CITY OF
PORTLAND
BUREAU OF
TRANSPORTATION

Sam
Adams
Mayor

Susan D.
Keil
Director

## REPORT TO COUNCIL

**Date: January 6, 2010**

**RE: Joint City Engineer's Report to City Council from the Portland Bureau of Transportation and the Bureau of Environmental Services to accept report and recommendations in the attached Central Eastside Street Plan.**

In 2006, the Central City Plan District was amended to create the Employment Opportunity Subarea (EOS) within the central portion of the Central Eastside Industrial District. The purpose of the EOS is to encourage redevelopment activities that support new emerging industries and greater employment densities, while also balancing the needs of existing businesses and industrial uses within the district. The EOS supplements the existing General Industrial base zone by allowing compatible Industrial-Office type uses in response to changing economic conditions. Upon adopting the Central City Plan District amendment, City Council directed the Bureau of Transportation to develop new right-of-way design guidelines for the frontage improvements likely to occur as the district redevelops.

The Central Eastside Street Plan was prepared to establish those design guidelines for street and intersection improvements within public rights-of-way as development occurs. These guidelines are intended to balance the operational and truck loading and parking needs of existing businesses with the increasing demands for public right-of-way space to accommodate greater employment densities and stormwater treatment requirements, while also improving the access and circulation needs of bicyclists and pedestrians. These guidelines also include design elements from the Clay Green Street and Routes to the River projects.

The Portland City Code, through Title 17: Public Improvements, authorizes the City Engineer to determine the location and design of public streets. There is substantial benefit to the public and the development community to provide advance guidance from the City concerning street design and stormwater management requirements within the public right-of-way. This is the intent of the Central Eastside Street Plan. The Street Plan is not intended to be inflexible, since unique implementation situations may require some tailoring of the preferred design criteria. Specific street design and stormwater treatment requirements will be established as specific development proposals are submitted and reviewed.

The Central Eastside Street Plan was developed with the assistance and guidance of a technical advisory committee that involved senior staff from both the Bureaus of Transportation and Environmental Services and a community working group that included a broad representation of business and community interest stakeholders. The draft Street Plan was reviewed by the Portland Design Commission and the City's bicycle, freight and pedestrian advisory committees.

The key elements contained in the Central Eastside Street Plan include:

- Established policy basis for street design and stormwater facilities based on Portland's adopted Transportation System Plan and Stormwater Management Manual.
- Functional street categories that reflect the unique operational and design considerations for each street in the district.
- Street cross-section design plans and preferred design criteria to provide development guidance within the public right-of-way.
- Stormwater treatment requirements and Green Street design options that can be applied in the district.
- Solutions toolbox of suggested design practices and potential implementation strategies based on identified project objectives.

For the reasons referenced above, the Bureaus of Transportation and Environmental Services jointly support the Central Eastside Street Plan and recommend that Council accept this document for inclusion in the Design Standards for Public Streets under the City's Transportation Policies & Administrative Rules.

Respectfully Submitted,

Steve Townsen, P.E
Portland Bureau of Transportation
City Engineer

Bill Ryan, P.E.
Portland Bureau of Environmental Services
Chief Engineer

**To the Council:**

The Commissioner of Finance and Administration concurs with the above City's Engineer's report, and

**Recommends:**
that the Council accept the Central Eastside Street Plan for inclusion in the Design Standards for Public Streets under the City's Transportation Policies & Administrative Rules.

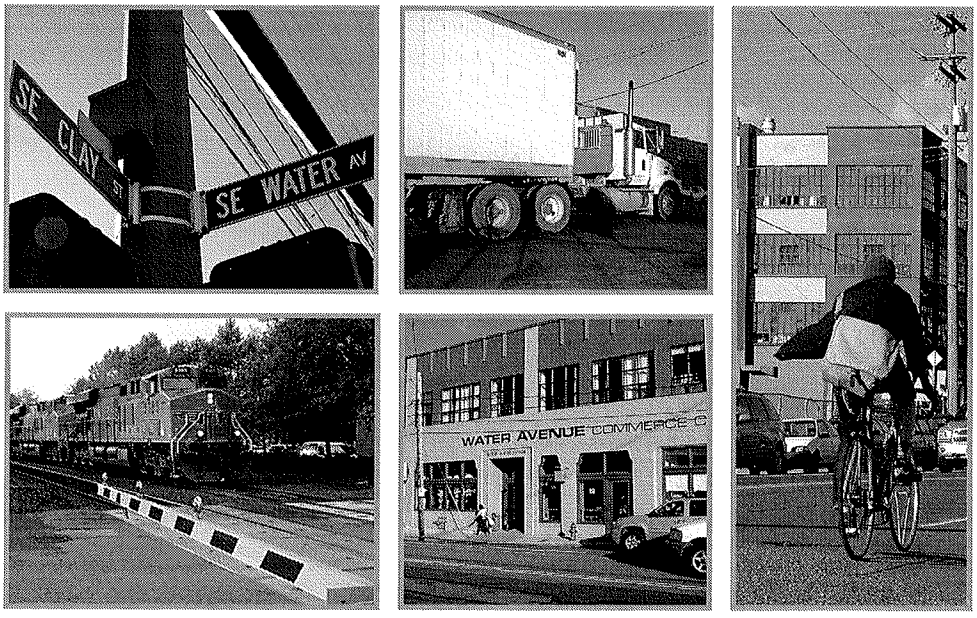
Respectfully Submitted,

Sam Adams
Mayor and Commissioner of Finance and Administration

As Amended
P. 35

# CENTRAL EASTSIDE STREET PLAN

## Final Draft




**January, 2010**

**CITY OF PORTLAND**

**BUREAU OF TRANSPORTATION**

## Acknowledgements

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# CENTRAL EASTSIDE STREET PLAN

CITY OF PORTLAND BUREAU OF TRANSPORTATION

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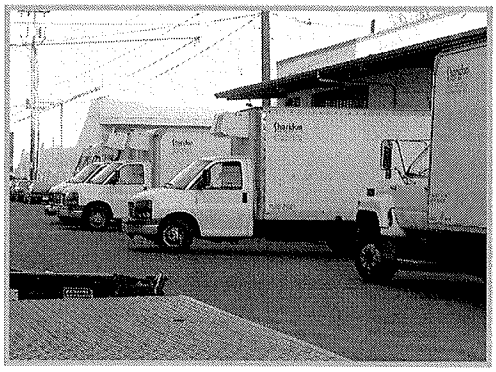
# 1 INTRODUCTION

## PROJECT BACKGROUND

The Central Eastside Industrial District (CEID) is one of seven sub-districts of Portland's Central City. It is one of Portland's oldest industrial areas featuring the 200-foot by 200-foot block pattern that is a signature of the City's older neighborhoods. The CEID continues to serve its historical role as a major wholesale and central distribution center, and its streets carry high volumes of truck traffic to support freight-related activity. However, this industrial area is undergoing changes resulting from technological shifts in the regional economy, and pressure to redevelop the centrally-located land to more intensive uses.

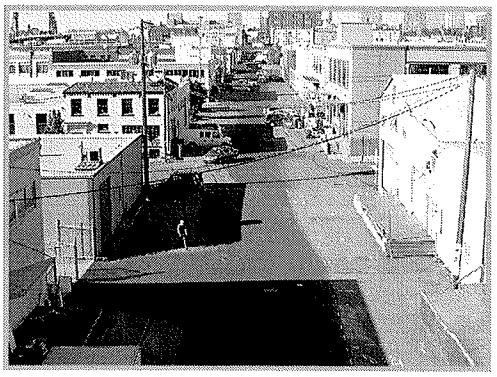
The zoning code amendment encourages redevelopment of underutilized industrial properties for Industrial Office use.

In 2006, the City crafted an amendment to the Central City Plan District (33.510.113.C), which amended the City Zoning Code and created the Employment Opportunity Subarea (EOS). As shown in Map 1.1, the EOS is located within the central portion of the CEID and is bordered by SE 3rd Avenue to the east, SE Water Avenue to the west, E Burnside, SE Ash and SE Oak Streets to the north, and SE Caruthers Street to the south. The creation of the EOS was intended to encourage the development of an urban employment center supporting employment-intensive businesses and new job types that are emerging in our regional economy, while protecting existing businesses and building upon the strengths and unique characteristics of the Central Eastside.

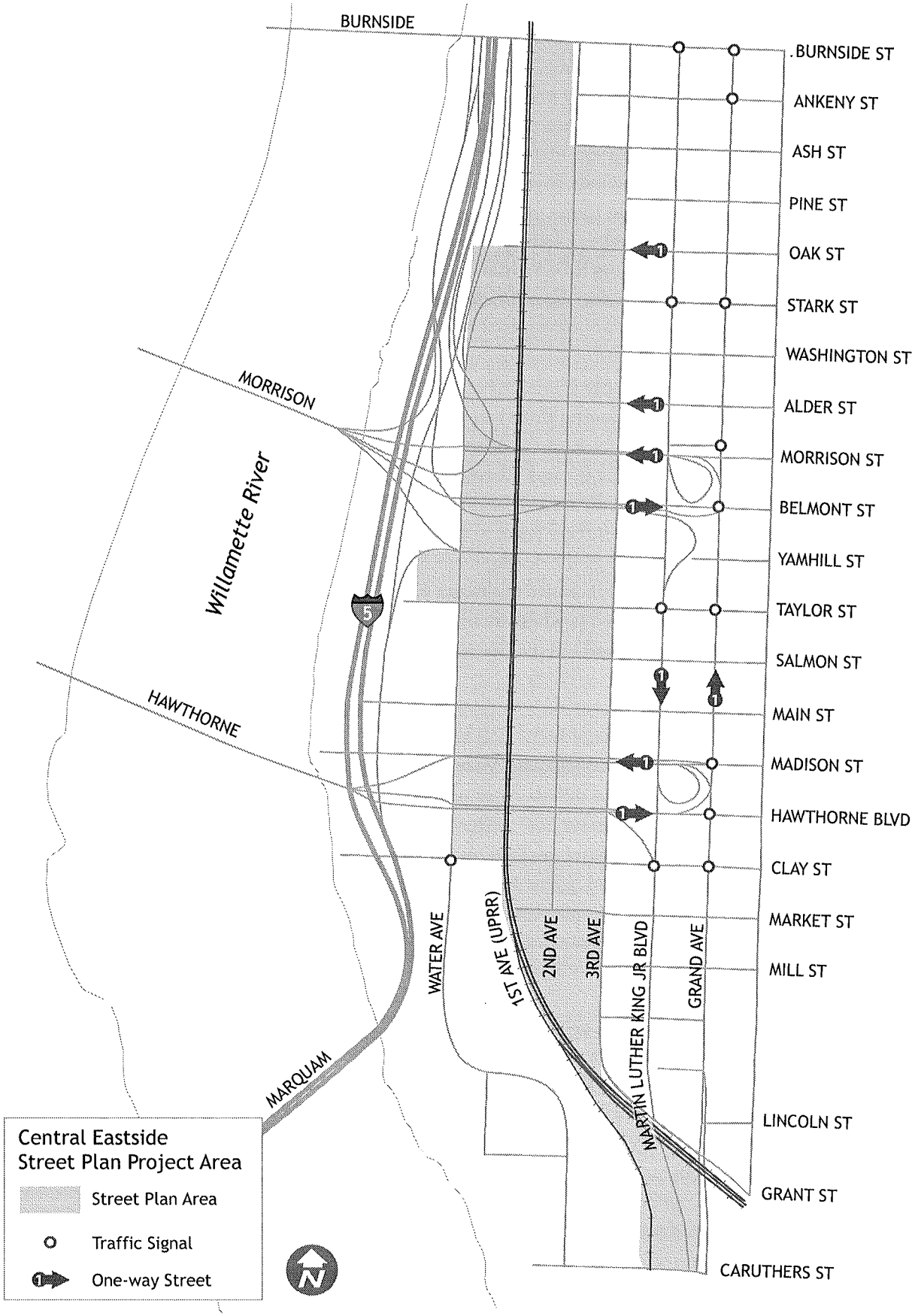

The Central Eastside serves as a local distribution center.

The EOS supplements the existing IG1 (General Industrial) base zone to create additional flexibility for compatible, employment-dense, Industrial Office uses. The Industrial Office classification differentiates production-oriented office uses, such as software development, web design, and data processing, that do not require frequent customer or client visits to the site, from traditional office uses. The EOS zoning amendment allows up to 60,000 square feet of Industrial Office use outright, and limits Traditional Office and Retail Sales and Service to 5,000 square feet. Traditional Office use, up to 60,000 square feet, is allowed as a conditional use.

Upon adopting the Central City Plan District amendment, City Council directed the Bureau of Transportation to develop new right-of-way design guidelines to guide frontage improvements likely to occur as the area redevelops. The Central Eastside Street Plan was developed to establish those right-of-way guidelines for the EOS area. The Street Plan balances the operational needs of the existing industrial businesses with the multi-modal demands imposed on the infrastructure of the Street Plan area by increasing employment density, while accommodating bicycle and pedestrian access to the Eastbank Esplanade.


Existing industrial uses must be balanced with increased demands for public right-of-way space.

**Map 1.1**
**Central Eastside Street Plan Project Area**



## PROJECT GOALS & OBJECTIVES

The guidelines were developed with the understanding that every project goal might not be realized on every block within the Street Plan area. Instead, the guidelines should direct the development of infrastructure that achieves project goals that address the primary function of each street, and where possible, contributes to achievement of other project goals. Accordingly, the Street Plan has the following set of goals and objectives:

SE 2nd Avenue functions as a Truck Loading Street. The building-to-building roadway provides trucks access to loading docks and doors.

### 1.1 Goal: Preserve Industrial Function

The base zone of the Street Plan project area is General Industrial (IG1), and the area is designated a Freight District in the Transportation System Plan (TSP). The Central Eastside Industrial District (CEID), of which the Street Plan area is a subsection, remains an active industrial employment center. In 2002, 6,433 people were employed in the distribution and logistics sectors. The design guidelines developed through the street planning process should preserve the industrial function of the area.

The short block lengths and narrow rights-of-way found in the Street Plan area make maneuvering and loading large trucks challenging.

#### 1.1.1 Objective: Enhance Truck Access

Many of the industrial businesses in the project area regularly send and receive shipments by truck. Physical limitations imposed by the 200' block grid demand innovative or non-traditional design solutions. Where possible, the design of streets and intersections in the Street Plan area should provide safe and convenient access for freight vehicles that will support continued industrial activity in the area.

#### 1.1.2 Objective: Preserve Truck Loading

Many buildings in the Street Plan area cover a large percentage of the lots upon which they are built and are situated close to or at the property line. As a result, many businesses conduct truck loading activities in the public right-of-way, using either internal or external loading docks. Often, these loading activities partially block the public right-of-way. Where these activities are integral to business function, street design should seek to accommodate loading facilities.

On-street loading activity, governed by the City's Angle Loading Permit process, occasionally blocks the roadway.

### 1.2 Goal: Enhance Access for Bicyclists & Pedestrians

The EOS zoning overlay will increase employment density in the project area as under utilized industrial facilities are converted to Industrial Office uses with higher employment density. Increasing intensity of use will require improvements in pedestrian and bicycle facilities to accommodate access for more local and commute trips.

Cyclists use the bicycle lanes on SE Water Avenue and SE Stark Street to make connections to the east side bicycle network.


The Street Plan area abuts the Eastbank Esplanade, which provides access to the Willamette Riverfront and serves as a key pedestrian and bicycle route.

### 1.2.1 Objective: Improve Pedestrian Facilities in Loading Areas

On some streets, particularly SE 2nd and 3rd Avenues, the pedestrian space is poorly defined and discontinuous. The Street Plan should clarify the appropriate place for the pedestrian in the right-of-way and designate consistent pedestrian access routes.

### 1.2.2 Objective: Enhance Bicycle Connections

Bicycle lanes on Stark Street and Water Avenue connect to the City bicycle network. The Street Plan should explore opportunities to enhance bicycle connections.

### 1.3 Goal: Improve Mobility for Bicyclists & Pedestrians

The Street Plan area boundary abuts the Willamette riverfront, and its streets serve as important connections to the Willamette River and the multi-use Vera Katz Eastbank Esplanade. The Street Plan should establish mobility corridors for bicyclists and pedestrians traveling through the Street Plan Area to reach riverfront destinations.

### 1.3.1 Objective: Improve Bicycle & Pedestrian Facilities for Through Travel

Key routes for bicyclists and pedestrians should be identified and, to the maximum extent feasible, designed to accommodate through travel to riverfront destinations.

### 1.4 Goal: Sustainability

The guidelines should address the management of stormwater runoff generated in the public right-of-way.

### 1.4.1 Objective: Stormwater Treatment

The Portland Stormwater Management Manual requires that stormwater generated in the public right-of-way be treated prior to discharge into sewers or waterways. The Street Plan must accommodate stormwater flow generated in the public right-of way.

## HOW TO USE THIS DOCUMENT

The purpose of the document is to provide guidance for the design of streets and intersections in the Street Plan area. The Street Plan establishes guidelines for improvements required within public rights-of-way as development and redevelopment occurs. The Street Plan is intended to help facilitate circulation within the district while also improving access and safety for all modes of transportation. This document also presents the process, study approach, and philosophy leading to the City Engineer's report for the Central Eastside Street Plan.

This document is divided into three sections: Policy Framework (Chapter 2), Street Design (Chapter 3) and the Technical Appendix. The Policy Framework section identifies the Transportation System Plan (TSP) street classifications and Design Guidelines for bicycle, freight, and pedestrians which establish the policy basis for street design. The Street Design section identifies the Recommended Cross Section design and the preferred design criteria for each street classification. The Basis of Design tables that accompany the Right-of-Way Design Plans reflect the varying existing conditions in the district, and are intended to guide the design detail of individual right-of-way elements where flexibility or case-by-case design is needed. The Street Design chapter contains a Stormwater Management section that provides options from the city's Stormwater Management Manual that can be applied in the Street Plan area. The Technical Appendix includes a detailed inventory of existing right-of-way conditions within the Street Plan area; a Solutions Toolbox of potential implementation strategies based on identified project objectives; a summary of turning movement tests conducted to refine intersection design criteria; and a summary of the technical committee and community involvement activities for developing the Street Plan.

These design guidelines help ensure consistent design of right-of-way improvements over time which reinforce the desired character and function of the Street Plan area. These guidelines are not intended to be inflexible, since unique implementation situations may require some tailoring of the preferred criteria.

## POLICY FRAMEWORK

The Policy Framework section describes the policy basis upon which the recommended street design guidelines are built.

SE 2nd Avenue functions as a Truck Loading Street.

## TRANSPORTATION SYSTEM PLAN (TSP)

The Transportation System Plan (TSP) is the 20-year plan for transportation improvements in Portland. The TSP describes how the transportation system should look and what purpose it fulfills. The street classifications and policies in the TSP are adopted as part of the City's Comprehensive Plan and describe the types of motor vehicle, transit, bicycle, pedestrian, truck and emergency response movement that should be emphasized on each street. The following summarizes the TSP street classifications within the Central Eastside Street Plan area. The TSP classification maps are shown in Maps 2.1 through 2.7.

### Freight Classifications

Freight Districts and Freight District Streets are determined by the presence of industrial sanctuary zoning (IG1, IG2 & IH). The entire Central Eastside Street Plan area is classified as a Freight District.

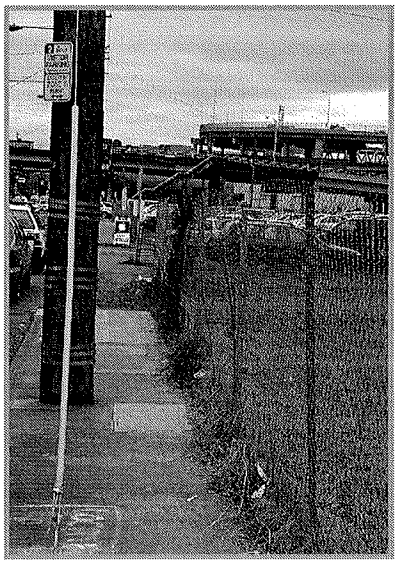
The Union Pacific Railroad Main Line runs through the Street Plan area, on the SE 1st Avenue right-of-way.

Freight Districts are intended to provide safe and convenient truck mobility and access in industrial and employment areas serving high levels of truck traffic and to accommodate the needs of intermodal freight movement. The TSP provides the following definitions for Freight Districts:

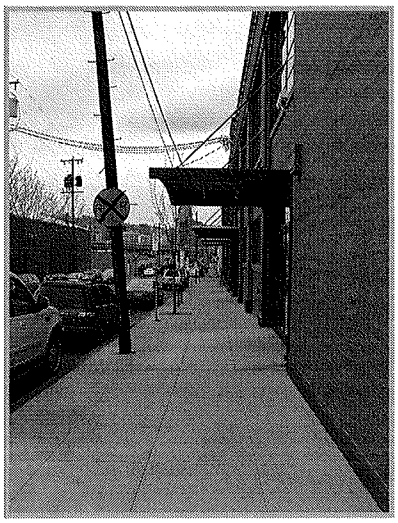
- **Land Use.** Support locating industrial and employment land uses that rely on multimodal freight movement in Freight Districts.
- **Function.** Freight District streets provide local truck access and circulation to industrial and employment land uses.
- **Connections.** In Freight Districts, streets not classified as Regional Truckways or Priority Truck Streets are classified as Freight District streets. Freight Districts connect individual properties to Priority Truck Streets.
- **Design.** Freight District streets should be designed to facilitate the movement of all truck types and over-dimensional loads, as practicable.

Local wholesale and distribution businesses depend on convenient freight access.

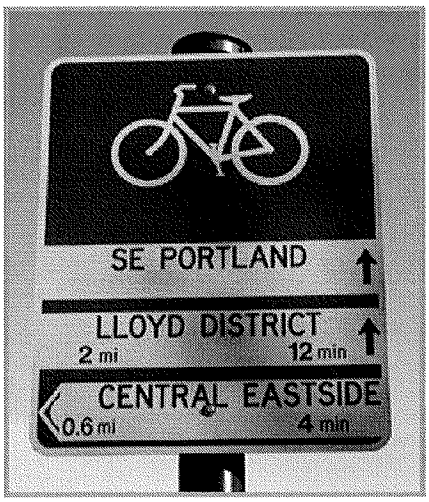
Within Freight Districts, only Regional Truckways, Priority Truck Streets and Major Truck Streets are mapped. All streets within Freight Districts should be designed to accommodate truck movement. Streets with multiple designations should be designed to accommodate trucks and the other designated modes.



Substandard sidewalk corridors impede pedestrian mobility.



Improved sidewalk corridors enhance pedestrian access to local businesses.




A route sign at the intersection of SE Clay Street and SE Water Avenue directs cyclists to destinations in the City's east side.

The TSP provides the same design description for Freight District Streets and for Major Truck Streets. The next freight classification down in the hierarchy, Truck Access Streets, calls for designs that "accommodate truck needs in balance with other modal needs of the street." The policy clearly states that freight movement needs are prioritized over other modes in Freight Districts.

**Freight District Streets** provide local truck access and circulation and should be designed to facilitate the movement of all truck types and over-dimensional loads, as practicable. The preferred lane width for Freight District Streets is 12-feet. The acceptable lane width of 11-feet requires a design exception and approval of the City Traffic Engineer.

## Pedestrian Classifications

**City Walkways** are intended to provide safe, convenient, and attractive pedestrian access to activities along major streets and to recreation and institutions, provide connections between neighborhoods and provide access to transit. City Walkways should be designed to buffer pedestrians from traffic. Design treatments such as landscape strips, street trees and on-street parking shall be considered, consistent with the street's other classifications. The recommended width of a pedestrian zone is 12 ft. (6 in. curb zone, 4 ft. furnishing zone, 6 ft. through zone, 1 ft. 6 in. frontage zone).

**Off-Street Paths** are intended to serve recreational and other walking trips. SE Ankeny and Morrison Bridge/Water Ave ramp are designated Off-Street Paths.

**Local Service Walkways** are intended to serve local circulation needs for pedestrians and provide safe and convenient access to local destinations, including safe routes to schools. Most Local Service Walkways should have sidewalks on both sides of the street. Design treatments such as street trees and on-street parking are appropriate. The recommended dimensions are the same as City Walkways as long as right-of-way is at least 60 ft. All right-of-way widths within Street Plan area are at least 60 ft., except SE Market, which is 30 ft.

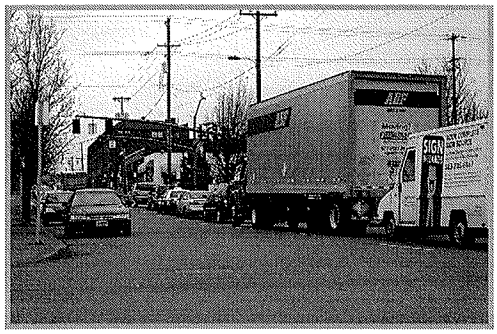
## Bicycle Classifications

**City Bikeways** are intended to serve the Central City, regional and town centers, station communities, and other employment, commercial, institutional, and recreational destinations.

**Local Service Bikeways** are intended to serve local circulation needs for bicyclists and provide access to adjacent properties. Bicycle boulevards are a treatment for local service bikeways. Elements of bike boulevards could include turning stop signs toward intersecting traffic, placing motor vehicle diverters at key intersections, placing traffic calming devices on streets, or placing directional signs for cyclists.

## Traffic Classifications

**Traffic Access Streets** are intended to provide access to Central City destinations, distribute traffic within a Central City district, provide connections between Central City districts, and distribute traffic from Regional Trafficways and Major City Traffic Streets for access within the district. Traffic Access Streets are not intended for through-traffic with neither a starting or ending point in the district.

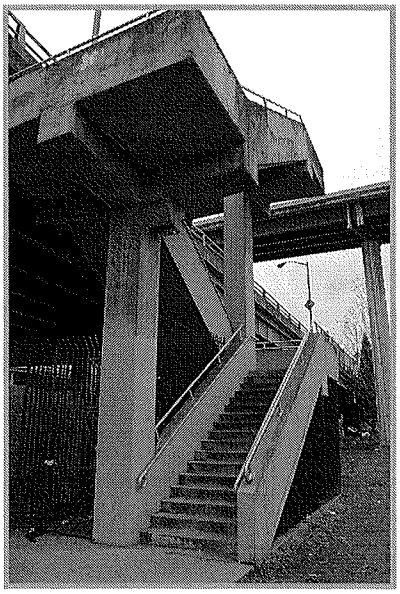


SE Taylor Street is a Portal Street without Bike Lanes.

**Local Service Traffic Streets** are intended to distribute local traffic and provide access to local residences or businesses.

## Transit Classifications

**Major Transit Priority Streets** are intended to provide high-quality transit service that connects the Central City and other regional and town centers and main streets. The elevated segments of the SE Morrison, Belmont, Madison, Hawthorne viaducts are Major Transit Streets and provide a transit connection to the Street Plan area.



Stairs connect the surface street sidewalk network to pedestrian facilities on the Morrison and Hawthorne Bridge viaducts.

**Local Service Transit Streets** are intended to provide transit service to nearby residential and adjacent commercial areas. All of the surface streets in the Central Eastside Street Plan area are classified as Local Service Transit Streets.

**Intercity Passenger Rail** provides commuter and other rail passenger service. SE 1st Avenue is an Intercity Passenger Rail street.

## Emergency Response Classifications

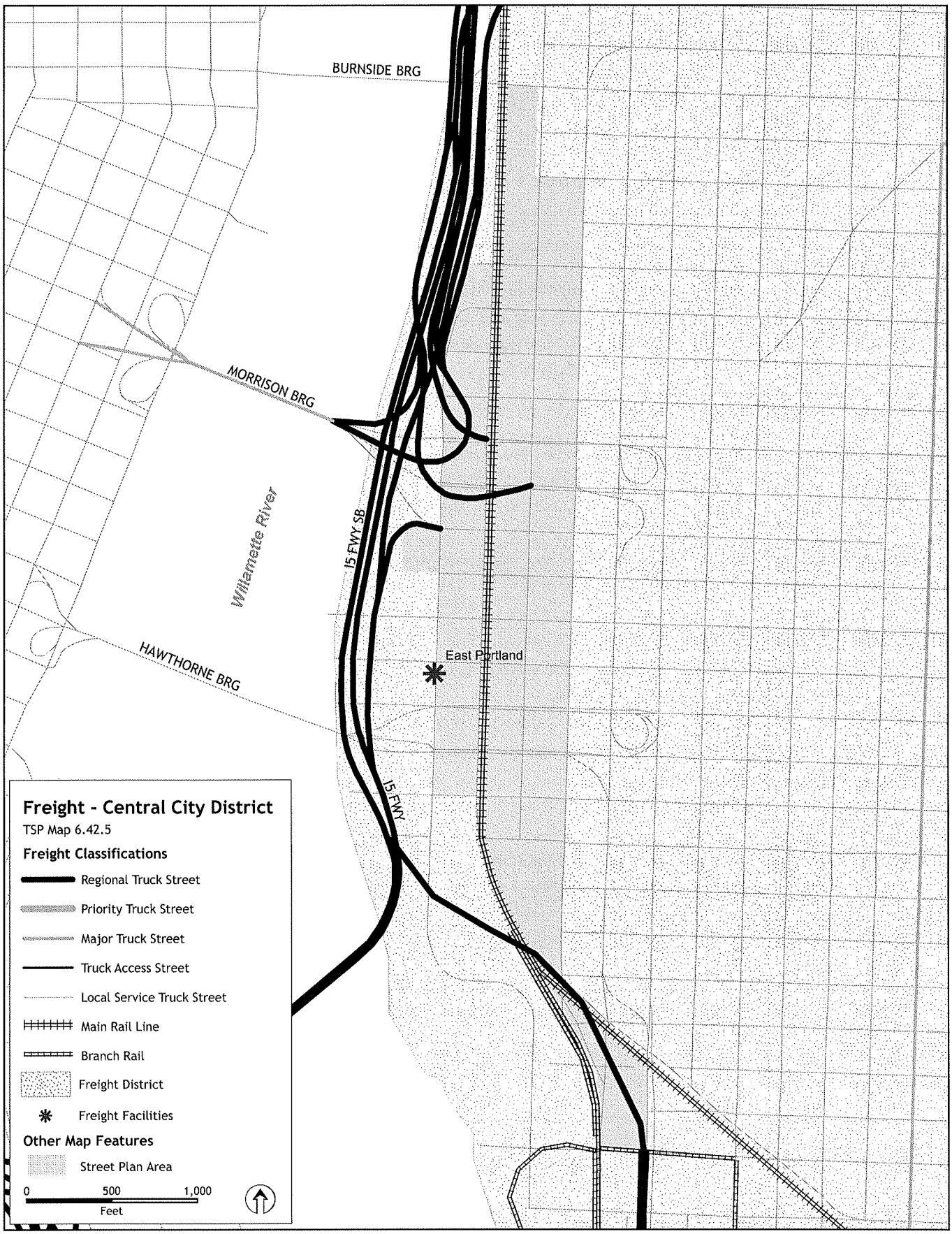
**Major Emergency Response Streets** are intended to serve primarily the longer, most direct legs of emergency response trips.

**Minor Emergency Response Streets** are intended to serve primarily the shorter legs of emergency response trips.

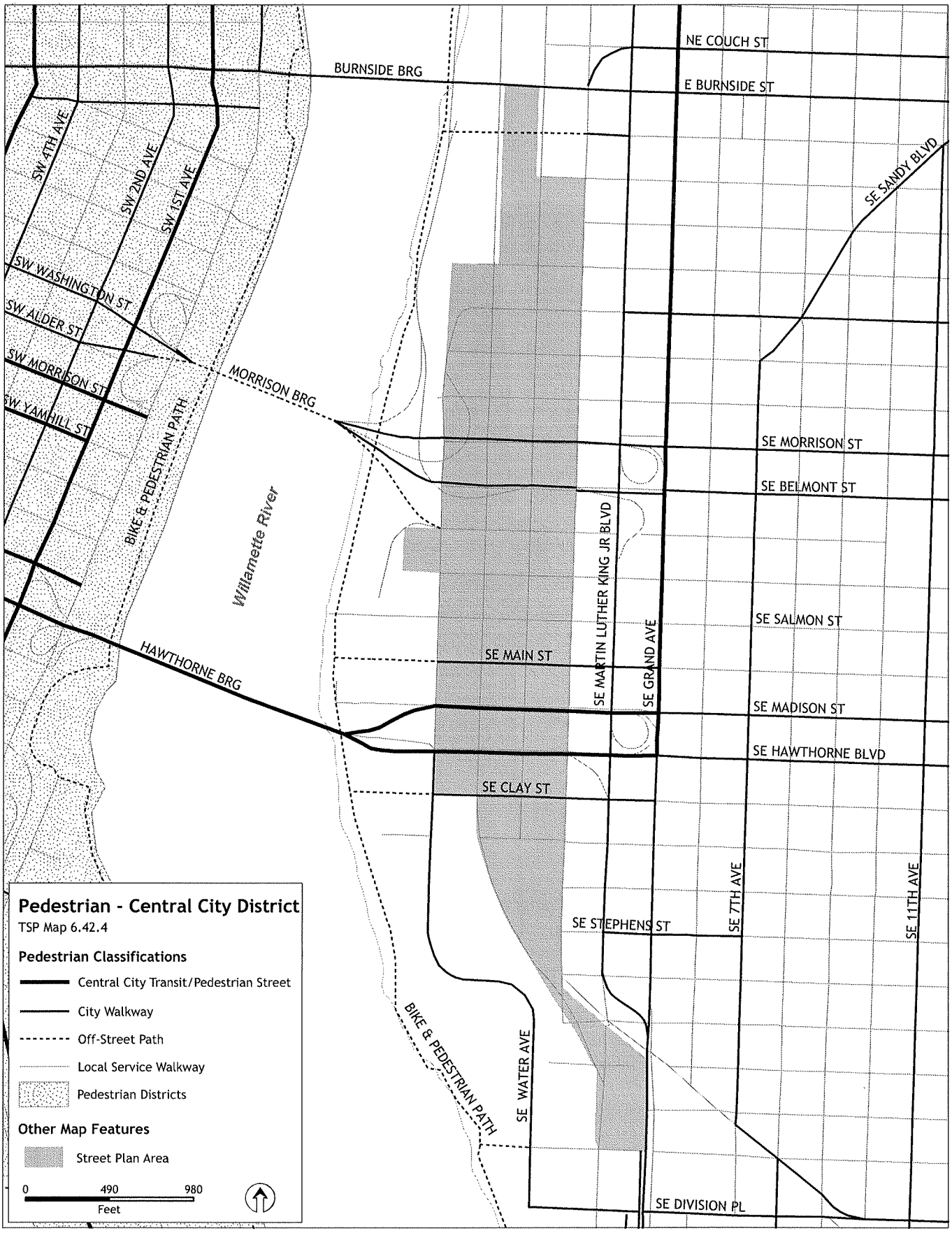
## Street Design Classifications

**Local Streets** are designed to complement planned land uses and reduce dependence on arterials for local circulation. Local Street design includes many connections with other streets, sidewalks, on-street parking, and planting of street trees and ground covers (where planting strips are included). All streets in the district are designated as Local Streets.

