July 15, 2008

Mr. Scott A. Ringgold,
Land Use Planner Department of Planning and Development
City of Seattle, 700 5th Ave Suite 2000. PO Box 34019
Seattle WA 98124-4019

Re: Comments on City’s draft environmental impact statement DEIS for Children’s expansion
Transportation Section Review GTC #08-132

Mr. Ringgold:

Gibson Traffic Consultants (GTC) has been asked by Laurelhurst Community Club (LCC) to review the Children’s draft environmental impact statement DEIS as it pertains to the transportation section. The LCC has reviewed and approved submittal of this letter on their behalf. Gibson Traffic Consultants, Inc. is a registered professional transportation engineering firm in Washington State with 20 years of experience in traffic impact analysis and transportation section EIS completion and review. The following comments should be addressed in changes to the proposal or resolved in the FEIS and additional comment time should be provided to allow comment on the additional information requested that was not available in the DEIS.

TRIP GENERATION

1. None of the build alternatives provides any real alternative in reducing trip generation other than the transportation management program (TMP) that applies to all alternatives. Reduced size/intensity build alternative, alternative staff/shift arrangements or alternative off-site location for the parking could do that and none is discussed in the transportation section of the Cities draft environmental impact statement DEIS for Children’s expansion.

2. The existing trip generation data for this existing site does not appear to have been performed using either actual traffic counts of all the driveways (off site parking lots, Hartman site and Penny Drive-no existing parking lot or driveway counts were provided in the DEIS) or based on standard Institute of Transportation Engineers (ITE) rates. ITE rates are the industry standard for determining new trip generation data for such sites rather than the complicated unverifiable modal split calculation. The modal split trip generation does not appear to have been calibrated using actual count data (none provided) making it impossible to determine its validity against actual conditions. The counts need to be either conducted or provided for review.
3. Using standard ITE trip generation would result in 2,800 peak hour trips based on the square footage (SF) of the hospital or 42,000 daily trips. In contrast, the DEIS acknowledges only 1,410. Transparency and detail is therefore especially important in disclosing how the DEIS trip generation projections were arrived at, so that, again, their validity can be assessed. Note: No detailed information on total employees (doctors, residents, and fellows) was provided for the other ITE variable calculation which could help verify future trip generation. The discrepancy between ITE and the DEIS trip generation data needs to be validated.

TRAFFIC VOLUMES

4. There is a large discrepancy between peak hour traffic volumes shown in the DEIS for Sandpoint/50th Street and that shown in the Heffron pedestrian facility assessment (page 103/4 of the attachments). If the DEIS count is incorrect, the level of service (LOS), queuing analysis and arterial LOS should be assessed with the correct volumes to determine the appropriate traffic control needs and blocking impacts.

5. As a minimum the most recent peak hour volumes based on manual counts plus approved development projects should be used for the concurrency analysis or even the Future Conditions modeling run conducted by the hospital. As roadways, such as the bridges, reach capacity, congestion means machine counts time out and do not provide an accurate count. The 2002 City study for the University District stated under future conditions “It is possible that the existing peak hour traffic counts are low because of the bottlenecks at the bridges and freeway ramps. The actual peak hour demand could be higher if those bottlenecks and backups were free flowing”.

VEHICLE LEVEL OF SERVICE AND CONCURRENCY

6. There was no intersection level of service (LOS) or arterial LOS Synchro or Highway Capacity Manual reports input/calculation/queuing sheets provided, making it impossible to knowledgeably review and comment on the LOS results. The electronic Synchro or HCM files should be available for review and verification. These have been requested from SDOT and so far have not been provided. Once they are provided there should be an additional comment period provided before issuance of the FEIS.

7. Concurrency is based on 1998 counts with no adjustment for future growth that is expected in the University District. The University Area Transportation Strategy (UATAC) Future Conditions Summary prepared for the Seattle Department of Transportation (January 2008) and on SDOT’s website identifies growth of traffic volumes during the peak hour increasing by a minimum of 10% and up to 69% on some arterials to the 2030 study year (Page 3 of Future Conditions report page 64 of my attachments). The screen line data from attachment T-7 (model forecasting) should be utilized for concurrency evaluation rather than the 1998 data. Or at least the major projects in the University District should be included in the pipeline as the director’s rule only excludes minor projects as being within current adopted count data. This is significant. Based on preliminary review it looks like the PM peak northbound volumes used in the 1998 DEIS are
about 400 PM peak hour northbound trips lower than the 2006/7 UATAC study “existing volumes” (page 82/3/4 of attachments that shows some of Transpo’s actual traffic volumes from a prior study) which would put the bridges at a volume to capacity ratio of over 1.0 before even the other new approved developments (page 89) or children’s hospital volumes are accounted for.

8. The City’s UATAS study reported LOS E or LOS F for 45th Street at I-5, 7th Ave Roosevelt Way, Brooklyn and 15th Avenue for existing conditions (page 58 “existing conditions”). However the DEIS only goes as far west as 15th and it reports 15th as acceptable LOS D rather than the deficient LOS E/F reported in the City’s study. Additionally, the City study identifies Montlake Blvd/Pacific as operating at LOS F for existing conditions while the DEIS identifies acceptable LOS C. These differences are significant as they demonstrate undisclosed and unmitigated deficient LOS conditions. The UATAS values should be utilized and the DEIS corrected. The full UATAS study existing and future conditions is attached page 1-80 of attachments.

9. Table 3.10-5 of the DEIS Travel Time demonstrates that, under the 2030 no build scenario, Montlake Blvd from Roanoke to Children’s will also operate at deficient LOS F at 6 mph for the SB direction. The DEIS also states that the build out would cause no change in travel speed. The report then goes on to say the enhanced TMP mitigation will actually improve travel speeds on the corridor by 20% to 8 mph, even though it still adds more traffic than the no build scenario. The DEIS should disclose the data and calculations bases for this claim of improved travel speed despite increased volumes from Children’s.

10. Table 3.10-5 of the DEIS Travel Time demonstrates that, under the 2030 no build scenario, 45th-Sandpoint Way, between I-5 and Children’s, operates at LOS E (10 mph) in the eastbound direction. However, with the build out the arterial will drop to unacceptable LOS F (8 mph) whether reduced TMP volumes or not. This is a 20% reduction in the already low travel speed and no mitigation for this significant impact is identified in the DEIS. Surely this is an unmitigated significant impact.

11. There are significant inconsistencies in the DEIS arterial travel speeds compared to the City’s UATAS study which identified that under future conditions Montlake Blvd will operate at LOS F with a 2 mph travel speed (slower than walking per the City UATAS’ own words) even if all the UATAS action strategies (multi-million unfunded project list) is implemented. The UATAS also identified that the 45th street corridor would operate at LOS F at 7 mph westbound and LOS F at 5 mph eastbound without any action plan. This speed would improve to LOS F at 8 mph with the unfunded recommendation fully implemented. The very significant discrepancies between the City’s UATAS analysis and the DEIS projected travel times need to be corrected or explained and justified.

MITIGATION TMP

12. Alternative 1 impact review 3.10.2.2 of the DEIS acknowledges that it is “speculative to assume further reduction in single occupancy vehicle (SOV) levels since current achieved levels are already consistent with Seattle’s central business district’s TMP performance.” However, under
the other alternatives, the mitigated TMP enhancement is, without support, represented as reducing peak hour traffic by 30%. Please provide the modeling basis for each individual element of the enhanced TMP that demonstrate and validate such a large cumulative difference between alternative 1 and the other alternatives.

13. Common sense suggests that if the existing aggressive TMP program results in an existing peak hour trip generation of 720 peak hour trips based on the DEIS, more than doubling the building size, employee base and the number of beds would result in at least double the amount of trips.

14. The existing TMP is already aggressive with substantial incentives and opportunities. It has already maxed out SOV reduction as is demonstrated in 3.10-45, where it is acknowledged that even all the latest enhancement updates “have only manage[d] to reduce the SOV percentage by 3% over the last several years”. For adequate and useful analysis, the DEIS should have reported what Children’s prior projecte SOV reduction was (as anticipated based on the prior enhancements) and whether those expectations were actually achieved. Specific and reliable data on this point is clearly necessary when attempting to assess the current claim that Children’s will reduce SOV usage by a further 20% (38% to 30%) from their already high CTR rates, even though employees are more than doubling and they are proposing to increase shuttles by less than double.

PARKING

15. The DEIS identifies an existing parking demand of 1,750 vehicles with the existing aggressive TMP and identifies that the practical parking lot occupancy is 85-90% (because of circulation, poor parking for oversized vehicles, etc). It identifies the main campus is already at capacity. Therefore, as employee numbers and inpatient beds are more than doubling, it would be expected to be closer to 3,600 spaces as identified in the DEIS. To prevent significant overflow onto the street system that does not have the capacity to handle it, the parking requirement should be kept to 3,600, not be arbitrarily reduced to 3,100. Any proposed reduction need to be clearly documented with supporting data to prevent underbuilding of parking or there needs to be contingency plans approved with trigger levels for any excess parking demand all of which should be available for comment before the FEIS.

16. The parking demand management strategy identifies future charging of patients and visitors for parking. The impact on the local neighborhood of visitor parking on the street needs to be assessed. A neighborhood parking zone would need to be implemented and fully financed by the hospital so the cost of residential parking permits and enforcement are not passed onto the local residents.

17. Table 3.10.10 completes parking demand calculation based on an effective supply reduction of 5%; while page 3.10-28 identified the practical capacity as being a 10-15% reduction (practical capacity is about 85-90% of occupancy). The effective supply (10-15% effective reduction) should be reported accurately and demand calculations based upon it to accurately reflect the needed parking to prevent overspill onto the surrounding residential street system.
OTHER TRAVEL MODE CONDITIONS

18. The University Area Transportation Action Strategy (UATAS) city study identified 45th Street as LOS F for pedestrian facilities and didn’t even assess Sand Point. The pedestrian needs in the area need to be specifically addressed and mitigated.

19. The UATAS city study identified 45th Street as failing for pedestrian vehicle conflicts in several locations including 45th Avenue / Union Bay. Increasing pedestrian TMP by monetary incentives cannot work if pedestrians cannot safely get to the site. The DEIS does not address this inconsistency and safety enhancement need.

20. The UATAS identifies that 45th Street west of 17th is failing the identified Bicycle LOS. The DEIS didn’t even analyze Bicycle LOS or safety conditions on 45th Street or Montlake Blvd or Sandpoint Way. It should be noted there were four bike accidents that had occurred between 25th street and Union Bay along the 45th Street corridor. Does the TMP model account for these failing unsafe pedestrian and bike facilities and if so how?

21. The UATAS identifies that 45th Street from 17th to Sandpoint and Montlake Blvd from the Cut to Sandpoint have failing LOS for transit (Figures 13, 14, 16). Does the TMP model account for these failing transit facilities and if so how?

CONSTRUCTION TRAFFIC

22. 382,000 cubic yard yards of soil (unidentified whether that is compact or loose) and debris from 216,000 SF of existing building is to be removed from the site with alternative 7 and even more with other alternatives, except alternative 1. No identification of truck type (single or pup and trailer is identified). Assuming an average yardage capacity of 14 cubic yards per truck per solo truck results in over 25,000 trucks loads (50,000 one way trips) for the soil extraction only; not including building debris. This significant impact should be specifically disclosed and addressed in much greater detail.

23. The DEIS identifies under appendix D-78 that an average of 40-80 weekly truck trips (i.e. using an average of 60 truck trips round trip). This would mean 416 weeks of truck traffic (over 8 years worth of truck traffic activity just for the removal of soil). This doesn’t include trucks delivering construction materials, trucks removing debris or stoppages/delays for holidays or inclement weather. This significant impact should be specifically disclosed and addressed in much greater detail.

24. The only mitigation for the trucks appears to be avoidance of peak hour traffic, thus pushing the truck impacts into the evening, middle of day or weekends in this family neighborhood. Again, the impacts should be clearly disclosed and discussed. Further, the need for and the impacts of not limiting truck operations to Penny Drive only should be disclosed.
25. Miscellaneous comments:
   - Haul routes need to be established and enforced methodologies and penalties identified.
   - Construction worker and staging area parking should be limited to on-site or previously approved sites to reduce double trips.
   - Advance notice to the neighborhood should be provided when there will be more than 80 truck trips in a week and approval received to avoid events and limit the number of haulage trucks per day as well as time.
   - With existing parking at the site at capacity, construction staging areas need to be identified as it appears they may have to be off-site for several phases.

EMERGENCY VEHICLE RESPONSE

26. The impacts of additional congestion, queueing blockage and service demand on Fire and Emergency service response to the Laurelhurst neighborhood was not assessed a significant deficiency. All emergency facilities come from stations located across Sandpoint Way. Therefore, they have to pass the increased queueing and delay and signals associated with the expansion. What is the impact on service times? There was no queueing assessment in the report. This information should be provided and adequate time given for a comment period.

27. Figure 15, Sandpoint Channelization, shows a shared NBRT lane at Penny Drive/Sandpoint Way while text discusses a separate right turn lane: which is correct?

Please call us at (425) 339-8266 or email (edwardk_gtc@earthlink.net) if you have any questions or comments regarding this review and additional information request. We look forward to your response.

Sincerely,

GIBSON TRAFFIC CONSULTANTS, INC.

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University Area Transportation Action Strategy

Existing Conditions Summary

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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
EXISTING CONDITIONS

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
EXISTING CONDITIONS

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.
EXISTING CONDITIONS

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
EXISTING CONDITIONS

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

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

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.
Figure 1. Street Type Classifications
EXISTING CONDITIONS

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

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:

\[
\text{Percent Adequate Walking Space} = \frac{\text{SUM (the length of the block face having averaged sidewalk width greater than 6 feet)}}{\text{the length of pedestrian segment}} \times 100.
\]

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.
EXISTING CONDITIONS

classifications. For Local Connector streets, a threshold of LOS B is required. All other street types have a LOS C threshold.

