



Chapter 3. Localized Recommendations by Area and Street

Hub Areas

While there are many points of access to downtown for travel from within the city, most travel to and from the larger region passes through one of four regional hub areas. These hub areas include three of the bus/LRT tunnel stations, plus Colman Dock. Peak commute service to regional destinations also operates through all of the hub areas except Colman Dock.

The University Street Station, while an important transit center in its own right, does not have the same level of regional and intermodal connections as the other stations and is therefore not included here. Convention Place Station is likewise not addressed. While some hub area functions will remain around the site of the former Convention Place Station, particularly in the form of on-street stops for regional transit, light rail will not extend into this area. (The northeast part of downtown is discussed in separate sections on each street or street-group later in this chapter. Stewart, Olive, Pike, and Pine are the key streets serving the general area of the Convention Place.)

Though we do not consider it a regional hub, Pioneer Square Station is discussed briefly below because of its future monorail connection.

The focus of this section is on three key hubs that carry the heaviest volumes of regional traffic and that are the first (or only) point of access to the downtown that one encounters when approaching by regional transit. These are:

- Westlake station area
- King St. Station and International District Station area
- Colman Dock

While this document focuses on the functionality of these hubs, it is important to remember that they become the primary gateways into the city for the majority of visitors, shoppers and commuters. Every effort should be made to ensure that they feel welcoming and safe, and that their design reflects their important role in defining the city's image.

A map of the hub areas appears on the following page.

Westlake Station Area

The character of the hub is shaped by its role as the region's densest retail center, with flagship stores and enclosed malls. The area is also near significant CBD employment. The pedestrian plaza on the east side of 4th, Pike to Pine, in many ways serves as the 'living room' of the city. This hub area already has a feeling of a pedestrian dominated realm, benefiting from narrow streets, short street crossings and high levels of pedestrian amenities.

Transit services in this Hub Area include the Westlake bus tunnel station, the existing Monorail station within Westlake Center, and the intensive on-street transit services of 2nd,

3rd, and 4th avenues and Pike and Pine streets. The Link LRT line will terminate at Westlake tunnel station, and the Green Line monorail will result in a station at 5th and Stewart.

Monorail-Tunnel Connection

Connections between the transit tunnel and the monorail at this location are crucial, and difficult. This is the logical connection point between the north end of the Monorail corridor and express destinations served from the north end of the tunnel. For example, a monorail-tunnel connection for a trip from Loyal Heights to Kirkland, or from Northgate to Seattle Center, would logically occur here at the first point of connection, since to ride any further south would be out-of-direction.

Seattle Center probably has the most to lose or gain from the design of this connection, because it already has monorail access to an ideal Westlake terminus. Since the tunnel carries the primary all-day service from Northgate, the U-District, and other Northeast Seattle points, as well as from the northern Eastside, Seattle Center relies on this connection for its access to all these areas. The current Westlake monorail station is several levels above the tunnel station but almost no horizontal distance from it. In order to provide for a continuous two-way route, the Seattle Monorail Project will replace the current facility with a station two blocks away from the tunnel. For Seattle Center, this increase in connection distance must be weighed against the value of the many additional destinations that the new Monorail will serve directly. Still, it should be cause for concern.

A connection from the 5th & Stewart Monorail station to Westlake Center's food court level is being studied, but is not definitively included in the monorail plan. This connection, accelerated by moving walkways where appropriate, is crucial to minimize the loss of connectivity for Seattle Center to northeast Seattle and Kirkland-Redmond, as well as providing Kirkland-Redmond connections for the whole 15th NW corridor. Although the city is appropriately resistant to new elevated walkways, this walkway would lie in the or near envelope of the existing monorail, so it would not constitute a new visual presence for the area, and could potentially be lighter and more transparent than the existing monorail structure.

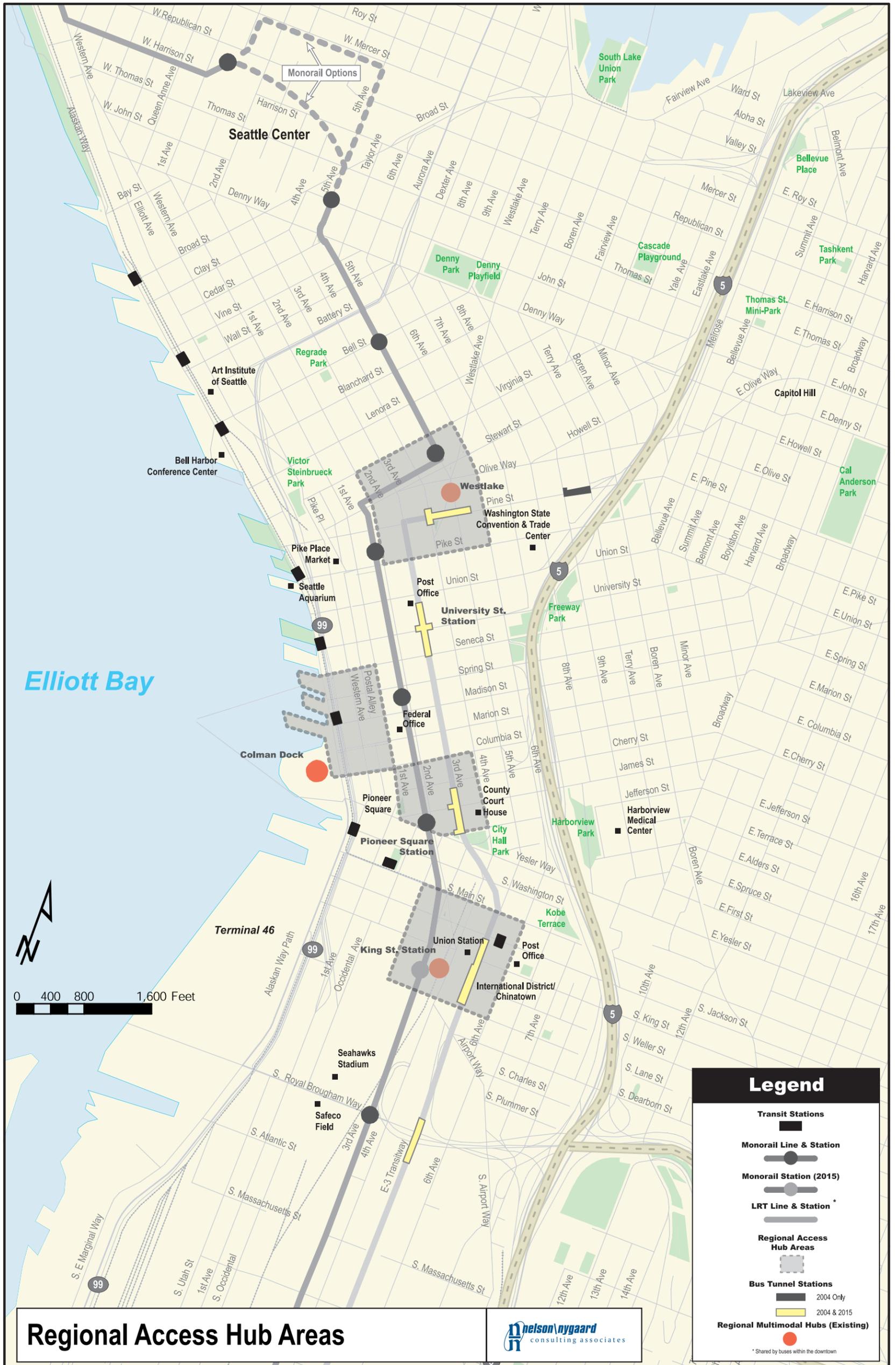
Pedestrian Area

As rail and surface transit and bicycling volumes increase, planning must focus on maintaining the current quality of the pedestrian experience. Additions of bus and bike lanes should be matched with increased levels of pedestrian amenities. Signage and enhanced urban design would strengthen connections and visually integrate the major bus street of 3rd Avenue with the plaza on 4th and the monorail station on 5th.

Bicycle Station

For cyclists, recent planning done for the Seattle Monorail Project shows high levels of demand for secure bike parking in the area. The frequency of planned rail service is likely to increase reverse commuting, which would increase bicycle parking demand. This prediction is supported by the station

Figure 3-1 Regional Access Hub Areas



Regional Access Hub Areas



peak period boarding projections of ridership of the Green Line. All day bicycle parking in this area would increase the catchment area for Westlake hub transit stations. However, the real estate and operational costs are difficult for a single transit provider to justify, and the benefits of secure bike parking like a bike station are increased if they serve a diverse market including services in the tunnel, monorail reverse commuters, and employees working in this hub area. Therefore providing a bike station in the area will require the planning and financial collaboration of transit providers, the city and possible private sector partners such as the Downtown Seattle Association or the Westlake Center.



Planters, special pavement and narrow crossings contribute to a comfortable pedestrian environment in the Westlake Center Area.

Colman Dock Area

This area provides the primary access from Kitsap County to the City Center, via Winslow and Bremerton. Non-auto ferries from Vashon Island also serve this hub area. Approximately 28,000 passengers per day use ferries in the area.¹ Other transit services in the area include the limited service of the Waterfront Streetcar, extensive bus service on 1st Avenue, and some Metro services that layover on the nearside of the dock auto exit. A monorail station is likely to be nearby at 2nd and Madison. However, there is a significant distance and elevation change to the nearest tunnel stations, with the Pioneer Square and University Street stations about equidistant from the dock. Generally, while the CBD and its transit services are geographically proximate, the grades, urban design, and viaduct increase the perceived distance and the feeling that the dock area is a separate place.

There is a strong tourist presence throughout the area, particularly to the north of the dock and west of the viaduct. South of the dock, the character is more industrial. To the east of the viaduct, one finds an eclectic mix of small retail, converted warehouses, high-rise residential and some alley-style streets.

The prominence of Colman Dock as a port of entry has often led to calls to upgrade transit connections, possibly with a dedicated CBD shuttle network or circulator that connects with ferries. However, provision of adequate transit at the dock would be difficult due to several factors:

- Autos egressing from the terminal would block transit vehicles,
- Irregular demand in conjunction with ferry arrivals and departures,
- Service would require a confusing loop route and the use of congested streets.

Proposed City Position on Ferry Development

The Colman Dock site combines pedestrian and vehicular access to the same ferries, thereby maximizing the efficiency of the boats. The disadvantage of this arrangement is that a high-value site near the center of downtown must be devoted to queuing vehicles. Even if queuing vehicles are moved offsite, as is planned, considerable roadway space and signal time must be devoted to their arrival and departure along Alaskan Way.

At a policy level, the city should support a two-pronged approach to ferry development:

- Support the growth of passenger-only ferries (accommodating bicycles but not motor vehicles) to points throughout Kitsap County and Vashon Island, where transit access and/or Park-and-Ride opportunities exist on the far side. Obvious new markets include direct ferries from Colman Dock to Kingston and Southworth, in addition to the large and established markets at Bremerton and Winslow. *Any redesign of Colman Dock must accommodate passenger-only ferries within the main facility, so that passengers depart through the same terminal area regardless of whether they use a boat that also carries cars.*
- Support the growth of auto-and-passenger ferries to non-downtown hubs, to help deflect the demand for vehicular trips from Kitsap County through downtown Seattle to other destinations in the region. The hubs that already offer vehicular alternatives to Colman Dock are Edmonds and Fauntleroy, both of which could accommodate some growth in ferry traffic, and also provide transit connections for people arriving as pedestrians. Both sites have their own constraints, and there may be reason to explore a new terminal location with better highway access.

