LENITS TOWN CENTER BUSINESS DISTRICT TRANSPORTATION PLAN

REPORT AND RECOMMENDATIONS

November, 1999

City of Portland
Office of Transportation
Portland Development Commission

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Pacific Rim Resources, Inc.
Urbsworks
Prepared by
City of Portland
Office of Transportation
and
Portland Development Commission

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The contents of this document do not necessarily reflect
the views or policies of the State of Oregon.

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LENTS
TOWN CENTER
BUSINESS DISTRICT
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LENTS TOWN CENTER BUSINESS DISTRICT TRANSPORTATION PLAN
EXECUTIVE SUMMARY

Background
For many years the Lents community has requested the City's assistance in reversing economic decline in the neighborhood. These efforts have culminated in the adoption of the Lents Urban Renewal Plan by City Council in 1998, which outlines a comprehensive strategy for the revitalization process. The purpose of the Lents Town Center Business District Transportation Plan is to identify transportation system improvements that support the Lents Urban Renewal Plan's goal of revitalizing the Lents community.

The Lents Town Center Business District Transportation Plan is also intended to support the area's designation as a town center in the Metro Region 2040 Framework Plan. Town centers are designed to provide a wide range of locally oriented commercial and housing options that reduce the need for residents to travel out of the area for basic services. A key functional characteristic of town centers is a transportation system that encourages a high level of pedestrian, bicycle and transit access.

A priority issue for both the urban renewal process and the development of a town center in Lents is the revitalization of the traditional business district core. The business district core is centered around the intersection of Foster Road and 92nd Ave., and is anticipated to receive new development and more neighborhood oriented businesses. Transportation issues play an important role in redeveloping this area given its proximity to the Interstate 205 freeway. Large volumes of traffic generated by the freeway ramps are routed through the core of the business district, creating congestion problems and conflicting with the area's need to improve the pedestrian environment and provide access for all modes of travel. The area's lack of on-street parking also impedes commercial development in existing storefront buildings which do not have off-street parking to rely upon.

The Lents Town Center Business District Transportation Plan was designed to comprehensively address these and other transportation issues specifically related to revitalizing the business district core area. Funding for the plan was made possible in part through a grant from the Transportation and Growth Management (TGM) Program, a joint program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development. A citizens advisory committee made up of volunteers from the Lents community has helped guide the plan's development and its recommendations. Public input on the plan was also solicited through two open house events during the spring of 1999. The plan's recommendations include the following elements:

- Street system plan for the business district core;
- Streetscape design standards for street frontage improvements in the public right-of-way as redevelopment occurs.
- Action items which provide policy guidelines for additional transportation planning in the study area.
Plan Objectives
The objectives of the plan were developed from existing policies, previous planning work
and discussions with the citizens advisory committee regarding the key issues that need to be
addressed to support revitalization of the commercial district core. Previous plans have laid
a policy framework for identifying plan objectives. These plans include the Region 2040
Plan, Outer Southeast Community Plan, the Lents Neighborhood Plan, as well as the Lents
Urban Renewal Plan. A transportation study completed in 1995, the Lents Transportation
Study, also identified a number of issues that need to be addressed through transportation
system improvements and management.

The following list of objectives was adopted by the citizens advisory committee to guide the
planning process. Most importantly, the objectives were used as criteria during the
evaluation phase to help judge the relative merits of alternatives under consideration. The
preferred alternative was chosen based on its ability, on balance, to best meet these
objectives.

- Pedestrian environment
  Enhance pedestrian access and circulation throughout the business district; improve connections into
  the neighborhood and to transit service.
- Commercial redevelopment
  Ensure transportation improvements support local commercial redevelopment opportunities.
- Parking
  Develop a strategy for the provision and management of adequate parking (on and off street) to
  support commercial redevelopment.
- Transit service
  Improve service and connections; coordinate with high capacity transit in the I-205 corridor.
- Streetscape
  Create a more attractive environment for pedestrians and commercial development through streetscape
design and planning.
- Decoupling
  Determine feasibility of decoupling Foster/Woodstock.
- Through traffic
  Keep through (non-local) traffic off local streets.
- Auto access and circulation
  Maintain acceptable traffic levels of service, stabilize traffic speeds.
- Multi-modal safety
  Ensure safety for all modes of travel.
- Bicycles
  Improve bicycle access and circulation to and through the business district.

Alternatives Development
Using the plan’s objectives as a vision for the transportation system, two transportation
system alternatives were developed for evaluation. The first alternative, Alternative A,
decouples the existing Foster/Woodstock one-way couplet (between 90th and 100th Ave.).
Decoupling refers to the process of turning one-way streets back to their original two-way
operation. Decoupling was specifically called out for study by the urban renewal plan. The business district core was historically served by two-way traffic flow on both Foster and Woodstock. This was changed with the construction of the I-205 freeway. The existing couplet was built to improve capacity to the new freeway connections. The couplet changed the function of business district core from a locally oriented ‘main street’ to one which now functions more like a transportation corridor, with an emphasis on regional access to the freeway. Conceptually, Alternative A attempts to return Foster in the core area functionally back to a more locally oriented ‘main street’ through decoupling.

The second alternative developed was built around the concept of retaining the existing couplet design for capacity reasons, but mitigating the associated negative impacts and improving its ability to serve local access and circulation by all modes. This alternative is referred to in the plan as Alternative B- Enhanced Couplet. The character of 92nd Ave., which currently has many of the transportation attributes of a main street, is identical in both alternatives.

Based on the intended functional design of each alternative, the alternatives development process then designed the appropriate transportation system improvements needed to enhance each one operationally in terms of capacity, safety, and utility for all modes. The basic system design components for each alternative are summarized below.

<table>
<thead>
<tr>
<th>Alternative A</th>
<th>Alternative B Enhanced Couplet</th>
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</thead>
<tbody>
<tr>
<td><strong>Decouple</strong></td>
<td></td>
</tr>
<tr>
<td>Foster Rd. 90th – 100th</td>
<td>- Two-way traffic flow</td>
</tr>
<tr>
<td></td>
<td>- 2 travel lanes + center turn lane</td>
</tr>
<tr>
<td></td>
<td>- Parking both sides</td>
</tr>
<tr>
<td>Woodstock Blvd. 90th – 100th</td>
<td>- Two-way traffic flow</td>
</tr>
<tr>
<td></td>
<td>- 5 travel lanes (two in each direction with a center turn lane)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>91st Ave. north of Foster</td>
<td>- Realign with 91st south of Foster (improved safety)</td>
</tr>
<tr>
<td>92nd Ave. north of Woodstock</td>
<td>- Two-way traffic flow</td>
</tr>
<tr>
<td></td>
<td>- 2 lanes in each direction</td>
</tr>
<tr>
<td></td>
<td>- Parking both sides</td>
</tr>
<tr>
<td>New traffic signals</td>
<td>- 90th &amp; Foster</td>
</tr>
<tr>
<td></td>
<td>- 100th &amp; Woodstock</td>
</tr>
<tr>
<td></td>
<td>- Option: 88th &amp; Foster</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Pedestrian facilities</td>
<td>- Wider sidewalks (12-14 ft.) on all core area streets</td>
</tr>
<tr>
<td></td>
<td>- Curb extensions</td>
</tr>
<tr>
<td>Bicycle facilities</td>
<td>- Bike lanes, both directions, on Woodstock and 92nd Ave.</td>
</tr>
</tbody>
</table>
The final design element used in developing the plan is streetscape design. Streetscape design refers to the design and relationship of the right-of-way to adjacent land uses; special sidewalk treatments, street trees, street furniture, etc., that help improve the overall look and attractiveness of the business district. Streetscape design guidelines were developed to create a consistent design theme for the area as properties redevelop and improvements in the right-of-way are required.

**Alternatives Evaluation**

Each alternative was evaluated using the project’s objectives as evaluation criteria. The evaluation process and criteria were divided into two categories, transportation and urban design/commercial development. The evaluation findings for each category and the related criteria were based on separate traffic engineering and urban design consultant reports. The evaluation matrix summarizes the findings for each evaluation criteria (see attached). The (√) indicates when the criteria is supported by the alternative.
Lents Town Center Business District Transportation Plan
Alternatives Evaluation Summary Matrix (√) indicates support of the criteria

<table>
<thead>
<tr>
<th>Objective/ Evaluation Criteria</th>
<th>Alternative A Decouple</th>
<th>Alternative B Enhanced Couplet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Auto access and circulation</strong></td>
<td>• Capacity: LOS ‘E’ or better in 2015. Adequate capacity can be provided (marginal), through requires significant amounts of right-of-way. (√) Speed control: Reduced through traffic volumes on Foster should reduce speeds. Increased congestion, two-way traffic flow should reduce speeds on Woodstock.</td>
<td>(√) Capacity: LOS ‘D’ or better in 2015. More capacity provided than Alternative A. (√) Speed control: Additional traffic signals can be better timed to control speeds and progression on both Foster and Woodstock through business district core.</td>
</tr>
<tr>
<td>Maintain acceptable traffic levels of service, stabilize traffic speeds.</td>
<td>(√) Because adequate capacity is provided, diversion should not be an issue.</td>
<td>(√) Same as Alternative A.</td>
</tr>
<tr>
<td><strong>Through traffic</strong></td>
<td><strong>Keep non-local traffic off local streets.</strong></td>
<td><strong>Ensure safety for all modes of travel.</strong></td>
</tr>
<tr>
<td><strong>Multi-modal safety</strong></td>
<td>• Traffic: More potential turn movement conflicts with two-way traffic flow.</td>
<td>(√) Traffic: Fewer turn movement conflicts with one-way traffic flow.</td>
</tr>
<tr>
<td><strong>Enhance pedestrian access and circulation throughout the business district; improve connections into the neighborhood and to transit service.</strong></td>
<td>(√) Foster: ‘Main Street’ traffic environment, lower traffic volumes, slower speeds, narrower street, wider sidewalks- improves pedestrian environment. • Woodstock: Wider street with higher traffic volumes creates barrier to south, degrade pedestrian environment. • Signalized crossings: Three signals (one new) in business district core. New signal at east end of study area. Optional signal at 88th Ave./Foster. • Unsignalized crossings: Two-way streets are more difficult to cross because fewer crossing</td>
<td>• Foster: Higher traffic volumes, more non-local traffic than Alternative A. Wider sidewalks. (√) Woodstock: Lower traffic volumes compared Alternative A. Wider sidewalks. (√) Signalized crossings: Five signals (three new) in core area. New pedestrian activated signals at east end of couplet. (√) Unsignalized crossings: One-way streets easier to cross- more longer gaps in traffic, one direction of travel to pay attention to.</td>
</tr>
<tr>
<td>Objective/ Evaluation Criteria</td>
<td>Alternative A Decouple</td>
<td>Alternative B Enhanced Couplet</td>
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</tbody>
</table>
| **Bicycles** Improve bicycle access and circulation to and through the business district. | (√) Foster-Woodstock: Bike lanes on Woodstock, not separated.  
(✓) 92<sup>nd</sup> Ave.: Bike lanes provided.  
• Safety: Two-way traffic flow creates more potential turn movement conflicts with vehicles. | (√) Foster-Woodstock: East and westbound bike lanes divided between streets.  
(✓) 92<sup>nd</sup> Ave.: Bike lanes provided.  
(✓) Safety: One-way traffic flow creates fewer potential conflicts with vehicles. |
| **Transit Service** Improve service and connections; coordinate with high capacity transit service in the I-205 corridor. | • Service: Does not affect ability to increase service. Increased congestion compared to Alternative B slows travel times. Eastbound and westbound service can be concentrated on Foster.  
• Connections: New north-south service on 92<sup>nd</sup> Ave. to link to Gateway and Clackamas Town Center | • Service: Does not affect ability to improve service.  
• Connections: Same as Alternative A. |

| Land Use/Urban Design Criteria | | |
|-------------------------------| | |
| **Parking** Develop a strategy for the provision and management of adequate parking (on and off street) to support commercial redevelopment. | (√) Overall Supply: +47 spaces  
• Foster: Parking on both sides of street in core, net increase of 61 spaces  
• Woodstock: No parking provided. Net decrease of 14 spaces.  
• 92<sup>nd</sup> Ave.: No change. | (√) Overall Supply: +82 spaces.  
• Foster: parking both sides 87<sup>th</sup>-90<sup>th</sup>, +26 spaces. 90<sup>th</sup>-94<sup>th</sup> +27 spaces.  
• Woodstock: 92<sup>nd</sup> –94<sup>th</sup>, +29 spaces  
• 92<sup>nd</sup> Ave.: No change. |
<table>
<thead>
<tr>
<th>Objective/Evaluation Criteria</th>
<th>Alternative A</th>
<th>Alternative B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Redevelopment</td>
<td>✓ Land use development: Supports 'main street' type neighborhood oriented retail opportunities on 92nd Ave. and Foster. Speeding, parking and visibility issues addressed. More 'main street' than Alternative B. Woodstock becomes more auto-oriented, barrier to access from south.</td>
<td>✓ Land use development: Supports 'main street' type neighborhood oriented retail opportunities on 92nd Ave. Supports more mixed auto/pedestrian oriented commercial development on Foster and Woodstock. Speeding and parking issues addressed.</td>
</tr>
<tr>
<td>Streetscape</td>
<td>✓ Wider sidewalks with regular pattern of street trees and pedestrian scale lighting on all three streets will significantly improve visual appearance of commercial core. Foster, 90th-94th, has greater potential to develop as a neighborhood and pedestrian oriented street. More overall 'main street' development potential.</td>
<td>✓ Wider sidewalks with regular pattern of street trees and pedestrian scale lighting on all three streets will significantly improve visual appearance of commercial core. Potential for gateway treatment at west end of couplet.</td>
</tr>
</tbody>
</table>
**Recommendation**
In review of the findings from the alternatives evaluation phase **Alternative B-Enhanced Couplet was chosen as the preferred alternative by the citizens advisory committee** because, on balance, it best addresses the evaluation criteria and adopted policy. Key findings in making this decision include:

- **Traffic capacity:** Future travel demand in the corridors served by Foster and 92nd Ave. are projected to increase substantially. Alternative B provides the most overall transportation system capacity to accommodate current and future travel demand.

- **Pedestrian environment:** Alternative B uses an enhanced system of traffic signals to control traffic speeds and provide more protected crossings for pedestrians along Foster and Woodstock. Wider sidewalks, on-street parking and a coordinated streetscape plan for street lighting and street trees will enhance the comfort and convenience of pedestrian circulation within the business district, consistent with its Town Center designation.

- **On-street parking:** Alternative B provides more opportunities for increasing the on-street parking supply than Alternative A.

- **Decouple impacts:** To provide adequate traffic capacity, Alternative A requires significant widening of Woodstock Blvd. (to 5 lanes) through the current couplet section. The widening of Woodstock would create a new barrier to pedestrian access between the south and north sides of the neighborhood.

- **Implementation impacts:** Alternative B requires less right-of-way acquisition and impact to adjacent property than Alternative A. Construction of Alternative B can be phased in over time as properties redevelop, unlike Alternative A.

**Streetscape Plan:**
The streetscape plan calls for the widening of the business district’s sidewalks to Pedestrian District standards and a coordinated system of street trees and street lighting. See attached design guidelines.

**Action Items:**
The plan recommendation also includes a series design and planning directives to help guide implementation of the plan and coordination with other planning activities going on in the urban renewal district.

1. Encourage Tri-Met to provide new transit service on 92nd Ave., connecting the Lents Town Center directly to the Gateway Regional Center and the Clackamas Town Center.

2. Request the State Speed Control Board reduce the posted speed limit to 30 mph on Foster and Woodstock within the couplet, and on 92nd Ave. Reedway to Tolman to 25 mph.
3. Review the relationship between traffic flow and the location of on-street parking on 91st Avenue between Foster and Woodstock when the 91st/Foster and 91st/Woodstock signals are installed to ensure efficient traffic flow along this narrow street.

4. Develop a transportation and streetscape plan for Foster west of 88th Ave. that builds off of and complements the Lents Town Center Business District Transportation Plan. This plan should also address safety and cut-through traffic concerns related to the intersection of Foster/Ellis and 84th Ave.

5. Continue to study traffic issues and implement transportation improvement projects on surrounding local neighborhood streets.

6. Encourage undergrounding utilities within business district.

7. Work with the Oregon Department of Transportation to study the feasibility of allowing full southbound access to I-205 from Powell Blvd.

Other Issues:
- Study the feasibility and desirability of providing a direct connection between Harold Street and Ellis Street in the vicinity of 92nd Ave.
- Continue to work with Metro and Tri-Met on the study and development of a high capacity transit system in the I-205 corridor which includes a station in Lents.

**Next Steps**

*Adoption of the plan*

The recommendations proposed by this plan have been approved by the Lents Town Center Business District Transportation Plan Citizens Advisory Committee in September, 1999. The Lents Neighborhood Association has also reviewed and endorsed the preferred alternative. This recommendation will be forwarded to the Lents Town Center Urban Renewal Advisory Committee for approval in October, 1999 and eventually City Council for final adoption by resolution, probably in the late fall of 1999.

*Construction*

Currently, there are two identified sources of funding for construction of this plan, System Development Charges (SDC) dedicated to expanding transportation system capacity related to growth, and tax increment financing from the Lents Town Center Urban Renewal Project. The SDC fund has earmarked approximately $1.2 million for construction of transportation improvement projects in Lents, while the urban renewal funds are contingent upon establishing funding priorities within the entire urban renewal plan work plan. Given the total cost estimate for construction of this plan (see Appendix D), implementation of the plan will need to be phased over time. Establishing priorities for implementation for the transportation management plan will be coordinated by the Portland Development Commission through the urban renewal public involvement and planning process.
Before construction of each identified improvement can proceed additional design engineering work is required to ensure final compatibility with City traffic and civil engineering standards.
Guidelines

Sidewalks. 12’ where the sidewalk allows; 4’ for furnishing zone; 8’ for through pedestrian zone (in conformance with Portland Pedestrian Design Guide).

Curb cuts, driveways. Consolidate driveways and minimize curb cuts.

Curb extensions. At all corners, except on east and west corners of 88th at Foster.

Marked crosswalks At all corners, painted or scored concrete (preferred).

Lighting. Two alternatives are illustrated, see plans. Especially on commercial streets, the white light of a metal halide luminaire is preferred, over the orange light produced by City standard sodium vapor. Pedestrian scale pole-mounted luminaire is preferred. See “Alternative Lighting and Tree Planting Designs” for specifications.

Trees. 20’-30’ spacing, depending on the species selected: Trees with a 20’ spread, plant 20’ o.c.; trees with a 30’ spread, plant 30’ o.c. (in conformance with Portland Urban Forestry Street Tree Planting Guidelines.). Canopy type tree preferred. See Canopy-type Tree list.

Streetscape Design Guidelines for Commercial Street
Southeast 88th Avenue and Foster Road

Lents Town Center Plan
City of Portland • Lennertz Coyle & Associates • DKS • URBSworks, Inc.

Guidelines

Sidewalks. 12’ where the sidewalk allows; 4’ for furnishing zone; 8’ for through pedestrian zone (in conformance with Portland Pedestrian Design Guide).

On-street parking. Maximize, where possible.

Curb cuts, driveways. Consolidate driveways and minimize curb cuts.

Curb extensions. At north corners of Foster at 92nc.

Marked crosswalks. At all corners, painted or scored concrete (preferred).

Lighting. Two alternatives are illustrated, see plans. Especially on commercial streets, the white light of a metal halide luminaire is preferred, over the orange light produced by City standard sodium vapor. Pedestrian scale pole-mounted luminaire is preferred. See “Alternative Lighting and Tree Planting Designs” for specifications.

Trees. 20’-30’ spacing, depending on the species selected: Trees with a 20’ spread, plant 20’ o.c.; trees with a 30’ spread, plant 30’ o.c. (in conformance with Portland Urban Forestry Street Tree Planting Guidelines ) canopy type tree preferred. For possible canopy-type street tree species, see Canopy-type Tree list.

Streetscape Design Guidelines for Commercial Street
Southeast 92nd Avenue and Foster Road

Lents Town Center Plan
City of Portland • Lennertz Coyle & Associates • DKS • Urbworks, Inc.
Alternative A: Single ornamental light standard at corners; City standard cobra-style light poles located midblock.

Alternative B: Single ornamental light standards at corners and midblock, 127' spacing. See "Alternative Lighting and Tree Planting Designs".