<table>
<thead>
<tr>
<th>Level of Service</th>
<th>Percent Meeting Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWS-LOS A</td>
<td>95 to 100 percent</td>
</tr>
<tr>
<td>AWS-LOS B</td>
<td>90 to 95 percent</td>
</tr>
<tr>
<td>AWS-LOS C</td>
<td>85 to 90 percent</td>
</tr>
<tr>
<td>AWS-LOS D</td>
<td>80 to 85 percent</td>
</tr>
<tr>
<td>AWS-LOS E</td>
<td>70 to 80 percent</td>
</tr>
<tr>
<td>AWS-LOS F</td>
<td>less than 70 percent</td>
</tr>
</tbody>
</table>

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

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

The figure shows the average width of the sidewalk or other paved surface by block.
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 Fehrman 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 Blakeley 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.
EXISTING CONDITIONS

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

<table>
<thead>
<tr>
<th>Street Type</th>
<th>Sidewalk</th>
<th>Planting</th>
<th>Parking/Bike</th>
<th>Total (Minimum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Connector</td>
<td>6 feet</td>
<td>4 feet</td>
<td>0 feet</td>
<td>10 feet</td>
</tr>
<tr>
<td>Commercial Connector</td>
<td>6 feet</td>
<td>4 feet</td>
<td>8 feet</td>
<td>18 feet</td>
</tr>
<tr>
<td>Local Connector</td>
<td>6 feet</td>
<td>6 feet</td>
<td>6 feet</td>
<td>18 feet</td>
</tr>
<tr>
<td>Green Street</td>
<td>8 feet</td>
<td>10 feet</td>
<td>0 feet</td>
<td>18 feet</td>
</tr>
<tr>
<td>Main Street/ Mixed Use Street</td>
<td>8 feet</td>
<td>6 feet</td>
<td>8 feet</td>
<td>22 feet</td>
</tr>
</tbody>
</table>

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:

\[
\text{Percent Adequate Pedestrian Facilities} = \frac{\text{SUM (the length of the block face having adequate pedestrian facilities based on the street type)}}{\text{(the total length)}} \times 100.
\]

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

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

<table>
<thead>
<tr>
<th>Level of Service</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>PF - LOS A</td>
<td>90 to 100 percent</td>
</tr>
<tr>
<td>PF - LOS B</td>
<td>80 to 90 percent</td>
</tr>
<tr>
<td>PF - LOS C</td>
<td>70 to 80 percent</td>
</tr>
<tr>
<td>PF - LOS D</td>
<td>50 to 70 percent</td>
</tr>
<tr>
<td>PF - LOS E</td>
<td>40 to 50 percent</td>
</tr>
<tr>
<td>PF - LOS F</td>
<td>less than 40 percent</td>
</tr>
</tbody>
</table>

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 better is required for green streets, main streets and local connectors, while regional connections may operate at LOS D.
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.

Legend
Pedestrian Facilities Space (feet)
- 0
- 1-9
- 10-17
- 18-21
- 22+
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)

<table>
<thead>
<tr>
<th>Level of Service</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP-LOS A</td>
<td>fewer than 200 vehicles</td>
</tr>
<tr>
<td>VP-LOS B</td>
<td>200 to 400 vehicles</td>
</tr>
<tr>
<td>VP-LOS C</td>
<td>400 to 600 vehicles</td>
</tr>
<tr>
<td>VP-LOS D</td>
<td>600 to 800 vehicles</td>
</tr>
<tr>
<td>VP-LOS E</td>
<td>800 to 1000 vehicles</td>
</tr>
<tr>
<td>VP-LOS F</td>
<td>greater than 1000 vehicles</td>
</tr>
</tbody>
</table>

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
EXISTING CONDITIONS

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)

<table>
<thead>
<tr>
<th>Level of Service</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCL-LOS A</td>
<td>less than 60 seconds</td>
</tr>
<tr>
<td>SCL-LOS B</td>
<td>60 to 75 seconds</td>
</tr>
<tr>
<td>SCL-LOS C</td>
<td>75 to 100 seconds</td>
</tr>
<tr>
<td>SCL-LOS D</td>
<td>100 to 120 seconds</td>
</tr>
<tr>
<td>SCL-LOS E</td>
<td>120 to 130 seconds</td>
</tr>
<tr>
<td>SCL-LOS F</td>
<td>greater than 130 seconds</td>
</tr>
</tbody>
</table>

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.
Figure 8. Signal Cycle Lengths
EXISTING CONDITIONS

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
EXISTING CONDITIONS

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

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.
**EXISTING CONDITIONS**

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

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.
Figure 11. Bicycle Level of Service Results
EXISTING CONDITIONS

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.
EXISTING CONDITIONS

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 provide 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

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

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

Legend
UVTN Transit Service Frequency in Minutes

- 0 - 10  Passing
- 10 - 15  Passing
- 15 - 20  Deficient
- 20+  Deficient

Not To Scale
Figure 14. UVTN Span of Service (Hours operating at 15 minute Headways)
Figure 15. Average Travel Speed to Posted Speed

Legend

Average Travel Speed Compared to Posted Speed

- 40+  Passing
- 30 - 40%  Passing
- 25 - 30%  Deficient
- 0 - 25%  Deficient
Figure 16. UVTN Service Reliability Index
Figure 17. UVTN Passenger Loading (Maximum)
# EXISTING CONDITIONS

## Table 9. UVTN Monitoring Results

<table>
<thead>
<tr>
<th>ID</th>
<th>Primary Street of Corridor Segment</th>
<th>Limits</th>
<th>Frequency (MAX)</th>
<th>Span (MIN)</th>
<th>Speed (AVG)</th>
<th>Reliability (MAX)</th>
<th>Load (MAX)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fairview/Eastlake</td>
<td>Stewart St</td>
<td>15.0 Pass</td>
<td>18 Pass</td>
<td>24% Fail</td>
<td>1.67 Fall</td>
<td>89% Pass</td>
</tr>
<tr>
<td>20</td>
<td>N/NE 45th St</td>
<td>Stone Way N</td>
<td>15.0 Pass</td>
<td>13 Pass</td>
<td>22% Fail</td>
<td>2.20 Fall</td>
<td>10% Fail</td>
</tr>
<tr>
<td>23</td>
<td>N/NE 40th St</td>
<td>15th Av NE</td>
<td>15.0 Pass</td>
<td>10% Fail</td>
<td>37% Pass</td>
<td>0.92 Fail</td>
<td>12% Fail</td>
</tr>
<tr>
<td>26</td>
<td>15th Ave NE</td>
<td>NE 45th St</td>
<td>15.0 Pass</td>
<td>13 Pass</td>
<td>31% Pass</td>
<td>0.66 Fail</td>
<td>10% Fail</td>
</tr>
<tr>
<td>28</td>
<td>25th Ave NE</td>
<td>NE 65th St</td>
<td>14.6 Pass</td>
<td>12 Pass</td>
<td>37% Pass</td>
<td>0.14 Fail</td>
<td>14% Fail</td>
</tr>
<tr>
<td>30</td>
<td>Montlake Blvd NE</td>
<td>NE Pacific St</td>
<td>N/A</td>
<td>10% Fail</td>
<td>21% Fail</td>
<td>0.79 Fail</td>
<td>36% Pass</td>
</tr>
<tr>
<td>31</td>
<td>NE 45th St, Sand Point</td>
<td>15th Av NE</td>
<td>60.0 Pass</td>
<td>4 Pass</td>
<td>31% Pass</td>
<td>2.20 Fail</td>
<td>10% Fail</td>
</tr>
<tr>
<td>32</td>
<td>NE 65th St</td>
<td>Roosevelt Way NE</td>
<td>30.0 Pass</td>
<td>5 Pass</td>
<td>32% Pass</td>
<td>0.46 Fail</td>
<td>80% Pass</td>
</tr>
<tr>
<td>33</td>
<td>NE Pacific St</td>
<td>Montlake Blvd NE</td>
<td>4.8 Pass</td>
<td>19 Fail</td>
<td>21% Fail</td>
<td>0.72 Fail</td>
<td>10% Fail</td>
</tr>
<tr>
<td>60</td>
<td>11th Ave NE, Roosevelt Wy</td>
<td>NE 40th St</td>
<td>15.0 Pass</td>
<td>25% Fail</td>
<td>27% Fail</td>
<td>2.41 Fail</td>
<td>79% Pass</td>
</tr>
</tbody>
</table>

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.
EXISTING CONDITIONS

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

<table>
<thead>
<tr>
<th>Stop Reference</th>
<th>Direction</th>
<th>Street</th>
<th>Cross-Street</th>
<th>Daily Boarding (Weekday)</th>
</tr>
</thead>
<tbody>
<tr>
<td>35720</td>
<td>East</td>
<td>NE Campus Pkwy</td>
<td>University Way NE</td>
<td>457</td>
</tr>
<tr>
<td>7941</td>
<td>North</td>
<td>25th Avenue NE</td>
<td>NE Blakely Street</td>
<td>416</td>
</tr>
<tr>
<td>82155</td>
<td>North</td>
<td>University Way NE</td>
<td>NE 55th Street</td>
<td>227</td>
</tr>
<tr>
<td>35741</td>
<td>South</td>
<td>NE Campus Pkwy</td>
<td>11th Avenue NE</td>
<td>156</td>
</tr>
<tr>
<td>7912</td>
<td>North</td>
<td>25th Avenue NE</td>
<td>NE 55th Street</td>
<td>138</td>
</tr>
<tr>
<td>26860</td>
<td>North</td>
<td>15th Avenue NE</td>
<td>NE 45th Street</td>
<td>128</td>
</tr>
<tr>
<td>9800</td>
<td>South</td>
<td>12th Avenue NE</td>
<td>NE 47th Street</td>
<td>117</td>
</tr>
<tr>
<td>37670</td>
<td>West</td>
<td>15th Avenue NE</td>
<td>NE 85th Street</td>
<td>101</td>
</tr>
<tr>
<td>7880</td>
<td>North</td>
<td>25th Avenue NE</td>
<td>NE 65th Street</td>
<td>88</td>
</tr>
<tr>
<td>6652</td>
<td>West</td>
<td>11th Avenue NE</td>
<td>NE 42nd Street</td>
<td>88</td>
</tr>
<tr>
<td>24950</td>
<td>South</td>
<td>15th Avenue NE</td>
<td>NE 55th Street</td>
<td>88</td>
</tr>
<tr>
<td>28080</td>
<td>South</td>
<td>15th Avenue NE</td>
<td>NE 50th Street</td>
<td>85</td>
</tr>
<tr>
<td>38700</td>
<td>North</td>
<td>Roosevelt Way NE</td>
<td>NE 50th Street</td>
<td>75</td>
</tr>
<tr>
<td>29429</td>
<td>East</td>
<td>NE 65th Street</td>
<td>15th Avenue NE</td>
<td>73</td>
</tr>
<tr>
<td>9575</td>
<td>East</td>
<td>12th Avenue NE</td>
<td>NE 45th Street</td>
<td>72</td>
</tr>
<tr>
<td>29140</td>
<td>West</td>
<td>NE 47th Street</td>
<td>11th Avenue NE</td>
<td>62</td>
</tr>
<tr>
<td>18040</td>
<td>South</td>
<td>Brooklyn Avenue NE</td>
<td>NE 50th Street</td>
<td>57</td>
</tr>
<tr>
<td>25960</td>
<td>North</td>
<td>15th Avenue NE</td>
<td>NE 52nd Street</td>
<td>56</td>
</tr>
<tr>
<td>9130</td>
<td>North</td>
<td>11th Avenue NE</td>
<td>NE 50th Street</td>
<td>55</td>
</tr>
</tbody>
</table>

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.
EXISTING CONDITIONS

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.
Figure 18. Street Classification

Legend

- Principal Arterials
- Minor Arterials
- Collector Arterials
- Interstate Freeways
- Access Streets (both residential and commercial)
EXISTING CONDITIONS

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.
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

- 25th Avenue NE South of NE 65th St
- 15th Avenue NE South of NE 65th St
- 12th Avenue NE South of NE 65th St
- 35th Avenue NE North of NE 55th St
- Roosevelt Way NE South of NE 65th St
Figure 24. Average Weekday Volumes for East-West Corridors 1991-2006

- NE 45th St-West of Roosevelt Way
- NE 50th St-West of Roosevelt Way
- NE Pacific St-West of Montlake Blvd
- NE 65th St-West of Roosevelt Way
- NE Ravenna Blvd-West of Roosevelt Way
Figure 25. PM Peak Hour Volumes for East-West Corridors 2000-2006

- NE 45th St-West of Roosevelt Way
- NE Pacific St-West of Montlake Blvd
- NE 50th St-West of Roosevelt Way
- NE 65th St-West of Roosevelt Way
- NE Ravenna Blvd-West of Roosevelt Way
EXISTING CONDITIONS

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
Figure 27. Collisions Rate (Collisions per Million Annual Vehicles)
EXISTING CONDITIONS

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 show 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

<table>
<thead>
<tr>
<th>LOS</th>
<th>Average Travel Speed (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>&gt;30</td>
</tr>
<tr>
<td>B</td>
<td>&gt;24-30</td>
</tr>
<tr>
<td>C</td>
<td>&gt;18-24</td>
</tr>
<tr>
<td>D</td>
<td>&gt;14-18</td>
</tr>
<tr>
<td>E</td>
<td>&gt;10-14</td>
</tr>
<tr>
<td>F</td>
<td>10 or less</td>
</tr>
</tbody>
</table>

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.
Figure 29. Travel Times and Level of Service for East-West Corridors
EXISTING CONDITIONS

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

<table>
<thead>
<tr>
<th>Averaged Intersection Delay (seconds)</th>
<th>LOS A</th>
<th>LOS B</th>
<th>LOS C</th>
<th>LOS D</th>
<th>LOS E</th>
<th>LOS F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>between 10 and 20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>between 20 and 35</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>between 35 and 55</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>between 55 and 80</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>greater than 80</td>
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</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Stop Sign Control Delay (Seconds)</th>
<th>LOS A</th>
<th>LOS B</th>
<th>LOS C</th>
<th>LOS D</th>
<th>LOS E</th>
<th>LOS F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 10</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>between 10 and 15</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>between 15 and 25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>between 25 and 35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>between 35 and 50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>greater than 50</td>
<td></td>
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</tbody>
</table>

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.
University Area Transportation Action Strategy
Future Conditions Summary

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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

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Household</th>
<th>Employment</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>15,840</td>
<td>44,300</td>
<td>39,520</td>
</tr>
<tr>
<td>2030</td>
<td>20,240</td>
<td>58,910</td>
<td>47,210</td>
</tr>
<tr>
<td>Growth 2030-2005 (% growth)</td>
<td>4,400</td>
<td>14,610</td>
<td>7,690</td>
</tr>
</tbody>
</table>

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 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
Figure 4. 2030 Arterial Levels of Service Under “No Action” – North-South Corridors
FUTURE CONDITIONS

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.
Figure 5. Proposed Link Light Rail Stations

Legend
- Light rail Route
- Station Location

University Area Transportation Action Strategy
City of Seattle
January 29, 2008
Page 9
FUTURE CONDITIONS

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:

- 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.
FUTURE CONDITIONS

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.
FUTURE CONDITIONS

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

Legend
- Bicycle Improvement
- Pedestrian Improvement
- Transit Improvement
- Roadway Improvement
- Trail Improvement

Spot / Intersection Improvement
Pedestrian Signal Improvement Area

University Area Transportation Action Strategy
City of Seattle
January 29, 2008
Page 13
### Table 2. Recommended Actions by Transportation Mode

**PEDESTRIAN**
- No. 2: Widens the sidewalk and provides for the extension of the 15th Avenue NE sidewalk to NE 45th Street.
- No. 3: Installs a crosswalk at the junction of Montlake Boulevard NE and NE 45th Street.
- No. 4: Installs a pedestrian signal, new crosswalk, and wider sidewalks for people crossing 11th Avenue NE at NE 41st Street.
- No. 5: Extends the sidewalk along the northern edge of the University of Washington campus to NE 45th Street.
- No. 6: 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. 7: Adds a southbound bicycle signal at Farhman Avenue E to allow riders to safely cross to the left turn lanes at Harvard Avenue NE.
- No. 8: Reconstructs the pedestrian and bicycle lane on Harvard Avenue NE from NE 45th Street to NE 46th Street.
- No. 9: Improves the character of University Way for bicycles and pedestrians.
- No. 10: Records bicycle lanes and pedestrian ways on map.
- No. 11: Creates a southbound bicycle lane on Montlake Boulevard from the Montlake Bridge to SR 520.
- No. 12: Extends the bicycle lane on Brooklyn Avenue NE between Ravenna and NE 68th Street.
- No. 13: Improves the repair and repaving of NE Ravenna Boulevard between NE 68th Street and Ravenna Avenue NE.

