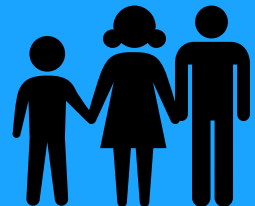
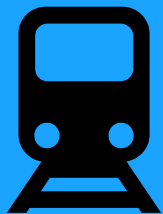




PEDESTRIAN AND BICYCLE CONNECTIVITY STUDY ANGLE LAKE STATION AREA PLAN

SEPTEMBER 2014

Prepared By:



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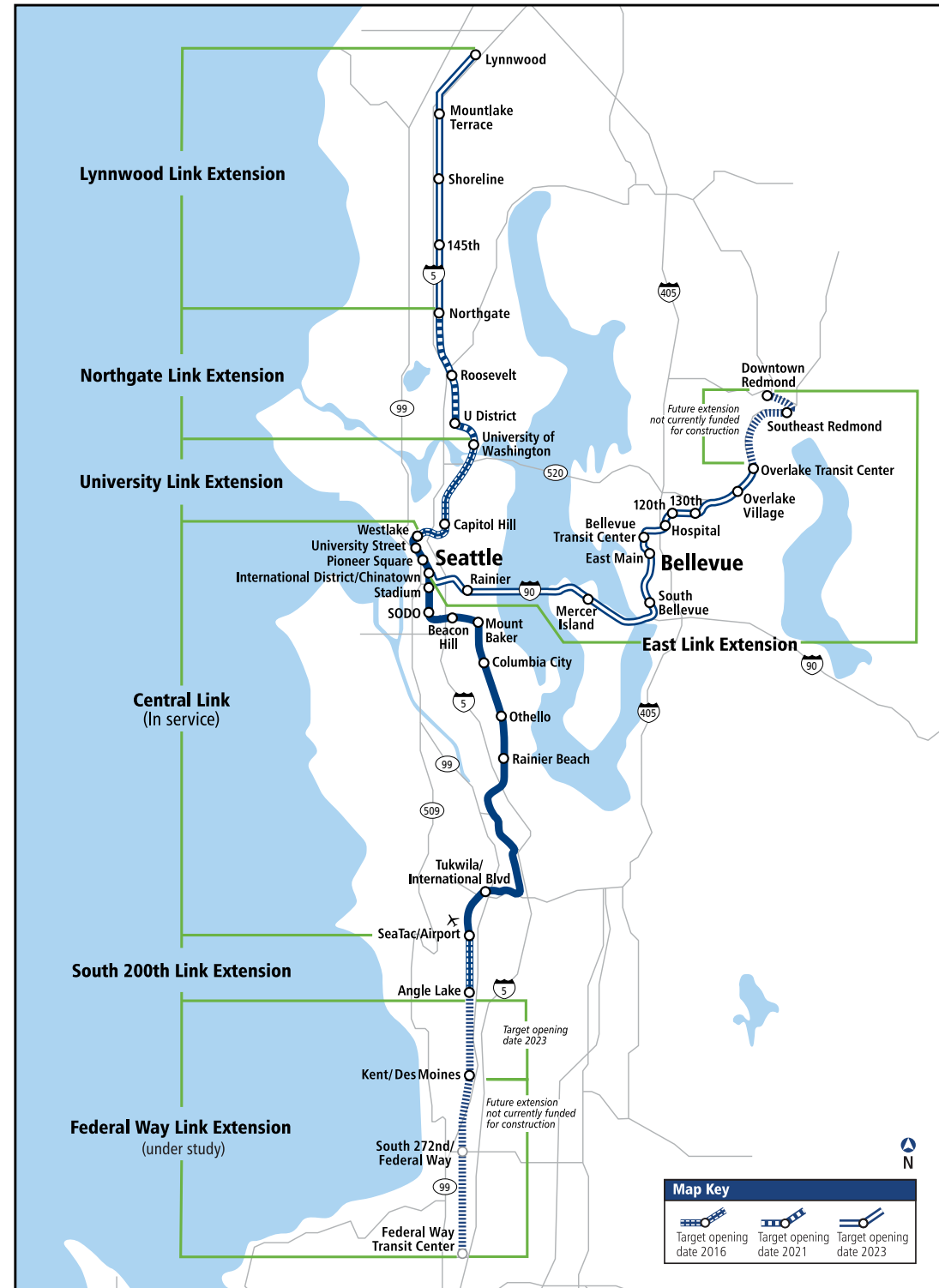


Figure 1. Link Light Rail System Map from Sound Transit.

INTRODUCTION

THE OPPORTUNITY

In late 2016, Sound Transit will open the Angle Lake Station at S 200th Street and 28th Avenue S, one block west of the City of SeaTac's main thoroughfare, International Boulevard (also known as SR99 and Pacific Highway). The Angle Lake Station will be the city's third light rail stop, and will include a 1,050 stall parking structure. There will also be 2,500 square feet of commercial space integrated as part of a 10,000 square foot public plaza, which can be utilized for a variety of community-oriented activities and events. Additionally, 35,000 square feet of the site has been reserved for future transit oriented development that could include housing, office or hospitality uses. As currently funded, the Angle Lake Station will be the last stop on the light rail line. Proposed stations to the south are under further study by Sound Transit. See Figure 1.

Construction of the Angle Lake Station will create significant opportunities for SeaTac. By enhancing connectivity to the region, area residents, employees and visitors will be able to conveniently access downtown Seattle, the University of Washington campus, Northgate and the east side of Lake Washington. The Station will improve mobility within the city and, perhaps most importantly, will encourage new development and redevelopment in the area adjacent to the light rail station. As part of the development of the light rail station, pedestrian and bicycle facilities will be constructed along S 200th Street between International Boulevard and the entrance to the Des Moines Creek Trail. Sidewalks will be constructed on 28th Avenue S and S 204th Street. A new traffic light will be located at the intersection of S 200th Street and 28th Avenue S.



Figure 2. Angle Lake Station Rendering from Sound Transit (looking east on S 200th Street).

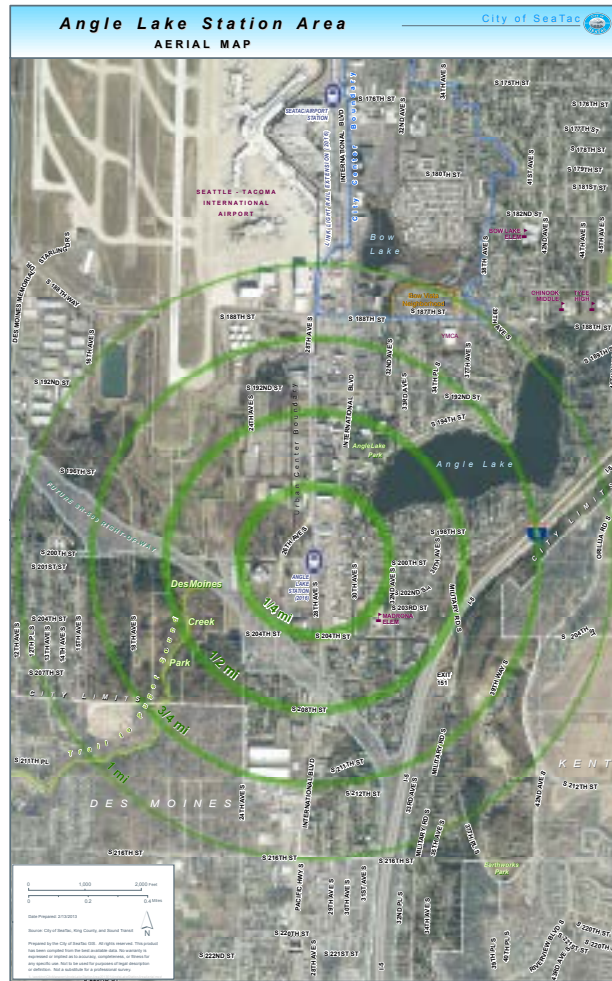


Figure 3. Angle Lake Station Area Aerial.

This *Pedestrian and Bicycle Connectivity Study* focuses on key recommendations for maintaining and improving pedestrian and bicycle facilities within the Angle Lake Station Area. This work will inform the goals, policies and strategies in the *Angle Lake Station Area Plan*.

ANGLE LAKE STATION AREA PLAN

The City of SeaTac is creating the *Angle Lake Station Area Plan* to guide future development and the transformation of this community into a more walkable, equitable, healthy, transit-oriented place with increased opportunities to work, live and play. The *Angle Lake Station Area Plan* will be a community-supported plan that will guide the redevelopment of the Angle Lake Station Area into a vibrant community that will ultimately mix office, commercial, retail, residential and public uses in a walkable environment, while making it easier and more convenient to access transit, parks and a variety of neighborhood destinations.

SCOPE OF ANGLE LAKE STATION AREA PLAN

The *Station Area Plan* will primarily focus its recommendations on locations within the Station Area boundary, which will extend generally ¼ mile from the Angle Lake Station. The purpose of this boundary is to encourage clustering of new commercial and residential developments and community amenities within a walkable distance from the station as a means of creating a mixed use center or focal point for the area. While

focusing on the area within a 1/4 mile of the station, or five-minute walking distance, the plan will also address the importance of connecting to the communities outside the Station Area. For this reason, this connectivity *Study* looks at both 1/4 and 1/2-mile areas. This will improve access for people traveling by foot or riding a bike who live, work, visit and play in SeaTac.

COMMUNITY TRANSFORMATION GRANT

In summer 2013, the City of SeaTac was awarded a Community Transformation Grant (CTG) administered by Seattle Children's Hospital, in partnership with Public Health-Seattle & King County and the King County Healthy Coalition. The grant enabled SeaTac to fund a technical study on pedestrian and bicycle connectivity within the Angle Lake Station Area. Additional CTG funding was received for the Angle Lake Station Area community engagement program, which included the community participation process for this *Study*.

PURPOSE OF STUDY

The main goal of the *Angle Lake Station Area Pedestrian and Bicycle Connectivity Study* is to make recommendations for increasing walkability and opportunities for bicycle travel within and immediately adjacent to, the Angle Lake Station Area. The *Study* has been informed by existing City policies, transit oriented development best practices, technical evaluation and a robust community engagement process.



Young people walking and biking near Madrona Elementary along 30th Avenue S.



Pedestrians at International Boulevard.



Pedestrians crossing S 204th Street at International Boulevard.



Angle Lake Park - a key community and regional destination in the Station Area.

METHODOLOGY



Figure 4. NACTO Urban Street Design Guide.

This *Study* used the following methods to identify the existing conditions and key recommendations for pedestrian and bicycle connectivity:

- **Policy Support.** Review of existing City goals and policies about connectivity.
- **Literature Review.** Review of best practices for location, types and design of pedestrian and bicycle facilities as part of station area redevelopment to support increased transit ridership and connectivity. References for the literature review are located in Appendices A and B.
- **Community Outreach.** Evaluation of results from outreach efforts that engaged community member and business owners within the Study Area (available in the *Angle Lake Station Area Community Engagement Report*).
- **Existing Conditions.** Analysis of existing condition opportunities and constraints from field visits, transportation data and available GIS data from City of SeaTac.

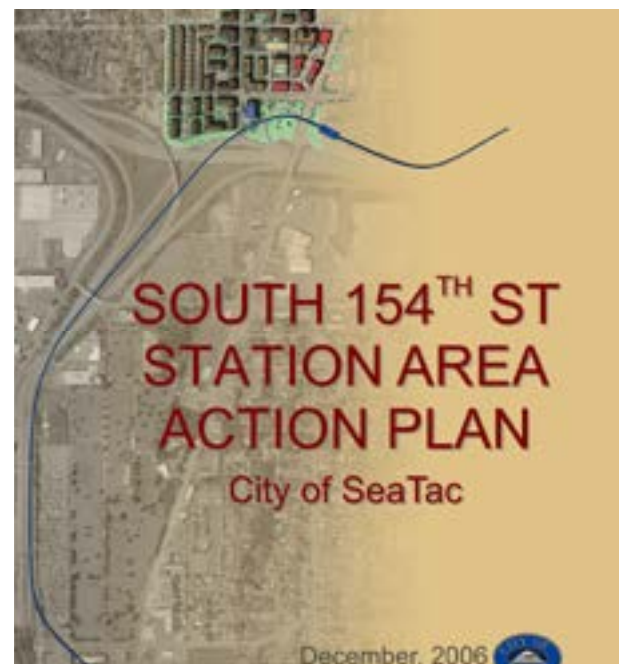


Figure 5. City of SeaTac 154th Street Station Area Action Plan.



Participants at one of the community engagement meetings hosted for the Angle Lake Station Area.

POLICY SUPPORT

The objectives of the Angle Lake Station Area planning process are supported by existing City policies and SeaTac City Council's goals. A sampling of these goals and policies is included below.

CITY OF SEATAC COMPREHENSIVE PLAN

The *City of SeaTac Comprehensive Plan Transportation Element*, Goal 3.1 and related policies provide a framework for focusing on multi-modal transportation solutions.

- **Goal 3.1.** *To promote the safe and efficient mobility of people and goods of SeaTac residents, businesses, and visitors through a multi-modal transportation system that encourages alternative modes.*

The City of SeaTac's on-going process to update its *Comprehensive Plan*, and especially the *Transportation Element* and the *Transportation Master Plan*, are being coordinated with this *Study* and the overall Station Area planning effort.

CITY COUNCIL GOAL

- *Plan and construct infrastructure improvements in the S 200th Street Light Rail Station Area that increase the viability of commercial development while also engaging in strategic urban planning efforts to determine the highest and best land uses in this area, incorporating input from SeaTac residents and adjacent businesses, as well as the development community.*



Figure 6. Angle Lake Station Rendering from Sound Transit.