Guidelines

Sidewalks. 12' where the sidewalk allows; 4' for furnishing zone; 8' for through-pedestrian zone (in conformance with Portland Pedestrian Design Guide).

On-street parking. Maximize, where possible.

Curb cuts, driveways. Consolidate driveways and minimize curb cuts.

Curb extensions. At north corners of Woodstock at 92nd.

Marked crosswalks. At all corners, painted or scored concrete (preferred).

Lighting. Two alternatives are illustrated, see plans. Especially on commercial streets, the white light of a metal halide luminaire is preferred, over the orange light produced by City standard sodium vapor. Pedestrian scale pole-mounted luminaire is preferred. See "Alternative Lighting and Tree Planting Designs" for specifications.

Trees. 20'-30' spacing, depending on the species selected: Trees with a 20' spread, plant 20' o.c.; trees with a 30' spread, plant 30' o.c. (in conformance with Portland Urban Forestry Street Tree Planting Guidelines) canopy type tree preferred. For possible canopy-type street tree species, see Canopy-type Tree list. Plant trees 25' from the curb line of intersections.

Streetscape Design Guidelines for Transportation Corridor
Southeast 92nd Avenue and Woodstock Boulevard

Lents Town Center Plan
City of Portland • Lennertz Coyle & Associates • DKS • Urbsworks, Inc.
92nd Main Street Alternative A
Trees spaced 30-35';
Same pole and luminaire as at 91st.
Light poles spaced 120-135', or one at each end of
block and one at center. Similar to spacing at
improved segment of 91st.

92nd Main Street Alternative B
Trees spaced 60-70';
Same pole and luminaire as at 91st.
Light poles spaced 60-70", or at quarter block
intervals. Within 200', this spacing is similar to lighting
at South Park blocks in downtown Portland.

LIGHTING ON WOODSTOCK AND FOSTER, ALTERNATIVE B SPECIFICATIONS

Single ornamental light standards at corners and midblock, 127' staggered spacing, resulting in a pole every
63.5', at alternate sides of the street.
Pole: Aluminum or fiberglass, 18' high
Average footcandle (.9 min. required for major arterial per IES): .92
Uniformity (3:1 max. per IES): 2.09:1
Luminaire: Acorn type
Veiling luminance (3:1 per IES): .297:1

Alternative Lighting and Tree Planting Designs
For 92nd Main Street and Foster/Woodstock

Lents Town Center Plan
City of Portland • Lennertz Coyle & Associates • DKS • Urbsworks, Inc.
**Guidelines**

**Sidewalks.** 12' required: 4' for furnishing zone; 8' for through pedestrian zone; 15' preferred: 4' for furnishing zone; 8' through-pedestrian zone; 2'6" storefront frontage zone, (in conformance with Portland Pedestrian Design Guide). For additional information, see "Sidewalk Details".

**On-street parking.** Provide a maximum number of spaces.

**Curb cuts, driveways.** Consolidate driveways and minimize curb cuts.

**Lighting.** Two alternatives are illustrated, see "Alternative Lighting and Tree Planting Plans". Especially on commercial streets, the white light of a metal halide luminaire is preferred, over the orange light produced by City standard sodium vapor. Pedestrian scale pole-mounted luminaire is preferred.

**Trees.** Two alternatives are illustrated, see "Alternative Lighting and Tree Planting Plans". Plans show a columnar-type tree. Trees must be located 25' from light poles. Between light poles, plant trees at 10'-20' spacing, depending on the species selected: trees with a 10' spread, plant 10 o.c.; trees with a 20' spread, plant 20" o.c. (in conformance with Portland Urban Forestry Street Tree Planting Guidelines). For possible columnar-type street tree species, see Columnar-type Tree list. Plant trees 25' from the curb line of intersections.

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**Streetscape Design Guidelines for Main Street**
Southeast 92nd Avenue north of Foster Road

**Lents Town Center Plan**
City of Portland • Lennertz Coyle & Associates • DKS • Urbworks, Inc.
**Sidewalk Design Guidelines**

Trees, light poles and street furniture such as benches, drinking fountains, bike racks, planters and garbage receptacles should occupy the 4' space between the curb zone and the through-pedestrian zone. When benches are placed next to the curb, they should face the storefront, not the street. Benches, removable planters and temporary cafe seating can also be located in the frontage zone (next to the building), as long as the through-pedestrian zone remains clear.

Where existing buildings prevent sidewalk from reaching an ideal 12'-0" width, adjustments can be made to the frontage zone and/or the furnishings zone. The through pedestrian zone can be reduced to 4'-6". Furnishings zone can be reduced to 3'-0". Reduction to less than 3'-0" is not recommended but in certain cases may be unavoidable. (Less than 3'-0" generally prohibits tree planting). The frontage zone can be reduced to 0'.

Trees are protected by Portland City standard tree grates, either with 4' x 4' size preferred. Select grates similar in style to those located on the improved portion of 91st street.

**Sidewalk Details**

**Lents Town Center Plan**

City of Portland • Lennertz Coyle & Associates • DKS • Urbsworks, Inc.
INTRODUCTION

Project Background
The Lents Town Center Business District Transportation Plan is a supporting piece of the Lents Urban Renewal Plan effort dedicated to revitalizing the Lents neighborhood. For many years the Lents community has suffered from protracted economic decline. The heart of the community, the once thriving business district centered at 92nd Avenue and Foster Road, over the years has seen its vitality eroded by commercial development along 82nd Avenue and construction of the I-205 freeway. Today the business district lacks the variety and character of the neighborhood oriented businesses that once defined the neighborhood.

Recently, the City has been working with the neighborhood to develop a strategy to finally get the revitalization process going. In 1995 Lents was designated as a Town Center in Metro’s Region 2040 Plan, giving it regional funding priority for improvements. The City’s Outer Southeast Community Plan, adopted in 1996, provided community-based policy guidance for revitalizing the area. This overall planning effort culminated in the adoption of the Lents Urban Renewal Plan in 1998 by the Portland Development Commission. The urban renewal plan outlines a comprehensive strategy for revitalization as well as establishing a funding source for moving it forward.

Among the key elements recognized by the urban renewal plan is the need to improve the area’s transportation system so it supports commercial redevelopment and improves neighborhood access. Currently, the business district core is dominated by non-local, freeway related traffic. The freeway pumps large volumes of traffic through the core area and creates a tremendous barrier between the east and west sides of the neighborhood. As a result, access to local businesses is difficult and uninviting either by car, bus, bike or foot. The sidewalks are narrow and lack basic commercial district amenities, the streets are wide and difficult to cross on foot, on-street parking is limited, and traffic circulation is difficult due to the large traffic volumes and congestion.

Policy G. Transportation of the urban renewal plan specifically directs the City to develop a transportation management plan for the business district to answer these and other transportation related problems that hinder commercial redevelopment. This plan is intended to address the above policy and provide a transportation system that supports the area’s Town Center designation.

Funding for development of the Lents Town Center Business District Transportation Plan was provided through a Transportation and Growth Management Program grant, a joint program sponsored by the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development.
Propose
The primary purpose of the plan is to identify a comprehensive package of transportation improvement projects that will support neighborhood oriented commercial redevelopment in the Lents business district. The improvements are intended to provide multi-modal access to the business district consistent with the objectives of the 2040 Plan for Town Centers, City policy and neighborhood values. The plan’s recommendations include the following elements:

- Street system plan for the business district which identifies the operational design of the street network;
- Streetscape design guidelines for improvements (primarily sidewalks, street trees and street lighting) in the public right-of-way as redevelopment occurs and public funds become available.
- Design and planning directives to help guide implementation of the plan and coordination with other planning activities going on in the urban renewal district.

Study Area
The plan’s study area is focused on the historic core of the business district, the intersection of Foster Road and 92nd Avenue. While businesses that serve the Lents neighborhood extend both east and west of 92nd Avenue along Foster Road, this core area has been identified by the community as the starting point for revitalization of the broader neighborhood. The primary emphasis of the plan is the function of the three arterial streets which serve the core area, Foster Road, Woodstock Boulevard and 92nd Avenue. Figure 1 provides a map of the study area boundaries.

Plan Development Process
A four phase process was used to develop the recommendations proposed by this plan. The process serves as a framework for understanding how the plan was put together. Each phase of the process culminates in an important decision making milestone, which is used as a building block for subsequent phases. Figure 2 illustrates the relationship of the four phases in the planning process.

To help prepare the products outlined for each phase of the process, a project team was assembled that included a traffic engineering consultant, an urban design consultant, and a retail development consultant. These products were reviewed by a technical advisory committee composed of representatives from various state, regional and local agencies that provide services in the Lents community. Coordination of the process was handled by city staff from the Office of Transportation and the Portland Development Commission.

Public Involvement
To help guide development of the plan and ensure consistency with local community values and concerns, a citizens advisory committee met regularly with the project’s staff to review the planning process and products. The committee consisted of representatives from the
Lents Urban Renewal Plan Transportation Sub-Committee and other interested volunteers from the Lents community. The committee provided important input during each decision making phase of the project and was the primary decision making body in drafting the project's recommendations to the Lents Urban Renewal Plan Steering Committee.

Broader public input regarding the plan and process was solicited through two open house events. The first open house was held on April 13 and the second on June 8, 1999. Each of these open house events provided an opportunity for residents, property owners, and business owners to review and comment on the work produced by the project staff. The draft plan recommendations were mailed to all residents, business owners, and property owners adjacent to the streets affected by this plan in late September of 1999. Appendix C provides a list of all public meetings related to the development of this plan.
PHASE I: GOALS & OBJECTIVES

Policy Background
There are many land use and transportation policies which pertain to the Lents business district at the local and regional level and helped guide the development of this plan. The most important policy is the area’s designation as a town center in the Region 2040 Plan. Town centers play a key role in the region’s growth management strategy. Town centers are intended to function as vibrant commercial hubs for the surrounding neighborhoods. The transportation system serving them is intended to provide high quality multi-modal access to support concentrated development and reduce the need to travel out of the area by car.

Lents is also at the crossroads of two very important regional transportation facilities, Interstate 205 and Foster Road. Immediately east of the business district core is the I-205 freeway, a regional trafficway that divides the neighborhood into two, leaving only two street and one pedestrian/bicycle connection which cross it in close proximity to the study area. While the freeway creates a major barrier to the study area’s local access and circulation, the freeway ramps in turn provide significant regional traffic access to the area. The region’s long term transportation system plan also calls for development of a high capacity system in the I-205 freeway corridor with a station that serves the Lents Town Center. This service would provide a major linkage to the regional transit system and greatly enhance the study area’s multi-modal options.

With its connections to the I-205 freeway, Foster Road serves as a major arterial for SE Portland traffic south of Powell Boulevard. However, Foster Road is also intended to serve many other transportation functions. The road is designated as a Major City Traffic Street, Major City Transit Street, Minor Truck Route, and City Walkway. Through the couplet portion, the road is designated as a City Bikeway. Foster Road and the area surrounding the core of the business district is also designated as a Pedestrian District, where priority is supposed to be given to pedestrian access and activities.

Plan Objectives
Defining the plan’s objectives was a key first step of the plan development process. The list of objectives represents a set of community values that was used to guide the entire plan development process. From the identification of issues to be addressed, through the development of alternatives and selection of recommended improvements, the process was built upon these objectives. The list of objectives serves its most important role in the evaluation phase of the process where the objectives are used as criteria in which to help judge the relative merits of each alternative under consideration.

In addition to the comprehensive plan policies noted above, there are a variety of recent planning efforts specific to the Lents area which have further helped lay the groundwork for developing the project’s objectives. The Outer Southeast Community Plan, the Lents
Neighborhood Plan and the Lents Urban Renewal plan all contain policies which specifically pertain to how the study area's transportation system should function. The 1995 Lents Transportation Study also identified issues the community wanted to see addressed through transportation system improvements.

The citizens advisory committee reviewed these policies and issues and developed the following comprehensive list of objectives for the plan and planning process:

- Pedestrian environment
  Enhance pedestrian access and circulation throughout the business district; improve connections into the neighborhood and to transit service.

- Commercial redevelopment
  Ensure transportation improvements support local commercial redevelopment opportunities.

- Parking
  Develop a strategy for the provision and management of adequate parking (on and off street) to support commercial redevelopment.

- Transit service
  Improve service and connections; coordinate with high capacity transit in the I-205 corridor.

- Streetscape
  Create a more attractive environment for pedestrians and commercial development through streetscape design and planning.

- Decoupling
  Determine feasibility of decoupling Foster/Woodstock.

- Through traffic
  Keep through (non-local) traffic off local streets.

- Auto access and circulation
  Maintain acceptable traffic levels of service, stabilize traffic speeds.

- Multi-modal safety
  Ensure safety for all modes of travel.

- Bicycles
  Improve bicycle access and circulation to and through the business district.

**Existing Conditions**

To help understand and define the transportation issues to be addressed by the plan, current transportation data from the study area was gathered and analyzed. The findings of the existing conditions analysis are contained in Appendix A. A summary of the key findings is listed below:

- Traffic Operations:
  Currently, all of the study area's signalized intersections operate at acceptable levels of service. However, congestion is a concern along 92nd Avenue during the PM peak hour due to inadequate storage for southbound vehicles between Foster Road and Woodstock Boulevard. Future growth in the study area's traffic volumes is expected to be significant. Land use development east I-205 should substantially increase traffic...
volumes on Foster Road, while increased congestion on I-205 is likely to increase volumes on 92nd Avenue as well.

- **Speed:**
  Surveys show most traffic is not exceeding the posted speed limit of 35 mph on Foster Road and Woodstock Boulevard. Nonetheless, due to the narrow width of the sidewalks and lack of an on-street parking buffer, the traffic speeds are considered detrimental to the pedestrian and retail environment.

- **Pedestrian Environment:**
  Access and circulation through the business district core is poor for pedestrians due to the narrow width of most sidewalks, lack of sufficient signalized crossings along Foster Road and Woodstock Boulevard, and the speed and volume of traffic moving through the core area. The lack of pedestrian amenities, such as street trees and landscaping makes the area uninviting for pedestrians.

- **Transit service:**
  Generally good levels of service are provided to downtown Portland relative to the rest of the region. Connections north and south to the Gateway Regional Center and Clackamas Town Center are indirect and inconvenient.

- **Parking:**
  On-street parking is limited along Foster Road and Woodstock Boulevard. Peak hour restrictions further reduce the supply at key demand times. Current utilization of the supply is low.

- **Bicycles:**
  Bike lanes are provided for east-west connections along Foster Road and Woodstock Boulevard. North-south connections along 92nd Avenue are incomplete due to the lack of bike lanes north of Woodstock Boulevard.
PHASE II ALTERNATIVES DEVELOPMENT

The alternatives development design process was divided into three separate elements. The first design element establishes a basic functional relationship between land use and transportation. The street function design types help define how a street needs to be designed and function in order to support certain general types of commercial development.

Given the functional street design defined in the first element, the second element, street network design, goes into greater detail regarding how to design and build a street that matches its intended function. Street network design goes into the basic multi-modal operational details of street design- the general geometry, capacity and connectivity of the street system. Basic design issues include the number of travel lanes, turn lanes, placement of signals.

The third design component is streetscape. Streetscape goes beyond merely how the street functions in terms of transportation into how it looks, feels, and relates back to the buildings, businesses, and surrounding community. Basic issues related to streetscape design include the design of pedestrian environment (sidewalk width, street trees, amenities) and its integration with land use development through design guidelines.

Street Function Design

While the Lents Town Center desires a more local, neighborhood oriented transportation environment to serve the business district, the reality is that the connections to the freeway and land use growth east of the freeway create the need to accommodate large volumes of non-local traffic. These two competing elements need to be balanced in the functional design of the transportation system.

Three business district street design types were identified as applicable to the Lents business district. Each design type functions differently in terms of transportation access and circulation, and tends to support different types of commercial development. These design types become useful in understanding how different street network alternatives relate to the commercial redevelopment and multi-modal access. They can be used in combination to build a transportation system that serves the two competing needs in the area, local access and regional through capacity. The three basic street design types are ‘Main Street’, ‘Commercial Street’ and ‘Transportation Corridor’

A. Main Street

The ‘main street’ is the classic design type in terms of supporting neighborhood oriented commercial development in urban areas. Most of the Lents business district during the early 1900’s, as was true of many older Portland area neighborhoods, developed in the mold of the ‘main street’ design type. The most important transportation feature of the main street is its narrow width and pedestrian orientation. Traffic volumes are relatively low and speeds
are slow compared to the other two design types. Commercial development is characterized by one to three story buildings, which are built directly adjacent to the sidewalk area and exhibit a strong orientation to pedestrian access.

The pedestrian environment tends to be comfortable because the street design does not emphasize traffic capacity. The adjacent buildings and the commercial activity they generate, such as sidewalk cafes and retail window displays dominate the sidewalk area. The street is narrow so pedestrian crossings at unsignalized intersections are comfortable and traffic speeds are slow. Because of the narrow, slow feel of the street bicyclists can more comfortably and safely mix with traffic. Transit access is encouraged because of the good pedestrian environment and compact nature of the commercial development.

This type of street environment tends to support compact, more neighborhood oriented storefront commercial development and uses. Buildings are built up to the street and form a nearly continuous storefront that extends approximately 1,000 ft. The businesses predominantly retail and rely primarily on on-street as opposed to off-street parking. Examples in Portland include NW 23rd Avenue, SE Belmont St. near 33rd Avenue and SE Hawthorne Blvd.

Basic design features generally include:

- Two travel lanes (up to maximum of four)
- Two-way traffic flow
- On-street parking on both sides of the street
- 10-12 ft. sidewalks with street trees
- Pedestrian scale lighting

B. Commercial Street

Compared to the ‘main street’, the ‘commercial street’ design type tends to balance traffic capacity with multi-modal access and circulation. The main transportation characteristic that sets it apart from the ‘main street’ is the larger volume of traffic. The ‘commercial street’ also tends to carry more through traffic, and thus tend to be located along major regional connections. The major land use characteristic of the ‘commercial street’ compared to the ‘main street’ is that development tends to be more of a mix of auto and pedestrian oriented.

A broader range of commercial businesses are permitted by the ‘commercial street’ compared to the ‘main street’ because the market area it serves is generally larger. Smaller, locally oriented businesses can be found next to larger national chains, which serve a regional market. Buildings typically are more set back from the street, are spaced apart more from each other, and rely on a mix of on and off-street parking.

Because the traffic volumes are greater, a major street design issue is how to safely and comfortably allow pedestrians to circulate through the business district. The street width and traffic speeds make crossings at unsignalized intersections more difficult for both pedestrians and bicyclists. This can be addressed through curb extensions to narrow the crossing distance and additional signals for protected crossings and speed control. Wider sidewalks and management of driveway location and design can improve the comfort and
safety of walking along the street which reduce the potential for conflicts between cars, bicyclists and pedestrians.

A good functional example of a commercial street in Portland is SW Capitol Highway through Hillsdale. The street currently carries about 26,000 cars a day. Though the volumes are high, the area has developed in a relatively compact manner that has made it comfortable and convenient for pedestrians as well as cars.

Basic design features generally include:

- Four travel lanes with or without a center turn lane
- Two-way or one-way traffic flow
- Greater use of traffic signals and turn lanes to control traffic flow and improve pedestrian crossings
- On-street parking, except at turn lanes
- Bicycle lanes
- A minimum of 12 ft. sidewalks

C. Transportation Corridor
The 'transportation corridor' design type places the most emphasis on traffic capacity of the three design types. The traffic volumes, traffic speeds and percentage of through traffic are all generally higher than the other design types. As a result, the kind of businesses this street type supports are less retail in nature, serve a broad regional market, and are almost exclusively auto-oriented. 82nd Avenue and Powell Boulevard are currently examples of the 'transportation corridor' design type.

Basic design features generally include:

- Four or more travel lanes with or without a center turn lane
- Two-way or one-way traffic flow
- No on-street parking
- Traffic scale lighting

The above three functional design types help to clarify in general what kind of commercial street environment the community could develop in Lents. While Lents historically has most closely resembled the 'main street' design type, and community policy tends to encourage it as well, this needs to be balanced against the need to plan and accommodate connections to the regional transportation system.

Transportation System Design
The transportation system design process then takes the functional concepts discussed above and figures out how to make them operational. The transportation system is based on three primary design elements, design of the street network, management of the system, and transit service.
A. Street Network
The street network is the backbone of an area’s transportation system, defining the basic circulation system for all modes of travel. A key street network issue is connectivity. Connectivity refers to how well the street network is interconnected. Good connectivity supports access and circulation to and through the study area for all modes of travel by making it easier to move through the system, especially without a car.