**BICYCLE**
- No. 14: Extends the bicycle lane on 15th Avenue NE from NE 45th Street to NE 50th Street.
- No. 15: Provides bicycle and pedestrian access to the Burke-Gilman Trail under the NE 45th Street Viaduct.
- No. 16: Extends the bicycle lane from the NE 45th Street NE/Pacific Gate Bridge to NE 50th Street.
- No. 17: Extends the existing eastbound HOV lane to provide a continuous lane from 15th Avenue NE to Montlake Boulevard.
- No. 18: Extends the eastbound HOV lane on 15th Avenue NE.
- No. 19: Extends the northbound HOV lane on 15th Avenue NE.
- No. 20: Extends the southbound HOV lane on 15th Avenue NE.
- No. 21: Extends the westbound HOV lane on 15th Avenue NE.
- No. 22: Extends the northbound HOV lane on 15th Avenue NE.

**TRAIL**
- No. 1: Completes a corridor study of 15th Avenue NE.
- No. 2: Provides bicycle and pedestrian access to the Burke-Gilman Trail under the NE 45th Street Viaduct.
- No. 3: Extends the bicycle and pedestrian connection between the Burke-Gilman Trail and 25th Avenue NE at NE 47th Street.
- No. 4: Extends the bicycle-pedestrian connection between 25th Avenue NE and the Burke-Gilman Trail.

**AUTO**
- No. 1: Improves the repair and repaving of NE Ravenna Boulevard between NE 68th Street and Ravenna Avenue NE.
- No. 2: Provides bicycle and pedestrian access to the Burke-Gilman Trail under the NE 45th Street Viaduct.
- No. 3: Extends the northbound HOV lane on 15th Avenue NE.
- No. 4: Extends the northbound HOV lane on 15th Avenue NE.
- No. 5: Provides bicycle and pedestrian access to the Burke-Gilman Trail under the NE 45th Street Viaduct.
- No. 6: Extends the bicycle and pedestrian connection between the Burke-Gilman Trail and 25th Avenue NE at NE 47th Street.
- No. 7: Extends the bicycle lane on 15th Avenue NE from NE 45th Street to NE 50th Street.
- No. 8: Extends the bicycle lane from the NE 45th Street NE/Pacific Gate Bridge to NE 50th Street.

**TRANSIT**
- No. 1: Provides bicycle and pedestrian access to the Burke-Gilman Trail under the NE 45th Street Viaduct.
- No. 2: Extends the bicycle lane on 15th Avenue NE from NE 45th Street to NE 50th Street.
- No. 3: Extends the northbound left-turn pocket and modify the signal timing.
- No. 4: Extends the existing eastbound HOV lane to provide a continuous lane from 15th Avenue NE to Montlake Boulevard.
- No. 5: Extends the eastbound HOV lane on 15th Avenue NE.
- No. 6: Extends the northbound HOV lane on 15th Avenue NE.
- No. 7: Extends the southbound HOV lane on 15th Avenue NE.

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University Area Transportation Action Strategy  
City of Seattle  
January 29, 2008  
Page 14
FUTURE CONDITIONS

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

Legend

2030 PM Peak Hour

- Arterial Corridor
- Direction Analyzed
- LOS / mph

University Area Transportation Action Strategy
City of Seattle

January 29, 2008

Page 17
FUTURE CONDITIONS

Figure 9. 2030 Arterial Levels of Service with Action Strategy Projects – North-South Corridors
VEHICLE VOLUME SUMMARY
CITY OF SEATTLE
DEPARTMENT OF TRANSPORTATION

LOCATION EASTLAKE AV E & FENDERMAN AV E TIME 4:15 - 5:15

DATE 03-07-06

DAY TUESDAY

WEATHER Rain

PREPARED BY

COUNTED BY

PM PEAK HR

PEDESTRIANS
EB 5
WB 5

PEDESTRIANS
NB 15
SB 15

%TRUCKS & BUSES

%TRUCKS & BUSES

PEAK HOUR VOLUME
(Peak 15 Min. Vol. x 4)

1847
4283
NB PM PEAK 82
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<th>SBT</th>
<th>SBR</th>
<th>SEL</th>
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| Total Split (%)         | 30.8%|54.6%|53.8%|53.8%|0.0%|46.2%|15.0%|30.0%
| Maximum Green (s)       | 36.0| 67.0| 68.0| 66.0| 16.0| 35.0|    |    |
| Yellow Time (s)         | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |    |    |
| All-Red Time (s)        | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |    |    |
| Lead/Lag                | Lead| Lead| Lag | Lag |     |     |    |    |
| Lead-Lag Optimize?      | Yes | Yes | Yes | Yes | Yes | Yes |    |    |
| Vehicle Extension (s)   | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |    |    |
| Recall Mode             | None| None| Min | Min |     |     |    |    |
| Walk Time (s)           | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |    |    |
| Flash Dnt Walk (s)      | 11.0| 11.0| 11.0| 11.0| 11.0| 11.0|    |    |
| Pedestrian Calls (#/hr) |     |     |     |     |     |     | 0  | 0  |
| Act Effct Green (s)     | 37.0| 68.0| 65.2| 65.2| 57.0|    |    |
| Actuated g/C Ratio      | 0.29| 0.53| 0.51| 0.51| 0.44|    |    |
| v/c Ratio               | 0.87| 1.24| 0.95| 0.19| 1.02|    |    |
| Control Delay           | 55.8| 144.6|44.2| 7.9 | 68.3|    |    |
| Queue Delay             | 0.0 | 4.6 | 0.0 | 0.0 | 0.0 | 0.0 |    |    |
| Total Delay             | 55.8| 149.2|44.2| 7.9 | 68.3|    |    |    |
### Lane Group

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### Intersection Summary

- **Area Type:** CBD
- **Cycle Length:** 130
- **Actuated Cycle Length:** 128.2
- **Natural Cycle:** 150
- **Control Type:** Actuated-Uncoordinated
- **Maximum v/c Ratio:** 1.24
- **Intersection Signal Delay:** 87.7
- **Intersection LOS:** F
- **Intersection Capacity Utilization:** 86.3%
- **ICU Level of Service:** E
- **Analysis Period (min)**: 15

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.

### Splits and Phases

- **Splits and Phases:** 232: Montlake Blvd NE & NE Pacific St

---

**Pamela Arora (cd)**
Gibson Traffic Consultants, Inc.
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<th>EBT</th>
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| Actuated g/C Ratio | 0.16 | 0.16 | 0.16 | 0.48 | 0.48 | 0.26 | 0.78 | 0.61 | 0.34 | 0.64 | 0.11 | 1.13 | 1.03 | 0.55 | 48.3 | 40.8 | 11.2 | 16.3 | 93.8 | 89.6 | 7.5 | 80 | Pamela Arora (cd) | No.Build | Gibson Traffic Consultants, Inc. | Page 1
### Existing 2007 Conditions

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### Intersection Summary

- **Area Type:** CBD
- **Cycle Length:** 100
- **Actuated Cycle Length:** 100
- **Offset:** 68 (68%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
- **Natural Cycle:** 150
- **Control Type:** Actuated-Coordinated
- **Maximum v/c Ratio:** 1.13

**Intersection Signal Delay:** 59.6

**Intersection LOS:** E

**Intersection Capacity Utilization:** 94.7%

**ICU Level of Service:** F

**Analysis Period (min):** 15

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.

### Splits and Phases: 110: Fuhrman Av E & 11 Av NE

![Diagram of traffic flow and splits]

Pamela Arora (cd)  
Gibson Traffic Consultants, Inc.

No Build  
Page 2
Figure 3
Existing 2003 PM Peak Hour Traffic Volumes
25th Avenue NE Mixed-Use

The Transpo Group

May 2004
University Village has major expansion plans

By DAN RICHMAN
P-I REPORTER

The University Village mall late last month filed papers with Seattle city planners seeking permission to dramatically expand in size.

The mall, already occupying 400,000 square feet on more than 22 acres, is considering erecting three new buildings and creating additions to two structures, adding a total of 422,500 square feet.

The mall's general manager, Susie Plummer, said the changes would add about 100,000 square feet of retail space and would mean a net gain of about 500 parking spaces.

The construction would take place in three phases, with some beginning in 2009, some in 2010 and some in 2011, according to the application filed with Seattle's Department of Planning and Development. But those dates are tentative, Plummer said.

"This is all very preliminary. We have a long way to go through the process" leading up to construction, she said. "Once the buildings are approved and they're leased -- which they are not yet -- we will decide about timing."

The first building to go up would be a seven-story, 350,000-square-foot structure with retail on the ground level and six levels of parking above. That building, along Northeast 45th Street, would replace a two-story, 60,000-square-foot building. Construction is slated to begin in January.

A two-story building in the middle of the mall, offering 20,000 square feet of retail space, would break ground in 2010.

The third new building would be a three-story structure 40,000 square feet in size. It would offer parking and retail space on the ground floor, retail and office on the second floor and office space on the top floor. Construction is set to start in 2011.

One addition, set to begin in 2009, will boost the retail capacity of an existing building by 5,000 square feet.

The other, also slated to start in 2009, will add 7,500 square feet to a different building.

Fountains, trees and more green space also may be added. No cost has been estimated for the changes, Plummer said.

The mall is enjoying good economic health, with an occupancy rate of 96.6 percent over the past seven years, she said, saying, "we are enjoying slow, measured growth."

But the mall has lacked space for a restaurant larger than 5,000 square feet, and that's an addition that would benefit both mall shoppers and the surrounding neighborhoods, Plummer said.

A public meeting will take place in June to review the proposed construction, she said.

P-I reporter Dan Richman can be reached at 206-448-8032 or darrichman@seattlepi.com.

Soundoff (Read 3 comments)

What do you think?

Go to Webtowns, your guide to Seattle neighborhoods, for more headlines and info from University District.

http://seattlepi.nwsource.com/business/361999_uvillage07.html
Table of Contents

1. INTRODUCTION .......................................................................................................................... 1

2. EXISTING CONDITIONS............................................................................................................ 1
   2.1. Sidewalks and Shoulder Conditions ...................................................................................... 7
   2.2. Pedestrian Crossings and Activity Centers ........................................................................... 9
   2.3. Transit Service and Stop Locations ....................................................................................... 9
   2.4. Existing Traffic Volumes ...................................................................................................... 14
   2.5. Vehicle Speeds .................................................................................................................... 16
   2.6. Traffic Collision History ..................................................................................................... 18
   2.7. Community Improvement Requests ..................................................................................... 19

3. PEDESTRIAN NEEDS ............................................................................................................... 19
   3.1. Sidewalks and Shoulders .................................................................................................... 19
   3.2. Pedestrian Crossings ........................................................................................................... 20
   3.3. Transit Stop Consolidation and Relocation ......................................................................... 20
   3.4. Vehicle Speed Reduction (Traffic Calming) ........................................................................ 20

4. RECOMMENDED IMPROVEMENTS ......................................................................................... 20

Figures

Figure 1. Existing Edge-of-Roadway Conditions .............................................................................. 5
Figure 2. Photos of Existing Edge of Roadway Conditions .............................................................. 5
Figure 3. Existing Pedestrian Conditions on Sand Point Way .......................................................... 8
Figure 4. Existing Transit Routes on Sand Point Way .................................................................... 10
Figure 5. Hourly Traffic Volumes on Sand Point Way NE south of NE 65th Street ...................... 10
Figure 6. Existing (2007) Traffic Volumes - AM Peak Hour .......................................................... 11
Figure 7. Existing (2007) Traffic Volumes - PM Peak Hour ........................................................... 12
Figure 8. Vehicles Speeds on Sand Point Way north of NE 64th Street ....................................... 13
Figure 9. Vehicles Speeds on Sand Point Way north of NE 85th Street ....................................... 15
Figure 10. Guidelines for Installing Marked Crosswalks at Non-Signalized Locations .................. 15
Figure 11. Recommended Improvements ....................................................................................... 28

Tables

Table 1. Sand Point Way NE Edge Conditions - NE 45th Street to NE 95th Street * ............... 2
Table 2. Average Weekday and Peak Hour Volumes on Sand Point Way NE ........................ 11
Table 3. Sand Point Way Speed Measurements .......................................................................... 14
Table 4. Collision Summary at Intersections ................................................................................ 16
Table 5. Collision Summary along Roadway Segments .............................................................. 17
1. INTRODUCTION

The Seattle Department of Transportation (SDOT) retained Heffron Transportation, Inc. to study pedestrian improvement needs along the Sand Point Way Corridor between NE 45th Street and NE 95th Street. This study documents existing conditions along the corridor that affect pedestrian mobility, including crossing locations, edge-of-road conditions, vehicular speeds, transit stop locations, and the land uses that affect pedestrian activity. After this review, potential improvement needs were identified and prioritized based on the severity of the need as well as input from the local communities. The results of this study will be used to aid in prioritizing future improvement projects. Potential funding sources for these improvements include the Neighborhood Street Fund (NSF), SDOT program funding, or grant sources.