Transit Access and Pedestrian Bridges

The Viaduct replacement project and reconstruction of the ferry terminal represents a major opportunity to address the connectivity issues in this area. An improved pedestrian bridge at Marion and a new bridge at Madison will improve the connection to the CBD in conjunction with proposed upgrades to Madison/Marion transit services. This, combined with the challenges of providing transit service to Colman Dock, points against a recommendation to either increase service on Alaskan Way or provide a shuttle service / circulator to move ferry passengers inland.

The following key actions are recommended:

- Retain and upgrade streetcar service along the waterfront, with reliable double-track service either in the Alaskan Way corridor or the adjacent Western Avenue. See the Streetcar section in the previous chapter for detailed discussion. The streetcar would also serve as the primary connection between Colman Dock and the bus/LRT tunnel for trips to and from the south, via International District Station.
- Design the new pedestrian bridge to Madison Street so that it comes out on the north side of the street, providing direct access from the Madison Street bus described in the next bullet, and also reducing by one the number of street crossings needed to reach the monorail station on 2nd Avenue.
- For expedited access between First Hill employment centers and the ferries, extend Madison-Marion trolleybus service to a new terminus at Madison & Western, and operate it every seven minutes all day (near term) and every five minutes or better by 2015. Westbound buses would drop passengers on Madison farside of 1st, where they could access a new pedestrian bridge from the north side of Madison. Buses would then layover on Madison nearside of Western. Departures would turn

¹ <http://www.downtownseattle.com/EconomicInfo/EconomicProfile/Transportation.cfm>

left on Western, left on Marion, and pick up passengers from the Marion pedestrian bridge on Marion nearside of 1st. The extension would require three new blocks of trolley wire.

- Reduce and eventually eliminate bus service to the stop adjacent to the ferry terminal on Alaskan Way. The street configuration requires this service to operate in a large one-way loop that serves different markets in the two directions, always an inefficient arrangement for transit.
- If shuttle services continue to be needed, operate them from the 1st Avenue ends of the pedestrian bridges, not from the problematic stop on Alaskan Way. There may be some residual market for shuttles timed to meet particular ferries, offering connections to major destinations within and around the core, though to the extent possible, this demand should be met by frequent regular transit service.

Colman Dock plans should consider mitigations to how the auto vehicle access and egress to the dock blocks north-south pedestrian, bike and vehicle movements on Alaskan Way for periods that often exceed two minutes. Alternatives that include holding some egressing vehicles on the dock should be explored.

Finally, the plans should strive to integrate visually Alaskan Way, the pedestrian bridges, Madison and Marion streets and the Colman Dock with strong and coordinated urban design.



Peds and cyclists wait for signal at Colman Dock

King St. Station/International District Station Area

This hub area is a transition among the places that surround it including the stadiums (southwest), Pioneer Square (northwest), Chinatown/International District (east), a somewhat unformed district to the north, and the new office development over the tunnel station between 4th and 5th avenues that “look in” at a pedestrian plaza. In the center, this area is dominated by heavy traffic as the extension of 2nd Avenue converges into 4th to form the two-way arterial 4th Avenue South.

Transit services in the area are diverse in nature, but generally long-distance focused. Light rail and express buses will use the International District tunnel station. Additional regional services operate on 4th Avenue South. At King Street Station, services include long distance intercity trains offering several trips a day and the peak-direction-only Sounder commuter rail. The Waterfront Streetcar’s southern terminus is in this area. The prominence of this hub will increase with the addition of light rail service, a Monorail Green Line station, and increased Sounder and Amtrak service. Accordingly, short- and long-term improvements are being made to King Street Station. The long-term redevelopment of Terminal 46 will also have a significant impact in expanding the role of this hub area.

Recommendations

The challenges in this hub area are to integrate future changes with one another, and to leverage these changes to integrate the areas surrounding the hub. These integrating elements can get ‘lost in the cracks’ between each project. The crucial, interrelated priorities for this area are:

- Extending the Weller pedestrian bridge to the Monorail.
- Developing a master plan for the undefined area between Yesler and Jackson Streets, roughly east of 2nd Avenue Extension. This area could be a logical site for a major bus layover/terminus facility. Conduct a study to recommend interim and long-term layover improvements in south downtown Seattle (specifically south of Pine Street and north of Lander Street) that will meet the City’s and County’s needs over the next 20 to 30 years. Bus staging and layover facilities are necessary in this area of the city to achieve cost-effective maintenance of regional and local bus services, minimize their operating budgets and improve their headways and on-time performance. The City and County are currently developing layover improvement recommendations for north downtown Seattle.
- Upgrading the pedestrian realm of 4th Avenue South, including lighting, sidewalk plantings and more and wider crosswalks.
- Providing a multi-use, non-motorized trail within Terminal 46 and across Alaskan Way, penetrating the hub area to the greatest extent possible
- Ensure that special event transit services are adequate and frequent enough to accommodate unpredictable ending times of stadium events



Heavy traffic, “Cobra-head” lights, and a great view on 4th Ave at King St. Station



Event crowds cross 4th Ave at King St. Station

Pioneer Square Station Area

This hub area is an interesting contrast of two markets. To the west, the Pioneer Square historic district is characterized by intensive tourist and retail activity and is most active on weekends. The municipal and county center to the east is an important 9-to-5 market for work and errands, but is inactive on evenings and on weekends. The Pioneer Square area is generally comfortable for pedestrians.

Current services include the tunnel station under 3rd (from Jefferson to Cherry), bus service to First Hill via James and the surface buses on 2nd, 3rd and 4th avenues. The monorail station -- planned roughly for 2nd Avenue and James Street -- will join these services.

This hub area has the potential to offer the shortest walk between a Monorail station and a tunnel (bus/LRT) station, with minimal street crossings.

The monorail and bus stations will actually sit on approximately the same horizontal plane. Absent a new pedestrian connection, however, this transfer will be more difficult than the proximity of the stations on the map implies. A monorail passenger transferring to services in the tunnel would have to descend from the James Station to the 2nd Avenue street level, walk up the grade to 3rd Avenue, and descend the two levels to the tunnel.

The feasibility and cost-effectiveness of providing a 'level transfer' are worth investigating. The city should encourage a collaborative endeavor between itself and the transit agencies to look for ways to optimize this connection.



The Monorail station near Pioneer Square will warrant streetscape and pedestrian facilities upgrades

Alaskan Way

Alaskan Way is Seattle's waterfront boulevard, offering a pedestrian promenade that is heavily used for recreation and tourism. Transit service is limited. It includes the waterfront streetcar, the limitations of which were discussed above, and limited Metro services at Colman Dock.

Alaskan Way cannot be visualized fully in the long term, because its future character will depend the decisions made concerning the Alaskan Way Viaduct. Clearly, though, the goal is to retain and enhance the qualities of this street as a pedestrian promenade and tourist destination, while also accommodating the operations of Colman Dock (discussed under "Hub Areas" above).

Streetcar Needs

Streetcar concepts are discussed in detail in the "Streetcar" section of Chapter 2. The bottom line for Alaskan Way is that the street must be planned to accommodate *one* of the following:

- A new double-track alignment on *Western* between Yesler and Union (extending south via Yesler, Occidental to the existing line), or
- Double-track in exclusive right-of-way adjacent to Alaskan Way, or in its median, at least between Main and Union, so that there is no physical limitation on Streetcar frequencies. If the Streetcar is to remain on the waterfront, full double-tracking is crucial because:
 - Demand is likely to vary significantly by season, and also be affected by special events all along the route, including at the stadiums. The Streetcar must be able to add service to meet high demand if it is to be relevant to mobility in this corridor. This is only possible with full double-track
 - Reliability is difficult to maintain in mixed flow traffic, and impossible to maintain on a single-track. While operations in mixed flow are possible where projected traffic volumes are not great, as on Westlake, Alaskan Way will be a busy street under any scenario, and could be severely congested in the surface boulevard scenario for the Viaduct.
 - Regardless of the future configuration of Colman Dock, vehicle egresses from ferries are likely to continue to cause long delays on Alaskan Way in this area -- and the Streetcar cannot operate reliably if exposed to these delays.

Transit Access to North End

The northern reaches of Alaskan Way are the site of many recent major hotel and residential developments that generate transit demand. The Streetcar can be made relevant for access to these developments from the south, but access from the east, to the adjacent part of downtown or the downtown core, remains problematic. The 1998 Downtown Circulation Study proposed an Alaskan Way bus route that would turn inland at the north and connect with 3rd Avenue. Unfortunately, this is not practical because of the extreme and unpredictable delays caused by the BNRR grade crossings on all available streets. This rail line, used by all freight trains from Seattle to all points north or east, can generate delays of 10 minutes or more, making high-frequency circulator service impossible.

Instead, we recommend using the northern terminus of frequent bus routes from the south to serve this area via a new turnaround. This turnaround (shown in detail in the Transit map of the previous chapter) would provide service to stops along the water side of Elliott Way between Battery and Broad. This is as close as transit from the east can get to

Alaskan Way without encountering unacceptable delays.

Multi-Way Boulevard

This plan suggests that street cross-sections of Alaskan Way under either replacement scenario include waterfront-side where slow moving vehicles, loading and parking can be accommodated. Access lanes would be separated from through lanes with a planted median, and while vehicles would operate in the access lanes, the area would be designed to operate as part of the pedestrian realm.

Multi-Use Path

Preliminary cross sections developed as part of the Viaduct replacement planning suggest eliminating the informal and somewhat problematic off-street trail used by many bicyclists, and replacing it with traditional on-street bike lanes between the loading lane and through vehicle lanes.

It is the strong recommendation of this plan, however, that provision of a multi-use path (also called greenways) focused on bicycle use be part of the reconstruction of Alaskan Way. A greenway provides a considerably higher-quality experience for cyclists than bike lanes. Rationales for a multi-use path along the waterfront include:

- Colman Dock on Alaskan Way is the most prominent point-of-entry to the City Center for bicyclists. (Of all cyclists counted at 29 prominent locations in the city in the morning peak, 14% were counted at the ferry terminal.)
- A greenway would extend the high-quality service provided by the Elliot Bay Trail to the City Center
- Greenways are shown to increase cycling, including for commute purpose among persons not typically disposed to non-recreational biking²
- A greenway on the waterfront would have minimal vehicle crossings and provide visual and physical access to some of Seattle's most significant natural amenities, right from the City Center
- Urban recreational amenities like greenways support downtown residential redevelopment

The challenge cited in support of the current on-street bike lane proposal is the difficulty in managing conflicts between fast-moving cyclists and waterfront pedestrians, who are typically tourists. In cities ranging from Vancouver to New York, waterfront roadway re-constructions have incorporated greenways and met this challenge using an array of design techniques.

Pedestrian Crossings

Pedestrians will need to easily cross Alaskan Way. Under both reconstruction scenarios, the redesigned Alaskan Way should maintain the narrowest cross-section of fast moving travel lanes as possible. Increases in vehicle volumes will require an increase in the number of signal-controlled crossings. The use of pedestrian push buttons should be limited if used at all, and traffic signal cycle lengths should be as short as is feasible. Other prominent crossings of Alaskan Way, such as University, Madison, and future crossings to Terminal 46 should be considered for 'upgrading' with treatments like those at Pine. Lighting should be pedestrian oriented.