The current local street network is primarily based on the traditional grid system that generally provides good street connectivity. The area’s major east-west arterial, Foster Road, cuts diagonally across the grid system. The blocks are regularly spaced and for the most part do not require excessive out-of-direction travel for all modes to get around. A major barrier to the grid network and connectivity between the area east of 94th Avenue and the business district is the I-205 freeway.

Another key street network issue is capacity. Capacity refers to the ability of the street network to carry existing and projected travel demand so that the impacts of congestion and traffic diversion are minimized. Capacity is an important issue in the Lents business district because of its proximity to I-205 freeway ramps and projected growth related to land use development east of I-205.

B. Transportation System Management
Transportation system management refers to how the transportation system is controlled to permit safe and efficient access and circulation through the study area for all modes of travel. Management design issues generally focus on the use of signals, turn lanes, bike lanes, pedestrian crossing locations and on-street parking.

Management of the study area’s traffic flow was changed dramatically with the construction of the Interstate 205 freeway. Prior to construction, Foster Road was a two-way street, similar to existing conditions west of 90th Avenue. In order to provide additional capacity for freeway access, the current Foster-Woodstock one-way couplet between 90th and 100th Avenue was constructed. In addition to providing more capacity, the one-way couplet changed the basic operational characteristics of the transportation system and how it relates to the surrounding business district.

The couplet now divides traffic access to the core of the business district between Foster Road and Woodstock Boulevard, making access and circulation more indirect. Businesses can orient themselves to only one direction of travel, reducing visibility to passing customers. The additional capacity provided by couplets also tends to encourage speeding.

‘Decoupling’, the changing of a one-way couplet back to two-way traffic operation along both streets, is a major design issue studied by this plan. The feasibility of decoupling Foster-Woodstock Boulevard between 90th and 100th Avenue has been a long standing issue in the neighborhood, and policy contained in the Lents Urban Renewal Plan specifically requests that the issue be studied through the transportation planning process.

Traffic signals are the primary means of traffic control within a transportation system. Signals allow for controlled, safe access between streets and circulation within the business.
district for vehicles. Traffic signals can also be used to control the flow and speed of traffic through an area by synchronizing the timing of a series of signals.

Pedestrian crossings are another issue related to transportation system management design. Traffic signals benefit pedestrians as well as traffic circulation by providing protected crossings. Protected crossings are particularly important along wide streets with heavy traffic volumes. At unsignalized intersections the ease and safety of crossing the street can be improved through curb extensions and median refuges, which reduce the crossing distance and improve sight distances. The use of curb extensions is limited to only areas where there is on-street parking. For traffic safety reasons, medians are recommended only for streets with two-way traffic flow.

On-street parking serves many purposes within a commercial area’s transportation system. The availability of parking has been identified as a very important access issue for commercial development and viability in Lents. On-street parking is especially important for many businesses, which do not have direct access to off-street parking, which is typically the case in older neighborhood commercial districts around the city. On-street parking also plays an important role in creating a safe and comfortable pedestrian environment by buffering pedestrians from traffic.

Bicycle access and circulation within areas that experience high traffic volumes, such as Lents; is difficult and unsafe without bike lanes. The city’s Bicycle Master Plan designates Foster-Woodstock Boulevard as the east-west bicycle corridor serving the study area and 92nd Avenue as the north-south corridor. Currently, bike lanes are provided on Foster Road and Woodstock Boulevard through the couplet area, with connections to the Springswater Corridor, the I-205 bike path and Woodstock Boulevard westbound. 92nd Avenue is striped with bike lanes south of Woodstock Boulevard, but lacks bike lanes to the north.

C. Transit Service
To address growth in travel demand, city, state and regional policy all require transit to play an increasingly important role in the development and management of a multi-modal transportation system. This is particularly true in areas designated as town centers, such as Lents. Currently, three transit lines serve the Lents business district with service that is 15 minutes or better during the peak hours. Service connections remain an important issue. While transit connections are good to downtown, they are more indirect to other important destinations in the area, such as the Gateway Regional Center and Clackamas Town Center. Improved north-south (cross-town) transit service through the business district would provide a stronger multi-modal linkage between the development centers consistent with the 2040 growth concept.

Street improvements within the right-of-way are another important component in transit service enhancement. The efficiency of service can be improved through stop improvements such as curb extensions, which reduce the dwell time at stops. Amenities at stops, such as shelters, and the regular, close spacing improve the quality of service.

In the longer term, high capacity transit service, such as light rail, is envisioned for the I-205 corridor, with a station that serves the Lents neighborhood. Many of the design details
associated with a high capacity transit system have not yet been planned. An objective for this plan is to ensure that transportation system improvements proposed by this plan will complement and not preclude strong multi-modal connections to development of high capacity transit service along I-205 in the future. Station areas that could serve the Lents area include a station within the I-205 right-of-way centered on Foster Road or closer to the Boys and Girls Club site off of 92nd Avenue.

**Streetcape Design**

The final layer of developing a comprehensive street system plan is the streetscape element. Streetscape refers primarily to the design of the sidewalk area and how it relates to adjacent land use development. Design guidelines for the streetscape are important because as redevelopment occurs over time, where improvements to the adjacent right-of-way are required, a consistent design theme can be developed.

Issues that the design guidelines address include the width of the sidewalks, special sidewalk design treatments, street trees, street lighting, street furniture, gateways, and pedestrian plazas. Streetscape design also can mean special design guidelines for buildings unique to the Lents business district that help building design relate better to the design theme and improve the overall design relationship between land uses and the transportation system.

**Transportation System Alternatives**

Using the above design elements, the project staff developed and refined two transportation system alternatives to forward to the evaluation phase of the process. The two alternatives were chosen because they reflect conceptually the best alternatives for meeting all of the project’s objectives through transportation system design. The basic difference between the two is that Alternative A is designed to return the original ‘main street’ environment to Foster Road through decoupling, while the second alternative, Alternative B, emphasizes mitigation of the negative impacts associated with the couplet to improve local access and circulation.

<table>
<thead>
<tr>
<th>Street Function Design</th>
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<tbody>
<tr>
<td><strong>Alternative A</strong></td>
<td><strong>Alternative B</strong></td>
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<tr>
<td><strong>Decouple</strong></td>
<td><strong>Enhanced Couplet</strong></td>
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<tr>
<td>• The major element of this alternative is the development of Foster Rd. between 90th Ave. and 94th Ave. as a ‘main street’ through decoupling.</td>
<td>• This alternative is designed to create a ‘commercial street’ environment along both Foster and Woodstock west of 94th Ave.</td>
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<tr>
<td>• 92nd Ave. would also be designed to function as a ‘main street’.</td>
<td>• 92nd Ave. would also be designed to function as a ‘main street’.</td>
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<td>• The areas of Foster and Woodstock near the freeway, east of 94th and west of 97th Ave., would be designed as ‘transportation corridors’</td>
<td>• The areas of Foster and Woodstock near the freeway, east of 94th and west of 97th Ave., would be designed as ‘transportation corridors’</td>
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<td><strong>Transportation System Management Design</strong></td>
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<td><strong>Alternative A</strong></td>
<td><strong>Alternative B</strong></td>
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<td><strong>Decouple</strong></td>
<td><strong>Enhanced Couplet</strong></td>
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<td><strong>Traffic Flow:</strong></td>
<td><strong>Traffic Flow:</strong></td>
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<td>• The major network design change</td>
<td>• The current Foster/Woodstock one-way</td>
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<td>associated with Alternative A is the</td>
<td>couplet between 90&lt;sup&gt;th&lt;/sup&gt; and 100&lt;sup&gt;th&lt;/sup&gt; Ave. would</td>
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<tr>
<td>‘decoupling’ of Foster and Woodstock</td>
<td>be retained.</td>
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<td>between 90&lt;sup&gt;th&lt;/sup&gt; Ave. and 100&lt;sup&gt;th&lt;/sup&gt; Ave.</td>
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<td>Decoupling refers to returning two-way</td>
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<td>traffic flow to both streets which are</td>
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<td>currently one-way through the core of</td>
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<td>the business district.</td>
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<td><strong>Street Network:</strong></td>
<td><strong>Street Network:</strong></td>
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<tr>
<td>• Foster between 90&lt;sup&gt;th&lt;/sup&gt; and 100&lt;sup&gt;th&lt;/sup&gt; Ave.</td>
<td>• Three travel lanes in each direction</td>
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<td>would become a two-way street with one</td>
<td>would be provided on Foster-Woodstock</td>
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<td>travel lane in each direction and a</td>
<td>through the couplet area.</td>
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<td>center left turn lane. Woodstock would</td>
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<td>be two-way as well, but widened to five</td>
<td>• 92&lt;sup&gt;nd&lt;/sup&gt; Ave. would remain a</td>
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<td>lanes, with two lanes in each direction</td>
<td>two lane, two-way street with the</td>
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<td>and a center turn lane, to provided</td>
<td>options of providing left turn pockets</td>
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<td>adequate capacity.</td>
<td>where needed.</td>
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<td>• 92&lt;sup&gt;nd&lt;/sup&gt; Ave. would remain a two-</td>
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<tr>
<td>way street with the option of providing</td>
<td>• A new access point north of Foster is</td>
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<td>left turn pockets where needed.</td>
<td>proposed at 90&lt;sup&gt;th&lt;/sup&gt; Ave. to</td>
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<td>• 91&lt;sup&gt;st&lt;/sup&gt; Ave. would be realigned</td>
<td>provide signalized access into the PDC</td>
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<td>north of Foster to create a new</td>
<td>redevelopment site. 91&lt;sup&gt;st&lt;/sup&gt; Ave.</td>
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<td>signalized intersection at 91&lt;sup&gt;st&lt;/sup&gt;</td>
<td>would be realigned north of Foster to</td>
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<td>and Foster, providing better access and</td>
<td>create a new signalized intersection at</td>
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<td>circulation north of Foster.</td>
<td>91&lt;sup&gt;st&lt;/sup&gt; and Foster to also</td>
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<td><strong>Traffic Signals:</strong></td>
<td>provide better access and</td>
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<td>• A new signal at Foster-Woodstock and</td>
<td>circulation north of Foster.</td>
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<td>90&lt;sup&gt;th&lt;/sup&gt; Ave. is needed to connect</td>
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<td>Foster to Woodstock, the new through</td>
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<td>route connection to the freeway and</td>
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<td>Foster east of I-205. An option is to</td>
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<td>signalize Foster at 88&lt;sup&gt;th&lt;/sup&gt; Ave.,</td>
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<td>with realignment of 88&lt;sup&gt;th&lt;/sup&gt; Ave.</td>
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<td>north of Foster, to improve circulation</td>
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<td>to areas north of Foster and connections</td>
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<td>to 92&lt;sup&gt;nd&lt;/sup&gt; Ave. via Reedway St.</td>
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<td>• The existing ‘U’ turn lanes at each end</td>
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<td>of the couplet are removed to improve</td>
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<td>pedestrian circulation. At the west end</td>
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<td>of the couplet the new 90&lt;sup&gt;th&lt;/sup&gt; Ave.</td>
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<td>signal will permit left turns from Foster</td>
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<td>to Woodstock.</td>
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### Transportation System Management Design

#### Alternative A

**Decouple**

**On-Street Parking**
- Foster, west of 94th Ave.- both sides
- Woodstock, west of 94th Ave.- no parking
- 92nd Ave., between Foster and Woodstock- no parking
- 92nd Ave., north of Foster- both sides
- Foster and Woodstock, east of 94th Ave.- no parking.

**Pedestrian Crossings**
- New signal at Foster/90th Ave. and 100th Ave. provide protected crossing at west and east end of business district.
- Curb extensions along both sides of Foster between 90th and 94th Ave.

**Bicycle Facilities**
- East-west travel- bike lanes on both sides of Woodstock.
- 92nd Ave. design option- bike lanes on both sides of 92nd Ave. north of Woodstock

**Transit Service**
- Policy- request Tri-Met to provide new service on 92nd Ave. which connects Lents to Gateway and Clackamas Town Center.
- Stops- two block spacing; design transit stops to include full bus curb extensions, where possible, with shelters

#### Alternative B

**Enhanced Couplet**

**On-Street Parking**
- Foster, west of 94th Ave.
  - Option 1: north side of Foster only
  - Option 2: both sides
- Woodstock, west of 94th Ave.-
  - Option 1: north side only, east of 91st Ave.
  - Option 2: both sides, east of 91st Ave.
- 92nd Ave., between Foster and Woodstock- no parking
- 92nd Ave., north of Foster- both sides
- Foster and Woodstock, east of 94th Ave.- no parking.

**Pedestrian Crossings**
- New signals at Foster/90th Ave., Foster/91st Ave., Woodstock/91st Ave. provide protected crossings in core of business district. Pedestrian activated signals at east end of couplet.
- Curb extensions along Foster and Woodstock where parking is provided.

**Bicycle Facilities**
- East-west travel- bike lane eastbound on Woodstock, westbound bike lane on Foster.
- 92nd Ave. design option- bike lanes on both sides of 92nd Ave. north of Woodstock

**Transit Service**
- Same as Alternative A
<table>
<thead>
<tr>
<th>Streetscape Design</th>
<th>Alternative B</th>
<th>Enhanced Couplet</th>
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<tbody>
<tr>
<td><strong>Foster</strong></td>
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<tr>
<td>Decouple</td>
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<td>• Widen sidewalks to 12 ft. with street trees spaced at 20 ft. Street lighting, similar to 91st Ave. between Foster and Woodstock, at corners minimum. Consolidated driveways where possible.</td>
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<td>Foster</td>
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<td><strong>Woodstock</strong></td>
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<td>• Widen sidewalks to 12 ft. with street trees spaced at 20 ft. Street lighting, similar to 91st Ave. between Foster and Woodstock, at corners minimum. Consolidated driveways where possible.</td>
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<td><strong>92nd Ave., north of Foster</strong></td>
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<td>• Widen sidewalks to 14 ft. with street trees spaced at 20 ft. Street lighting, similar to 91st Ave. between Foster and Woodstock, at corners and mid-block.</td>
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<td>92nd Ave.</td>
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<td>Same as Alternative A</td>
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**Design Options**

Both alternatives contain a series of design options, one which is common to both and the others which pertain only to individual alternatives.

1. **Alternative B- On-Street Parking/Foster**
Alternative B provides on-street parking along the north side of Foster Road west of 94th Avenue (currently restricted parking during the AM peak hour). An option, which would increase the need for additional right-of-way acquisition, is to have on-street parking along both sides of Foster Road between 90th and 94th Avenue.

2. **Alternative B- On-Street Parking/Woodstock**
Alternative B provides on-street parking along the north side of Woodstock Boulevard between 91st and 94th Avenue. An option, which would increase the need for additional right-of-way acquisition, is to have on-street parking along both sides of Woodstock Boulevard between 91st and 94th Avenue.

3. **Alternative A- 85th Avenue Signal**
This signal provides an additional protected crossing for pedestrians at the west end of the business district core and could improve auto circulation between Foster Road and 92nd Avenue north of Foster Road.
Alternative A
DECOUPLE WITH FOSTER "MAIN STREET" AND 5 LANE WOODSTOCK
Alternative A
DECOUPLE WITH FOSTER "MAIN STREET" AND 5 LANE WOODSTOCK
PHASE III ALTERNATIVES EVALUATION

The two alternatives developed in the previous phase were evaluated using the objectives established in phase I as evaluation criteria. The evaluation findings are based primarily on the analyses contained in Appendix A Transportation System Analysis and Appendix B Urban Design and Retail Development Analysis. The findings for each objective/evaluation criteria are divided into these two general categories and summarized below.

Summary of Findings

A. Transportation System Analysis

Four of the project’s objectives are directly related to transportation system operations. Many of these objectives can be quantified and compared between the two alternatives, others are more qualitative in nature and require evaluation based on the professional judgment of the project staff. Appendix A provides a detailed discussion of the methodology and evaluation findings. The seven objectives which pertain most directly to transportation system analysis are:

- Auto access and circulation
  Maintain acceptable levels of service for traffic, stabilize traffic speeds.
- Multi-modal safety
  Ensure safety for all modes of travel.
- Through traffic
  Keep through traffic off of local streets.
- Decoupling
  Determine the feasibility of decoupling the Foster-Woodstock one-way couplet.
- Pedestrian Environment
  Enhance pedestrian access and circulation throughout the business district; improve connections into the neighborhood and transit service.
- Bicycles
  Improve bicycle access and circulation to and through the business district.
- Transit Service
  Improve service and connections; coordinate with high capacity transit in the I-205 corridor.

Auto Access and Circulation

Objective: Maintain acceptable levels of service for traffic, stabilize traffic speeds.

The primary issue in regards to the auto access and circulation objective is the ability of each alternative to provide adequate capacity within the street network to accommodate projected vehicular traffic volumes. Future traffic volumes within the study area were determined by evaluating data from the Metro regional travel demand forecast model which is based on projected travel demand for the year 2015 during the PM peak hour.
Currently, a large percentage of the traffic volumes moving through the study area are related to trips originating or destined for the I-205 freeway. For instance, the model indicates that the freeway accounts for nearly 50% of the traffic volume on Foster Road between 82nd Avenue and 90th Avenue (during the PM peak hour). The model projects traffic volumes on Foster Road east of 82nd Avenue in the year 2015 to increase by 30%, from 26,750 to 34,700 vehicles a day. While the freeway ramps remain a major origin or destination of this traffic, development growth in the area around Happy Valley will significantly increase travel demand on Foster Road east of I-205. Looking again at vehicle trips on Foster Road between 82nd Avenue and 90th Avenue, the model projects the percentage of vehicles with origins or destinations east of I-205 increasing from 26 to 40% by the year 2015 (during the PM peak hour).

A key measure of the study area’s capacity to handle the projected growth in traffic volumes is intersection level-of-service, or LOS. LOS measures an intersection’s volume to capacity ratio and vehicle delay. Without mitigation, eight of the nine study area signalized intersections fail to perform at acceptable LOS with Alternative A, and three of the seven intersections fail with Alternative B.

Since it is possible to mitigate poor levels-of-service at study area intersections, the greatest difference between the alternatives is the extent of mitigation needed to provide acceptable LOS. Mitigation for unacceptable LOS is primarily addressed through adding additional lane capacity for critical turn movements at the intersections. The traffic operations analysis found that the main difference between the two alternatives is that Alternative A requires much more extensive mitigation to bring the study area intersections to acceptable levels of service than Alternative B.

The design of 92nd Avenue remains consistent between the two alternatives, with two-way traffic flow, one lane in each direction. Despite the difference in traffic flow at 92nd Ave.’s intersection with Foster Road and Woodstock Boulevard between the two alternatives, there is little difference in level-of-service at these intersections. Concerns about providing adequate capacity on 92nd Avenue north of Foster Road led to the consideration of an option that included a center left turn lane. The analysis however indicates that this lane would not significantly improve capacity. The capacity constraint on 92nd Avenue is at its intersection with Woodstock Boulevard. This issue is addressed in both alternatives through improved signal timing which allows more ‘green time’ for the left turn and a right turn lane on Woodstock Boulevard. The year 2015 LOS for 92nd Avenue at Foster Road and Woodstock Boulevard was found to be consistent with city standards under both alternatives.

Speeding is another important traffic operations issue identified by the project CAC. Speeding can be controlled through either active techniques, such as signal timing or speed bumps, or passively through congestion. Alternative A controls speeds primarily through increased congestion, which would occur only during peak periods. Alternative B in comparison has the ability to control traffic speeds through improved signal timing. The alternative includes three new signals in the couplet area that allows the system of signals on each leg of the couplet to better control the progression of traffic through the couplet area. Two-way streets do not have the same ability to control traffic progression with signals. Travel times through the corridor are predicted to increase by 53% with Alternative A,
compared to 25% for Alternative B. Speed bumps are not an option with either alternative because of both Foster and Woodstock's designation as Emergency Response routes.

**Multi-modal safety**

*Objective: Ensure safety for all modes of travel.*

The main traffic safety difference between the two alternatives is based on the difference between one-way and two-way traffic flow. Two-way traffic flow creates more potential turning movement conflicts at intersections or driveways compared to one-way flow. Thus, Alternative B is considered a safer environment for vehicular traffic compared to Alternative A. Safety issues related to the bicycle and pedestrian modes are discussed separately under the ‘Bicycle’ and ‘Pedestrian Environment’ evaluation criteria.