DRAFT SAFE AND COMPLETE STREETS PLAN

In 2012, SeaTac City Council endorsed the *Draft Safe and Complete Streets Plan* and directed that this non-motorized plan be integrated into the *Comprehensive Plan* and *Transportation Master Plan* updates. Specific goals of the *Draft Safe and Complete Streets Plan* include:

- Improve safety for all users and all modes in the right-of-way;
- Support efforts to define and complete the City's pedestrian and bicycle networks;
- Focus improvements to the pedestrian and

bicycle network to where they do the most good;

- Encourage multi-modal transportation including walking, biking and transit within SeaTac; and,
- Create more opportunities for SeaTac's residents, workers, and visitors to enjoy an active lifestyle through walking and bicycling.

These non-motorized goals and other policies within the *Draft Safe & Complete Streets Plan* help provide a policy framework for the Station Area planning effort and this *Study*. This *Study* also references (in Appendix A) the facility implementation tools identified in the *Draft Safe & Complete Streets Plan*.

GROWING TRANSIT COMMUNITIES COMPACT

In 2014, SeaTac City Council endorsed the *Growing Transit Communities Compact*, a non-binding agreement between communities in the Puget Sound Region that expresses a commitment to a cooperative, regional approach to support equitable transit-oriented development. Three of those key strategies applicable to the Station Area planning effort and this *Study* are:

- **Strategy 8.** Locate, design, and provide access to transit stations to support TOD.
- **Strategy 10.** Invest in infrastructure and public realm improvements.
- **Strategy 22.** Invest in equitable mobility options.

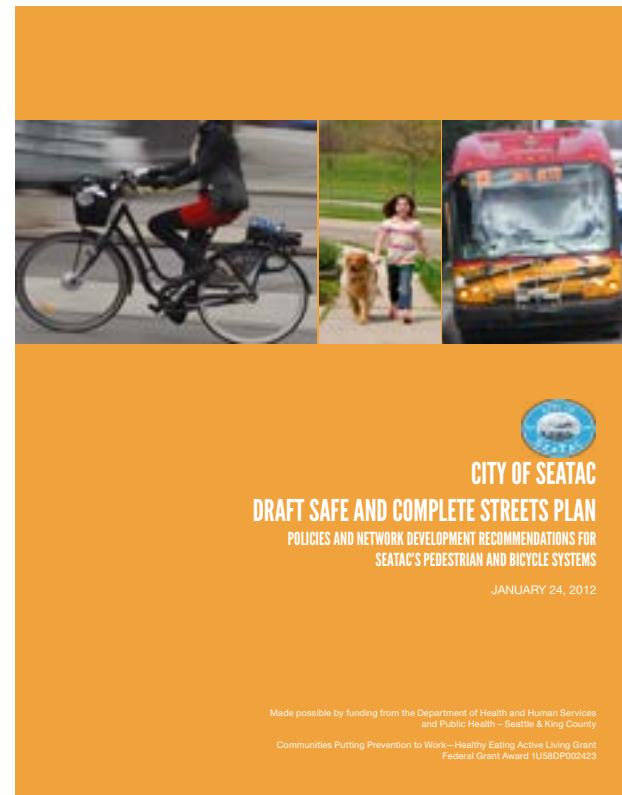


Figure 7. *Draft Safe & Complete Streets Plan* can be found online at the City of SeaTac website.

LITERATURE REVIEW

The *Angle Lake Station Area Pedestrian and Bicycle Connectivity Study* focuses on both the ¼ and ½ mile distances from the Angle Lake Station. Studies referenced in the literature review are cited in Appendix B.

Studies consistently show that people are willing to walk and bike to reliable transit service. Data from Washington, DC; Kansas City, Missouri; New York, and New Jersey have shown that people are willing to walk at least a ¼ mile to rail transit and are willing to bike up to 2 miles to rail transit. The Mineta Transportation Institute in San Jose, California found that bicycle and pedestrian facilities should be low-stress and link destinations within the 1/4 mile range of the Station Area to get the highest number of people walking and biking. Looking at data from San Francisco and Philadelphia, researchers found that people are willing to bike farther than 1/4 mile (sometimes up to 5 miles) to access transit.

Transportation agencies that provide funding for transportation projects support pedestrian and bicycle infrastructure within close proximity to transit. In 2010, the United States Department of Transportation released a policy statement on *Bicycle and Pedestrian Accommodation Regulations and Recommendations* stating that every transportation agency has the responsibility to improve conditions and opportunities for walking and biking and to integrate those types of facilities into their transportation systems.

In 2013, the Washington State Department of Transportation (WSDOT) endorsed the *Urban Street Design Guidelines* published by the National Association of City Transportation Officials (NACTO) and released a policy statement that a highway must also function like a connector, providing local access to businesses, parking for customers and sidewalks and bikeways for people to travel.

These studies and policy statements from funding agencies show that these partners expect to see these facilities incorporated into local design standards and implemented as a part of road redevelopment projects and other transportation improvements.

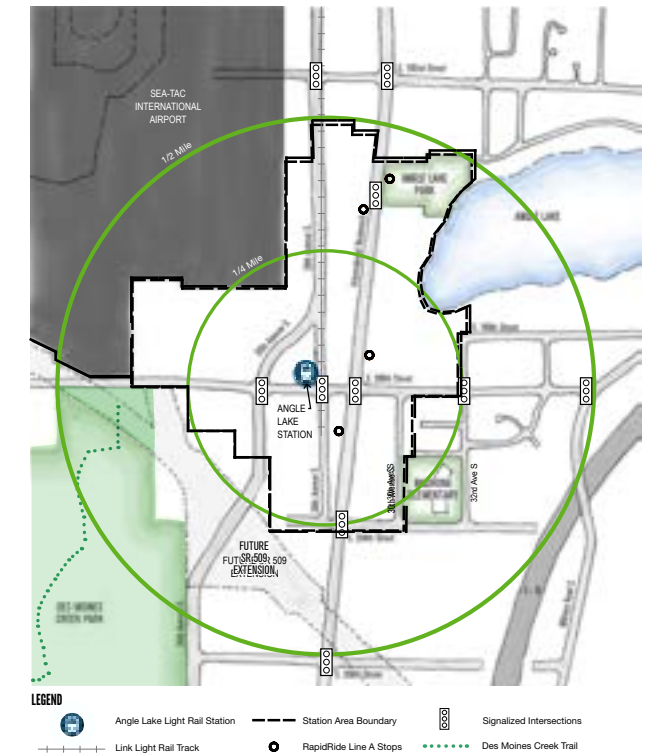


Figure 8. *Angle Lake Station Area Boundary Map*. Displays 1/4 and 1/2 mile radius from the light rail station.

COMMUNITY OUTREACH



Part of the outreach included letting the community know how long it would take them to walk to the new Angle Lake Station at S 200th Street.

The *Pedestrian and Bicycle Connectivity Study* is part of a collaborative effort resulting from numerous conversations with the public and stakeholders around their visions for the future Angle Lake Station Area. Public outreach has been a key element of the Station Area planning process. Formal outreach to the public and key stakeholders began in Winter 2014, and continued through Spring 2014, with a focus on four groups: businesses and property owners, residents, workers and young people. Outreach activities have included interviews with key business stakeholders, two public workshops, an online questionnaire and in-person surveying, community briefings, and a project webpage on the City of SeaTac website.



Outreach activities were developed that would specifically inform the *Pedestrian and Bicycle Connectivity Study*.

KEY THEMES FROM COMMUNITY & STAKEHOLDERS

The following key themes emerged out of the public feedback:

- Importance of placemaking for potential developers,
- Need for diverse business opportunities near the station,
- Need for safer pedestrian and bike facilities including wider sidewalks and all ages and abilities (AAA) cycling infrastructure,
- Need for pedestrian-scale development to encourage walkability,
- Vision of new retail (coffee shops, grocery stores, restaurants, etc.) opportunities near the Angle Lake Station, and
- Improved connectivity between the station and the surrounding neighborhood, particularly Angle Lake Park.

EXISTING CONDITIONS

THE BUILT ENVIRONMENT

Currently, the built environment near the station consists of suburban-style mega-blocks with primarily low density commercial and auto-oriented uses on either side of International Boulevard. Because of its close proximity to the airport, there are numerous hotels, park-and-fly businesses and auto-rental lots. Unlike some suburban commercial districts, there are also several large office/institutional establishments in the area, most of which support the aviation industry. Residential developments are generally on the east side of International Boulevard and include several multi-story apartment complexes, a mobile home park and a single family community to the east.



Many hotels are located along International Boulevard due to the close proximity to Sea-Tac International Airport



Parking lots separate the front doors of businesses from the street frontage.

DESTINATIONS & COMMUNITY AMENITIES

One of the goals of the *Station Area Plan* is to enhance access to existing amenities and to encourage the development of more destinations such as places for people to work, shop, visit, eat and live. Currently, the main destination that brings local and regional visitors to the area is the station's namesake, Angle Lake, and the adjacent Angle Lake Park (only a ten minute walk from the station). In addition to open space amenities in the area, there are currently four large employers (over 100 employees) and eight hotels within approximately 1/2 mile of the station, or about a fifteen minute walk. More details about Angle Lake Park and other community amenities easily accessed from the Station Area including:



Gas stations are located on three corners of S 200th Street.

- **Angle Lake Park** includes a swimming beach, boat launch, summer arts programming and a spray park. (A ten-minute walk from the station.)
- **Des Moines Creek Park & Trail** can be accessed off of S 200th Street, west of the station, and includes a six-mile paved shared-use path that connects to the Des Moines Marina and Puget Sound. (The trailhead on S 200th Street is less than a ten-minute walk from the station.)
- **Lake to Sound Trail.** One component of the SR509 extension project (which is currently unfunded) is the portion of the Lake to Sound Trail that will connect the Des Moines Creek Trail to North SeaTac Park's "West Side Trail." The Lake to Sound Trail is a multi-city effort to build a continuous trail connecting Lake Washington to the Puget Sound.
- **Madrona Elementary School** is a local elementary school and community meeting place. (A 12-minute walk from the station.)
- **Angle Lake Station Plaza** will be completed in 2016, as part of the station and commuter garage construction project. The Plaza will include views of Puget Sound and the Olympic Mountains and is designed to be extended into the adjacent drop-off/pick-up area for community events. Twenty-five hundred square feet of commercial space will also be integrated into the plaza.

THE TRANSPORTATION SYSTEM

The City of SeaTac is home to Seattle-Tacoma International Airport (Sea-Tac) and serves as a major regional transportation hub. The transportation network within the Station Area is typical of other inner-ring

suburban communities where a main street, International Boulevard, functions as a highway and large block sizes impede connectivity along the corridor.

Arterials. The existing transportation network is focused on serving motorized transportation on the following arterial streets:

- International Boulevard, a 4 to 6-lane state highway, runs north south through the middle of the Angle Lake Station Area. The speed limit on this road is 40 mph. Street trees are located along this arterial and, intermittently, within a planted median.
- S 200th Street, is a 4-lane arterial that provides connections from International Boulevard to Interstate 5. The speed limit on this road is 25 mph.
- 28th Avenue S/ 26th Ave S/ 24th Ave S is a 4-lane arterial boulevard that provides access to the Port of Seattle properties adjacent to the airport. The speed limit on this road is 35 mph.

These arterials have existing 4-5 feet wide sidewalks. Portions of these streets do not have buffers (vegetation, parking, street trees) between the pedestrians and the vehicles. With the exception of 30th Avenue S, the intersections along arterials have signals.

Local Streets. Some local streets have pedestrian facilities, typically these facilities are sidewalks, paved shoulder or paved separated walkways.

- S 204th Street is the only east-west local access street in the Station Area study area.



Figure 10. Angle Lake Station Area Road Classifications Map.

- 28th Avenue South from 26th Avenue S to S 204th Street and 30th Avenue South are the north-south local access streets in the Station Area.

Transit Service. In addition to the new light rail station, there are King County Metro RapidRide A-Line stops on International Boulevard within the Angle Lake Station Area. The RapidRide connects the area with the airport and Tukwila Light Rail stations to the north and the Federal Way Transit Center to the south along International Boulevard. The bus stops are located at S 195th Street near Angle Lake Park and at S 200th Street near the light rail station.

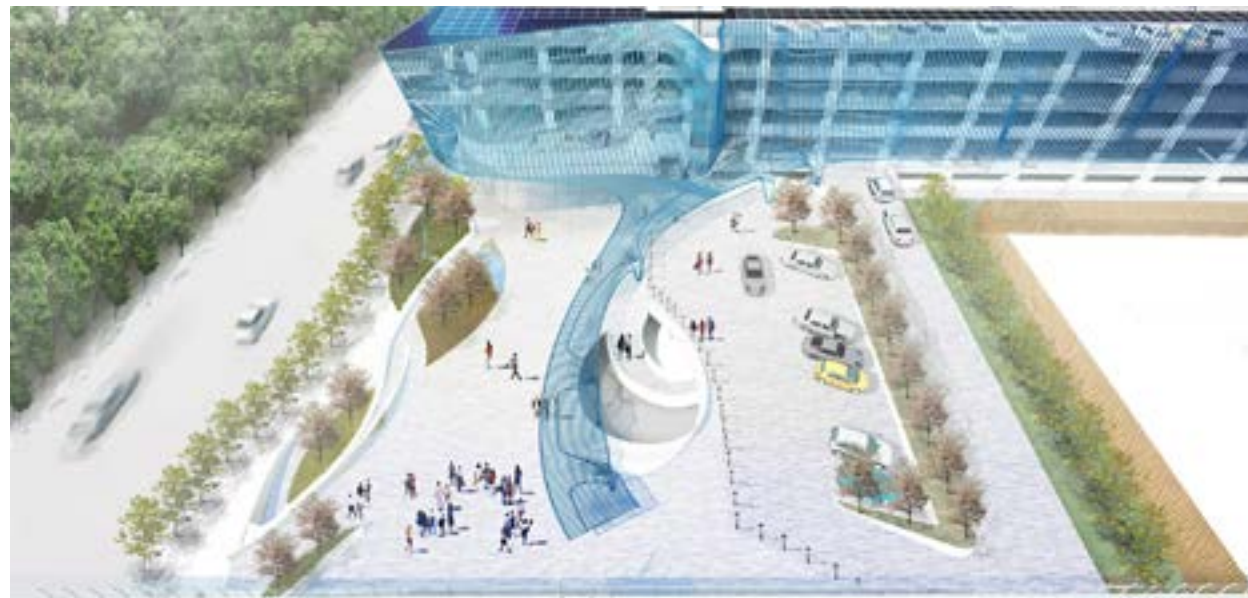


Figure 9. Angle Lake Station Plaza and Parking Garage Rendering from Sound Transit.