² In New York City, the few years old Hudson River Greenway saw a 500% increase in cycling from 2000 to 2001 (New York City Department of City Planning)

Notes for Viaduct Replacement Construction Planning

During the construction of the replacement for the Viaduct, the potential for economically severe construction impacts must not be taken lightly. Small businesses operating in the various piers may not survive a year in which Alaskan Way is too unpleasant for pedestrian life, regardless of how wonderful things will be when the project is done. This is a typical challenge for any major project in such a sensitive area.

From a transportation perspective, we recommend that construction activities for any Viaduct replacement put a high priority on the following:

- Keep the pedestrian bridge at Marion open at all times. If it must be closed, construct and open the Madison bridge before closing the Marion bridge. Direct pedestrian access from Colman Dock to 1st Avenue is crucial because bus transit simply cannot get to an Alaskan Way stop at Colman Dock efficiently in a logical routing. This is true today, and is likely to be even more so during construction.
- Retain pedestrian crossings, with good signage, at the major crossing points that are already improved, and that are already lined with businesses depending on pedestrian traffic. The most important of these are University Street and Pike Hillclimb.
- If a Western Avenue alignment for the Streetcar is chosen south of Union, minimize impacts on the Streetcar as it crosses over to Alaskan Way at Union. A major purpose of a Western alignment for the streetcar would be to minimize the overlap between the Streetcar and the Viaduct construction zone, and also to provide room for the other features of Alaskan Way recommended above. For this alignment to be viable, the Streetcar must be able to cross the construction zone along Union and proceed north along Alaskan Way in its current alignment, with as few construction-related shutdowns as can be managed.



The Pike pedestrian-only crossing of Alaskan Way is as wide as a full street



The current trail on Alaskan is too narrow and clogs with pedestrians, but it is a rare, off-street facility for bikes near major attractions



On Alaskan Way at Yesler, the narrow cross section for vehicles allows for easy pedestrian crossings.

North-South Avenues

Western Avenue

Overview

Currently there are no transit services along Western Avenue. Its character varies throughout the City Center. North of Blanchard, Western is one-way northbound for traffic from the Viaduct ramp to Queen Anne and the 15th Avenue West corridor. From Blanchard and Pike, Western functions as a frontage street through Pike Place Market and is congested with local trips. Between Pike and Marion, Western descends, passing under the Marion Street pedestrian bridge. Land uses are an eclectic mix of retail, office and residential, mostly in historic buildings, many of which function as a backside to buildings on 1st Avenue and Alaskan Way. This function and the historic architecture continues south of Marion as Western levels out, but commercially Western is secondary to 1st Avenue.

Streetcar Alternatives

Western Avenue is a possible alternative alignment for the Waterfront Streetcar between Union and Yesler, one that could potentially remain in operation during Viaduct construction. This would be a double-track segment mixed with traffic, and presumes a Viaduct replacement configuration that would not substantially increase traffic volumes on Western.

As the only street climbing the waterfront bluff within the Streetcar's grade limitation, Western is also a possible alignment for a Streetcar branch that would climb the hill from Union to Blanchard, where it would transition to 1st Avenue and follow one of several possible routes to connect with the South Lake Union Line. See the Streetcar section of Chapter 2 for more detail.

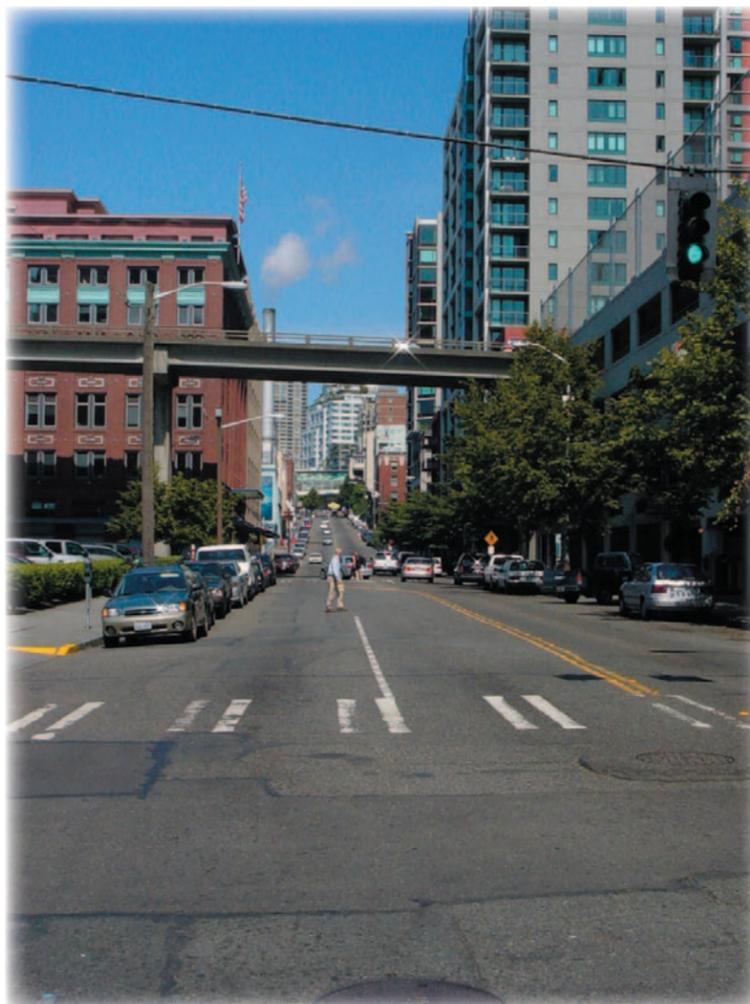
Bicycle Needs

Western is a popular alternative to Alaskan Way for bicyclists. Assuming a high quality multi-use path on Alaskan Way, the increase in traffic and the addition of the streetcar would not decrease the level of service for bikes along the waterfront. For pedestrians, as retail and sidewalk cafes sprout on Western, amenity levels should increase.

The gentle grade that makes Western a viable hillclimb route for a streetcar also makes it attractive for cycling. Any streetcar design for Western Avenue should include careful design to minimize the bicycle hazard associated with rails in the street.



The growing pedestrian orientation of Western Avenue would be well served by the Waterfront Streetcar.



Western's gentle climb up the Waterfront bluff makes it ideal for creating a useful streetcar network.

1st Avenue

One of the city's most prominent streets, 1st Avenue serves three of Seattle's famous recreation and tourism centers – Seattle Center, Pike Place Market and Pioneer Square -- all of which are highly valued by residents. 1st Avenue offers nearly continuous street-level small-scale retail from Pioneer Square to north of Pike Street, although the pedestrian environment varies primarily due to the presence, or lack thereof, of a tree-lined median. In Belltown, the character, though not yet continuous, is of high-rise residential over retail. King County Metro offers frequent bus services that are mostly oriented toward Ballard/Magnolia in the north and West Seattle in the south, but most of these services are expected to be replaced, in their downtown segments, by the Green Line Monorail, permitting 1st Avenue transit to be rethought.

At Marion Street, 1st Avenue provides the only level access for pedestrians between Colman Dock and downtown. An additional level crossing is planned at Madison. The stairway-park on the east side of 1st just north of Madison will then complete an attractive pedestrian route between the Monorail and Colman Dock. Meanwhile, transit along 1st will be useful for distributing ferry riders to destinations north and south, including the Pike Market and King St Station areas, as well as the stadiums.

The vision for 1st Avenue is to enhance its role as a "Community Main Street" for Lower Queen Anne, Belltown, and the emerging residential district south of Pike Market, while also being a key corridor of tourist activity.

Transit

Two options exist for transit on 1st Avenue. One is that the Streetcar on Western, with the addition of a branch covering 1st from Broad St. north to Lower Queen Anne, would be the primary transit service. This is not ideal in the Pike Market area, where 1st is at a significantly higher grade than Western, but there will be some overlap of the markets in any case.

The other option for transit on 1st is a locally-oriented, intra-downtown transit service with high frequency (no worse than every 7 minutes, except late at night). A continuous route

would begin at Lower Queen Anne/Seattle Center and run through Pioneer Square to Jackson, then turn east to connect with the spine and multimodal hub at King St. Station. Transit would continue to operate in mixed-flow and thus would be slower than on 3rd Avenue. This overall slow movement of vehicle traffic reflects the focus of this street on the pedestrian experience and the fine-grained, street level retail. Transit signal priority would help maintain bus schedules, especially in the congested southern segment. Bus bulbs with attractive and informative shelters will keep buses from being forced to re-merge into the flow of traffic, and add pedestrian space.

It is important that 1st Avenue operate as an electric bus service since the start-and-stop of diesel vehicles would detract from the 'Main Street' feel. Battery-powered buses may eventually be available for this application, though they would need to recharge at the end of each trip and are currently too small for the potential demand. Implementing the 1st Avenue plan for transit would involve adding a short segment of trolley-bus infrastructure, from Broad to Lenora.

Pedestrians and Bicycles

On many corners that do not already have bus bulbs, curb extensions for pedestrians are appropriate. They are possible due to curb parking and because few buses, trucks or other large vehicles make turns onto westbound streets. Pedestrian amenities like landscaping and pedestrian-scaled lighting should be expanded, and wayfinding signage could also serve to inform pedestrians of the commercial services along the avenue. For bicyclists, the moderate pace of traffic will

make 1st Avenue comfortable for many. Because of the retail presence, bike amenities should be focused on providing a high, dispersed supply of 'short-term' parking, i.e. sidewalk racks. Reconfiguring 1st Avenue with a planted median would allow the creation of a northbound bicycle lane as a complement to the southbound lane a block east on 2nd Avenue.

Overall Street Management

It is important to maintain all-day on-street parking on 1st Avenue for the benefit of the street's retail services. Pricing, time, and other restrictions should be used to prioritize short-term users and commercial loading. To the extent possible, commercial loading should be moved to alleys and side streets to prevent double parking.

Median

Finally, the 'Main Street' feel of 1st Avenue south of Pine would be greatly enhanced by the tree-lined median. The current unbalanced cross-section on many parts of 1st Avenue north of Yesler --two northbound through lanes, one southbound-- can be reallocated to one through lane in each direction with left-turn pockets. This will benefit through movements by increasing the space for left turn queuing – reducing waits for through movement – and create the opportunity to extend the planted median northward.

Figure 3-2 shows a section drawing of 1st Avenue integrating the above ideas.