**Through traffic**

*Objective: Keep through traffic off local streets.*

The key issue here is diversion. If an inadequate amount of capacity is placed on the intended through routes of the transportation system, then traffic will seek out, or be diverted to, alternative routes on streets not intended to handle those trips.

Both alternatives are designed to accommodate the projected travel demand on each of the three study area arterials, Foster Road, Woodstock Boulevard between 90th and 100th Avenue, and 92nd Avenue. In order to avoid unacceptable amounts of congestion, and therefore diversion, Alternative A - Decouple needs to be designed with a five lane cross section on Woodstock Boulevard and additional turn lanes as proposed. Three travel lanes are required on Foster Road and Woodstock Boulevard through the couplet section in order to make Alternative B function adequately, and avoid diversion. Maintaining the proposed cross-sections for each alternative, diversion is not expected with either alternative.

The design of 92nd Avenue contains options similar to both alternatives. Analysis indicates that one travel lane in each direction is sufficient to accommodate projected vehicle volumes on 92nd Avenue. Left turn pockets can be provided as warranted when large parcels, such as the Boys and Girls Club site, redevelop.

**Decoupling**

*Objective: Determine the feasibility of decoupling the Foster-Woodstock one-way couplet.*

This objective has been addressed through the inclusion of Alternative A - Decouple as part of the alternatives development and evaluation phases of the plan process. Alternative A was chosen over other decouple design options, such as a three lane Woodstock Boulevard and a five lane Foster Road, that were considered because it most closely addressed the projects objective of restoring a 'main street' environment to Foster Road.
Pedestrian Environment

Objective: Enhance pedestrian access and circulation throughout the business district; improve connections to the neighborhood and transit service.

With Alternative A-Decouple the reduced volume and speed of traffic along Foster Road between 90th and 94th Avenue are significant enhancements for the pedestrian environment in the core of the business district. Along with on-street parking on both sides of the street, Foster Road would become much more of a traditional main street with a strong pedestrian orientation.

However, there are also significant tradeoffs to the pedestrian environment along Woodstock Boulevard associated with decoupling. The most serious issue for pedestrians with Alternative A-Decouple is the widening of Woodstock Boulevard from three to five lanes. This, along with the additional volume of traffic that is shifted from Foster Road to Woodstock Boulevard, will create a substantial barrier for pedestrian access to the business district from the south. Wide streets with high traffic volumes are inconvenient, uncomfortable, and potentially unsafe for pedestrian circulation.

Another impact associated with Alternative A and decoupling is the effect of two-way traffic on the availability of pedestrian crossing gaps compared to one-way traffic flow. Two-way traffic flow creates fewer gaps in traffic which pedestrians can use to cross the street at unsignalized intersections. This is because pedestrian must pay attention to both directions of traffic, whereas with one-way, there is only one direction of traffic to gauge for adequate gaps.

Both alternatives significantly improve the pedestrian circulation along all three primary streets through proposed widening of the sidewalks. The current width would on average be widened from 6-8 ft. to 12-14 ft., consistent with design standards for Pedestrian Districts. Crossing facilities are improved for both alternatives over existing conditions. Alternative A provides for one new protected crossing in the core area, while Alternative B provides for three new protected crossings through signalization. Both alternatives also provide curb extensions to reduce pedestrian crossings distances at signalized and unsignalized intersections on Foster Road. Alternative B includes curb extensions on Woodstock Boulevard between 91st and 92nd Avenue.

The supply of on-street parking should also be taken into account when assessing the pedestrian environment. On-street parking helps create a safe and comfortable environment for pedestrians by buffering the sidewalk area and pedestrians from traffic. Both alternatives provide on-street parking along Foster Road which is beneficial to pedestrians. Design option 2 for Alternative B, which provides parking on both sides of Foster Road, provides additional support in regard to meeting the objective. Alternative A does not provide parking along Woodstock Boulevard, in the interest of minimizing right-of-way acquisition impacts, while Alternative B provides parking along the north side of the street, with the option of placing parking along the south side.
Bicycles

Objective: Improve bicycle access and circulation to and through the business district

Both alternatives provide bicycle facilities to serve the study area that are consistent with the city’s Bicycle Master Plan. The main difference between the two alternatives for east-west bicycle travel is that Alternative B separates eastbound and westbound bike lanes between the two streets, whereas Alternative A provides bike lanes for east and westbound access on Woodstock Boulevard only. Foster Road between 90th and 94th Avenue is likely to be a slower, lower volume traffic environment with Alternative A where bicycle can mix reasonably with traffic. Circulation via bike lanes through the business district, because of the separation of travel directions, is less direct with the couplet under Alternative B.

The two-way traffic flow on Foster Road and Woodstock Boulevard proposed by Alternative A is considered a less safe environment for bicycles than Alternative B. Because there are more turning movements at intersections and driveways, there is greater potential for conflicts between bicycles and motorists with the decouple alternative.

Bicycle operations on 92nd Avenue are identical between the two alternatives. Bike lanes are proposed for 92nd Avenue north of Woodstock Boulevard to continue the existing lanes south of Woodstock Boulevard. Again, this is consistent with the development of 92nd Ave. as north-south bicycle corridor for Outer SE Portland, as designated in the City’s Bicycle Master Plan. While the main street traffic environment designed for 92nd Avenue would permit safer and more comfortable mixing of bicycles with traffic, bike lanes provide better overall safety and support of the objective.

Transit Service

Objective: Improve service and connections; coordinate with high capacity transit in the I-205 corridor.

Transit is intended to play a significant role providing regional and local access to Town Centers. Current transit service levels in the study are good relative to other areas within the region. The frequency of service along Foster Road is better than 15 minutes in the AM and PM peak hours. Because Alternative B provides more system capacity, the efficiency of transit service is less likely to be affected by congestion than Alternative A.

Of greater concern are the current connections the transit system provides. Existing connections to downtown and the hub of the regional system are good, but connections to the two adjacent centers, Gateway and Clackamas Town Center are indirect. These north-south connections would reinforce the link between the Lents Town Center and other centers within the Region 2040 growth management concept.

Neither alternative affects the ability to provide new north-south connections through Lents. 92nd Avenue is the most appropriate location for such service to serve the Lents Town Center and business district core. The ‘main street’ design proposed for 92nd Avenue is identical to both alternatives, and complements and supports transit service. The plan requests the City work with Tri-Met to provide new service on 92nd Ave. as a supporting action item within the recommendations.

Similarly, neither alternative affects the ability to make strong connections to high capacity transit service in the I-205 corridor in the future. Station area planning is not precluded at
either a site within the I-205 right-of-way or at the Boys and Girls Club under either alternative. However, strong pedestrian connections to a station at either location from the south are reduced under Alternative A because of the width and traffic volumes on Woodstock Boulevard.

B. Urban Design/Commercial Development Analysis
The following three objectives pertain most directly to the urban design commercial development analysis findings contained within Appendix B. These objectives are:

- Parking
  Develop a strategy for the provision and management of adequate parking (on and off street) to support commercial redevelopment.

- Commercial Redevelopment
  Ensure transportation improvements support local commercial redevelopment opportunities.

- Streetscape
  Create a more attractive environment for pedestrians and commercial development through streetscape design and planning.

Parking
Objective: Develop a strategy for the provision and management of adequate parking (on and off street) to support commercial redevelopment.

On-street parking is considered a critical component in revitalizing the business district core. Currently, many of the existing buildings in the core are older storefront style commercial buildings which for the most part do not have associated off-street parking. However, many of the block faces in the core area also do not have on-street parking, which these buildings rely upon. This situation is compounded by peak hour restrictions for on-street parking along the north side of Foster Road, which limit use and confuse people as to their availability. As the business district redevelops, parking will become increasingly important in supporting the redevelopment process. Adequate on-street parking provides readily identifiable access to shopping for drive-by customers, and also benefits pedestrians by buffering the sidewalk area from traffic.

Both alternatives were designed to increase the study area’s parking supply. The net result is that the increase in spaces is roughly the same amount. The difference is in the location of the supply. Alternative A- Decouple provides on-street parking along both sides of the street on Foster Road through the core area and 92nd Avenue, north of Foster Road. However, no on-street parking is provided on Woodstock Boulevard due to right-of-way constraints. Alternative B- Enhanced Couplet provides on-street parking along the north sides of both Foster Road and Woodstock Boulevard, with the option to provide parking along the south sides.

The overall net increase in on-street parking supply for Alternative A is approximately 47 spaces. There is an increase of 61 spaces on Foster Road and a decrease of 14 spaces on
Woodstock Boulevard. The supply along 92nd Avenue north of Foster Road remains unchanged. Alternative B-Enhanced Couplet increases the overall supply by approximately 35 spaces. 26 additional spaces are provided on Foster Road between 87th Avenue and 90th Avenue by adding parking to the south side of the street. Through the core of the business district, 90th – 94th Avenue, there is no change in the supply, though the current peak hour restriction (7-9 AM) is removed. The south side option adds 27 spaces in this section.

Woodstock Boulevard retains parking along the north side of the street between 91st and 92nd Avenue, with additional 9 spaces east of 92nd Avenue. The south side of the street has the option to develop parking between 92nd and 94th Avenue to add another 29 spaces.

The parking demand analysis indicates that while utilization of both on and off street parking is currently low, as redevelopment occurs these spaces will increasingly become short in supply. The Parking Management Plan (Appendix A, Chapter 3) indicates that at near full buildout there will be an excess peak period demand for parking that additional off-street spaces provided by redevelopment are not likely to fully satisfy. This indicates the importance of on-street parking supply in the long run in terms of supporting redevelopment. The parking management plan, which is consistent between the two alternatives, outlines strategies for making sure there is an adequate supply of on and off-street parking as redevelopment occurs over time.

**Commercial Redevelopment**

*Objective: Ensure transportation improvements support local commercial redevelopment opportunities.*

The ability of each alternative to support neighborhood oriented commercial redevelopment is perhaps the most important evaluation criteria for the plan. Improving the area’s transportation infrastructure is considered a key factor in stimulating and supporting redevelopment activity. The most commonly cited deficiency in the business district core is the lack of a clearly defined ‘main street’ environment, where more local and pedestrian oriented businesses tend to thrive. Currently, 92nd Avenue north of Foster Road has many of the transportation elements of a main street- relatively slow and low traffic volumes, narrow street width, and two-way traffic, though currently does not support much retail activity. Because of the volume and speed of freeway related traffic, Foster Road clearly no longer functions as a main street like it once did.

Alternative A-Decouple is designed around the concept of maximizing the amount of main street environment in the business district core by recreating a main street environment on Foster Road between 90th and 94th Avenue through decoupling. This can be achieved, but at the expense of Woodstock Boulevard east of 90th Avenue, which must be widened to five lanes in order to adequately accommodate the projected traffic volumes. This type of street environment on Woodstock Boulevard created by decoupling is not likely to support main street type land uses. Furthermore, a significantly widening Woodstock Boulevard with higher traffic volumes will act as a barrier to multi-modal access between the north and south sides of the business district. Alternative B-Enhanced Couplet focuses main street development along 92nd Avenue, while encouraging more a mixed main street/commercial street environment along Foster Road and Woodstock Boulevard, acknowledging the need to balance traffic capacity with land use development goals.
The retail development analysis identified three transportation issues as critical for supporting retail development in the study area: reduce traffic speeds, increase on-street parking, improve the pedestrian environment and business visibility. As discussed under the Auto Access and Circulation criteria findings, both alternatives can reduce traffic speeds through the business district core. Alternative A-Decouple slows traffic on Foster Road by changing to two-way traffic flow and increasing the percentage of local trips by shifting freeway related traffic to Woodstock Boulevard. Traffic speeds on Woodstock Boulevard are in turn slowed on Woodstock Boulevard primarily through increased congestion. Alternative B-Enhanced Couplet slows traffic speeds primarily through improved traffic progression made possible by retaining the one-way couplet and adding signals on both Foster Road and Woodstock Boulevard.

There are many reasons on-street parking is important in neighborhood shopping districts. For many retailers in older storefront buildings on-street parking is crucial because they do not have off-street parking to rely upon. With old and new retail development, on-street parking provides readily identifiable parking for drive-by customers. On-street parking also enhances the pedestrian access to retail by buffering the sidewalk area from vehicular traffic.

Both alternatives increase the supply of on-street parking in the business district core area. Alternative A provides approximately 57 additional spaces, while Alternative B provides 56 additional spaces with the design option to provide approximately 57 more spaces on the south sides of Foster Road and Woodstock Boulevard.

Business visibility refers to the ability of traffic passing through the area to identify shopping opportunities. Currently, much of the traffic moving through the area is moving too fast to recognize individual businesses. The couplet also separates visibility by direction, where businesses on Foster Road are exposed to only westbound vehicles and Woodstock Boulevard only to eastbound vehicles. This limits the types of businesses that can locate on the street because certain businesses rely on catching either the morning or evening commute (such as coffee shops in the morning and video rentals in the evening).

Alternative A addresses the directional visibility problem through decoupling. Businesses need not worry about which direction to orient to on either Foster Road or Woodstock Boulevard. The tradeoff for Foster Road though is that the overall future volume of traffic is reduced from 24,000 vehicles a day to 13,500. The lower volume of traffic means fewer potential drive by customers. Retaining the couplet in Alternative B means the directional problem remains, but traffic volumes are balanced between Foster Road and Woodstock Boulevard.

**Streetscape**

*Objective: Create a more attractive environment for pedestrians and commercial development through streetscape design and planning.*

In addition to improvements, which make the pedestrian access in the business district safer and more convenient, there is the need to enhance the overall appearance of the area to encourage pedestrian access and support commercial redevelopment. Currently there is no consistent design treatment in the right-of-way that defines the business district. The
proposed streetscape plan is identical to the two street network alternatives. The plan addresses the four major deficiencies in the study area, narrow sidewalk widths, lack of street trees, lack of pedestrian scale lighting, and the lack of an overall consistent design theme.

The proposed design guideline for all sidewalks in the core area along Foster Road, Woodstock Boulevard is 12 feet. 92nd Avenue, where more intense sidewalk activity is expected, such as cafes with sidewalk seating, 14 ft. wide sidewalks are recommended. These dimensions are consistent with the City’s design guidelines for a Pedestrian District and allows for a comfortable pedestrian through zone with room for street trees, utilities and street furniture next to the curb. In most cases, this will require additional right-of-way to implement under both alternatives.

Reconstruction and widening of the sidewalk area allows for two important elements of streetscape design to be implemented, street trees and street lighting. Through these elements a consistent design theme throughout the business district can be developed which helps define the character of the business district. A regular street tree pattern is important in terms of making the business district more inviting to pedestrians and gives it more of a neighborhood oriented character. Pedestrian scale lighting is proposed as another element of the streetscape plan because of the need to emphasize the pedestrian nature of the business district. Similar to the street tree design, the proposed pedestrian scale ornamental lighting pattern creates a consistent design theme which identifies with the desired neighborhood orientation of the business district and its historical character.

The matrix on the following three pages summarizes the results of alternatives evaluation findings.
### Lents Town Center Business District Transportation Plan
#### Alternatives Evaluation Summary Matrix

(✓) indicates support of the criteria

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<tr>
<th>Objective/ Evaluation Criteria</th>
<th>Alternative A</th>
<th>Alternative B</th>
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| **Auto access and circulation** Maintain acceptable traffic levels of service, stabilize traffic speeds. | • *Capacity*: LOS ‘E’ or better in 2015. Adequate capacity can be provided (marginal), through requires significant amounts of right-of-way.  
✓ *Speed control*: Reduced through traffic volumes on Foster should reduce speeds. Increased congestion, two-way traffic flow should reduce speeds on Woodstock. | ✓ *Capacity*: LOS ‘D’ or better in 2015. More capacity provided than Alternative A.  
✓ *Speed control*: Additional traffic signals can be better timed to control speeds and progression on both Foster and Woodstock through business district core. |
| **Through traffic** Keep non-local traffic off local streets.                                   | ✓ Because adequate capacity is provided, diversion should not be an issue.       | ✓ Same as Alternative A.                                                     |
| **Multi-modal safety** Ensure safety for all modes of travel.                                 | • *Traffic*: More potential turn movement conflicts with two-way traffic flow.    | ✓ *Traffic*: Fewer turn movement conflicts with one-way traffic flow.         |
| **Pedestrian environment** Enhance pedestrian access and circulation throughout the business district; improve connections into the neighborhood and to transit service. | ✓ *Foster*: ‘Main Street’ traffic environment, lower traffic volumes, slower speeds, narrower street, wider sidewalks- improves pedestrian environment.  
• *Woodstock*: Wider street with higher traffic volumes creates barrier to south, degrade pedestrian environment.  
• *Signalized crossings*: Three signals (one new) in business district core. New signal at east end of study area. Optional signal at 88th Ave./Foster.  
• *Unsignalized crossings*: Two-way streets are more difficult to cross because fewer crossing opportunities. | • *Foster*: Higher traffic volumes, more non-local traffic than Alternative A. Wider sidewalks.  
✓ *Woodstock*: Lower traffic volumes compared Alternative A. Wider sidewalks.  
✓ *Signalized crossings*: Five signals (three new) in core area. New pedestrian activated signals at east end of couplet.  
✓ *Unsignalized crossings*: One-way streets easier to cross- more longer gaps in traffic, one direction of travel to pay attention to. |
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| Bicycles Improve bicycle access and circulation to and through the business district. | ✓ Foster-Woodstock: Bike lanes on Woodstock, not separated.  
 ✓ 92nd Ave.: Bike lanes provided.  
 • Safety: Two-way traffic flow creates more potential turn movement conflicts with vehicles. | ✓ Foster-Woodstock: East and westbound bike lanes divided between streets.  
 ✓ 92nd Ave.: Bike lanes provided.  
 ✓ Safety: One-way traffic flow creates fewer potential conflicts with vehicles. |
| Transit Service Improve service and connections; coordinate with high capacity transit service in the I-205 corridor. | • Service: Does not affect ability to increase service. Increased congestion compared to Alternative B slows travel times. Eastbound and westbound service can be concentrated on Foster.  
 • Connections: New north-south service on 92nd Ave. to link to Gateway and Clackamas Town Center | • Service: Does not affect ability to improve service.  
 • Connections: Same as Alternative A. |
| Parking Develop a strategy for the provision and management of adequate parking (on and off street) to support commercial redevelopment. | ✓ Overall Supply: +47 spaces  
 • Foster: Parking on both sides of street in core, net increase of 61 spaces  
 • Woodstock: No parking provided. Net decrease of 14 spaces.  
 • 92nd Ave.: No change. | ✓ Overall Supply: +82 spaces.  
 • Foster: parking both sides 87th-90th, +26 spaces.  
 • 90th-94th +27 spaces  
 • Woodstock: 92nd –94th, +29 spaces  
 • 92nd Ave.: No change. |
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| Commercial Redevelopment     | (✔) Land use development: Supports 'main street' type neighborhood oriented retail opportunities on 92nd Ave. and Foster. Speeding, parking and visibility issues addressed. More 'main street' than Alternative B. Woodstock becomes more auto-oriented, barrier to access from south.  
  - Right-of-way acquisition: Right-of-way needed for all streets. Significant amounts of right-of-way needed on Woodstock.  
    Minimum estimate sqft.- 142,000  
    Estimated # parcels/structures impacted- 31  
  - Construction implementation: Significantly greater cost than Alternative B. Construction cannot be phased. | (✔) Land use development: Supports 'main street' type of neighborhood oriented retail opportunities on 92nd Ave. Supports more mixed auto/pedestrian oriented commercial development on Foster and Woodstock. Speeding and parking issues addressed.  
  - Right-of-way acquisition: Right-of-way needed for all streets. Less overall needed than Alternative A.  
    Minimum estimate sqft.- 95,000  
    Estimated # parcels/structures impacted- 72  
  - Construction implementation: Less cost than Alternative A, can be phased in over time. |
| Streetscape                   | (✔) Wider sidewalks with regular pattern of street trees and pedestrian scale lighting on all three streets will significantly improve visual appearance of commercial core.  
  - Foster, 90th-94th, has greater potential to develop as a neighborhood and pedestrian oriented street. More overall 'main street' development potential.  
  - Less inviting environment for pedestrians, more auto oriented, on Woodstock is the tradeoff. | (✔) Wider sidewalks with regular pattern of street trees and pedestrian scale lighting on all three streets will significantly improve visual appearance of commercial core.  
  - Potential for gateway treatment at west end of couplet. |
PHASE IV. PLAN RECOMMENDATIONS

Preferred Alternative
In review of the findings from the alternatives evaluation phase Alternative B-Enhanced Couplet was chosen as the preferred alternative by the citizens advisory committee. The key reasons for selecting Alternative B include:

- Traffic capacity: Future travel demand in the corridors served by Foster Road and 92nd Avenue are projected to increase substantially. Alternative B provides the most overall transportation system capacity to accommodate current and future travel demand.