PROJECTS UNDERWAY

In the next few years, several projects will be completed as part of the Sound Transit station area improvements and the SeaTac Transportation Improvement Program. These improvements provide non-motorized facilities where they did not exist before.

SOUND TRANSIT IMPROVEMENTS

As part of the construction of the Angle Lake Station, Sound Transit will improve sidewalks at the following locations:

- Sidewalks and separated pedestrian walkways along S 200th Street from the light rail station to the Des Moines Creek Trailhead.
- Sidewalks along 28th Avenue S (local access segment) on the west side of the street.
- A sidewalk along the south side of S 204th Street across from Madrona Elementary.
- Bike facilities on S 200th Street, west of International Boulevard to connect the station to the Des Moines Creek Trail and Park.

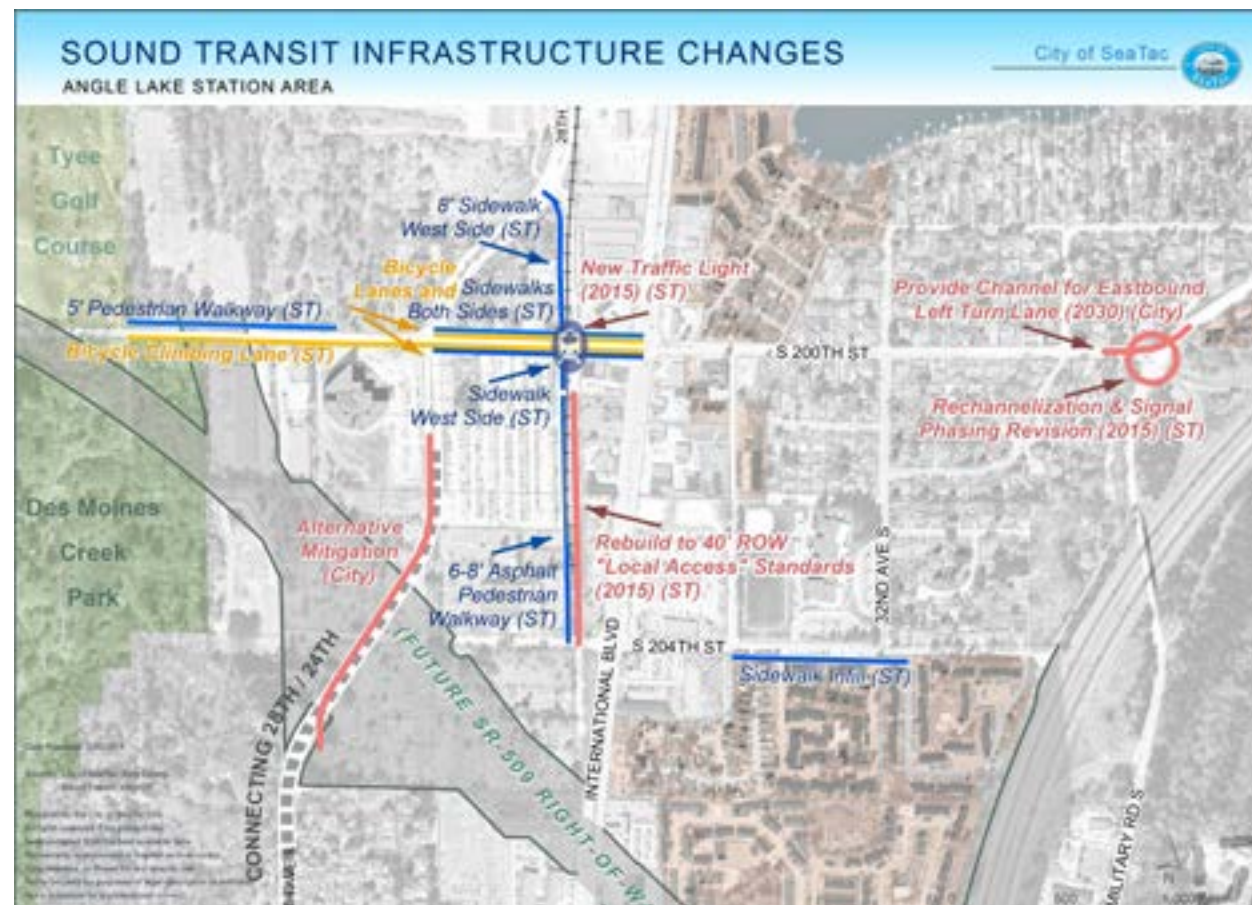


Figure 11. Sound Transit Infrastructure Changes in Angle Lake Station Area.

CITY OF SEATAC IMPROVEMENTS

The City of SeaTac is connecting 28th Ave S to 24th Avenue S. This project completes a vital north/south corridor that provides a direct connection with the City of Des Moines, Sea-Tac, the light rail station and multiple adjacent developable properties.

The new roadway segment will provide four

general purpose lanes, left turn pockets, a shared use path on both sides to accommodate bikes and pedestrians, curb, gutter, stormwater infrastructure, retaining walls, street lighting, signalization, landscaping, and undergrounding of power and communication utilities. This project is funded and is under construction.

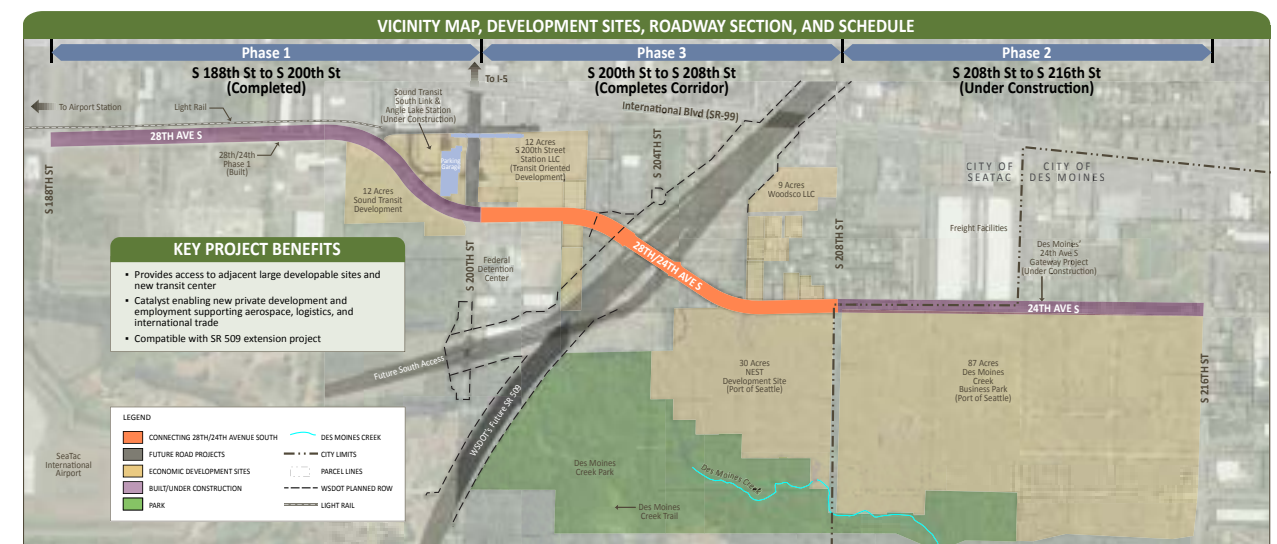
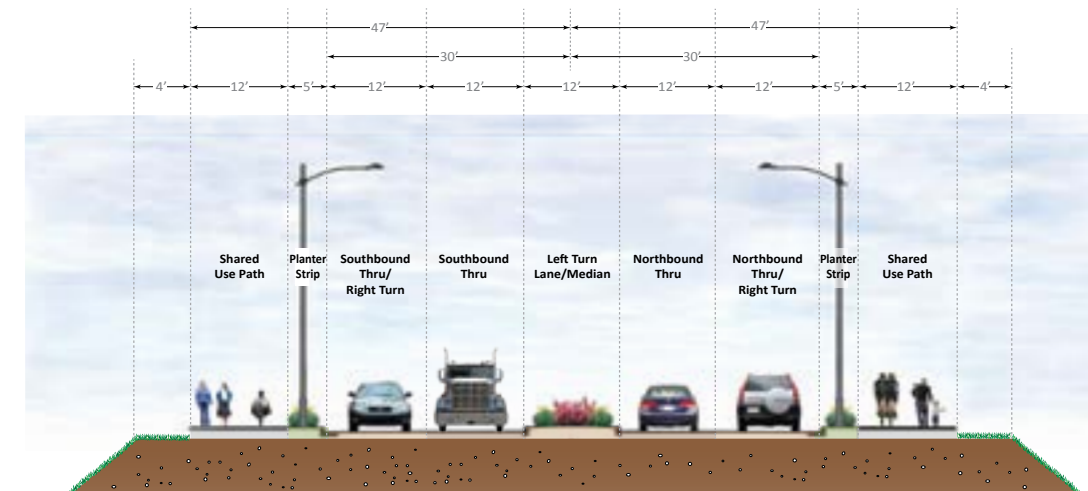


Figure 12. City of SeaTac Connecting 28th/24th Avenue S Cross Section and Vicinity Map.



A family walking to Angle Lake Park from International Boulevard along S 195th Street.



Existing street trees and street lights along International Boulevard.



Existing paved shoulder walkway, a delineated pedestrian facility on a local street in SeaTac.

THE PEDESTRIAN ENVIRONMENT

Figure 13 shows the existing pedestrian facilities located on public streets within the vicinity of the Station Area. Pedestrian facilities in SeaTac are typically designed to meet the minimum requirements in the 2007 King County Road Standards. In the City of SeaTac, these facilities are defined as follows:

- **Sidewalks** are placed alongside paved roadways. These facilities typically include a curb and gutter and may include a planting strip. These facilities are typically a minimum of 5 feet on local access streets and 8 feet within a business district.
- **Paved shoulder walkways** are typically constructed as an extension of an asphalt roadway and are delineated from the travel lane with a white line and marked with a pedestrian symbol. These facilities are typically a minimum of 5 feet.
- **Paved separated walkways** are typically constructed from asphalt and separated from the vehicle travel lane by a curb or planting strip. These facilities are typically a minimum of 5 feet wide.
- **Shared Use Paths or Trails** are built for transportation and recreation purposes and accommodate pedestrians and bicycles. Shared use paths are usually located parallel to a street and take the place of a separate pedestrian and bicycle facility. Trails typically connect several destinations and are often part of a larger regional network. Shared use paths and trails are typically a minimum of 12 feet wide.

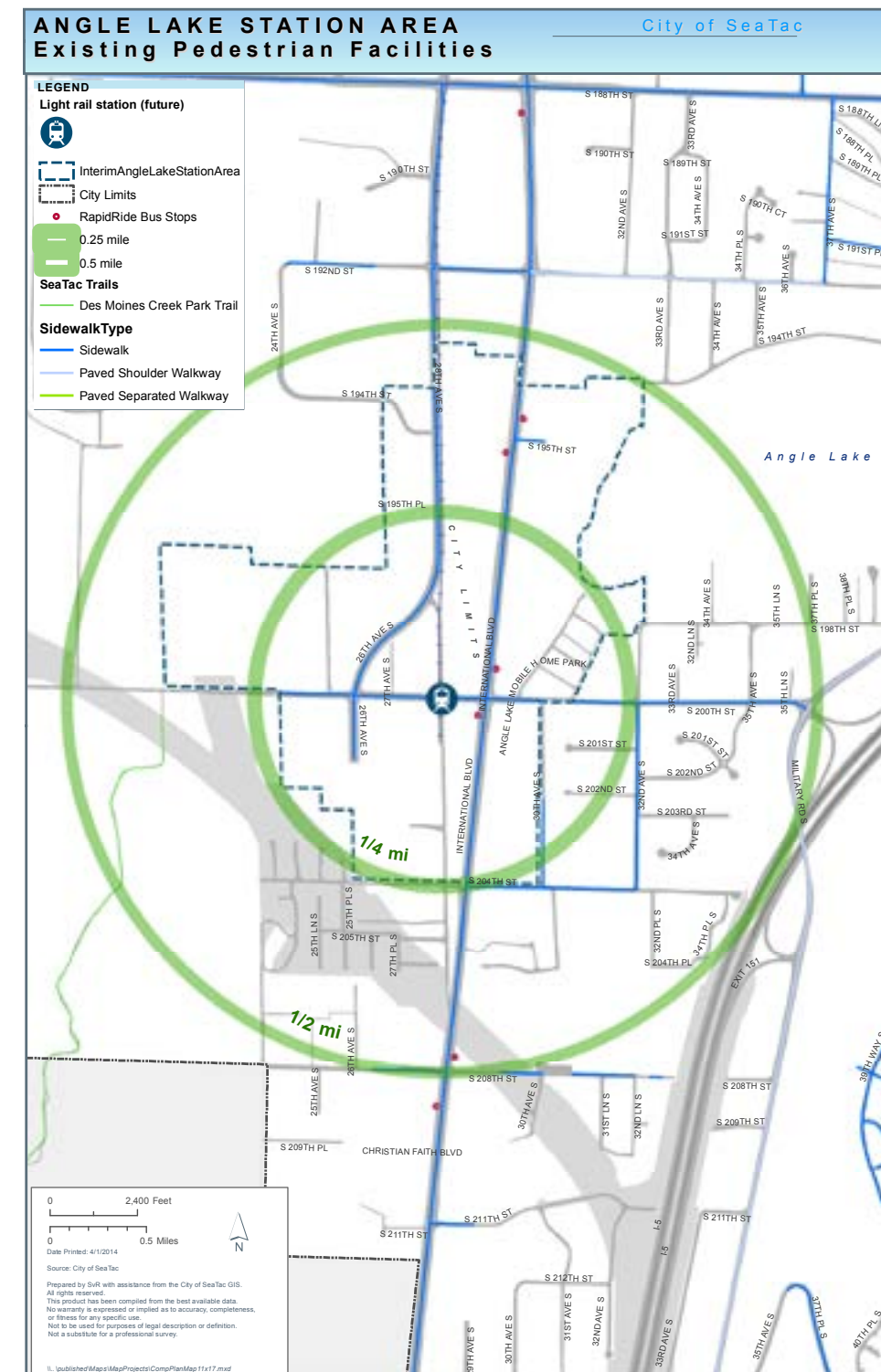


Figure 13. Existing Pedestrian Facilities in Angle Lake Station Area.