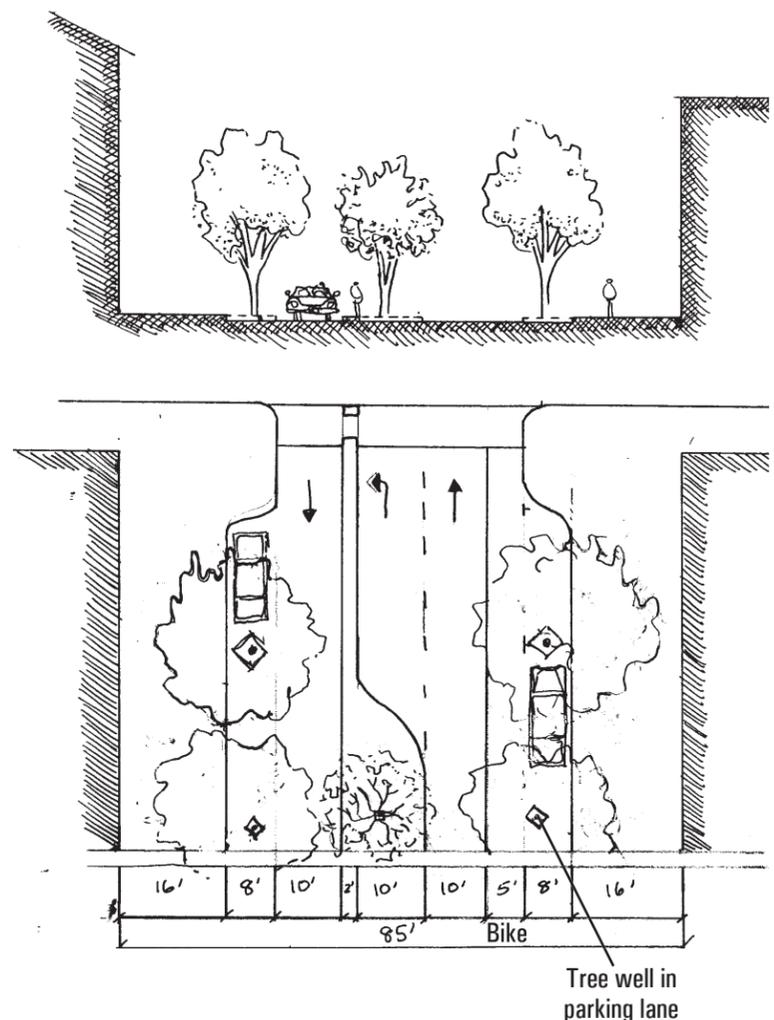


The tree-lined median south of Yesler generates the 'Main Street' feel of 1st Avenue.



Reconfiguring 1st Avenue to add extend the planted median and pedestrian-scaled lighting would enhance 1st Avenue's role as the main street to Seattle's main attractions.

Figure 3-2 1st Avenue — Conceptual Plan & Cross-Section



3rd Avenue

Existing Condition and Current Plans

Traffic generally moves slowly along 3rd Avenue. The street offers considerable street level retail, but not central to any particular district, as does 1st Avenue in Pioneer Square or 4th Avenue around Westlake Center. Along with the bus tunnel under 3rd Avenue, surface transit operates at extremely high frequency from Blanchard Street to James Street. For most of the day, the next bus is always in sight in both directions. Most Metro services within the city operate on 3rd Avenue, with West Seattle and northwest services, which operate on 1st Avenue, being exceptions.

The Tunnel Closure Mitigation plan will introduce significant changes in 3rd Avenue, possibly as early as 2005. The plan would close the street to general traffic in peak-periods except for right-turn-in, right-turn-out access, from Yesler Street to Stewart Street. The plan creates a continuous transit-only lane with a separate transit-stopping lane every other block. During off-peak hours, autos would be allowed to share this lane.

Vision: The Transit Spine

Building on current infrastructure and the Tunnel Closure Mitigation Plan, 3rd Avenue is the logical street to become downtown's "Transit Spine," the backbone of the transit circulation network. Most frequent all-day transit routes would be consolidated on the street, leading to high-frequency, all-day service where you can always see the next bus coming. High-frequency all-day express routes would operate beneath the street in the transit tunnel. The case for defining 3rd as the main transit street is presented in Chapter 2. As part of the process of defining 3rd as a transit street, 2nd/4th would be defined as primarily auto streets, except for certain lanes during peak hours.

Transit Priorities on Third

The long-term estimates for bus volumes indicate that the transit priority treatments envisioned in the Tunnel Mitigation program should be made permanent, which means that they can be reflected in a redesign of the street to an extent that would not be appropriate if this were merely a construction mitigation. These changes are below what will be needed to accommodate future bus volumes.

Guiding Policy: Transit Operating Speed

- Buses should be able to operate through downtown on this street at a minimum average of 9 mph, including all stops and other sources of delay. Most other provisions of the street would follow from this, including:
 - Extent of the peak period in which autos are prohibited in the center lane.
 - Signal timing set to accommodate transit travel time, including stops, rather than focused solely on auto travel time.
 - Stop spacing (already planned to be four blocks, the maximum reasonable spacing for local access).

Physical Description of the Reconfigured Street

Third Street's cross-section would consist of four wide lanes with no center turn-lane. All remaining right-of-way would be dedicated to generous sidewalks.

The inside lane would be a continuous through lane for transit buses, with autos permitted only at times and in ways that do not impede transit. The outside or right-hand lane and sidewalks would alternate between two types of character, depending on the one-way pattern of the intersecting streets:

- **Approaching a street that is one-way to the right:** The right hand lane would be available to automobiles. During peak operations, this lane would be accessible only via the cross street at the beginning of the block, and traffic would be forced to turn right again on the street at the end of the block. Most pull-outs for delivery purposes are already in these blocks, and these would continue to be functional at all hours. Pullouts should be expanded to the degree that taxis can also use them, minimizing the need to stop in the auto lane (which in turn would push autos in to the transit lane). No parking would be provided. Except at the delivery pull-outs, a low, permanent landscaping buffer would separate pedestrians from the street.
- **Approaching a street that is one-way to the left:** The right hand lane would be exclusively for buses serving stops in this block. Sidewalks would be widened and landscaped to facilitate access to buses -- typically without landscaped barriers unless these create useful channels that align with bus doors.

Left Turn Prohibition

Even if automobiles are permitted in the through-lane, all left turns off of 3rd must be prohibited at all hours to ensure that the auto flow (between Cedar and James) is continuous and does not block operations in the through-lane. Any motorist wanting to turn left must be directed to make three right turns starting at the next block, thus looping back via 4th (if northbound) or 2nd (if southbound). Signage should provide clear direction on how to do this, and should make clear that no left turns are permitted anywhere on 3rd through downtown.

Extent of "Spine" Treatment

Currently, 3rd Avenue carries its most intense traffic south of Pike Street, because major routes turn off onto Pike/Pine and Stewart/Virginia. North of Virginia, bus volumes are substantially lower.

The recommended downtown route structure (see chapter 2) changes this arrangement so that any bus running on 3rd would use the street continuously between Blanchard and James, with most continuing north as far as Cedar. The recommended design of the street, as described above, would generally extend from Cedar to Yesler. (Southbound, James would be the first street at which left-turns are permitted, so long as major bus routes are turning here).

Between Blanchard and James all routes operating perpendicular to 3rd will cross 3rd rather than turn onto it. This will both improve the throughput of the avenue and provide certainty to persons in the downtown area that any bus on 3rd Avenue is going to take them where they expect. A person dining in Belltown, for example, will know that all she needs to do to get to her show at Pioneer Square is find any bus on 3rd. Given this profile, downtown area maps can be drawn with a bold line *all* along 3rd Avenue. The skip-stop service pattern can be reflected graphically in detailed maps, for example using filled and unfilled circles to denote skip stops.³ Fully implemented, 3rd Avenue could potentially carry about 250 buses per hour per direction.

Character of Third

Since 3rd Avenue will carry more people than any other street in Seattle, special attention should be paid to its character, and a detailed urban design and economic development study is recommended. Similar to major transit streets in

³ Unfortunately, bus stops are rarely shown on bus maps and other maps showing bus routes, even when 'zoomed' enough to do so.

cities such as Denver or Portland, 3rd should be the home of major attractors such as department stores, hotels and civic buildings, as well as convenience retail such as drug stores and dry cleaners.

Pedestrians and Bicyclists

The challenge in planning for pedestrians on 3rd Avenue is providing a high quality environment – necessitated by the fine-grained front doors of the street, and high volumes of people walking to and from transit stops – on a street processing as many as four buses per minute in each direction. This can be accomplished by providing a well-designed curb-to-building environment with high quality, attractive pedestrian and transit user amenities. Bollards, planters and street trees can be used to mimic the buffer from moving vehicles typically provided by curb parking. Therefore, it is imperative that the bus-vehicle vision for 3rd Avenue be accompanied by implementation of significant urban design improvements.



Transit priority on the 3rd Avenue ‘Transit Spine’ would allow buses to pass one another without merging with mixed-traffic

Improving accommodation of bicyclists on 3rd Avenue means both an increase in on-sidewalk, short-term parking (via racks) for retail trips, and in-building, secure all-day bike parking for commuters around high-rise office development– as provided at the new Bicycle Station at 3rd Avenue and Main Street. While bicyclists are likely to use the lanes provided on 2nd and 4th Avenue, the overall lower vehicle volumes and speeds on 3rd Avenue will mean that bicyclists will not be unwelcome on the street.



The Portland Bus Mall provides a comparable level of service as would the 3rd Avenue ‘Transit Spine’



On 2nd and 4th Avenues buses merge with mixed traffic to pass buses loading passengers

2nd and 4th Avenues Existing Conditions

For motorists, 2nd and 4th avenues are the fastest north-south streets for traversing central downtown. This should continue to be the case in the future.

Despite their two-block separation, southbound 2nd Avenue and northbound 4th Avenue operate as a couplet. At the south end of downtown, they converge into the two-way 4th Avenue South. At the north end, their traffic dissipates along several routes, and the streets themselves end, somewhat awkwardly, at Denny.

In peak periods, the curb parking lane is converted to bus use. The cumulative volume of peak-only services provided by Sound Transit, Community Transit and Metro along these streets means buses are typically using two lanes – the curb lane for boarding and alighting and the adjacent mixed flow lane for passing stopped buses. Outside of the peak from about Blanchard to the south end of the City Center, transit services operate at 15-minute cumulative frequencies or better.

From Denny Street to Main Street, 2nd Avenue offers a southbound-only bicycle lane. The Green Line will operate on either the east or west side of 2nd Avenue, from Stewart Street to King Street Station.

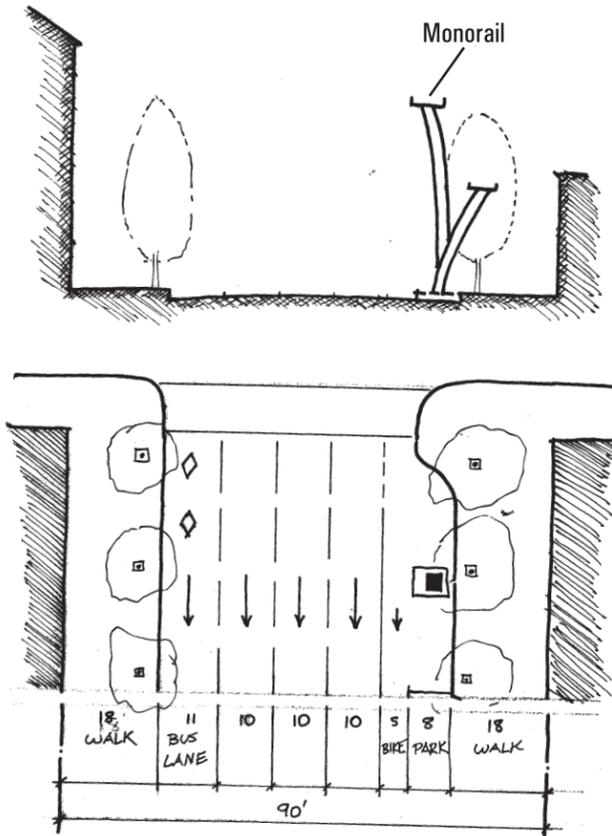
Vision

Similar to their current function, these two avenues would work as a high capacity couplet (2nd southbound, 4th northbound), providing a fast “through and to” route for private vehicles, peak-oriented bus transit, and bicycles.