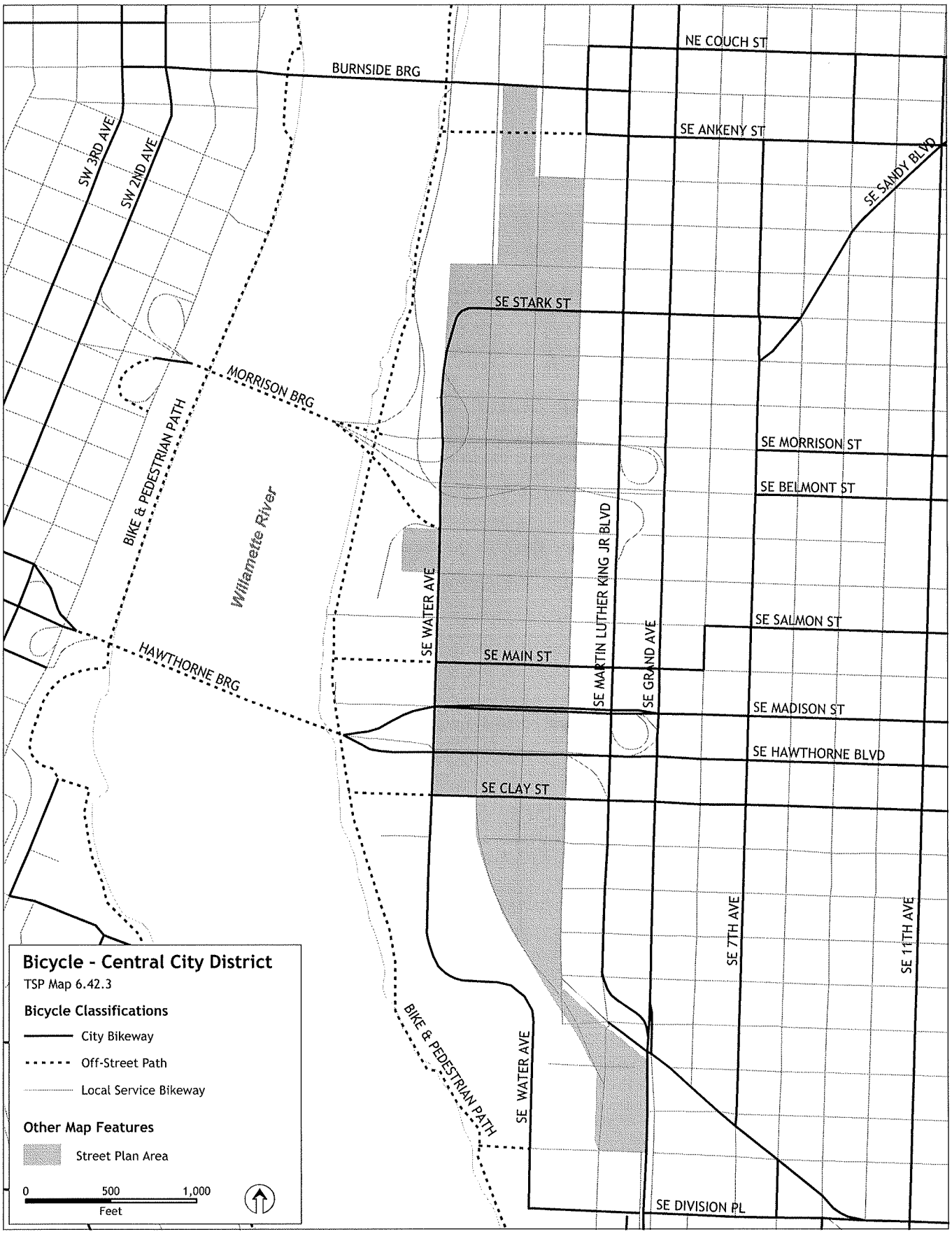
## Map 2.1
## Freight - Central City District



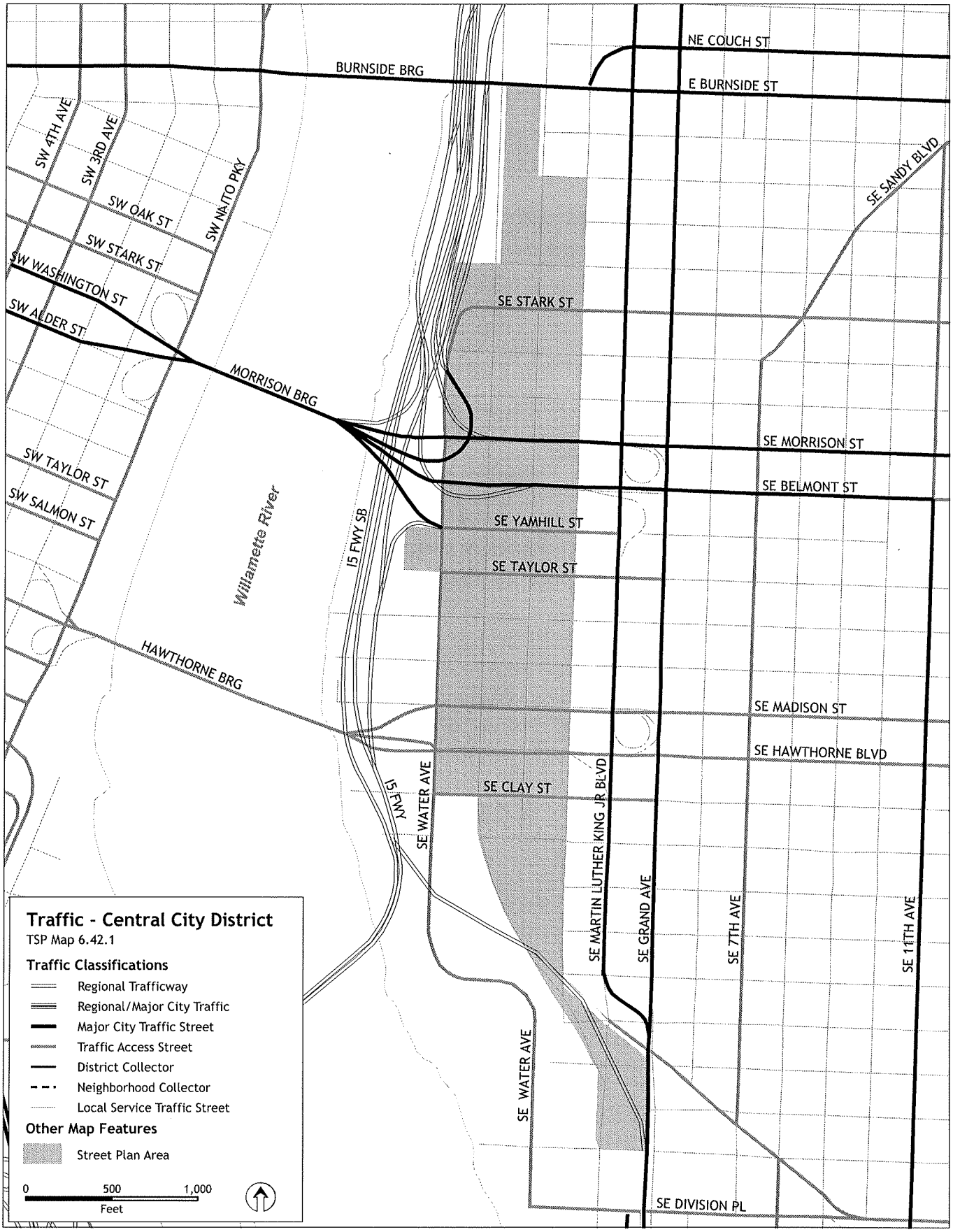
## Map 2.2
## Pedestrian - Central City District



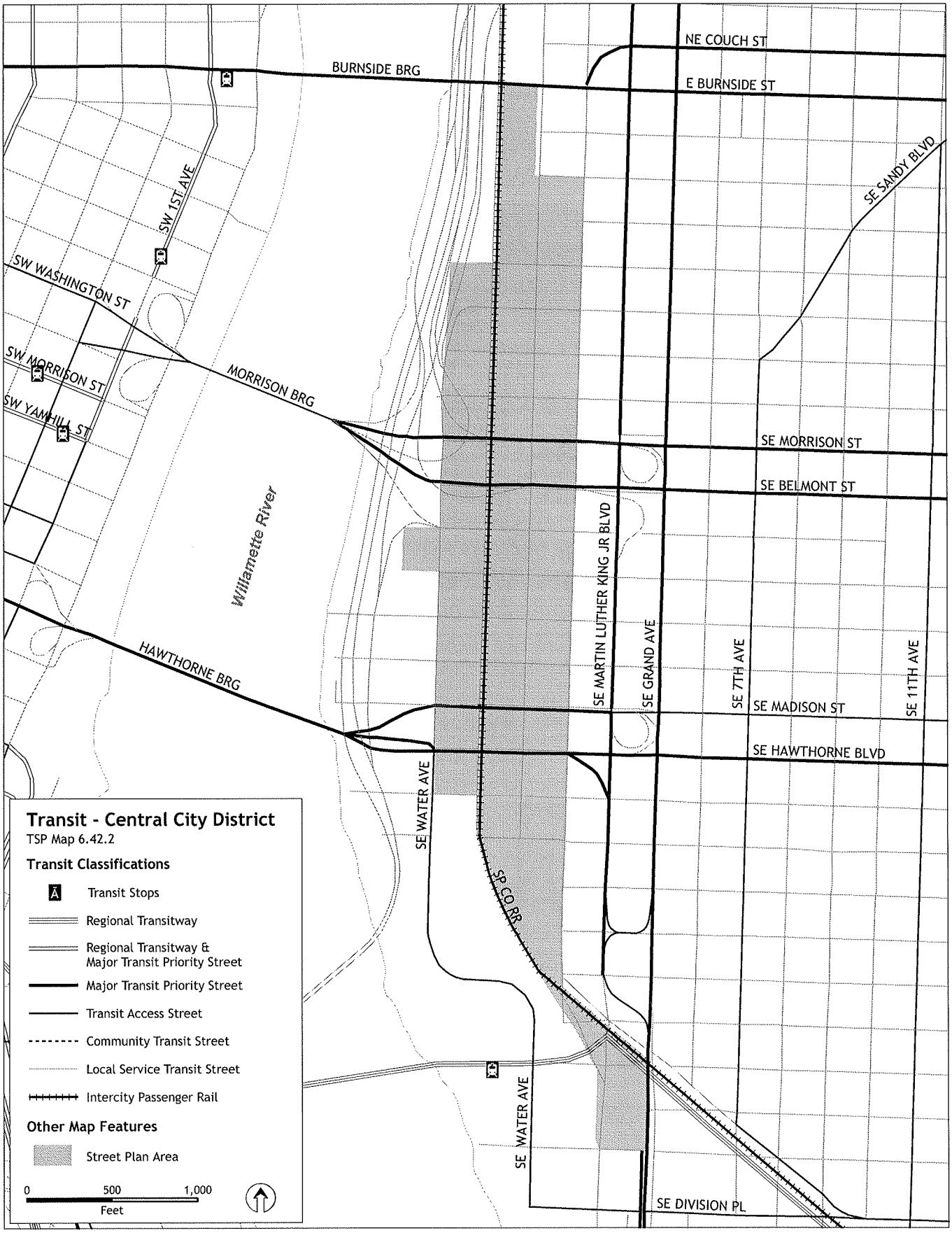
## Map 2.3
## Bicycle - Central City District



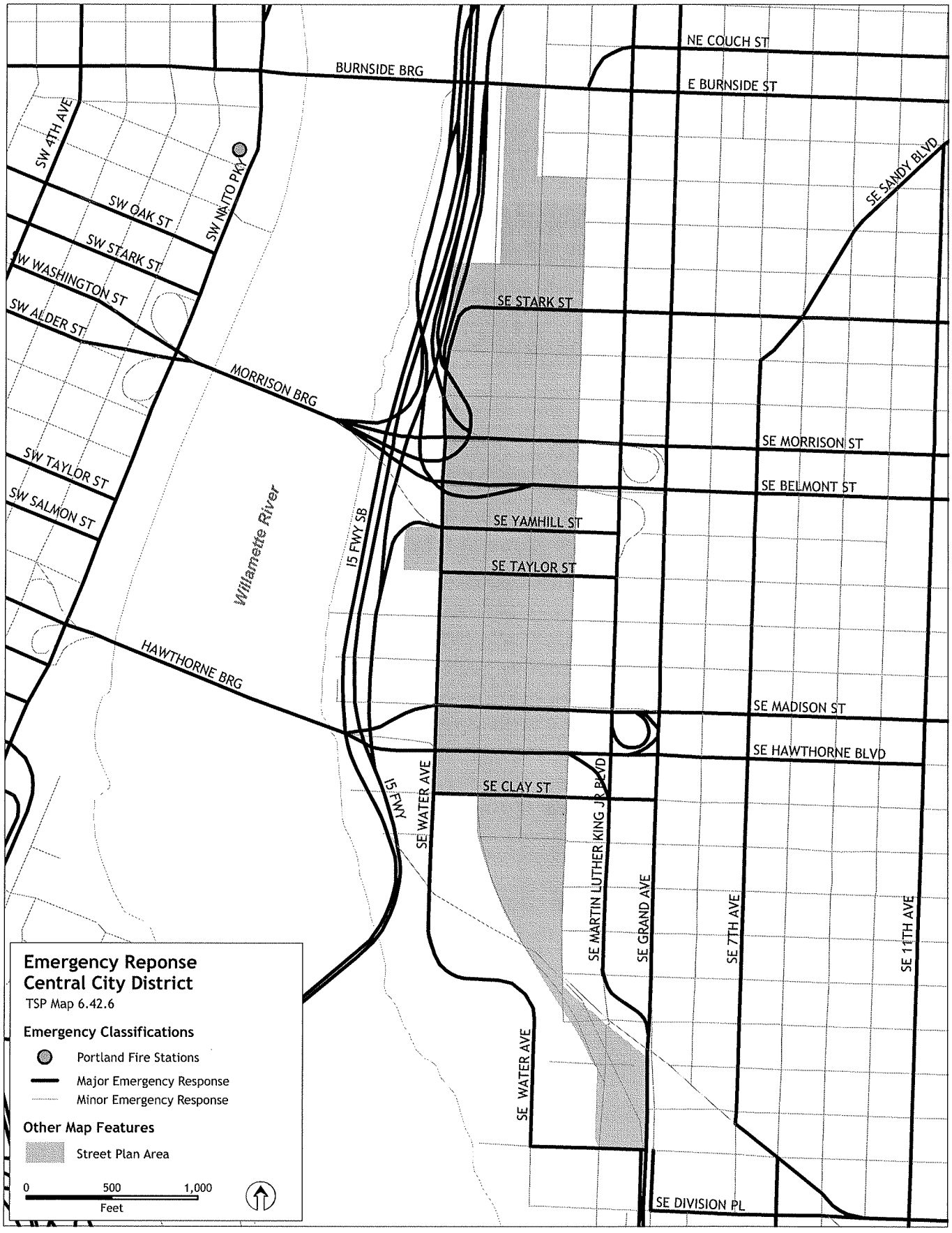
## Map 2.4
## Traffic - Central City District



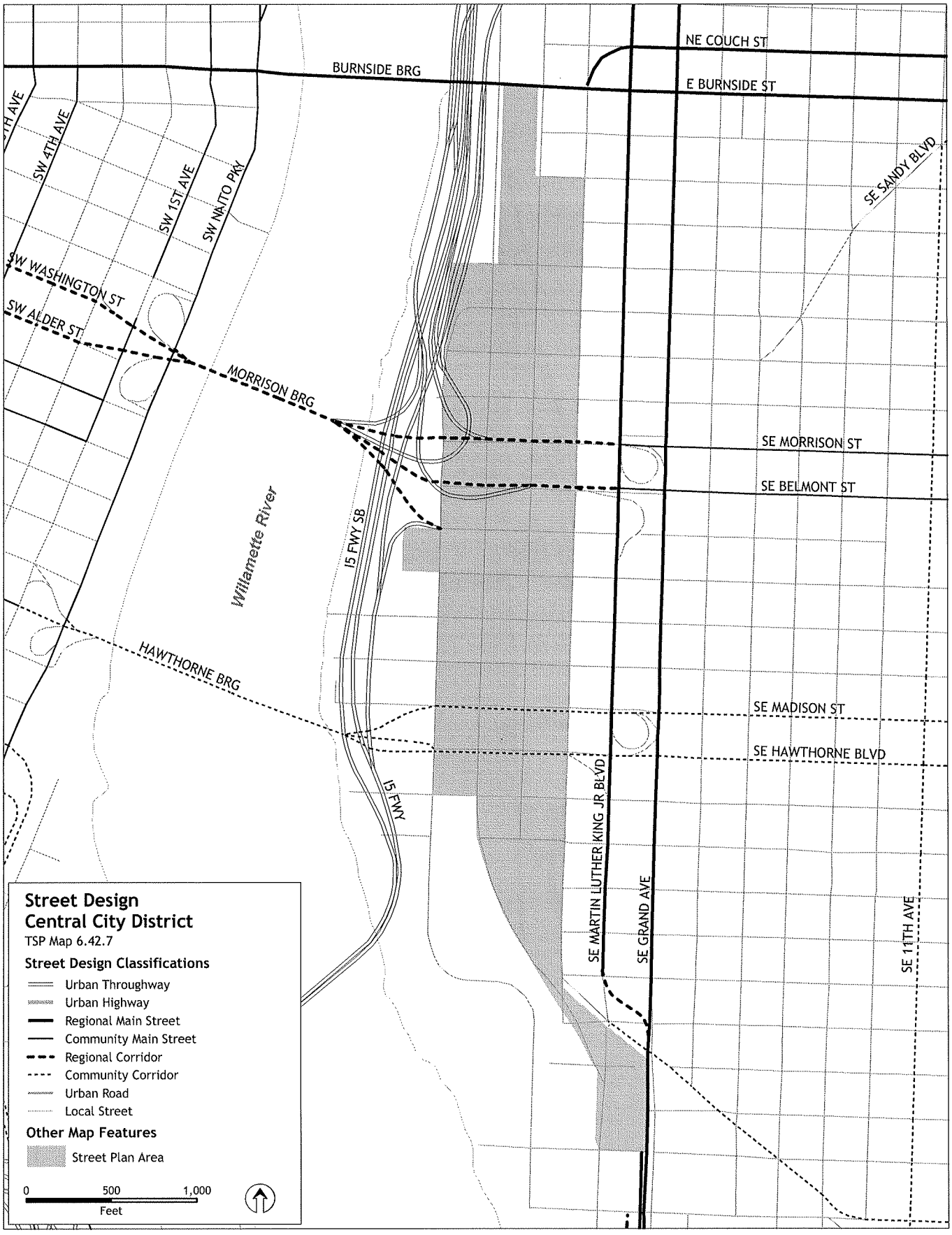
## Map 2.5
## Transit - Central City District



## Map 2.6
## Emergency Response - Central City District



## Map 2.7
## Street Design - Central City District



## CENTRAL CITY TRANSPORTATION MANAGEMENT PLAN

The Central City Transportation Management Plan (CCTMP) was adopted in 1995 by City Council (Ordinance No. 169535) as the guiding transportation policy for the Central City. The CCTMP is part of a continuous planning process to promote economic vitality, livability and environmental quality in Portland's central core. The CCTMP also has modal and district-specific policy language. Policies related to freight and the Street Plan area include:

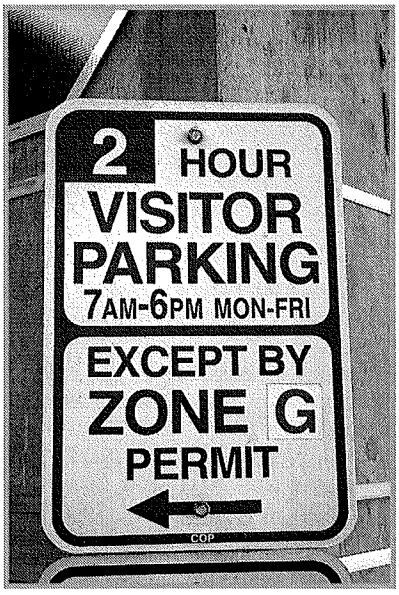
SE Clay Street has been identified as an access route for over-dimensional freight.

### Policy 2.7: Maintain Access to Industrial Activities

Maintain and/or enhance commercial and vehicle access and circulation to and within the Central City to serve industrial activity.

### Policy 2.8: Industrial Sanctuaries

Protect industrial sanctuaries in the Central City from commercial development, especially from being used as a parking resource by commercial development in adjacent districts. Support the development of commercial parking in industrial districts only if it serves uses within the industrial district.



Most of the Street Plan area falls within Area Parking Permit Zone G, which limits visitor parking.

### Policy 20

Preserve the Central Eastside as an industrial sanctuary while improving freeway access and expanding the area devoted to the Eastbank Esplanade. Reinforce the district's role as a distribution center.

### Circulation Strategy 6.3

Develop a truck access plan for industrial land uses in the Central Eastside which improves connections to the regional traffic network and reduces conflicts with non-industrial land uses.

## PORTLAND STREET DESIGN GUIDELINES

The City has adopted street design guidelines for bicycles, pedestrians and freight. These guidelines provide a detailed description of mode-specific needs within the public right of way and provide the overall design basis for the Central Eastside Street Plan. Table 2.1 summarizes the recommended bike/travel lane, and sidewalk widths as currently adopted by Portland City Council. A more detailed description of the design guidelines can be found in the Bicycle, Pedestrian and Freight design guideline documents referenced at the bottom of the table.

## Table 2.1
## Summary of City of Portland Bicycle, Truck, and Pedestrian Street Design Guidelines

| Street Classification | Recommended Widths | | | |
|---|---|---|---|---|
| **Bicycle (1)** | **Desirable** | **Preferred** | **Acceptable** | **Standard** |
| City Bikeway | 6-ft. bike lane | 5-ft. bike lane | 4-ft. bike lane | NA |
| Local Service Bikeway | 6-ft. bike lane | 5-ft. bike lane | 4-ft. bike lane | NA |
| Shared Roadway | NA | NA | NA | No specific standard or treatment for local roads and minor collectors with a 25 mph speed limit, or traffic volumes of 3,000 ADT or less. |
| Wide Outside Lane | NA | NA | NA | Typically 14 feet wide for higher volumes/higher speed streets (above 25 mph or 3,000 ADT). |
| **Truck (2)** | | **Preferred (4)** | **Acceptable (5)** | |
| Regional Truckway | NA | 13-ft. travel lane | 12-ft. travel lane | NA |
| Freight District Street | NA | 12-ft. travel lane | 11-ft. travel lane | NA |
| | | | | |
| **Pedestrian (3)** | | **Recommended(6)** | **Accepted (7)** | |
| City Walkway | NA | 12-ft. sidewalk | 9-ft. sidewalk | NA |
| Local Service Walkway | NA | 10-12-ft. sidewalk | 9-ft. sidewalk | NA |
| Pedestrian-Transit Street | | | | |

(1) Source: Portland Bicycle Master Plan, Appendix A, Design and Engineering Guidelines, pages A10-A12, July 1998.
(2) Source: Designing for Truck Movements and Other Large Vehicles in Portland, Table 3, page 21, October 2008.
(3) Source: Portland Pedestrian Design Guidelines, Section A, Guidelines for Sidewalk Corridors, pages A12-A13, June 1998.
(4) Preferred is the recommended width and should be applied for new streets and for reconstruction where physical features do not interfere.
(5) Acceptable requires the approval of the City Traffic Engineer or his/her designated representative. "Acceptable" is the width that should only be applied where various constraints, such as those resulting from inadequate or unavailable right of way, building setbacks and other physical features are present. Designing lane widths narrower than Acceptable requires a design exception.
(6) Recommended for City Walkways, for local streets in Pedestrian Districts, and for streets where ROW is 60-ft. 10-ft. Recommended for Local Service Walkways in residential zones or R-7 or less density where ROW width is less than 50-ft.
(7) 9-ft. Not Recommended for new construction or reconstruction. 9-ft. or less Accepted in existing constrained conditions when increasing the Sidewalk Corridor is not practicable.

## STORMWATER MANAGEMENT

The following plans, projects, and policies impact the management for public right-of-way stormwater within the Central Eastside Street Plan boundaries.

Portland Watershed Management Plan (2005): The Watershed Management Plan describes the approach that will be used to evaluate conditions in the City's urban watersheds and implement projects to improve watershed health. The plan also provides an integrated City response to local, state and federal environmental requirements.

### City Green Street Policy (2007)

The City's Green Street Policy was adopted by City Council in April 2007. It directs City bureaus and agencies "to cooperatively plan and implement Green Streets as an integral part of the City's maintenance, installation, and improvement programs for its infrastructure located in the public right-of-way, and to integrate the Green Street Policy into the City's Comprehensive Plan, Transportation System Plan, and Citywide Systems Plan." The Policy also created a 1% for Green Fund that would be used to implement green street projects throughout the city. City of Portland non-emergency projects that do not trigger the Stormwater Management Manual are required to pay 1% of the construction cost into the fund. Funds are distributed through a grant review process.

### Sewer and Drainage Facilities Design Manual (2007)

The Sewer and Drainage Facilities Design Manual is the primary reference for designing public sewers. It is referenced for the design of pipelines, drainage channels, and other public facilities that convey and dispose of sanitary sewage, stormwater, and combined sewage flows. The Stormwater Management Manual should not be used to design any public sewer conveyance facility, and designers must reference both manuals when working in the City of Portland to determine the appropriate standards that apply to a project.

### Stormwater Management Manual (2008)

The Stormwater Management Manual was first developed in 1999 to meet local, state, and federal policies and regulations. The manual provides developers and design professionals with specific requirements for managing stormwater from new development and redevelopment projects.

### Clay Green Street Project (2009)

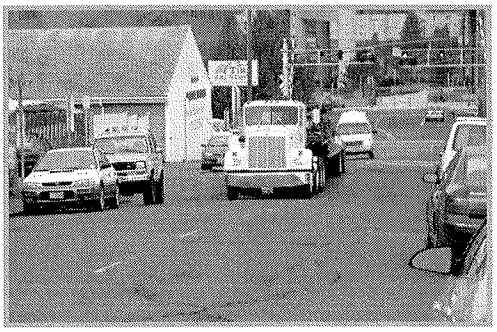
The City of Portland is working with the community to develop a series of green street projects on SE Clay Street from the Willamette River to SE 12th Avenue. The goals of the project are to maintain freight and business activities, enhance pedestrian and bicycle access to the Willamette River, and provide sustainable stormwater management. Concept design plans have been prepared as part of this project. Final street design for the Clay Green Street Project requires approval by the City Engineer and City Traffic Engineer.

# 3 STREET DESIGN

This chapter describes the recommended right-of-way design plans and stormwater management options for the Central Eastside Street Plan area. More detailed information on existing right-of-way conditions are found in the Technical Appendix.

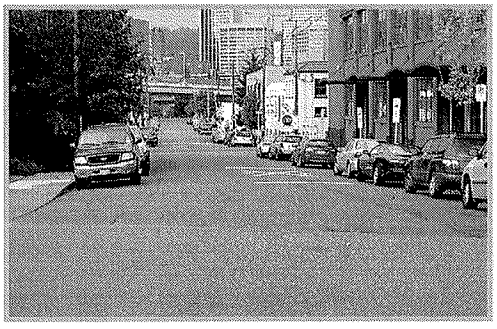
## STREET FUNCTION

The Transportation System Plan (TSP) is the City's policy document that establishes the street classifications for each mode (freight, bicycle, pedestrian, public transit, traffic, emergency response and street design) and provides the policy basis for street improvements within the public right-of-way. The street classifications are based, in part, upon the underlying land use category and describe which transportation mode should be emphasized on each street. The Central Eastside Street Plan area is zoned IG1 and designated as Industrial Sanctuary in the City's Comprehensive Plan. These land use categories are designed to protect industrial lands within the City, to ensure that a range of employment opportunities are available, and to provide areas where industrial uses may locate, while restricting non-industrial uses to prevent conflicts.

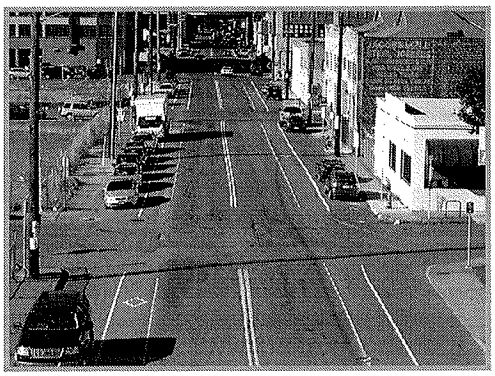


SE Clay Street is a Portal Street without Bike Lanes.

A recent Zoning Code amendment created the Employment Opportunity Subarea (EOS) to allow more employment dense "Industrial/Office" use within the CEID. This will create greater demands on the existing right-of-way to accommodate higher volumes of autos, trucks, bicycles and pedestrians and will increase the need for customer and employee parking. In order to accommodate competing right-of-way needs, functional street categories were developed to address the unique design considerations for the Central Eastside Street Plan area. These street categories are based on the TSP hierarchical classification system as well as the current operational function of each street as identified through business and property owner survey responses, traffic analysis, and field observations. The functional street categories used in this document are designed to supplement the existing TSP street classifications and are illustrated in Map 3.1.



SE Main Street is a Route to the River Street.



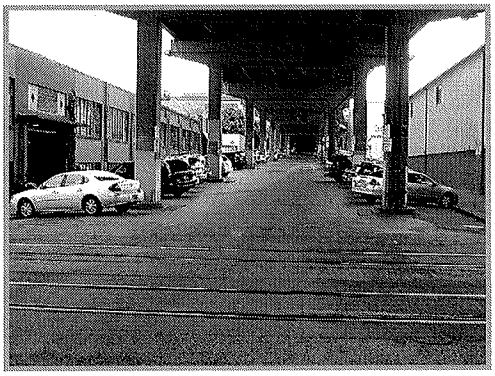
SE Water Avenue is a Portal Street with Bike Lanes.

### Portal Street

Portal Streets serve as the primary north-south and east-west routes for distributing multi-modal traffic flows within and through the Street Plan Area. These facilities provide a direct connection to the National Network and/or the National Highway System (e.g., the MLK/Grand Couple and I-5 northbound off ramp) and key bicycle/pedestrian connections (e.g., Morrison Bridge) with traffic flow controlled at signalized intersections (with the exception of Yamhill Street). These facilities typically serve higher traffic volumes than other streets within the Street Plan Area. Three types of Portal Streets are identified in the Street Plan Area: 1. Portal Street without Bike Lanes; 2. Portal Streets with Bike Lanes; 3. Portal Street–Clay Green Street.

### Truck Loading Street

Truck Loading Streets have a high concentration of truck loading activity occurring within the public right-of-way. These activities may include short to medium-term parking of truck or tractor-trailers on the street, temporary blocking or partially blocking of city streets to facilitate loading activities, and the use of forklifts and other loading equipment within the public right-of-way. These facilities also serve as secondary north-south portal streets that provide local access and circulation within the Street Plan Area.



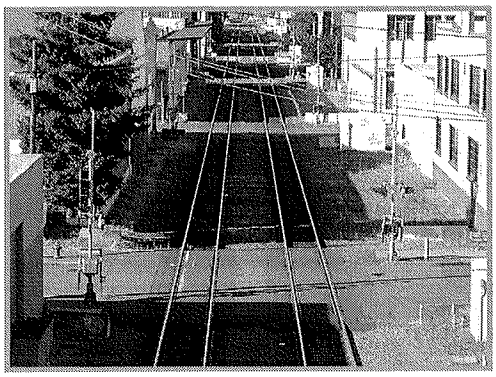
SE Madison Street is a Surface Viaduct Street.

### Routes to the River Street

The East Bank Riverfront Park Master Plan of 1995 identifies SE Salmon, SE Main and SE Clay Streets as Routes to the River. These streets are designed to facilitate the movement of people from East Portland to the Willamette River through the Central Eastside Industrial District.

### Surface Viaduct Street

Surface Viaduct Streets are one-way streets located underneath the Hawthorne/Madison and Belmont/Morrison bridge ramps. Numerous piers that support the bridge ramps stand in the public right-of-way, limiting future right-of-way improvements and restricting the width of the travel lane. Angled parking is prevalent along both sides of these streets.



SE 1st Avenue is a Rail Corridor.

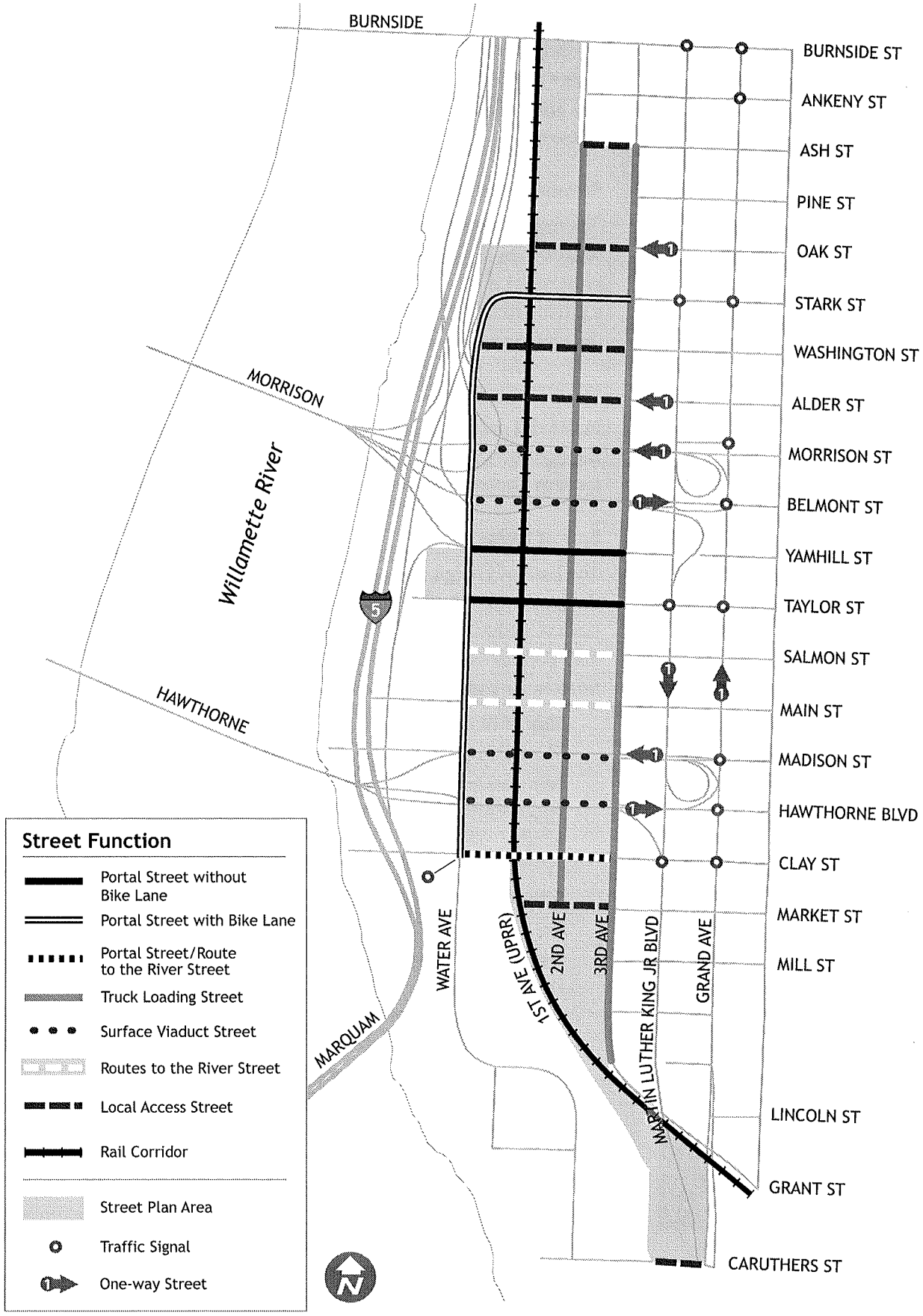
### Local Access Streets

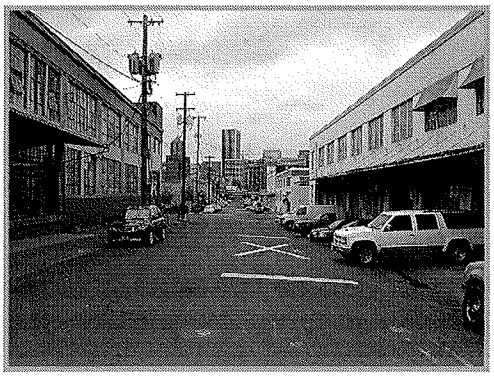
Local Access Streets primarily serve local access and circulation within the Street Plan Area. Intersections at Major City Traffic Streets are not signalized.

### Rail Corridor

The Rail Corridor only serves freight cargo and rail passengers as part of the national rail network. The Union Pacific Railroad and AMTRAK operate on the rail line along the SE 1st Avenue right-of-way. There are thirteen at-grade crossings within the Street Plan Area.

## Map 3.1
## Street Function





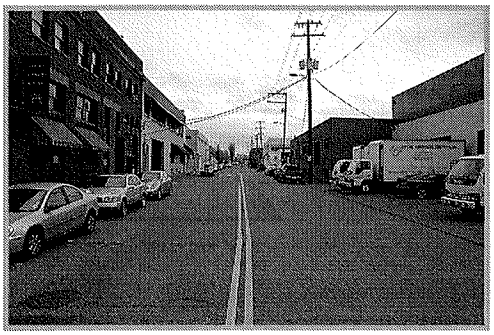
SE Salmon Street is a Routes to the River Street.

## RIGHT-OF-WAY DESIGN PLANS

The Right-of-Way Design Plans (RDPs) provide the design guidelines for each of the roadway segments and street classifications in the Central Eastside Street Plan area. The plans consist of detailed cross sections and basis of design tables that reflect the objectives and guiding principals developed for this Street Plan. A more detailed description of the design elements are as follows:

### Recommended Cross Sections

The recommended cross sections provide dimensions for each of the features identified in the basis of design tables. These dimensions are intended to capture the existing conditions of all the individual roadway segments within a given street classification and help to guide future improvements that satisfy the preferred design criteria.



On-street parking and truck loading on SE Taylor Street.

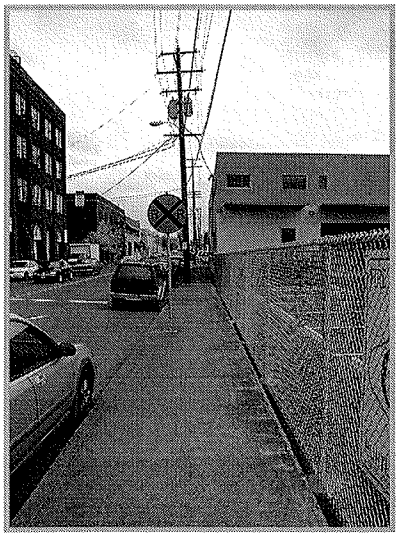
The recommended cross sections display the desired features located both inside and outside the existing right-of-way. The features displayed outside the right-of-way (typically sidewalks) are shown in light gray dashed lines. All features displayed inside the right-of-way are shown in thick black solid lines.

### Basis of Design Tables

The Basis of Design tables provide the preferred design criteria and basis of design for the components of each street classification's cross section. The bases of design explain the project objectives, guiding design principles, and City policies on which the preferred design criteria are based. The following features are addressed in the Basis of Design Tables:

#### Right-of-Way Width

The RDPs maintain existing 60 foot right-of-way widths for all roadway segments and street classifications in the study area except where opportunities present themselves to satisfy the preferred sidewalk corridor width.



Substandard sidewalks will be widened through property dedication when development occurs.

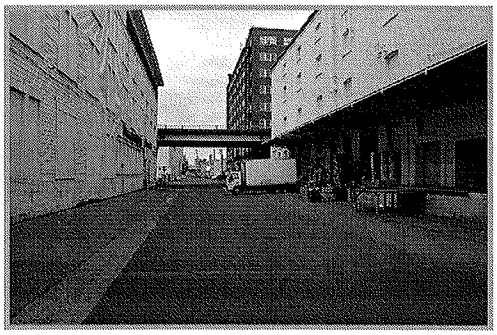
#### Sidewalk Corridor Width

For most streets in the EOS, the preferred sidewalk corridor width was determined to be 11 feet, in order to satisfy the City of Portland Pedestrian Design Guidelines. The TAC work sessions identified three exceptions. Given the unique location of utility poles and other obstructions, the preferred sidewalk corridor width for the east side of SE Water Avenue was adjusted to 8 feet minimum. To help balance the objectives of providing a useful sidewalk corridor and retaining developable private property, the preferred sidewalk corridor width for Viaduct and Local Access streets was reduced to 9 feet.

Where additional sidewalk corridor width is needed to accommodate the preferred design, adjacent property owners will be expected to dedicate additional right-of-way if the land is not occupied by essential structures.

### Pedestrian Through Zones

Except on the east side of SE Water Avenue and along the Viaduct Streets and Local Access Streets, all sidewalks in the Street Plan area should have 6-foot wide pedestrian through zones that are located adjacent to the back of the sidewalk. Remaining sidewalk width will be considered the furnishing zone.