2. EXISTING CONDITIONS

Sand Point Way NE is a Principal Arterial from NE 45th Street to NE 65th Street. North of NE 65th Street it is classified as a Minor Arterial. Between NE 45th Street and NE 65th Street, Sand Point Way has two lanes in each direction with left turn lanes at key intersections. North of 40th Avenue NE, this section has a landscaped median between left turn areas. From NE 65th Street to NE 74th Street the roadway has two lanes in each direction (four lanes total) and no left turn lanes. North of NE 74th Street, the roadway narrows to a three-lane configuration with one lane in each direction and a center, two-way left turn lane. North of the driveway to the National Oceanic and Atmospheric Administration (NOAA), the roadway narrows again to two lanes, one lane in each direction with no left turn lane. Sand Point Way south of NE 65th Street is part of State Route (SR) 513, which extends south along NE 45th Street and Montlake Boulevard to SR 520.

Detailed information about the edge conditions along Sand Point Way for pedestrians, adjacent land uses and transit stops that attract pedestrian trips, and speed limit along the route is presented in the following sections.

2.1. Sidewalks and Shoulder Conditions

Sand Point Way NE has a mix of edge treatments that range from new sidewalks to ditches at the back of pavement. The location and condition of these various edge treatments were mapped by the City and field verified. Three classifications of edge conditions used for this study are:

- Sidewalk – a sidewalk, with curb and gutter.
- Passable Shoulder – a shoulder of at least four feet in width. Sections where parking blocks pedestrian access along the shoulder (leaving less than four feet of width) are noted.
- No Shoulder or Sidewalk – these sections have less than the minimum passable shoulder width. Pedestrians or wheelchairs must be in or too close to the street when traveling along these sections.

Table 1 details the edge conditions along the corridor. Following the table, Figure 1 shows the edge conditions along the Sand Point Way corridor, and Figure 2 presents photographs of typical edge of roadway conditions.
Table 1. Sand Point Way NE Edge Conditions – NE 45th Street to NE 95th Street

<table>
<thead>
<tr>
<th>Location</th>
<th>Sidewalk or Path</th>
<th>Passable Shoulder</th>
<th>No Shoulder or Sidewalk</th>
<th>Description of Edge Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAST SIDE OF STREET</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NE 45th Street to 40th Avenue NE</td>
<td>X</td>
<td></td>
<td></td>
<td>Sidewalk in good condition. Open driveway at Wells Fargo Bank &gt; 60’ in length</td>
</tr>
<tr>
<td>40th Avenue NE to NE 50th Street</td>
<td>X</td>
<td></td>
<td></td>
<td>Sidewalk in good condition behind wide landscape strip.</td>
</tr>
<tr>
<td>NE 50th Street to 47th Avenue NE</td>
<td></td>
<td>X</td>
<td></td>
<td>Variety of conditions. North of NE 50th Street 4’ crushed gravel/grass adjacent to 3 ft deep drainage ditch. Residential driveways on either side of NE 52nd Street provide additional 6 ft asphalt path. South of 47th Avenue NE 6’ wide soft uneven ground.</td>
</tr>
<tr>
<td>47th Avenue NE to Princeton Avenue NE</td>
<td>X</td>
<td></td>
<td></td>
<td>Sidewalk in good condition.</td>
</tr>
<tr>
<td>Princeton Ave to 50th Avenue NE</td>
<td>X</td>
<td></td>
<td></td>
<td>Sidewalk in good condition</td>
</tr>
<tr>
<td>50th Avenue NE to NE 59th Street</td>
<td>X</td>
<td></td>
<td></td>
<td>Majority of length occupied by open driveway to gas station. At grade concrete pedestrian path across driveway.</td>
</tr>
<tr>
<td>NE 55th Street to NE 65th Street</td>
<td>X</td>
<td></td>
<td></td>
<td>Sidewalks generally in good condition. A few locations where sidewalk is slightly raised but not hazardous. However, between NE 59th Street and NE 60th Street, some sidewalk panels have lifted.</td>
</tr>
<tr>
<td>NE 65th Street to NE 74th Street</td>
<td>X</td>
<td></td>
<td></td>
<td>Paved walkway is located at back of ditch. It is in good condition.</td>
</tr>
<tr>
<td>At NE 74th Street (Entrance to Magnuson Park)</td>
<td>Intersection crossing</td>
<td></td>
<td></td>
<td>The east leg of intersection is divided by three landscaped traffic islands for traffic control. However, a crosswalk is not provided across the islands. A crosswalk is provided from the sidewalk on the south side of the intersection to the south island and across Sand Point Way to the west side of the street.</td>
</tr>
<tr>
<td>NE 74th Street to NE 77th Street</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>There is no shoulder for three car lengths north of NE 74th Street. North of that, there is on street parking with shoulder. The combined width for pedestrians between parked cars and the fog line is 6 ft. Approximately 80 ft south of NE 77th Street, there is sidewalk. South of the sidewalk there is a raised curb for approximately 50 ft with a 10 ft wide grass path.</td>
</tr>
<tr>
<td>Location</td>
<td>Sidewalk or Path</td>
<td>Passable Shoulder</td>
<td>No Shoulder or Sidewalk</td>
<td>Description of Edge Condition</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------------------</td>
<td>-------------------</td>
<td>-------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>NE 77th Street to NE NOAA Drive</td>
<td>X</td>
<td></td>
<td></td>
<td>Sidewalk in good condition. At NOAA Dr on the east leg there are two traffic islands for traffic control. A crosswalk is provided across the islands.</td>
</tr>
<tr>
<td>NE NOAA Drive to Inverness Dr NE</td>
<td></td>
<td>X</td>
<td></td>
<td>6 ft wide shoulder. Widens to 7 ft north of 6500 block, however, parked vehicles reduce pedestrian path. Asphalt in good condition, cracked in some areas but does not create unsafe conditions. Ivy overgrown onto shoulder at 6500 block.</td>
</tr>
<tr>
<td>Inverness Drive NE to NE 80th Street</td>
<td></td>
<td></td>
<td>X</td>
<td>Wide paved shoulder. Parked vehicles can block pedestrian path.</td>
</tr>
<tr>
<td>NE 90th Place to NE 93rd Street</td>
<td></td>
<td>X</td>
<td>X</td>
<td>Shoulder width varies from 3 ft to 6 ft. However, in wider areas, parked vehicles block pedestrian path.</td>
</tr>
<tr>
<td>NE 93rd Street to NE 55th Street</td>
<td></td>
<td></td>
<td>X</td>
<td>Shoulder varies from 5 ft to 7 ft wide. However, debris including overgrowth of weeds on composted material reduces width to 3' in some spots. Tunnel under Lakeshore Blvd bridge. Guardrail between roadway and pedestrian path north and south of bridge.</td>
</tr>
<tr>
<td>WEST SIDE OF STREET</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NE 45th Street to 40th Avenue NE</td>
<td>X</td>
<td>X</td>
<td></td>
<td>Sidewalk from NE 45th Street to Sand Point/Clinic Pharmacy in good condition. North of Pharmacy, 6' at grade asphalt. Light poles in the middle of pedestrian path are located 4' from leg line.</td>
</tr>
<tr>
<td>NE 40th Street to 41st Avenue NE</td>
<td></td>
<td></td>
<td>X</td>
<td>Conditions vary: either grass or gravel path greater than 4' wide. Sidewalk 60’-80’ south of 41st Avenue NE.</td>
</tr>
<tr>
<td>41st Avenue NE to NE 52nd Street</td>
<td></td>
<td></td>
<td>X</td>
<td>Sidewalk in good condition.</td>
</tr>
<tr>
<td>NE 52nd Street to 47th Avenue NE</td>
<td></td>
<td></td>
<td>X</td>
<td>North of NE 52nd Street to mid-way of section is sidewalk. Mid-way of section to Princeton is an at grade asphalt 4 ft wide path separated from shoulder by landscape and/or gravel. Width diminished in some areas by weed overgrowth.</td>
</tr>
<tr>
<td>Princeton Avenue NE to NE Windermere Road</td>
<td></td>
<td></td>
<td>X</td>
<td>Gravel and/or grass edge approximately 4 ft wide.</td>
</tr>
<tr>
<td>NE Windermere Road to NE 59th Street</td>
<td></td>
<td></td>
<td>X</td>
<td>There is a short section of sidewalk along the frontage to The Center for Spiritual Living. The remaining section has a grass edge.</td>
</tr>
<tr>
<td>NE 59th Street to NE 65th Street</td>
<td></td>
<td></td>
<td>X</td>
<td>Maximum shoulder width is 3 ft. The edge is grass varying in width from 0 ft to 12 ft.</td>
</tr>
<tr>
<td>Location</td>
<td>Sidewalk or Path</td>
<td>Passable Shoulder</td>
<td>No Shoulder or Sidewalk</td>
<td>Description of Edge Condition</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>------------------</td>
<td>-------------------</td>
<td>--------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>NE 65th Street to NE 70th Street</td>
<td>X</td>
<td></td>
<td>X</td>
<td>Approximately ½ of this section is sidewalk. There is sidewalk just north of NE 65th Street and south of NE 70th Street. In between there is no shoulder. Approximately 15 ft wide grass path but it is swampy and uneven.</td>
</tr>
<tr>
<td>NE 70th Street to NE 74th Street</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Sidewalk near intersection with NE 74th Street. South of sidewalk, there is an open driveway to gas station. North of NE 70th Street there is no sidewalk; the edge is 4 ft wide grass.</td>
</tr>
<tr>
<td>NE 74th Street to NE 75th Street</td>
<td>X</td>
<td></td>
<td>X</td>
<td>Just south of NE 75th Street there is an open driveway for apartments. There is 7 ft wide asphalt between parked vehicles and roadway.</td>
</tr>
<tr>
<td>NE 75th Street to NE 77th Street</td>
<td></td>
<td>X</td>
<td>X</td>
<td>Edge condition varies with some paved shoulder and gravel/ grass shoulder areas. There is a short section of sidewalk south of NE 77th Street to transit shelter.</td>
</tr>
<tr>
<td>NE 77th Street to NE NOAA Drive</td>
<td></td>
<td></td>
<td>X</td>
<td>Sidewalk begins approximately 80 ft south of NE 77th Street</td>
</tr>
<tr>
<td>NE NOAA Drive to Inverness Dr NE</td>
<td></td>
<td>X</td>
<td>X</td>
<td>4 ft - 5 ft wide shoulder south of 8500 block, thins to 5 ft – 6 ft. Actual width difficult to determine due to muck or weed overgrowth. Several areas where overgrowth and/or puddles this section impassable. Vehicles parked north of 8700 block constrict the pedestrian path.</td>
</tr>
<tr>
<td>Inverness Dr NE to NE 90th Street</td>
<td></td>
<td></td>
<td></td>
<td>4 ft wide shoulder with some areas that are narrower due to dirt and weeds growing over the pavement.</td>
</tr>
<tr>
<td>NE 90th Street to Matthews S Avenue NE</td>
<td></td>
<td></td>
<td>X</td>
<td>4 ft wide shoulder with some areas that are narrower due to dirt and weeds growing over the pavement.</td>
</tr>
<tr>
<td>Matthews S Avenue NE to Matthews N Avenue NE</td>
<td></td>
<td></td>
<td>X</td>
<td>A 6 ft wide shoulder. Path is separated from travel lane by curb. Width is reduced in sections due to encroaching weeds.</td>
</tr>
<tr>
<td>Matthews N Avenue NE to Lakeshore Blvd Bridge</td>
<td>X</td>
<td></td>
<td></td>
<td>Narrow grass path.</td>
</tr>
<tr>
<td>Lakeshore Blvd Bridge to NE 95th Street</td>
<td></td>
<td></td>
<td>X</td>
<td>8 ft wide shoulder from transit stop to NE 95th Street. Shoulder narrows to 0’ before bridge.</td>
</tr>
</tbody>
</table>


a. The study area for this project extends from NE 45th Street to NE 95th Street.
b. National Oceanic and Atmospheric Administration (NOAA)
Figure 2. Photos of Existing Edge of Roadway Conditions

East side of Sand Point Way south of 47th Ave NE

West side of Sand Point Way north of 40th Avenue NE

East side of Sand Point Way north of NE 74th Street

West side of Sand Point Way north of Princeton Avenue NE

East side of Sand Point Way south of Matthews Place

West side of Sand Point Way south of about NE 68th Street

2.2. Pedestrian Crossings and Activity Centers

The marked pedestrian crosswalks in the corridor, pedestrian activity centers, and transit stops are shown on Figure 3. All signalized intersections include a marked crosswalk across at least one leg of Sand Point Way. There are two marked crosswalks in the corridor that are unsignalized: one at the NOAA entrance and the other near Matthews Beach. Figure 3 also presents bus stop locations with and without shelters. Bus stop locations are shown to indicate where pedestrian crossings could occur in addition to intersections with marked or unmarked crosswalks.

Prior to summer 2007, there was an unsignalized marked crosswalk located just south of 40th Avenue NE that crossed five lanes of traffic. The crosswalk was removed in conjunction with a paving project, since this location did not comply with SDOT’s marked crosswalk criteria. (See information about crosswalk criteria in Section 3.2 below.)

There are several major activity nodes along or accessed from the Sand Point Way corridor that generate pedestrian traffic. Pedestrian activity centers are also shown on Figure 3 to indicate where the higher volume pedestrian crossing locations occur. These include:

- **Children’s Hospital** – There is substantial pedestrian activity generated by Children’s Hospital that primarily accesses the campus via the main gate also called Penny Drive (the signal at Children’s Hospital access). This includes patients and parents who may be staying at local housing, including the Ronald McDonald House that is located west of the campus on 40th Avenue NE.

- **Magnuson Park** – This park is one of the largest in Seattle and attracts pedestrians from nearby neighborhoods. The primary access points are at NE 65th Street, NE 70th Street (where there is a break in the fence surrounding the park), and NE 74th Street (the former main gate to the Naval Air Station). There are several redevelopment and reuse proposals for various sites within the park. Two projects at the north end of the park could increase pedestrian flows in that area. One project, which has already been approved, would remodel Building 67 (near Sand Point Way and NE 77th Street) to house the Mountaineers. Another proposal, which is in early planning stages, would add recreational and possible commercial uses in the north waterfront area.