Transit. 2nd and 4th Avenues would be managed to carry regional commuter express buses that run mainly during peak hours, though even midday service would be every 15 minutes or better, at least south of Stewart/Olive. Transit should be able to achieve an average speed of 9 mph along this street.

These avenues provide parallel peak-hour transit capacity to complement the all-day capacity of 3rd Avenue – in essence, a ‘thickening’ of the spine when demand warrants it. This would entail preserving the current peak-period restrictions on curb parking on the right-hand sides of the streets. In addition, as demand grows, a second lane adjacent to the curb lane would be reserved for buses – allowing a moving bus to pass stopped buses without having to merge into mixed flow conditions. In off-peak periods, the second lane would become a mixed-flow lane, while the right hand lane would become a parking lane except where there are bus stops, or in the half-block preceding a legal right turn. (Actual traffic volumes would dictate the length of the lane for right-turning traffic.) As on 3rd Avenue, bus stops would be located only in the blocks that end with a street that is one-way to the left,

Figure 3-3 2nd Avenue -- Conceptual Plan & Cross-Section



so as to eliminate the difficult interface between autos turning right and buses exiting a bus stop. Figures 3-3 and 3-4 show conceptual sections for these streets.

2nd Avenue Monorail's Impact on Transit

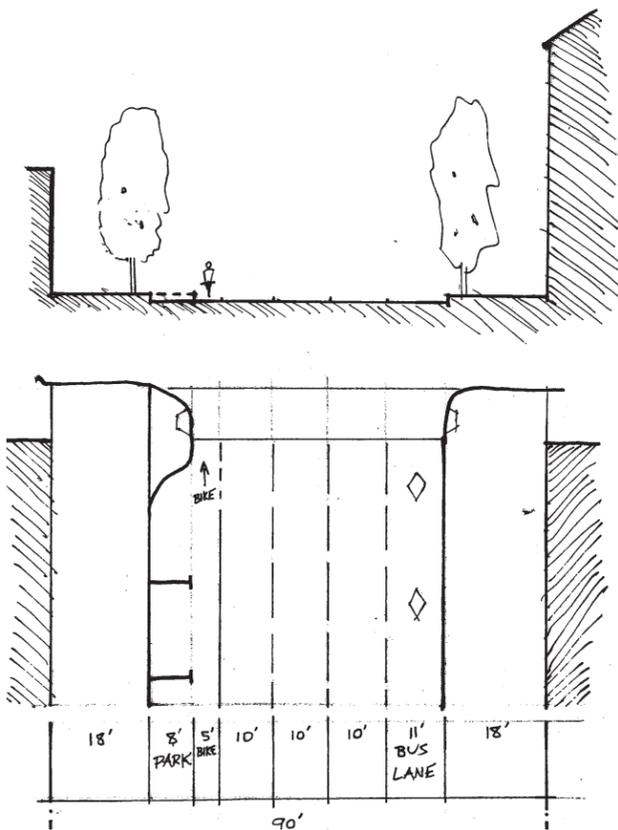
West-side bus lanes can be accommodated with any of the three potential monorail alignments on 2nd Avenue – west-side, east-side and center. An east side monorail alignment provides a slight advantage to bus transit in that monorail columns will not interfere with bus loading and unloading. Other considerations, such as urban design, real estate and bike lane accommodation, will likely outweigh bus accommodation in determining the preferred monorail alignment.

Pedestrians and Bicyclists

It is important that the monorail and future bus transit facilities do not come at the expense of the 2nd Avenue bike lane. Preliminary examination of the typical cross-section of 2nd indicates that preservation should be feasible except in the center alignment for the monorail. On 4th Avenue, a bike lane would provide a key northbound route through and to downtown, closing a gap in the bicycle network.

Pedestrian use of these avenues is high, and will increase along with the growth in transit service (both monorail and bus). A concern for pedestrians along 2nd and 4th is the proximity of moving buses to the sidewalk in peak periods. Narrow pedestrian bollards should be used close to the curb line on the sidewalk, as well as increased tree planting in some areas, to visually and physically protect pedestrians from moving vehicles.

Figure 3-4 4th Avenue -- Conceptual Plan & Cross-Section



Overall Street Management

Similar to current operations, parking would be allowed on the bus lane side at off-peak times only, with pricing and regulations used to prioritize short-term and commercial loading uses. While the dual bus lane may reduce private vehicle capacity of the avenue, this is warranted if the total person throughput capacity increases due to faster transit speeds.

5th and 6th Avenues

From Denny to Cherry (Key Tower), 5th & 6th Avenues can be thought of as a couplet. Both streets are central to the retail and hotel core, and further south they become critical streets for freeway access. The couplet effect ends near Cherry, where 6th briefly reverses direction to become one-way southbound, the same direction that 5th is flowing. 6th reverses direction again at Yesler, with the effect that it tends to feed traffic into Yesler despite the lack of freeway access there. It is a confusing arrangement, and beyond the scope of this study to improve.

While it is continuous, 5th is much less attractive than 2nd for driving the length of downtown. The monorail occupies the median from Denny to Stewart. 5th narrows through the retail core, and south of Pike, it easily clogs with traffic heading to and from nearby I-5. Outside of the retail core, street retail is limited. A mixture of transit services operates on 5th, turning on at various points from Denny to Blanchard and turning off between Union and south of Yesler. Most routes provide frequencies of 20-30 minutes, but they do not combine to provide a useful aggregate frequency.

Recommendations: South of Stewart

The southern part of 5th should remain an auto-oriented street. It will continue to hold vehicles queuing to access I-5. Eventual priority treatments may be needed for southbound HOVs heading for the Key Tower entrance to the express lanes in the afternoon, though this will not be a significant

transit route.

The transit use of 5th will be primarily south of the Key Tower ramps, as certain Metro and Community Transit routes use the contraflow lane between Terrace and Cherry to access the northbound transit lanes during the PM peak hour, and use the same segment of 5th in the other direction during the AM peak hour. The number of routes that will continue to use this routing -- locally known as the "Blue Streak" -- may decline. The routing is useful only for buses that are making single trips in the peak direction, and it has the effect of putting buses on southbound 2nd Avenue even though their destinations are northward -- a counterintuitive arrangement.

Other transit service on 5th would be moved to either the 4th/2nd couplet or 3rd Avenue. The key is to preserve 5th as a place for vehicles to queue onto I-5, allowing other streets to move more freely.

Suggestions North of Stewart

No significant changes are proposed for these streets. However, 6th may have a role as a main route of auto access to Westlake Avenue (see discussion of Westlake Avenue below.)

In addition, the following idea should be considered as part of both the Monorail Project and the future Denny Urban Design study. Because 5th is so constrained going through the core retail area, especially in the block between Olive and Pine, it may be appropriate to rethink this street further north. One possibility for simplifying the tangled movements at Denny would be for 5th to become two-way at some point north of Virginia. If the monorail remains in the median, two-way operation of this street would actually be clearer than the current split-lanes running the same direction. The main advantage of this idea would be to allow traffic to cross directly over Denny on 5th in both directions, eliminating unnecessary turning movements on Denny caused by the awkward point where 6th pours traffic into the street.

East-West Streets

Mercer

Mercer is a prominent multi-modal street that relates to new urban development in South Lake Union and links this district to Queen Anne and Seattle Center. Via Eastlake, Lakeview and Belmont, Mercer also provides key potential transit, bicycle and pedestrian connections between Capitol Hill and the South Lake Union area.

Using Mercer and some adjacent streets, the current “Mercer Maze” serves east-west travel between Lower Queen Anne, South Lake Union, I-5 and Capitol Hill. Recognizing that it does not function well for any mode, the City is redesigning Mercer Avenue in conjunction with the Viaduct project. This effort will ultimately determine how Mercer functions.

The design should address the multi-modal needs in the area, including providing transit, bicycle and pedestrian connections between Queen Anne and redeveloping South Lake Union. Current plans call for acquisition of enough right-of-way to create a multi-way boulevard, which could create a pedestrian realm to support street level retail, slow-moving access lanes that would be comfortable for cyclists, and fast-moving travel lanes that would allow Mercer to carry the high volume of vehicles and transit that travel west from I-5. An east-west crosstown transit route is also proposed for this street. It could be either trolley or diesel, though a trolley route would enable service to more easily continue via Eastlake, Lakeview, Bellevue, and Roy to connect to Capitol Hill, a much stronger destination than Eastlake Avenue.

A crucial input from this study to the Mercer study is the need to retain access to Mercer east of Fairview, where the bulk of Mercer traffic flows into I-5. Our transit mapping presumes that this segment will remain open to eastbound traffic only to Eastlake, with westbound traffic from Eastlake routed via Republican to Fairview to access Mercer. This is important because it is the only viable alignment for a future east-west local transit route on Mercer.

Thomas

With the proposed bicycle/pedestrian bridge across Aurora, Thomas will become a continuous pedestrian street from Lower Queen Anne all the way to Eastlake, though unfortunately there is no crossing of the freeway at this point. Denny Way urban design plans should look jointly at Denny and Thomas, and consider the possibility of replacing the unpleasant pedestrian crossing at Denny with a pedestrian bridge from Capitol Hill to South Lake Union at Thomas. This is a long-term, high-cost project, but there is currently no other linkage between the extremely dense housing east of I-5 and the South Lake Union district, and one will be needed eventually.

Denny Way

Denny Way is one of the least attractive major streets in downtown Seattle, and this is a particular problem because the street is so unavoidable. The current pattern of colliding grids creates many awkward intersections -- indeed some stretches of Denny seem to be nothing but intersection as streets enter slightly offset from each other. Many key streets from both north and south terminate at Denny, forcing even more traffic into the street. The result is a street that is designed primarily for cars but that is actually unpleasant for all modes.

Streets where grids collide can be sites of particular vibrancy. They offer the potential for dramatic developments that “anchor” the view down one or more arterials, either north or south. However, they also require more aggressive attempts at channelization of intersecting traffic, with the goal of minimizing intersections that end in a “T” at Denny, thus

forcing traffic into the street that may not want to be there. As one example, it may be appropriate to make Queen Avenue North two way, and direct through traffic over to 1st before this street reaches Denny. In an example from the south, 6th Avenue’s approach to Denny should be designed either to encourage motorists to cross over into 6th Avenue North (if this is desirable), or else 6th Avenue through traffic could be turned west to join a two-way 5th under the monorail to flow more cleanly into 5th Avenue N.

A vision for Denny will be determined though the Urban Design Plan called for in the ‘Blue Ring’ Plan. The latter plan postulates Denny as a possible ‘outdoor living room’ or ‘main street’ with a variety of sidewalk activities enhancing its role as a street that connects neighborhoods. Regardless of the ultimate urban design vision, crossing Denny must be made more efficient for transit vehicles, bicycles and pedestrians.