Angle Lake Park's sprayground is a popular destination on a summer day.

PEDESTRIAN DESTINATIONS

When asked where people currently walk in the Station Area, the top four destinations identified in the 220 questionnaires the City received were:

- Angle Lake Park,
- Madrona Elementary,
- RapidRide bus stops and
- Friends' houses.

This indicates that people are not only walking along neighborhood streets but are also walking adjacent to, and crossing, International Boulevard.



People walking along International Boulevard at the RapidRide bus stop.

INTERSECTIONS

Most of the intersections within the Angle Lake Station Area have signals that provide a walk signal for pedestrians to cross the street. The only intersections without a signal are 30th Avenue S and S 200th Street.

Many of the intersections have crosswalks and curb ramps to provide direction for the pedestrians crossing the intersections. The City will be embarking on an ADA Transition Plan to assess accessibility of intersections and other infrastructure. Infrastructure will be improved to current standards through private and public projects.



A sidewalk near Madrona Elementary without a buffer between pedestrians and the travel lane.

TOPOGRAPHY

The Angle Lake Station Area is relatively flat with the exception of S 200th Street west of 26th Avenue S and areas of 28th Avenue S. A big hill down to the Des Moines Creek Trail likely discourages some people from walking to it.

LIGHTING

The intersections within the Station Area are lit, and there is pedestrian lighting on International Boulevard. Since most buildings are set back from front property lines, little light is provided from the adjacent properties. The street trees along International Boulevard provide shade during the day but block light from the street lights at night during the summer.

Many of the comments received during the community outreach effort indicated that people perceive the Station Area to be dark and there is not enough lighting for pedestrians.

STREET TREES

Street trees are regularly spaced along the two main north-south arterials, International Boulevard and 28th Ave S/ 26th Ave S. There are very few street trees located on S 200th Street and S 204th Street.



There is a hill down to Des Moines Creek Trail from the light rail station.



The sidewalk along International Boulevard includes street trees.



Cyclist on International Boulevard.



Kids ride their bicycles in the Angle Lake Station Area.

THE BICYCLE ENVIRONMENT

Figure 14 on the following page shows the existing bicycle facilities located on public streets in the city and Angle Lake Station Area. As part of the *Transportation Master Plan* update, a bicycle network is being updated, which builds on the *Draft Safe and Complete Streets Plan*.

With the Sound Transit and City of SeaTac improvements around the Station Area there will be new segments of bike lanes, shared roadways and shared use paths. The S 200th Street bike lane will connect the Des Moines Creek Trail to the Angle Lake Station Area. Bicycle facilities in SeaTac are typically designed to the 2007 King County Road Standards. In the City of SeaTac, the facilities shown on the map are defined as follows:

- **Bicycle Lanes** are delineated by painted lane markings within the pavement width of urban arterials or collector streets.
- **Bicycle Route/Shared Roadway** accommodate cyclists and motorists in the same travel lane. In some cases, an extra three feet of width is provided. Facilities in this category may also accommodate cyclists riding on the roadway shoulder.
- **Shared Use Path or Multi-Use Trail** is built for transportation and recreation purposes and accommodate a variety of non-motorized uses, including pedestrians and bicycles. Multi-use trails typically connect several destinations. Shared use paths and trails are typically a minimum of 12 feet wide.

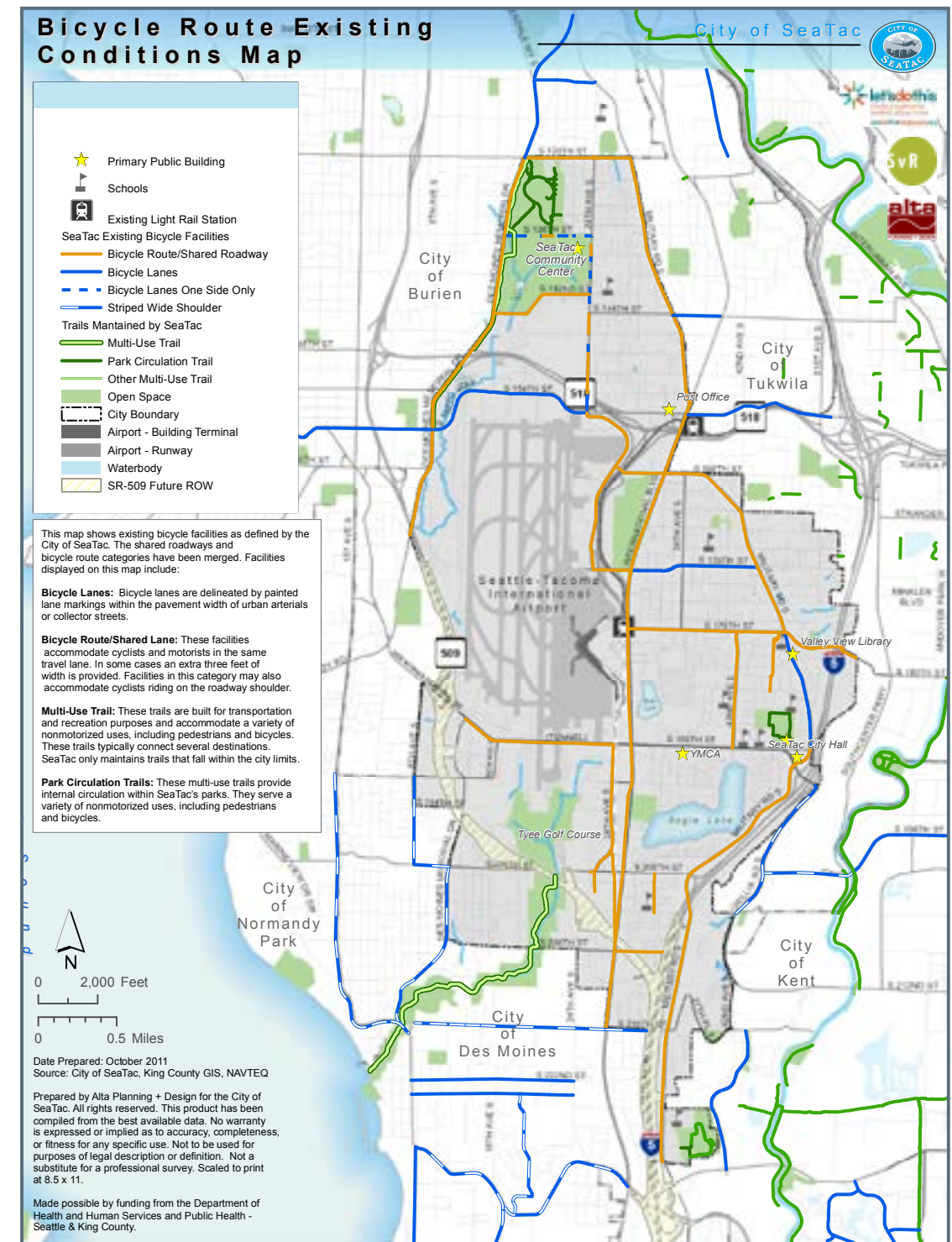


Figure 14. Bicycle Facilities in City of SeaTac. Map referenced from the 2012 Draft Safe and Complete Streets Plan

CYCLIST DESTINATIONS

When asked where people currently ride their bikes in the Station Area, the top four locations identified in the 220 questionnaires the City received were:

- Des Moines Creek Trail,
- Friends' houses,
- Madrona Elementary School and
- Angle Lake Park.

During field visits, it also became evident that International Boulevard, SeaTac's main north-south thoroughfare, is also used by commuter cyclists who ride in the shared bus/HOV lane.

TOPOGRAPHY

Except for the steep hill on S 200th Street, between the light rail station and the Des Moines Creek Trail, the Station Area is relatively flat for biking.

ALL AGES AND ABILITIES

Due to the lack of bicycle facilities in the Station Area, bicyclists of all ages and abilities are not being served. The Des Moines Creek Trail and the new shared use path being constructed as part of the Connecting 24th/28th project are facility types that serve all ages and abilities. However, these facilities currently do not connect to the areas east of International Boulevard where the majority of the residential population of the Station Area lives.



Cyclists ride in the lane with busses and HOV traffic on International Boulevard.

OPPORTUNITIES AND CONSTRAINTS

BUILDING BLOCKS FOR SUCCESS

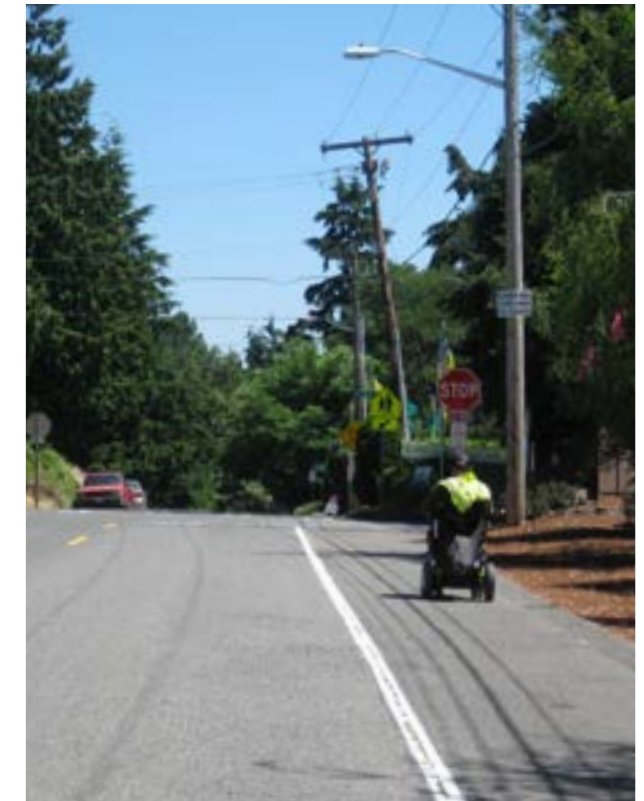
Applying the following best practices for new connections and bicycle and pedestrian facility design is recommended to further the community-supported goals and vision of the *Angle Lake Station Area Plan*. These considerations support the proposed land uses and increased connectivity through this area.

- Safety and Accessibility
- All Ages and Abilities
- Comfort
- Active Transportation.

SAFETY AND ACCESSIBILITY

Pedestrian facilities need to be safe and accessible to serve the diverse population of SeaTac. The wide range of users including employees, employers, residents and visitors need to be considered when installing non-motorized facilities.

- **Sidewalk Width/Accessibility.** As part of the outreach performed for this *Study*, the community highlighted the need for safer pedestrian facilities including wider sidewalks. These facilities should meet the current requirements for accessibility as outlined in the ADA standards.
- **Clear Path from Obstructions.** Along the roadway, pedestrians need to feel safe while walking. Their path should be clear of obstructions on the ground and above the pedestrian facility in areas where people will be moving.



Paved shoulder walkways delineate where pedestrians should travel on local streets.



Existing curb ramps with truncated domes help direct pedestrians across the intersection.

- **Visibility and Wayfinding at Intersections.** At arterial intersections, pedestrians should be directed to marked crossings that are signalized to let them know when it is safe to cross. The intersections should be clear. Drivers in vehicles should be able to see the pedestrians waiting to cross and the pedestrians should be able to see the vehicles.
- **Pavement Surfaces.** The surfaces of pedestrian facilities also need to be comfortable. The surface material needs to meet accessibility standards and be free of obstructions and well maintained so that people with limited mobility using a walker, wheelchair and even a stroller can use the pedestrian facility. Surface materials also have a significant impact on the riding experience for cyclists. Smoother pavements are more com-

fortable to ride on than large aggregate pavement or gravel paths. When bike lanes are located along the roadway, periodic street and shoulder sweeping can clean up trash/debris that can block bicycle access.