- **Matthew’s Beach Park** – This park attracts pedestrians from nearby neighborhoods. On sunny days (as well as on January 1st for the Polar Bear Swim), park users often park along Sand Point Way or on neighborhood streets to the west because the park’s on-site lot is filled. Pedestrians walk along the shoulders and cross at multiple unsignalized locations.

- **Burke-Gilman Park** – This neighborhood park is located on the west side of Sand Point Way at about NE 52nd Street.

- **Burke-Gilman Trail** – Pedestrians and bicycles will cross Sand Point Way to access this regional trail, which is parallel and west of the Sand Point Way corridor. Major access locations exist at all of the crossing arterials as well as through the Center for Spiritual Living’s parking lot, which is located across from NE Windermere Road.
• **Laurelhurst Elementary School** – This public elementary school is located on NE 45th Street at 47th Avenue NE. Children who live west of Sand Point Way are eligible to be bused to school; however, some walking may occur.

• **Villa Academy** – This private elementary school is located in the Laurelhurst neighborhood at 50th Avenue NE and NE 50th Street. Students are driven or walk to school.

• **Transit stops** – There are many King County Metro transit stops on the corridor, some of these are at unsignalized intersections. Transit riders must cross Sand Point Way to reach one direction of the transit service.

• **Sand Point Retail Center** – There is a small neighborhood retail center located on the east side of Sand Point Way between 47th Avenue NE and 50th Avenue NE. Pedestrians cross Sand Point Way to reach this center.

2.3. **Transit Service and Stop Locations**

There are two King County Metro bus routes serving the Sand Point Way corridor. Route 74 provides service to Seattle Center and Express peak hour service to Downtown Seattle. Route 75 provides service to Ballard via Northgate. Both routes also serve the University District. Both of these routes operate on 30-minute headways (time between buses) during weekdays and weekends. Route 74 Express provides more frequent service (15-minute headways) during peak commuter periods. A detailed table of transit service is provided in Appendix A.

There are over 15 transit stops in each direction along this approximately 3¾-mile corridor. Fifty percent of the stops located on the west side of Sand Point Way have shelters; whereas only one stop is sheltered on the east side of the street. This is because those on the west side of the street serve "inbound" transit routes where most of the riders wait for buses. Those on the east side of the street serve "outbound" transit routes where riders exit the bus and then walk to their destination. Figure 3 showed transit stop locations and shelters.

2.4. **Existing Traffic Volumes**

Traffic volumes at various locations along the Sand Point Way Corridor were collected for the purpose of evaluating pedestrian crossing locations and assessing whether new or improved traffic signals are needed in the corridor. Traffic volumes in the corridor are highest at the south end and gradually decrease to where traffic at the north end of the corridor near NE 95th Street is less than half the volume at NE 45th Street. Table 2 summarizes the average daily and peak hour volumes at various locations.
Table 2. Average Weekday and Peak Hour Volumes on Sand Point Way NE

<table>
<thead>
<tr>
<th>Location</th>
<th>Date of Count</th>
<th>Average Weekday Traffic Volume (AWDT)</th>
<th>AM Peak Hour Volume</th>
<th>PM Peak Hour Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Northbound</td>
<td>Southbound</td>
<td>Northbound</td>
</tr>
<tr>
<td>South of NE 45th Street</td>
<td>10/05/06</td>
<td>12,400</td>
<td>12,100</td>
<td>720</td>
</tr>
<tr>
<td>South of NE 65th Street</td>
<td>04/08/06</td>
<td>8,700</td>
<td>8,100</td>
<td>470</td>
</tr>
<tr>
<td>South of NE 74th Street</td>
<td>11/06/06</td>
<td>7,200</td>
<td>6,900</td>
<td>430</td>
</tr>
<tr>
<td>South of NE 95th Street</td>
<td>11/07/05</td>
<td>6,000</td>
<td>5,700</td>
<td>290</td>
</tr>
</tbody>
</table>

Source: Seattle Department of Transportation (SDOT), Tube Count Database Index, April 2007.

An hourly profile of traffic was created for the count located just south of NE 65th Street. As shown on Figure 5 below, the hourly profile on this arterial is similar to that on most arterials in Seattle—two distinct peak hours, one in the morning starting at 8:00 A.M. and another in the afternoon starting at 5:00 P.M. with a slight increase in noon-hour traffic. The peak directional flows are higher southbound in the morning and northbound in the afternoon, which reflects commuter and student traffic destined into locations such as Children’s Hospital, the University of Washington, downtown Seattle, and the Eastside.

Figure 5. Hourly Traffic Volumes on Sand Point Way NE south of NE 65th Street

Source: Seattle Department of Transportation (SDOT), Traffic count performed on April 18 thru 20, 2006.

Available turning movement counts were collected for the Sand Point Way corridor. The existing AM and PM peak hour volumes are shown on Figure 6 and Figure 7, respectively. All but one of these intersection counts was performed by SDOT in April 2006; the count at 40th Avenue NE was performed in November 2007.
Figure 7
Existing (2007) Traffic Volumes
Weekday PM Peak Hour
2.5. Vehicle Speeds

The posted speed limit changes at several locations along Sand Point Way. The south end of the corridor, from NE 45th Street to just north of Windermere Road, has a posted speed limit of 35 mph. From north of Windermere Road to north of NE 74th Street (the entrance to Magnuson Park), the posted speed limit is 40 mph. North of there, the speed limit is 30 mph.

SDOT has performed several speed studies along Sand Point Way in the past five years. All but the study north of 50th Street were performed midday with a hand-held radar. The speed study north of 50th Street was performed by machine for a seven-day period. The locations, posted speed limit, and the recorded speeds are presented in Table 3. The speed reflects the 85th-percentile speed, which means that 85% of the motorists drove at or under that speed (and 15% of the motorists exceeded that speed). This is the standard threshold for measuring speed compliance.

Table 3. Sand Point Way Speed Measurements

<table>
<thead>
<tr>
<th>Location</th>
<th>Posted Speed Limit</th>
<th>Date of Survey</th>
<th>85th-Percentile Speed</th>
<th>Difference between Posted and 85th-percentile Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Northbound</td>
<td>Southbound</td>
</tr>
<tr>
<td>North of NE 50th Street</td>
<td>35</td>
<td>11-15-06</td>
<td>39.7</td>
<td>40.7</td>
</tr>
<tr>
<td>At NE 63rd Street</td>
<td>40</td>
<td>08-04-06</td>
<td>40.0</td>
<td>39.0</td>
</tr>
<tr>
<td>North of NE 64th Street</td>
<td>40</td>
<td>10-27-06</td>
<td>43.0</td>
<td>42.0</td>
</tr>
<tr>
<td>North of NE 70th Street</td>
<td>40</td>
<td>08-01-03</td>
<td>43.0</td>
<td>41.0</td>
</tr>
<tr>
<td>North of NE 85th Street</td>
<td>30</td>
<td>11-22-06</td>
<td>38.0</td>
<td>37.0</td>
</tr>
<tr>
<td>North of Inverness Drive</td>
<td>30</td>
<td>02-01-02</td>
<td>37.0</td>
<td>39.0</td>
</tr>
</tbody>
</table>

Source: Spot speed surveys performed by Seattle Department of Transportation (SDOT). These are manual surveys performed between 11:00 a.m. and 1:00 p.m. with a hand-held radar. Speed data for the location "North of NE 50th Street" was performed with a machine that measures speed.

The greatest speed differential between the posted speed limit and the 85th percentile speed occurs north of 85th Street and north of Inverness Drive. Speeds in these segments are seven to nine miles per hour over the posted speed limit. The highest speeds recorded along the corridor were north of NE 64th Street where the posted speed limit is 40 mph. Speeds north of NE 50th Street were five mph over the speed limit. Speed profiles are shown on Figure 8 for the segment north of NE 64th Street and Figure 9 for speeds north of NE 85th Street. North of 64th Street, 77% of the motorists drove at or below the posted speed limit of 40 mph. However, compliance declines substantially further north on the corridor where the speed limit drops to 30 mph where 92% of the motorists exceed the 30 mph speed limit.
Figure 8. Vehicles Speeds on Sand Point Way north of NE 64th Street

Source: Survey performed by SDOT, October 27, 2006.

Figure 9. Vehicles Speeds on Sand Point Way north of NE 85th Street

Source: Survey performed by SDOT, November 22, 2006.
2.6. Traffic Collision History

Collision data for intersections and roadway segments in the vicinity of the project site were obtained from SDOT. These data were examined to determine if there are traffic safety conditions that should be addressed as part of this project. Collision data for a 5.7-year period from January 1, 2002 through August 14, 2007 was compiled and summarized in Table 4 for intersections and Table 5 for roadway segments.

Table 4. Collision Summary at Intersections (January 1, 2002 – August 14, 2007)

<table>
<thead>
<tr>
<th>Intersection with Sand Point Way NE</th>
<th>Rear-End</th>
<th>Side-Swipe</th>
<th>Right Turn</th>
<th>Left Turn</th>
<th>Right Angle</th>
<th>Ped/Cyclist</th>
<th>Other</th>
<th>Total for 5.7 Years</th>
<th>Ave/Per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signaled Intersections</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NE 45th Street</td>
<td>0 0 0 0</td>
<td>3 5 0 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8 1.4</td>
<td></td>
</tr>
<tr>
<td>Children’s Hospital Driveway</td>
<td>1 0 0 0</td>
<td>2 0 0 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 0.5</td>
<td></td>
</tr>
<tr>
<td>Princeton Avenue NE</td>
<td>0 0 1 0</td>
<td>3 2 2 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8 1.4</td>
<td></td>
</tr>
<tr>
<td>50th Avenue NE</td>
<td>0 1 0 0</td>
<td>4 0 1 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6 1.1</td>
<td></td>
</tr>
<tr>
<td>NE Windermere Road</td>
<td>1 1 0 1</td>
<td>1 1 0 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5 0.9</td>
<td></td>
</tr>
<tr>
<td>NE 65th Street</td>
<td>0 0 0 0</td>
<td>4 0 1 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5 0.9</td>
<td></td>
</tr>
<tr>
<td>NE 70th Street</td>
<td>2 0 0 0</td>
<td>0 3 1 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7 1.2</td>
<td></td>
</tr>
<tr>
<td>NE 74th Street</td>
<td>0 0 0 0</td>
<td>0 0 2 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 0.5</td>
<td></td>
</tr>
<tr>
<td>Unsignaled Intersections</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40th Avenue NE</td>
<td>2 0 0 0</td>
<td>1b 3 0 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6 1.1</td>
<td></td>
</tr>
<tr>
<td>NE 50th Street</td>
<td>0 1 0 0</td>
<td>13 0 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>17 3.0</td>
<td></td>
</tr>
<tr>
<td>NE 52nd Street</td>
<td>0 0 0 0</td>
<td>1 0 0 0</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>1 0.2</td>
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</tr>
<tr>
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<td>0 0 0 0</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td>2 0.4</td>
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<tr>
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<td>1 0 0 1</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>2 0.4</td>
<td></td>
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<tr>
<td>Inverness Drive NE</td>
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<td>0 0 1 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 0.4</td>
<td></td>
</tr>
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<td>Matthews Avenue NE</td>
<td>1 0 0 0</td>
<td>1 0 0 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 0.4</td>
<td></td>
</tr>
<tr>
<td>NE 93rd Street</td>
<td>2 0 0 0</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td>2 0.4</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5 0.9</td>
<td></td>
</tr>
</tbody>
</table>

Source: City of Seattle Department of Transportation, August 2007.

a Other collisions includes vehicles making illegal maneuvers, vehicles overturning or spun out, vehicle hitting object either on or off the roadway or moving vehicle hitting a parked car.

b Collision resulted in a fatality.
Table 5. Collision Summary along Roadway Segments (January 1, 2002 – August 14, 2007)

<table>
<thead>
<tr>
<th>Roadway Segment Along Sand Point Way NE</th>
<th>Rear-End</th>
<th>Side-Swipe</th>
<th>Right Turn</th>
<th>Left Turn</th>
<th>Right Angle</th>
<th>Ped/Cyclist</th>
<th>Parked Vehicle</th>
<th>Object</th>
<th>Other*</th>
<th>Total for 5.7 Years</th>
<th>Avg Per Year</th>
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<tr>
<td>NE 45th St to 40th Ave NE</td>
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<td>0</td>
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<td>3</td>
<td>1</td>
<td>1b</td>
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<td>0</td>
<td>15</td>
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<tr>
<td>40th Ave NE to 41st Ave NE</td>
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<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0.5</td>
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<td>41st Ave S NE to 41st Ave N NE</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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<td>1</td>
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<td>0.4</td>
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<td>41st Ave NE to NE 50th St</td>
<td>7</td>
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<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2c</td>
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<td>1</td>
<td>11</td>
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<td>NE 50th St to NE 52nd St</td>
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<td>0</td>
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<td>0</td>
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<td>0</td>
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<td>3c</td>
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<td>47th Ave NE to Princeton Ave NE</td>
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<td>1b</td>
<td>1c</td>
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<td>2</td>
<td>11</td>
<td>1.9</td>
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<tr>
<td>Princeton Ave NE to 50th Ave NE</td>
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<td>0</td>
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<td>0</td>
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<td>NE 55th St to NE Windermere Rd</td>
<td>2</td>
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<td>0</td>
<td>0</td>
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<td>1b</td>
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<td>NE Windermere Rd to NE 53rd St</td>
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<td>0.9</td>
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<tr>
<td>NE 65th St to NE 70th St</td>
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<td>0</td>
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<td>0</td>
<td>0</td>
<td>3c</td>
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<td>0</td>
<td>6</td>
<td>1.1</td>
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<tr>
<td>NE 70th St to NE 74th St</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1c</td>
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<td>1</td>
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<td>1.6</td>
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<td>NE 74th St to NE 75th St</td>
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<td>0</td>
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<tr>
<td>NE 77th St to NOAA Dr</td>
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<td>0</td>
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<td>1</td>
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<td>0</td>
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<td>NE 93rd St to Matthews N Ave</td>
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<td>0</td>
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<td>0</td>
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<td>0</td>
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<td>0</td>
<td>1c</td>
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<td>0</td>
<td>2</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Source: City of Seattle Department of Transportation, August 2007

- a 'Other' collisions includes vehicles making illegal maneuvers, vehicles overturning or spun out, damage to a parked vehicle not related to another vehicle or no diagram included with collision report.
- b Based on collision diagram report, noted collisions occurred as a result of a parking maneuver.
- c Footnoted collisions involve objects off the roadway. All other 'Object' collisions involve objects in the roadway which includes curbs and median-barriers.
- d This roadway segment is adjacent to a retail area with on-street parking. Based on collision diagram report, it is likely that four of the six sideswipe collisions were the result of vehicles pulling out from an on-street parking space into traffic.