As the only route eastward from Lower Queen Anne and Seattle Center, transit frequency is clearly inadequate, and will need to reach 10 minutes all day to be worth waiting for. *Frequent service on Denny is a higher priority than service on Mercer, and provision for this service must be included in any redesign of the street.*

Transit priority treatments such as signal priority will help high frequency buses and the SLU streetcar cross Denny at Westlake and Fairview avenues. The eventual urban design plan should look at the potential for ‘road diets’ for the many streets that hit Denny as a result of the colliding grids. Linkages for each mode should be clearly signed. This would make Denny easier to cross and traverse. The opportunity for transportation character changes at Denny is matched by the land use opportunities, which could provide special spaces and developments that anchor the downtown avenues and provide a sense of gateway. The eventual urban design plan for Denny should integrate the potential changes.

Stewart / Virginia / Olive

Traffic is heavy on these streets as they serve various freeway approaches. Transit demand on these streets increases with the Tunnel Closure plan, as routes that now enter the transit tunnel directly from the express lanes are instead routed onto the surface. To expedite this, the Tunnel Closure plan proposes two peak-hour changes:

- Eastbound transit lane on Olive, for access to either the express lanes at Convention Place or the general purpose lanes via the Olive onramp just beyond I-5. The latter is needed for SR 520 buses, which cannot use the express lanes, and for buses traveling in the reverse-peak direction.
 - A signal queue-jump at Boren may be needed so that buses from the right lane of Olive can get over to the left-side onramp to I-5.
- Terry Avenue North will have a northbound transit-only lane. This is needed to permit buses exiting the express lanes into Convention Place to get to westbound Stewart Street.

Route 70 provides service with 15-minute frequency in the peak on Stewart and Virginia (as a couplet), from 3rd Avenue to 9th Avenue. These streets are used as part of a variety of confusing end-of-line routings for South King County services, including both CT and Metro service. Rail will not serve Convention Place, increasing the need for rapid bus operations in this direction, especially expedited expresses for future rail markets such as Northgate and the U-District.

Vision

Stewart and Virginia operate as one of the key transit crosstown corridors to downtown, providing high frequency all-day service and benefiting from transit priority treatments. Increased service operating on Fairview Avenue to Stewart and Virginia provides a connection between South Lake Union and the markets that will be attracted to new employment there.

Moving transit through the congestion in this area would require a number of operational changes by 2015, when general demand growth and SLU development are likely to justify these treatments. The plan elements will be needed at different times transit operating speeds deteriorate, but are likely to include:

Midday

All-day, frequent express-routes to and from the north operate into Convention Place Station (CPS), which will be a staging area for bus operations through the tunnel when operating jointly with light rail. (LRT will not operate east of Westlake.) This group includes express service to and from:

- Northgate via I-5
- U-District via I-5
- Redmond via I-5 to SR 520.

Inbound buses going to the tunnel can exit into CPS from either the general purpose lanes or the express lanes. Northbound, buses leaving the tunnel can enter the express lanes directly from the station when the lanes are open. Otherwise, they must exit the station onto Olive (at Terry), turn right on Olive, merge left, and enter I-5 using the Olive onramp.

All other all-day routes will need to use Stewart from the freeway inbound, and Olive to the freeway outbound.

Peak Only Express Routes

- Southbound buses from I-5 general purpose lanes (which means all SR 520 buses and all buses operating against the peak direction) exit directly into Stewart.
- Southbound buses from I-5 express lanes exit into Convention Place and proceed north on Terry, left on Stewart.
- Northbound buses to I-5 (except those looping south through downtown) use Olive to the express lanes, enter the general purpose lanes from Olive, or could enter the express lanes via Convention Place station.

Metro 70 Trolleybus

Service would be all day and intensive on its current routing, for local service along Fairview. However, instead of turning south into 3rd Avenue as it does now, this route would continue west using Virginia-Stewart to 1st Avenue and terminate in that area.

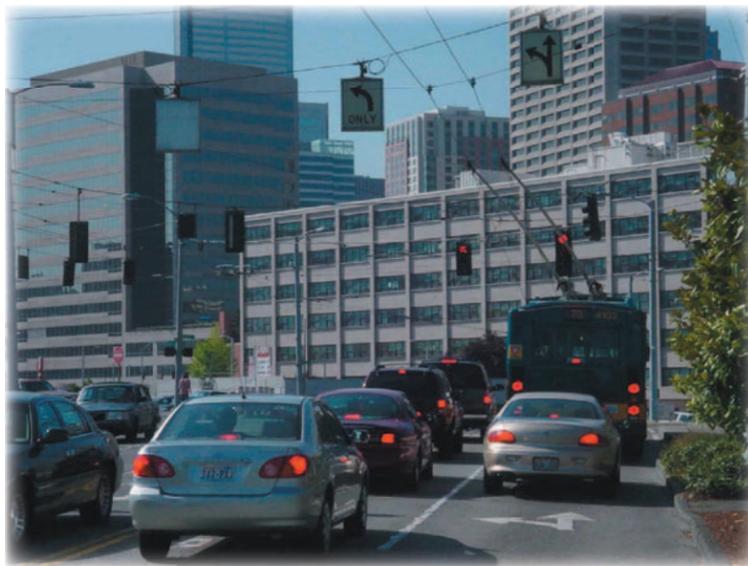
Street Management Needs

To accommodate the outlined services, the following street managements measures would likely be necessary.

- **Fairview Avenue.** Because of backups from Denny and Mercer, we recommend bus-only lanes on Fairview from the south end (Boren/Virginia) to John, and some preferences to be determined at Mercer.
- **Stewart between I-5 and Terry.** Provide an inbound bus + HOV lane. This would require either removal of a curb parking lane or a mixed-flow lane.
- **Stewart west of 9th Avenue to 2nd Avenue.** Provide a curb bus-only lane and either an adjacent bus only

lane or bus and 3+HOV lane. Many inbound express buses and deadheading buses use this segment, with many not making local stops. To remain reliable these trips will need a fast flow past traffic congestion, while Route 70 will need the curb.

- **Circulation.** Prohibit right turns from southbound Westlake Avenue onto Stewart. Demand for this movement would be forced right onto Lenora Street with provisions to turn left on to 5th Avenue, or continue west. In addition, northbound auto access would begin with traffic entering from Virginia or 6th Avenue, leaving a space for the south end of streetcar line to terminate without traffic interference, and opening up the confusing intersection of Westlake and Stewart to create more of a plaza, warranted by the confluence of services (monorail, streetcar, bus transit).



Buses get caught in regional traffic using Fairview, Stewart and Virginia to cross Denny Way

Pike / Pine

As the longest east-west streets in downtown, Pike and Pine are central to many key districts, including Pike Place Market, Westlake/retail core, and the Convention Center area. They operate as a one-way couplet in downtown, but each become two-way across Capitol Hill. Transit is extremely frequent (<5 min.) from Bellevue Avenue to 3rd Avenue. However, frequencies drop to 6-14 minutes at 1st Avenue as difficult turnarounds and layovers displace routes that would logically end there.

Vision. Transit and bicycling services provide strong and complete connections from Capitol Hill to Pike Place market. Pike and Pine operate as a second transit 'radial' / 'finger' perpendicular to the 3rd Avenue spine.

All transit service on Pike and Pine would operate to 1st Avenue and terminate there. This route clarity is likely to greatly increase the number of impulse transit trips within the downtown, for example from the Convention Center to Pike Place market. Bus lanes and transit signal priority would increase the speed and reliability of these services. There is currently a left side bus lane with a boarding island on Pine between 3rd and 4th Avenues, designed for buses turning left on 3rd. This island could be eliminated.

The current one-way couplet structure would be retained; however, for bicycles the inbound Pine Street lane would be extended to 1st Avenue with a contraflow bike lane, also on Pine Street.

Along with 3rd Avenue, the proposal for Pine Street is potentially the most dramatic street reconfiguration proposed in this Plan. Currently Pine Street's roadbed west of 6th Avenue ranges from 38 feet to 36 feet, as it narrows to reflect the high pedestrian volumes between Westlake Center and Pike Place Market. Additionally, curb extensions create

crossing distances of between 26 feet and 20 feet. The curb extensions at 4th Avenue are adorned with large concrete planters. This proposal would require approximately 41 feet of roadbed with crossing distances of 28 – 35 feet through to 1st Avenue (see Figure 3-6) and would result in a single through travel lane for mixed vehicles. As shown, the configuration includes far-side bus bulbs with cutouts for cyclist traveling in the with-flow bike lane.

An added challenge to this plan is the need to layover buses near where the routes would end, on 1st Avenue between Pike and Pine – one of the most prominent intersections in the city. This should be addressed both by a detailed assessment by the city of curb space allocation in this area and the ongoing bus layover study being conducted by KC Metro. A possibility would be to turn some routes south on 1st, perhaps sharing the Madison-Marion turnaround and enjoying the resulting ferry access. This would require double-wiring the turnaround so that the two routes could operate independently.

For Pike Street, proposed changes to the cross section are less dramatic (Figure 3-5), with the typical configuration consisting of a bus lane, two travel lanes and a loading / parking lane. The parking lane and second travel lane would likely be replaced by a widened sidewalk at Westlake Center and 1st Avenue, where pedestrian volumes are highest. It would be vital to protect pedestrians from buses operating curbside on Pike, which could be done with closely spaced (~10 feet) bollards along the curb.

While the proposed changes are significant, the benefits of a high quality bike route through downtown from the east, and clear, fast, and reliable transit in this corridor are great. Vehicles seem to already know to avoid Pine west of 5th Avenue as it is “choked” by the treatment in front of Westlake Center. The same is not true of eastbound Pike, which offers the illusion of a continuous wide street though in fact it can become congested as it approaches the Convention Center area.



Looking East on Pine from 1st Avenue. Cars avoid driving to Pike Market on Pine

University / Union

University and Union streets function as onramps/offramps to I-5's north all access lanes. Transit service is minimal and not useful for intra-downtown travel. Union Street connects through to Alaskan Way as a street, while University Street is a major pedestrian connection to waterfront via steps.

Union is currently used by certain bus routes transitioning from 5th to 1st or Alaskan Way. This confusing routing would be eliminated, eliminating all transit service along Union and allowing some parking to be restored.