ALL AGES AND ABILITIES

- **Visibility & Agility.** Walkways, sidewalks and associated crossings need to consider the visibility and agility of all ages but especially seniors and children. Pedestrians need to be able to be seen by the vehicles and also to see the vehicles turning into and out of the roadway.
- **Signal Timing and Crossing Distances.** For vulnerable users, signal timing and crossing should be considered where feasible.

COMFORT

Pedestrian and bicycle facilities need to be comfortable for the users.

- **Places to Stop.** Strategically placed benches and leaning rails can support walking for all ages including seniors and people with children.
- **Active Edges.** Transparent, interesting, varied street edges are vital to promoting and maintaining a walkable area.
- **Street Trees** provide both a buffer for pedestrians and create passive “friction” for passing cars. They also absorb pollutants and particulate matter. Studies show that areas with a high percentage of tree canopy have better air quality.

ACTIVE TRANSPORTATION

Providing safe places for people of all ages to walk is a public health benefit. Studies show that when people live in walkable communities that provide sidewalks and other pedestrian facilities, they are healthier and are less prone to chronic disease. Many agencies and associations including Center for Disease Control, Public Health - Seattle and King County, the Urban Land Institute, and the American Planning Association have confirmed that access to active transportation opportunities the built environment is directly related to health outcomes of that community.

OPPORTUNITIES

The following opportunities will support non-motorized connections within the Angle Lake Station Area.

DEMOGRAPHIC TREND

Baby boomers, millennials and others are increasingly seeking to live in highly walkable areas that are well-connected by transit and nonmotorized networks. Additional infrastructure and funding are needed to enhance the pedestrian and bicycle infrastructure in the Station Area.

DESTINATIONS

The clustering of diverse and well-connected places to work, live and play is a hallmark of transit-oriented and complete communities. Key private and public investments focused on enhancing connectivity to existing amenities and to areas with the potential for new



The intersection at International Boulevard and S 200th Street is seven lanes across. Signal timing should take pedestrian speeds into account.



Trees can provide shade along the sidewalk for pedestrians.

destinations will help further station area development goals. As properties redevelop in the area, additional commercial and retail space will provide even more destinations. Destinations that currently draw people into the Station Area include:

- **Community Amenities.** Angle Lake Park, Des Moines Creek Trail and Park, Light Rail and Rapid Ride Stations and Madrona Elementary are existing key destinations within the Angle Lake Station Area.
- **Hotels and Office Buildings.** Many hotels and other office buildings are also destinations for people who work in the Station Area.

EXPAND LIST OF ALLOWABLE NON-MOTORIZED FACILITIES

While Sound Transit is making improvements that will better connect cyclists to the nearby Des Moines Creek Trail, the Station Area currently lacks facilities for people to ride comfortably to other places in the community. Until a more connected and citywide bicycle network is funded, people in the area will have difficulty cycling to regional and local facilities including schools, libraries, recreation opportunities, retail services and the airport. Expanding the allowed types of bicycle facilities would give more people the choice to bike to work, to transit or to other locations. The following three facilities could be allowed to support a wider range of riders. Additional definitions and resources for these facilities can be found in Appendix A.

- **Shared Streets (also called “woonerfs” or “pedestrian priority streets”)** are typically on low-volume streets where traffic is already slow and destinations are few, i.e. there will not be speeding through-traffic. A variety of traffic calming measures are important to signal to drivers that there are a different set of expectations in place. The streets are popular in mixed use areas with retail uses that activate the streetscape.
- **Neighborhood Greenways (also called “walk-bike streets”)** combine a number of non-motorized facilities – signage, traffic calming, pavement markings – to create designated, prioritized routes for walking and biking on local streets. Pioneered in Portland, Oregon, neighborhood greenways are created through modest, cost-effective interventions on existing low-volume streets. Local roads with less than 1,000 ADT (Average Daily Traffic) are typically the best candidates for this treatment.
- **Cycletracks** are bike lanes that are separated from traffic by a vertical element. This can be a vertical curb, a sidewalk, stanchions or bollards. For many cyclists, these facilities feel safer than other on-street cycling facilities. However, their installation takes up more horizontal space in a street than is often available, which is why they are relatively rare in the United States. Cycletracks can be one-way or two-way. Travel along a route is relatively straight-forward but special attention should be paid to intersections where vehicular and bicycle traffic interact.

DESIGN GUIDELINES

As part of the implementation of the *Angle Lake Station Area Plan*, SeaTac can develop additional design guidelines that can be implemented as redevelopment occurs. The 2013 *NACTO Urban Street Design Guide* include traffic calming elements that effectively encourage drivers to go the speed limit.

Washington State Department of Transportation and the Federal Highway Administration endorse the 2013 *NACTO Urban Street Design Guide*. This endorsement allows cities to design streets that support safe walking, biking and efficient transit while still being eligible for state and federal funding. Some of the ways these guidelines can help SeaTac create a walkable community around the Angle Lake Station Area are:

- **Minimize Overall Lane Width.** Reducing the number of lanes and the width of these lanes are key recommendations for reducing vehicle speeds. Additionally, the available space may be reallocated for new or improved non-motorized facilities.
- **Increase Sidewalk Widths.** Typically, the existing sidewalks meet the minimum 5-foot-wide sidewalks in the 2007 *King County Road Standards*. In order to encourage the creation of a walkable environment along the key arterials (International Boulevard, S 200th Street and 28th/26th Avenue S,) City standards should require private development to provide sidewalks wide enough to complement transit-oriented development within the Angle Lake Station Area. The 2007 *King County Road Standards* refer to an 8-foot minimum sidewalk in business districts.



Existing medians along International Boulevard do not provide pedestrian refuge.



A family walking along International Boulevard to Angle Lake Park.



The posted speed limit on International Boulevard is 40 mph.



Street trees are located in the planting strip and the median on 26th Avenue S.

- **Upgrade Accessibility of Pedestrian Crossings.** Existing pedestrian crossings should be upgraded at intersections and driveways to improve safety, accessibility and visibility for pedestrians. For example, many of the existing curb ramps are diagonal and direct pedestrians to the center of the intersection. Improvements will also provide SeaTac with the opportunity to better meet the more current ADA standards and guidelines outlined in PROWAG.
- **Lighting.** The *Station Area Plan* should provide guidance for street lighting within the area that serves both vehicles and pedestrians. Lighting should be provided down at the pedestrian and bicycle scale along the roadway and at intersections with other roadways and driveways. Along arterials, pedestrian lighting should occur at both the intersections and along the roadway.
- **Street Trees.** Street trees provide multiple benefits including air quality, stormwater interception, shade for pedestrians, buffer between the street and the buildings, habitat and an aesthetic that is appealing to most people. Studies also show that on streets lined with trees, people drive their vehicles slower. Street trees should be pruned to provide clearance for bicycles.

CONSTRAINTS

The following constraints will need to be considered as the Angle Lake Station Area redevelops:

- **Speed and Traffic Volumes.** The speed limit on International Boulevard is posted at 40 mph. Travel demand and destinations on this route, particularly Sea-Tac International Airport, currently constrain what can be done here. With over 1,000 feet between signals and three lanes of traffic in each direction, it is currently a challenging environment for both pedestrians and cyclists.
- **Bicycle Facility - Shared Locations on Arterials.** On arterials with speeds above 35 mph, bike facilities should be separated from the vehicle lanes. Ideally, the separation would be both horizontal and vertical on roads with higher speeds. The current configuration of the travel lanes and sidewalks on arterials does not allow space for most separated bicycle facilities, so some facilities are shared with vehicles.
- **All Ages and Abilities.** Inexperienced riders, families with children or people out for a leisurely ride are unlikely to bike in the street along an arterial. If they choose to ride at all, they will likely ride on low volume streets, trails or sidewalks - what is called all ages and abilities infrastructure. If these facilities are disconnected or not available, then the pool of cyclists will remain small.

BICYCLE NETWORK

Even if high quality bike facilities were installed in the Station Area, there is a limited regional and local network to connect with in SeaTac. To effectively serve the community, new facilities should also be made to encourage a combined bicycle or pedestrian access with transit.

- **Key Station Area Connections** to Des Moines Creek Trail, the Angle Lake Light Rail Station, King County RapidRide Line A, Madrona Elementary and Angle Lake Park are critical.
- **Key Regional Connections** to the adjacent cities of Des Moines, Burien, Kent and Tukwila will increase the regional access to and from SeaTac.



Existing Rapid Ride stop near S 200th Street.

LAND USE & CONNECTIVITY



Hotels and office are the predominant commercial uses within the Station Area.



Many of the buildings are set back from the roadway with parking in the front.



Airport related services are dominant within the northwest portion of the Station Area.

A key component of the *Angle Lake Station Area Plan* is an “urban design framework.” An urban design framework is basically a graphical and written illustration of how a community’s vision and policies for an area would be implemented on the ground. The two main components of the urban design framework are the types of land uses and the transportation network (both non-motorized and motorized) that best connects these people to destinations. The urban design framework and its land use and transportation connectivity components will provide the organizing principles for the *Angle Lake Station Area Plan* and its implementation strategies.

In order to get input on the community’s preferred land uses and transportation connections within the Station Area, the City conducted various outreach activities, including two urban design workshops. During these activities, the City engaged the community by asking them about the type of destinations they currently visit in the Station Area and services they would like to have close by in the future. People were also asked where they or their customers need and prefer to walk and bike.

LAND USE

Feedback from the City’s various outreach activities identified a community desire for more diverse, walkable and ground related land uses. The community coalesced around a vision of a “mixed use center” that focuses retail and other development immediately adjacent to the future light rail station. The surrounding areas would support this center with additional hotel, office and residential uses. Figure 15 shows the five sub-districts used to describe the land uses within the Angle Lake Station Area.

SUB-DISTRICT 1

The station area center where land uses concentrate people-intensive uses such as office, retail and residential.

SUB-DISTRICTS 2 AND 4

Land uses concentrate office, hotel and other commercial uses.

SUB-DISTRICT 3

Land uses concentrate residential & mixed use development.

SUB-DISTRICT 5

Land uses concentrate commercial, flex & light industrial uses.

SUB-DISTRICT 6

Land uses compatible with Port of Seattle-owned commercial redevelopment area.

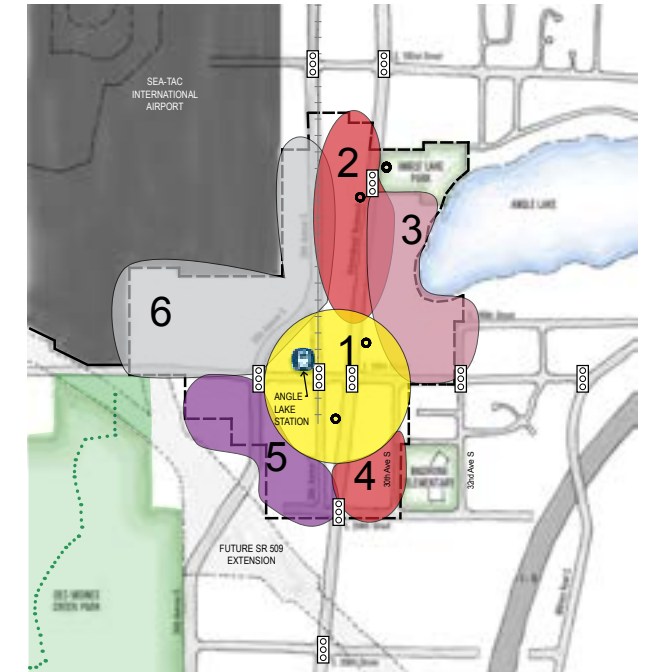


Figure 15. Angle Lake Station Area Sub-District Map.

CONNECTIVITY

Alternatives for proposed connectivity opportunities were presented to the community along with the land use recommendations to see what they preferred. Feedback from this community engagement process, and this *Study* will inform the final urban design framework that is presented in the *Station Area Plan*.

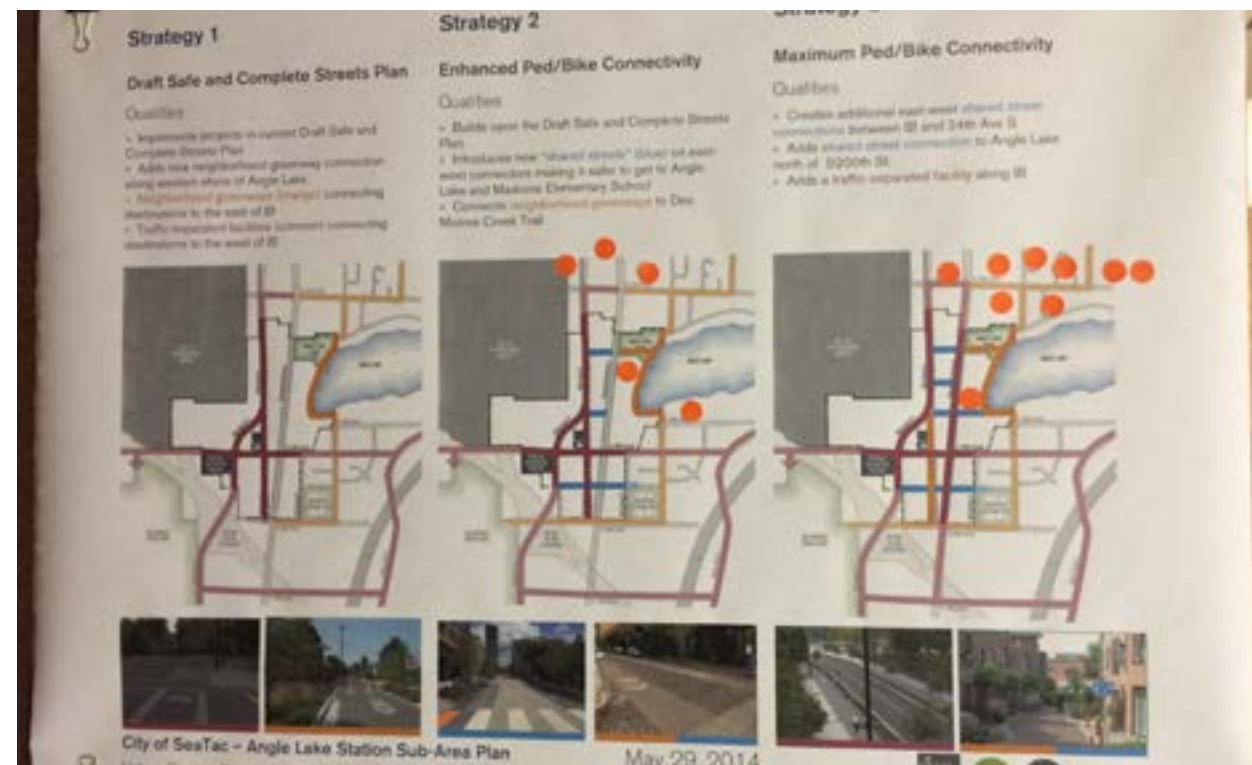
Increasing the connections within a half mile of key transit access points was included in the 2012 *Draft Safe and Complete Streets Plan*. Additionally, the 2012 *Draft Safe and Complete Streets Plan* identified that a ¼ mile grid access network supports pedestrian connectivity that would better encourage people to walk. For transit-oriented development communities,

even finer-grained pedestrian networks are recommended to encourage and accommodate people-intensive uses.