There were two fatal collisions along the corridor during the study period: one at the intersection of 40th Avenue NE and one at the intersection of NE 60th Street. Both fatal collisions involved left-turning vehicles. There were also 8 pedestrian collisions in the corridor; 6 of these occurred at signalized intersections. There were many collisions that involved vehicles hitting objects off of the roadway. Although no contributing causes were indicated in the accident records, this can be an indicator of collisions related to speed.
Unsignalized intersections with an average of five or more collisions per year and signalized intersections with an average of 10 or more collisions per year are considered high accident locations by the City of Seattle. None of the intersections along this corridor would meet the threshold.

The only concentration in the type of accident, which could relate to a safety issue, was the number of right-angle collisions at the intersection of Sand Point Way NE/NE 50th Street. This intersection is located just north of the signal at Children’s Hospital. Some motorists cross through the signal queue area to reach NE 50th Street.

2.7. Community Improvement Requests

The City of Seattle’s Northeast District Council has made several recent requests for pedestrian improvements along Sand Point Way. Two of these have been reviewed for potential Neighborhood Street Fund (NSF) and Cumulative Reserve Fund (CRF) grants. The improvement requests are summarized below.

- **Sand Point Way NE between 45th Avenue NE and 47th Avenue NE.** The neighborhood requested asphalt walkways on the east side of the street under the NSF “small” project fund. This request was approved; however, given the relatively high cost of the project, the funding will be applied to walkway improvements on the west side of Sand Point Way between Princeton Avenue NE and about 50th Avenue NE. This project is expected to be completed in 2008.

- **Sand Point Way & NE 52nd Street.** The neighborhood has requested that a pedestrian signal and marked crosswalk be installed at this location, along with better definition of the corners where pedestrians wait to cross. This request was made because of the speed of traffic on Sand Point Way as well as the obscured sight lines due to the horizontal curve to the north. This grant request cannot be approved until the location meets signal warrants. Further details about signal warrants are provided in Section 3.2.

SDOT has been granted funding on another project as part of the Transportation Improvement Board (TIB) Sidewalk Program. This project would construct a 6-foot wide sidewalk and a 5-foot wide planting strip along the west side of Sand Point Way NE from 40th Avenue NE northward approximately 380 feet to match the existing sidewalk. The project will be completed in 2008. A separate TIB application to construct new sidewalk south of 40th Avenue NE was unsuccessful.

Expansion is underway at the Center for Spiritual Living (CSL) located on the west side of Sand Point Way at NE Windermere Road. As part of this project, CSL will be constructing about 1,200 feet of sidewalk along its frontage, which extends from about 500 feet south of NE Windermere Road north to the Federal Archives property line.
3. PEDESTRIAN NEEDS

The Sand Point Way corridor has many segments where enhanced pedestrian facilities are needed. Ideally, continuous sidewalks would be constructed along the entire Sand Point Way Corridor; a goal supported by the Northeast District Council. However, due to limited funding resources, improvements should be focused first in locations where the existing edge has less than four feet of walkway width, which is the minimum ADA standard. In addition, there are several locations where pedestrian crossings and transit facilities could be improved. The following sections identify the highest priority sidewalk and shoulder needs in the corridor, and evaluate pedestrian crossing improvements. It also describes potential transit stop enhancements that King County Metro is evaluating separately. Chapter 4 later in this report presents the improvement recommendations to address these pedestrian needs.

3.1. Sidewalks and Shoulders

There are many sections of Sand Point Way NE that have no sidewalk or shoulder to accommodate pedestrians, or where the existing shoulder is impassable because of parked vehicles or debris. The edge conditions were previously described in Table 1. The following lists all of the locations where there is no passable pedestrian walkway.

**East side of Sand Point Way**

- NE 50th Street to 47th Avenue NE. The southern part of this segment has a sloped shoulder area that is sometimes blocked by parked cars. The northern part has no shoulder and pedestrians walk through unmowed grass along the edge.
- NE 74th Street to about 100 feet north – Parked cars frequently block the existing gravel shoulder.
- Inverness Drive NE to NE 93rd Street – The shoulder is often blocked by parked cars. Consider improvements on the west side of the street where there are fewer adjacent land uses and driveways.

**West side of Sand Point Way**

- 40th Avenue NE to 41st Avenue NE – No sidewalk or shoulder in this location, and pedestrians walk on grass. This project has received TIB funding and is in the design phase.
- Princeton Avenue NE to NE Windermere Road – Very narrow gravel/un-mowed grass edge. A walkway between Princeton Avenue NE and 50th Avenue NE is proposed to be constructed in 2008 as part the City’s NSF program. In addition, the Center for Spiritual Living will be constructing new sidewalk along its frontage, which extends about 500 feet south of NE Windermere Road.
- NE Windermere Road to NE 65th Street – The shoulder is 2.5 to 3-feet wide with ditch at back of pavement. The Center of Spiritual Living will be constructing sidewalk along a portion of this section, extending north from NE Windermere Road to its north property line.
- Approximately NE 65th Street to Children’s Hospital office – No sidewalk or shoulder in this location. Pedestrians walk on mowed grass.
• NE 70\textsuperscript{th} Street to NE 74\textsuperscript{th} Street - No sidewalk or shoulder in this location. Pedestrians walk on un-mowed grass.

• NE 74\textsuperscript{th} Street to NE 77\textsuperscript{th} Street – Variable walking edge in this location with portions of narrow gravel/grass walkway.

• Inverness Drive NE to Matthews Avenue – The paved shoulder in this area has been narrowed in some locations to less than two feet by dirt and weeds that have accumulated on the shoulder. Consider major maintenance along the east side of the street to reclaim the shoulder and remove shrubs and brush from encroaching into the walking area. Parking restrictions would be needed to maintain an adequate walkway width for pedestrians.

In the long, straight section of Sand Point Way NE between NE Windermere Road and NE 65\textsuperscript{th} Street, the shoulder on the west side of the roadway is less than 3 feet wide. The Center for Spiritual Living will construct new sidewalk along about 700 feet of this segment, extending from NE Windermere Road to the site’s north property line with the Federal Archives. For the remaining section, it may be possible to create a wider shoulder by narrowing the travel lanes. In the southbound direction, the existing driving width between the fog lines is 22 to 22.5 feet wide. If the lanes could be narrowed to 10 feet, then the shoulder could be widened to 4.5 to 5 feet in width. There are few pedestrian destinations on the west side of the roadway; the majority of the frontage is adjacent to the National Archives Building, which has limited access options. Most pedestrians in this area are transit riders that come from residential areas on the east side of Sand Point Way. Therefore, this interim measure may be sufficient to accommodate pedestrian activity on this side of the roadway.

3.2. Pedestrian Crossings

Pedestrians may legally cross a street at every intersection, unless signage specifically prohibits a crossing. At signalized intersections, crosswalks are typically marked on all legs of an intersection unless pedestrian safety or traffic operations would be adversely affected by such a crossing. At unsignalized intersections, pedestrian crossings are still legal even if no marked crosswalk exists. Sometimes, a crosswalk will be marked to indicate a preferred crossing location, with consideration of such factors as the pedestrian volume, lighting, sight lines between motorists and pedestrians, and turning conflicts with vehicles. Providing a marked crosswalk does not necessarily improve pedestrian safety. This section describes guidelines used by the City of Seattle to evaluate various crossing treatments.

Unsignalized Crossings

There are two marked unsignalized pedestrian crossing locations on Sand Point Way at pedestrian activity centers: at NE NOAA Drive and NE 93\textsuperscript{rd} Street near Matthews Beach Park. The marked crosswalk at the NOAA driveway crosses three traffic lanes (one lane in each direction plus the left-turn lane to access NOAA) and has an overhead pedestrian crosswalk warning sign. The marked crosswalk near Matthews Beach crosses two traffic lanes (one lane in each direction). The volume of traffic at these crossings is about 12,000 vehicles per day, and the speed limit is 30 mph. The Seattle Department of Transportation guidelines for crosswalks are outline in Directors Rule 04-01.1 These

\footnote{1 Seattle Department of Transportation, Director’s Rule 04-01. Installation Criteria & Procedures for Responding to Requests for Safety Improvements regarding: Marked Pedestrian Crosswalks; General Traffic Control Signals; Pedestrian Traffic Signals; Pedestrian Traffic Signals for the Disabled or Senior Citizens; and Pedestrian Traffic Signals to Accommodate School Crossings. Effective December 31, 2004.}

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guidelines describe many types of treatments that can be used to help pedestrians safely cross streets. These include (but are not limited to):

- Providing raised medians on multi-lane roads;
- Installing traffic signals (or pedestrian signals) where warranted or where serious pedestrian crossing problems exist;
- Reducing the effective street crossing distance for pedestrians by providing curb extensions or raised pedestrian islands or reducing four-lane undivided road sections to two through lanes with left-turn pockets with sidewalks;
- Providing adequate nighttime lighting for pedestrians;
- Redesigning intersections and driveways with refuge islands and tighter turn radii;
- Using innovative signs, signals and markings.

One crossing treatment is the marked pedestrian crosswalk. The Director’s Rule establishes guidelines for where crosswalks could be delineated to show the preferred pedestrian crossing path. As noted above, pedestrians may legally cross at unsignalized intersections, even where no marked crosswalks exist.

Factors that affect the safety of a marked crosswalk include the pedestrian volume, vehicle speed, gaps in traffic, sight distance both for the pedestrian and motorist, illumination, and the needs of special populations (e.g., seniors or children). The number of lanes that must be crossed also affects safety. The Director’s Rule outlines “Guidelines for installing marked crosswalks at non-signalized intersections” based on the number of lanes, volumes and speed limit. These are shown on Figure 10.

Figure 10. Guidelines for Installing Marked Crosswalks at Non-Signalized Locations

<table>
<thead>
<tr>
<th>Daily Traffic Volume =</th>
<th>9,000 ADT</th>
<th>9,001 to 12,000 ADT</th>
<th>12,001 to 15,000 ADT</th>
<th>&gt;15,000 ADT</th>
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<td>Speed Limit =</td>
<td>30 mph</td>
<td>35 mph</td>
<td>40 mph</td>
<td>40 mph</td>
</tr>
<tr>
<td>2 Lanes</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>3 Lanes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Lanes with Raised Median</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Lanes with No Median</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Table excerpted from Seattle Department of Transportation (SDOT) Director’s Rule 04-01. ADT = Average daily traffic

Note: Where speed limit exceeds 40 mph, marked crosswalks alone should never be used.

Key:

- Candidates for a marked crosswalk. Marked crosswalks, if installed, must be installed carefully and selectively. Complete engineering evaluation prior to installing marked crosswalk.

- May or may not be a good candidate for a marked crosswalk. Complete engineering evaluation prior to installing marked crosswalk.

- Usually not a good candidate for a marked crosswalk (unless used in combination with other treatments). Complete engineering evaluation prior to installing marked crosswalk.

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-21-

December 28, 2007
The average daily traffic (ADT) on Sand Point Way ranges from about 25,000 vehicles per day south of NE 45th Street and declines to about 11,700 ADT south of NE 95th Street. Just south of NE 65th Street, the ADT is about 16,800 vehicles per day. The speed limit on the corridor changes from 35 mph south of NE Windermere Road, 40 mph between NE Windermere Road and NE 74th Street, and 30 mph north of NE 74th Street. Based on the lane, volume, and speed criteria described above, unsignalized marked crosswalks should not be considered at the south end of the corridor, but could be considered north of NE 74th Street. The crosswalk near Matthews Beach has a traffic volume of less than 12,000 vehicles per day, crosses two lanes of traffic, and the speed limit is 30 mph. This rates as a “Candidate” location. The crosswalk at NOAA has the same traffic volume (about 12,000 vehicles per day) and speed (30 mph) and crosses three lanes of traffic. This also rates as a “Candidate” location. Because of this, it is recommended that these marked crosswalks remain.

Redevelopment at the north end of Magnuson Park could increase pedestrian activity in the area. Building 67, which is located near Sand Point Way at about NE 77th Street, is being remodeled to accommodate the Mountaineers. Increased recreational and potential commercial uses are being discussed in future plans to redevelop buildings in the north waterfront area. These uses could increase pedestrian crossings of Sand Point Way at NE 77th Street, which is the primary connection between the Burke-Gilman Trail and the north end of the park. For this reason, SDOT should monitor pedestrian activity in this area and determine if a marked crosswalk should be installed at NE 77th Street. This location would be a “Candidate” location based on the road’s lane configuration, traffic volumes and speed limit.

No other marked, unsignalized crosswalks are recommended for the corridor. South of NE 77th Street, there are signalized intersections with pedestrian crossings at NE 74th Street, NE 70th Street, and NE 65th Street. Although the gaps between these locations are long, the east side of the street is bounded by a chain-link fence that prevents direct access to Magnuson Park except at those key crossing locations. Transit stops are also consolidated to those signalized crossing locations. Therefore, there is no reason a pedestrian would need to cross the street between these intersections. South of NE 65th Street, the roadway widens to five lanes and the traffic volume increases to over 15,000 vehicles per day. This configuration and speed are rated as “Not Good Candidate” for an unsignalized crosswalk.

The City of Seattle is just commencing its Pedestrian Master Plan, which may recommend other crossing treatments/technologies that SDOT could consider along the corridor, particularly for multi-lane crossings. SDOT should continue to monitor potential crossing locations as new treatments and technologies become available.

Signalized Crossings

South of NE 65th Street, the lane configuration, speed limits, and traffic volumes make unsignalized crosswalks undesirable. Therefore, the potential to install a signalized pedestrian crossing was evaluated for several locations: at 40th Avenue NE, NE 52nd Street, and in the sections between NE Windermere Road and NE 65th Street.