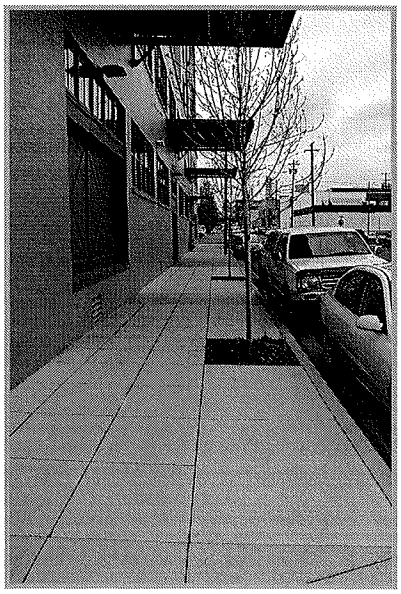
Loading docks, like these on SE 2nd Avenue, allow businesses to load trucks in the public right-of-way.

### Loading Docks

Loading docks are located in the sidewalk corridor and are allowed on Truck Loading Streets (SE 2nd and SE 3rd Avenues). Active loading docks are not required to satisfy minimum ADA access standards. Loading docks that are no longer in use and maintained as part of a sidewalk corridor must meet ADA standards. No new docks will be allowed on the east side of SE 3rd Avenue unless they actively support a use that is allowed in an IG1 zone.

### Furnishing Zones

A 4-foot wide furnishing zone adjacent to the curb is preferred in order to provide space for utility poles, hydrants, street trees, and stormwater management facilities. Utilities and other features placed within the furnishing zone should not obstruct the pedestrian through zone. The only exceptions are in areas where sidewalk corridors are less than 11-feet wide. In these areas the furnishing zone shall be equal to the width of the sidewalk minus the minimum required pedestrian through zone clearance.



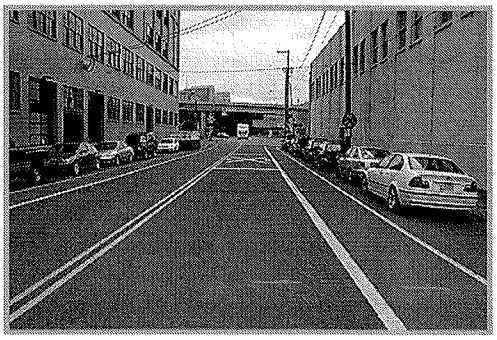
SE 2nd Avenue sidewalk corridor with trees planted in the furnishing zone.

## Roadway Width

Roadway widths are measured from sidewalk corridor to sidewalk corridor, or in the case of Truck Loading Streets the roadway is any area that does not have a sidewalk or loading dock. The following details the preferred cross section dimensions of roadway components:

### Parking Zone Width

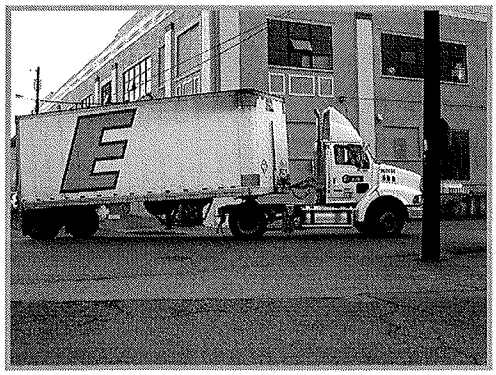
The majority of streets in the Street Plan area accommodate 7-foot wide parallel parking zones. However, on Truck Loading Streets, Viaduct Streets and Local Access Streets (where street width and travel lane width allow) angle parking is preferred if the resulting parking supply is equal to or greater than if parallel parking were provided.



5-foot wide bike lanes on SE Stark Street.

### Bike Facility

Five-foot wide bike lanes are desired along SE Water Avenue, SE Stark, and the eastbound (uphill) direction of SE Clay Street. SE Water Avenue and SE Stark Street are multi-modal Portal Streets that serve as primary routes through the area. Bike lanes are in place on both streets. The Street Plan aspires to add an uphill bike lane on SE Clay Street if the loss of on-street parking can be mitigated within the immediate area. Clay Street has also been identified as a multimodal "Routes to the River"



Intersection design must accommodate various truck types.

Street that connects southeast neighborhoods to the Eastbank Esplanade. Given SE Clay Street's grade, multimodal emphasis, portal-level traffic activity; its preferred optimum cross section resulted in a single bike lane in the uphill direction so slower-moving cycles do not have to share the same lane with motor vehicles. It was deemed acceptable for westbound (downhill) cyclists to share the motor vehicle lane because the two are more capable of traveling at similar speeds. On all other streets in the Street Plan area, cyclists and drivers are expected to share the same travel lanes.

### Travel Lane Width

Eleven to 12-foot wide travel lanes are preferred for all streets in the Street Plan area in order to satisfy the City of Portland Truck Street Design Guidelines. All roadways' travel lanes are already at least 11-feet wide after accounting for parking zone width and existing bicycle lanes.

## Stormwater Facilities

Projects that develop or redevelop over 500 square feet of impervious surface must comply with flow control and pollution reduction requirements (where applicable) described in sections 1.3.2 and 1.3.3 of the Stormwater Management Manual (SMM). Stormwater management facilities must be designed per the Stormwater Infiltration and Discharge Hierarchy (Hierarchy) described in section 1.3.1 of the SMM. Optimum designs in the Street Plan area will locate stormwater facilities in the furnishing zone to the extent practicable, and minimize loss of on-street parking. All infiltration, flow control and pollution reduction facilities in the public right of way must be approved by the Bureau of Environmental Services (BES).


There are twelve at-grade railroad crossings in the Street Plan area.

## Intersection Design

Fifteen-foot curb radii are desired at all intersections in the Street Plan area to accommodate truck turning movements with minimal impact to on-street parking. The only exceptions are at the Viaduct streets where turning movements are constrained by bridge columns and at the Rail Corridor where the intent is to discourage access to the right-of-way.

## Rail Corridor

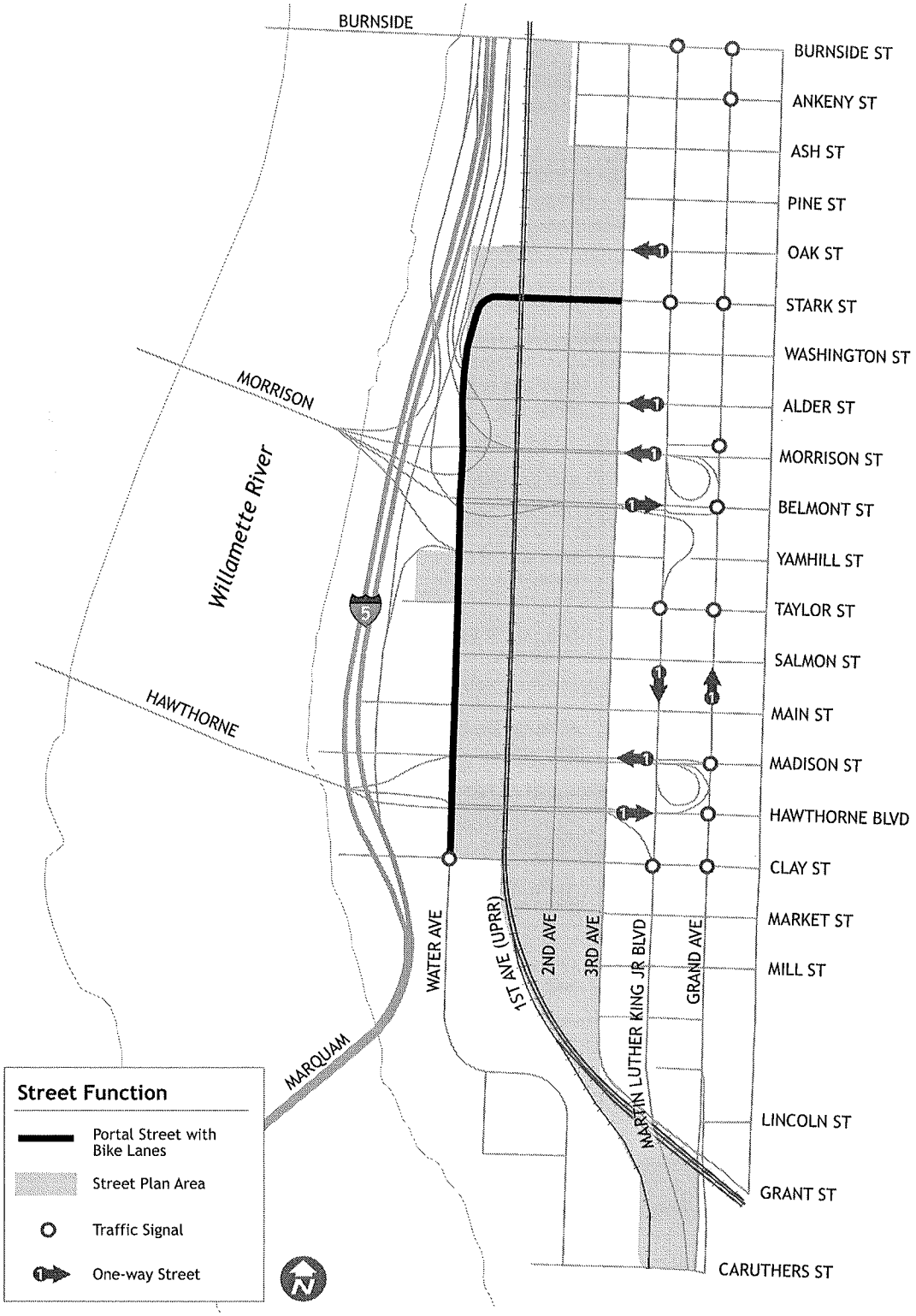
SE 1st Avenue is a Railroad Main Line intended to transport freight cargo and passengers over long distances as part of the national rail network. It is also an intercity Passenger Rail corridor intended to provide commuter and other rail passenger services.

Any changes to the existing railroad grade crossings must be designed and executed to the satisfaction of the Oregon Department of Transportation's Rail Division.

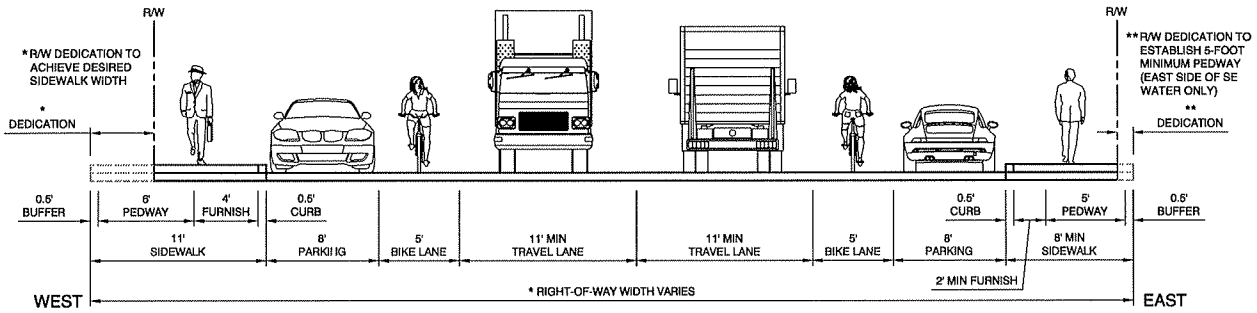
## Portal Streets with Bike Lanes

Portal Streets with Bike Lanes include SE Water Avenue and SE Stark Street. These streets are highlighted on Map 3.2. Figures 3.1 and 3.2 display the recommended cross-sections for SE Water Avenue and SE Stark Street. Tables 3.1 and 3.2 display the Basis of Design for the recommended cross-sections.

**Map 3.2**
**Portal Streets with Bike Lanes**



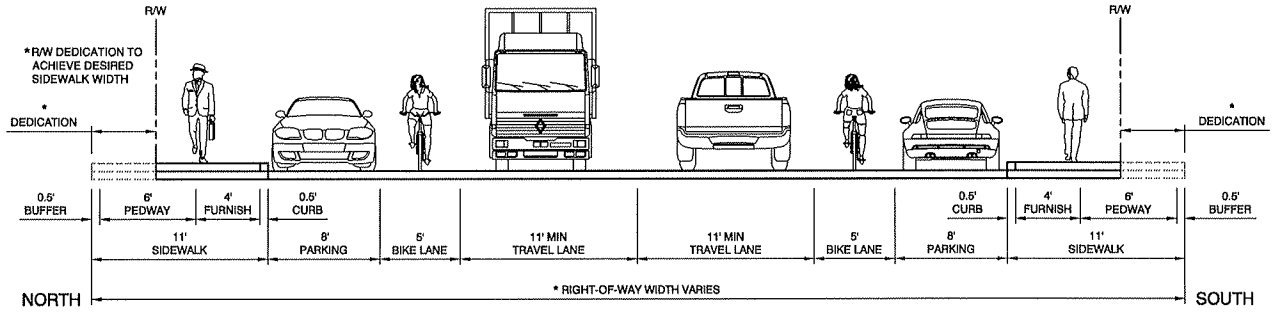
## Figure 3.1
## Recommended Cross Section - SE Water Avenue
(Portal Streets with Bike Lanes)




## Table 3.1
## Basis of Design Table - SE Water Avenue
(Portal Streets with Bike Lanes)

| Feature | Preferred Criteria | Location | Basis of Design |
|---|---|---|---|
| Right-of-Way Width | Minimum width required to establish recommended cross section dimensions. | SE Water Ave. | Assumed existing right-of-way. |
| Sidewalk Corridor Width | Establish 11-foot wide sidewalk corridor where existing sidewalk corridor is less than 11 feet, when right-of-way dedication is possible.<br><br>Establish 5-foot pedestrian clearance when right-of-way dedication is possible. | West side of SE Water Ave.<br><br>East side of SE Water Ave. | Retain existing curb locations.<br>Satisfy Access Board Guidelines for Pedestrian Access Route (PAR).<br>Satisfy City of Portland Pedestrian Design Guidelines. |
| Furnishing Zone Width | 4-foot wide furnishing zone.<br><br>2-foot wide minimum furnishing zone. | West side of SE Water Ave.<br><br>East side of SE Water Ave. | Provide space for utility poles, hydrants, street trees, and storm water management facilities without obstructing the pedestrian through zone.<br>Satisfy Access Board Guidelines for Pedestrian Access Route (PAR).<br>Satisfy City of Portland Pedestrian Design Guidelines. |
| Parking Zone Width | 8-foot wide parallel parking zone. | All Portal Streets w/ Bike Lanes | Retain existing curb locations.<br>Satisfy parking design criteria in Title 33.266 of the City Code.<br>Prioritize retaining on-street parking. |
| Bike Facility | 5-foot bike lanes. | All Portal Streets w/ Bike Lanes | Moderate traffic volumes and speeds. High bike usage.<br>Satisfy City of Portland Bicycle Design Guidelines. |
| Travel Lane Width | (2) 11-foot to 12-foot wide travel lanes. | All Portal Streets w/ Bike Lanes | Retain existing curb locations.<br>Satisfy City of Portland Truck Street Design Guidelines. |
| Stormwater Facilities | Locate in the furnishing zone to the extent practicable, and design to minimize loss of on-street parking. | All Portal Streets w/ Bike Lanes | Satisfy City of Portland Stormwater Management Manual Requirements. |
| Intersection Design | 15-foot corner radii.<br><br>At Truck Street intersections, establish Truck Street width as needed to satisfy the basis of design. | All Portal Streets w/ Bike Lanes | Accommodate truck turning movements with minimal impact to on-street parking.<br>At intersections with Portal Streets, WB-67 trucks must be able to turn from their designated lane into their designated receiving lane.<br>At intersections with all other streets, SU-30 trucks must be able to turn from their designated lane into their designated receiving lane. All larger trucks turning from a Portal Street must be able to turn from their designated lane into any portion of the cross street roadway.<br>Corner radii must accommodate ADA accessible ramps.<br>Satisfy City of Portland Truck Street Design Guidelines. |

## Figure 3.2
## Recommended Cross Section - SE Stark Street
(Portal Streets with Bike Lanes)



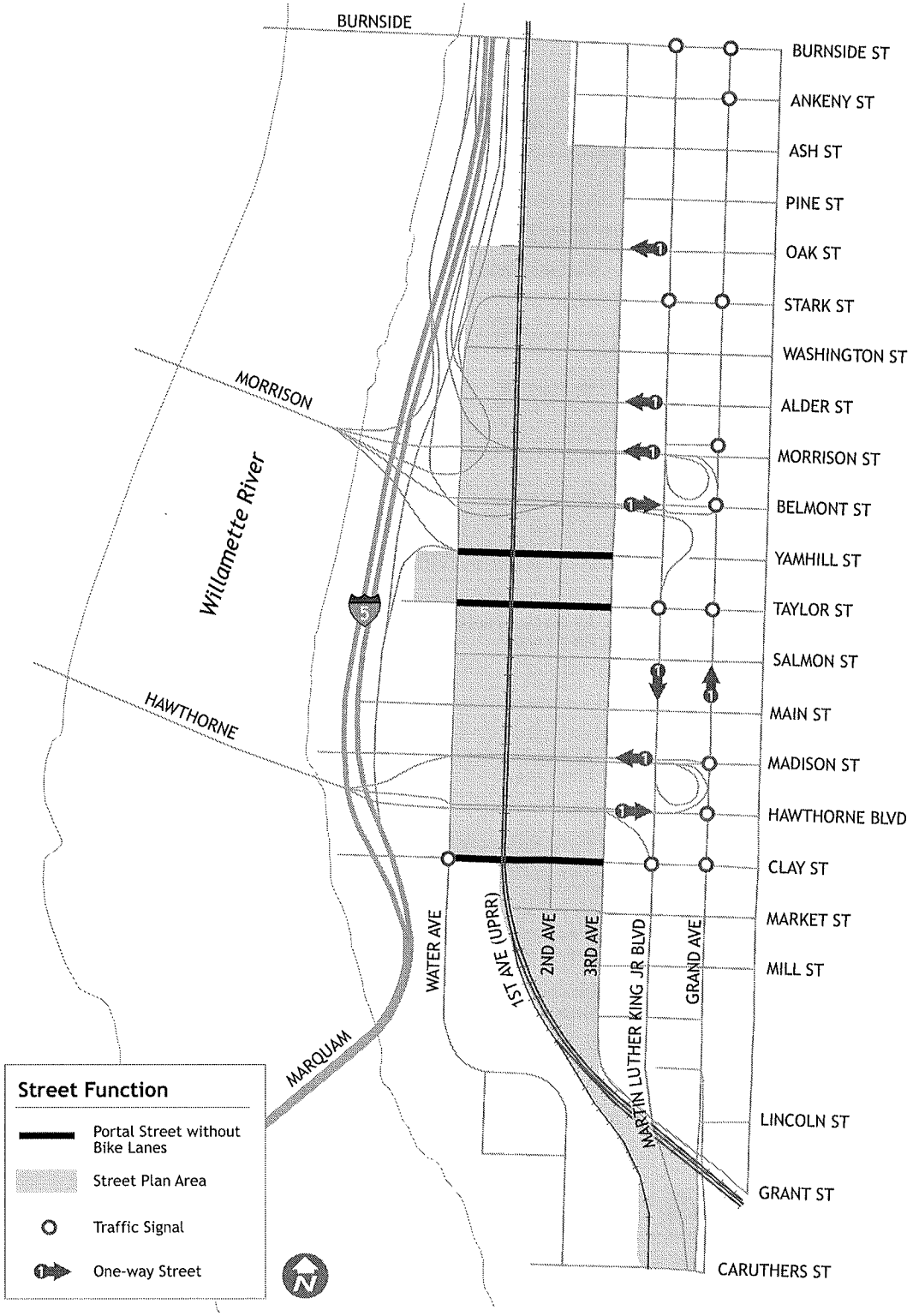

## Table 3.2
## Basis of Design Table - SE Stark Street
(Portal Streets with Bike Lanes)

| Feature | Preferred Criteria | Location | Basis of Design |
|---|---|---|---|
| Right-of-Way Width | 60-foot right-of-way.<br>Minimum width required to establish recommended cross section dimensions. | SE Stark St. | Assumed existing right-of-way. |
| Sidewalk Corridor Width | Establish 11-foot wide sidewalk corridor where existing sidewalk corridor is less than 11 feet, when right-of-way dedication is possible. | SE Stark St. | Retain existing curb locations.<br>Satisfy Access Board Guidelines for Pedestrian Access Route (PAR). |
| Furnishing Zone Width | 4-foot wide furnishing zone | All Portal Streets w/ Bike Lanes | Provide space for utility poles, hydrants, street trees, and stormwater management facilities without obstructing the pedestrian through zone.<br>Satisfy Access Board Guidelines for Pedestrian Access Route (PAR).<br>Satisfy City of Portland Pedestrian Design Guidelines. |
| Parking Zone Width | 8-foot wide parallel parking zone. | All Portal Streets w/ Bike Lanes | Retain existing curb locations.<br>Satisfy parking design criteria in Title 33.266 of the City Code.<br>Prioritize retaining on-street parking. |
| Bike Facility | 5-foot bike lanes. | All Portal Streets w/ Bike Lanes | Moderate traffic volumes and speeds. High bike usage.<br>Satisfy City of Portland Bicycle Design Guidelines. |
| Travel Lane Width | (2) 11-foot to 12-foot wide travel lanes. | All Portal Streets w/ Bike Lanes | Retain existing curb locations.<br>Satisfy City of Portland Truck Street Design Guidelines. |
| Stormwater Facilities | Locate in the furnishing zone to the extent practicable, and design to minimize loss of on-street parking. | All Portal Streets w/ Bike Lanes | Satisfy City of Portland Stormwater Management Manual Requirements. |
| Intersection Design | 15-foot corner radii.<br>At Truck Street intersections, establish Truck Street width as needed to satisfy the basis of design. | All Portal Streets w/ Bike Lanes | Accommodate truck turning movements with minimal impact to on-street parking.<br>At intersections with Portal Streets, WB-67 trucks must be able to turn from their designated lane into their designated receiving lane.<br>At intersections with all other streets, SU-30 trucks must be able to turn from their designated lane into their designated receiving lane. All larger trucks turning from a Portal Street must be able to turn from their designated lane into any portion of the cross street roadway.<br>Corner radii must accommodate ADA accessible ramps.<br>Satisfy City of Portland Truck Street Design Guidelines. |

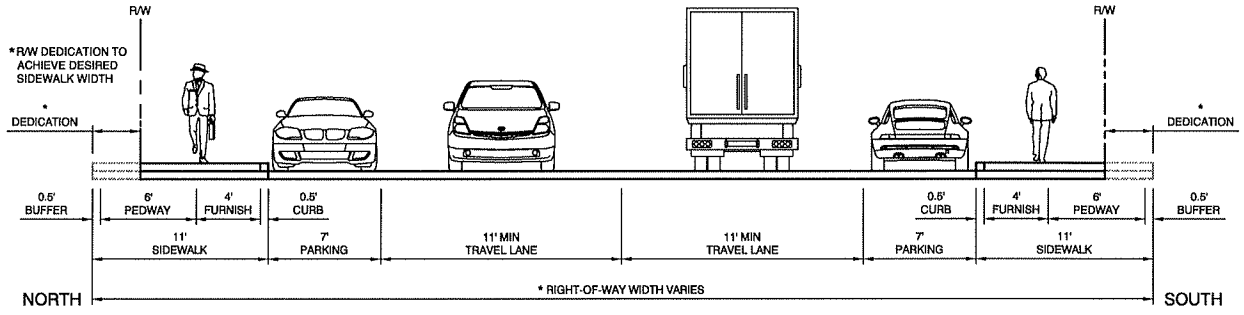
## Portal Streets without Bike Lanes

Portal streets without Bike Lanes include SE Yamhill, Taylor, and Clay Streets. These streets are highlighted on Map 3.3. Figure 3.3 displays the recommended cross-section. Table 3.3 displays the Basis of Design for the recommended cross-section.

**Map 3.3**
**Portal Streets without Bike Lanes**



## Figure 3.3
## Recommended Cross Section - SE Yamhill, Taylor, and Clay[1] Streets
(Portal Streets without Bike Lanes)




## Table 3.3
## Basis of Design Table - SE Yamhill, Taylor, and Clay[2] Streets
(Portal Streets with Bike Lanes)

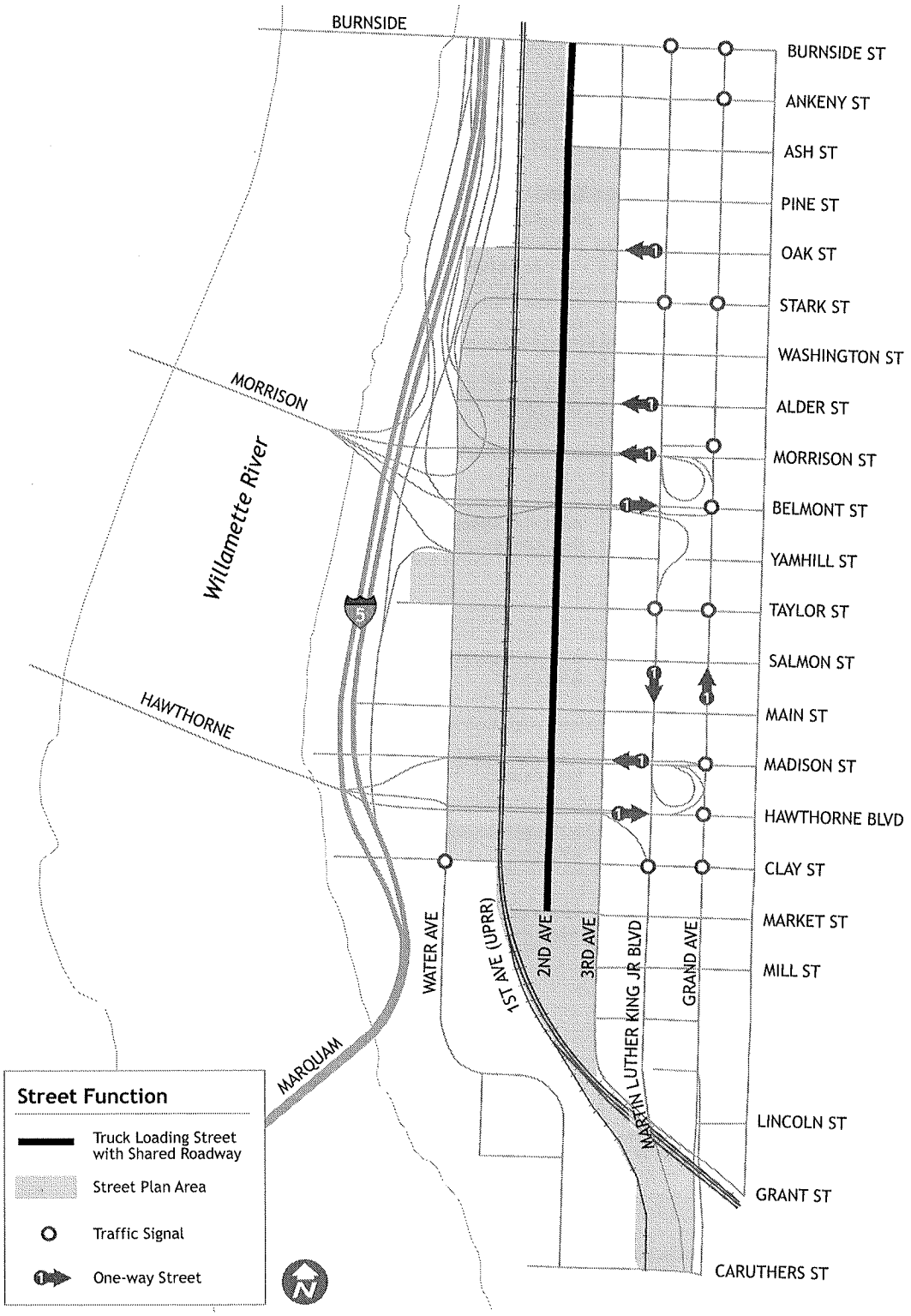
| Feature | Preferred Criteria | Location | Basis of Design |
|---|---|---|---|
| Right-of-Way Width | 60-foot right-of-way. | All Portal Streets w/o Bike Lanes | Assumed existing right-of-way. |
| Sidewalk Corridor Width | Establish 11-foot wide sidewalk corridor where existing sidewalk corridor is less than 11 feet, when right-of-way dedication is possible. | All Portal Streets w/o Bike Lanes | Retain existing curb locations.<br>Satisfy Access Board Guidelines for Pedestrian Access Route (PAR).<br>Satisfy City of Portland Pedestrian Design Guidelines. |
| Furnishing Zone Width | 4-foot wide furnishing zone. | All Portal Streets w/o Bike Lanes | Provide space for utility poles, hydrants, street trees, and stormwater management facilities without obstructing the pedestrian through zone.<br>Satisfy Access Board Guidelines for Pedestrian Access Route (PAR).<br>Satisfy City of Portland Pedestrian Design Guideline. |
| Parking Zone Width | 7-foot wide parallel parking zone. | All Portal Streets w/o Bike Lanes | Retain existing curb locations.<br>Satisfy parking design criteria in Title 33.266 of the City Code.<br>Prioritize retaining on-street parking. |
| Bike Facility | Bikes share roadway lanes.[1] | All Portal Streets w/o Bike Lanes | Moderate traffic volumes and speeds. Generous travel lane widths.<br>Satisfy City of Portland Bicycle Design Guidelines. |
| Travel Lane Width | (2) 13-foot to 14-foot wide travel lanes. | All Portal Streets w/o Bike Lanes | Retain existing curb locations.<br>Satisfy City of Portland Truck Street Design Guidelines. |
| Stormwater Facilities | Locate in the furnishing zone to the extent practicable, and design to minimize loss of on-street parking. | All Portal Streets w/o Bike Lanes | Satisfy City of Portland Stormwater Management Manual Requirements. |
| Intersection Design | 15-foot corner radii.<br>At Truck Street intersections, establish Truck Street width as needed to satisfy the basis of design. | All Portal Streets w/o Bike Lanes | Accommodate truck turning movements with minimal impact to on-street parking.<br>At intersections with Portal Streets, WB-67 trucks must be able to turn from their designated lane into their designated receiving lane.<br>At intersections with all other streets, SU-30 trucks must be able to turn from their designated lane into their designated receiving lane. All larger trucks turning from a Portal Street must be able to turn from their designated lane into any portion of the cross street roadway.<br>Corner radii must accommodate ADA accessible ramps.<br>Satisfy City of Portland Truck Street Design Guidelines. |

[1] While Clay Street has also been identified as a "Route to the River" in the Eastbank Riverfront Park Master Plan of 1995, "Portal Street without Bike Lanes" is the recommended cross section design. Maintain existing 12-foot wide sidewalk corridor on SE Clay Street.
[2] Draft concept designs have been prepared as part of the SE Clay Green Street Project.
[3] Provide eastbound bike lane on Clay Street if loss of on-street parking can be mitigated within the immediate area.

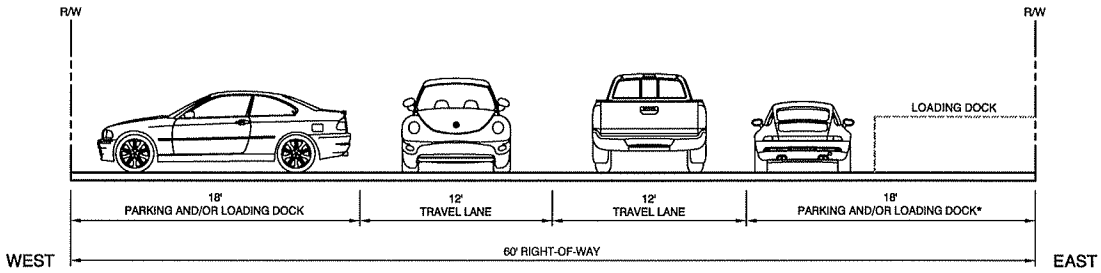
### Truck Loading Streets with Shared Roadway

Truck Loading Streets with Shared Roadway include SE 2nd Avenue. This street is highlighted on Map 3.4. Figure 3.4 displays the recommended cross-section. Table 3.4 displays the Basis of Design for the recommended cross-section.

**Map 3.4**
**Truck Loading Streets with Shared Roadway**



## Figure 3.4
## Recommended Cross Section - SE 2nd Avenue
(Truck Loading Streets with Shared Roadway)



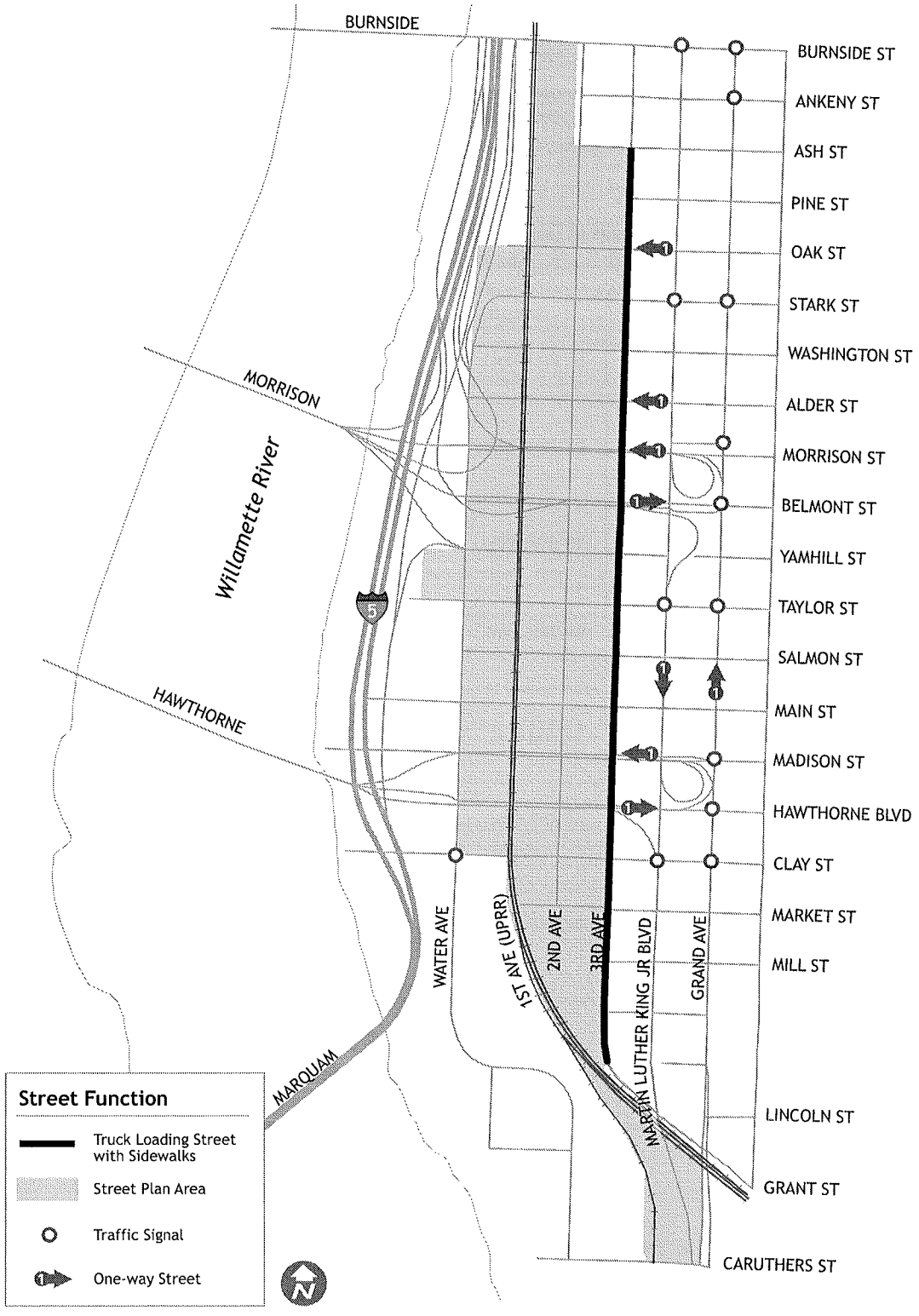

## Table 3.4
## Basis of Design Table - SE 2nd Avenue
(Truck Loading Streets with Shared Roadway)

| Feature | Preferred Criteria | Location | Basis of Design |
|---|---|---|---|
| Right-of-Way Width | Retain existing 60-foot right-of-way. | SE 2nd Ave. | Assumed existing right-of-way. |
| Sidewalk Corridor Width | No new sidewalk.<br>Retain existing active loading docks.<br>Retain existing sidewalks. | SE 2nd Ave. | Retain existing curb locations.<br>Emphasize truck loading. Shared roadway facility. |
| Furnishing Zone Width | No new furnishing zone. | SE 2nd Ave. | Provide space for utility poles, hydrants, and stormwater management facilities while minimizing obstructions to truck loading activity. |
| Parking Zone Width | 18-foot wide parking zone for loading docks and parking.<br>Head-in parking where loading docks do not exist. | SE 2nd Ave. | Retain existing curb locations.<br>Satisfy parking design criteria in Title 33.266 of the City Code.<br>Prioritize retaining on-street parking. |
| Bike Facility | Bikes share travel lanes. | SE 2nd Ave. | Moderate traffic volumes and speeds.<br>Retain existing curb locations.<br>Satisfy City of Portland Bicycle Design Guidelines. |
| Travel Lane Width | 2 12-foot wide travel lanes. | SE 2nd Ave. | Retain existing curb locations.<br>Satisfy City of Portland Truck Street Design Guidelines. |
| Stormwater Facilities | Locate in the furnishing zone to the extent practicable, and design to minimize loss of on-street parking. If no furnishing zone exists, site-specific solutions should be developed on a case-by-case basis. | SE 2nd Ave. | Satisfy City of Portland Stormwater Management Manual Requirements. |
| Intersection Design | 15-foot corner radii.<br>At Truck Street intersections, establish Truck Street width as needed to satisfy the basis of design. | SE 2nd Ave. | Accommodate truck turning movements with minimal impact to on-street parking.<br>Corner radii must accommodate ADA accessible ramps.<br>Satisfy City of Portland Truck Street Design Guidelines. |

## Truck Loading Streets with Sidewalks

Truck Loading Streets with sidewalks include SE 3rd Avenue. This street is highlighted on Map 3.5. Figure 3.5 displays the recommended cross-section. Table 3.5 displays the Basis of Design for the recommended cross-section.