Seneca / Spring

This couplet is used only by trolley bus route 2, solely to the east of 3rd Avenue. As higher frequency service on Madison/

Figure 3-5 Pike Street -- Conceptual Plan & Cross-Section

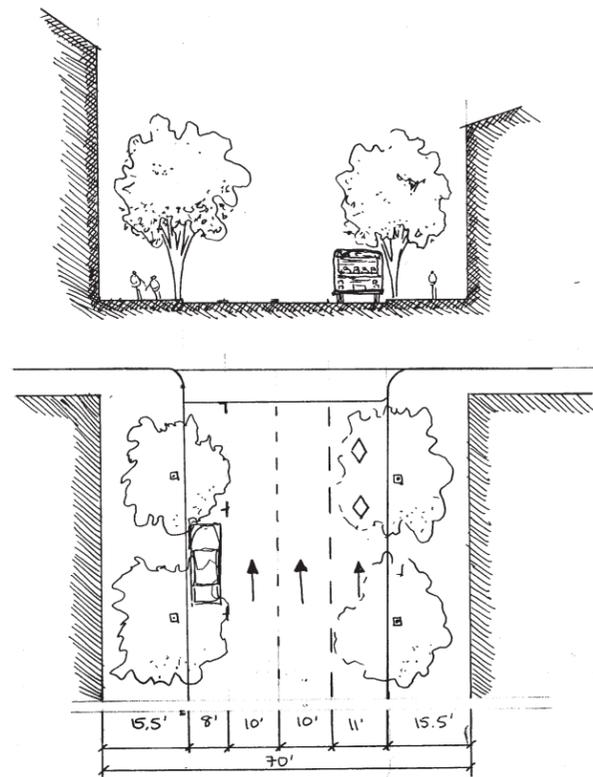
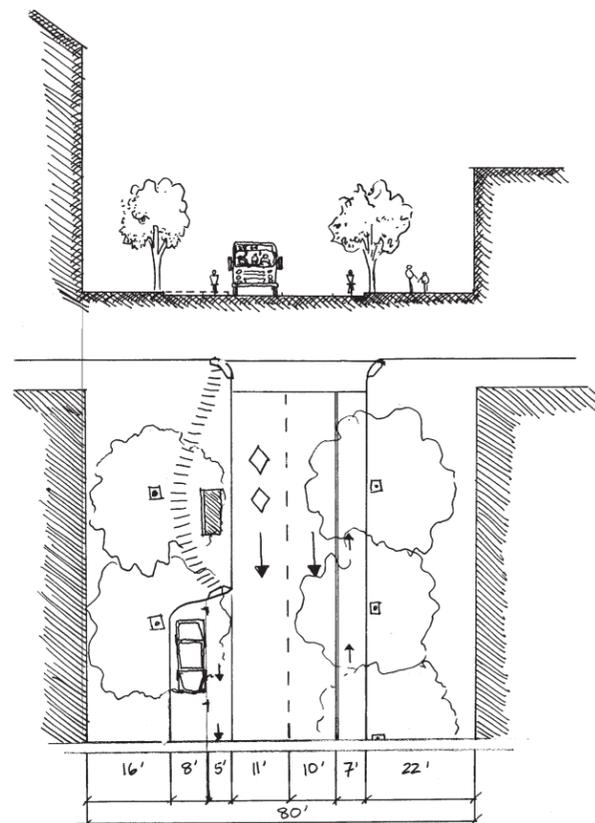


Figure 3-6 Pine Street -- Conceptual Plan & Cross-Section



Marion would be more useful, trolley bus route 2 would be moved from Seneca / Spring to provide higher frequencies on Madison/Marion. Seneca is not suited to transit operations, because the freeway ramps at both ends tend to create unacceptable volumes of traffic.

An uphill bike lane on Spring would connect downtown to First Hill. A lane could be accomplished within the existing right of way or by converting diagonal parking to parallel.

Madison/Marion

West of I-5 and 6th Avenue, Madison and Marion streets operate as a couplet. East of there, Madison is two-way, and runs straight all the way to Lake Washington, one of very few streets that do. Transit service does not reflect Madison's simplicity because the inner segment is trolley bus service, while the outer segment (Madison Park) is diesel. Efforts should continue to be made to create a simpler trolley route between downtown and Madison Park along the full length of Madison, to take advantage of this street's simplicity, even if this requires creating a circulator route for areas of Madison Park where trolley wires are an issue.

After Pike-Pine, Madison-Marion transit services provide the second busiest east-west transit couplet. Frequencies are in the 6-14 minute range, but are erratic. Characteristics of Madison-Marion that make it valuable as a transit street include:

- Provides the most direct route up the steep hill to the First Hill medical area.
- Connects directly to Colman Dock at 1st & Marion.
- Crosses I-5 without encountering an interchange.
- Core of First Hill medical area is on Madison.
- Original Sound Transit LRT had subway station at 9th/ Madison.

Poor access to the bus tunnel and eventual LRT service is the only limit on this couplet's value as a transit street.

Vision. Colman Dock, the CBD and First Hill are strongly connected by high frequency transit service and an uphill bike lane. The Madison and Marion couplet serve as a transit crosstown corridor perpendicular the 3rd Avenue spine -- the most important in the city next to Pike-Pine

Given its value as a transit couplet, this plan recommends increasing the frequency of service, extending service to 1st Avenue to provide the primary intermodal connection to ferry passengers, and providing priority to transit via a bus lane and signal priority. Layover for this routing would occur on westbound Madison near-side of Western and back a few feet so that the left turn is possible. This has implications for the design of the new pedestrian bridges at 1st Avenue to permit access to new bulbout stops on the near side of 1st on Marion and far-side of 1st on Madison.

An uphill bike lane on Marion Street will connect First Hill residents to the CBD and ferry riding cyclists to the First Hill medical area. The implications of this plan for the configuration of these streets are shown in Figures 3-7 and 3-8. On Madison, the space for the bus lane comes from a conversion of angle parking on one side of the street to parallel parking. To accommodate the bus lane and uphill bike lane on Marion, the parallel parking lane is eliminated. The cross-sections are accommodated within the current roadbed; however, some curb extensions would need to be trimmed back. For pedestrians, buses are already operating adjacent to the curb, but this volume will increase. An appropriate buffer, such as narrowly spaced bollards along the curb, should be provided.



Madison Street would be reconfigured to provide an exclusive bus lane while preserving two travel lanes.

Figure 3-7 Madison Street -- Conceptual Plan & Cross-Section

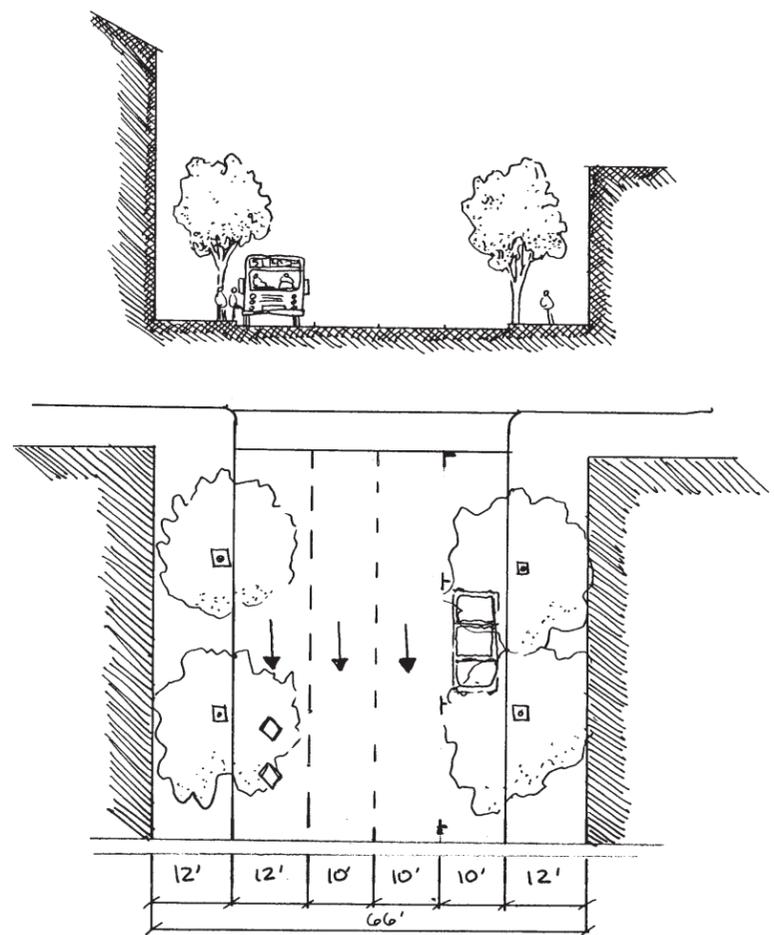
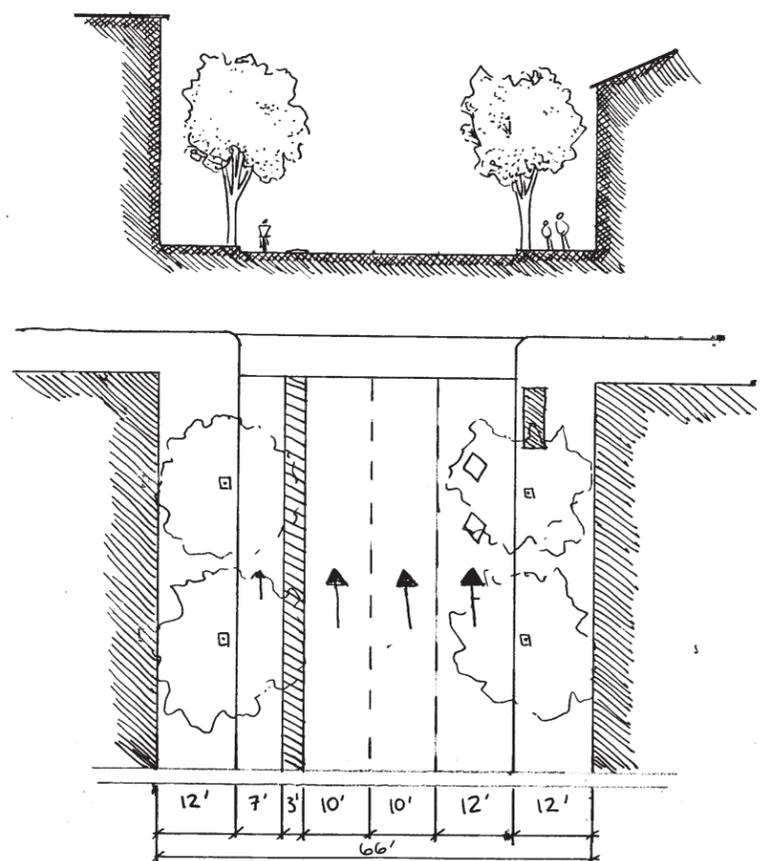


Figure 3-8 Marion Street -- Conceptual Plan & Cross-Section



James

Beginning at 3rd Avenue, James Street provides a rare direct hillclimb route to residential density in First Hill. It is the only two-way, east-west street in the southern downtown grid. Current trolleybus service operates every 10 minutes, providing a convenient connection to the Pioneer Square tunnel station. Some 3rd Avenue service branches off on to James.

Recommendations

Some King County Metro staff have proposed realigning the current service on James (Routes 3 and 4) to instead use Yesler and 9th as their routing to First Hill. This routing is longer, and would require moving some trolley wire, but it has the considerable advantage of protecting transit from freeway-related congestion that tends to affect James near the I-5 interchange. It also would eliminate the need for left turns from the 3rd Avenue transit spine onto James.

Meanwhile, the following short-term alterations would improve bus operations on James Street:

- Restrict north-to-west left turns from 9th Avenue to James Street. General purpose traffic could turn left at Boren or Terry avenues. This would require a new signal at Terry & James and a transit-activated left turn at 9th & James.
- Revise lane striping on westbound James Street between 6th and 7th avenues under I-5. Currently, the southernmost left turn lane is an add lane; instead, feed center westbound lane to the southern left turn lane (there is a double left at 6th Avenue) and make the westbound northernmost lane the add lane at 6th Avenue. Inbound routes 3 and 4 would be in that lane. This would likely result in less queuing in the westbound lanes caused by the large number of vehicles turning left to the southbound I-5 ramps.