- Pedestrian environment: Alternative B uses an enhanced system of traffic signals to control traffic speeds and provide more protected crossings for pedestrians along Foster Road and Woodstock Boulevard. Slowing traffic speeds and improving pedestrian access and circulation are considered essential ingredients to revitalizing commercial activity within the business district.

- On-street parking: Alternative B provides more opportunities for increasing the on-street parking supply than Alternative A. On-street parking is considered as another key ingredient to the revitalization of the business district.

- Decouple impacts: To provide adequate traffic capacity, Alternative A- Decouple requires significant widening of Woodstock Boulevard through the current couplet section (to 5 lanes). This widening would create a new barrier between the south and north sides of the neighborhood.

- Implementation impacts: Alternative B requires less right-of-acquisition and impact to adjacent property than Alternative A. Construction of Alternative B can be phased in over time as properties redevelop, unlike Alternative A.

Streetscape Plan
The streetscape plan was developed in conjunction with the street network alternatives to provide a consistent streetscape design theme throughout the business district. The plan specifies design guidelines for sidewalks, street trees and street lighting that make the business district a more attractive, safe and convenient place to shop. See Appendix B.

Action Items
The plan recommendation also includes a series design and planning directives to help guide implementation of the plan and coordination with other planning activities going on in the urban renewal district.
1. Encourage Tri-Met to provide new transit service on 92nd Avenue, connecting the Lents Town Center directly to the Gateway Regional Center and the Clackamas Town Center.

2. Request the State Speed Control Board reduce the posted speed limit to 30 mph on Foster Road and Woodstock Boulevard within the couplet, and 92nd Avenue Reedway to Tolman to 25 mph.

3. Review the relationship between traffic flow and the location of on-street parking on 91st Avenue between Foster Road and Woodstock Boulevard when the 91st/Foster Road and 91st/Woodstock Boulevard signals are installed to ensure efficient traffic flow along this narrow street.

4. Develop a transportation and streetscape plan for Foster Road west of 88th Avenue that builds off of and complements the Lents Town Center Business District Transportation Plan. This plan should also address safety and cut-through traffic concerns related to the intersection of Foster Road/Ellis and 84th Avenue.

5. Continue to study traffic issues and implement transportation improvement projects on surrounding local neighborhood streets.

6. Encourage of undergrounding utilities within business district.

7. Work with the Oregon Department of Transportation to study the feasibility of allowing full southbound access to I-205 from Powell Boulevard.

Other Issues
- Study the feasibility and desirability of providing a direct connection between Harold Street and Ellis Street in the vicinity of 92nd Avenue
- Continue to work with Metro and Tri-Met on the study and development of a high capacity transit system in the I-205 corridor which includes a station in Lents.

Next Steps
Formal adoption of the plan
The recommendations proposed by this plan have been approved by the Lents Town Center Business District Transportation Plan Citizens Advisory Committee in September, 1999. The Lents Neighborhood Association has also reviewed and endorsed the preferred alternative. This recommendation will be forwarded to the Lents Town Center Urban Renewal Advisory Committee for approval in October, 1999 and eventually City Council for final adoption by resolution, probably in the late fall of 1999.

Construction
Currently, there are two identified sources of funding for construction of this plan, System Development Charges (SDC) dedicated to expanding transportation system capacity related to growth, and tax increment financing from the Lents Town Center Urban Renewal Project. The SDC fund has earmarked approximately $1.2 million for construction of
transportation improvement projects in Lents, while the urban renewal funds are contingent upon establishing funding priorities within the entire urban renewal plan work plan. Given the total cost estimate for construction of this plan (see Appendix D), implementation of the plan will need to be phased over time. Establishing priorities for implementation for the transportation management plan will be coordinated by the Portland Development Commission through the urban renewal public involvement and planning process.

Before construction of each identified improvement can proceed additional design engineering work is required to ensure final compatibility with City traffic and civil engineering standards.
**GUIDELINES**

**Sidewalks.** 12' where the sidewalk allows; 4' for furnishing zone; 8' for through pedestrian zone (in conformance with Portland Pedestrian Design Guide).

**Curb cuts, driveways.** Consolidate driveways and minimize curb cuts.

**Curb extensions.** At all corners, except on east and west corners of 88th at Foster.

**Marked crosswalks** At all corners, painted or scored concrete (preferred).

**Lighting.** Two alternatives are illustrated, see plans. Especially on commercial streets, the white light of a metal halide luminaire is preferred, over the orange light produced by City standard sodium vapor. Pedestrian scale pole-mounted luminaire is preferred. See “Alternative Lighting and Tree Planting Designs” for specifications.

**Trees.** 20’-30’ spacing, depending on the species selected: Trees with a 20’ spread, plant 20’ o.c.; trees with a 30’ spread, plant 30’ o.c. (in conformance with Portland Urban Forestry Street Tree Planting Guidelines).

Canopy type tree preferred. See Canopy-type Tree list.

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**Streetscape Design Guidelines for Commercial Street**

Southeast 88th Avenue and Foster Road

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**Lents Town Center Plan**

City of Portland • Lennertz Coyle & Associates • DKS • Urbsworks, Inc.
Alternative A: Single ornamental light standard at corners; City standard cobra-style light poles located midblock.
Alternative B: Single ornamental light standards at corners and midblock, 127' spacing. See “Alternative Lighting and Tree Planting Designs”.

GUIDELINES

Sidewalks. 12' where the sidewalk allows; 4' for furnishing zone; 8' for through-pedestrian zone (in conformance with Portland Pedestrian Design Guide).

On-street parking. Maximize, where possible.

Curb cuts, driveways. Consolidate driveways and minimize curb cuts.

Curb extensions. At north corners of Foster at 92nd.

Marked crosswalks. At all corners, painted or scored concrete (preferred).

Lighting. Two alternatives are illustrated, see plans. Especially on commercial streets, the white light of a metal halide luminaire is preferred, over the orange light produced by City standard sodium vapor. Pedestrian scale pole-mounted luminaire is preferred. See “Alternative Lighting and Tree Planting Designs” for specifications.

Trees. 20'-30' spacing, depending on the species selected: Trees with a 20' spread, plant 20' o.c.; trees with a 30' spread, plant 30' o.c. (in conformance with Portland Urban Forestry Street Tree Planting Guidelines ) canopy type tree preferred. For possible canopy-type street tree species, see Canopy-type Tree list.

Streetscape Design Guidelines for Commercial Street
Southeast 92nd Avenue and Foster Road

Lents Town Center Plan
City of Portland • Lennertz Coyle & Associates • DKS • Urbsworks, Inc.
**Guidelines**

**Sidewalks.** 12’ where the sidewalk allows; 4’ for furnishing zone; 8’ for through-pedestrian zone (in conformance with Portland Pedestrian Design Guide).

**On-street parking.** Maximize, where possible.

**Curb cuts, driveways.** Consolidate driveways and minimize curb cuts.

**Curb extensions.** At north corners of Woodstock at 92nd.

**Marked crosswalks.** At all corners, painted or scored concrete (preferred).

**Lighting.** Two alternatives are illustrated, see plans. Especially on commercial streets, the white light of a metal halide luminaire is preferred, over the orange light produced by City standard sodium vapor. Pedestrian scale pole-mounted luminaire is preferred. See “Alternative Lighting and Tree Planting Designs” for specifications.

**Trees.** 20’-30’ spacing, depending on the species selected: Trees with a 20’ spread, plant 20’ o.c.; trees with a 30’ spread, plant 30’ o.c. (in conformance with Portland Urban Forestry Street Tree Planting Guidelines) canopy type tree preferred. For possible canopy-type street tree species, see Canopy-type Tree list. Plant trees 25’ from the curb line of intersections.

---

**Streetscape Design Guidelines for Transportation Corridor**

Southeast 92nd Avenue and Woodstock Boulevard

**Lents Town Center Plan**

City of Portland • Lennertz Coyle & Associates • DKS • Urbsworks, Inc.
92nd Main Street Alternative A
Trees spaced 30-35'
Same pole and luminaire as at 91st.
Light poles spaced 120-135', or one at each end of block and one at center. Similar to spacing at improved segment of 91st.

92nd Main Street Alternative B
Trees spaced 60-70'
Same pole and luminaire as at 91st.
Light poles spaced 60-70", or at quarter block intervals. Within 200', this spacing is similar to lighting at South Park blocks in downtown Portland.

**Lighting on Woodstock and Foster, Alternative B Specifications**

- Single ornamental light standards at corners and midblock, 127' staggered spacing, resulting in a pole every 63.5', at alternate sides of the street.
- **Pole:** Aluminum or fiberglass, 18' high
- **Luminaire:** Acorn type
- **Average footcandle** (.9 min. required for major arterial per IES): .92
- **Uniformity** (3:1 max, per IES): 2.09:1
- **Veiling luminance** (3:1 per IES): .297:1

**Alternative Lighting and Tree Planting Designs**

For 92nd Main Street and Foster/Woodstock

**Lents Town Center Plan**

City of Portland • Lennertz Coyle & Associates • DKS • Urbsworks, Inc.
GUIDELINES

Sidewalks. 12' required: 4' for furnishing zone; 8' for through pedestrian zone; 15' preferred: 4' for furnishing zone; 8' through-pedestrian zone; 2'6" storefront frontage zone, (in conformance with Portland Pedestrian Design Guide). For additional information, see "Sidewalk Details".

On-street parking. Provide a maximum number of spaces.

Curb cuts, driveways. Consolidate driveways and minimize curb cuts.

Lighting. Two alternatives are illustrated, see "Alternative Lighting and Tree Planting Plans". Especially on commercial streets, the white light of a metal halide luminaire is preferred, over the orange light produced by City standard sodium vapor. Pedestrian scale pole-mounted luminaire is preferred.

Trees. Two alternatives are illustrated, see "Alternative Lighting and Tree Planting Plans". Plans show a columnar-type tree. Trees must be located 25' from light poles. Between light poles, plant trees at 10'-20' spacing, depending on the species selected: trees with a 10' spread, plant 10' o.c.; trees with a 20' spread, plant 20' o.c. (in conformance with Portland Urban Forestry Street Tree Planting Guidelines). For possible columnar-type street tree species, see Columnar-type Tree list. Plant trees 25' from the curb line of intersections.

Streetscape Design Guidelines for Main Street
Southeast 92nd Avenue north of Foster Road

Lents Town Center Plan
City of Portland • Lennertz Coyle & Associates • DKS • Urbsworks, Inc.
SIDEWALK DESIGN GUIDELINES

Trees, light poles and street furniture such as benches, drinking fountains, bike racks, planters and garbage receptacles should occupy the 4' space between the curb zone and the through-pedestrian zone. When benches are placed next to the curb, they should face the storefront, not the street. Benches, removable planters and temporary cafe seating can also be located in the frontage zone (next to the building), as long as the through-pedestrian zone remains clear.

Where existing buildings prevent sidewalk from reaching an ideal 12'-0" width, adjustments can be made to the frontage zone and/or the furnishings zone. The through pedestrian zone can be reduced to 4'-6". Furnishings zone can be reduced to 3'-0". Reduction to less than 3'-0" is not recommended but in certain cases may be unavoidable. (Less than 3'-0" generally prohibits tree planting). The frontage zone can be reduced to 0'.

Trees are protected by Portland City standard tree grates, either with 4' x 4' size preferred. Select grates similar in style to those located on the improved portion of 91st street.

Sidewalk Details

Lents Town Center Plan
City of Portland • Lennertz Coyle & Associates • DKS • Urbsworks, Inc.
APPENDIX A
TRANSPORTATION ANALYSIS

Chapter 1: Existing Conditions
Chapter 2: Transportation Street Network Analysis
Chapter 3: Parking Management Plan
CHAPTER 1
EXISTING CONDITIONS

This section of the report discusses the existing transportation conditions in the project study area, including roadway geometries and classifications, traffic and pedestrian volumes, operating conditions, transit, bicycles, parking and other related information. The project study area is generally bounded by SE Harold Street to the north, SE Tolman Street to the south, SE 101st Avenue to the east and SE 84th Avenue to the west. Figure 1 shows the project study area.

This project area focuses on the downtown Lents Business District, which is generally located between Foster Road and Woodstock Boulevard, from just west of the I-205 ramps to about SE 90th Avenue. The following sections summarize current traffic and transportation conditions in the study area, with supporting detail (traffic counts and level of service calculations) provided in the appendix.

ROADWAY NETWORK

Regional access to the study area is provided via the I-205 freeway. The I-205 freeway intersects Foster Road and Woodstock Boulevard in a split diamond interchange configuration. Frontage roads connect Foster Road and Woodstock Boulevard at both the west (southbound only) and east (northbound only) sides of the freeway. This type of configuration of Foster Road and Woodstock Boulevard creates a couplet that exists from approximately 90th Avenue eastward to SE 99th Avenue.

The following section describes the general roadway characteristics for each key roadway in the study area, and is followed by Table 1 which summarizes the functional classifications for each roadway (i.e. street, transit, bike, pedestrian and freight) by Metro and the City of Portland.

Interstate 205 is the regional north/south freeway that provides access to and from the study area. Generally, I-205 is six lanes wide (three northbound lanes and three southbound lanes) and intersects the couplet of Foster Road and Woodstock Boulevard. The posted speed along Interstate 205 is 55 miles per hour. Refer to Table 1 for roadway classifications within the study area.

Foster Road is the northern portion of the couplet (with Woodstock Boulevard) within the study area. It generally consists of three westbound through travel lanes, with left turn lanes at the I-205 south bound ramps and 90th Avenue (west end of the couplet). A right turn lane is provided.
at the I-205 northbound ramps. Foster Road is controlled by fixed-time traffic signals at the I-205 southbound and northbound ramps with a semi-actuated signal at 92nd Avenue that is activated by the northbound left turn lane from 92nd Avenue. The posted speed zone along Foster Road within the study area is 35 mph. Figure 2 shows the existing lane geometry for the study area intersections.

Table 1 summarizes the functional classifications for each roadway within the study area.

### Table 1
Summary of Functional Classifications for Roadways Within the Study Area

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Transit</th>
<th>Bike</th>
<th>Pedestrian</th>
<th>Freight</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Metro</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interstate 205</td>
<td>Principal Arterial</td>
<td>High Capacity Transit</td>
<td>Off-street multi-use path</td>
<td>Multi-use path</td>
</tr>
<tr>
<td></td>
<td>(Freeway)</td>
<td>Corridor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foster Road</td>
<td>Major Arterial</td>
<td>Frequent Bus</td>
<td>Regional Access Bikeway</td>
<td>Pedestrian District</td>
</tr>
<tr>
<td>Woodstock Boulevard</td>
<td>Major Arterial</td>
<td>Primary Bus (west of couplet)</td>
<td>Regional Corridor Bikeway</td>
<td>Pedestrian District</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Frequent Bus (within couplet)</td>
<td>(west of couplet)</td>
<td></td>
</tr>
<tr>
<td>92nd Avenue</td>
<td>Collector of Regional</td>
<td></td>
<td></td>
<td>Pedestrian District</td>
</tr>
<tr>
<td></td>
<td>Significance (south of Foster)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>City of Portland</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interstate 205</td>
<td>Regional Trafficway</td>
<td>Regional Transitway</td>
<td>Off-street path</td>
<td>Off-street path</td>
</tr>
<tr>
<td>Foster Road</td>
<td>Major City Traffic</td>
<td>Major City Transit Street</td>
<td>City Bikeway</td>
<td>Pedestrian District</td>
</tr>
<tr>
<td></td>
<td>Street</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woodstock Boulevard</td>
<td>Major City Traffic</td>
<td>Major City Transit</td>
<td>City Bikeway</td>
<td>Pedestrian District</td>
</tr>
<tr>
<td></td>
<td>Street</td>
<td>Street</td>
<td></td>
<td></td>
</tr>
<tr>
<td>92nd Avenue</td>
<td>Neighborhood Collector</td>
<td>Minor Transit Street</td>
<td>City Bikeway</td>
<td>Pedestrian District</td>
</tr>
</tbody>
</table>

1 *Regional Transportation Plan, Metro, 1997 version 4.0, Figures 2.1-2.6.*

Figure 2
EXISTING SIGNALS AND LANE GEOMETRY
A signalized pedestrian crossing is provided at the intersection of Foster Road/87th Avenue (87th Avenue traffic is stop sign controlled at this location). There is an unsignalized five leg intersection at Foster Road/Ellis Street/84th Avenue with the uncontrolled movement along Foster Road, and stop signs along Ellis Street and 84th Avenue. To the east of the couplet, the nearest traffic signal along Foster Road is located at 101st Avenue and has protected left turn lanes in the east/west direction with permitted left turns along 101st Avenue. Table 1 summarizes the functional classifications of Foster Road.

There are sidewalks along both sides of Foster Road with adequate widths ranging from 6 to 12 feet. However, only three foot wide sidewalks are provided along the south side of the street between the I-205 southbound frontage road and the I-205 northbound frontage road.

Within the couplet area, no parking is allowed on the south side of the street, but parking (1 hour maximum) is allowed on the north side of the street. The exception is on the north side of Foster Road between the two I-205 frontage roads, where a bus zone replaces parking. Although Foster Road is designated as a bike route, limited bicycle facilities exist on the roadway. Bicycle striping along Foster Road is found just east of the I-205 northbound on ramp to the I-205 southbound off ramp. Refer to Table 1 for roadway classifications within the study area.

Woodstock Boulevard has three eastbound through travel lanes with left turn lanes at the I-205 northbound ramps and at the east end of the couplet. A right turn only lane is provided at the I-205 southbound ramp. Woodstock Boulevard is controlled by fixed-time traffic signals at the I-205 southbound and northbound ramps with a semi-actuated signal at 92nd Avenue that is activated by the southbound left turn lane from 92nd Avenue.

Figure 2 shows the lane geometries and signal locations along Woodstock Boulevard. There is no posted speed along Woodstock Boulevard within the couplet, however previous speeds along Foster Roads are 35 miles per hour.

There are generally sidewalks along both sides of Woodstock Boulevard in the study area, with adequate widths ranging from 5 feet to 10 feet. Minimal sidewalks are provided along the north side of Woodstock Boulevard between the freeway frontage roads and just east of the I-205 northbound frontage road on the south side. A bus zone is located on the south side of the

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**Lents Town Center**
Existing Transportation Background

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DKS Associates
June 1999
roadway between the two I-205 frontage roads. There are limited bicycle facilities along Woodstock within the couplet area, however west of the couplet (from outside the study area to the couplet) along Woodstock Boulevard there are designated bicycle facilities on both sides of the roadway.

92nd Avenue consists of one through lane in each direction north and south of the couplet. Left turn lanes are provided at Foster Road and Woodstock Boulevard for the north and southbound moving traffic. A right turn lane is also provided for northbound traffic at Woodstock Boulevard. As previously mentioned, 92nd Avenue (at Foster Road and Woodstock Boulevard) is controlled by semi-actuated traffic signals. The posted speed along 92nd Avenue is 25 miles per hour.

Parking is provided on both sides of 92nd Avenue north of Foster Road and south of Woodstock Boulevard. No parking is allowed between Foster Road and Woodstock Boulevard. Sidewalks, ranging in width from 5 to 8 feet, are provided along both sides of the roadway. Designated bicycle facilities along 92nd Avenue start just south of Woodstock Boulevard.

**BICYCLE**

Foster Road, Woodstock Boulevard, and 92nd Avenue are designated as City Bikeways within the couplet area. This designation is given to 92nd Avenue north of Foster Road and south of Woodstock Boulevard.

Designated bicycle facilities within the study area are found along Foster Road from 101st Avenue to the west end of the couplet, along Woodstock Boulevard from 84th Avenue to the west end of the couplet and then again on the south side of Woodstock Boulevard from the I-205 southbound frontage road to 101st Avenue. Bicycle facilities are also found along 92nd Avenue just south of Woodstock Boulevard. The I-205 Off-street path also runs north and south through the study area on the west side of I-205.

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The bicycle volume counts during the peak periods at the study area intersections is less than 15 bicycles per peak hour.