At the urban design workshops, community members clearly indicated a preference for more connections throughout the Station Area, especially across International Boulevard. In these discussions, it was noted that there are very large block sizes in the Station Area with few places to cross International Boulevard. In fact, the distance between the signalized crossings at S 200th Street and S 192nd Street (next to Angle Lake Park) is approximately 1,000 feet. This compares to block lengths in downtown Bellevue of 600 feet, and

even more walkable, transit-supportive environments where block lengths are 350 feet.

Increased connectivity, as desired by the community, supports the goal of a walkable, mixed use center within the Station Area and will be beneficial for all users in creating a safer, healthier built environment. Better connectivity can be established through increased intersection density and the establishment of a more pedestrian-scale grid rather than the superblocks that currently define the area. Though a variety of public and private partnerships will be required to meet this goal, the benefits for the area's residents and businesses from livability, environmental, economic and public health perspectives are significant.



At the May 29, 2014 urban design framework public meeting, attendees voted for options with more bicycle and pedestrian connections surrounding the Angle Lake Station.

POLICY RECOMMENDATIONS

The following are policy recommendations for increased connectivity within the Station Area, and they support the connectivity recommendations on page 34:

- **Promote and prioritize increased and improved connections within the Station Area.**
- **Encourage the enhancement of the non-motorized network at a scale to promote walking and biking in the Angle Lake Station Area.**
- **Obtain as many public access connections through superblocks at the time it is feasible.**
- **Obtain as many public access points to and along Angle Lake at the time it is feasible.**

The following best practices informed the recommendations about pedestrian and bicycle connectivity in the Angle Lake Station Area and the supporting action items identified as part of this Study.

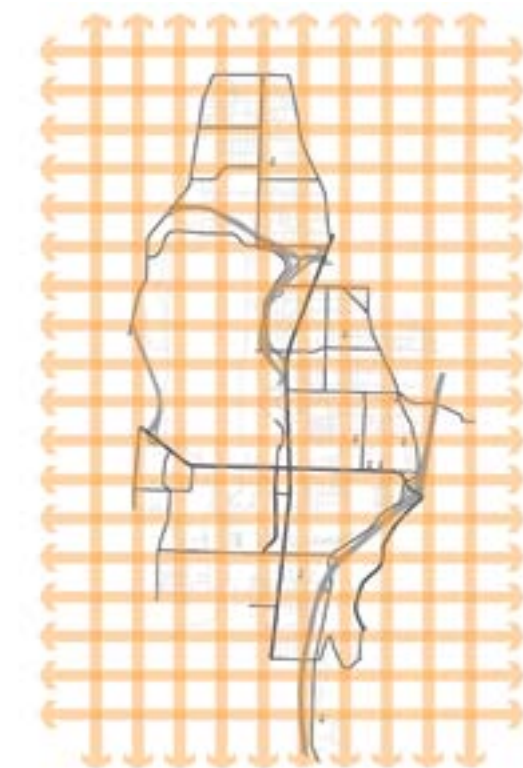


Figure 16. SeaTac 1/4-Mile Pedestrian Access Network Grid Spacing. Identified in the Draft Safe and Complete Streets Plan. Even finer grained pedestrian network recommended in Station Area.



Community members considered connectivity options and preferred making new connections through large blocks in the Angle Lake Station Area.

RECOMMENDATIONS

RECOMMENDED CONNECTIONS

Figure 17 on the following page identifies where there are opportunities to coordinate connections as properties redevelop in the Station Area and improve access in the existing public rights-of way. Key connections include:

A. NEW EAST-WEST NON-MOTORIZED CONNECTIONS BETWEEN 28TH AVENUE S AND INTERNATIONAL BOULEVARD

New non-motorized connections should be created to provide access between 28th Avenue S and International Boulevard. These connections will allow for employees, clients, customers and the community to better access businesses and services. These connections will also enhance access to Angle Lake Park and provide more access options to and from the station.

At least one of these connections should take advantage of the existing signalized crosswalk adjacent to Angle Lake Park.

B. NEW EAST-WEST ROAD BETWEEN INTERNATIONAL BOULEVARD AND 28TH AVENUE S, NORTH OF S 200TH STREET

A minimum of one new road should be created to enhance circulation to the light rail station and connect the potential Port of Seattle redevelopment area to International Boulevard. This road could connect to the potential roundabout at 26th/28th Avenue S. A new signalized intersection at International Boulevard would have to be approved with WSDOT.

C. S 202ND STREET CONNECTION TO 30TH AVENUE S

This non-motorized connection will improve the existing informal pedestrian path at this location and create a safer, more visible link between the potential redevelopment corridor on the west side of 30th Avenue S and Madrona Elementary School.

D. NEW EAST-WEST NON-MOTORIZED CONNECTIONS BETWEEN INTERNATIONAL BOULEVARD AND 30TH AVENUE S

Multiple new non-motorized connections should be created to provide access between International Boulevard and 30th Avenue S. These connections will allow for employees, clients, customers and the community to better access businesses and services.

E. NEW SHARED USE PATH ALONG WESTERN SHORE OF ANGLE LAKE

This connection will allow for an alternative north-south non-motorized connection parallel to International Boulevard. A minimum 12 foot wide connection can provide a much needed non-motorized route that serves all ages and abilities that can connect the community and businesses to Angle Lake Park. Connecting to the road end at S 198th should be considered as properties develop.

F. IMPROVE CONNECTIONS TO DES MOINES CREEK PARK AND TRAIL

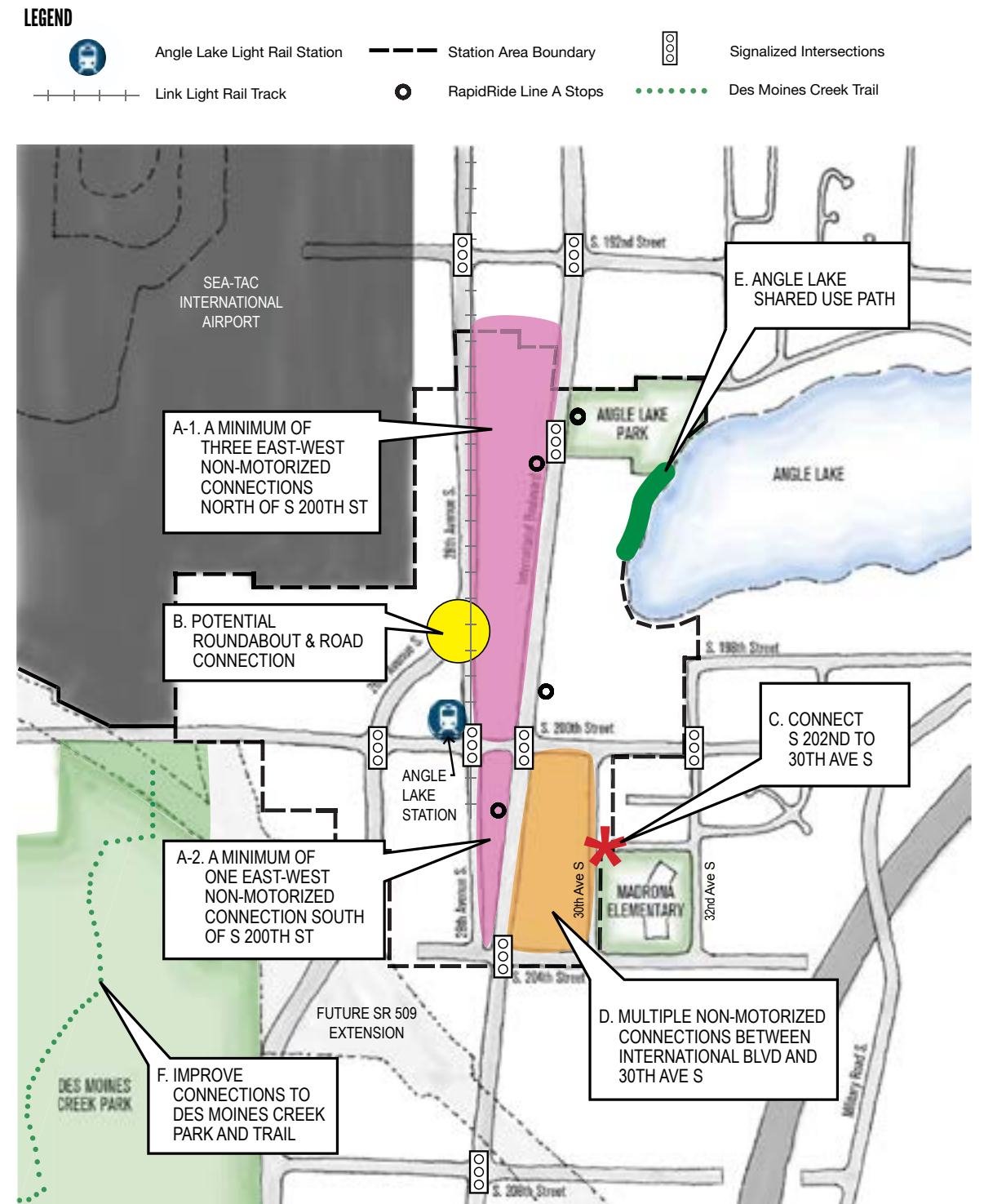


Figure 17. Angle Lake Station Area Proposed Connectivity Map.

RECOMMENDED PEDESTRIAN FACILITIES

Following the evaluation completed from this *Study* and the feedback from the community received during the outreach efforts, recommendations for pedestrian facility infrastructure and design guidelines are proposed within the Angle Lake Station Area as shown in Figure 18 on the following page.

NEW / IMPROVED PEDESTRIAN FACILITY

- **PEDESTRIAN FACILITIES ON BOTH SIDES OF ALL STREETS WITHIN THE STATION AREA**

At a minimum, every street within the Station Area should have accessible pedestrian facilities on both sides of the street. These pedestrian facilities may vary in width and surface material based on the adjacent land use and street classification.

- **INTERSECTION IMPROVEMENTS**

Intersection improvements at all arterial crossings should upgrade crosswalk markings and curb ramps to meet current accessibility guidelines and standards.

- **NEW SIGNAL ON INTERNATIONAL BOULEVARD**

A new signalized crossing north of S 200th Street will help connect 28th Avenue S to the west side of the boulevard. This crossing should be coordinated with the potential location of a roundabout at the intersection of 28th Avenue S and 26th Avenue S.

DESIGN GUIDELINES

Any pedestrian improvements in the Station Area as part of private or public projects should implement the vision and urban design framework recommended in the *Station Area Plan*.

- **SIDEWALK WIDTHS**

Increase sidewalk widths along International Boulevard and other streets within the Station Area as properties redevelop. To be consistent with SeaTac's City Center and S 154th Street Station Area, 12 feet is the minimum desired width for International Boulevard sidewalks and 8 feet is the minimum desired width for all other arterial streets within the Station Area. This is also consistent with the 2007 King County Road Standards.

- **STREET TREES**

Continue to incorporate street trees as a standard element of the sidewalk design per the SeaTac road design standards (2007 King County Road Standards). A minimum 5 foot planting strip should be provided in business districts.

- **SHARED STREETS OR NEIGHBORHOOD GREENWAYS**

As defined in Appendix A, shared streets and neighborhood greenways are two facility types appropriate to low-volume, low speed local access roads that accommodate pedestrians, bicyclists and cars and should be considered for all non-arterial streets.