**Map 3.5**
**Truck Loading Streets With Sidewalks**



1/27/10 Council Amendment. To be added as footnote to page 35:
SE 3rd Avenue is intended to accommodate both truck loading activities and bicycle travel, and any project development will respect the needs of both.

**Figure 3.5**
**Recommended Cross Section - SE 3rd Avenue**
(Truck Loading Streets with Sidewalks)

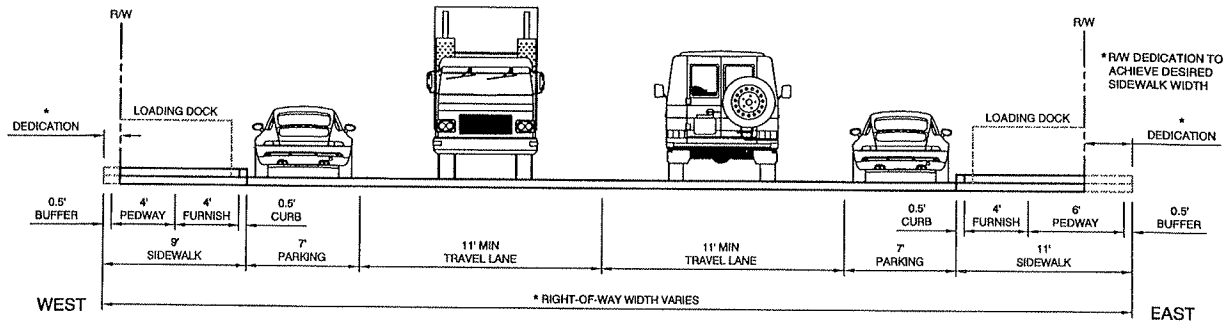


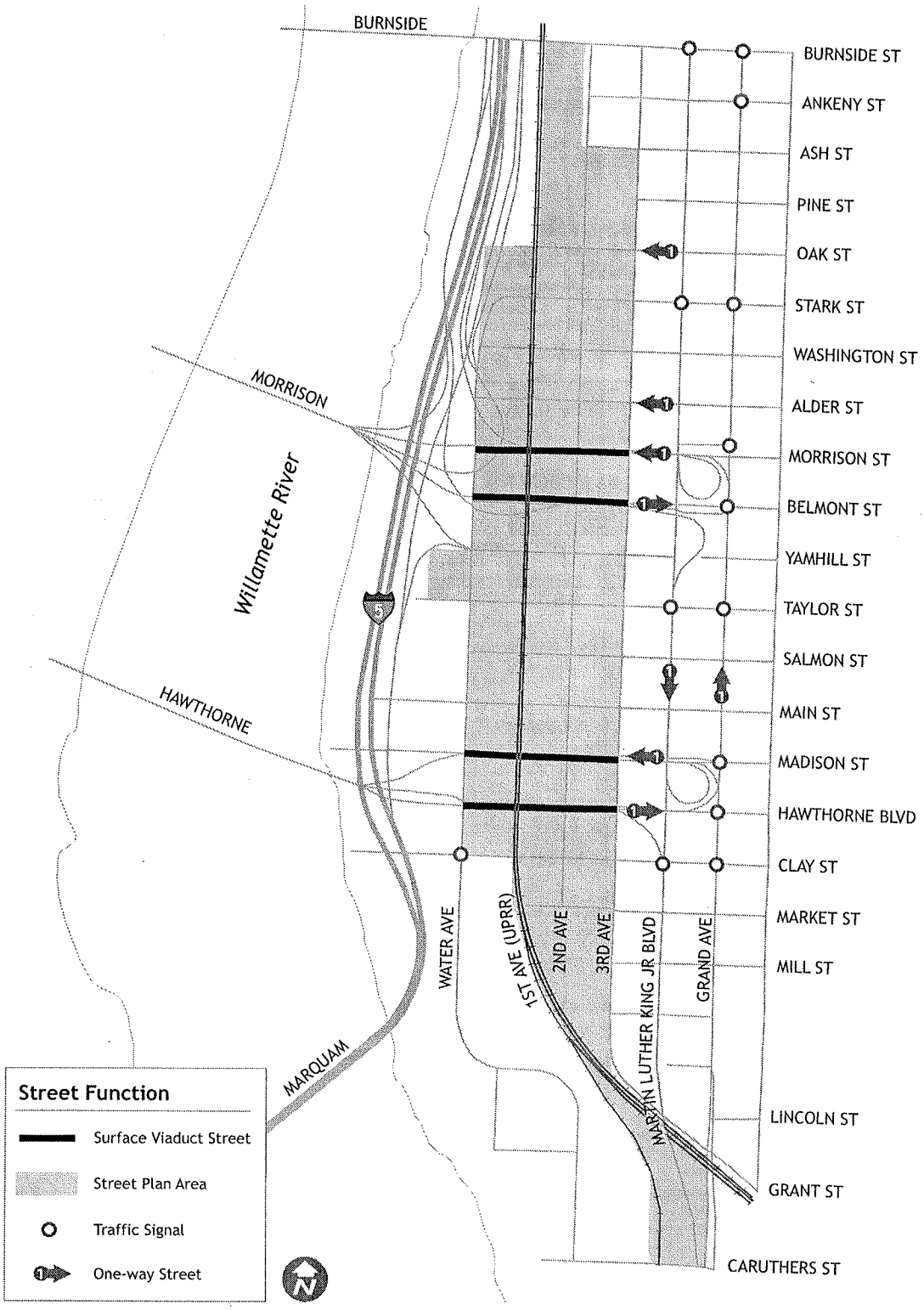

**Table 3.5**
**Basis of Design Table - SE 3rd Avenue**
(Truck Loading Streets with Sidewalks)

| Feature | Preferred Criteria | Location | Basis of Design |
|---|---|---|---|
| Right-of-Way Width | Retain existing 60-foot right-of-way. | SE 3rd Ave. | Assumed existing right-of-way. |
| Sidewalk Corridor Width | Retain existing active loading docks.<br>Where no loading dock exists in the public right-of-way, establish a minimum 9-foot wide sidewalk corridor.<br>Establish 11-foot wide sidewalk corridor where existing sidewalk corridor is less than 11 feet, when right-of-way dedication is possible. | SE 3rd Ave.<br>West side of SE 3rd Ave.<br>East side of SE 3rd Ave. | Retain existing curb locations.<br>Emphasize truck loading.<br>Fill in missing segments of sidewalk.<br>Acknowledge that properties on the west side of SE 3rd Ave are zoned IG1 and properties on the east side of SE 3rd Ave are zoned EX.<br>Satisfy Access Board Guidelines for Pedestrian Access Route (PAR).<br>Satisfy City of Portland Pedestrian Design Guidelines. |
| Furnishing Zone Width | 4-foot wide furnishing zone, except to satisfy minimum ADA through pedestrian zone. | SE 3rd Ave. | Provide space for utility poles, hydrants, and stormwater management facilities while minimizing obstructions to truck loading activity.<br>Satisfy Access Board Guidelines for Pedestrian Access Route (PAR).<br>Satisfy City of Portland Pedestrian Design Guidelines. |
| Parking Zone Width | 7-foot wide parking zone for loading docks and parking. | SE 3rd Ave. | Retain existing curb locations.<br>Satisfy parking design criteria in Title 33.266 of the City Code.<br>Prioritize retaining on-street parking and loading. |
| Bike Facility | Bikes share travel lanes. | SE 3rd Ave. | Moderate traffic volumes and speeds.<br>Retain existing curb locations.<br>Satisfy City of Portland Bicycle Design Guidelines. |
| Travel Lane Width | (2) 11-foot wide travel lanes. | SE 3rd Ave. | Retain existing curb locations.<br>Satisfy City of Portland Truck Street Design Guidelines. |
| Stormwater Facilities | Locate in the furnishing zone to the extent practicable, and design to minimize loss of on-street parking. If no furnishing zone exists, site-specific solutions should be developed on a case-by-case basis. | SE 3rd Ave. | Satisfy City of Portland Stormwater Management Manual Requirements. |
| Intersection Design | 15-foot corner radii.<br>At Truck Street intersections, establish Truck Street width as needed to satisfy the basis of design. | SE 3rd Ave. | Accommodate truck turning movements with minimal impact to on-street parking.<br>Corner radii must accommodate ADA accessible ramps.<br>Satisfy City of Portland Truck Street Design Guidelines. |

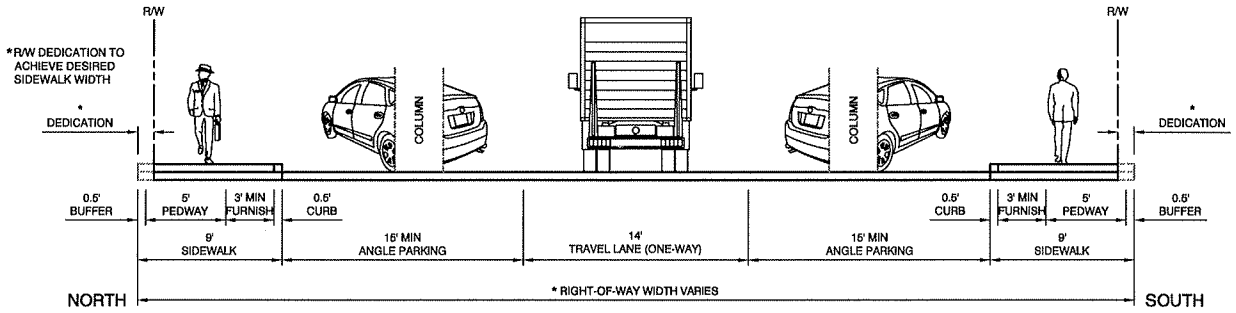
## Surface Viaduct Streets

Viaduct streets include SE Morrison, Belmont, and Madison Streets, and Hawthorne Boulevard. These streets are highlighted on Map 3.6. Figure 3.6 displays the recommended cross-section. Table 3.6 displays the basis of Design for the recommended cross- section.

**Map 3.6**
**Surface Viaduct Streets**



## Figure 3.6
## Recommended Cross Section - SE Morrison, Belmont, and Madison Streets, and Hawthorne Boulevard
(Surface Viaduct Streets)



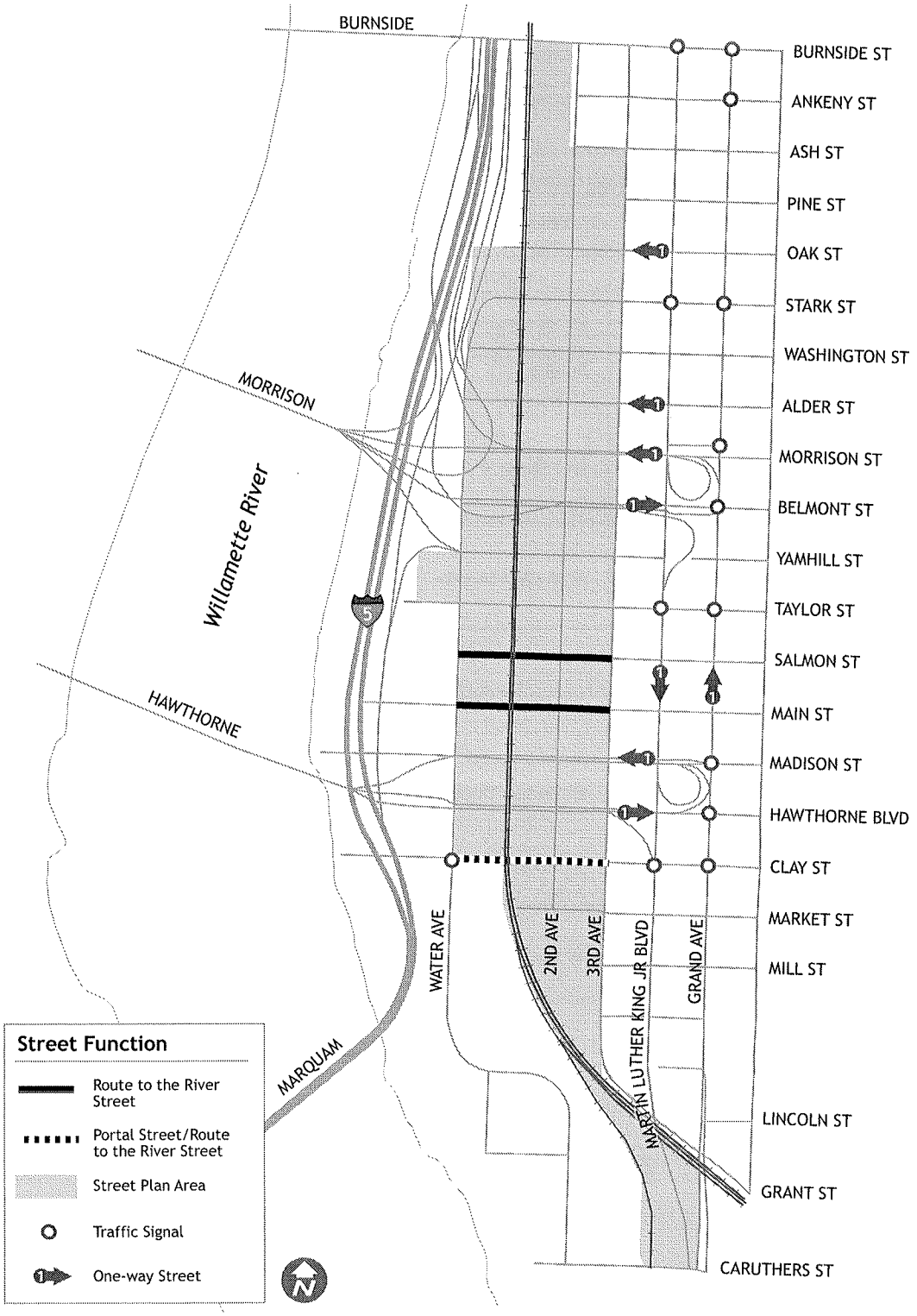

## Table 3.6
## Basis of Design Table - SE Morrison, Belmont, and Madison Streets, and Hawthorne Boulevard
(Surface Viaduct Streets)

| Feature | Preferred Criteria | Location | Basis of Design |
|---|---|---|---|
| Right-of-Way Width | Retain existing 70-foot right-of-way.<br>Retain existing 60-foot right-of-way. | SE Hawthorne Blvd.<br>All other Viaduct Streets | Assumed existing right-of-way. |
| Sidewalk Corridor Width | Establish 9-foot sidewalk corridor where right-of-way dedication is possible.<br>Retain existing active loading docks. | All Viaduct Streets | Retain existing curb locations.<br>Satisfy Access Board Guidelines for Pedestrian Access Route (PAR). |
| Furnishing Zone Width | 4-foot wide furnishing zone. | All Viaduct Streets | Provide space for utility poles and hydrants without obstructing the pedestrian through zone.<br>Satisfy Access Board Guidelines for Pedestrian Access Route (PAR). |
| Parking Zone Width | 15-foot to 16-foot angled parking spaces. | All Viaduct Streets | Satisfy parking design criteria in Title 33.266 of the City Code.<br>16-foot preferred length with 15-foot minimum length acceptable.<br>Prioritize retaining on-street angled parking. |
| Bike Facility | Bikes share roadway lane. | All Viaduct Streets | Low traffic volumes and wide travel lane. Satisfy City of Portland Bicycle Design Guidelines. |
| Travel Lane Width | 14-foot travel lane (one-way). | All Viaduct Streets | Satisfy parking design criteria in Title 33.266 of the City Code.<br>Satisfy City of Portland truck Street Design Guidelines. |
| Stormwater Facilities | Locate in the furnishing zone to the extent practicable, and design to minimize loss of on-street parking. | All Viaduct Streets | Satisfy City of Portland Stormwater Management Manual Requirements. |
| Intersection Design | SU-30 trucks turn from Viaduct Street to any portion of Truck Loading Street and vice versa.<br>WB-67 trucks turn from Viaduct Street to any portion of Portal Street. | All Viaduct Streets | Truck turning and circulation, emergency vehicle access and backing movements from angled parking.<br>Satisfy City of Portland Truck Street Design Guidelines. |

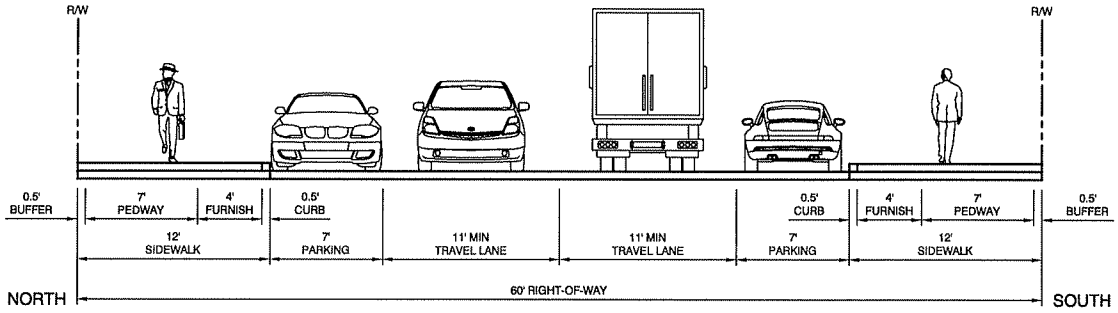
## Routes to the River Streets

Routes to the River streets include SE Salmon and Main Streets. SE Clay Street was also identified as a Route to the River in the 1995 Eastbank Riverfront Park Master Plan. However, due to its function as a Portal Street, the Routes to the River recommended cross section and Basis of Design apply only to SE Salmon and SE Main. These streets are highlighted on Map 3.7. Figure 3.7 displays the recommended cross-section. Table 3.7 displays the Basis of Design for the recommended cross-section.

**Map 3.7**
**Routes to the River Streets**



## Figure 3.7
## Recommended Cross Section - SE Salmon and Main Streets
(Routes to the River Streets)



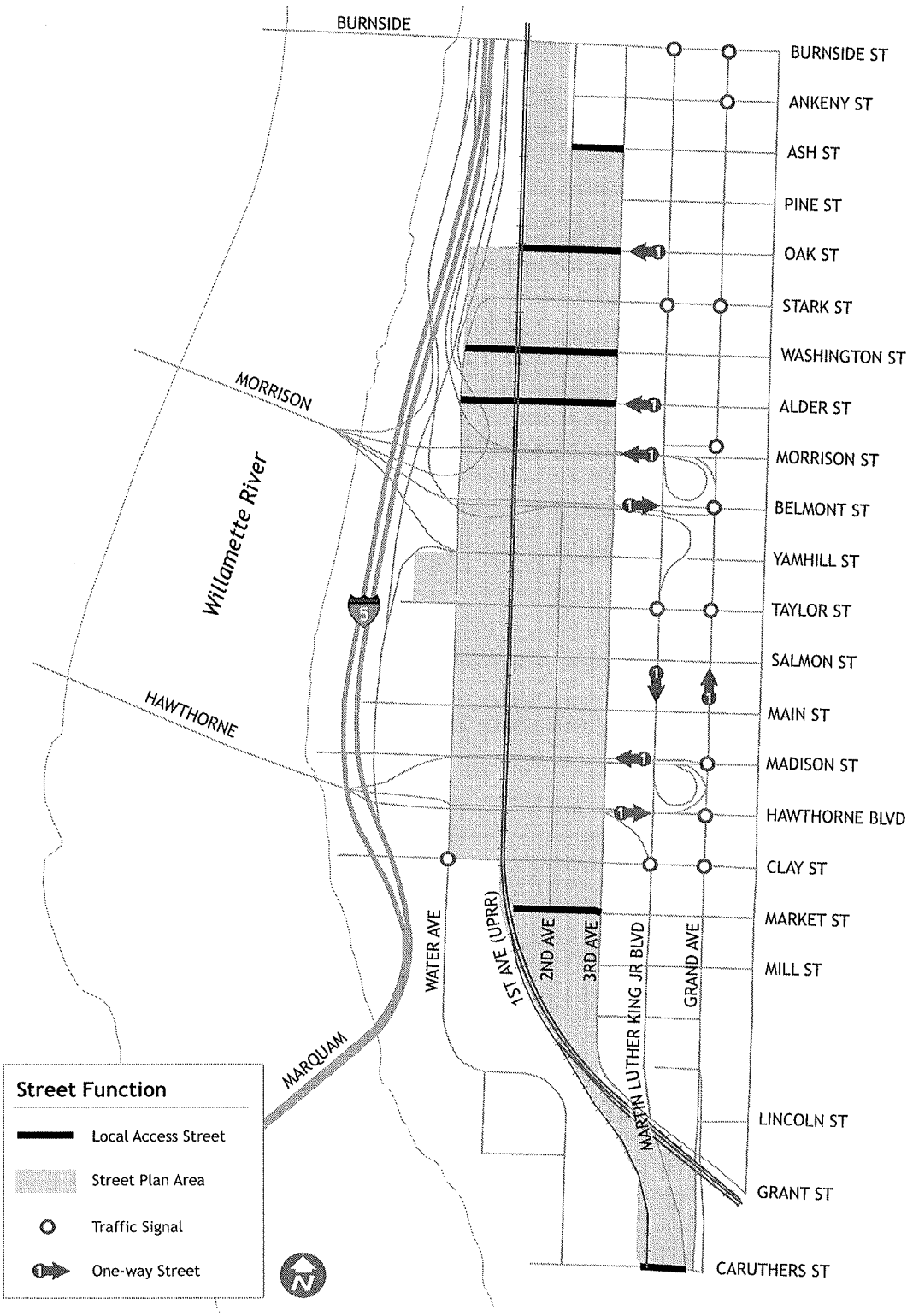

## Table 3.7
## Basis of Design Table - SE Salmon and Main Streets
(Routes to the River Streets)

| Feature | Preferred Criteria | Location | Basis of Design |
|---|---|---|---|
| Right-of-Way Width | Retain existing 60-foot right-of-way. | All Routes to the River Streets | Assumed existing right-of-way. |
| Sidewalk Corridor Width | Retain existing sidewalk corridors (12-foot widths). | All Routes to the River Streets | Retain existing curb locations.<br>Satisfy Access Board Guidelines for Pedestrian Access Route (PAR).<br>Satisfy City of Portland Pedestrian Design Guidelines. |
| Furnishing Zone Width | 4-foot wide furnishing zone. | All Routes to the River Streets | Provide space for utility poles, hydrants, street trees, and stormwater management facilities without obstructing the pedestrian through zone.<br>Satisfy Access Board Guidelines for Pedestrian Access Route (PAR).<br>Satisfy City of Portland Pedestrian Design Guidelines. |
| Parking Zone Width | 7-foot wide parallel parking zone. | All Routes to the River Streets | Retain existing curb locations.<br>Satisfy parking design criteria in Title 33.266 of the City Code.<br>Prioritize retaining on-street parking. |
| Bike Facility | Bikes share roadway lanes. | All Routes to the River Streets | Moderate traffic volumes and speeds.<br>Satisfy City of Portland Bicycle Design Guidelines. |
| Travel Lane Width | 2 11-foot wide travel lanes. | All Routes to the River Streets | Retain existing curb locations.<br>Satisfy City of Portland Truck Street Design Guidelines. |
| Stormwater Facilities | Locate in the furnishing zone to the extent practicable, and design to minimize loss of on-street parking. | All Routes to the River Streets | Satisfy City of Portland Stormwater Management Manual Requirements. |
| Intersection Design | 15-foot corner radii.<br>At Truck Street intersections, establish Truck Street width as needed to satisfy the basis of design. | All Routes to the River Streets | Accommodate truck turning movements with minimal impact to on-street parking.<br>Corner radii must accommodate ADA accessible ramps.<br>Satisfy City of Portland Truck Street Design Guidelines. |

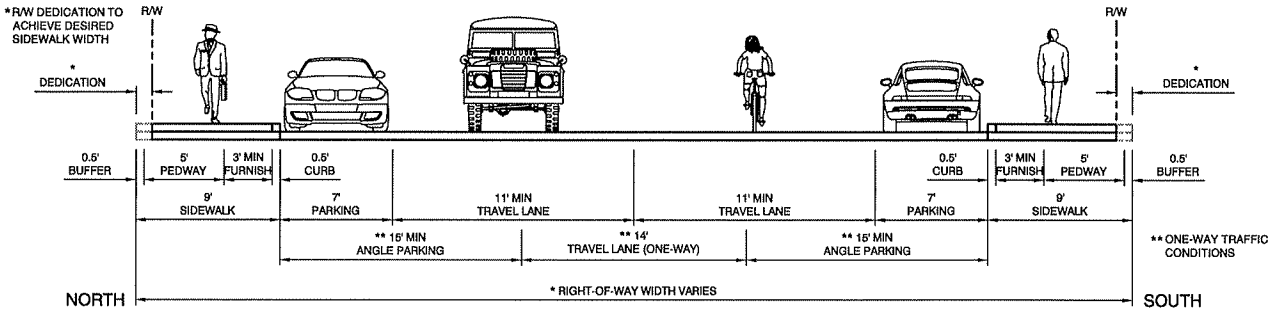
## Local Access Streets

Local access streets include SE Ash, Oak, Washington, Alder, Market, and Caruthers Streets. These streets are highlighted on Map 3.8. Figure 3.8 displays the recommended cross-section. Table 3.8 displays the Basis of Design for the recommended cross- section.

**Map 3.8**
**Local Access Streets**



## Figure 3.8
## Recommended Cross Section - SE Ash, Oak, Washington, Alder, Market and Caruthers Streets
(Local Access Streets)




## Table 3.8
## Basis of Design Table - SE Ash, Oak, Washington, Alder, Market[4] and Caruthers Streets
(Local Access Streets)

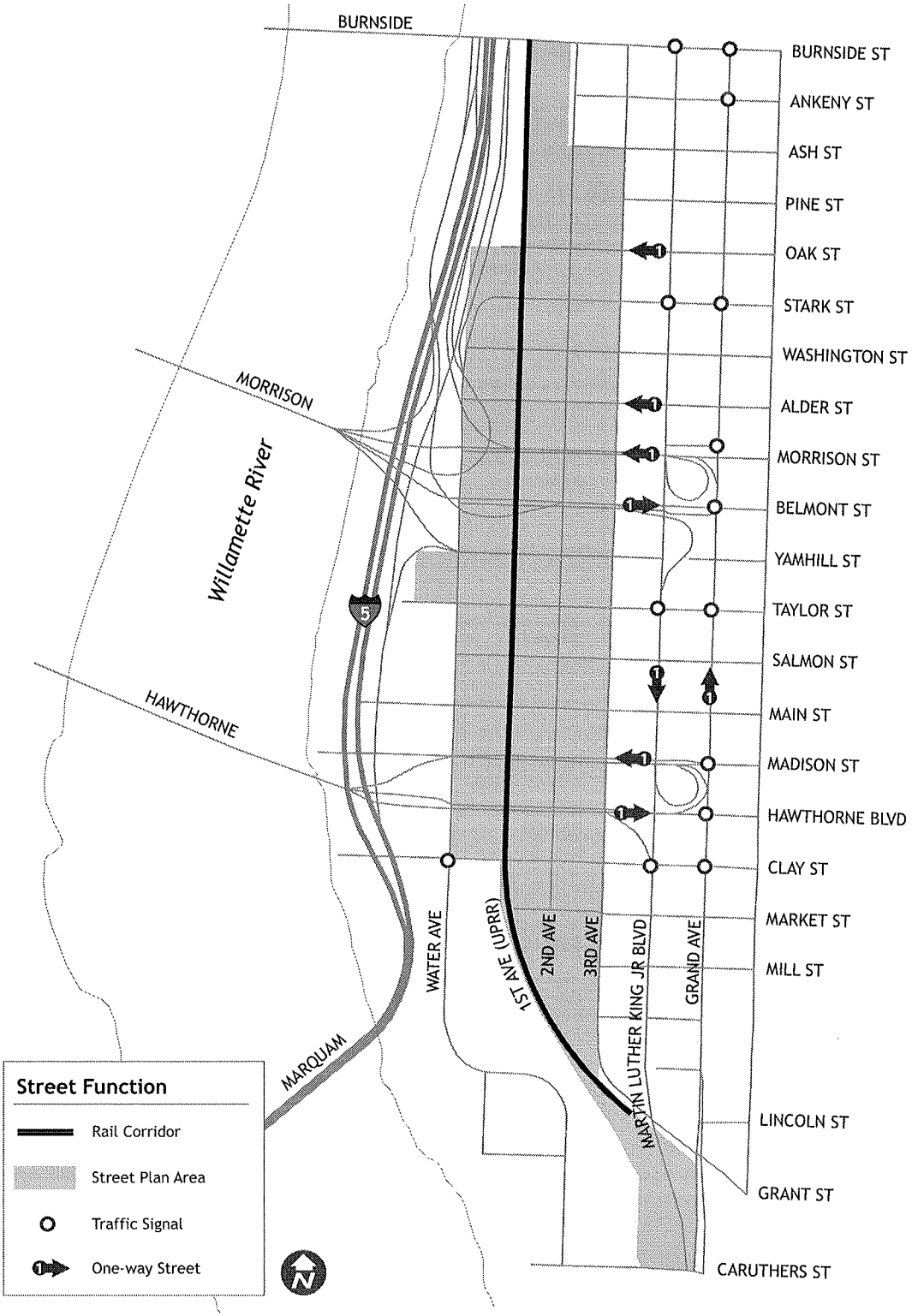
| Feature | Preferred Criteria | Location | Basis of Design |
|---|---|---|---|
| Right-of-Way Width | Retain existing 30-foot right-of-way.<br>Retain existing 60-foot right-of-way. | Market Street<br>All other Local Access Streets | Assumed existing right-of-way. |
| Sidewalk Corridor Width | Establish minimum 9-foot wide sidewalk corridor where existing sidewalk corridor is less than 9 feet, when right-of-way dedication is possible.<br>Retain existing active loading docks. | All Local Access Streets | Retain existing curb locations.<br>Satisfy Access Board Guidelines for Pedestrian Access Route (PAR).<br>Satisfy City of Portland Pedestrian Design Guidelines. |
| Furnishing Zone Width | 3-foot wide minimum furnishing zone. | All Local Access Streets | Provide space for utility poles, hydrants, street trees, and stormwater management facilities without obstructing the pedestrian through zone.<br>Satisfy Access Board Guidelines for Pedestrian Access Route (PAR).<br>Satisfy City of Portland Pedestrian Design Guidelines. |
| Parking Zone Width | Angle parking zone where appropriate.<br>7-foot wide parallel parking zone. | One-way Local Access Streets<br>All Local Access Streets | Retain existing curb locations.<br>Satisfy parking design criteria in Title 33.266 of the City Code.<br>Prioritize retaining on-street parking.<br>Where street width and travel lane width allow, provide angle parking if resulting parking supply is equal to or greater than parallel parking. |
| Bike Facility | Bikes share roadway lanes. | All Local Access Streets | Moderate traffic volumes and speeds<br>Retain existing curb locations.<br>Satisfy City of Portland Bicycle Design Guidelines. |
| Travel Lane Width | (2) 11-foot to 15-foot wide travel lanes.<br>(1) 12-foot to 14-foot wide travel lane. | Two-way Local Access Streets<br>One-way Local Access Streets | Retain existing curb locations.<br>Satisfy City of Portland Truck Streets Design Guidelines. |
| Stormwater Facilities | Locate in the furnishing zone to the extent practicable, and design to minimize loss of on-street parking. | All Local Access Streets | Satisfy City of Portland Stormwater Management Manual Requirements. |
| Intersection Design | 15-foot corner radii.<br>At Truck Street intersections, establish Truck Street width as needed to satisfy the basis of design. | All Local Access Streets | Accommodate truck turning movements with minimal impact to on-street parking.<br>Corner radii must accommodate ADA accessible ramps.<br>Satisfy City of Portland Truck Street Design Guidelines. |

[4] The segments of Market Street within the Street Plan area are currently limited to 30' right-of-way. Street improvements in this limited right-of-way are unlikely to meet city design standards. These improvements will require a design exception approved by the City Engineer.

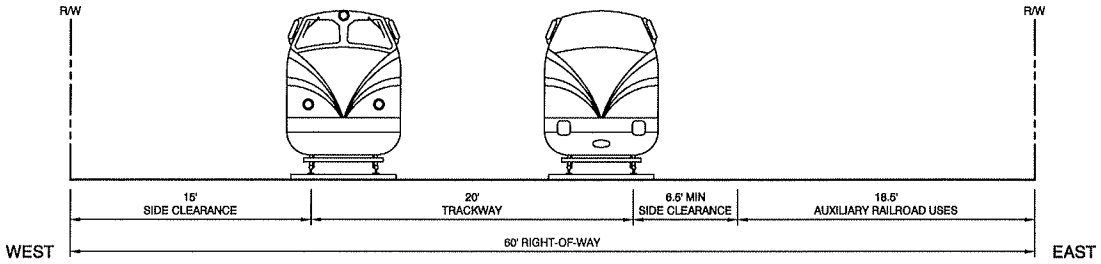
## Rail Corridor

SE 1st Avenue is a Rail Corridor and is highlighted on Map 3.9. Figure 3.9 displays the recommended cross-section. Table 3.9 displays the basis of Design for the recommended cross-section.

**Map 3.9**
**Rail Corridor**

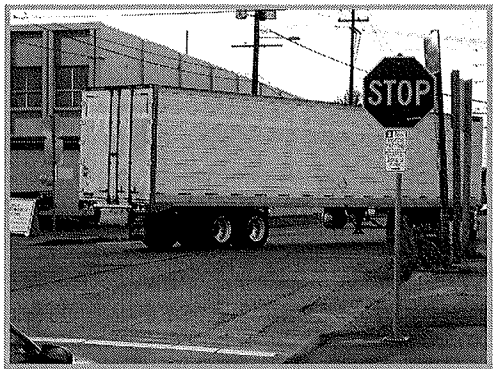


## Figure 3.9
## Recommended Cross Section - SE 1st Avenue
(Rail Corridor)




## Table 3.9
## Basis of Design Table - SE 1st Avenue
(Rail Corridor)

| Feature | Preferred Criteria | Location | Basis of Design |
|---|---|---|---|
| Right-of-Way Width | Retain existing 60-foot right-of-way. | SE 1st Ave. | Assumed existing right-of-way. |
| Sidewalk Corridor Width | No sidewalks.<br>No truck loading access to adjacent properties. | SE 1st Ave. | Retain the right-of-way as an exclusive rail corridor. |
| Side Clearance | 8'6" minimum horizontal clearance, measured from the center of a track.<br>No railroad loading platforms.<br>Install utility poles and hydrants as close to the right-of-way line as possible. | SE 1st Ave. | Satisfy Division 741-310 of the Rail Oregon Administrative Rules regarding side clearances along railroad tracks.<br>Provide space for utility poles, hydrants while minimizing obstructions to train movement. |
| Overhead Clearance | 20'9" minimum vertical clearance, measured from the top of rail. | SE 1st Ave. | Satisfy Division 741-305 of the Rail Oregon Administrative Rules regarding vertical clearances under viaduct structures. |
| Multimodal use | Prohibit vehicular, pedestrian, or bicycle access to midblock portions of the corridor. | SE 1st Ave. | Retain the right-of-way as an exclusive rail corridor. |
| Intersection/ Grade Crossing Design | Design Railroad/Roadway Grade Crossing modifications to the satisfaction of ODOT Rail Division via an approved *Railroad-Highway Public Crossing Safety Application* | SE 1st Ave. | Design cross streets to satisfy Access Board Guidelines for Pedestrian Access Route (PAR), City of Portland Pedestrian Design Guidelines, and Rail Oregon Administrative Rules (741-100 through 741-300).<br>Discourage motor vehicle, pedestrian, and bicycle access to SE 1st Avenue right-of-way. |



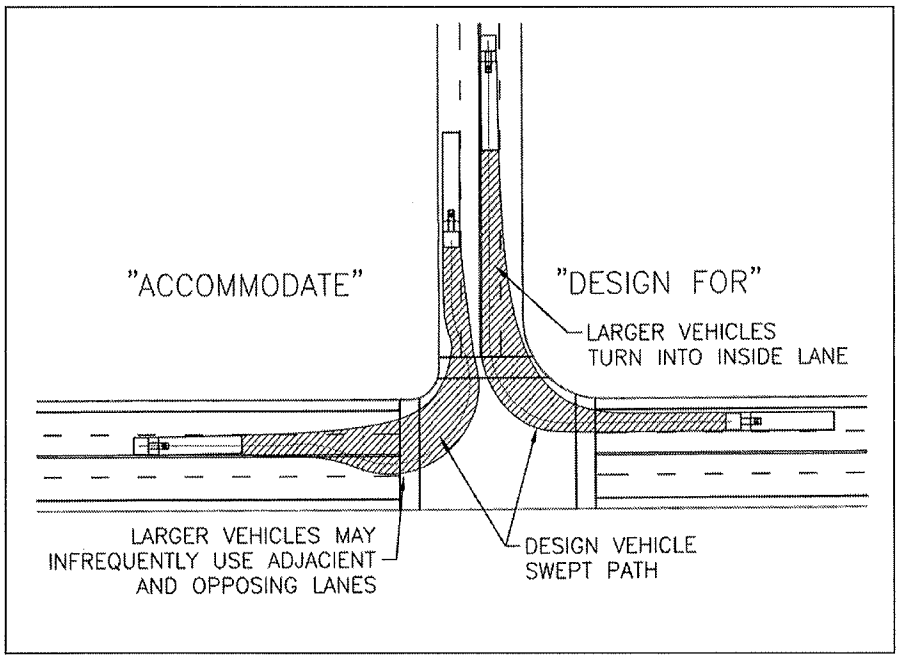

A WB-67 tractor-trailer turns onto SE 3rd Avenue.

## INTERSECTION DESIGN

In the design of an intersection, it is essential to identify the size and type of trucks that will be using the intersection. Information on the current and future use of adjacent property, street classification, and the need for trucks to turn at a particular intersection are also needed. With an understanding of the anticipated truck type, the designer evaluates the turning track maneuvers of a vehicle using turning templates or specialized software such as AutoTURN. For a typical passenger vehicle, the path followed by the rear wheels is almost the same as that of the front wheels. With larger vehicles, the swept area becomes much larger as the inside rear wheels track substantially inside of the path of the front wheels. This becomes the most critical factor in sizing the intersection.