**PEDESTRIAN**

The study area encompasses the Lents Pedestrian District as designated by the City of Portland in the Comprehensive Plan.\(^4\) Within the study area, sidewalks are provided along Foster Road and Woodstock Boulevard throughout most of the study area. Generally, these facilities range in size from 5 to 12 feet which adequately provide for the pedestrian volumes experienced.

Sidewalks are not provided along the south side of Foster Road between the I-205 freeway on and off-ramps, along the north side of Woodstock Boulevard between the I-205 freeway on and off-ramps, and 3-5 foot sidewalks exist along the south side of Woodstock Boulevard between the I-205 northbound off-ramp and 97th Avenue. Figure 3 shows the existing pedestrian volumes in the AM and PM peak hours.

Pedestrian access is not provided to the area bounded by Foster Road/Woodstock Boulevard, the I-205 southbound frontage road and the I-205 northbound frontage road. Minimal pedestrian sidewalks currently exist around this area with a width of approximately 3 feet.

Signalized pedestrian crossings are located at the following locations:

- Foster Road/87th Avenue (crosswalk stripping on the east and west legs only)
- Foster Road/92nd Avenue (crosswalks on all four legs)
- Woodstock Boulevard/92nd Avenue (crosswalks on all four legs)
- Foster Road/I-205 southbound ramps (crosswalks on the north and west legs only)
- Woodstock Boulevard/I-205 southbound ramps (crosswalks on the south and west legs only)
- Foster Road/I-205 northbound ramps (crosswalks on the north and east legs only)
- Woodstock Boulevard/I-205 northbound ramps (crosswalks on the south and east legs only)


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<table>
<thead>
<tr>
<th>Lents Town Center</th>
<th>1-7</th>
<th>DKS Associates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Transportation Background</td>
<td></td>
<td>June 1999</td>
</tr>
</tbody>
</table>

X:\PROJECTS\1999\P99044 (Lents)\WP\Chapter 1 (Existing Conditions).wpd
A pedestrian crossing either Foster Road or Woodstock Boulevard at unsignalized locations can be difficult within the study area because of high traffic volumes, moderate speeds, long crossing distances at some locations, and restricted sight distance on portions of Woodstock Boulevard at the couplet ends. Pedestrian crossings are particularly difficult at both ends of the couplet where a number of merge and diverge movements take place in the traffic stream and vehicle drives are often concentrating on avoiding a collision with another vehicle rather than looking for pedestrians.

The I-205 pedestrian/bike path runs north and south along the west side of I-205, intersecting the Foster Road/Woodstock Boulevard couplet within the study area. This path is designated as an Off-street Path by the City of Portland. The path crosses Foster Road on the west leg of the I-205 southbound off-ramp intersection and crosses Woodstock Boulevard on the west leg of the I-205 southbound on-ramp intersection.

**TRANSIT**

There are three Tri-Met routes servicing the study area. Two of these routes run directly along Foster Road and Woodstock Boulevard, while the other route services the norther part of the study area.

The two routes that directly service Foster Road and Woodstock Boulevard area are route #14 and route #71. Route #14 (Hawthorne) runs between the Portland downtown to the Foster Road/Woodstock Boulevard/I-205 couplet via the Hawthorne district. The headways for the #14 route are approximately 6 minutes in the AM and PM peak directions with approximately 9 minute headways in the opposite peak direction. Route #71 (60th to 122nd Avenue) runs between the Foster Road/Woodstock Boulevard/I-205 to Sunnyside Road/Kaiser with approximate headways of 13-15 minutes in the AM peak period (6-8am) and approximately 15 minute headways in the PM peak period (4-6pm).

The third Tri-Met route is the #10 (Harold) and runs along Ellis Street. The headways for route #10 are approximately 12-15 minutes in the AM peak period, and approximately 13-17 minutes.

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in the PM peak period. Figure 4 shows the Tri-Met routes within the study area with the transit stop locations and the daily ridership for each route. Metro has forecasted 2015 transit ridership and auto vehicle occupancy to and from the Lents area. Table 2 summarizes these forecasts.

Table 2
2015 Transit and Auto Vehicle Occupancy Data For Study Area Land Uses

<table>
<thead>
<tr>
<th>Mode</th>
<th>Lents Downtown Core</th>
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</thead>
<tbody>
<tr>
<td><strong>Transit</strong></td>
<td></td>
</tr>
<tr>
<td>From Lents to all locations</td>
<td>4%</td>
</tr>
<tr>
<td>From all locations to Lents</td>
<td>10.3%</td>
</tr>
<tr>
<td><strong>Auto Vehicle Occupancy (persons/vehicle)</strong></td>
<td></td>
</tr>
<tr>
<td>From Lents to all locations</td>
<td>1.14</td>
</tr>
<tr>
<td>From all locations to Lents</td>
<td>1.14</td>
</tr>
</tbody>
</table>

**Motor Vehicles**

This section describes the vehicle traffic conditions within the study area along the key roadways. Items discussed in this section traffic performance, safety, driveway access, street cross sections, and parking information.

Traffic Performance

Traffic data for the study area was supplied by the City of Portland for traffic volumes, speed surveys, pedestrian gap data, and existing AM and PM peak hour turn movement counts. Figure 5 shows the AM and PM peak hour turn movement counts as well as the average daily traffic volumes for the six signalized study area intersections.

While analysis of traffic flows is useful in attempting to reach an understanding of the general nature of traffic in an area, traffic volume alone indicates neither the ability of the street network to carry additional traffic nor the quality of service provided by the street facilities. For this

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6 Transit Mode Split and Average Vehicle Occupancy Data, Provided by Metro, March 1996.

7 Data supplied by the City of Portland Bureau of Traffic Management. All data with the exception of the AM and PM peak hour turning movement counts was historic data from within the past six years.
reason, the concept of level of service (LOS) has been developed to correlate traffic volume data to subjective descriptions of traffic performance at intersections.

An intersection’s level of service (LOS) is similar to a "report card" rating, based on average vehicle delay. Level of service "A", "B" and "C" indicate conditions where vehicles can move freely. Level of service "D" and "E" are progressively worse. LOS "D" is generally accepted as the minimum acceptable LOS during peak periods. For signalized intersections, level of service "F" represents conditions where the average delay for all vehicles through the intersection exceeds 60 seconds per vehicle, generally indicated by long queues and delays. Under this operating condition, delay is highly variable, and it is difficult to estimate average delay accurately because congestion often extends into, and is affected by adjacent intersections. Descriptions of levels of service for signalized and unsignalized intersections are contained in the appendix.

Capacity conditions at the six signalized intersections in the study area were evaluated in the AM and PM peak period. For both the AM and PM peak period, traffic operation is at level of service D or better conditions. Table 3 provides a summary of intersection performance for the AM and PM peak hour level of service and volume-to-capacity ratios.

Table 3
Intersection Performance in Peak Periods

<table>
<thead>
<tr>
<th></th>
<th>AM Peak</th>
<th></th>
<th>PM Peak</th>
<th></th>
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<tr>
<td></td>
<td>Delay</td>
<td>LOS</td>
<td>V/C</td>
<td>Delay</td>
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<tr>
<td><strong>Signalized</strong></td>
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<tr>
<td>Foster/92nd Avenue</td>
<td>10.2</td>
<td>B</td>
<td>0.50</td>
<td>27.7</td>
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<tr>
<td>Woodstock/92nd Avenue</td>
<td>10.3</td>
<td>B</td>
<td>0.52</td>
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<td>Foster/I-205 SB off-ramp</td>
<td>9.7</td>
<td>B</td>
<td>0.47</td>
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<td>Woodstock/I-205 SB on-ramp</td>
<td>9.5</td>
<td>B</td>
<td>0.63</td>
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<td>Foster/I-205 NB on-ramp</td>
<td>10.7</td>
<td>B</td>
<td>0.73</td>
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<td>Woodstock/I-205 NB off-ramp</td>
<td>17.7</td>
<td>C</td>
<td>0.46</td>
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<tr>
<td>Foster/101st Avenue</td>
<td>11.1</td>
<td>B</td>
<td>0.60</td>
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<tr>
<td><strong>Unsignalized</strong></td>
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<tr>
<td>Foster/84th Avenue</td>
<td>A/E</td>
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<td></td>
<td>B/F</td>
</tr>
</tbody>
</table>

Signalized Intersection:
LOS = Level of Service
Delay = Average delay per intersection
V/C = Volume-to-capacity ratio

Unsignalized Intersection:
X/X = Major roadway left turn/Minor roadway movement
Field observations showed that in the north and southbound directions along the frontage roads connecting the I-205 on and off-ramps from Foster Road and Woodstock Boulevard, vehicle queues extended from one side of the couplet to the other due to poor lane balance. Vehicle queuing extending for upwards of one block was also observed in the north and southbound directions turning left onto Forster Road and Woodstock Boulevard along 92nd Avenue.

Speed Survey

Historical speed survey data was provided by the City of Portland for the location along Foster Road at 94th Avenue and Woodstock Boulevard at 93rd Avenue.8 The posted speed along Foster Road and Woodstock Boulevard is 35 miles per hour throughout the couplet. These speed surveys track the volume and speed of vehicles as they pass a point on the roadway. Figure 6 and 7 summarize the speed surveys at these locations.

Figure 6
Speed Survey Along Foster Road 200 Feet East of 92nd Avenue

8 Speed survey data provided by the City of Portland Bureau of Traffic Management was taken along Foster Road and Woodstock Boulevard within the couplet in January 1993. Although it does not represent existing conditions today, it does give a representation of the number of vehicles traveling within certain speed categories. This information is useful to determine the 85th percentile speed and the average speed that the largest number of vehicles are traveling at.
Figure 7  
Speed Survey Along Woodstock Boulevard East of I-205

At each of these locations the 85th percentile speed observed is lower than the posted speed limit of 35 miles per hour just outside the study area. This 85th percentile speed is used as a measure of the upper limit of reasonable speeds for the prevailing conditions. Typically, facilities and controls are designed for this 85th percentile characteristics. These characteristics include speeds, reaction times, visibility, and other characteristics within which 85 percent of the driver population exists.

Driveways and Cross Sections

Along Foster Road and the Woodstock Boulevard couplet there are many driveway ingress and egress points. Most of these ingress and egress points are low volumes residential driveways, however, there are a number of commercial driveways also located along the corridor. Figure 8 shows the approximate location of the driveways along the key roadways within the study area (Foster Road, Woodstock Boulevard and 92nd Avenue).

Figure 9 shows cross sections for five locations within the study area. Cross sections are provided to the west of the couplet and within the couplet for both Foster Road and
### Number of Existing Driveways

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Driveways</th>
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<tbody>
<tr>
<td>Foster Road</td>
<td>38</td>
</tr>
<tr>
<td>Woodstock Boulevard</td>
<td>12</td>
</tr>
<tr>
<td>SE 92nd Avenue</td>
<td>23</td>
</tr>
</tbody>
</table>

### LEGEND
- Driveway Location

**Figure 8**
EXISTING DRIVEWAY INVENTORY
Foster Road
West of SE 92nd Avenue
Within Couplet

Woodstock Boulevard
West of SE 92nd Avenue
Within Couplet

Woodstock Boulevard
West of Couplet

SE 92nd Avenue
Between Foster Road and Woodstock Boulevard

LEGEND

Vehicle On-street Parking

Figure 9
LENTS TOWN CENTER STREET CROSS SECTIONS
Woodstock Boulevard. Also shown is a cross section of 92nd Avenue between the Foster Road and Woodstock couplet.

**Collision Data**

Collision data was supplied by the City of Portland for the intersections within the study area. Of the eight intersections being evaluated, four of these locations were reported in the City of Portland's High Accident Location (HAL) report. These four intersections are not ranked within the top 40 intersections with high accidents in the City of Portland.

One fatality has occurred in the study area in the past three years. In 1996, a vehicle was struck by another vehicle at the intersection of Foster Road and the northbound I-205 on-ramp intersection. One vehicle was heading northbound from the frontage road onto the on-ramp and another vehicle was heading westbound on Foster Road. The passenger of one of the vehicles was killed when the other vehicle struck it.

Table 4 summarizes the collision activity within the study area at key roadways intersections between January 1994 to December 1997.

**Table 4**

**Accidents Data at Key Study Area Intersections (1994-1997)**

<table>
<thead>
<tr>
<th>Location</th>
<th>Total Accidents</th>
<th>Total Injuries</th>
<th>Total Non-injuries</th>
<th>Total Fatalities</th>
<th>Average Number per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foster Road/92nd Avenue</td>
<td>71</td>
<td>20</td>
<td>51</td>
<td>0</td>
<td>17.75</td>
</tr>
<tr>
<td>Woodstock Blvd./92nd Avenue</td>
<td>34</td>
<td>17</td>
<td>17</td>
<td>0</td>
<td>8.5</td>
</tr>
<tr>
<td>Foster Road I-205 SB off-ramp</td>
<td>22</td>
<td>6</td>
<td>16</td>
<td>0</td>
<td>5.5</td>
</tr>
<tr>
<td>Woodstock Blvd./I-205 SB on-ramp</td>
<td>13</td>
<td>5</td>
<td>8</td>
<td>0</td>
<td>3.25</td>
</tr>
<tr>
<td>Foster Road/I-205 NB on-ramp</td>
<td>35</td>
<td>12</td>
<td>22</td>
<td>1</td>
<td>8.75</td>
</tr>
<tr>
<td>Woodstock Blvd./I-205 off-ramp</td>
<td>8</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>2.0</td>
</tr>
</tbody>
</table>

* Non injuries for this data is qualified as property damage only

---

9 *HAL 96: 1993-1996 High Accident Locations*, City of Portland Bureau of Traffic Management. Ranking of the high accident location intersections within the study area was: Foster/92nd Ave (#42), Foster/94th Ave (#66), Foster/96th Ave (#45), and Woodstock/96th Ave (#136).

10 Collision data compiled and supplied by the City of Portland Bureau of Traffic Management.
Parking

Parking is generally provided on-street within the Lents Downtown area. An on-street parking occupancy study was conducted from 8:00 AM to 5:00 PM (in half hour increments) during a weekday on Foster Road, Woodstock Boulevard, and 92nd Avenue. The number of available stalls was inventoried as well as the maximum number of parking stalls occupied during the survey time. Figure 10 summarizes the parking survey results for the study area.

Generally, the highest use of parking occurred along 92nd Avenue north of Foster Road, and along Foster Road from 92nd Avenue west to 91st Avenue. The occupancy rate per hour varied within the study area ranging from 0% to 90% occupancy. On the average, the occupancy rate per hour was generally less than 50% within the study area which would allow for adequate parking needs.

---

11 Parking occupancy survey data supplied by the City of Portland Bureau of Traffic Management.
### Existing Parking Inventory

<table>
<thead>
<tr>
<th>AREA</th>
<th>Avail.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
<td>4</td>
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<tr>
<td>4</td>
<td>17</td>
<td>3</td>
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<tr>
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<td>17</td>
<td>6</td>
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<tr>
<td>6</td>
<td>9</td>
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<tr>
<td>8</td>
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<td>11</td>
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<td>8</td>
<td>0</td>
</tr>
<tr>
<td>19</td>
<td>9</td>
<td>0</td>
</tr>
</tbody>
</table>

**Legend**

- **- Parking Area**
- **- No Parking Zone**
- **- Bus Zone**

Avail. = The amount of on-street available parking spaces
Max. = The maximum number of occupied parking stalls for each area during the survey time (8:00am - 5:00pm)

Note: Parking surveys not conducted for non-colored areas
**SUMMARY OF FACTS**

**Traffic Performance**

- The level of service along the Foster Road/Woodstock Boulevard couplet is generally at C or better. This is considered to be better than other collector streets in SE Portland.
- Speed survey data indicates that the average travel speed along the couplet is approximately 30 mph which is less than the posted speed on Foster Road and equal to the posted speed on Woodstock Boulevard.

**Bicycle**

- The I-205 bicycle/pedestrian path at Foster Road is narrow and can be confusing to users due to the rerouting of the bike route to the east in the opposing direction of Foster Road.
- Woodstock Boulevard does not contain continuous bicycle lane striping throughout the area and offers only limited space along the west end of the couplet.
- Bicycle volumes in the peak hours at signalized intersections is generally less than 15 bicycles per hour.

**Pedestrian**

- Some areas contain deficient and/or narrow sidewalks for pedestrians.
- The configuration of the couplet ends (east and west) can create difficult areas for pedestrians to cross at unsignalized intersections.
- Pedestrian access is not provided to the area bounded by Foster Road/Woodstock Boulevard and the I-205 northbound and southbound frontage roads.

**Transit**

- Three Tri-Met busses currently service the area: #14 (Hawthorne), #71 (60th/122nd) and the #10 (Harold). The #14 and #71 run along the Foster Road/Woodstock Boulevard couplet while the #10 runs along Ellis Street and Harold Street to the north.
- The bus staging area for Tri-Met is under the I-205 freeway along Foster Road and Woodstock Boulevard. Busses wait in this area after finishing their route before starting a new route.

**Parking**

- Generally, the highest usage of parking occurs along 92nd Avenue north of Foster Road, and along Foster Road from 92nd Avenue west to 91st Avenue.
- The occupancy rate per hour varies within the study area ranging anywhere from 0% to 90% occupancy.
- On average the occupancy of parking in the study area was generally less than 50% and allows for current parking usage.
CHAPTER 2
STREET NETWORK TRANSPORTATION ANALYSIS

This chapter presents the evaluation of the various street network transportation alternatives that were developed. Impacts to motor vehicle, bicycle, pedestrian and transit modes were evaluated for each alternative developed. The alternatives developed include roadway networks that both maintained the existing one-way couplet along Foster/Woodstock and decoupled Foster/Woodstock into two-way streets. The initial alternatives developed included the following (See Figures 11, 12 and 13):

♦ Decouple Alternatives
  - **Decouple Option 1** - Decouple Foster/Woodstock and reconstruct Woodstock Boulevard as a five-lane roadway and reconstruct Foster Road as a two/three lane roadway. "T" Foster Road into Woodstock Boulevard at approximately 90th Avenue (west end) and "T" Foster Road into Woodstock Boulevard at approximately 99th Avenue (east end).

  - **Decouple Option 2** - Decouple Foster/Woodstock and reconstruct Foster Road as a five-lane roadway and reconstruct Woodstock Boulevard as a two/three lane roadway. "T" Woodstock Boulevard into Foster Road at approximately 90th Avenue (west end) and "T" Woodstock Boulevard into Foster Road at approximately 99th Avenue (east end).

  - **Decouple Option 3** - Decouple Foster/Woodstock and reconstruct Woodstock Boulevard as a five-lane roadway and reconstruct Foster Road as a two lane roadway. "T" Foster Road into Woodstock Boulevard at approximately 90th Avenue (west end) and "T" Foster Road into Woodstock Boulevard at approximately 93rd Avenue (east end).

  - **Decouple Option 4** - Decouple Foster/Woodstock and reconstruct Woodstock Boulevard as a five-lane roadway. "T" Foster Road into Woodstock Boulevard at approximately 90th Avenue (west end) and "T" Foster road into Woodstock Boulevard at approximately 93rd Avenue (east end). Reconstruct I-205/Foster/Woodstock Interchange into "single point" (urban) interchange with Woodstock Boulevard connecting with Foster Road at approximately 97th Avenue.

♦ Couplet Alternatives
  - **Couplet Option 1** - Maintain Foster/Woodstock couplet and provide a minimum of three through lanes in each direction along both Foster Road and Woodstock Boulevard. Provide traffic signals on both Foster and Woodstock at 91st Avenue.

  - **Couplet Option 2** - Maintain Foster/Woodstock couplet and provide only two to three through lanes in each direction along both Foster Road and Woodstock Boulevard.
Decouple Option 3

Decouple Option 4

Figure 2-12
Boulevard. Provide traffic signals on both Foster and Woodstock at 91st Avenue.