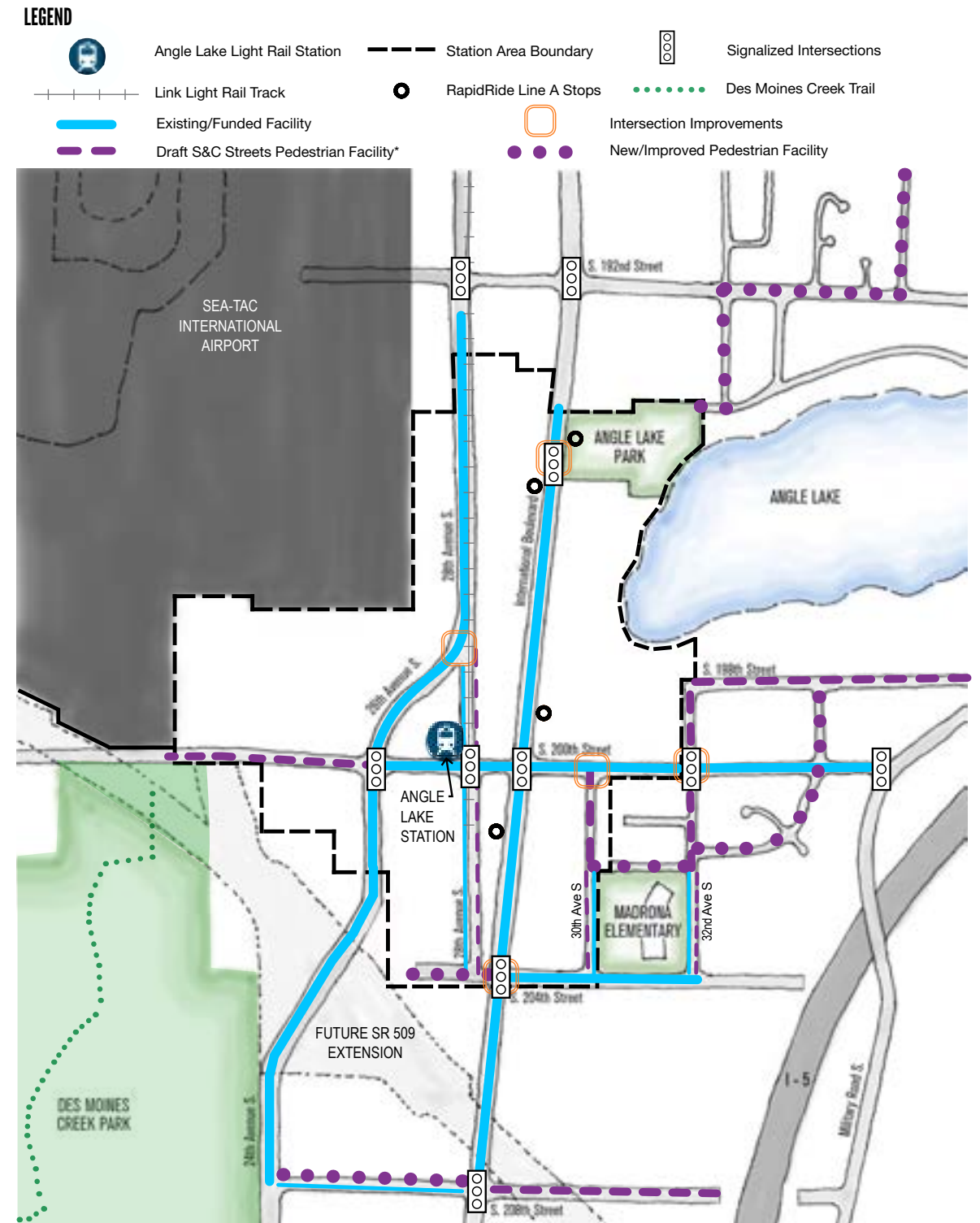


Figure 18. Angle Lake Station Area Existing and Proposed Pedestrian Facilities.

*The 2012 Draft Safe and Complete Streets Plan proposed new pedestrian facilities in these locations.

RECOMMENDED BICYCLE FACILITIES

Following the evaluation completed from this *Study* and the feedback from the community received during the outreach efforts, the following recommendations for bicycle infrastructure are proposed within the Angle Lake Station Area.

As shown on Figure 19, facility types should be provided within the Station Area to provide a bicycle network for a range of users including both commuter and novice riders. The proposed bike facilities focus on connecting bicyclists within the Station Area and also connecting to the surrounding residential areas.

PROPOSED INFRASTRUCTURE

- NON-ARTERIAL (LOCAL ACCESS STREETS) BICYCLE FACILITY - SHARED NETWORK**

It is important that some bicycle facilities be provided to accommodate all ages and abilities to promote biking for both novice and experienced riders. Shared facilities, such as shared streets, shared use paths and neighborhood greenways (as defined in Appendix A) are appropriate on low-volume, low speed local access roads that can accommodate pedestrians and bicyclists. (See “Bike Facilities Shared” on Figure 14 for recommended locations.)

- 26TH AVENUE S / 28TH AVENUE S BICYCLE FACILITY - SEPARATED**

A separated facility along 26th Avenue S/28th should provide an alternative north-south commuter route through the Station Area. This facility would be an extension of the shared use path to be constructed as part of the “Connecting 24th/28th” project.

- S 200TH STREET BICYCLE FACILITY - SEPARATED**

A separated bike facility should be provided on S 200th Street to make the east-west connections between Des Moines Creek Park, the Station Area and Military Road. These facilities need to be coordinated with future SR 509/Interstate 5 highway on-ramp access design iterations.

DESIGN GUIDELINES

Any bicycle facility improvements in the Station Area as part of private or public projects should implement the vision and urban design framework recommended in the *Station Area Plan*.

- GUIDELINES BICYCLE FACILITIES-SHARED ON LOCAL STREETS**

A network of bike facilities that accommodate all ages and abilities should be provided on all local streets. These facilities should combine a number of elements – signage, traffic calming, pavement markings – to create designated, prioritized space for biking and walking on local streets. Applying speed and volume management measures with these facilities will discourage through trips by motor vehicles while supporting the safe, convenient bicycle crossings of arterial streets.

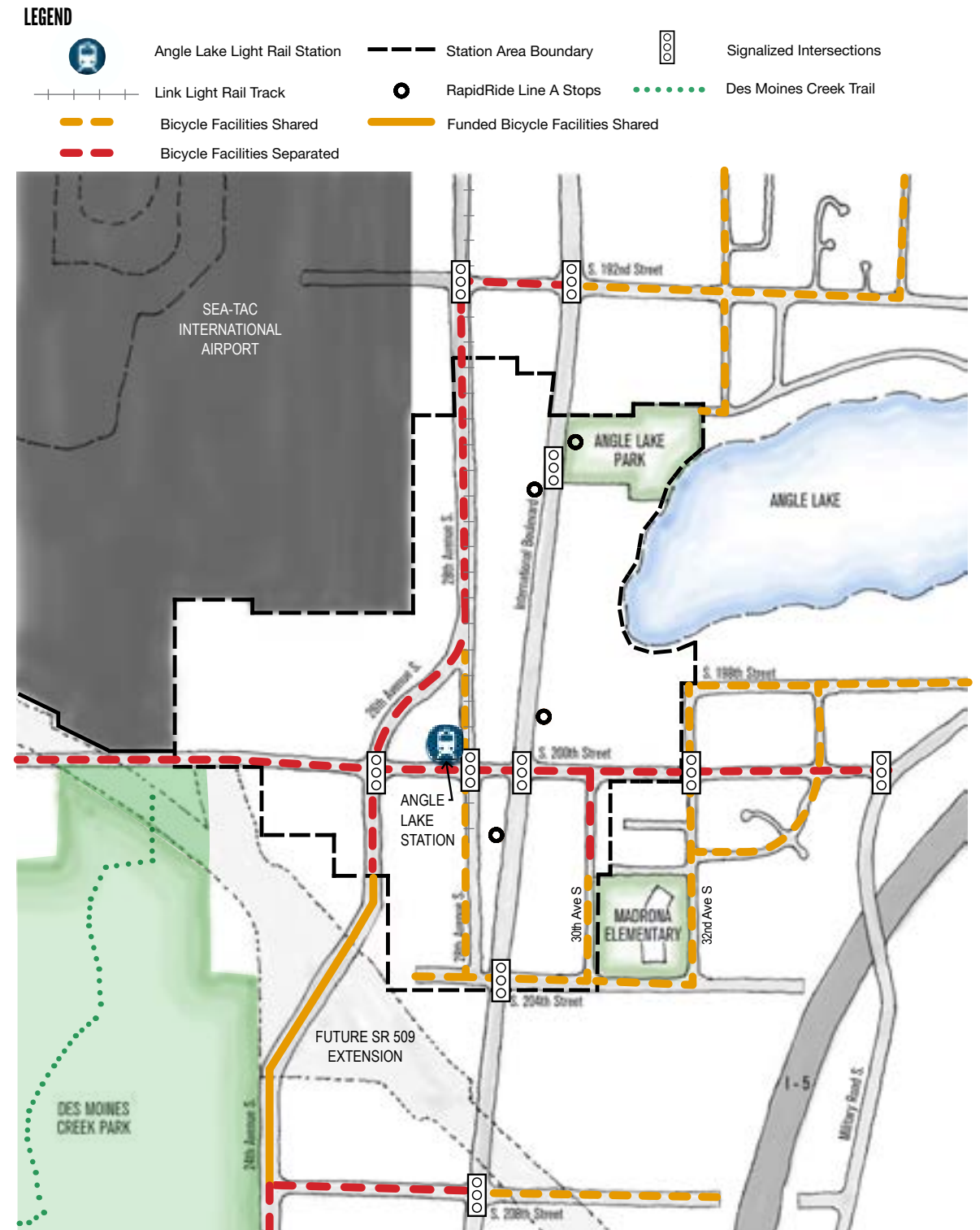


Figure 19. Angle Lake Station Area Proposed Bicycle Facilities.

RECOMMENDED ACTION ITEMS

In addition to the connectivity, pedestrian facilities and bicycle facilities recommendations, the following actions will help to further the implementation of the Angle Lake Station Area's nonmotorized network. These actions are recommended for incorporation into the *Angle Lake Station Area Plan* and the *Transportation Master Plan*.

STATION AREA PLAN

The *Angle Lake Station Area Plan* will identify key policies and strategies that will primarily be implemented through changes to the SeaTac Municipal Code and through public and private development.

- **DESIGN GUIDELINES FOR SHARED STREETS AND/OR NEIGHBORHOOD GREENWAYS**
To connect the Southeast residential neighborhood and Madrona Elementary to the light rail station, identify design guidelines for non-motorized facilities.
- **NEW CONNECTIONS**
Identify opportunities and mechanisms to acquire easement and/or dedications for non-motorized connections to break up the superblocks within the Station Area. This will increase access for employees, clients, visitors and the community.

TRANSPORTATION MASTER PLAN

The updates to the *Transportation Master Plan* will revise transportation policies and prioritize transportation improvements to serve all modes. These improvements will be implemented through the Transportation Improvement Program (TIP) and the SeaTac Municipal Code.

- **PEDESTRIAN FACILITIES**
All public streets, within the Station Area should have an accessible pedestrian facility on each side of the street and connect to accessible intersections. As identified in the *Draft Safe and Complete Streets Plan*, there are missing segments on 30th Avenue S near Madrona Elementary. Pedestrian facilities on both sides of the street along 28th Avenue South (a local access street) from S 200th Street to S 204th Street should be coordinated with the bicycle improvements along that street. This would allow for a parallel route alternative to International Boulevard.
- **BICYCLE NETWORK**
The bike facilities within the Station Area need to be integrated into a larger SeaTac bicycle network. There should be a focus on providing access from residential areas to the light rail station and the RapidRide lines along International Boulevard. In addition, the bicycle network should show what facilities are recommended outside the Station Area to make the desired regional connections.

- **IMPROVEMENTS TO S 200TH STREET**
Study the opportunity to reconfigure S 200th Street to be two lanes (one lane in each direction) with a center turn lane. Reallocate space to cyclists.
- **NEW SIGNAL ON INTERNATIONAL BOULEVARD**
Study the location for a new signal on International Boulevard between S 195th Street and S 200th Street considering adjacent land uses, transportation impacts and potential redevelopment opportunities.
- **INTERSECTION IMPROVEMENTS AT 26TH AVENUE S AND 28TH AVE S**
At this time a roundabout has been discussed as one potential facility at this location. Provide pedestrian and bicycle facilities as part of any proposed intersection improvements at this location.
- **PORT OF SEATTLE - SEA-TAC INTERNATIONAL AIRPORT ACCESS AND PROPERTY REDEVELOPMENT**
As part of the SR 509 project, airport access at the south end may also reduce traffic on International Boulevard. Additionally, the Port is studying the redevelopment potential of its commercially zoned property west of 26th Avenue S.
- **WASHINGTON STATE DEPARTMENT OF TRANSPORTATION - STATE ROUTE 509 GATEWAY PROJECT**
This project would relieve traffic congestion and improve freight mobility by completing the long-planned SR 509 corridor, which will include a new interchange at 28th and 24th Avenues south near the station.

COORDINATION OF FUTURE PROJECTS

SeaTac is currently coordinating with the following agencies on the following projects in the Station Area. As these projects move forward, there may be opportunities to leverage these projects to improve non-motorized connections within the Station Area.

- **KING COUNTY - LAKE TO SOUND TRAIL**
This project is a proposed 16-mile-long biking and walking trail that would link the shoreline of Lake Washington in Renton to the shoreline of Puget Sound in Des Moines. A portion of the trail is planned as part of SR509 and would connect to Des Moines Creek Trail on S 200th Street.

APPENDIX A: FACILITY IMPLEMENTATION TOOLS

As part of the 2012 *Draft Safe and Complete Streets Plan*, the following pedestrian and bicycle facilities were identified as applicable within the City of SeaTac.

- Sidewalks
- Trails
- Paved Walkways
- Bike Lanes
- Sharrows (or Shared Lanes)
- Cycletracks
- Neighborhood Greenways
- Shared-Use Paths
- Shared Streets

These tools have been updated to be more specific to the *Angle Lake Station Area Plan*. The references provided for each facility have been updated to include the recent NACTO guidance for urban streets and urban bike-ways.