When developing intersections to fully accommodate ("Design For") truck movements, the designer establishes a travel path that allows the design vehicle to remain entirely within its designated lane into its designated receiving lanes as it completes its turn. To "accommodate" trucks on narrower streets, the designer assumes more latitude for the vehicle path, including encroachment on adjacent lanes approaching and/or departing the intersection. When accommodating larger vehicles in narrow street environments, the designer often assumes a truck driver will shift to the left, hugging the lane line, before beginning a right turn, and will use all available lanes moving in their direction to begin and complete the turn. This can interfer with traffic while trucks are turning. This is referred to as "operational accommodation" since the compromise is some loss of operational efficiency of traffic movements. If this maneuvering by large trucks is infrequent or if general traffic volume is low, the interference from the encroachment into adjacent lanes moving in the same direction as the trucks may be considered acceptable under certain conditions. The "Design For" versus "Accommodate" concept to intersection design is illustrated in Figure 3.10.

**Figure 3.10**
**Design For vs. Accommodate**




If physical constraints, such as limited right-of-way, restrict the ability for trucks to conveniently complete a turn, the designer may be forced to further compromise the intersection operation. At a minimum, the designer seeks to assure "physical accommodation" of large vehicles. In such cases, the designer tries to design the intersection so that there are no permanent physical features that prevent a large vehicle from negotiating a corner. For example,

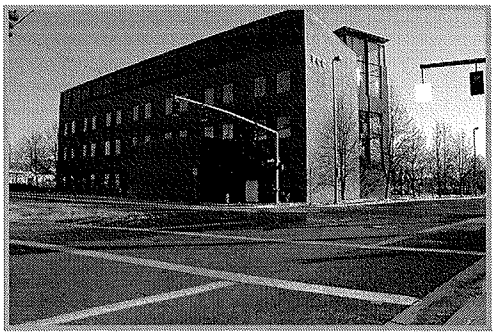
the designer could assume that the entire street width is available for truck maneuvering. This maneuvering may require trucks to use opposing travel lanes normally used by oncoming traffic, and could require pilot cars, flaggers, or permits. Designing for minimal truck circulation and access is not desirable in a Freight District.

The intersection of SE Water Avenue, SE Yamhill Street, and the Morrison Bridge/I-5 exit ramp.

### Intersection Design Guidelines for the Central Eastside Street Plan

The industrial land use prevalent in the Street Plan area generates substantial freight traffic, including both multi-unit tractor-trailer trucks (WB-67s) and smaller single-unit vehicles (SU-30s). The City's Transportation System Plan directs that Freight District streets be designed to facilitate the movement of freight. The bases of the recommended intersection design reflect the focus of City policy on enhancing freight mobility in support of industrial activity in the area. The following summarizes the bases of design that guided the development of the intersection recommendations:

- At the intersection of Portal Streets, WB-67 trucks must be able to turn from their designated lane into their designated receiving lane.
- At the intersection of all other streets, SU-30 trucks must be able to turn from their designated lane into their designated receiving lane.
- All larger trucks turning from a Portal Street onto any other street must be able to turn from their designated lane into any portion of the cross street roadway.
- Corner radii must accommodate ADA accessible ramps.
- Designs must satisfy City of Portland Truck Street Design Guidelines.
- Designs must accommodate truck turning movements with minimal impact to on-street parking.


The intersection of SE Water Avenue and SE Clay Street.

Two intersection design criteria were established using the Basis of Design:

- Intersection corner radii should not exceed 15'.
- At all Truck Loading Street intersections, the curb-to-curb width of the Loading Street should be adjusted as needed to satisfy the bases of design.

A summary of the analysis used to determine the optimal intersection design is found in Technical Appendix D.

## STORMWATER MANAGEMENT

This section summarizes stormwater management requirements and options for the Central Eastside Street Plan. More detailed information on stormwater requirements is available in the on-line version of the city's Stormwater Management Manual (SMM) http://www.portlandonline.com/bes/index.cfm?c=43428.

Stormwater management requirements apply to projects on both private and public property, including all streets, alleys, driveways, and sidewalks. Stormwater that is generated on private property must be managed on private property, and runoff from public property must be managed on public property, in publicly maintained facilities.

Projects that develop or redevelop over 500 square feet of impervious surface must comply with flow control and pollution reduction requirements (where applicable) described in sections 1.3.2 and 1.3.3 of the SMM. In addition, stormwater management facilities must be designed per the Stormwater Infiltration and Discharge Hierarchy (Hierarchy) described in section 1.3.1 of the SMM. A summary of the applicable requirements follows:

- The Hierarchy states vegetated infiltration facilities are required to the maximum extent feasible. In order of preference Category 1 facilities have no overflow; Category 2 facilities overflow to a sump, drywell, or soakage trench; Category 3 facilities overflow to drainageway, stream, river, or storm-only pipe; and Category 4 facilities overflow to a combined sewer.
- Flow control: discharge to a combined sewer must detain the 25-year post-development peak runoff rate to 10-year pre-development peak rate.
- Pollution reduction: must achieve 70 percent Total Suspended Solids (TSS) removal from 90 percent of the average annual stormwater runoff.

All infiltration, flow control and pollution reduction facilities in the public right of way must be approved by the Bureau of Environmental Services (BES).

### Applicable Stormwater Plans, Projects, and Policies

The following plans, projects, and policies impact the management for public right-of-way stormwater within the Central Eastside Street Plan boundaries.

- **Portland Watershed Management Plan (2005):** The Watershed Management Plan describes the approach that will be used to evaluate conditions in the City's urban watersheds and implement projects to improve watershed health. The plan also provides an integrated City response to local, state and federal environmental requirements.

- **City Green Street Policy (2007):** The City's Green Street Policy was adopted by City Council in April 2007. It directs City bureaus and agencies "to cooperatively plan and implement Green Streets as an integral part of the City's maintenance, installation, and improvement

programs for its infrastructure located in the public right-of-way, and to integrate the Green Street Policy into the City's Comprehensive Plan, Transportation System Plan, and Citywide Systems Plan." The Policy also created a 1% for Green Fund that would be used to implement green street projects throughout the city. City of Portland non-emergency projects that do not trigger the Stormwater Management Manual are required to pay 1% of the construction cost into the fund. Funds are distributed through a grant review process.

- **Sewer and Drainage Facilities Design Manual (2007):** The Sewer and Drainage Facilities Design Manual is the primary reference for designing public sewers. It is referenced for the design of pipelines, drainage channels, and other public facilities that convey and dispose of sanitary sewage, stormwater, and combined sewage flows. The Stormwater Management Manual should not be used to design any public sewer conveyance facility, and designers must reference both manuals when working in the City of Portland to determine the appropriate standards that apply to a project.

- **Stormwater Management Manual (2008):** The Stormwater Management Manual was first developed in 1999 to meet local, state, and federal policies and regulations. The manual provides developers and design professionals with specific requirements for managing stormwater from new development and redevelopment projects.

- **Clay Green Street Project (2009):** The City of Portland is working with the community to develop a series of green street projects on SE Clay Street from the Willamette River to SE 12th Avenue. The goals of the project are to maintain freight and business activities, enhance pedestrian and bicycle access to the Willamette River, and provide sustainable stormwater management. Concept design plans have been prepared as part of this project. Final street design for the Clay Green Street Project requires approval by the City Engineer and City Traffic Engineer.

### Drainage Analysis

The majority of stormwater runoff from the Street Plan area drains to separated storm sewers, with the rest draining to the combined sewer system. Stormwater management requirements differ depending on where the runoff drains. In general:

- **Pollution reduction only required if:** stormwater runoff drains to a separated storm sewer that flows directly to the Willamette River and the storm sewer has adequate capacity.
- **Pollution reduction and flow control required if:** stormwater runoff drains to the combined sewer system (including anything flowing to the diversion structures for the Eastside Tunnel) or runoff drains to a separated storm sewer that is over capacity.

Current areas which drain to the combined sewer and will need to meet pollution reduction and flow control requirements are:

- SE Clay St. from SE 2nd Ave. to SE 3rd Ave.
- SE Salmon St. from SE 2nd Ave. to SE 3rd Ave.
- SE 3rd Ave. from SE Salmon St to Division St.
- SE Division St. from SE 3rd Ave. to SE Grand Ave.

### Storm Sewer Extensions

Some streets in the Street Plan area, particularly SE 1st Ave and SE 2nd Ave, do not have storm or combined sewers in them. If such a street is improved, storm sewer extensions may be necessary.

### Stormwater Management Facilities

Examples of vegetated stormwater management facilities include stormwater swales, planters, and stormwater curb extensions. These facilities are collectively known as green streets.

Green streets are vegetated facilities that manage stormwater runoff from the street. Sizing methods vary depending upon stormwater management requirements and the type of facility used. The Hierarchy in the SMM makes them the preferred method of managing stormwater runoff from the public right-of-way.

Integration of green street facilities into the public right-of-way requires an attention to many design issues, including:

- underground and surface utilities
- impacts to on street parking
- bike / pedestrian / traffic safety
- truck turning movements at intersections
- proximity to existing structures (infiltration or lined options)
- existing street trees
- street widths
- impacts to development

Examples of several facility types follow, and other facility types can be found in Chapter 2 and Appendix G (Green Street Facility Details) of the SMM.

## Green Street Facility Examples

**Stormwater Curb Extensions** (see Figure 3.11)
Stormwater curb extensions extend into the street, transforming street surface into a landscape area. Curb extensions can be used to enhance pedestrians and traffic safety.

Three stormwater curb extensions were installed in February 2008 at SE 12th and Clay. They have a combined facility area of approximately 720 square feet, and manage runoff from approximately 11,000 square feet of street and sidewalk. The project combined pedestrian and bicycle safety improvements with stormwater management, and included pedestrian curb extensions and paint striping for pedestrians and bicycles. This project was collaboratively designed by Bureau of Transportation (PBOT) and BES, and was built by the City's Bureau of Maintenance (BOM).

A stormwater curb extension retrofit was installed at NW Everett & 16th in 2007. It has a surface area of 160 square feet, and manages runoff from approximately 8,700 square feet of street and sidewalk. The extension provided greater bicycle and pedestrian safety at this crossing adjacent to I-405. The facility was lined to protect a PGE utility vault which could not be relocated because of the prohibitively high cost. This was a collaborative design project between PBOT and BES, and was built by BOM. Other than some clogging of the overflow during heavy leaf fall, the facility has performed very well.

**Stormwater Planters** (see Figures 3.12 and 3.13)
Stormwater street planters are typically located between the sidewalk and the curb. Because they have vertical walls, they work well in areas with limited space and urban environments. Through the use of step-out area, they can allow for adjacent on-street parallel parking.

The SW 12th & Montgomery planters were installed on the south side of SW 12th Ave. adjacent to the Portland State University campus in 2005. They manage runoff from 7,000 square feet of street runoff while maintaining metered parking along the curb. Overflows go into the storm sewer and to the Willamette River.

For a PBOT street redevelopment project spanning 9 blocks on SE 92nd between Powell and Holgate, twenty-three planters were installed to manage drainage over 100,000 square feet of street. Planters are typically located behind the curb line but can be extended at pedestrian crossings to create a curb extension. The planters in this area were sized for water quality treatment only, and stormwater overflow goes to sumps (5 new and 2 existing) or to the existing combined sewer system (Holgate).

**Water Quality Planter Boxes** (see Figure 3.14)
Water quality planter boxes are small planters intended to manage small rainfall events and provide pollution reduction only. They are typically planted with one or more shrubs or small trees, and can either infiltrate into the surrounding soil or be fully lined. Approval through the Performance Approach as described in Chapter 2.2.3 of the Stormwater Management Manual will be required unless this facility type has been formally approved at the time of the proposed project.

Four 4 ft. x 6 ft. planter boxes were installed on SE Water Ave south of SE Clay St. The four planters together manage runoff from approximately 7,000 square feet, providing pollution reduction treatment for street runoff that would otherwise flow directly into the Willamette River. Larger storm events overflow to downstream catch basins and into the existing storm sewer.

Two proprietary water quality planter boxes were installed in the furnishing zone on either side of SW Capitol Hwy just west of Sunset Blvd. Each unit is 4 ft. x 8 ft. and together manage runoff from approximately 14,000 square feet. Overflow from larger events flow into inlets downstream of each unit and into the storm sewer. This high traffic, highly urbanized drainage area forms the uppermost headwaters of Fanno Creek. Overflow from larger storm events flows into inlets downstream of each unit and into the storm sewer.

Stormwater management requirements as discussed here are current as of the 2008 revision of the Stormwater Management Manual. The document is revised approximately every 3 years and the most current revision at the time of application will supersede any information in this document.

## Figure 3.11
## Stormwater Curb Extension

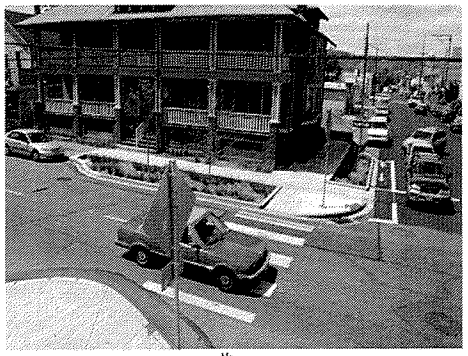
Stormwater facilities extending into the parking lane. Facility width varies depending upon utility locations and traffic engineering requirements. Can be incorporated into pedestrian and traffic safety improvements.

Stormwater curb extensions can be infiltration facilities or lined facilities with an underdrain system. However, lined facilities may require different sizing depending upon specific stormwater management requirements.

Width is typically 6½ ft or 4 ft, but can be adapted for use with angled parking or other design situations. Can incorporate furnishing zone area if appropriate. The 4 ft width is used when water lines or other utilities need to be avoided.

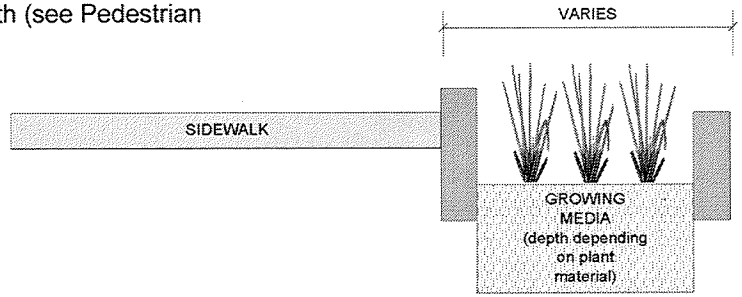
No minimum sidewalk width (see Pedestrian Guidelines).

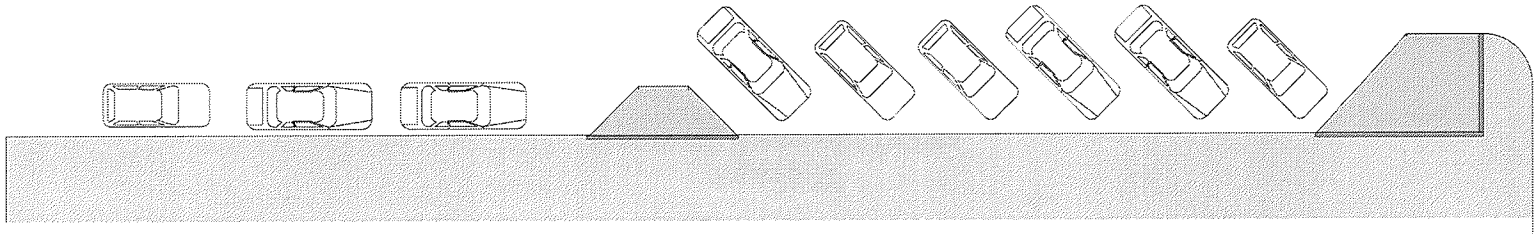
SE Foster & 90th
(incorporates furnishing zone)



SE 12th & Clay

NW Everett & 16th



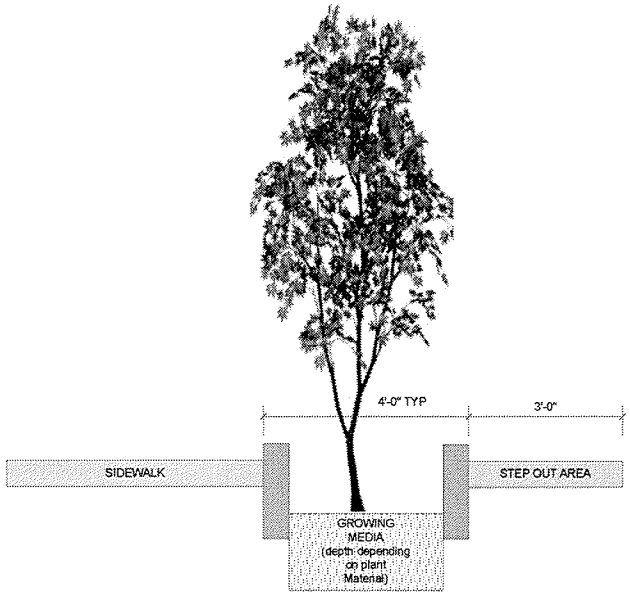
## Figure 3.12
## Stormwater Planter with Parking

Stormwater facilities in the furnishing and sidewalk zones with a step out area that accommodates adjacent parking. Stormwater Planters can be used to meet both water quality and flow control requirements when sized appropriately. Sizing is by the Simplified Approach or Presumptive Approach depending upon drainage area and stormwater management requirements as detailed in the Stormwater Management Manual.

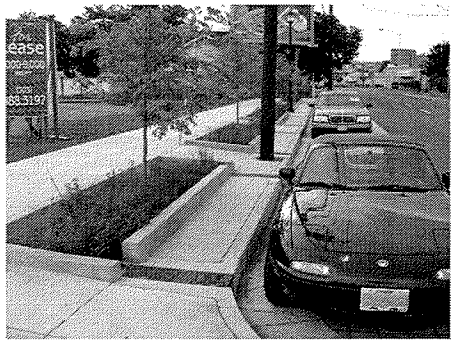
Planters can be infiltration facilities or lined facilities with an underdrain system. However, lined facilities may require different sizing depending upon specific stormwater management requirements.

Minimum step out width is 3 ft, and the current minimum planter width is 4 ft (including the planter walls). Minimum planter length is 12 ft with a typical length of 18 ft to provide for access from the sidewalk to the step out area.

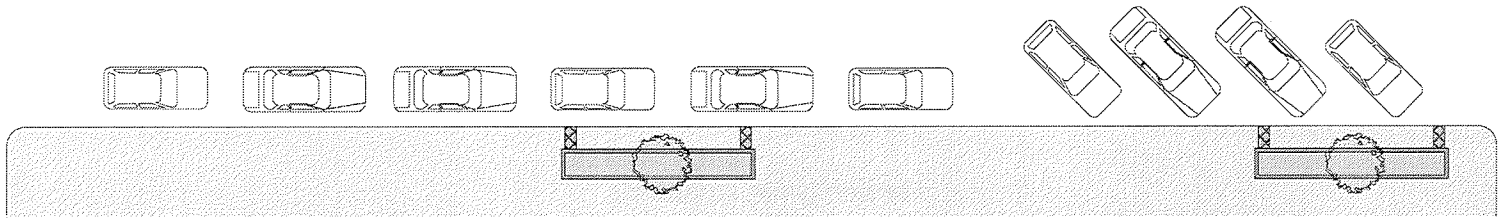
Requires minimum sidewalk width of 12 feet.




SW 12th & Montgomery, PSU



SE Foster & 90th



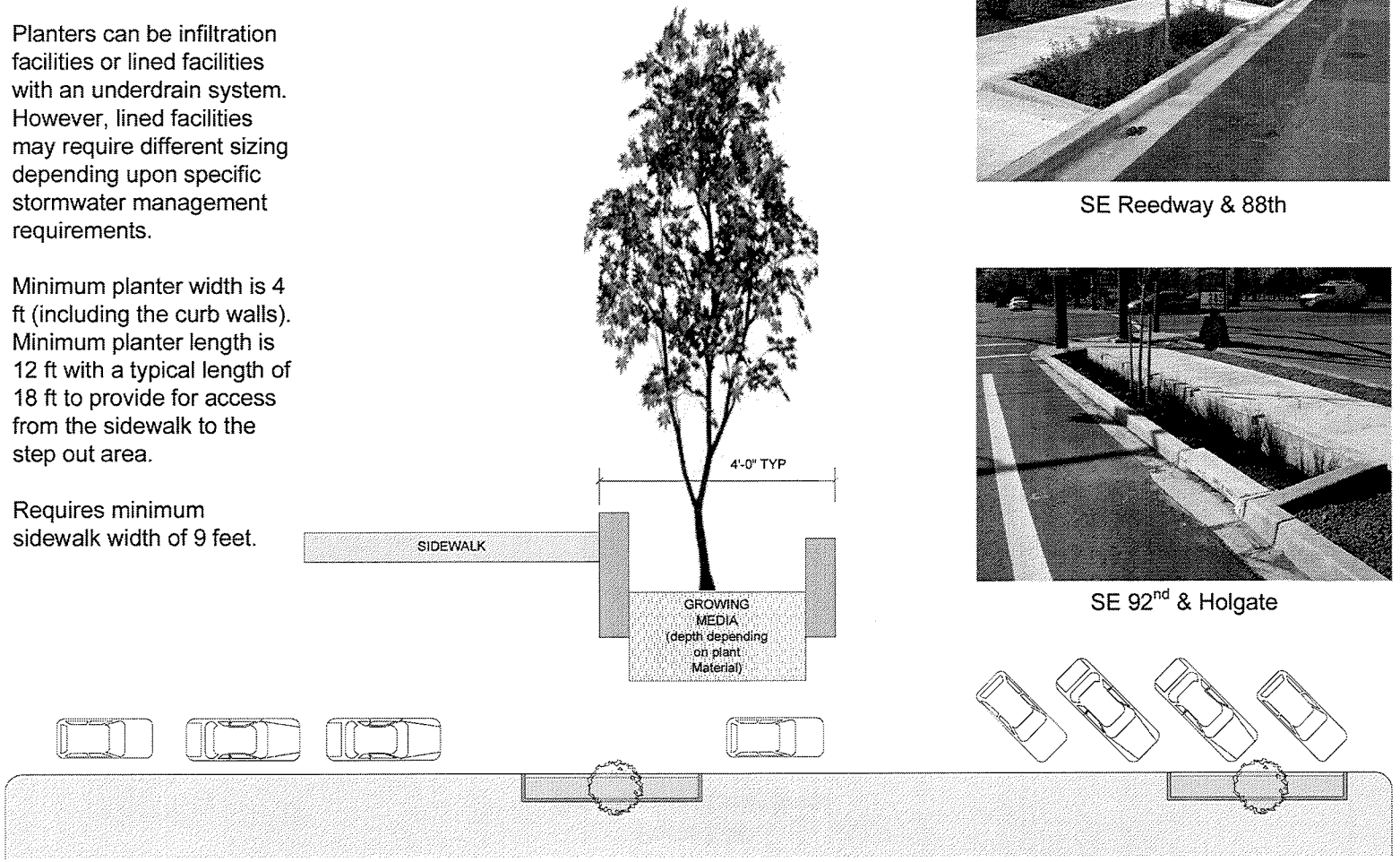
## Figure 3.13
## Stormwater Planter without Parking

Stormwater facilities in the furnishing zone with no accommodation for adjacent parking. Stormwater Planters can be used to meet both water quality and flow control requirements when sized appropriately. Sizing is by the Simplified Approach or Presumptive Approach depending upon drainage area and stormwater management requirements as detailed in the Stormwater Management Manual.

Planters can be infiltration facilities or lined facilities with an underdrain system. However, lined facilities may require different sizing depending upon specific stormwater management requirements.

Minimum planter width is 4 ft (including the curb walls). Minimum planter length is 12 ft with a typical length of 18 ft to provide for access from the sidewalk to the step out area.

Requires minimum sidewalk width of 9 feet.






SE Reedway & 88th



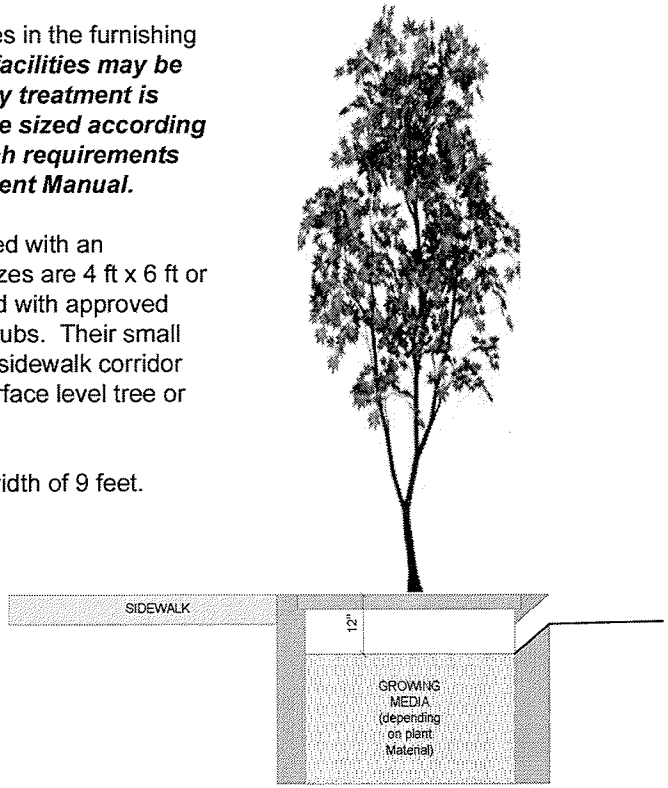
SE 92nd & Holgate

## Figure 3.14
## Water Quality Planter Boxes

Stormwater facilities with grates in the furnishing zone of the sidewalk. ***These facilities may be used when only water quality treatment is required, and may need to be sized according to the Performance Approach requirements in the Stormwater Management Manual.***

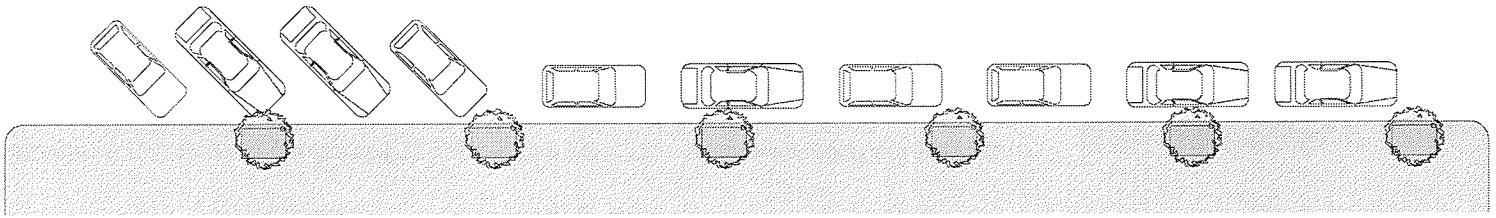
Boxes can be infiltration or lined with an underdrain system. Typical sizes are 4 ft x 6 ft or 4 ft x 8 ft. They can be planted with approved street trees or low growing shrubs. Their small size minimizes impacts to the sidewalk corridor and is similar to traditional, surface level tree or landscape wells.

Requires minimum sidewalk width of 9 feet.




SE Water Ave, south of Clay

SW Capitol Hwy, west of Sunset
(proprietary unit in pilot phase)



# EXISTING CONDITIONS – RIGHT-OF-WAY INVENTORY

| Street | Type | Block | ROW Width | Curb -to- Curb | Travel Lanes | Parking North | Parking South | Side-walk North | North Notes | Side-walk South | South Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ash | Local Access | 2nd-3rd | 60' | 36' | 2 | Parallel (177') | Parallel (142') | 12' | 6 street trees in furnishing zone | 9'-12' | 3' fenced for 2/3 of block |
| Oak | Local Access | 1st-2nd | 60' | 43' | 2 | Parallel (!27') | None | 9' | | 8' | Flush with lot and loading dock behind curb |
| Oak | Local Access | 2nd-3rd | 60' | 44' | 1 | Parallel (50') | Angle (101') | 8' | | 8' | 2' planting strip |
| Stark | Portal w/ Bike Lane | Water-1st | 60' | 38' | 2 (15') | None | None | 6.5' | | 8' | 7.5' barren planting strip lotside |
| Stark | Portal w/ Bike Lane | 1st-2nd | 60' | 48' | 2 (11') | Parallel (161') | Parallel (190') | 6' | | 6' | |
| Stark | Portal w/ Bike Lane | 2nd-3rd | 60' | 48' | 2 (11') | Parallel (195') | Parallel (185') | 6' | | 6' | |
| Washington | Local Access | Water-1st | 60' | 42' | 2 | Parallel (81') | Parallel (93') | 8' | 2' barren planting strip at building edge; 3' bump out at rail crossing (east end) | 8' | 9' bump out at rail crossing (east end) |
| Washington | Local Access | 1st-2nd | 60' | 44' | 2 | Paral-lel(113') | None | 8' | 1/2 block flush w/ loading | 8' | 2/3 block flush w/ loading or driveway ramp |
| Washington | Local Access | 2nd-3rd | 60' | 44' | 2 | Parallel (88') | Parallel (79') | 8' | | 8' | 2/3 block flush w/ one loading dock obstruction |
| Alder | Local Access | Water-1st | 60' | 36' | 1 | Parallel | Parallel | 9' | 6 street trees | 12' | |

The Right-of-Way inventory is based on a field survey of existing conditions conducted by Portland Bureau of Transportation staff in December 2008.

| Street | Type | Block | ROW Width | Curb -to- Curb | Travel Lanes | Parking North | Parking South | Side-walk North | North Notes | Side-walk South | South Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Alder | Local Access | 1st-2nd | 60' | 36' | 1 | Parallel | Parallel | 12' | 11' bump out at rail crossing (west end) | 12' | 11' bump out at rail crossing (west end) |
| Alder | Local Access | 2nd-3rd | 60' | 36'-47' | 1 | Angle | Angle | 8'-12' | Widens mid-block | 5'-12' | Widens mid-block |
| Morrison | Viaduct | Water-1st | 60' | 44' | 1 | Angle | Angle | 8' | | 8' | |
| Morrison | Viaduct | 1st-2nd | 60' | 44' | 1 | Angle | Angle | 8' | 10' bump out at rail crossing (west end) | 8' | 10' bump out at rail crossing (west end) |
| Morrison | Viaduct | 2nd-3rd | 60' | 44' | 1 | Angle | Angle | 8' | | 8' | |
| Belmont | Viaduct | Water-1st | 60' | 46' | 1 | Angle | Angle | 7' | 6' bump out at west end; 13' bump out at rail crossing (east end) | 7' | 13' bump out at rail crossing (east end) |
| Belmont | Viaduct | 1st-2nd | 60' | 46' | 1 | Angle | Angle | 7' | sidewalk is flush; several steep driveway ramps and a loading dock obstructing | 7' | |
| Belmont | Viaduct | 2nd-3rd | 60' | 46' | 1 | Angle | Angle | 7' | | 7' | |
| Yamhill | Portal w/out Bike Lane | Water-1st | 60' | 42' | 2 | Parallel | Parallel | 9' | | 9' | |
| Yamhill | Portal w/out Bike Lane | 1st-2nd | 60' | 42' | 2 | Parallel | Parallel | 9' | 6' bump out at rail crossing (west end) | 9' | |

| Street | Type | Block | ROW Width | Curb -to- Curb | Travel Lanes | Parking North | Parking South | Side-walk North | North Notes | Side-walk South | South Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Yamhill | Portal w/out Bike Lane | 2nd-3rd | 60' | 42' | 2 | Parallel | Parallel | 9' | | 9' | |
| Salmon | Route to the River | Water-1st | 60' | 36' | 2 | Parallel | Parallel | 6' | 1/2 block 6' plant-ing strip; 1/2 block 6' parking lot w/ driveway | 12' | 1/2 block driveway to loading doors |
| Salmon | Route to the River | 1st-2nd | 60' | 36' | 2 | Parallel | Parallel | 12' | 1/2 block flush curbline w/ headin parking/"loading" | 6.75' | 5.25' planting strip, lot-side |
| Salmon | Route to the River | 2nd-3rd | 60' | 36' | 2 | Head-in | Parallel | 12' | Flush curbline with head-in parking and no ped route | 12' | Street trees; lots of angled driveway |
| Main | Route to the River | Water-1st | 60' | 36' | 2 | Parallel | Parallel | 12' | 1/2 block driveway, 1 street tree | 6' | 1/2 block 6 foot shrubs against building; 1/2 block parking lot |
| Main | Route to the River | 1st-2nd | 60' | 36' | 2 | Parallel | Parallel | 12' | 1/2 block angled driveway, 2 street trees | 6'/12' | 1/3 block 6 foot shrubs against building |
| Main | Route to the River | 2nd-3rd | 60' | 36' | 2 | Parallel | Parallel | 12' | 1/2 block flush cur-bline, 1 street tree | 6'/12' | 1/2 block 6+ foot trees w/ low branch-es against building (city-approved?); portion in parking lot |
| Taylor | Portal w/out Bike Lane | Water-1st | 60' | 44' | 2 | Parallel | Parallel | 8' | | 8' | 6' bump out at rail crossing (east end) |

| Street | Type | Block | ROW Width | Curb -to- Curb | Travel Lanes | Parking North | Parking South | Side-walk North | North Notes | Side-walk South | South Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Taylor | Portal w/out Bike Lane | 1st-2nd | 60' | 42' | 2 | Parallel | Parallel | 12' | 1/2 block driveway, 6.5' bump out at rail crossing (west end) | 8' | 1/2 block flush curbedge |
| Taylor | Portal w/out Bike Lane | 2nd-3rd | 60' | 42' | 2 | Parallel | Parallel | 12' | | 8' | 1 large angled drive-way |
| Madison | Viaduct | Water-1st | 60' | 46' | 1 | Angle | Angle | 7' | | 7' | 14' bump out at rail crossing (east end) |
| Madison | Viaduct | 1st-2nd | 60' | 46' | 1 | Angle | Angle | 7' | 12' bump out at rail crossing (west end) | 7' | |
| Madison | Viaduct | 2nd-3rd | 60' | 46' | 1 | Angle | Angle | 7' | | 7' | |
| Hawthorne | Viaduct | Water-1st | 70' | 52' | 1 | Angle | Angle | 9.5' | 5 street trees, 16' bump out at rail crossing (east end) | 9' | 16' bump out at rail crossing (east end), stairs from viaduct (east end) |
| Hawthorne | Viaduct | 1st-2nd | 70' | 52' | 1 | Angle | Angle | 9' | | 9' | |
| Hawthorne | Viaduct | 2nd-3rd | 70' | 52' | 1 | Angle | Angle | 7' | | 8.5' | 5' bump out (east end) |
| Clay | Portal | Water-1st | 60'-70' | 36' | 2 + turn lane | None | None | 12' | | 8' | |
| Clay | Portal | 1st-2nd | 60' | 36' | 2 | Parallel | Parallel | 12' | | 12' | |
| Clay | Portal | 2nd-3rd | 60' | 36' | 2 | Parallel | Parallel | 12' | | 12' | |
| Market | Local Access | 1st-2nd | 30' | 30' | 2 | None | None | 0' | | 0' | |
| Market | Local Access | 2nd-3rd | 30' | 30' | 2 | None | None | 0' | | 0' | |

| Street | Type | Block | ROW Width | Curb -to- Curb | Travel Lanes | Parking East | Parking West | Side-walk East | East Notes | Side-walk West | West Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Water | Portal w/ bike lane | Stark-Washington | -- | 36' | 2 (11') | Parallel (102') | None | 8' | | 8' | |
| Water | Portal w/ bike lane | Washing-ton-Alder | -- | 42' | 2 (10.5') | Parallel (123') | Parallel | 8' | | 10' | |
| Water | Portal w/ bike lane | Alder-Morrison | -- | 42' | 2 (10') | Parallel (150') | Parallel | 8' | | 11' | |
| Water | Portal w/ bike lane | Morrison-Belmont | -- | 44' | 2 (10') | Parallel (66') | None | 7' | | 10' | |
| Water | Portal w/ bike lane | Belmont-Yamhill | -- | 48' | 2 (10.5' -12') | Parallel (140') | Parallel (115') | 6' | | 6' | |
| Water | Portal w/ bike lane | Yamhill-Taylor | 60' | 54' | 2 (11') | Parallel (148') | None | 6' | | 0' | No curb or side-walk. Private head-in parking behind lot line |
| Water | Portal w/ bike lane | Taylor-Salmon | 60' | 48' | 2 (11') | Parallel (93') | Parallel | 6' | | 6' | Sidewalk disap-pears 50' short of block's southern end |
| Water | Portal w/ bike lane | Salmon-Main | 60' | 48' | 2 (11') | Parallel (110') | Parallel (114') | 6' | | 6' | |
| Water | Portal w/ bike lane | Main-Madison | 60' | 48' | 2 (11') | Parallel (142') | Parallel | 6' | | 6' | Stairs from Haw-thorne Bridge (south end) |

| Street | Type | Block | ROW Width | Curb -to- Curb | Travel Lanes | Parking East | Parking West | Side-walk East | East Notes | Side-walk West | West Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Water | Portal w/ bike lane | Madison-Hawthorne | 60' | 48' | 2 (11') | Parallel | Parallel (90') | 6' | 78' driveway with private parking lot behind curb | 6' | |
| Water | Portal w/ bike lane | Hawthorne-Clay | 60' | 48'-43' | 2 (11') | Parallel | Parallel (55') | 6' | private parallel parking/loading dock behind curb | 6'-11' | Widens mid block; 3 street trees in furnishing zone |
| 2nd | Truck Loading | Burnside-Ankeny | 60' | 53' | 2 | Parallel (85') | Parallel (120') | 7' | 1 loading dock (16') blocking side-walk; 80' parking lot behind curb | 5' | 133' sidewalk; 7 loading doors 60'-70' from lot line |
| 2nd | Truck Loading | Ankeny-Ash | 60' | 53' | 2 | Parallel (85') | Parallel (150') | 7' | 9 loading doors 72' from lot line | 0' | |
| 2nd | Truck Loading | Ash-Oak | 60' | 54'-60' | 2 | Parallel (250') | Parallel (250') | 6' | 100' sidewalk (north end); 1 load-ing dock (18') and 5 loading doros; | 0' | 9 loading doors 60' from lot edge |
| 2nd | Truck Loading | Oak-Stark | 60' | 60' | 2 | Angle | None | 0' | 1 loading door | 0' | 1 dock behind curb, 6 loading doors |
| 2nd | Truck Loading | Stark-Washington | 60' | 60' | 2 | Parallel (60') | Parallel | 0' | | 11' | 2 loading doors, hydraulic dock? |
| 2nd | Truck Loading | Washing-ton-Alder | 60' | 60' | 2 | Angle (176') | Parallel (85') | 0' | 4 loading doors | 0' | 1 dock (30'); 1 loading door |
| 2nd | Truck Loading | Alder-Morrison | 60' | 60' | 2 | Parallel (132') | Parallel (161') | 0' | 4 loading doors | 0' | 2 garage doors |
| 2nd | Truck Loading | Morrison-Belmont | 60' | 60' | 2 | None | None | 0' | 1 dock (160') | 0' | |
| 2nd | Truck Loading | Belmont-Yamhill | 60' | 60' | 2 | Angle (200') | Parallel (125') | 0' | | 0' | 3 loading doors |

| Street | Type | Block | ROW Width | Curb -to- Curb | Travel Lanes | Parking East | Parking West | Side-walk East | East Notes | Side-walk West | West Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2nd | Truck Loading | Yamhill-Taylor | 60' | 60' | 2 | Angle (60') | Parallel (60') | 0' | 4 loading doors | 0' | 2 loading doors |
| 2nd | Truck Loading | Taylor-Salmon | 60' | 60' | 2 | None | Angle (50') | 0' | 3 loading doors | 0' | 2 loading docks (166'); |
| 2nd | Truck Loading | Salmon-Main | 60' | 60' | 2 | Angle (100') | Angle (50') | 0' | 3 docks (145' to-tal); angle parking in front of dock | 0' | 2 loading doors |
| 2nd | Truck Loading | Main-Madison | 60' | 60' | 2 | None | Angle (50') | 0' | 2 docks (126' to-tal); 1 loading door | 0' | 1 dock (103'); 1 loading door |
| 2nd | Truck Loading | Madison-Hawthorne | 60' | 60' | 2 | None | Angle (160') | 0' | 2 docks (50' total) | 0' | |
| 2nd | Truck Loading | Hawthorne-Clay | 60' | 60' | 2 | Head-in (110') | Parallel | 0' | 3 loading doors | 0' | |
| 2nd | Truck Loading | Clay-Market | 60' | 60' | 2 | Head-in | Head-in | 0' | Check with Bob Haley on side-walk to be built for Taylor Electric redevelop | 0' | |
| 3rd | Truck Loading | Ash-Pine | 60' | 36' | 2 | None | Parallel | 11' | 165' of 11' side-walk; low curb; 1 dock (40') | 11' | 100' of 11' side-walk; 96' curbless w/ driveways park-ing in PAR; 1 dock (35') and 4 garage doors |
| 3rd | Truck Loading | Pine-Oak | 60' | 37' | 2 | Parallel (17') | Parallel | 11' | Full length | 12' | 132' of 12' walk-way; low or no curb; sloped con-crete; 1 dock (85') and 1 garage door, 1 porch |