**Couplet Sub-Options** - Several sub-options were developed which were applicable to both of the couplet options described above. These sub-options included:

1. Realign 88th Avenue at Foster Road
2. Extend 89th Avenue to Reedway Street and signalize
3. Signalize Foster/Woodstock at 90th Avenue and extend 90th Avenue to the north to Reedway Street
4. Signalize Foster/Woodstock at 90th Avenue and provide a driveway access to the parcel immediately north of Foster Road
5. Realign 91st Avenue at Foster Road
6. Provide bike lane along 92nd Avenue between Harold Street and Tolman Street
7. Improve geometric alignment of 91st Avenue at both Foster Road and Woodstock Boulevard by providing raised median island
8. Provide on-street parking on both sides of Foster Road
9. Provide on-street parking on both sides of Woodstock Boulevard
10. Provide pedestrian signals across both Foster Road and Woodstock Boulevard at the east end of the couplet

**PRELIMINARY ALTERNATIVES SCREENING**

A preliminary screening of alternatives was conducted to determine fatal flaws associated with the preliminary list of alternatives. The fatal flaws analysis considered impacts to all modes of travel (motor vehicles, pedestrians, bicycles and transit), impacts to right-of-way and impacts to the operation of the I-205/Foster Road/Woodstock Boulevard Interchange.

**Decouple Alternatives**

Of the four decouple alternatives, Decouple Option 1 (Foster "Main Street" and 5 Lane Woodstock) best meets the project goals and objectives. Decouple Options 2 through 4 were eliminated for the reasons listed below.

♦ **Decouple Option 2** was eliminated because of:
  - Significant right-of-way impacts to Foster Road (96 feet of right-of-way required).
  - Lack of an enhanced pedestrian environment on Foster Road (even with 12 foot sidewalks) due to a five-lane cross section.
  - The five-lane cross-section of Foster Road split the business district and did not support local commercial redevelopment opportunities.

♦ **Decouple Option 3** was eliminated because of:
  - Significant right-of-way impact to the parcels bounded by Foster/I-205/Woodstock/92nd.
- Inability of the Woodstock/93rd intersection to operate at an acceptable level of service. The intersection can not be signalized (due to the close proximity to existing signals at 92nd and I-205) and in the unsignalized mode would operate at level of service F with a lack of available gaps in the Woodstock Boulevard traffic stream to allow unsignalized movements from southbound 93rd Avenue.

- Decouple Option 4 was eliminated because of:
  - Significant right-of-way impact to the parcels bounded by Foster/I-205/Woodstock/92nd.
  - Cost of improvements to the I-205/Foster/Woodstock interchange.
  - Difficulty in achieving the appropriate geometric configuration for the "single point" (urban) interchange.

**Couplet Alternatives**

The two primary couplet options (provide three lanes on Foster/Woodstock and provide two/three lanes on Foster/Woodstock) are similar in nature and would both generally meet the project goals and objectives. A detailed level of service analysis of the two options is necessary to determine the specific lane requirements necessary. Of the 10 couplet sub-options only sub-option #2 (extend 89th Avenue to Reedway Street and signalize at Foster) and option #3 (signalize Foster/Woodstock at 90th Avenue and extend 90th Avenue to the north to Reedway Street) were determined to be not feasible. The significant impact these sub-options have on the parcels north of Foster Road does not meet the project goals and objectives.

**ANALYSIS OF ALTERNATIVES**

Based on the results of the preliminary alternatives screening, one decouple and one couplet alternative was carried forward to detailed analysis. For each of the two alternatives, sub-options were developed which focused in on detailed design elements on a portion of the study area.

- **Alternative A - Decouple with Foster "Main Street" and 5 Lane Woodstock**
  - 92nd Avenue Sub-Option 1: 2 travel lanes, bike lanes and parking both sides
  - 92nd Avenue Sub-Option 2: Add a center turn lane to sub-option 1
  - 92nd Avenue Sub-Option 3: Remove bike lanes and center left turn lane

- **Alternative B - Enhanced 3 Lane Couplet**
  - 92nd Avenue Sub-Option 1: 2 travel lanes, bike lanes and parking both sides
  - 92nd Avenue Sub-Option 2: Add a center turn lane to sub-option 1
  - 92nd Avenue Sub-Option 3: Remove bike lanes and center left turn lane
  - Foster Road Sub-Option 1: 3 travel lanes, WB bike lane and parking north side
  - Foster Road Sub-Option 2: Add parking on the south side
  - Woodstock Sub-Option 1: 3 travel lanes, EB bike lane and parking north side
  - Woodstock Sub-Option 2: Add parking on the south side
Future Traffic Volumes

Future travel forecast information was developed for the Lents Town Center area for 2015 conditions. The City of Portland’s version of the Metro regional travel demand forecast model was utilized as a source for determining future motor vehicle volumes given 2015 projections for land use within the study area.

Forecasting the amount of future traffic at the signalized intersections was done by using a methodology incorporating existing traffic counts, base case travel demand model counts (1994), and future travel demand model (2015) counts. This methodology minimizes the effects of model error by adding the increment of growth projected by the travel demand model (modeled 2015 volumes - modeled volumes for existing base conditions) to the base year counts.

The land uses contained within the study area were disaggregated to represent the future conditions in the study area. Growth within the study area was compared between the City of Portland travel demand model and the City of Portland Comprehensive Plan. This future growth was then reallocated within the study area based on future land use patterns.

Trip distribution represents the estimation and forecast of where trips go to and come from. It is based upon the predicted patterns from the City of Portland regional travel demand forecast model. These trip distribution patterns were applied to the disaggregated future land uses to help forecast the future volumes. The future forecasts were then assigned to the transportation network using this distribution pattern.

Traffic Operations

The traffic operations analysis focuses on both level of service and travel time through the corridor for year 2015 conditions. The process used consisted of: 1) development of future (year 2015) traffic volume projections for both alternatives, 2) analysis of intersection operations (level of service) based on existing and assumed geometric conditions for both alternatives 3) development of modifications (mitigation) to each alternative to achieve acceptable operating conditions (level of service D or better), 4) evaluation of travel time results for each alternative, and 6) evaluation of the impact sub-options would have on traffic operations.

Figures 14 and 15 show the estimated year 2015 PM peak hour and daily traffic volumes within the study area for both Alternative A (Figure 14) and Alternative B (Figure 15). Table 5 shows the results of the level of service analysis for year 2015 conditions. All study area intersections would operate at level of service D or better conditions under either Alternative A or Alternative B. The amount of mitigation required under Alternative B was such that a minimum of three through lanes were required on both Foster Road and Woodstock Boulevard. This essentially eliminated the couplet option which had two to three lanes on Foster Road and Woodstock Boulevard.
Table 5
Intersection Levels of Service Year 2015 PM Peak Period

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Alternative A</th>
<th>Alternative B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foster Road/90th Avenue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foster Road/92nd Avenue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woodstock Boulevard/92nd Avenue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foster Road/I-205 SB off ramp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woodstock Boulevard/I-205 SB on ramp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foster Road/I-205 NB on ramp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woodstock Boulevard/I-205 NB off ramp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foster Road/101st Avenue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foster Road/Woodstock Boulevard (west end)</td>
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<td>Foster Road/Woodstock Boulevard (east end)</td>
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<td>Delay</td>
<td>LOS</td>
<td>V/C</td>
</tr>
<tr>
<td>----------</td>
<td>-----</td>
<td>-----</td>
</tr>
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<td>31.1</td>
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<tr>
<td>35.3</td>
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</tr>
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<td>31.1</td>
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</tr>
<tr>
<td>11.2</td>
<td>B</td>
<td>0.90</td>
</tr>
</tbody>
</table>

Delay = Average vehicle delay at intersection  
LOS = Level of service  
V/C = Volume-to-capacity ratio

Figures 16 (3 sheets) and Figure 17 (3 sheets) show the lane geometry which is required for Alternatives A and B to operate at the level of service numbers shown in Table 5. A series of mitigation measures were necessary for each alternative to bring them to level of service D conditions for the year 2015 analysis and these mitigation measures are shown on Figures 16 and 17. Table 6 shows the results of the travel time comparison for existing conditions as well as Alternatives A and B in the year 2015.

Table 6
Travel Time for Study Area

<table>
<thead>
<tr>
<th>Travel Times</th>
<th>Existing</th>
<th>Alternative A</th>
<th>Alternative B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Westbound</td>
<td>2 min 26 sec</td>
<td>3 min 27 sec</td>
<td>2 min 48 sec</td>
</tr>
<tr>
<td>Eastbound</td>
<td>1 min 58 sec</td>
<td>3 min 14 sec</td>
<td>2 min 42 sec</td>
</tr>
</tbody>
</table>

Notes: Travel time from 87th Avenue to Spring Water Trail  
Alternative A is the travel time along Woodstock Boulevard both eastbound and westbound

Traffic Operations findings for Alternative A include:

- Greater potential for non-local traffic on local streets than Alternative B due to overall greater intersection delay and longer travel times
- 34,700 daily vehicles (yr 2015) on Foster west of couplet (7,750 more than toady)
- 13,500 daily vehicles (yr 2015) on Foster west of 92nd (4,100 less than today)
- 34,500 daily vehicles (yr 2015) on Woodstock west of 92nd (16,900 more than today)
- 42,000 daily vehicles (yr 2015) on Foster east of couplet (11,600 more than today)
- 18,300 daily vehicles (yr 2015) on 92nd north of Foster (6,700 more than today)
- Two-way configuration of both Foster and Woodstock impedes efficient traffic flow and

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provides for poor signal progression

- Marginally adequate capacity to meet level of service (LOS) requirements
- Woodstock/92nd is most congested intersection with 35.3 sec/vehicle of delay (LOS D) and 0.99 volume to capacity ratio
- Short block spacing between Foster and Woodstock along 92nd Ave. impacts traffic flow due to vehicle queuing exceeding available storage
- East/west travel times along Woodstock from 87th to Spring Water Trail increase 51 percent by the year 2015 (avg. 132 seconds today and 200 seconds in year 2015)

Traffic Operations findings for Alternative B include:

- Adequate capacity provided which minimizes potential for non-local traffic to utilize local streets
- 34,700 daily vehicles (yr 2015) on Foster west of couplet (7,750 more than today)
- 24,000 daily vehicles (yr 2015) on Foster west of 92nd (6,400 more than today)
- 24,000 daily vehicles (yr 2015) on Woodstock west of 92nd (6,400 more than today)
- 42,000 daily vehicles (yr 2015) on Foster east of couplet (11,600 more than today)
- 18,300 daily vehicles (yr 2015) on 92nd north of Foster (6,700 more than today)
- Three lane Foster and Woodstock along with one-way couplet provides for efficient traffic flow and excellent signal progression
- Adequate capacity to meet level of service (LOS) requirements
- Woodstock/92nd is most congested intersection with 28.0 sec/vehicle of delay (LOS D) and 0.96 volume to capacity ratio
- Short block spacing between Foster and Woodstock along 92nd Ave. impacts traffic flow due to vehicle queuing exceeding available storage
- Traffic signals can facilitate speed regulation on one-way Foster and Woodstock
- Center turn lane on 92nd under Option 1 does not significantly improve capacity
- East/west travel times along Woodstock from 87th to Spring Water Trail increase 51 percent by the year 2015 (avg. 132 seconds today and 200 seconds in year 2015)

Pedestrian Circulation

The objective of the pedestrian environment for each alternative is to "Enhance pedestrian access and circulation throughout the business district; improve connections into the neighborhood and to transit service". Issues which should be addressed relating to the pedestrian environment include:

- Sidewalk width - A desirable sidewalk width in commercial areas is 12 feet which allows for the use of street trees, benches, light poles and trash receptacles in a "furniture zone" while still providing adequate width for pedestrian movements (three abreast).
- Signalized versus unsignalized crossings - The volume of both pedestrians and vehicles along with the spacing between signals and overall safety will determine the need for signalized pedestrian crossings.

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• Width of each roadway crossing - A narrow roadway crossing is desirable to minimized the pedestrian/vehicle conflict area.
• The use of buffers (parking and bike lanes) adjacent to pedestrian facilities - Buffers provide additional distance between vehicles and pedestrians.
• One-way versus two-way street crossings - At unsignalized pedestrian crossings one-way streets provide fewer conflicts as vehicles are only approaching from one direction. Additionally, one-way flow typically arrives in platoons from upstream traffic signals and gaps in the traffic stream are typically experienced after the platoon has passed. At unsignalized pedestrian crossings on two-way streets the vehicle arrivals from both directions are typically random and are dependent on the adjacent traffic signal operations.
• The use of curb extensions at crossings - Curb extensions at both signalized and unsignalized intersections shorten the crossing distance and provide for a larger pedestrian landing/queueing area.

Both Alternatives A and B provide for 12 foot sidewalks throughout the couplet area and along 92n Avenue and also provide for curb extensions where possible. Traffic signals have been added under both alternatives to improve pedestrian crossing opportunities although in slightly different configurations. The greatest difference between the alternatives in terms of pedestrian environment relate to the width of Woodstock Boulevard under Alternative B, the use of or lack of use of buffering treatment and the one-way versus two-way flow.

Pedestrian findings for Alternative A include:

• Wider (12') sidewalks on Foster, Woodstock and 92nd
• Signalized pedestrian crossings at Foster/Woodstock "T" connections (west and east ends) and at Foster/88th
• Parking buffers sidewalk on Foster and 92nd
• Bike lanes buffer sidewalk on Woodstock and 92nd
• Unsignalized pedestrian crossings on two-way streets create more conflicts
• 5/6 lanes on Woodstock creates "theoretical barrier" for pedestrians

Pedestrian findings for Alternative B include:

• Wider (12') sidewalks on Foster, Woodstock and 92nd
• Signalized pedestrian crossing at Foster/90th, Foster/91st Woodstock/91st, Foster/98th and Woodstock/98th (signals facilitate movements from couplet "ends")
• Parking and bike lanes buffer pedestrians on north side of Foster
• No sidewalk buffer on south side of Foster except under Option 1 which provides parking as buffer on south side
• Parking buffers pedestrians on north side of Woodstock (91st to I-205)
• Bike lanes (and parking under Option 1) buffers pedestrians on south side of Woodstock
• Unsignalized pedestrian crossings on one-way streets have fewer conflicts
Parking

The change in on-street parking associated with each option is summarized in Table 7. On 92nd Avenue there is no change in on-street parking. For Alternatives B the change in parking associated with each of the sub-options is listed. The greatest increase in on-street parking occurs under Alternative B sub-option 2 where a total of 82 on-street parking stalls are added.

Table 7
Parking Impacts West of I-205
Change in Parking Related to Existing Conditions

<table>
<thead>
<tr>
<th>Location</th>
<th>Alternative A</th>
<th>Alt B - Option 1</th>
<th>Alt B - Option 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>92nd Avenue</td>
<td>+ 0 stalls</td>
<td>+ 0 stalls</td>
<td>0 stalls</td>
</tr>
<tr>
<td>Foster Road (87th Avenue to 90th Avenue)</td>
<td>+ 31 stalls</td>
<td>+ 26 stalls</td>
<td>+26 stalls</td>
</tr>
<tr>
<td>Foster Road (90th Avenue to I-205)</td>
<td>+ 30 stalls</td>
<td>+ 0 stalls</td>
<td>+27 stalls</td>
</tr>
<tr>
<td>Woodstock (90th Avenue to I-205)</td>
<td>- 14 stalls</td>
<td>+ 9 stalls</td>
<td>+29</td>
</tr>
<tr>
<td>Total</td>
<td>+ 47 stalls</td>
<td>+ 35 stalls</td>
<td>+82 stalls</td>
</tr>
</tbody>
</table>

Parking findings for Alternative A include:

• No change in parking stall count on 92nd Avenue
• 31 parking stalls added on Foster from 87th to 90th
• 30 parking stalls added on Foster from 90th to I-205
• Parking/bus layover zone provided on both sides of Foster under I-205 (potential for 36 parking stalls)
• 10 parking stalls added on Foster from I-205 to 98th Avenue
• No on-street parking provided on Woodstock results in a loss of 14 stalls on Woodstock from 90th to I-205

Parking findings for Alternative B include:

• No change in parking stall count on 92nd Avenue
• 26 parking stalls added on Foster from 87th to 90th
• No change in parking stall count on Foster from 90th to I-205 except under Option 2 which adds 27 stalls on Foster from 90th to I-205
• Parking/bus layover zone provided on north side of Foster under I-205 (potential for 18 parking stalls)
• 21 parking stalls added on south side of Foster from I-205 to 98th Avenue
• 9 parking stalls added on north side of Woodstock from 92nd to I-205 and under Option 2 additional 20 stalls added on south side of Woodstock from 91st to I-205
Transit

The travel times for transit routes #14 and #71 are different for the two alternatives. Busses would operate more efficiently with the one-way couplet. Curb extensions under the two options improve transit operation as the buses would be allowed to stop in the travel lane.

*Transit findings for Alternative A include:*

- Bus layover zone for eastbound direction moved from Woodstock to Foster
- Eastbound Routes #14 and #71 should shift to Foster
- Transit circulation through Lent's slowed due to two-way street configuration and increased travel times through Lents

*Transit findings for Alternative B include:*

- Transit circulation not impacted
- Curb extensions can improve operation

Bicycle Circulation

Both options provide for adequate bicycle facilities except for sub-option 3 on 92nd Avenue under which no bicycle facilities are provided on 92nd Avenue. Under Alternative A the bicycle facilities along Foster/Woodstock are both provided along Woodstock Boulevard. Under Alternative B the bicycle facilities are split between Foster (westbound) and Woodstock (eastbound).

*Bicycle findings for Alternative A include:*

- Westbound bicycle access on Woodstock at 90th Ave. is difficult
- North/south bicycle circulation along 92nd improved while under Option 3 no improvement is realized
- North/south bicycle circulation along I-205 improved at Foster and Woodstock

*Bicycle findings for Alternative B include:*

- Signal at Foster/90th Ave. provides westbound bicycle connection to Woodstock
- North/south bicycle circulation along 92nd improved while under Option 3 no improvement is realized
- North/south bicycle circulation along I-205 improved at Foster and Woodstock
Right-of-Way

Right-of-way impacts were identified for Alternative A as listed below.

♦ 92nd Avenue
  - Masonic Lodge, west side north of Foster
  - Chevron Service Station, west side between Foster and Woodstock
  - 92nd Club Dancers, west side between Foster and Woodstock
  - Tidee Didee Diapers, west side south of Foster
  - Copper Penny Buildings on east side require approximate four foot dedication to achieve desired sidewalk width (12 feet)
  - Five buildings north of Foster on east side require six foot dedication to achieve desired sidewalk width (12 feet)

♦ Foster Road
  - 8705 Structure on north side, east of 87th
  - Empty building mid-block between 87th and 88th (north side)
  - Foster Road Carpets, north side east of 88th
  - U-Haul building (parking and part of structure affected), south side east of 87th
  - Mayflower Auto and Body, north side east of 88th
  - Empty building, south side east of 89th
  - Hogan’s Electric, north side west of 91st
  - One Fine Mechanic, north side east of 91st
  - Plaza 9000, north side west of 92nd
  - Mill Creek Antique Crossing, north side east of 92nd
  - Empty Building, north side east of 92nd
  - Jensen and Associates, north side east of 92nd
  - Copper Penny buildings on south side require approximate three foot dedication to achieve desired sidewalk width (12 feet).
  - Rattan and More buildings on south side require approximate five foot dedication to achieve desired sidewalk width (12 feet)

♦ Woodstock Boulevard
  - Single family residence, south side west of 90th
  - Rix Lumber Orphanage, south side west of 91st
  - 9104 building (empty), south side east of 91st
  - Muscle Car Restoration, south side east of 91st
  - Tidee Didee Diapers, south side west of 92nd (also shown on 92nd list)
  - Stride Construction, south side east of 92nd
  - Single family residence, south side east of 93rd
  - Single family residence, south side east of 97th
  - Multi-family unit, south side west of 100th
Right-of-way impacts were identified for Alternative B as listed below.

♦ **92nd Avenue**
  - Masonic Lodge, west side north of Foster
  - Chevron Service Station, west side between Foster and Woodstock
  - 92nd Club Dancers, west side between Foster and Woodstock
  - Tiddee Didee Diapers, west side south of Foster
  - Copper Penny Buildings on east side require approximate four foot dedication to achieve desired sidewalk width (12 feet)
  - Five buildings north of Foster on east side require six foot dedication to achieve desired sidewalk width (12 feet)

♦ **Foster Road**
  - 8705 Structure on north side, east of 87th
  - Empty building mid-block between 87th and 88th (north side)
  - Foster Road Carpets, north side east of 88th
  - U-Haul building (parking and part of structure affected), south side east of 87th
  - Mayflower Auto and Body, north side east of 88th
  - Empty building, south side east of 89th
  - One Fine Mechanic, north side east of 91st
  - Copper Penny buildings on south side require approximate three foot dedication to achieve desired sidewalk width (12 feet).
  - Rattan and More buildings on south side require approximate five foot dedication to achieve desired sidewalk width (12 feet)
  - Hogan’s Electric and Plaza 900 on north side (west of 92nd) require approximate seven foot dedication to achieve desired sidewalk width (12 feet)
  - Mill Creek Antique Crossing, Empty Building and Jensen and Associates, north side east of 92nd require approximate eight foot dedication to achieve desired sidewalk width (12 feet)

♦ **Woodstock Boulevard**
  - 9104 building (empty), south side east of 91st
  - Muscle Car Restoration, south side east of 91st
  - Tiddee Didee Diapers, south side west of 92nd (also shown on 92nd list)
  - Stride Construction, south side east of 92nd
CHAPTER 3  
PARKING MANAGEMENT PLAN

This chapter presents the evaluation of parking impacts and needs generated by redevelopment of the Lents Business District. Analysis for this includes calibration of existing parking demand ratios and utilization, estimation of future parking demand created by redevelopment of the area, and discussion of various management alternatives that could be considered to address new parking demand for the area. Figure 3-18 shows the approximate study area being analyzed.