NON-MOTORIZED FACILITIES MATRIX

On the following page, the Non-Motorized Alternative Facilities Matrix is an at-a-glance matrix that overlays land uses and street classifications to provide guidance on the types of pedestrian and bicycle facilities that would be appropriate for these spaces. This is not intended to be a prescriptive document but rather a jumping off point where a range of facility options can be considered for a single location.

The City of SeaTac's land use and transportation codes should be reviewed for specific site requirements.

HOW THE MATRIX WORKS

Pedestrian or bicycle facility options for a specific road classification can be found by matching the road classification listed in the columns on the top of the matrix with the appropriate land use/zoning designation described in the rows on the left-hand side of the table. A plus sign (+) denotes that the facility is in the 2007 *King County Road Standards* as adopted by the SeaTac Municipal Code.

NON-MOTORIZED FACILITIES MATRIX FACT SHEETS

Definitions and images are also provided for each pedestrian and bicycle facility option listed in the Matrix in order to give users of this study illustrative examples of these facilities. Where applicable, some of the images show examples where the facility has already been installed in SeaTac.

Functional Classification		Principal Arterials	Minor and Collector Arterials	Local Access Roads (Non-Arterial)	New Private Roads (Non-Arterial)
Land Use Type	Zoning				
Single-family	UL-[all sizes], MHP	Sidewalks +	Sidewalks +	Trails +	Sidewalks +
		Bike Lanes +	Bike Lanes +	Paved Walkways	Shared Streets
		Cycletracks	Cycletracks	Sidewalks +	Neighborhood Greenways
		Shared-Use Path +	Sharrows	Shared Streets	
Multi-family	UM-[all sizes] UH-[all sizes], Townhouse	Sidewalks +	Sidewalks +	Sidewalks +	Sidewalks +
		Bike Lanes +	Bike Lanes +	Shared Streets	Shared Streets
		Cycletracks	Cycletracks		
		Shared-Use Paths +	Sharrows		
Commercial	NB, O/C/MU, O/CM, CB, CB-C, AVC	Sidewalks +	Sidewalks +	Sidewalks +	Sidewalks +
		Cycletracks	Bike Lanes +	Shared Streets	Shared Streets
		Shared-Use Paths +	Sharrows		
Industrial	BP, AVB, AVO, I	Sidewalks +	Sidewalks +	Sidewalks +	Sidewalks +
		Cycletracks	Bike Lanes +		
		Shared-Use Paths +	Sharrows		

LEGEND	Pedestrian Facilities	Bike Facilities	Bike/Ped Facilities
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+ These tools are in the 2007 King County Road Standards per SeaTac Municipal Code, 11.05.100, sidewalks can be asphalt or concrete.

For facilities owned and operated by other agencies, bicycle and pedestrian connections should be made to regional shared-use paths that are located within the City of SeaTac, where appropriate. Traffic controls such as signals, markings, controls and wayfinding should be considered when implementing these facilities.



 **SIDEWALKS** +

DEFINITION AND DISCUSSION

Sidewalks are paved horizontal surfaces, typically within the public right-of-way, used for walking. Sidewalks are typically vertically separated from the roadway surface due to the need to install a curb and gutter to manage stormwater. Sidewalks must meet ADA requirements and should be designed to meet the intent of PROWAG guidelines.

Sidewalks can be constructed from a number of hard paving materials including concrete, pervious concrete, asphalt, and porous asphalt.

GUIDELINES, STANDARDS AND REFERENCES

NACTO, Urban Street Design Guide, <http://nacto.org/usdg/>

Access Board, Accessible Rights of Way: A Design Guide, <http://www.access-board.gov/provac/>

King County, 2007 Road Design and Construction Standards, <http://www.kingcounty.gov/transportation/kcdot/Roads/EngineeringServices/RoadStandards2007.aspx>



 **TRAILS** +

DEFINITION AND DISCUSSION

Trails can be a lower cost alternative to the traditional sidewalk. This facility is a hard, level surface, placed between private property and the travel lanes. Trails can be straight or can meander and can be constructed out of a number of paving materials including concrete, pervious concrete, asphalt, porous asphalt and crushed stone.

Where sidewalk installations traditionally necessitate installation of a curb and gutter to manage stormwater runoff, trails lend themselves to using other stormwater management methods, such as low impact development. Using permeable paving and bioretention facilities, trails can be installed on residential streets in a way that can help reduce project costs.

GUIDELINES, STANDARDS AND REFERENCES

Access Board, Accessible Rights of Way: A Design Guide, <http://www.access-board.gov/provac/> and Outdoor Developed Areas, <http://www.access-board.gov/outdoor/>

King County, 2007 Road Design and Construction Standards, <http://www.kingcounty.gov/transportation/kcdot/Roads/EngineeringServices/RoadStandards2007.aspx>



 **PAVED WALKWAYS**

DEFINITION AND DISCUSSION

Paved walkways are one of the most cost-effective solutions for retrofitting a walkable zone on streets that are appropriate for them: local streets in single-family neighborhoods. This strategy demarcates a hard surfaced zone and a 6 foot vertical clear space.

With the lower volume and lower speed streets within the single-family zoned areas of the City, this strategy can be very simple to implement. It is not, however, generally considered an adequate facility for streets with speeds higher than 25 mph or greater volumes than local streets.

GUIDELINES, STANDARDS AND REFERENCES

Access Board, Accessible Rights of Way: A Design Guide, <http://www.access-board.gov/prowac/>

King County, 2007 Road Design and Construction Standards, <http://www.kingcounty.gov/transportation/kcdot/Roads/EngineeringServices/RoadStandards2007.aspx>




 **BIKE LANES** +

Photo Credit: SDOT Photos on Flickr.

DEFINITION AND DISCUSSION

Bike lanes are dedicated horizontal zones within the street right-of-way that are intended solely for bicycle use. The lanes are generally placed to the right side of the roadway, between the travel lane and parked cars moving in the same direction of traffic. There is a great variety in how bike lanes have been implemented in communities around the United States including center bike lanes, contra-flow (against traffic) bike lanes and buffered bike lanes on streets with posted speeds of 35 mph or less.

Buffered bike lanes provide cyclists with a sense of security by providing larger horizontal separation between the rider and the travel lanes. Most often this is achieved with simple striping. The reduced lane width for cars slows vehicular traffic, and the greater separation for bikes increases safety for all users.

GUIDELINES, STANDARDS AND REFERENCES

NACTO, Urban Bikeway Design Guide, <http://nacto.org/cities-for-cycling/design-guide/>

AASHTO, Guide for the Development of Bicycle Facilities, 4th Edition

Access Board, Accessible Rights of Way: A Design Guide, <http://www.access-board.gov/prowac/>

King County, 2007 Road Design and Construction Standards, <http://www.kingcounty.gov/transportation/kcdot/Roads/EngineeringServices/RoadStandards2007.aspx>



SHARROWS (OR SHARED LANES)

DEFINITION AND DISCUSSION

A combination of the words “share” and “arrow,” sharrows, or shared lane markings, are being used in many situations where there is not adequate space for an on-street bike lane. The marking signals to both cyclists and drivers that the road is meant to be shared by all users.

Sharrows are typically placed on the right-hand side of a street to indicate that cyclists should ride closer to the shoulder to allow for cars to pass, when appropriate. Recent studies of the sharrow’s effectiveness have shown that cars pass at a further distance from cyclists when sharrows are present versus when they are not.

Sharrows should be implemented along with public education about the purpose of the marking.

GUIDELINES, STANDARDS AND REFERENCES

NACTO, Urban Bikeway Design Guide, <http://nacto.org/cities-for-cycling/design-guide/>

AASHTO, Guide for the Development of Bicycle Facilities, 4th Edition

Access Board, Accessible Rights of Way: A Design Guide, <http://www.access-board.gov/provac/>

FHWA, Manual on Uniform Traffic Control Devices for Streets and Highways, 2009 Edition



CYCLETRACKS

DEFINITION AND DISCUSSION

Cycletracks are bike lanes that are separated from traffic by some sort of vertical element. This can be a vertical curb, a sidewalk, stanchions or bollards. For many cyclists, these facilities feel safer than other on-street cycling facilities. However, their installation takes up more horizontal space in a street than is often available, which is why they are relatively rare.

Cycletracks can be one-way or two-way, as shown above. Travel along a route is relatively straight-forward but special attention should be paid to intersections where vehicular and bicycle traffic interact. For example, the image above provides an example of using a raised crossing to allow pedestrians to get to the transit island for loading and unloading buses.

GUIDELINES, STANDARDS AND REFERENCES

NACTO, Urban Bikeway Design Guide, <http://nacto.org/cities-for-cycling/design-guide/>

AASHTO, Guide for the Development of Bicycle Facilities, 4th Edition

Access Board, Accessible Rights of Way: A Design Guide, <http://www.access-board.gov/provac/>

King County, 2007 Road Design and Construction Standards, <http://www.kingcounty.gov/transportation/kcdot/Roads/EngineeringServices/RoadStandards2007.aspx>

Photo Credit: Dylan Passmore.



Photo Credit: ALTA Planning + Design.

NEIGHBORHOOD GREENWAYS

DEFINITION AND DISCUSSION

Neighborhood greenways combine a number of non-motorized facilities – signage, traffic calming, pavement markings – to create designated, prioritized routes for biking and walking on local streets. Pioneered in Portland, Oregon, neighborhood greenways are created through modest, low-cost interventions on existing low-volume streets. Local roads with less than 1,000 ADT (Average Daily Traffic) are typically the best candidates for this treatment.

For example, stop signs may be turned so that perpendicular cross-traffic must stop, but cyclists and joggers can travel along the neighborhood greenway unimpeded. The most intensive interventions occur where greenways cross arterials. Pedestrian signals, refuge islands, signage and other traffic control devices are used to make safe crossings.

GUIDELINES, STANDARDS AND REFERENCES

NACTO, Urban Bikeway Design Guide, <http://nacto.org/cities-for-cycling/design-guide/>

AASHTO, Guide for the Development of Bicycle Facilities, 4th Edition

Access Board, Accessible Rights of Way: A Design Guide, <http://www.access-board.gov/prowac/>

FHWA, Manual on Uniform Traffic Control Devices for Streets and Highways, 2009 Edition

Federal Way, WA Neighborhood Greenways: http://www.forterra.org/blog/federalway_greenways



SHARED-USE PATHS +

DEFINITION AND DISCUSSION

Shared-use paths – also called multi-use paths, hiker-biker trails, greenways and regional trails – are off-street facilities designed for a variety of non-motorized uses. The Des Moines Creek Trail is a local example of this type of facility.

Many shared-use paths are built on old rights-of-way – like the Burke-Gilman Trail in Seattle, which uses an old railroad grade – or share the right-of-way with other infrastructure projects, like the proposed extension of the Lake to Sound Trail, which will share the right-of-way with the SR 509 extension. The costs associated with a dedicated right-of-way means that, while popular, there are also relatively few shared-use paths.

GUIDELINES, STANDARDS AND REFERENCES

NACTO, Urban Bikeway Design Guide, <http://nacto.org/cities-for-cycling/design-guide/>

AASHTO, Guide for the Development of Bicycle Facilities, 4th Edition

Access Board, Accessible Rights of Way: A Design Guide, <http://www.access-board.gov/prowac/>

King County, 2007 Road Design and Construction Standards, <http://www.kingcounty.gov/transportation/kcdot/Roads/EngineeringServices/RoadStandards2007.aspx>



Photo Credit: CoolStreet Studios.

DEFINITION AND DISCUSSION

Whether referred to as woonerfs, festival streets or home zones, shared streets are quickly becoming a popular strategy for reclaiming the street right-of-way by signalling that cars are the guests and the street is truly designed for people. These facilities are typically on low-volume streets where traffic is already slow and destinations are few, i.e. there will not be speeding through-traffic. A variety of traffic calming measures are important to signal to drivers that there are a different set of expectations in place.

The streets are popular in mixed use areas with retail uses that activate the streetscape.

GUIDELINES, STANDARDS AND REFERENCES

NACTO, Urban Bikeway Design Guide, <http://nacto.org/cities-for-cycling/design-guide/>

Access Board, Accessible Rights of Way: A Design Guide, <http://www.access-board.gov/prowag/>

King County, 2007 Road Design and Construction Standards, <http://www.kingcounty.gov/transportation/kcdot/Roads/EngineeringServices/RoadStandards2007.aspx>

APPENDIX B: REFERENCES

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City of SeaTac. Safe and Complete Streets Plan. SeaTac, WA: Department of Planning & Community Development; Department of Health and Human Services and Public Health – Seattle & King County, 2012. <http://www.ci.seatac.wa.us/Modules/ShowDocument.aspx?documentid=5018>

City of SeaTac. S 154th Street Station Area Plan. SeaTac, WA: Department of Planning & Community Development, 2006. <http://www.ci.seatac.wa.us/index.aspx?page=583>

National Association of City Transportation Officials (NACTO). Urban Bikeway Design Guide. Washington DC: Island Press, 2014. <http://nacto.org/cities-for-cycling/design-guide/>

National Association of City Transportation Officials (NACTO). Urban Street Design Guide. Washington DC: Island Press, 2013. <http://nacto.org/usdg/>

United States Access Board. Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG). Washington, DC: Federal Register, 2011. <http://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines>

Urban Land Institute (ULI), Northwest. ULI Technical Assistance Panel Recommendations: City of SeaTac – Angle Lake Station Area Redevelopment. Seattle: ULI, 2013. <http://www.ci.seatac.wa.us/Modules/ShowDocument.aspx?documentid=8430>