Before SDOT and WSDOT would install a signal, it must meet one or more minimum criteria that are defined as traffic signal warrants by the Manual on Uniform Traffic Control Devices (MUTCD).² These warrants account for traffic conditions, pedestrian characteristics, and physical characteristics of a potential signal location to determine whether installation of a traffic signal is justified. Pedestrian-only signals are reviewed against the criteria in Warrant 4: Pedestrian Volumes. The pedestrian

volume signal warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street. This warrant is satisfied when the minimum pedestrian volume exceeds 100 pedestrians per hour and there are insufficient gaps in traffic to cross the street. Several other guidelines are provided.

The City of Seattle developed a supplemental rule for pedestrian signal warrants to address conditions where the crossing volume does not reach the thresholds prescribed by the MUTCD, yet the through street volumes are so high that there are very limited available gaps for pedestrians to safely cross a street. (Director’s Rule 2004-01, Seattle Transportation Department, SMC 11.16.340(N); 3.12.020)
The first case is based on curves published on a graph. There are four criteria for the second case:

1. 500 vehicles per hour on the main street for 8 hours
2. Less than 30 adequate gaps in ½ hour
3. At least 300 feet between new signal location to an existing signal
4. Serves a pedestrian transportation facility

Although a signal could make it easier for a pedestrian to cross a street, traffic signals can also create safety issues if installed at inappropriate locations. Traffic signals can increase the occurrence of some types of collisions, particularly rear-end collisions. Also, if the signal does not change often enough, in the case where pedestrian volumes are low, motorists may not be accustomed to having to stop at the signal when it does turn red. It is for these reasons that traffic signals should not be installed unless justified.

None of the locations reviewed would have pedestrian volumes that are high enough to justify a pedestrian-only signal. At 40th Avenue NE, for example, two recent traffic counts determined that fewer than 10 pedestrians per hour crossed Sand Point Way. Pedestrian volumes at NE 52nd Street and north of NE Windermere Road would be well under the 100 pedestrians required to meet the traffic signal warrant. It is also noted that Sand Point Way south of NE 65th Street is part of the state highway system, and any traffic control changes will require WSDOT approval.

Vehicular traffic at 40th Avenue NE is high enough to justify a full traffic signal at this intersection, which would control both traffic and pedestrian crossings. The north-to-south crossing distances will be longer than at a typical 90-degree intersection because 40th Avenue NE intersects Sand Point Way at a skewed angle. For this reason, it may not be possible to provide crosswalks on all legs of the intersection. The majority of turning vehicles at the intersection are right turns from southbound 40th Avenue NE and the return left turn to northbound 40th Avenue NE and so most vehicular conflict would occur at a crosswalk of Sand Point Way across the southwest leg of the intersection. If a crosswalk across Sand Point Way were only located on the northeast side of the intersection, pedestrian crossings may be able to overlap with the signalized right and left turn movements (similar to the crossing at Montlake Boulevard/Pacific Street).

One other location where crossing improvements should be considered along the east side of Sand Point Way across NE 74th Street, the main access to Magnuson Park. There are three concrete islands on the NE 74th Street leg to this intersection that impede north-south pedestrian crossings. The islands could be modified to include pedestrian ramps as well as a marked crosswalk to improve the pedestrian access at this location.

NOAA has requested that SDOT review the need for a traffic signal at its access driveway on Sand Point Way. Traffic volume counts have been performed at the driveway to determine if the traffic volumes would meet the minimum requirements of the MUTCD signal warrants. As of November 2007, the results of this analysis had not been complete. If a traffic signal is warranted at this location,
it could have secondary benefits to pedestrian traffic in the area. A signal would have actuated pedestrian crossings, which would eliminate the existing unsignalized crosswalk at this driveway.

3.3. Transit Stop Consolidation and Relocation

King County Metro is evaluating transit stop enhancements and changes along Sand Point Way. These could include stop consolidation, which is aimed at improving the speed and reliability of transit routes, as well as ADA and shelter enhancements at stops. As previously discussed, almost all of the shelters along Sand Point Way are located on the west side of the street because that is where riders wait to catch “inbound” buses to downtown and other destinations. The only transit shelter for outbound (northbound) routes is located at Children’s Hospital.

Improvements that King County Metro could consider include:

- Consolidating the closely-spaced stops located between Ivanhoe Place NE (50th Avenue NE) and Princeton Avenue NE, and adding a shelter for inbound riders. Because one of the bus routes turns onto Princeton Avenue NE, the stops cannot be consolidated onto the far (south) side of this street. However, Metro could consider an improved stop north of Princeton Avenue NE once the proposed walkway project there is complete.

- If ridership warrants, install a shelter at one inbound stop at the north end of the corridor (north of Inverness Drive NE).

- Install a shelter at one or more outbound stop at north end of corridor. Possible candidates might include the stop near the Children’s Hospital Office Building (at NE 70th Street) and NOAA where outbound ridership may be higher than at other locations.

- Make ADA improvements at transit stops, as needed.

3.4. Vehicle Speed Reduction (Traffic Calming)

The speed data in the corridor indicates 85th-percentile speeds up to 43 mph in the sections where the posted speed is 40 mph. North of NE 74th Street, where the speed decreases to 30 mph, the speed stays high with 85th-percentile speeds ranging from 37 to 39 mph. The accident analysis disclosed that there were 24 collisions in the 5.7-year analysis period that struck objects off of the roadway. Although no contributing cause was listed with the accident data, these types of collisions can relate to speed.

There are two marked unsignalized crosswalks at the north end of the corridor where pedestrian safety would be enhanced with lower vehicle speeds. The posted speed limit in this section is 30 mph, but 93% of the motorists were observed exceeding this speed. Radar speed signs could be considered in this section of the corridor as a traffic calming measure. These signs detect and post a motorist’s actual speed along with the posted speed limit (see example at right). Signs located south of NE 77th Street for northbound traffic and south of NE 95th Street for southbound traffic could be considered.
Sand Point Way is one of only two arterials (excluding Interstate 5) north of the Ship Canal that has a posted speed limit of 40 mph or higher. On Aurora Avenue N, the posted speed limit is 40 mph on the section between the Aurora Bridge and Green Lake, and north of N 115th Street. Each of these arterials is designated as a State Route (Aurora is SR 99, and Sand Point Way south of NE 65th Street is SR 513). All other arterials in Seattle north of the Ship Canal have a designated speed limit of 35 mph or less.

The 40 mph speed limit may not be appropriate for Sand Point Way. The speed limit changes from 35 mph to 40 mph at NE Windermere Road even though neither the adjacent land uses nor roadway configuration change at this location. In addition, the left turn lanes in both sections are located at breaks in the center landscape median. The left turn refuge areas are too short to provide the standard deceleration needed for a high-speed arterial. There are also many side street intersections and driveways on the east side of the roadway. North of NE 65th Street, there is no left turn lane, and turns to adjacent residential developments and at the signal at NE 70th Street occur from the inside through lane. Finally, the section between NE 65th Street and NE 74th Street is adjacent to a park which attracts many pedestrians. This park did not exist (it was the Naval Air Station) when the speed limit was original set on this roadway.

Because Sand Point Way south of NE 65th Street is part of the state highway, any changes in the posted speed limit will require approval from the Washington State Department of Transportation (WSDOT). WSDOT’s policy related to setting the speed limit is described on the WSDOT website. It states:

State law (RCW 46.61.400) sets Washington’s basic speed law and the maximum speed limits for state highways, county roads, and city streets. The statute also authorizes agencies to raise or lower these maximum speed limits, when supported by an engineering and traffic investigation.

Speed limits reflecting the speed most motorists naturally drive are selected in part by determining the “85th-percentile speed” (the speed that 85 out of 100 vehicles travel at or below). This method is based on the principle that reasonable drivers will consider roadway and roadside conditions when selecting travel speeds.

When setting speed limits, engineers also consider other factors like:

- Roadway characteristics, shoulder condition, grade, alignment, and sight distance
- Roadside development and lighting
- Parking practices, e.g., angle parking, and pedestrian and bicycle activity
- Collision rates and traffic volume trends
- Right lane/entering traffic conflicts (for freeways)

The range of travel speeds is reduced when speed limits are set near the 85th-percentile speed and adjusted for the other influencing factors.

Although the 85th-percentile speeds are near the 40 mph speed limit, the other roadway, land use and pedestrian activities described above should also be considered when evaluating the speed limit on this roadway. In addition, the current speed limit changes three times through this corridor—from 35 mph at the south to 40 mph in the middle to 30 mph at the north. Reducing the 40 mph speed limit to 35 mph would provide more consistency throughout the corridor. Such a reduction may also help

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reduce the differential between driving speed and posted speed that is now experienced at the north end of the corridor.

For all of these reasons, Heffron Transportation recommends that SDOT work with WSDOT to reduce the speed limit from 40 mph to 35 mph. The City should also consider the use of radar speed signs in the section between Windermere Road and NE 65th Street to encourage compliance with the new speed limit.

It is recognized that a change in the posted speed limit, in and of itself, does not necessarily have any substantial affect on the speed that motorists will drive. Given this, and considering the overall design of the street, adjacent land uses, and the documented collision history and vehicle speeds throughout the corridor, additional changes in the posted speed limit are not recommended.

4. RECOMMENDED IMPROVEMENTS

The Sand Point Way corridor has many segments where enhanced pedestrian facilities are needed. Ideally, the entire corridor would be reconstructed with sidewalks; but due to limited funding resources, improvements should be focused first in locations where the existing edge has less than four feet of walkway width, which is the minimum ADA standard. In addition, there are several locations where pedestrian crossings and transit facilities could be improved. Heffron Transportation recommends the following pedestrian improvements for Sand Point Way NE. (The numbers do not indicate a priority for these recommendations.) The recommended improvements are illustrated on Figure 11.

1. Install sidewalks, walkways, or improve the shoulder for pedestrians in the areas where walkable walkways do not exist. These locations were previously listed in Table 1 and include:

   **East side of Sand Point Way**
   - NE 50th Street to 47th Avenue NE (about 1,800 feet).
   - NE 74th Street to about 100 feet north.

   **West side of Sand Point Way**
   - 40th Avenue NE to 41st Avenue NE (about 380 feet).
   - Princeton Avenue NE to the Center for Spiritual Living (CSL) south property line (new sidewalk is to be constructed along the CSL frontage). (about 800 feet).
   - CSL south property line to NE 65th Street. Consider narrowing the southbound driving lanes to create a wider shoulder. This would require approval by WSDOT.
   - Approximately NE 66th Street to Children’s Hospital office (about 390 feet).
   - NE 70th Street to NE 74th Street (about 1,000 feet).
   - Private drive at Fairview Estates (approximately NE 80th Street) to Matthews Avenue. Reclaim the existing 6-foot shoulder by removing mud, grass and debris that has accumulated along the edge of the roadway (about 3,800 feet).
2. Prohibit parking on the west side of Sand Point Way between the private drive at Fairview Estates (approximately NE 80th Street) and Matthews Avenue to maintain a passable shoulder on one side of the street. The west side of the street is where the street lighting is located, and there are no adjacent land uses. In addition, parking is already restricted on the west side of Sand Point Way at most other locations throughout the corridor. The Northeast District Council considers this parking restriction to be of lesser priority, and the Inverness Community Club is concerned about parking restrictions in this area since it is the only available parking when ice and snow prevent access to that neighborhood. The City of Seattle will consult with this community prior to any parking prohibitions being implemented.

3. Retain marked crosswalk at the NOAA driveway and near Matthew’s Beach.

4. Monitor pedestrian crossing activity at NE 77th Street in the future as redevelopment occurs at Magnuson Park to determine if a marked crosswalk should be installed at that location.

5. Monitor pedestrian crossing activity in the section of Sand Point Way between NE 65th Street and NE Windermere Road to determine if a marked crosswalk would be warranted. This section could be a candidate for future crossing treatments and technologies that may be developed as part of the City’s pending Pedestrian Master Plan.

6. Reduce the speed limit in the segment between NE Windermere Road and NE 74th Street from 40 mph to 35 mph. The segment between NE Windermere Road and NE 65th Street is part of a state highway, and the speed limit reduction will require approval by WSDOT.

7. Install radar speed signs north of NOAA driveway where the speed limit is 30 mph. Radar speed signs should be considered northbound just south of NE 77th Street and southbound south of NE 95th Street. Consider radar speed signs in the section between NE Windermere Road and NE 65th Street after the speed limit is reduced in that section.

8. Install full traffic signal at Sand Point Way NE/40th Avenue NE intersection. SDOT is currently evaluating signal options for this intersection. As a state highway, the signal will require WSDOT approval. The signal should allow for emergency pre-emption to serve the future fire station that will be located on 40th Avenue NE at NE 55th Street.

9. Install a pedestrian-only signal, if and when warranted, at Sand Point Way NE and NE 52nd Street. This location could be a candidate for future crossing treatments and technologies that may be reviewed as part of the City’s pending Pedestrian Master Plan.

10. Improve the pedestrian crossing across the east leg of the Sand Point Way NE/NE 74th Street intersection (the main gate to Magnuson Park). Modify the existing concrete islands to create pedestrian ramps and a marked crosswalk across the east leg of this intersection.

11. Work with King County Metro to improve transit stops and shelter facilities along the corridor.

12. Continue to maintain landscaping in the center median along Sand Point Way emphasizing the sight lines at the ends of the medians for both turning motorists and pedestrians.
Figure 11
Recommended Pedestrian Improvements

SAND POINT WAY NE
PEDESTRIAN STUDY

LEGEND
- Construct sidewalk or walkway
- Reclaim shoulder
- Sidewalk to be Constructed by Others

SCHEMATIC ONLY: NOT TO SCALE
REFERENCES


City of Seattle, *Arterial Roadway Map*.


King County Metro Transit route schedules, from website, October 2007.


Seattle Department of Transportation. Historic traffic counts, various dates.