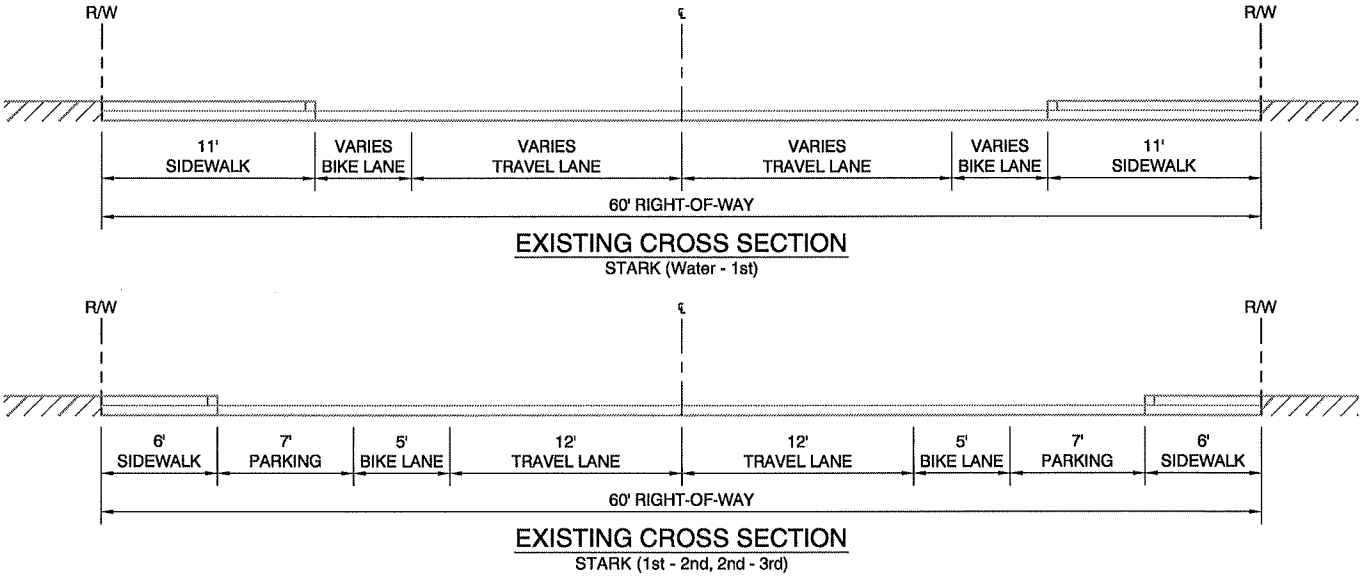
| Street | Type | Block | ROW Width | Curb -to- Curb | Travel Lanes | Parking East | Parking West | Side-walk East | East Notes | Side-walk West | West Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3rd | Truck Loading | Oak-Stark | 60' | 38' | 2 | None | Parallel (130') | 11' | 70' of 11' sidewalk (block ends)2 docks (129' total) | 11' | 17' of 11' sidewalk (north end), 1 dock (180'); Parallel parking in front of dock |
| 3rd | Truck Loading | Stark-Washington | 60' | 40'-36' | 2 | Parallel (107') | Angle (18'); Par-allel (19') | 9' | 100' of 9' sidewalk; low curb; around dock; 2 docks (99' total) and 1 garage door | 12' | Full length |
| 3rd | Truck Loading | Washing-ton-Alder | 60' | 42'-60' | 2 | None | Parallel (130') | 0' | 2 docks (165' total) | 6.5' | 70' sidewalk (north end); Angle park-ing on "sidewalk"; 2 loading doors; 1 garage door |
| 3rd | Truck Loading | Alder-Morrison | 60' | 42'-36' | 2 | Parallel (80') | None | 12' | 100' of 12' side-walk; BES Big Pipe constructions currently blocks 100' | 8'-12' | 110' of sidewalk; 90' driveway in front of 4 garage doors; |
| 3rd | Truck Loading | Morrison-Belmont | 60' | 36' | 2 | Parallel (130') | Parallel (145') | 12' | 100' of 12' side-walk (north end); 1 loading dock (95'); narrow sidewalk strip in front of dock (2.5') | 12' | 75' of 12' side-walk (north end); remainder of block elevated walk (stairs at N; ramp at S) displaying City Liquid. Goods |
| 3rd | Truck Loading | Belmont-Yamhill | 60' | 48' | 2 | Parallel (130') | None | 12' | Full length | 0' | 1 dock (95') |

| Street | Type | Block | ROW Width | Curb -to- Curb | Travel Lanes | Parking East | Parking West | Side-walk East | East Notes | Side-walk West | West Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3rd | Truck Loading | Yamhill-Taylor | 60' | 40' | 2 | Parallel | Parallel (150') | 12' | Full length | 8' | 30' of 8' sidewalk (north end); 2 loading docks (160' total); 1 garage door; parking in front of docks |
| 3rd | Truck Loading | Taylor-Salmon | 60' | 42' | 2 | Parallel (50') | Parallel | 12' | Full length; 1 garage door | 6' | Full length; 1 garage door |
| 3rd | Truck Loading | Salmon-Main | 60' | 36' | 2 | Parallel | Parallel (170') | 12' | Full length | 12' | Full length; 3 street trees; 1 garage door |
| 3rd | Truck Loading | Main-Madison | 60' | 50' | 2 | None | Parallel (50') | 0' | 1 dock (150') | 0' | 2 docks (44'), 2 garage doors |
| 3rd | Truck Loading | Madison-Hawthorne | 60' | 42'-40' | 2 | Parallel (90') | Parallel (80') | 12' | 100' sidewalk (south end); 1 dock (80') | 8' | 100' of 8' flush sidewalk (south end) usually obstructed by head-in parking; 1 dock (76') |
| 3rd | Truck Loading | Hawthorne-Clay | 60' | 36' | 2 | Parallel (60') | None | 6' | Sidewalk full length; 2 garage doors; several long planting strips (5' wide) w/ 5 street trees) | 10' | Sidewalk full length, but sloped and usually used for parking; sidewalk fronts private parking/loading; 5 loading doors; 3 garage doors; used as parkinglot |

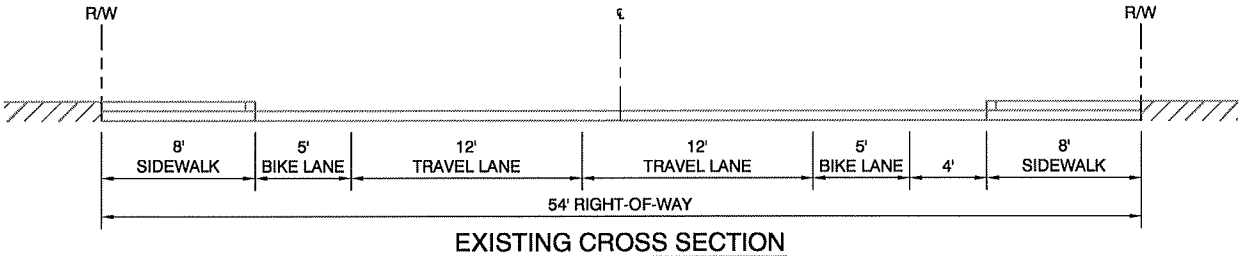
| Street | Type | Block | ROW Width | Curb -to- Curb | Travel Lanes | Parking East | Parking West | Side-walk East | East Notes | Side-walk West | West Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3rd | Truck Loading | Clay-Market | 60' | 36' | 2 | Parallel | Parallel | 6' | Sidewalk full length; 3' grass strip btwn sidewalk & curb; 2' grass strip btwn sidewalk & lot line | 10' | 2' grass strip btwn sidewalk & lot line |
| 3rd | Truck Loading | Market-Mill | 60' | 36' | 2 | Parallel | Parallel (130') | 12' | Sidewalk full length | 9'-12' | Sidewalk full length; 9' sidewalk (north end) where 3' shrubs planted btwn sidewalk & lot line |
| 3rd | Truck Loading | Mill-Stephens | 60' | 36' | 2 | None | None | 12' | Sidewalk full length; 1 garage door | 12' | Sidewalk full length; 3 loading doors; head-in parking behind sidewalk |

# EXISTING CONDITIONS – STREET CROSS-SECTIONS BY FUNCTION

## Portal Street with Bike Lanes – Stark Street

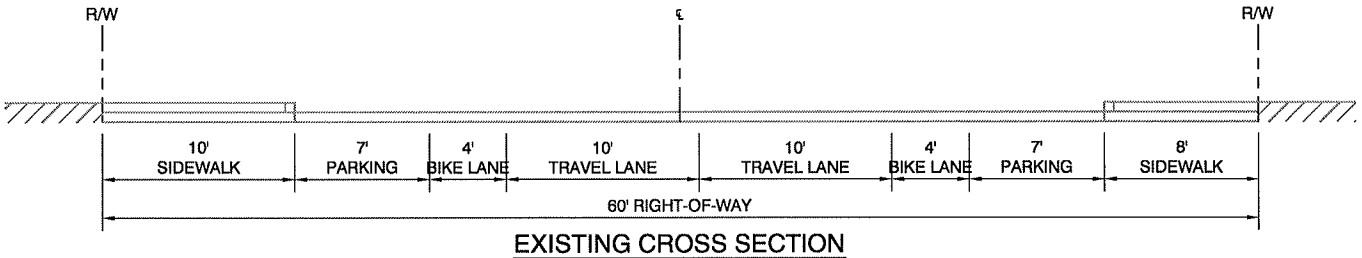


## Portal Street with Bike Lanes – Water Avenue



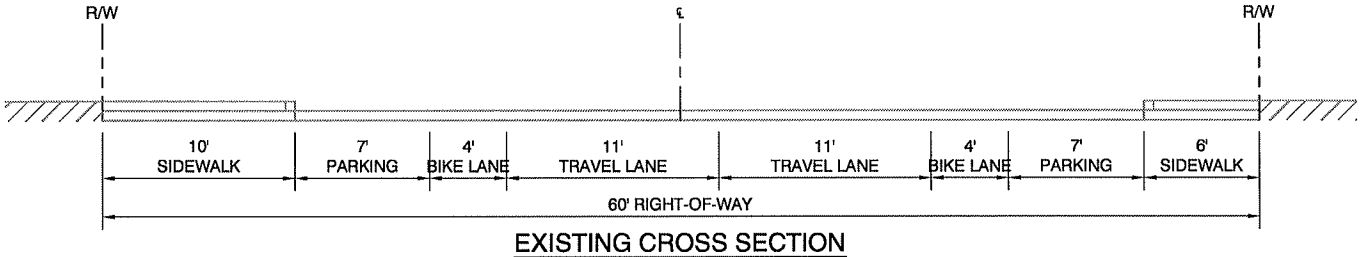

EXISTING CROSS SECTION

WATER (Stark - Washington)



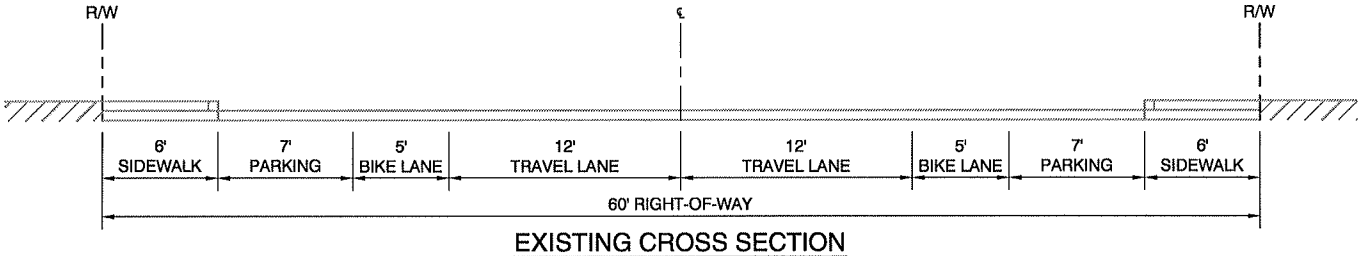

EXISTING CROSS SECTION

WATER (Washington - Alder, Alder - Morrison)




EXISTING CROSS SECTION

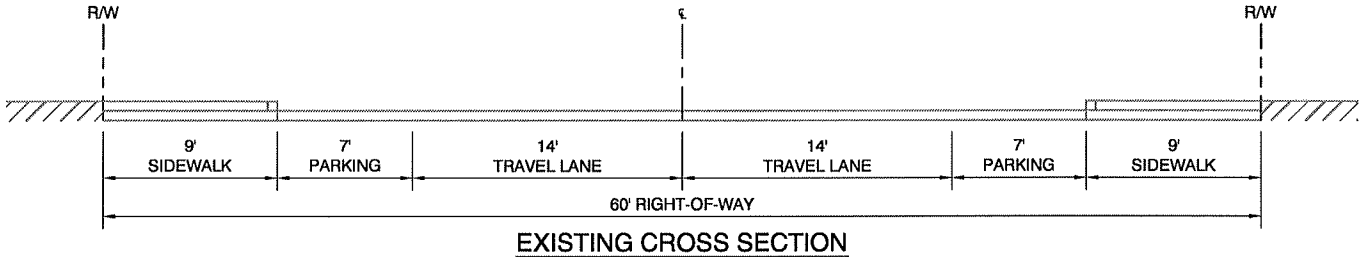
WATER (Morrison - Belmont, Hawthorne - Clay)



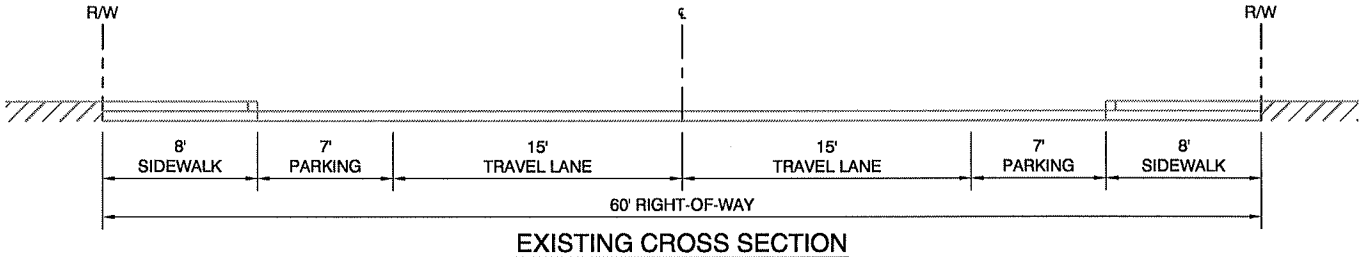

EXISTING CROSS SECTION

WATER (Belmont - Yamhill, Yamhill - Taylor, Taylor - Salmon, Salmon - Main, Main - Madison, Madison - Hawthorne)

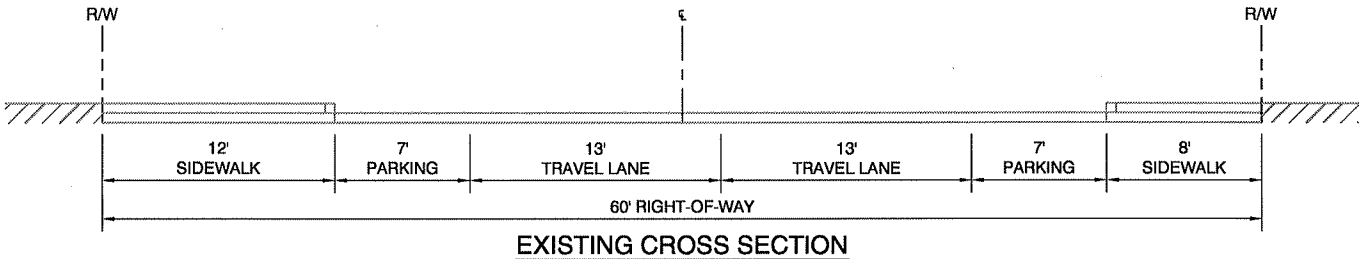
## Portal Street with Bike Lanes – Yamhill, Taylor and Clay Streets



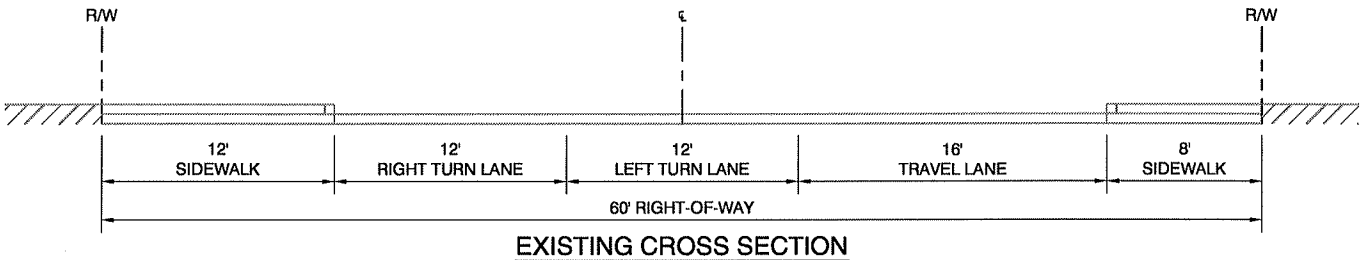

EXISTING CROSS SECTION
YAMHILL (Water - 1st, 1st - 2nd, 2nd - 3rd)



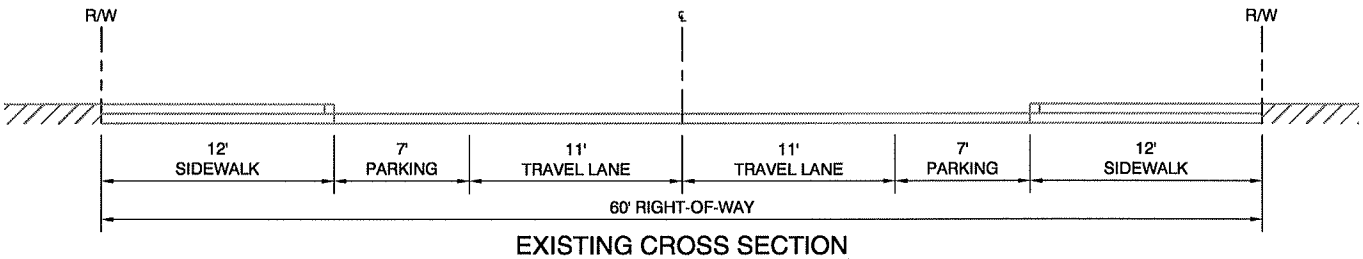

EXISTING CROSS SECTION
TAYLOR (Water - 1st)




EXISTING CROSS SECTION
TAYLOR (1st - 2nd, 2nd - 3rd)

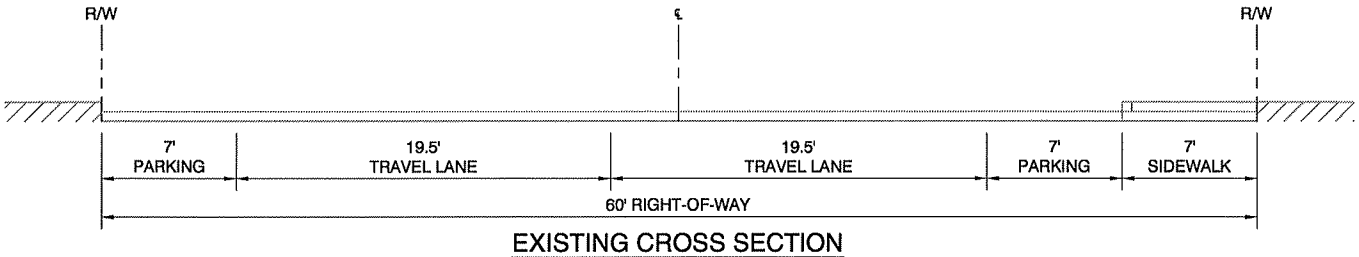



EXISTING CROSS SECTION
CLAY (Water - 1st)

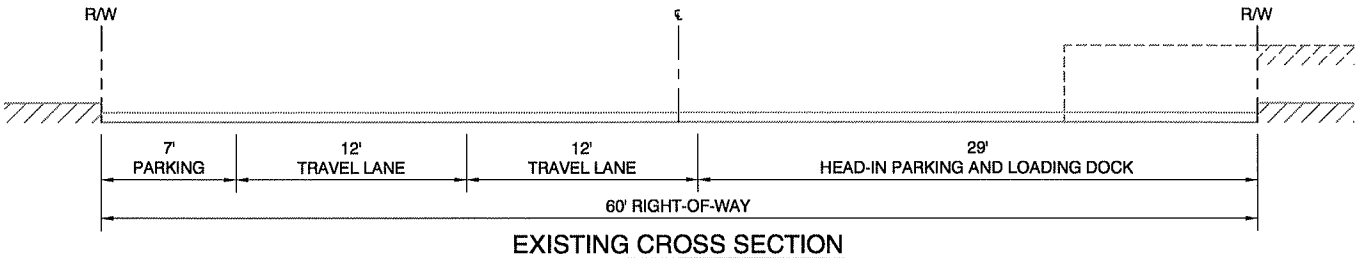



EXISTING CROSS SECTION
CLAY (1st - 2nd, 2nd - 3rd)

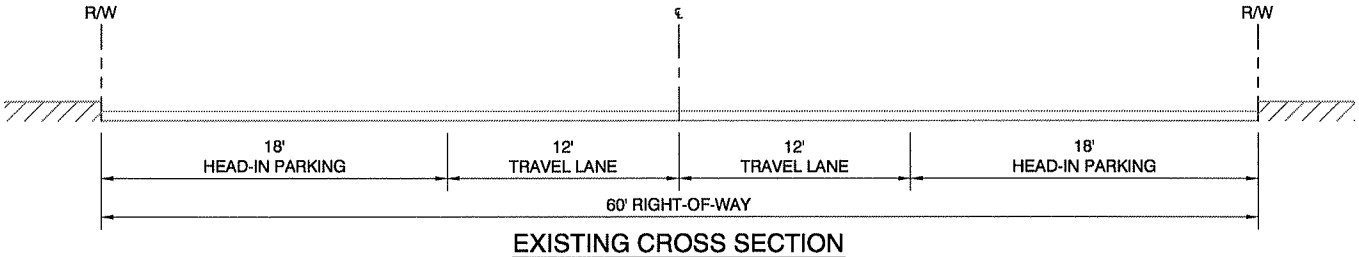
## Truck Loading Streets – 2nd Avenue



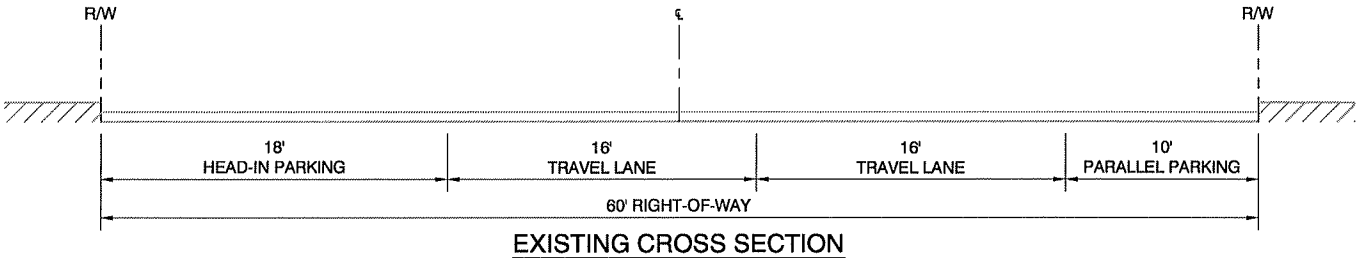

EXISTING CROSS SECTION
2nd (Ankeny to Ash)



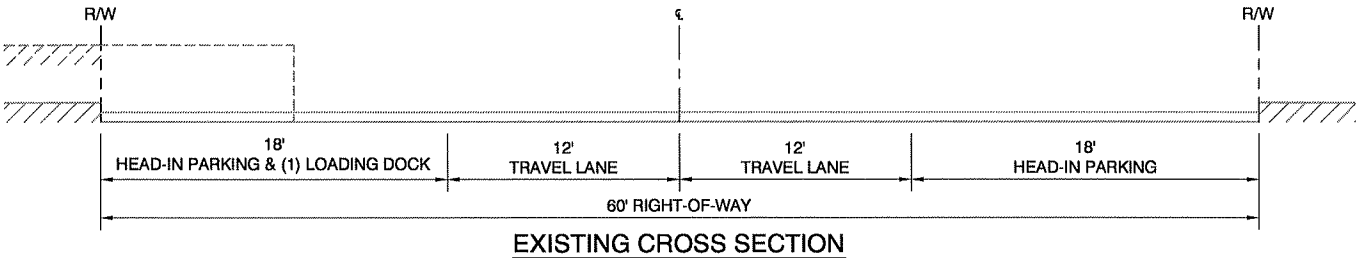

EXISTING CROSS SECTION
2nd (Ash to Oak)



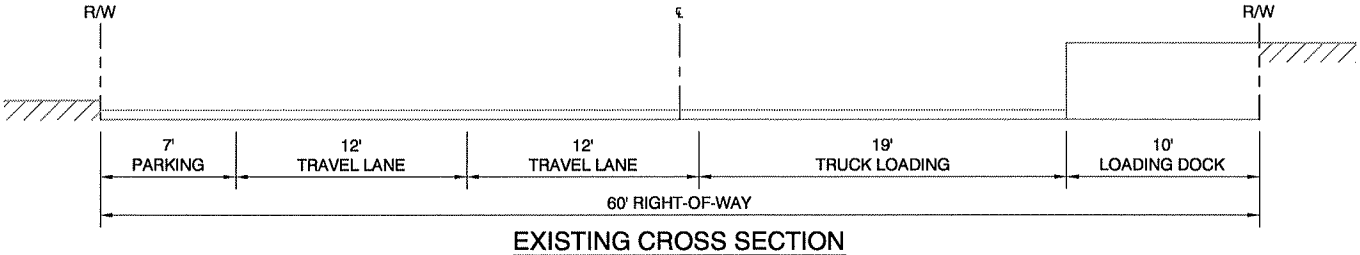

EXISTING CROSS SECTION
2nd (Oak to Stark)




EXISTING CROSS SECTION
2nd (Stark to Washington)

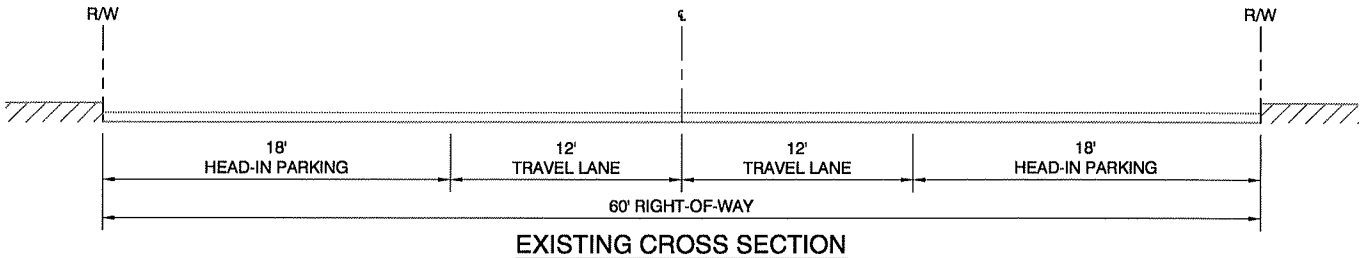



EXISTING CROSS SECTION
2nd (Washington to Alder, Alder to Morrison)

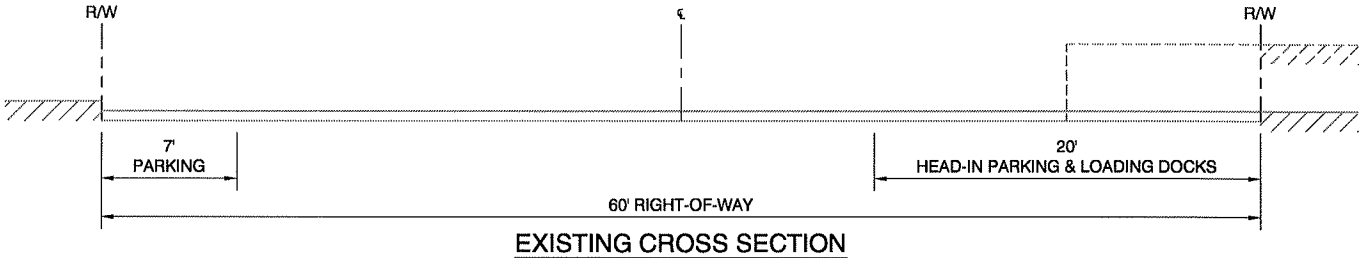



EXISTING CROSS SECTION
2nd (Morrison to Belmont)

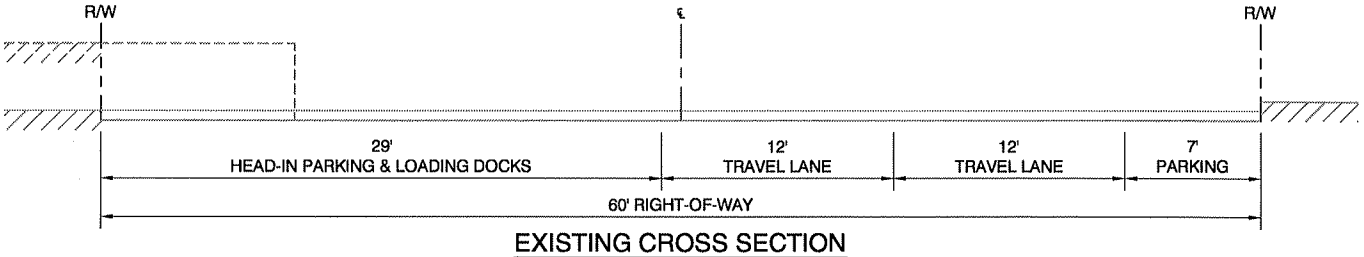
## Truck Loading Streets – 2nd Avenue



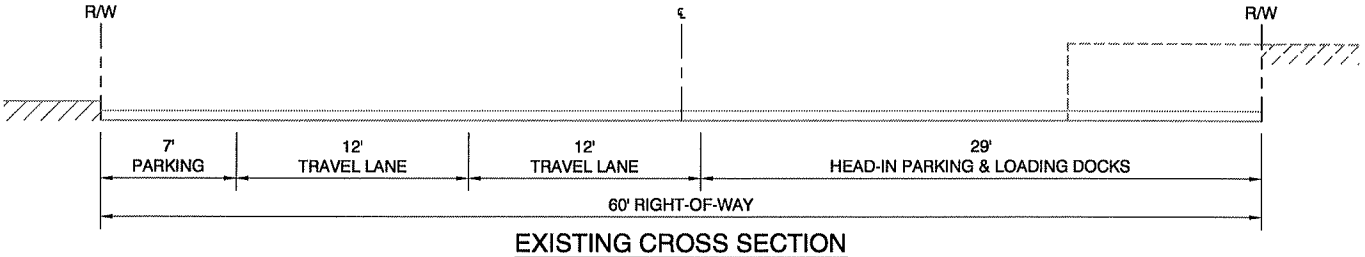

EXISTING CROSS SECTION
2nd (Belmont to Yamhill)



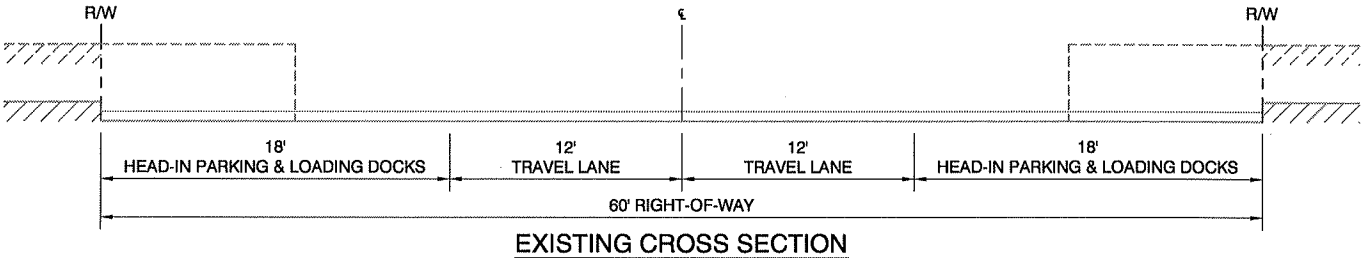

EXISTING CROSS SECTION
2nd (Yamhill to Taylor)



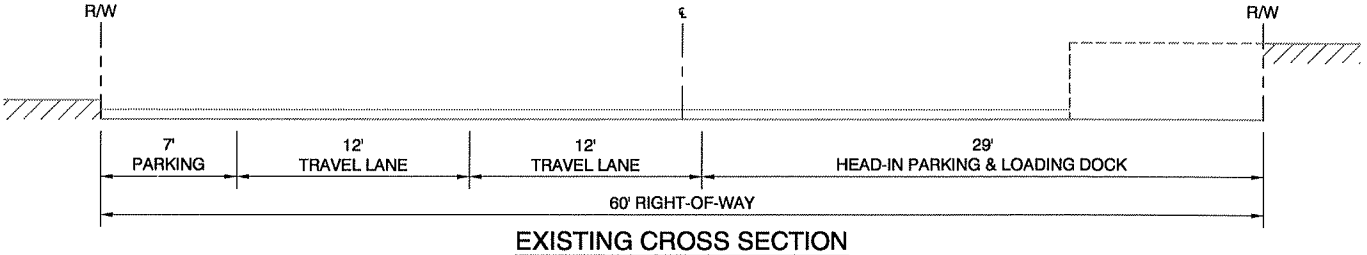

EXISTING CROSS SECTION
2nd (Taylor to Salmon)




EXISTING CROSS SECTION
2nd (Salmon to Main)

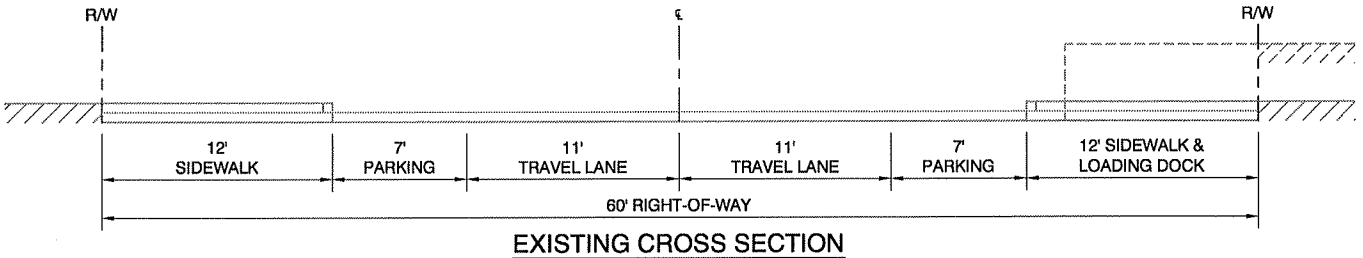



EXISTING CROSS SECTION
2nd (Main to Madison)