Yesler

Yesler Street is the southern boundary of the CBD grid, creating a function and opportunities similar to Denny Way but over a shorter segment. Vehicle movement is slow and sensitive through Pioneer Square. To the east of 2nd Avenue, Yesler is an attractive east-west corridor for transit given the lack of a freeway interchange and less of a grade relative to James and Madison/Marion. However, use is limited as current mid-day frequencies are only 30-minutes. These should be increased to every 15 minutes when resources permit.

Little physical improvement is needed on Yesler. The street generally flows well, largely because it is protected from I-5 traffic.

Crossing I-5

The availability and quality of crossings of I-5 for bicyclists and pedestrians determine the connectivity between the City Center districts and will affect whether bike, walk and transit trips can accommodate the continued growth in the area. Past planning has included assessments of these crossings and some modifications are underway. This assessment is not meant to be exhaustive, but instead is meant to highlight the opportunities for improvement in relation to the city's growth and creating a high quality Center City circulation network to support it. Some improvements can be made in the very short term while the opportunity for others will come in conjunction with major projects such as reconstruction of segments of I-5 or land use projects on the freeway's air rights. This section looks at key crossings moving from north to south in the study area. Upgrading these crossings would be consistent with the City's Blue Ring Plan. The Blue Ring includes I-5 from Freeway Park north to Harrison Street.

Linking South Lake Union and Capitol Hill

This connection is of growing importance as redevelopment proceeds in South Lake Union. Currently, there is little connectivity between these two districts that are separated by a steep grade as well as I-5. Over half a mile separates the Denny and Belmont crossings, with the next crossing over ¾ mile north of Belmont.

Recommendations

A pedestrian bridge providing elevators, similar to the Bell Street Bridge at Alaskan Way, in the vicinity of Thomas Street, would serve to creating a bike/pedestrian corridor from the forthcoming Thomas Street Bridge at Elliot Bay complete to Capitol Hill.



The Bell Street bridge crosses major infrastructure and allows pedestrians to ascend a significant grade. A similar concept could be used to connect Thomas across I-5.

Crossing I-5 via Denny Way

Denny Way is considered “Center City Connector” in the city's Blue Ring Plan. From I-5 at Denny, there is a view corridor to Elliot Bay. The crossing is somewhat steep and long spanning Eastlake before touching down. New development is occurring in the area and there are many opportunity sites in the corridor. The crossing is unpleasant for pedestrians who have only an unprotected sidewalk on the south side.

An upgrade of this crossing would include:

- Adding planters and pedestrian lighting on the existing south side crosswalk
- Eventually providing a sidewalk, with landscaping and lighting, on the north side of Denny. The planters would provide a barrier between fast moving vehicles on Denny.
- Providing automatic pedestrian crossing phases at Denny and Stewart rather than a pedestrian push button

Ultimately, a civil pedestrian environment worthy of this spectacular site would require widening the Denny overpass. Compared to this, the alternative of a pedestrian overpass at nearby Thomas may seem more reasonable.



Sidewalk crossing I-5 on the south side of Denny offers no buffer from cars and trucks.



North side of Denny over I-5

Crossing I-5 via Olive Way

Vehicle circulation at Olive and I-5 is geared towards allowing freeway access, making nearby Pine more useful to bicyclists for crossing I-5. However, pedestrian volumes are significant and influenced by the nearby Metropolitan Park Towers.

Improving conditions for pedestrians would entail:

- Providing a crosswalk on Olive across Minor Avenue with a stop sign at Minor
- Vehicles yielding to pedestrians in the crosswalk at the I-5 express lanes at Olive. Possible treatments include texturizing the asphalt (rumble striping) as it approaches the crosswalk, zigzag lane markings (see photo), and/or a crosswalk with automated pedestrian detection that activates crosswalk lights or a vehicle signal
- Adding planters to the sidewalks over I-5 along Olive



Bike lane and sidewalk end heading southwest on Pine over I-5



No crosswalk for pedestrians crossing Minor at Olive



Pedestrian using Pine's north side curb as a sidewalk



Pedestrian waiting for compliant vehicles at the I-5 HOV entrance from Olive



Resumption of southbound bike lane on Pine before Boren

Crossing I-5 via Pine Street

The Pine Street crossing of I-5 is important for a number of reasons including its bike lanes, the commercial services on Pine both east and west of I-5, and the Convention Place bus tunnel station and Westlake Center west of I-5. Pine Street also offers perhaps the gentlest grade between the CBD and Capitol Hill. The crossing is unique because Pine intersects with Boren Avenue in the midst of carrying over I-5. The Pine Street bike lanes currently “disappear” and restart while approaching the intersection with Boren in both directions.



Pedestrians and bike crossing Boren at Pine over I-5

Note that some changes to Pine Street are underway in conjunction with the planning for LRT facilities at Convention Place. A number of treatments could improve the functioning of Pine Street for bicyclists and pedestrians, including:

- Providing a “Blue Bike Lane Treatment” of the Pine Street bike lanes in both directions at Boren to provide continuity and enhance safety⁴
- Adding a continuous sidewalk on Pine’s north side, which is used by pedestrians either walking in the bike lane or on the narrow curb
- Reducing the cycle length of the intersection of Boren and Pine to decrease pedestrian wait times and providing an automatic pedestrian phase rather than via the pedestrian push button
- Upgrade crosswalk striping and curb ramps
- Adding pedestrian lighting and landscaped planters along Pine

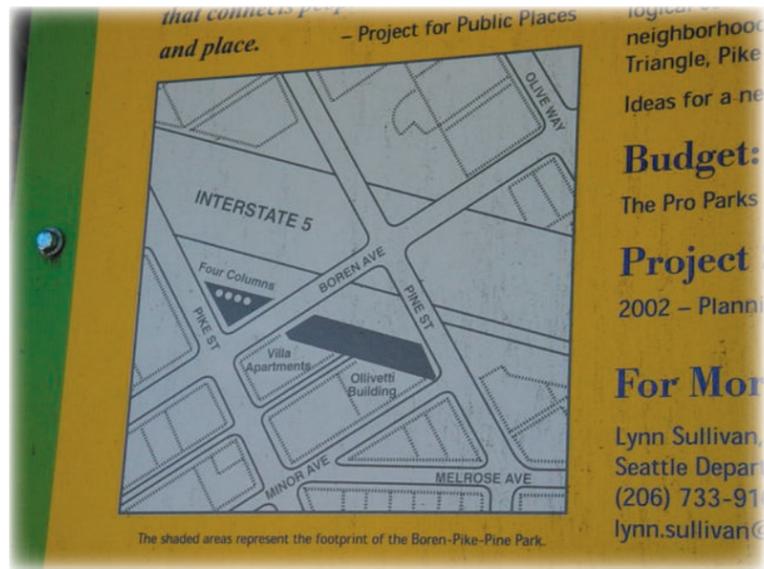
Boren-Pike-Pine Park

This park, which is yet to be renamed, conceptually provides a useful and pleasant walking connection in the freeway area. It could provide an alternative to using the Boren Pine intersection by bringing them to Pike Street. However, pedestrian volumes are low in the park. Its usefulness as a connection is minimal because it requires jaywalking across Boren Avenue.

The City should explore providing the connection between the two park segments via a mid-block crossing. Detailed analysis would determine this concept’s feasibility and they type of crossing (e.g. controlled, uncontrolled) that would be appropriate.



Looking toward Pine from Boren



Plan of Boren-Pike-Pine Park

Crossing I-5 Via Pike Street

The crossing along Pike Street is prominent given the presence of the Convention Center as well as CBD oriented hotels east of the freeway. The treatments of Pike as it crosses I-5 can serve as somewhat of a model for other crossings. Sidewalks are provided on both sides of the street, tree planters provide a buffer from vehicles for pedestrians and soften the landscape, streetlights are pedestrian oriented and adorned with planters.

Possible improvements to Pike Street as it crosses I-5 include refinements to the crosswalk at the entrance to I-5, using urban street design details rather than freeway design details.



Planters buffer a painter on Pike over I-5

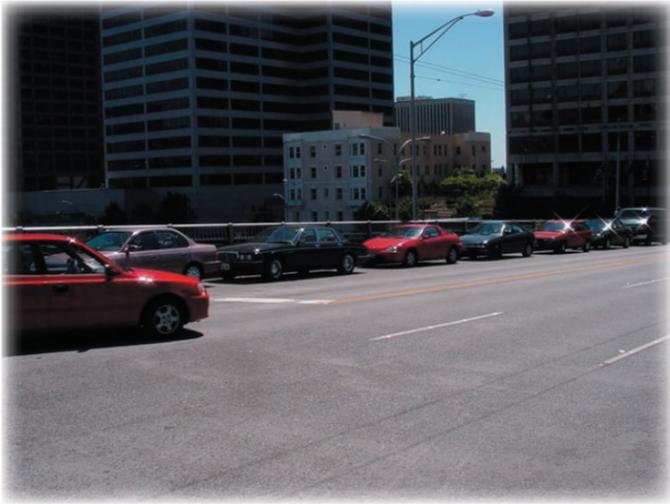
Freeway Park

Lawrence Halprin’s Freeway Park is complete and would be difficult to update at this point. However we did observe some blind corners along the pedestrian path that make the park feel less inviting. The park also is much less inviting when the fountain is not operating. We observed many pedestrians avoiding the park and walking the hill via Seneca even during the daytime. The city should review its policies on shutting down the Freeway Park fountain, since doing so reduces the diversity of people who will be drawn to the area and who collectively would increase the perception of personal safety in the area.

⁴The Blue Bike Lane Treatment was implemented in Portland in areas where the bicyclist travels straight and the motorist crosses the bicycle lane to enter a right-turn lane, as is the case at Pine and Boren. The effectiveness of this treatment is examined in “Evaluation of the Blue Bike Lane Treatment used in Bicycle-Motor Vehicle Conflict Areas in Portland, Oregon”, FHWA, August 2000. Available at <http://www.walkinginfo.org/pdf/r&d/bluelane.PDF>

Crossing I-5 via Madison Street

The Madison Street crossing of I-5 is important because of the street's prominence in First Hill and its location near the core CBD offices. The crossing is the only one in the area that is not affected by freeway ramps. Pedestrians are buffered on both sides of Madison -- by tree planters on the north side and by parking on the south side. Improvements to this crossing could include providing crosswalks and stoplines at each possible crossing at the I-5 service road intersections. Adding pedestrian-scaled lighting will additionally improve the crossing.



Planters on the northeast side of Madison over I-5



The southeast side of Madison over I-5



Looking across Madison over I-5

Crossing I-5 via Cherry Street

Unlike the other crossings discussed, Cherry Street crosses under, rather than over, I-5. Cherry proceeds steeply to First Hill east of I-5. While the pedestrian route is marked and signalized, users must cross a myriad of I-5 access lanes at awkward approach angles. The crossing is dark on the sunniest of days.

A detailed assessment of the crossing could reveal ways to improve the comfort of pedestrians at pedestrian-vehicle conflict points. The effectiveness of the current lighting could be improved, particularly with short street lamps rather than the I-5 "ceiling lights."



Little encourages vehicles to slow and stop for pedestrians crossing at this Cherry eastbound to I-5 northbound access lane.



The long Cherry Street underpass from 6th Avenue.