Seattle Department of Transportation, Speed studies, various dates.
# APPENDIX A

## Table A. Transit Schedule along Sand Point Way Corridor Study Area

<table>
<thead>
<tr>
<th>Route</th>
<th>Service Area</th>
<th>Service Hours</th>
<th>Headways (time between buses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>74</td>
<td>NOAA Campus, Hawthorne Hills, Ravenna, University District, Wallingford, Fremont, Queen Anne Hill, Seattle Center</td>
<td>5:15 A.M. to 6:15 P.M.</td>
<td>30-minute</td>
</tr>
<tr>
<td></td>
<td>Magnuson Park Entrance, Hawthorne Hills, Ravenna, University District, Wallingford, Fremont, Queen Anne Hill, Seattle Center</td>
<td>7:00 P.M. to 10:30 P.M.</td>
<td>30-minute</td>
</tr>
<tr>
<td></td>
<td>Magnuson Park Campus, Hawthorne Hills, Ravenna, University District</td>
<td>11:00 P.M. to 1:30 A.M.</td>
<td>30 to 60-minute</td>
</tr>
<tr>
<td></td>
<td>Peak Hour Express: NOAA Campus, Hawthorne Hills, Ravenna, University District, Downtown Seattle</td>
<td>6:00 A.M. to 7:45 A.M.</td>
<td>15 to 30-minute</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2:45 P.M. to 6:30 P.M.</td>
<td>15 to 30-minute</td>
</tr>
<tr>
<td>74</td>
<td>Magnuson Park Campus, Hawthorne Hills, Ravenna, University District</td>
<td>5:30 A.M. to 1:00 A.M.</td>
<td>30-minute</td>
</tr>
<tr>
<td></td>
<td>Magnuson Park Entrance, Hawthorne Hills, Ravenna, University District, Wallingford, Fremont, Queen Anne Hill, Seattle Center</td>
<td>9:00 A.M. to 9:00 P.M.</td>
<td>30-minute</td>
</tr>
<tr>
<td></td>
<td>(Route extends beyond U-District for this time)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>74</td>
<td>Magnuson Park Campus, Hawthorne Hills, Ravenna, University District</td>
<td>6:15 A.M. to 1:00 A.M.</td>
<td>30-minute</td>
</tr>
<tr>
<td></td>
<td>Magnuson Park Entrance, Hawthorne Hills, Ravenna, University District, Wallingford, Fremont, Queen Anne Hill, Seattle Center</td>
<td>11:00 A.M. to 6:30 P.M.</td>
<td>30-minute</td>
</tr>
<tr>
<td></td>
<td>(Route extends beyond U-District for this time)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>75a</td>
<td>[Ballard, Loyal Heights, Crown Hill,] Northgate Transit Center, Lake City, View Ridge, University District</td>
<td>5:15 A.M. to 9:00 A.M.</td>
<td>10 to 20-minute</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9:00 A.M. to 2:30 P.M.</td>
<td>30-minute</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3:00 P.M. to 6:30 P.M.</td>
<td>10 to 20-minute</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7:00 P.M. to 12:00 A.M.</td>
<td>30-minute</td>
</tr>
<tr>
<td>75</td>
<td>Northgate Transit Center, Lake City View Ridge, University District</td>
<td>6:00 A.M. to 8:30 A.M.</td>
<td>30-minute</td>
</tr>
<tr>
<td></td>
<td>Ballard, Loyal Heights, Crown Hill, Northgate Transit Center, Lake City, View Ridge, Sand Point Way, University District</td>
<td>8:30 A.M. to 5:30 P.M.</td>
<td>30-minute</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6:00 P.M. to 8:30 P.M.</td>
<td>20 to 40-minute</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8:45 P.M. to 11:45 P.M.</td>
<td>60-minute</td>
</tr>
<tr>
<td>75</td>
<td>Northgate Transit Center, Lake City View Ridge, University District</td>
<td>6:15 A.M. to 8:30 A.M.</td>
<td>30-minute</td>
</tr>
<tr>
<td></td>
<td>[Ballard, Loyal Heights, Crown Hill,] Northgate Transit Center, Lake City, View Ridge, Sand Point Way, University District</td>
<td>8:30 A.M. to 7:30 P.M.</td>
<td>30-minute</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7:30 P.M. to 11:30 P.M.</td>
<td>60-minute</td>
</tr>
</tbody>
</table>

**Source:** King County Metro Transit Website, October 2007.

**Note:** Service Hours are rounded to the nearest 15 minutes. Exact times are available on Route TimeTables located on the King County Metro Transit website.

- a. This route serves Whittman Middle School, Nathan Hale High School, and the University of Washington. Additional service is provided on this route when schools are in session.
- b. Origin/Destination of this route varies during the AM and PM peak hours and the evening/nighttime hours. Approximately half of the trips originate from/continue to Ballard. The remaining trips originate or continue to Northgate Transit Center or Lake City Way. During the mid-day hours all trips originate from or continue to Ballard.

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heffron
TRANSPORTATION, INC

December 28, 2007
Section 1  Introduction

The Washington State Growth Management Act, Revised Code of Washington, Section 36.70A.070, requires counties and cities to include transportation level of service (LOS) standards in their Comprehensive Plans and to enact an ordinance implementing these LOS standards. Seattle's Comprehensive Plan, adopted on July 25, 1994, includes the LOS standards for the City, and City Ordinance #117383, creating a new Land Use Code Chapter 23.52, Transportation Concurrency Project Review System, effective on April 3, 1995, was adopted to implement those standards.

This Director's Rule amplifies the Land Use Code regulations in Chapter 23.52 to assist in administration of the ordinance and updates level of service screenline data based on 1997 traffic counts (see Attachment C).
Section 2  Transportation Concurrency and Comprehensive Plan LOS Policies

Transportation concurrency can be defined as either: a) having adequate facilities and services, as measured by LOS standards for arterials and transit routes adopted in the comprehensive plan, available when the impacts of development occur; or b) ensuring that commitments are in place to complete the facilities and services within six years.

Transportation LOS standards indicate the acceptable balance between the demand for use of the arterial and transit systems and the capacity of the transportation system. Total capacity is based not only on the facilities currently in existence, but on known future projects. LOS standards are one method of measuring the impacts of growth and change on the transportation system, and providing predictability for both the public and private sectors regarding current and anticipated operating characteristics of the transportation system.

The proposed transportation concurrency project review system implements Seattle’s adopted Comprehensive Plan Policies T21 and T22.

**Transportation Element Policy T21 - Arterial Level-of-Service:** Define arterial LOS to be the volume-to-capacity ratio (v/c) at designated screenlines, each of which encompasses one or more arterials (Attachment A). Measure p.m. peak hour directional traffic volumes on the arterials crossing each screenline to calculate the screenline LOS. To judge the performance of the arterial system, compare the calculated LOS for each screenline with the LOS standard for that screenline (Attachment B).

**Transportation Element Policy T22 - Transit Level-of-Service:** Define transit LOS to be the volume-to-capacity ratio (v/c) at designated screenlines, each of which encompasses one or more arterials, on some of which transit operates (Attachment A). Measure p.m. peak hour directional traffic volumes on the arterials crossing each screenline to calculate the screenline LOS. To judge the performance of the transit system, compare the calculated LOS for each screenline with the LOS standard for that screenline (Attachment B).
A screenline is an imaginary line drawn across several arterials at a particular place. The v/c ratio is the ratio of the sum of p.m. peak hour volumes on arterials crossing a screenline to the sum of the p. m. peak hour capacities of the arterials crossing the screenline.

\[ \text{Capacity} = \frac{V}{C} \]

Section 3  Transportation Concurrency Project Review System

Seattle's Land Use Code Chapter 23.52, *Transportation Concurrency Project Review System*, provides the regulatory authority to conduct transportation concurrency review for all projects that are subject to SEPA environmental review. From the Comprehensive Plan, Chapter 23.52 contains the City's screenline map (Attachment A), and Transportation Concurrency LOS standards (Attachment B) for the screenlines. Before a development project is approved, Transportation Concurrency LOS standards must be met like any other Land Use Code development standard. Chapter 23.52 also includes the basis for project approval, denial or development of remedial strategies to avoid denial.

Transportation concurrency review for a proposed project will be integrated into the Master Use Permit (MUP) review process. Transportation concurrency review will be conducted early in the MUP process. Future renewal or revision of an approved MUP would require a new transportation concurrency project review.

To keep the Transportation Concurrency Project Review System up to date, the City will conduct annual traffic counts along all screenlines. These counts will be taken during the p.m. peak hour, in each direction, along each arterial encompassed by a screenline. The counts will be summed for each screenline in each direction, and this information will be updated and revised annually. These annual traffic counts will be used by applicants and DCLU to conduct transportation concurrency project review (*Attachment C: Level of Service - 1997*).

This annual traffic count will ensure the cumulative transportation impacts of small developments are taken into account, even if they are categorically exempt from SEPA, and therefore exempt from Seattle's Transportation Concurrency Project Review System. Once a small, exempt development project is completed, the traffic it generates will be captured in the City's annual traffic counts. Thus the decision whether adequate transportation facilities exist to support future new development will be based on an accounting of all existing development, including small projects that were not subject to the Transportation Concurrency Project Review System.
Transportation Concurrency Project Review Submittal Requirements: The following information shall be required of an applicant to conduct transportation concurrency project review:

1. Site location;
2. Proposed use and densities, including number of dwelling units, and square footage of non-residential development by type of use; and
3. Trip generation and distribution.

Determine Trip Generation and Distribution for Proposed Project: Applicants proposing projects subject to transportation concurrency project review are required to prepare and submit trip generation and distribution information associated with their respective projects.

Trip generation is based on the proposed uses and densities, including the number of dwelling units and square footage of non-residential uses. In calculating the number of trips generated by a development, the applicant will use the standard trip generation rates provided in the Institute of Transportation Engineers (ITE) Manual. A copy of the ITE Manual is available for public use at the Access and Drainage Review Information Counter at DCLU’s Permit Information and Application Center. Instead of this approach, however, an applicant may submit a calculation of alternative trip generation rates for the proposed development. DCLU will review and evaluate the alternate calculations and methodology used to determine whether such calculations can be used rather than the ITE Manual standard trip generation rates.

Distribution of a proposed development’s trips to the street network will be based on trip distribution tables generated from the City’s traffic forecasting model. Following the Trip Distribution Origin and Destination Map are two tables for each of the four categories of land use (Residential, Retail, General Office, and Manufacturing/Industrial). One table shows the distribution of trips by land use type exiting (outbound from) the project site and traveling to other areas in the city and region during the p.m. peak hour; the other table shows the distribution of trips by land use type entering (inbound to) the project site from other areas of the city and region during the p.m. peak hour (Attachment D: Trip Distribution Origin and Destination Areas Map and Trip Distribution Tables by Land Use Type). The trips between the project site and other areas of the city and region will then be assigned by DCLU to the arterial network using the most likely routes to minimize travel time and distance.

In order to educate applicants on this new Transportation Concurrency Project Review System and improve customer service, DCLU’s Access and Drainage Review section has been designated to assist applicants in computing trip generation and distribution for a proposed
project. Please visit the Access and Drainage Review Information Counter at DCLU’s Permit Information and Application Center or call 684-5362 for more information.

**Determine “Applicable Screenlines”:** DCLU will determine the proposed project’s “applicable screenlines.” The “applicable screenlines” used for transportation concurrency review will be those screenlines (up to four) that have the highest number of directional trips assigned to them from the proposed project.

**Calculate Volume-to-Capacity (v/c) Ratio for “Applicable Screenlines”:** A proposed project’s trip generation and distribution will provide estimates of the additional number of trips assigned to each “applicable screenline” by the proposed project. These new trips will be added to the volume (based on the last adopted count) for the screenline, and the v/c ratio will be re-calculated as follows:

\[
\text{Volume + Proposed Project’s Trips} \\
\text{Capacity}
\]

Once the project’s trips are determined, the proposed uses, densities, number of dwelling units and/or square footage associated with the subject proposal cannot be changed without recalculation of trip generation.

**Transportation Concurrency Decision:**

- If the new v/c ratio is lower than or equal to the LOS standard for the screenline, the proposed project will be approved.

- If the new v/c ratio is greater than the LOS standard for the screenline, the proposed project will either be denied or will be allowed to propose alternative solutions (see next section).

**Failure To Meet Transportation Concurrency LOS Standards:** When a project fails to meet the transportation concurrency requirement, an applicant may suggest remedial strategies (mitigation & options to receive approval of a project that would otherwise be denied) to achieve transportation concurrency. DCLU will review these remedial strategies and decide whether they are adequate to approve the proposed project.
Section 23.52.006, Effect of Not Meeting Transportation Concurrency LOS Standards, reads:

If a proposed use or development does not meet the LOS standards at one or more applicable screenline(s), the proposed use or development may be approved if the Director concludes that an improvement(s) will be completed and/or a strategy(ies) will be implemented that will result in the proposed use or development meeting the LOS standard(s) at all applicable screenline(s) at the time of development, or that a financial commitment is in place to complete the improvement(s) and/or implement the strategy(ies) within six (6) years. Eligible improvements or strategies may be funded by the City, by other government agencies, by the applicant, or by another person or entity.

Section 4.0 Definitions

For the purposes of this Director’s Rule, the following terms are defined.

- "Applicable Screenlines" are those screenlines (up to 4) affected by a proposed project that DCLU designates are to be reviewed as part of the Transportation Concurrency Project Review System.

- "P. M. Peak Hour" is the one-hour period between 4 p.m. and 6 p.m. that has the highest traffic volume for a given screenline.

- "Remedial Strategies" are possible options or project mitigation that, when put into place, would allow a proposed project to be approved under the Transportation Concurrency Project Review System.

- "Screenline" is an imaginary line drawn across several arterials at a particular place where the volume-to-capacity ratio (v/c) is calculated.

- "Time of Development" is the date when the building permit is issued for the project.

- "Transportation Concurrency" is either: a) having available adequate facilities and services, as measured by LOS standards for arterials and transit routes adopted in the comprehensive plan, when the impacts of development occur, or b) ensuring that commitments are in place to complete the facilities and services within six years.
"Trip Distribution" is the determination of the geographic locations where trips generated by a project originate and terminate. For this Transportation Concurrency Project Review system, distribution is estimated by the City forecasting model.

"Trip Generation" is the estimation of the number of trips that arrive and depart from a proposed project. For the purposes of the Transportation Concurrency Project Review system, estimation of the number of automobile and truck trips, out of the total number of person trips, is required for the trip generation step.

"Volume" is the number of vehicles using a street over a certain period of time. In the case of transportation concurrency review, volume refers to the sum of p.m. peak hour volumes of the arterials crossing the screenline.

"Volume-to-Capacity Ratio (v/c)" is the ratio of the sum of p.m. peak hour volumes on arterials crossing a screenline to the sum of the p.m. peak hour capacities of the arterials crossing the screenline.

IMPORTANT NOTE:

THIS ON-LINE (ELECTRONIC) VERSION OF DIRECTOR'S RULE 4-99 CONTAINS ONLY PAGES 1-7.