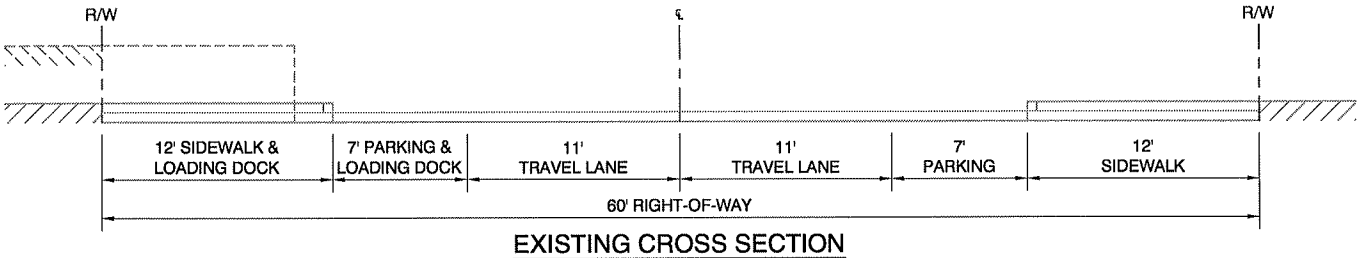



EXISTING CROSS SECTION
2nd (Madison to Hawthorne, Hawthorne to Clay)

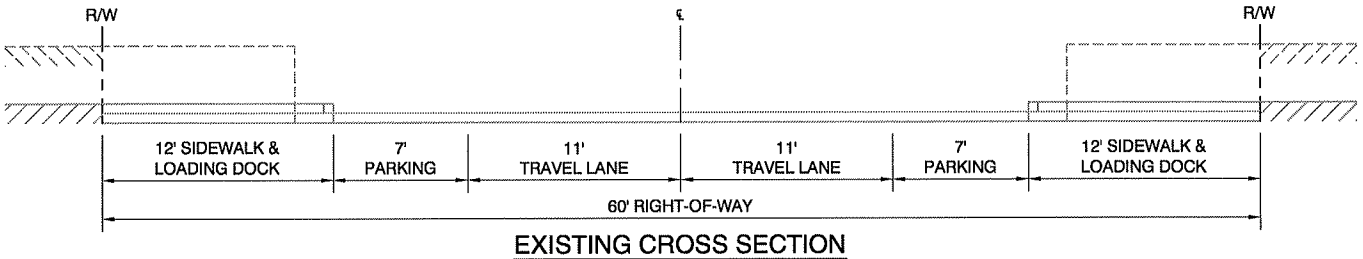
## Truck Loading Streets – 3rd Avenue



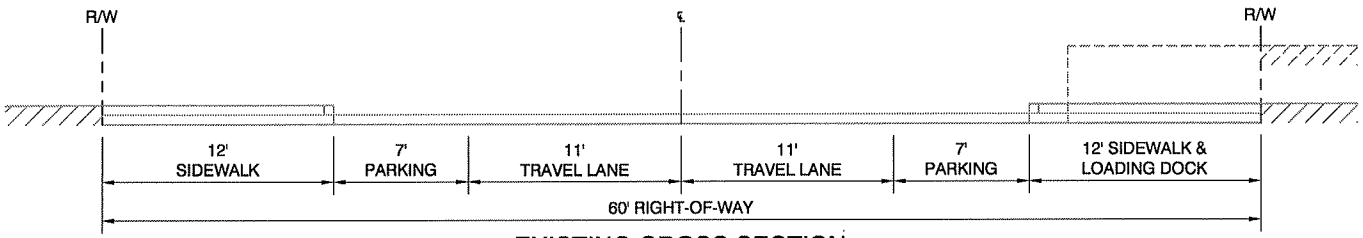

EXISTING CROSS SECTION
3rd (Ash to Pine)



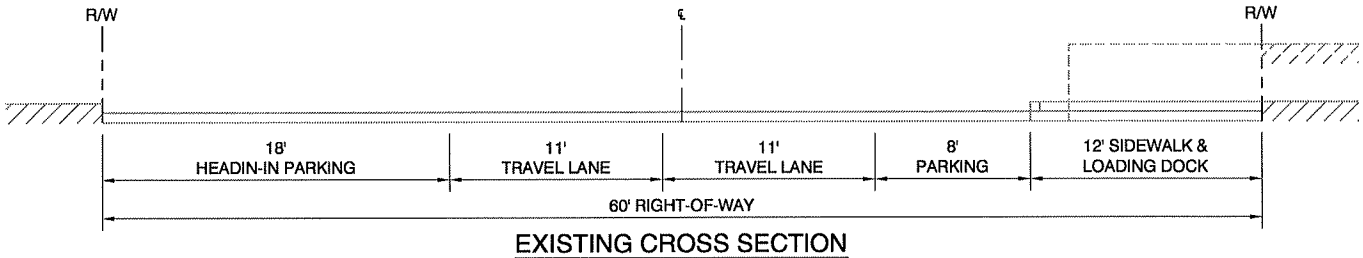

EXISTING CROSS SECTION
3rd (Pine to Oak)




EXISTING CROSS SECTION
3rd (Oak to Stark)

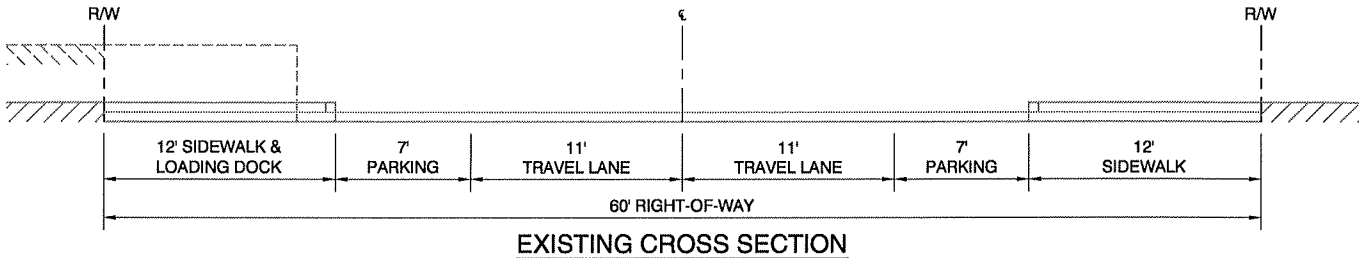



EXISTING CROSS SECTION
3rd (Stark to Washington)

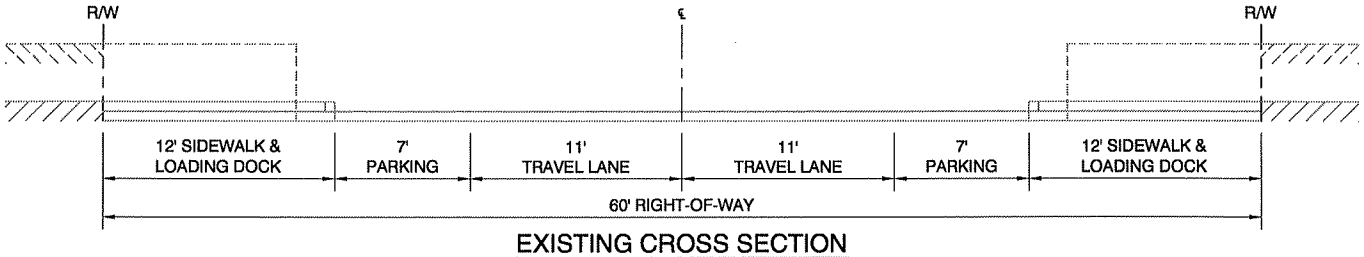



EXISTING CROSS SECTION
3rd (Washingto to Alder)

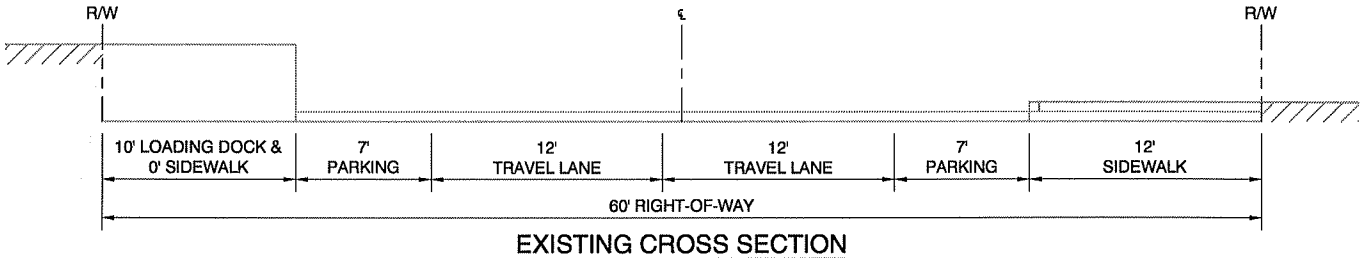
## Truck Loading Streets – 3rd Avenue



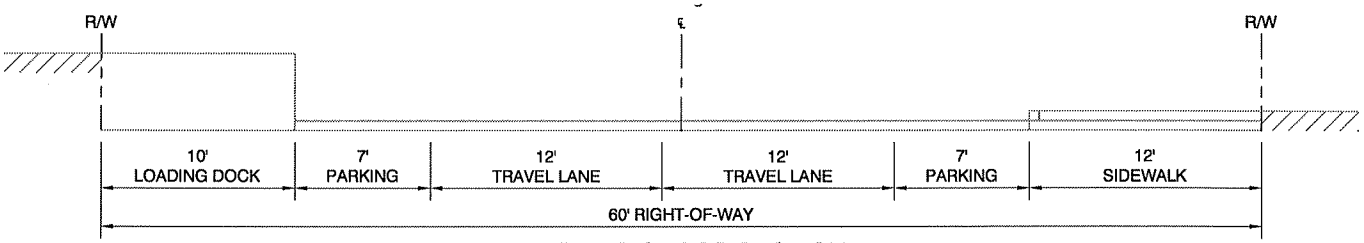

EXISTING CROSS SECTION
3rd (Alder to Morrison)



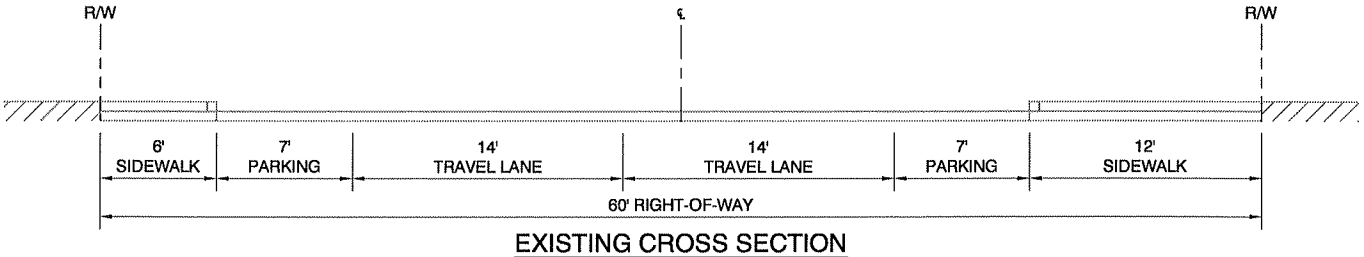

EXISTING CROSS SECTION
3rd (Morrison to Belmont)




EXISTING CROSS SECTION
?rd (Belmont to Yamhill)

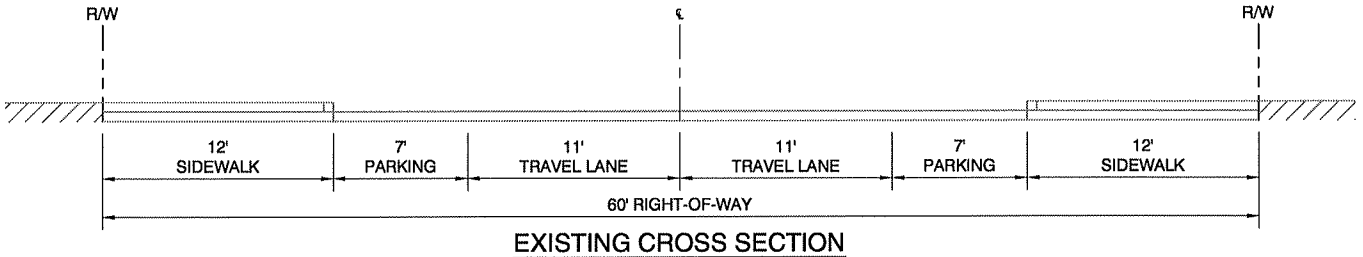



EXISTING CROSS SECTION
3rd (Yamhill to Taylor)

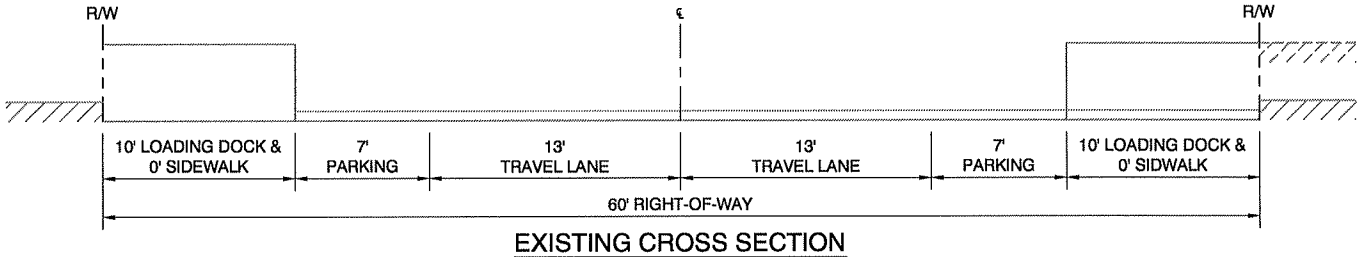



EXISTING CROSS SECTION
3rd (Taylor to Salmon)

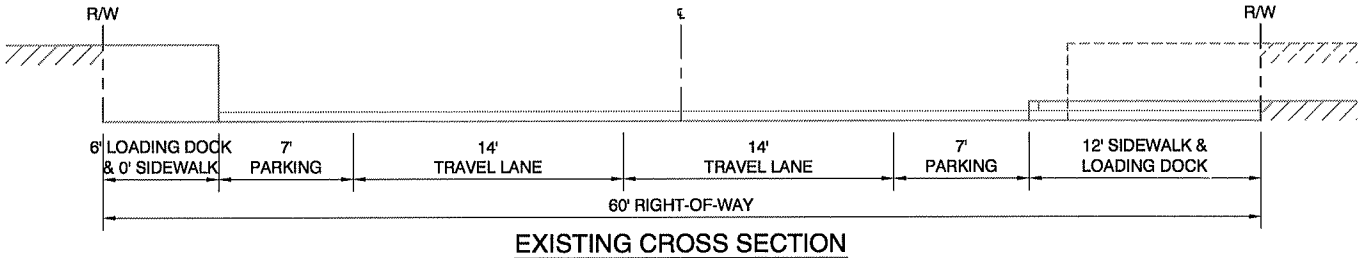
## Truck Loading Streets – 3rd Avenue



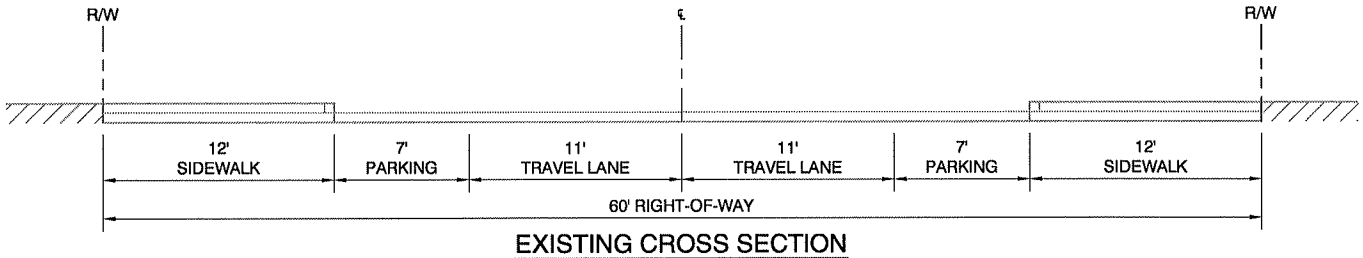

EXISTING CROSS SECTION
3rd (Salmon to Main)




EXISTING CROSS SECTION
3rd (Main to Madison)

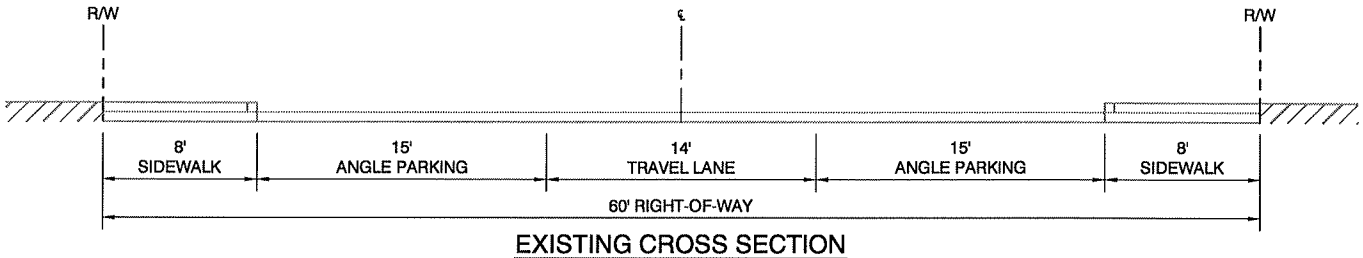



EXISTING CROSS SECTION
3rd (Madison to Hawthorne)

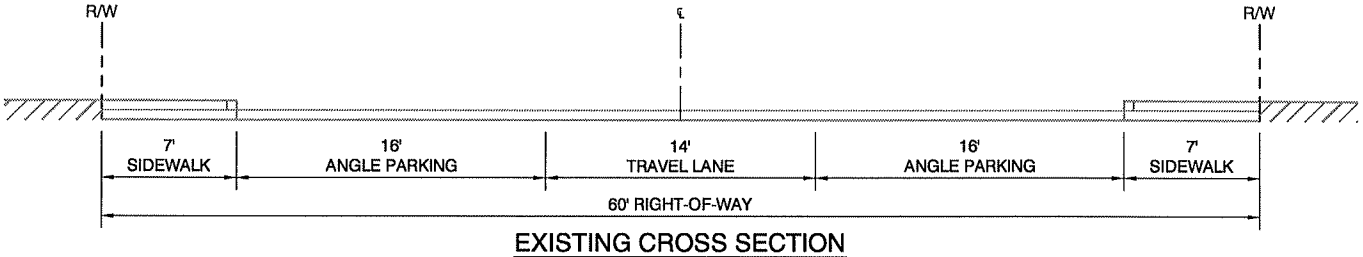



EXISTING CROSS SECTION
3rd (Hawthorne to Clay)

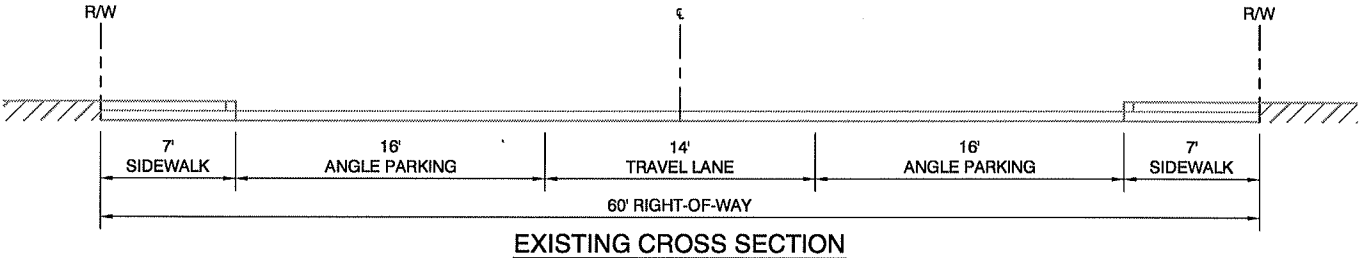
## Surface Viaduct Street–Morrison, Belmont, and Madison Streets, and Hawthorne Boulevard



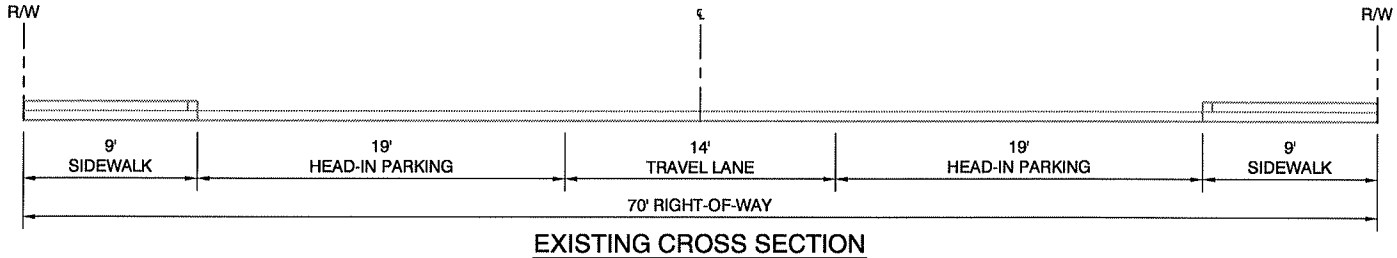

EXISTING CROSS SECTION
MORRISON (Water - 1st, 1st - 2nd, 2nd - 3rd)




EXISTING CROSS SECTION
BELMONT (Water - 1st, 1st - 2nd, 2nd - 3rd)

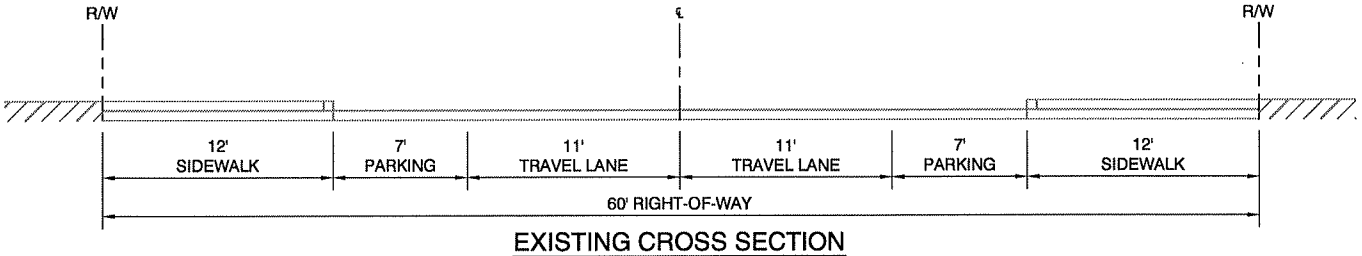



EXISTING CROSS SECTION
MADISON (Water - 1st, 1st - 2nd, 2nd - 3rd)

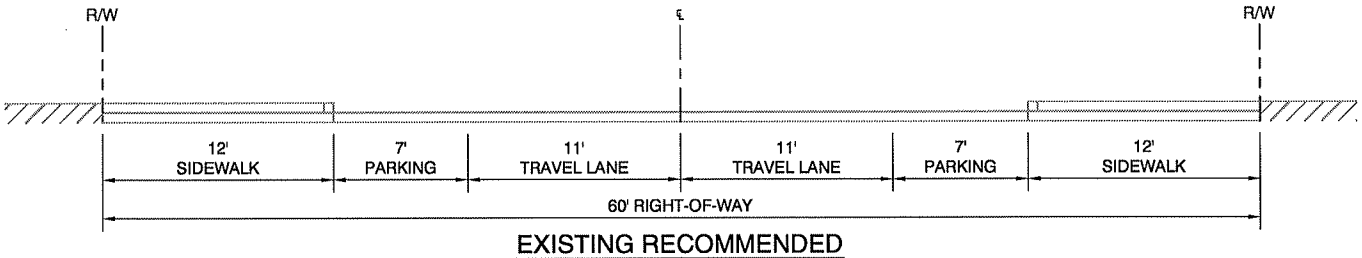



EXISTING CROSS SECTION
HAWTHORNE (Water - 1st, 1st - 2nd, 2nd - 3rd)

## Routes to the River Streets – Salmon and Main Streets

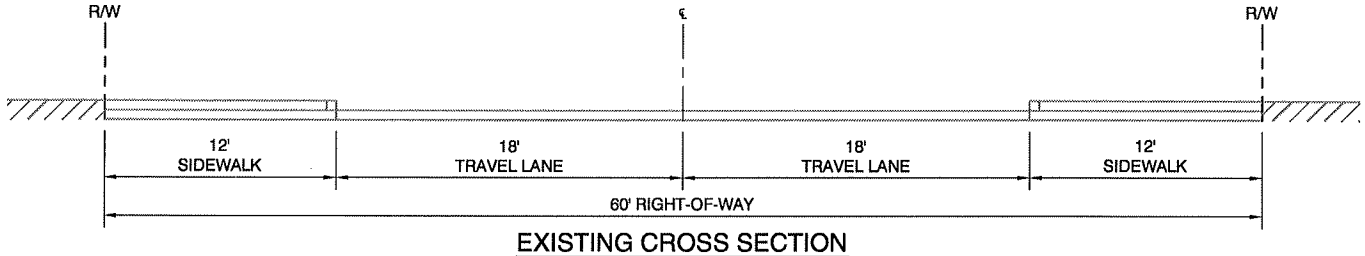



EXISTING CROSS SECTION
MAIN (Water - 1st, 1st - 2nd, 2nd - 3rd)

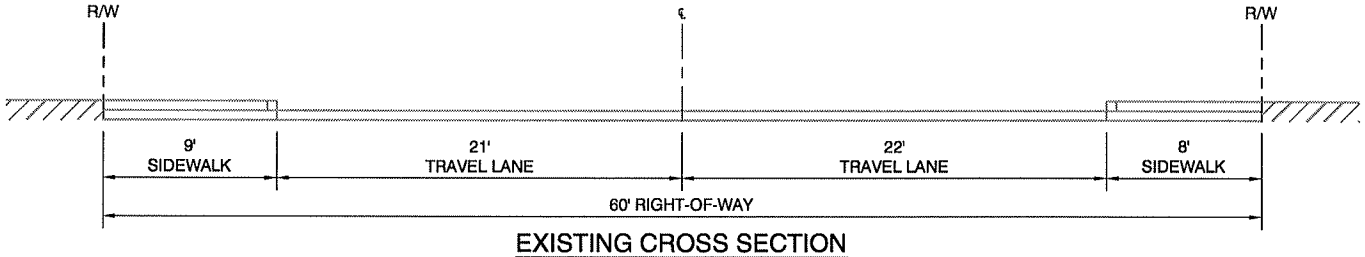



EXISTING RECOMMENDED
SALMON (Water - 1st, 1st - 2nd, 2nd - 3rd)

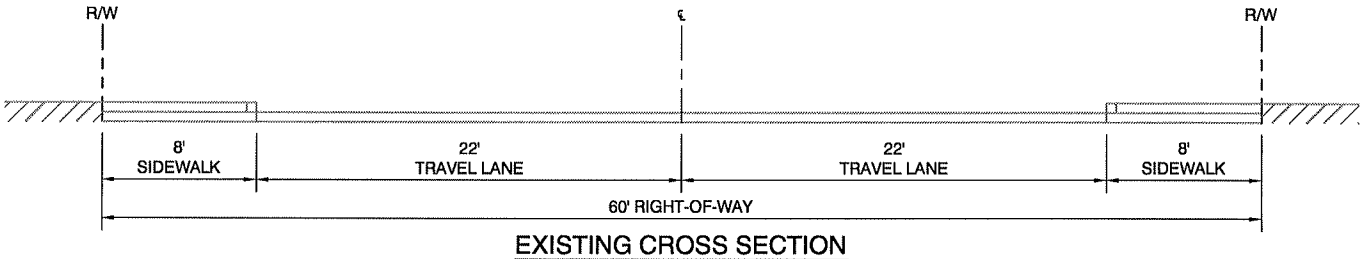
## Local Access Streets – Ash, Oak and Washington Streets



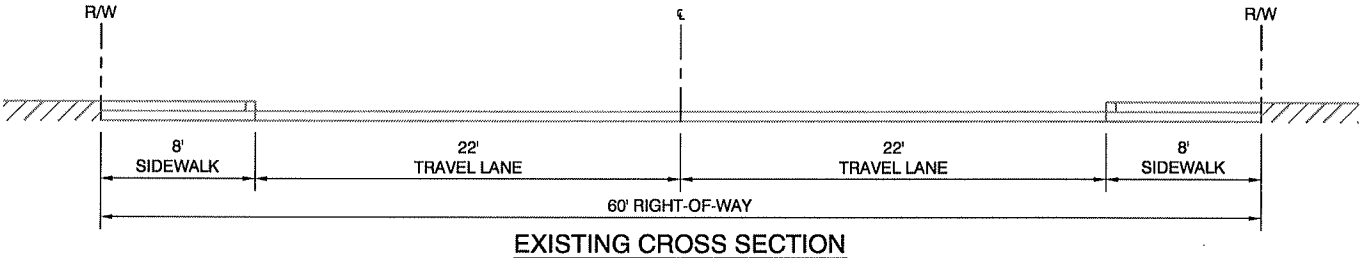

EXISTING CROSS SECTION
ASH ST (2ND - 3RD)




EXISTING CROSS SECTION
OAK ST (1st - 2nd)

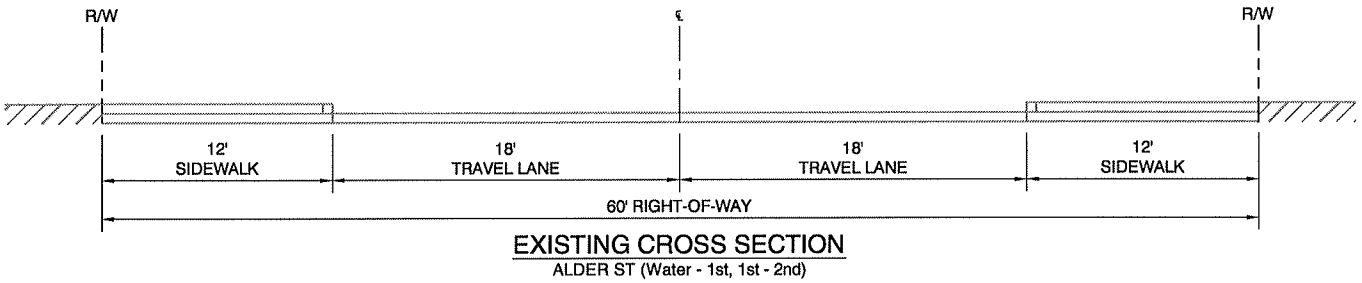



EXISTING CROSS SECTION
OAK ST (2nd - 3rd)

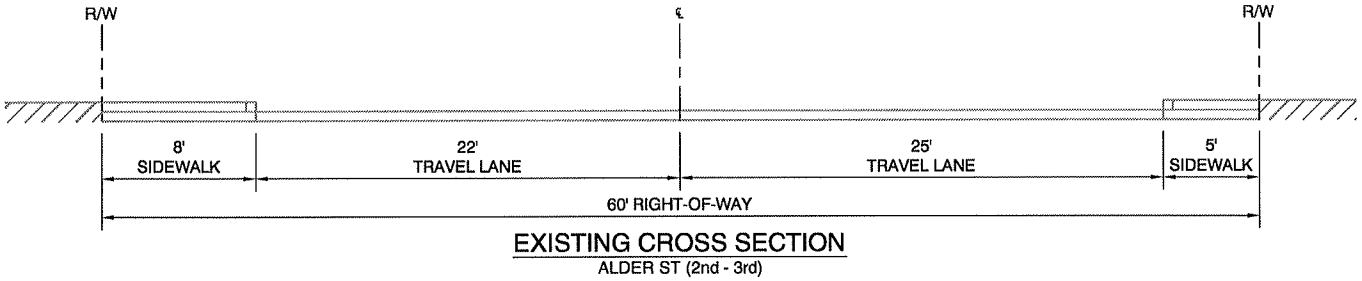



EXISTING CROSS SECTION
WASHINGTON (Water - 1st, 1st - 2nd, 2nd - 3rd)

## Local Access Streets – Alder and Market Streets




EXISTING CROSS SECTION
ALDER ST (Water - 1st, 1st - 2nd)

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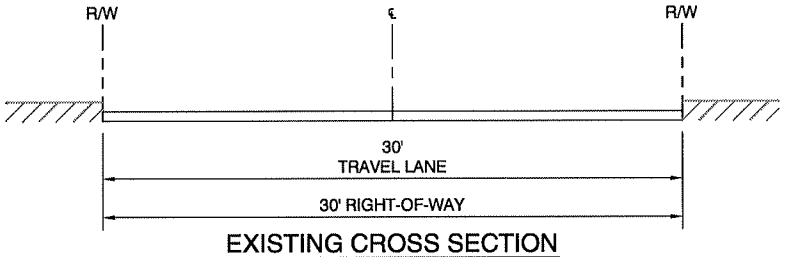
ALDER ST (2nd - 3rd)




EXISTING CROSS SECTION
MARKET (1st - 2nd, 2nd - 3rd)

# SOLUTIONS TOOLBOX

## OBJECTIVE: Provide safe and convenient truck mobility and access

| Tools | Description | Type | Trade-offs | Pros | Cons |
|---|---|---|---|---|---|
| Truck Loading Zone (Parallel Parking) | Establishing time of day and day of week use of space by trucks through signing. | Program, Regulatory | Providing parallel parking requires more space and hence reduces the on-street parking availability as other parking use is prohibited when TLZ is in effect. | Easier to load and unload. Also a typical minimum width required for parallel parking in a business area is 38 feet (two 8-foot parking lanes and two 11-foot driving lanes). It is flexible and can be customized within city policies and practices. | Leads to inefficient use of parking space. Establishing and managing truck loading zones could be expensive. |
| Angle Loading Parking Permits | Permits allowing truck loading and unloading activities during certain hours of the day can be issued to businesses. During other times of the day the same space could be used as a regular parking space. Restrictions are placed on the user that provide safety zones for vehicular and pedestrian traffic. This may include temporary street and/or sidewalk closures. | Program, Regulatory | Alternatives to permitting angle loading parking would include prohibiting trucks from blocking sidewalks and traffic lanes or creating truck loading zones that are long enough to accommodate large parallel-parked trucks. | Allows more efficient use of the space that would otherwise be limited to loading and unloading activities during some part of the day. | May temporarily re-route vehicular and/or pedestrian traffic. |
| Onsite Truck Loading | Establish requirement that the trucks can only be parked onsite. | Program, Regulatory | None identified | Minimizes the impacts of loading/unloading actions on the traffic on the streets. Also, the sidewalks remain clear at all times making it safer for pedestrian movement. | It influences the design and availability of ground floor building space. It could discourage redevelopment by making the cost of providing onsite parking onerous. |

The Solutions Toolbox is based on the project objectives identified as part of the Central Eastside Street Plan process.

| Tools | Description | Type | Trade-offs | Pros | Cons |
|---|---|---|---|---|---|
| Shared Onsite Truck Loading | Share the onsite parking among trucks and users of the business. | Program, Regulatory | None identified. | Quick, flexible and inexpensive way to use parking facilities more efficiently. | |
| Prohibit Truck Loading on specific Blocks | No trucks allowed. | Design, Regulatory | No benefits to truck drivers. No benefits to properties whose freight shipping and receiving areas are on the block in question. | Simplifies and minimizes the geometric considerations in the block in question. | Requires a permanent commitment to prohibiting trucks in order to design street features accordingly. |
| Trucks turn from a Lane to a Lane | Design intersections so trucks can turn without encroaching on other lanes. | Design, Regulatory | Creating room to accommodate the turns of large vehicles can cost onstreet parking and/or corner sidewalk area. | Higher volume intersections work best when other drivers do not have to yield to large turning vehicles. | Large amounts of space must be reserved for accommodating large vehicles. |
| Turn from Entire Street Width to Entire Street Width | Design intersections so trucks can use all available street area to make turns. | Design, Regulatory | Other drivers must cooperate with the drivers of large vehicles to yield the right of way while they turn. | Minimizes the impact to onstreet parking and/or corner sidewalk areas. | Is acceptable only at low volume intersections where overall travel delay to other users can be tolerated. |

## OBJECTIVE: Provide for existing and future business and employee parking needs

| Tools | | Description | Type | Trade-offs | Pros | Cons |
|---|---|---|---|---|---|---|
| *1. Increase Parking Supply* | A. Minimum Parking Requirements | Establish minimum off-street parking requirements in zoning regulations and development policies, and raise these minimums as needed to accommodate growth in parking demand. | Regulatory | Requiring minimum on-site parking supply would reduce the effectiveness of travel demand management strategies. It could also influence the design and availability of ground floor building space. It could discourage redevelopment by making the cost of providing onsite parking onerous. | This is a common way to increase parking supply. It is easy to implement in most communities by adjusting existing zoning codes and development policies. | It imposes high economic and environmental costs, adding thousands of dollars per space to development costs. It is slow to implement and so cannot solve immediate parking problems. It is inflexible and standard parking requirements do not necessarily represent demand at a particular site. |
| | B. Increase On-Street Parking | Design streets with on-street parking areas. Convert traffic lanes to parking lanes. Minimize restrictions for on-street parking. Convert parallel to angled parking. | Design | It involves trade-offs with traffic lanes, bike lanes, sidewalk space, and other uses of street space. | On-street parking is convenient, visible and cost efficient. It does not require access lanes, and so uses less land per parking space than off-street parking. It is relatively inexpensive. \On-street parking can provide a buffer between pedestrians and vehicle traffic. | Only a limited amount of curb parking can be provided in an area. Parallel parked cars are a hazard to cyclists, particularly if lanes are narrow. Under some conditions, angled parking increases the rate of collisions, although it tends to reduce their severity. |
| | C. Subsidize Off-Street Parking | Use public resources to build parking facilities. This can include direct government funding, free or discounted land provided to developers, tax exemptions and other favorable tax policies, and public parking facilities incorporated into public-private-partnership projects. | Design, Program, Regulatory | This tool would most likely take private property that would otherwise develop per the base zoning. | It increases the supply of public parking where it is most desirable from a community perspective. Governments can control when and where parking supply is added. | It tends to be expensive, and represents a public subsidy for driving. It is slow to implement. It is inflexible, resulting in expensive structures that have few alternative uses if expected demand does not occur. |

| Tools | | Description | Type | Trade-offs | Pros | Cons |
|---|---|---|---|---|---|---|
| *1. Increase Parking Supply (cont.)* | D. Remote Parking | Develop additional parking where land is relatively inexpensive and available. Provide information and incentives to encourage longer-term parkers (particularly commuters) to use the remote parking. | Program | None identified. | Less expensive than increasing central area parking supply. May allow use of otherwise unused land, such as odd-shaped or contaminated parcels. By shifting parking spaces and traffic it allows increased density and reduced traffic impacts in central areas, improving efficiency and environmental quality. | Is less convenient than closer parking. Remote parking spaces may not be used. May require additional costs, such as subsidized shuttle service or enforcement. May involve paving greenspace. |
| | E. Redesign Existing Facilities | Increase the number of spaces in existing parking facilities by using currently wasted areas (corners, edges, undeveloped land, etc.) and sizing a portion of spaces for motorcycles and compact cars. | Design | Utilizing curbside space that is not currently available for parking may compromise safety and maneuverability and may not yield enough space to actually be used by additional vehicles. | Can be an inexpensive way to increase capacity. | Current trends are toward larger parking spaces due to increasing average vehicle size and requirements for disabled vehicle parking. |
| | F. Car Stackers | Car stackers and mechanical garages use various types of lifts and elevators to increase the number of vehicles that can fit in a parking structure. | Design, Program | This tool would most likely take private property that would otherwise develop per the base zoning. | Requires the least possible amount of private property. It increases the supply of public parking where it is most desirable from a community perspective. Governments can control when and where parking supply is added. | This tool will be expensive and the technology would be new to Portland. |

| Tools | | Description | Type | Trade-offs | Pros | Cons |
|---|---|---|---|---|---|---|
| *2. Use Existing Parking Capacity More Efficiently* | A. Improve User Information | Provide information on parking availability and price using signs, brochures and maps, websites, and parking information incorporated into general marketing materials. Provide real-time information on the location of available parking spaces. | Program | This tool would work only for off street public parking that can be adequately monitored and reported. | Can be a cost effective solution to some parking problems. Is quick and flexible. It tends to reduce motorist delay and frustration, and increase user satisfaction. Information may be incorporated into existing marketing material at little extra cost. | Potential impacts may be limited. Imposes costs. Providing accurate real time information tends to be difficult and expensive. |
| | B. Regulate Parking | Public parking can be regulated using time regulations, user regulations, vehicle regulations and on-street parking regulations | Regulatory | This tool is not compatible with making onstreet parking available for long-term use by to anyone who wishes to use it. | Allocates the most desirable parking spaces to preferred users. Imposes minimal direct costs on governments. Is widely used and understood, and so is easy to implement. | Imposes costs for planning, signs and enforcement. Users often find regulations confusing and frustrating. Favors some motorists and businesses over others. Enforcement tends to be unpopular. |
| | C. Shared Parking | Share parking facilities among users. | Program | None identified. | Quick, flexible and inexpensive way to use parking facilities more efficiently. | It may require additional administration and enforcement activities. Users accustomed to assigned spaces may object. There may be inadequate capacity during unusual peak demand periods. |

| Tools | | Description | Type | Trade-offs | Pros | Cons |
|---|---|---|---|---|---|---|
| *2. Use Existing Parking Capacity More Efficiently (cont.)* | D. Public Parking | Public parking can be a particularly efficient type of shared parking since each space can serve many users and destinations. As a result, 100 public parking spaces can be equivalent to 150 to 250 private parking spaces. Developers or building owners can be allowed or required to pay in-lieu fees that fund public parking facilities as an alternative to minimum requirements for private off-street parking | Program | None identified | Can be a cost effective way to provide parking | It may require additional administration and enforcement activities. It may be less convenient to users than a separate parking facility at each site. There may be occasional problems during unusual peak demand periods. |
| | E. Control Parking Passes | Passes that allow motorists to use parking facilities are often not carefully controlled. More careful control of parking passes can reduce inappropriate use of parking facilities. | Regulatory | None identified | Reduces inefficient and unfair use of parking passes. Can help reduce total parking demand. Sets an example that parking is a valuable resource that should not be provided free. Is fair. | May increase administrative and enforcement responsibilities. May upset some employees and officials. |

| Tools | | Description | Type | Trade-offs | Pros | Cons |
|---|---|---|---|---|---|---|
| *3. Reduce Parking Demand* | A. Price Parking | Charge motorists directly for using parking facilities. Even a relatively small parking fee can cause significant travel impacts and provide significant TDM benefits | Regulatory | Paying for parking may cause motorists to look for places with lower or no parking fee forcing vehicles into the nearby residential areas. In other words it may shift the demand rather than reducing the demand. | Pricing is an efficient way to reduce parking demand, address parking congestion problems and support TDM objectives. Pricing parking can be considered fairer than subsidized parking. | Charging for parking incurs transaction costs, including equipment and administrative costs of collecting fees, and inconvenience to motorists. In areas with low demand, revenue may not cover transaction costs. |
| | B. Tax Parking | Special parking taxes can be used to reduce total parking demand, create a disincentive to drive, and raise revenue. These can include special property tax on parking facilities, special sales tax on commercial parking transactions, and special taxes on employee parking subsidies. | Regulatory | None identified. | Taxes provide government revenue. They can be effective as part of an overall strategy to reduce total parking supply and manage vehicle use. | Requires a collection system, which imposes transaction costs. Parking taxes tend to be opposed by motorists and businesses. |
| | C. Commuter Parking Benefits | This means that commuters are offered an alternative to parking subsidies. Specific types include parking cash out, travel allowances and transit and ridership benefits. | Program | None identified. | They have a similar effect as pricing parking, but cause little or no user opposition. These strategies are often highly valued by some commuters, and are considered more equitable than only providing parking benefits. They can be implemented quickly and are flexible. | These strategies require new administrative responsibilities and may add costs. |

| Tools | | Description | Type | Trade-offs | Pros | Cons |
|---|---|---|---|---|---|---|
| *3. Reduce Parking Demand (cont.)* | D. Improve Transport Alternatives | This includes a wide range of specific strategies that improve Walking and Cycling, Ridesharing, Transit and Telework, in order to reduce automobile travel. | Program | None identified. | These strategies reduce parking demand and vehicle use. | May be expensive and ineffective at reducing parking problems. They may require new planning, financing and administrative systems. |
| | E. Reduce Parking Supply | Reducing parking supply tends to increase parking prices, and support strategic transportation and land use objectives, particularly if implemented as part of a comprehensive TDM and Smart Growth program | Program | Cannot be reduced below the minimum parking requirements | Reduces costs and subsidies to driving. Helps achieve strategic transportation and land use objectives. | May increase parking congestion and resulting spillover and competitive disadvantage problems. May require new planning, financing and administrative systems. May be ineffective at achieving objectives unless implemented in conjunction with other TDM strategies. |
| | F. Bicycle Parking | Add bicycle parking as a bicycle encouragement strategy. | Design, Regulatory | Using space for bicycle parking trades away all other possible uses for that space. | Can be a cost effective way to encourage bicycle use. Can make use of small and irregular-shape spaces that are unsuitable for automobile parking. | There is often limited demand for bicycle parking facilities. High quality bicycle lockers and racks are moderately expensive. May be vulnerable to vandalism or abuse. Note: would probably prefer bike lockers for daily, long-term parking for security. |

## OBJECTIVE: Enhance circulation and access for bicycle, pedestrian and transit users

| Tools | | Description | Type | Trade-offs | Pros | Cons |
|---|---|---|---|---|---|---|
| *1. Bicycle Circulation* | Bicycle Lanes | Portion of the street designated by striping, signing, or pavement markings for preferential or exclusive use by bicyclists. | Design | Depending on available street width; onstreet parking and traffic lanes might have to be narrowed or eliminated to make room for bike lanes. | Politically easier to attain and can add space to the roadway. Minimizes conflicts between bicyclists and motorists and reduces delay for motorists. | Complicate bicycle and motor vehicle turning movements at intersections even with recommended dashed striping pattern. Motorists believe that bicyclists will remain in the bicycle lane at all times. |
| | Sharrows (Shared-lane arrows) | Shared-lane arrows are markings painted onto the street to show motorists and cyclists that they are supposed to share the lanes. | Design | An alternative to exclusive bike lanes for cyclists | Heightens drivers' awareness of the possible presence of cyclists. | Excessive use could breed driver disrespect for the meaning of the marking. |
| | Signed Bicycle Routes | System of roadways and connections between neighborhoods or areas in a community that forms a bicycling throughway, but discourages through and higher speed motor vehicle movement. | Design | None Identified | Simplifies wayfinding and enhances safety for cyclists by leading them on routes that are most conducive for cycling. | None identified. |
| | Bicycle Parking facilities | Parking spaces specifically for bicycles. | Design | Using space for bicycle parking trades away all other possible uses for that space. | Compliments the cycling trip by providing convenient and reliable locations to secure a bicycle. | Providing bicycle parking in a random unpredictable way can frustrate cyclists. |
| | Shared Bicycle/ Pedestrian Paths | A street or path designed to be shared by bicyclists and pedestrians. | Design, Regulatory | An alternative to exclusive bike lane for cyclists. | Minimizes the interaction of pedestrians and bicyclists with motorized vehicles and hence improves safety. | None identified. |

| Tools | | Description | Type | Trade-offs | Pros | Cons |
|---|---|---|---|---|---|---|
| 2. Pedestrian Circulation | Pedestrian District | It is a district or area with widened sidewalks, curb extensions, street lighting and signing that has, or is expected to have, intense pedestrian use. | Design | Using space for pedestrians trades away all other possible uses for that space. | Compliments all transportation modes by serving the beginning and end of all trips except freight delivery and loading. | Limited interest from businesses as business is more auto-dependent than pedestrian-dependent.. |
| | Pedestrian Corridor | Particular streets with sidewalks and enhanced pedestrian crossing opportunities. | Design | Emphasizes some street rights-of-way as more pedestrian oriented than others. | Can encourage pedestrian activity to focus on the streets that most benefit them and deemphasize streets whose activities may be less pedestrian friendly. | May put some properties at a disadvantage if their uses are pedestrian dependent. |
| | Access to Transit | Sidewalks, crossing improvements, and curb extensions with enhanced amenities at transit stops. | Design | See pedestrian corridor. | Provides pedestrian amenities on streets that are most likely to see higher concentrations of transit-related pedestrian activity. | May put some properties at a disadvantage if their uses are predominantly non-pedestrian-oriented. |
| | Special Pedestrian Connections | Connections for access to schools, transit and shopping. Examples include public stairways, pedestrian overcrossings at major impediments, and pathways linking cul-de-sacs. | Design | None identified. | Provides critical links in the pedestrian system that cannot be best addressed by traditional means like street sidewalks. | Could be expensive. Could pose safety concerns. Could be difficult to comply with ADA guidelines. |
| | Curb Extensions at Intersections | Intersection corners that reach out into the street. | Design | Occupies space that would otherwise be used by motor vehicles and cyclists. | Reduces the crosswalk distance for pedestrians. Enhances a pedestrian's ability to see and be seen by approaching drivers and cyclists. Increases the sidewalk area at corners. Simplifies ADA ramp design. | Reduces the ability for larger vehicles to turn at intersections. Can complicate the street's ability to collect and convey stormwater. Storm drains often have to be relocated. |

| Tools | | Description | Type | Trade-offs | Pros | Cons |
|---|---|---|---|---|---|---|
| *2. Pedestrian Circulation (cont.)* | One-Way Streets | Streets on which traffic is allowed to flow only in one direction. | Design, Regulatory | Negatively impacts the circulation of bicyclists and some bicyclists may ride on sidewalks to go in opposite direction of traffic. | One-way streets can simplify crossings for pedestrians who must look for traffic only in one direction. Also, if a two-way street is converted to a one-way street and there are no capacity issues, a portion of the street width could be used to provide additional parking, or exclusive bus and bike lanes. | One-way streets tend to have higher speeds. They increase travel distances for motorists and bicyclists and can create confusion, especially for non-local residents. Conversion costs can be quite high to build crossovers where the one-way streets convert back to two-way streets, and to rebuild traffic signals and revise striping and signing. |
| | Pedestrian Refuge Island | Islands located on the centerline of a street intended to help pedestrians safely cross a two-way street one half at a time. | Design | Usually does not leave enough street width to accommodate onstreet parking. | Increase opportunities for pedestrians to cross a street. Usually has no impact on stormwater collection and conveyance. | Usually requires significant length to move vehicles away from the center of the street where the island would be located. Usually requires significant amount of striping and signing. Can be difficult to build ADA ramps at midblock locations. |
| | Striped Crosswalks | Identify pedestrian crossing locations will pavement markings. | Design | By law, striping one intersection crosswalk makes the other crossing illegal. | Can help drivers recognize intersections from a distance along through streets that are densely used for onstreet parking. | Can breed a false sense of security in pedestrians who are crossing in a striped crosswalk. Ongoing responsibility and cost to maintain striping. |

| Tools | | Description | Type | Trade-offs | Pros | Cons |
|---|---|---|---|---|---|---|
| 2. Pedestrian Circulation (cont.) | Sidewalk on One Side of Street | | Design | Trades off pedestrian mobility and convenient pedestrian access to properties that are not adjacent to a sidewalk. | Can minimize incompatibilities between truck loading activities and pedestrian circulation. Can leave right-of-way space for other uses besides pedestrian circulation. | Increases a pedestrian's need to cross streets. Probably limits the possibilities for onstreet parking on the side of a street that has no sidewalk. |
| | Sidewalks on Two Sides of Streets | | Design | Trades off opportunities to use right-of-way space for other uses. | Maximizes pedestrian mobility. Supports onstreet parking on both sides of a street. | See Trade Offs. |
| | Zero Height Sidewalks along the Streets | Sidewalk areas that are flush with the street. May be distinguished with striping or truncated dome texturing. Stormwater is collected and conveyed in a valley gutter located at the center of the street or where the sidewalk area meets the street edge. | Design | None identified. | Enhances flexibility for using the paved space for activities that are "separated in time" rather than "separated in space." Helps accommodate vehicle maneuvering. | Could lead to users wandering into space they don't usually use. Difficult to install and maintain parking and traffic control sigining. |
| | Zero Height Sidewalks at Driveways | Alternative to standard driveway design. The entire sidewalk width drops down to street level to accommodate private driveways. | Design | None identified. | Accommodates ADA guidelines in cases where sidewalks are too narrow to provide a 4-foot flat area and an adequate driveway ramp. | Takes special attention to design the private property to blend with the changing sidewalk elevations. |
| | Festival Streets/ Shared Court | Streets designed for modes to blend together and lines between designated uses are blurred. | Design, Operations, Program | None identified. | Flexibility | Requires organization and cooperation to make activities work together safely and beneficially. |

| Tools | | Description | Type | Trade-offs | Pros | Cons |
|---|---|---|---|---|---|---|
| *2. (Cont.)* | Sidewalks with Planting Strips | Few feet of grass between the sidewalk and the street | Design | Trades off sidewalk or street width to make room for planting strips | Increases pedestrian safety, provides a place to absorb runoff and put storm drains, can be used to place road signs and utility poles | If not designed and maintained properly, landscaping may hinder visibility and cause security problems. Root growth can sometimes damage adjacent paved surfaces if not protected. |
| *3. Transit Users* | Pedestrian Circulation Tools | The success of transit as a mode of transportation is highly dependent on pedestrian access and hence improving pedestrian circulation will enhance transit usage. The tools mentioned for pedestrian circulation are also applicable to this section | See Pedestrians Circulation | See Pedestrian Circulation | See Pedestrain Circulation | See Pedestrian Circulation |
| | Transit Stops and Bus Pullouts | These provide designated space for loading or unloading. There are three choices for location of bus stops – near side, far side and mid-block | Design | Some on-street parking may have to be sacrificed to provide space for the transit stops. The needs of passengers boarding and exiting the bus may conflict with the needs of pedestrians and bicyclists moving through the area. | Strategically located and well designed transit stops and bus pullouts increase ridership and minimize the conflicts between the boarding/deboarding passengers and nearby traffic. | High level of planning is required. |

| Tools | | Description | Type | Trade-offs | Pros | Cons |
|---|---|---|---|---|---|---|
| 3. Transit Users | Bus Stop Amenities | Provide well-lit access ways to transit facilities, provide separate spaces for those waiting, passing through, transferring between buses, and queuing to board and deboard. Provide street furnishings such as benches, pay phones, light posts, shelter, kiosks, and garbage receptacles set back a minimum of 8 feet from the curb. Where space is not available, the lateral clearance required by the ADA is 3 feet. . Provide shelters and covered structures, accessibility to people with disabilities with curb cuts and ramps. | Design | None identified. | Encourages the use of transit by enhancing the access, comfort, and safety of the riders | Increased cost of maintenance. |
| | Arrival Headways | The time between two vehicles passing the same point traveling in the same direction on a given route. | Operations | None identified. | Frequent transit service provides riders with flexibility in their schedules. and hence makes transit a favorable alternative to driving. | Increased maintenance and operational cost. |
| | Provision for Vertical Circulation | Features that accommodate movement between ground level and viaducts. | Design | None identified. | Improved and easier access to transit stations specially for older and people with disabilities. | Increased maintenance and operational cost. |
| | Bike Stair Channel | A narrow channel provide along the sides of a stair on which the bikes can be rolled up and down. | Design | None identified. | Convenient access to transit stations for bicyclists. | Increased construction cost. |

## OBJECTIVE: Accommodate ADA circulation and access guidelines

| Tools | Description | Type | Trade-offs | Pros | Cons |
|---|---|---|---|---|---|
| A. Sidewalks on both sides of a street | Provide a prototypical "model" sidewalk with curbs and on both sides of the street. The design should conform to draft guidelines developed by the Public Rights-of-Way Access Advisory Committee (PROWAAC). | Design, Regulatory. | May compromise desired travel lane widths, on-street parking, large turning radii at corners. May also present challenges for current freight loading practices and for future curb space for freight loading zones. | This solution is nearly certain to meet the criteria and intent of federal accessibility requirements and City goals for pedestrian mobility. It is also likely to support any future redevelopment scenario envisioned for an Employment Opportunity Subarea (EOS) zoning overlay. | This solution may be seen as compromising other desired street uses, in particular freight truck turning and loading movements involving medium to large trucks. It will probably be the most expensive solution to construct. Given those potential complaints, sidewalks on both sides of the street may be seen as "over kill" for an industrial district that has not historically seen high levels of pedestrian use or been regarded as a "pedestrian-friendly" district. |
| B. Sidewalk on one side of a street | Provide a prototypical "model" sidewalk with curb for only one side of the street. Within the project area, it is likely that achievable sidewalk widths on one side only will be 12-feet to 15-feet wide. The design should still conform to draft guidelines developed by the Public Rights-of-Way Access Advisory Committee (PROWAAC). | Design, Regulatory. | Less likely than construction of sidewalks on both sides of the street to compromise desired travel lane widths, on-street parking, freight loading and large turning radii at corners. However, it could still create some difficulties for those design tools. | Depending on the nature of existing buildings and uses, this solution could reduce the number of potential conflicts between pedestrians using the designated PAR and truck parking while loading directly from buildings. It still provides for a pedestrian facility and pedestrian mobility. | This solution may still be seen as compromising other historic street uses with the EOS, such as freight truck turning and loading movements. It will limit the number of PARs available and limit the accessibility of the building entries not on the side of the street with the sidewalk. A single sidewalk will probably require more street crossings and increase the frequency of mid-block crossings to reach building entries. |

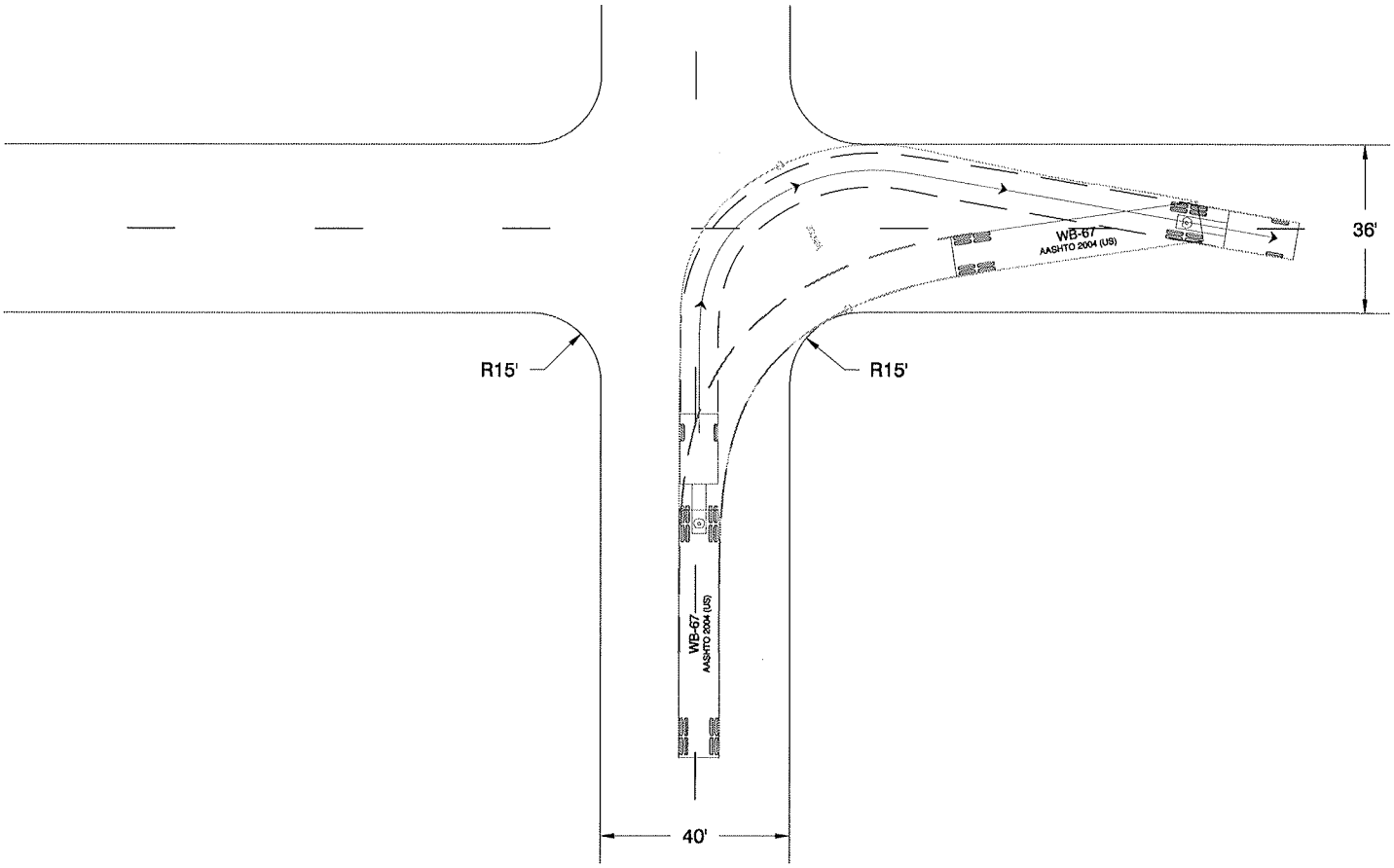
| Tools | Description | Type | Trade-offs | Pros | Cons |
|---|---|---|---|---|---|
| C. Curb Ramps | Provide accessible curb ramps at each corner, directly connected to the PAR, to facilitate pedestrian crossing at the intersections. | Design, Regulatory. | Providing adequate space for sidewalk landing areas and curb ramps may require tighter corner radii. This may compromise design tools intended to ease the turning intersections radius and path for larger trucks. | Flexibility in street corner design when above-ground obstructions are too costly to move. | Can result an irregular and unpredictable pattern of street crossings for pedestrians. |
| D. Curbless Streets | A curbless street design where the PAR is not distinguished and protected by a raised curb. Some treatment, compliant with ADA guidelines, will be required to separate car-free and car-accessible zones. | Design, Regulatory. | Horizontal space to accommodate the non-curb physical separation of pedestrians and cars (landscaping, bollards, shallow valley gutters for drainage, etc) may impact the travel lane widths. | This could seem like a less formal and less intrusive design solution depending on other critical design factors such as stormwater management, pavement materials and the design treatment to keep cars and pedestrians separate. It may also be a design solution with more flexibility in matching the elevations of existing entries and exterior stairs. | Additional design treatments, such as tactile warning strips, may be required so the visually impaired can determine where the sidewalk area ends and the vehicle travel lanes begin. It may, in fact, be required use a low or rolled curb to make the pedestrian area completely clear to all potential users. |
| E. Streets with no pedestrian facilities | The Americans with Disabilities Act (ADA) is a non-discrimination law. It is intended to prevent the construction of pedestrian facilities that do not provide for the needs of those with disabilities affecting their pedestrian movements. If the street master plan for the EOS specified that certain streets were to have no pedestrian facilities, then ADA guidelines would not apply to those streets. | Design, Program | This solution would compromise design tools and design objectives intended to provide full pedestrian mobility as part of any street master plan. | Design flexibility that minimizes perceived impacts to existing business practices. | Limits pedestrian mobility within the EOS and for any future redevelopment along those streets. |

| Tools | Description | Type | Trade-offs | Pros | Cons |
|---|---|---|---|---|---|
| F. Allow temporary vehicle obstruction of the PAR | This assumes that a constructed sidewalk, especially one based on the curbless design, could be temporarily and fully blocked by a vehicle parked at a building entry or loading area. Fully blocked means there would be a pedestrian clear space of 4-feet minimum and 5-feet preferred free of any other pavement or above-ground obstructions. It also assumes that such a permit would be granted by the City with restrictions on the hours and the duration of the obstruction. This should not be confused with permits for temporary sidewalk closure during construction. | Design, Regulatory, Program | This solution would compromise design tools intended to provide continuous and fully available pedestrian facilities that meet ADA accessibility requirements. | Allows freight loading and other vehicle use at building entries with little or no design conflicts from street improvements. It also allows an exemption from certain regulatory restrictions seen as difficult to meet given the existing conditions of uses in the project area. For many existing business this may be seen as supporting to their existing business practices. | Unlikely to be found acceptable by a design review process for compliance with ADA accessibility requirements. It probably has no precedent at the local or federal level of design standards. It may be argued that if sidewalks are constructed on both sides of the street there is an alternate pedestrian route available. However, the City may not want to pursue that interpretation in order to avoid setting a precedent for parking private vehicles on City sidewalks for commercial purposes. |

## TRUCK TURNING MOVEMENTS

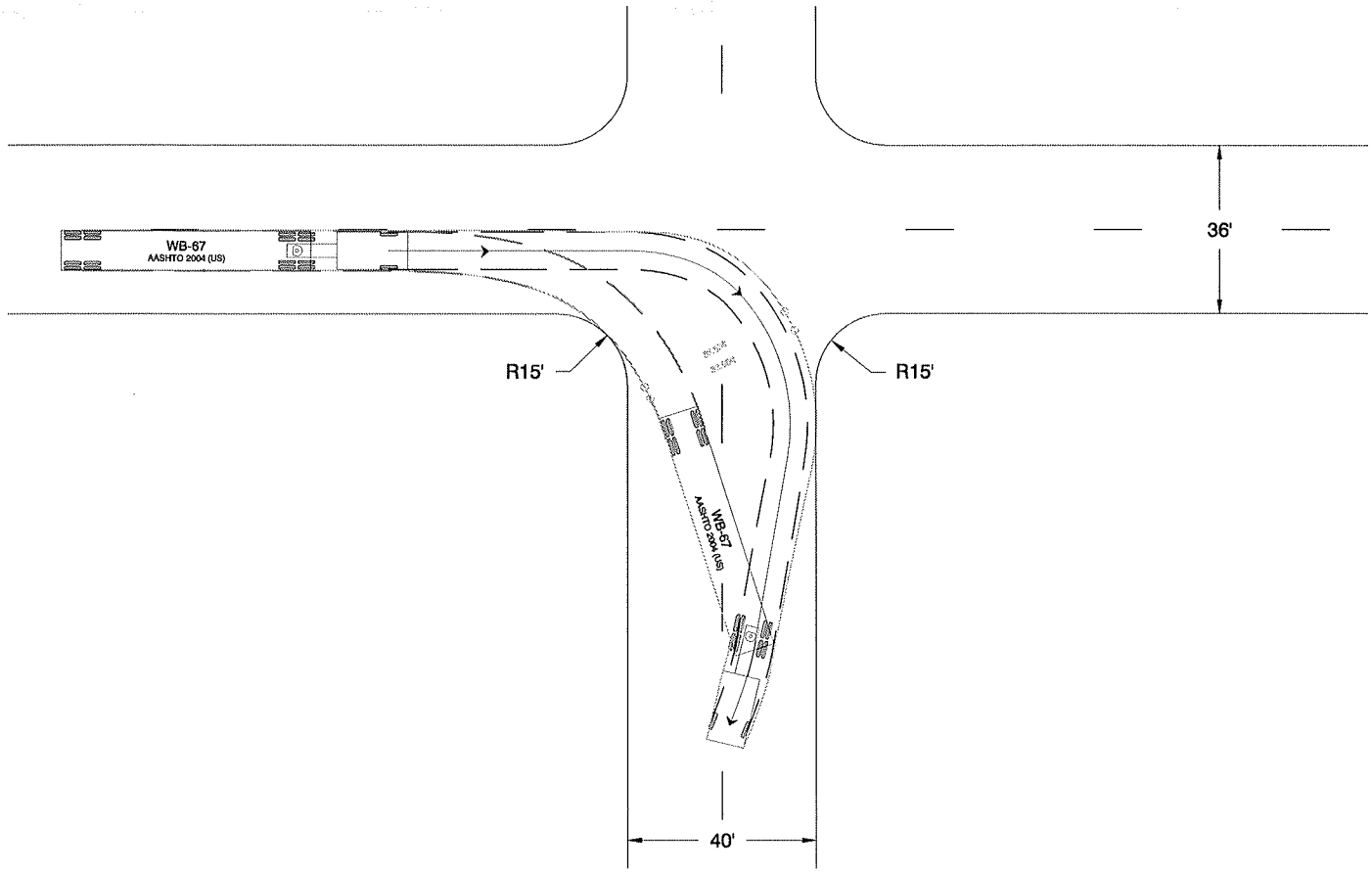
Analysis of truck turning movements was performed using AutoTURN , to determine if proposed 15' corner radii would satisfy the requirements outlined in the basis of design tables. The intersection of the narrowest of Portal Streets (Clay Street) with a Truck Loading Street (2nd Avenue) was used as the test environment for the turning analysis. The analysis found that a 15' curb radius would satisfy the design requirements, assuming a 40' curb-to-curb width for 2nd Avenue. Additional analysis suggested a larger corner radius (20') could be used, and would allow a narrowing of the Truck Loading Street to 38'. The following figures illustrate the turning movements for a WB-67 tractor trailer and a SU-30 truck given a 15-foot curb radius intersection.

**WB-67 Right Turn From 40' Street to 36' Street**

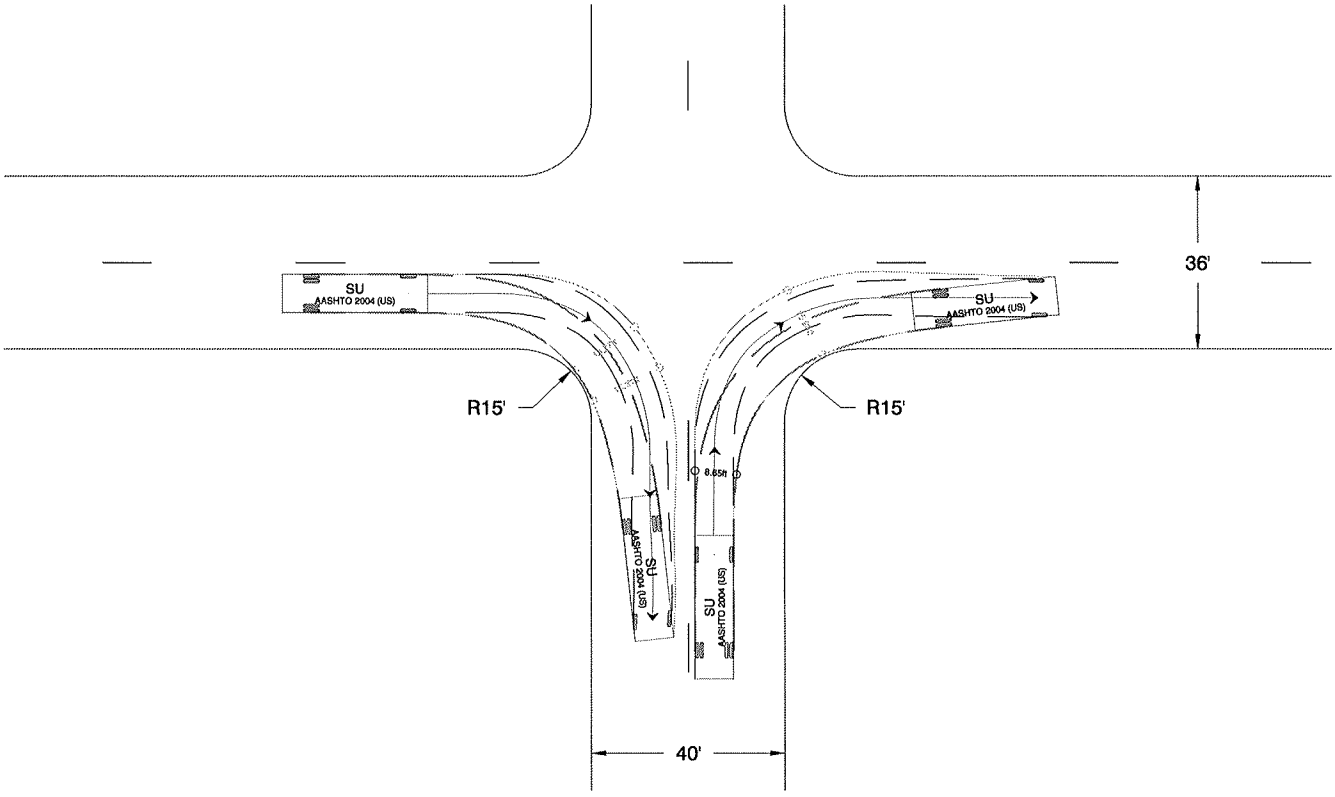



[1] AutoTURN is a specialized turning movement analysis software package produced by Transoft Solutions.

## WB-67 Right-Turn From 36' Street to 40' Street




## SU-30 Right-Turn From 36' Street to 40' Street and Right-Turn From 40' Street to 36' Street



# APPENDIX E

## PUBLIC INVOLVEMENT PROCESS

The following summarizes the advisory committees and community involvement activities for preparing the Central Eastside Street Plan.

Two committees were formed to help guide development of the Central Eastside Street Plan - a Technical Advisory Committee (TAC) made up of staff from various divisions within the Portland Bureau of Transportation, modal coordinators, other City Bureaus and partnering agencies; and a Community Working Group (CWG) made up of members from adjacent neighborhoods, local businesses, property owners and the pedestrian, bicycle and freight communities. A series of Technical Working Sessions were also held with staff members from the various City Bureaus.

Two Open House events were held during the project to solicit public input and presentations were made to the Portland Design Commission, Pedestrian Advisory Committee, Portland Freight Committee, and Bicycle Advisory Committee.

**Central Eastside Street Plan Meeting Date Summary**

| Date | Meeting |
|---|---|
| January 12, 2009 | Technical Advisory Committee #1 |
| January 29, 2009 | Community Work Group #1 |
| February 17, 2009 | Technical Advisory Committee #2 |
| February 19, 2009 | District Walk with TAC and CWG |
| February 23, 2009 | Community Work Group #2 |
| March 3, 2009 | Open House #1 |
| March 10, 2009 | Technical Work Session #1 |
| March 17, 2009 | Technical Work Session #2 |
| March 19, 2009 | Portland Design Commission #1 |
| March 31, 2009 | Technical Advisory Committee/Community Working Group Joint Work Session #3 |
| April 7, 2009 | Technical Work Session #3 |
| April 7, 2009 | Central Eastside Industrial District Land Use Committee |
| April 16, 2009 | Technical Advisory Committee/Technical Work Session #4 |
| April 21, 2009 | Technical Work Session #5 |
| April 21, 2009 | Pedestrian Advisory Committee |
| April 29, 2009 | Community Work Group #3 |
| May 5, 2009 | Open House #2 |
| May 21, 2009 | Portland Design Commission #2 |
| May 27, 2009 | Community Work Group #4 |
| May 28, 2009 | Technical Advisory Committee #5 |
| June 4, 2009 | Portland Freight Committee |
| June 9, 2009 | Bicycle Advisory Committee |

-142

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Agenda No.
**REPORT NO.**
Title

Accept City Engineer's Report on the Central Eastside Street Plan (Report)

**INTRODUCED BY**
Commissioner/Auditor:
**MAYOR SAM ADAMS**
K. Merrenn for Mayor Adams

**COMMISSIONER APPROVAL**

Mayor—Finance and Administration - Adams

Position 1/Utilities - Fritz

Position 2/Works - Fish

Position 3/Affairs - Saltzman

Position 4/Safety - Leonard

**BUREAU APPROVAL**

Bureau: Bureau of Transportation
Bureau Head: Susan D. Keil, Director
Susan D. Keil

Prepared by: Robert Hillier
Date Prepared: January 15, 2010

Financial Impact Statement

Completed ☒ Amends Budget ☐
Not Required ☐

Council Meeting Date
January 27, 2010

**City Attorney Approval**

CLERK USE: DATE FILED JAN 22 2010

LaVonne Griffin-Valade
Auditor of the City of Portland

By: _____
Deputy

**ACTION TAKEN:**

JAN 27 2010 ACCEPTED As Amended

**AGENDA**

**TIME CERTAIN** ☐
**Start time:** _____

**Total amount of time needed:** _____
**(for presentation, testimony and discussion)**

**CONSENT** ☐

**REGULAR** ☒
**Total amount of time needed: 30 minutes**
**(for presentation, testimony and discussion)**

| FOUR-FIFTHS AGENDA | COMMISSIONERS VOTED AS FOLLOWS: | YEAS | NAYS |
|---|---|---|---|
| 1. Fritz | 1. Fritz | ✓ | |
| 2. Fish | 2. Fish | ✓ | |
| 3. Saltzman | 3. Saltzman | ✓ | |
| 4. Leonard | 4. Leonard | ✓ | |
| Adams | Adams | ✓ | |