Existing parking conditions were previously analyzed and evaluated (refer to Chapter 1). Current zoning for the area is primarily EXd which is classified by the City of Portland as Central Employment. This classification allows mixed-uses with a predominant industrial type development. Industrial type development is a broad based term, and in this area it focuses on manufacturing and service oriented businesses. Parking surveys were conducted by the City of Portland and parking in the area was shown to be underutilized throughout the day.

Redevelopment of the area is being proposed by the Portland Development Commission. This redevelopment focuses on new retail and office use with the availability for off-street parking to complement it. These new uses would help create a new character in the area, but would not require new zoning. The primary focus of this analysis is to determine the need for parking in the area based on potential redevelopment, and evaluate the need for shared parking or structured parking. Two potential redevelopment scenarios were analyzed. The first scenario was a low potential redevelopment of the study area, and the second scenario was a high potential redevelopment.

A calibration of the existing parking demand was done using parking demand ratios determined by Metro. These parking demand ratios are used to determine the number of parking stalls necessary to support the parking needs of a particular land use. Parking demand ratios are given in a range for any particular type of land use. This range can affect the number of parking stalls necessary to support the use. If a low end of the range is used, the parking demand could be underestimated in the area. Conversely, if a high end of the range is used, an overestimation of parking demand could result. This calibration of the range helps to determine the appropriate parking demand ratios for a land use that can be used in the future for similar types of existing land use.

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12 City of Portland Comprehensive Plan, Chapter 33.140.030B Central Employment.

13 Refer to parking section of Chapter 1 and Figure 10.

14 Title 2 of Metro's Urban Growth Management Functional Plan, Section 3.07.220(A)(1), Table 3.07-2 - Regional Parking Ratios, December 17, 1998.
Using the data provided by the City of Portland, the existing peak demand was approximately 12:00 PM. The utilization of on-street parking within the area (focusing along Foster Road, Woodstock Boulevard and 92nd Avenue) during this peak period was approximately 32% occupied. This meant that during the peak parking conditions in the study area, 68% of the available on-street parking was not being used. The off-street parking for the same peak demand period was determined to be approximately 30% utilized. Table 9 summarizes the existing parking demand utilization for the peak period of the day.

Table 9
Existing Peak Period Parking Demand Utilization

<table>
<thead>
<tr>
<th>Parking Type</th>
<th>Available Parking</th>
<th>Occupied Parking Spaces</th>
<th>Utilization of Parking</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-street parking</td>
<td>100 spaces</td>
<td>32 spaces</td>
<td>32%</td>
</tr>
<tr>
<td>Off-street parking</td>
<td>188 spaces</td>
<td>58 spaces</td>
<td>30%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>288 spaces</strong></td>
<td><strong>89 spaces</strong></td>
<td><strong>31%</strong></td>
</tr>
</tbody>
</table>

* Along Foster Road, Woodstock Boulevard, 91st Street and 92nd Street in study area (see Figure 3-18)

**ASSUMPTIONS FOR REDEVELOPMENT**

Key factors that affect future parking analysis in the area include the type and level of each redevelopment scenario, analysis of the peak hour demand for parking for the entire study area, different parking demand ratios for different land uses, and implementation of future transportation improvements. All of these factors play a key role in comparing the amount of future parking supply and the future parking demand in the area.

Potential redevelopment of the area (either as a low or high redevelopment potential) included the assumed building square footage to be two stories with retail on the first floor and office uses on the second. Both Foster and Woodstock were assumed to redevelop as commercial streets with sixty foot building depths while 92nd Avenue (north of Foster Road) was assumed to redevelop as a main street with fifty foot building depths (all with 100 percent coverage).

The difference in development potential between the low redevelopment and the high redevelopment is significant. The low redevelopment scenario is approximately 280,000 square feet of area within the study area, while the high redevelopment scenario has the potential for approximately 748,000 square feet of redevelopment in the study area.

15 Parking survey conducted by the City of Portland Bureau of Traffic Management

16 Parking survey data available for the study area was along Foster Road from 88th Street to I-205, Woodstock Boulevard from Foster Road to I-205, 91st Avenue between Foster Road and Woodstock Boulevard, and 92nd Avenue just south of Woodstock Boulevard to Reedway Street.

17 Land use information and building development data provided by Portland Development Commission. See appendix for additional information.
It is important to note that these two scenarios represent a vast range of potential redevelopment and were selected to analyze the affects on parking demand in the area from a minimal infill/build out scenario (low) to a maximum build out scenario (high). This high potential redevelopment scenario is almost three times higher than the low scenario and would redevelop almost the entire study area. The low scenario focuses redevelopment along the main street location (92nd Avenue) and incorporates many of the existing structures in the study area.

The amount of redevelopment being considered in the maximum build out scenario would create a high demand for parking in the area. It is highly unlikely that this type of redevelopment would occur if sufficient parking was not allowed to develop along with it to support it. While it is academic in nature to assume that this high redevelopment scenario would develop without sufficient parking supply, certain types of development can help create additional parking on a block by block basis. One way this can be accomplished is through the use of “sunken” parking. This allows for additional parking by lowering a level of parking below grade and allowing redevelopment to stay at grade (with parking). Similar redevelopment has occurred in the City of Portland using this type of parking, for example Belmont Dairy. This “sunken” parking is likely to become more popular in the future and could help with the high demand for parking.

Figure 3-19 shows the study area and the potential redevelopment for the low scenario. Figure 3-20 shows the study area and the potential redevelopment for the high scenario. Included for each land use redevelopment scenario was the assumption that 25 percent of blocks 1, 2, 5 and 6 would contain a restaurant type of land use.

**FUTURE PARKING CONDITIONS ANALYSIS**

Future peak parking demand in an area is based on three key elements: building square footage, parking demand ratios, and peak hour parking utilization. Building square footage for each redevelopment scenario was supplied by the Portland Development Commission. Future weekday parking demand ratios were assumed using the Regional Parking Policy available from Metro.\(^\text{18}\) Future weekend parking demand ratios were assumed using a report titled *Shared Parking* produced by the Urban Land Institute.\(^\text{19}\)

The other factor that determines peak parking demand is the utilization of parking which is based on a percentage of available parking used per land use. Each land use has a different utilization of parking throughout the day and may not fully utilize parking during the peak time period for

\(^{18}\) Title 2 of Metro’s Urban Growth Management Functional Plan, Section 3.07.220(A)(1), Table 3.07-2 - Regional Parking Ratios, December 17, 1998.

\(^{19}\) Urban Land Institute, *Shared Parking*, 1990 (Fourth Printing). This report summarized shared parking data for mixed use areas around the nation to develop demand for parking within an urban setting.
Figure 3-19

LOW DEVELOPMENT POTENTIAL SCENARIO
<table>
<thead>
<tr>
<th>Block</th>
<th>Total Development Lot Size</th>
<th>Office</th>
<th>Retail</th>
<th>Restaurant</th>
<th>Residential</th>
<th>% of Lot Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>134,399</td>
<td>20,044</td>
<td>23,381</td>
<td>7,480</td>
<td>18,000</td>
<td>22%</td>
</tr>
<tr>
<td>2</td>
<td>115,306</td>
<td>25,460</td>
<td>19,088</td>
<td>6,363</td>
<td>0</td>
<td>22%</td>
</tr>
<tr>
<td>2a</td>
<td>33,994</td>
<td>11,250</td>
<td>11,250</td>
<td>0</td>
<td>0</td>
<td>33%</td>
</tr>
<tr>
<td>3</td>
<td>184,038</td>
<td>67,500</td>
<td>67,500</td>
<td>0</td>
<td>0</td>
<td>37%</td>
</tr>
<tr>
<td>4</td>
<td>93,044</td>
<td>27,500</td>
<td>27,500</td>
<td>0</td>
<td>0</td>
<td>30%</td>
</tr>
<tr>
<td>5</td>
<td>134,440</td>
<td>41,500</td>
<td>31,125</td>
<td>10,375</td>
<td>0</td>
<td>31%</td>
</tr>
<tr>
<td>6</td>
<td>75,552</td>
<td>49,050</td>
<td>36,788</td>
<td>12,283</td>
<td>0</td>
<td>65%</td>
</tr>
<tr>
<td>7</td>
<td>44,948</td>
<td>29,850</td>
<td>29,850</td>
<td>0</td>
<td>0</td>
<td>66%</td>
</tr>
<tr>
<td>8</td>
<td>40,581</td>
<td>14,750</td>
<td>14,750</td>
<td>0</td>
<td>0</td>
<td>36%</td>
</tr>
<tr>
<td>9</td>
<td>60,417</td>
<td>24,000</td>
<td>24,000</td>
<td>0</td>
<td>0</td>
<td>40%</td>
</tr>
<tr>
<td>10</td>
<td>21,775</td>
<td>12,000</td>
<td>12,000</td>
<td>0</td>
<td>0</td>
<td>55%</td>
</tr>
<tr>
<td>11</td>
<td>18,068</td>
<td>10,800</td>
<td>10,800</td>
<td>0</td>
<td>0</td>
<td>60%</td>
</tr>
<tr>
<td>12</td>
<td>34,626</td>
<td>15,300</td>
<td>15,300</td>
<td>0</td>
<td>0</td>
<td>44%</td>
</tr>
<tr>
<td>13</td>
<td>27,347</td>
<td>15,000</td>
<td>15,000</td>
<td>0</td>
<td>0</td>
<td>55%</td>
</tr>
<tr>
<td>14</td>
<td>8,029</td>
<td>5,400</td>
<td>5,400</td>
<td>0</td>
<td>0</td>
<td>67%</td>
</tr>
<tr>
<td>Sub-total</td>
<td>1,027,066</td>
<td>365,394</td>
<td>342,731</td>
<td>36,460</td>
<td>18,000</td>
<td>766,585 Square Feet of development</td>
</tr>
</tbody>
</table>

**Figure 3-20**

HIGH DEVELOPMENT POTENTIAL SCENARIO

**LEGEND**

- Study Boundary
- Block Number
- Commercial Street (100% coverage at 60 foot building depth)
- Main Street (100% coverage at 50 foot building depth)
parking demand. Utilization of parking throughout the day by land use was taken from the *Shared Parking* report.\(^{20}\) Using all of these factors, the future land uses showed a peak parking demand for weekday use between 1:00 PM and 2:00 PM.\(^{21}\) Analysis for peak parking conditions for the entire study area was based on the parking demand forecasted for this peak hour.

Tables 10 and 11 show the assumed building square footage, parking demand ratios, assumed peak period utilization and potential parking demand in spaces for full redevelopment (both low potential and high potential) of the area. This demand shown also takes into account the demand for parking by employees that would be working in the area. It is important to note that the parking demand shown is for full redevelopment of the area during peak parking demand conditions. The demand for parking would be less with only partial redevelopment of the area under either scenario.

**Table 10**
**Future Low Development Potential Land Use**

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Building Square Footage</th>
<th>Parking demand ratio* weekday</th>
<th>Utilization during weekday peak</th>
<th>Parking demand in spaces weekday</th>
<th>Parking demand ratio* weekend</th>
<th>Utilization during weekend peak</th>
<th>Parking demand in spaces weekend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail</td>
<td>178,767 SF</td>
<td>4.1</td>
<td>100%</td>
<td>733 spaces</td>
<td>5.0</td>
<td>100%</td>
<td>894 spaces</td>
</tr>
<tr>
<td>Office</td>
<td>77,206 SF</td>
<td>2.96</td>
<td>90%</td>
<td>206 spaces</td>
<td>0.50</td>
<td>60%</td>
<td>23 spaces</td>
</tr>
<tr>
<td>Restaurant</td>
<td>25,247 SF</td>
<td>15.34</td>
<td>70%</td>
<td>270 spaces</td>
<td>15.34</td>
<td>45%</td>
<td>174 spaces</td>
</tr>
<tr>
<td>Residential</td>
<td>18,000 SF</td>
<td>1.0</td>
<td>59%</td>
<td>11 spaces</td>
<td>1.0</td>
<td>71%</td>
<td>13 spaces</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>299,220 SF</strong></td>
<td></td>
<td><strong>1,220 spaces</strong></td>
<td></td>
<td></td>
<td><strong>1,104 spaces</strong></td>
<td></td>
</tr>
</tbody>
</table>

* per 1,000 square feet

**Table 11**
**Future High Development Potential Land Use**

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Building Square Footage</th>
<th>Parking demand ratio* weekday</th>
<th>Utilization during weekday peak</th>
<th>Parking demand in spaces weekday</th>
<th>Parking demand ratio* weekend</th>
<th>Utilization during weekend peak</th>
<th>Parking demand in spaces weekend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail</td>
<td>342,731 SF</td>
<td>4.1</td>
<td>100%</td>
<td>1,405 spaces</td>
<td>5.0</td>
<td>100%</td>
<td>1,714 spaces</td>
</tr>
<tr>
<td>Office</td>
<td>369,394 SF</td>
<td>2.96</td>
<td>90%</td>
<td>984 spaces</td>
<td>0.50</td>
<td>60%</td>
<td>111 spaces</td>
</tr>
<tr>
<td>Restaurant</td>
<td>36,460 SF</td>
<td>15.34</td>
<td>70%</td>
<td>391 spaces</td>
<td>15.34</td>
<td>45%</td>
<td>251 spaces</td>
</tr>
<tr>
<td>Residential</td>
<td>18,000 SF</td>
<td>1.0</td>
<td>59%</td>
<td>11 spaces</td>
<td>1.0</td>
<td>71%</td>
<td>13 spaces</td>
</tr>
</tbody>
</table>

\(^{20}\) Urban Land Institute, *Shared Parking*, 1990 (Fourth Printing), page 47, Exhibit 28 “Representative Hourly Accumulation by Percentage of Peak Hour”.

\(^{21}\) See technical appendix for more detailed hourly analysis.
The high redevelopment potential scenario requires approximately 1,500 parking spaces than the low redevelopment potential for the peak weekday hour. This number of parking spaces for the high redevelopment potential option is more than double the peak parking demand determined in the low redevelopment scenario. Using the high redevelopment potential creates a “worst case scenario” for parking demand.

It is important to note the difference between parking demand and required parking spaces for a development based on the City of Portland Parking and Loading Code. The parking demand ratios determine the demand for parking necessary to support a development, while the City of Portland Parking and Load Code determines the maximum number of off-street parking spaces for a development.

The demand for parking could be greater than the allowable number of parking spaces for a development which results in a parking shortage. Conversely, if the City of Portland Parking and Loading Code allows for more parking spaces than there is a demand for, then a greater supply of parking could exist and could result in an underutilization of parking. Tables 12 and 13 summarize the City of Portland Parking and Loading requirements for each potential redevelopment scenario.

**Table 12**  
City of Portland Required Parking by Land Use - Low Development Scenario

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Square Footage</th>
<th>Parking Requirement</th>
<th>Parking Ratio</th>
<th>Allowable Parking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail</td>
<td>178,767</td>
<td>1 parking stall/200 square feet</td>
<td>5.0</td>
<td>893 spaces</td>
</tr>
<tr>
<td>Office</td>
<td>77,206</td>
<td>1 parking stall/400 square feet</td>
<td>2.5</td>
<td>193 spaces</td>
</tr>
<tr>
<td>Restaurant</td>
<td>25,247</td>
<td>1 parking stall/75 square feet</td>
<td>13.33</td>
<td>337 spaces</td>
</tr>
<tr>
<td>Residential</td>
<td>18,000</td>
<td>1 parking stall/1000 square feet</td>
<td>1.0</td>
<td>18 spaces</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>1,441 spaces</strong></td>
</tr>
</tbody>
</table>

**Table 13**  
City of Portland Required Parking by Land Use - High Development Scenario

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Square Footage</th>
<th>Parking Requirement</th>
<th>Parking Ratio</th>
<th>Allowable Parking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail</td>
<td>342,731</td>
<td>1 parking stall/200 square feet</td>
<td>5.0</td>
<td>1,714 spaces</td>
</tr>
<tr>
<td>Office</td>
<td>369,394</td>
<td>1 parking stall/400 square feet</td>
<td>2.5</td>
<td>923 spaces</td>
</tr>
<tr>
<td>Restaurant</td>
<td>36,460</td>
<td>1 parking stall/75 square feet</td>
<td>13.33</td>
<td>486 spaces</td>
</tr>
<tr>
<td>Residential</td>
<td>18,000</td>
<td>1 parking stall/1000 square feet</td>
<td>1.0</td>
<td>18 spaces</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>3,141 spaces</strong></td>
</tr>
</tbody>
</table>

---

22 City of Portland Comprehensive Plan, Chapter 33.266 Parking and Loading, Table 266-1.

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**Lents Town Center**  
Future Parking Demand Analysis  
3-8  
**DKS Associates**  
June, 1999
Comparing the parking demand and the allowable parking based on the City of Portland Parking and Loading Code for the potential redevelopment of the area as a whole, does not adequately address the future parking needs of the area. The future parking needs for each individual block must be addressed to determine the amount of available space for off-street parking after redevelopment of each block. This determines how many off-street parking spaces can fit onto each block. It is this number that must be compared to the demand for parking and the City of Portland Parking and Loading code to adequately address the future parking needs of the area.

On-street parking availability in the area affects the total parking supply for each redevelopment scenario. Both future transportation alternatives (Alternative A and B) were analyzed as to the potential for future on-street parking to be added to the study area. Alternative A included on-street parking on both the north and south faces of Foster Road, but no parking along Woodstock Boulevard. Alternative B had two future parking options. Option 1 allows parking on the north sides of Foster Road and Woodstock Boulevard, while Option 2 allows parking on both the north and south sides of Foster Road and Woodstock Boulevard.

Table 14 summarizes the additional on-street parking available for each development scenario and each transportation alternative. Block 3 was not counted for additional on-street parking available in the low development scenario because no redevelopment was occurring on it. Therefore, the high potential scenario has a supply of 35 additional on-street parking stalls (western and souther side of block 3) when compared with the low development scenario.

Table 14
Future On-street Parking Supply

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Option 1</th>
<th>Option 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative A</td>
<td>191 spaces (low)/ 226 spaces (high)</td>
<td>-</td>
</tr>
<tr>
<td>Alternative B</td>
<td>182 spaces (low)/ 217 spaces (high)</td>
<td>228 spaces (low)/ 263 spaces (high)</td>
</tr>
</tbody>
</table>

As shown in Table 14, Option 2 allows for the most on-street parking to be added to the study area by creating on-street parking along both Foster Road and Woodstock Boulevard. This only shows a total amount of on-street parking in the study area, but does not identify the on-street parking by block. A detailed analysis of each block is necessary to help define the parking supply and demand created by the potential redevelopment of each block for each scenario (low and high).

Table 15 summarizes the peak hour parking demand conditions using the low development scenario and Alternative A for on-street parking supply.
Table 15
Low Development Scenario
Alternative A: Option 1 Peak Parking Analysis Summary

<table>
<thead>
<tr>
<th>Block</th>
<th>Building square footage</th>
<th>Parking spaces in available lot space for parking</th>
<th>Allowable parking spaces by city code</th>
<th>Total number of available off-street parking</th>
<th>Number of on-street adjacent stalls</th>
<th>Peak off-street parking demand</th>
<th>Demand for additional parking per block</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>44,655</td>
<td>209</td>
<td>172</td>
<td>172</td>
<td>39</td>
<td>98</td>
<td>-70</td>
</tr>
<tr>
<td>2</td>
<td>49,688</td>
<td>194</td>
<td>238</td>
<td>194</td>
<td>37</td>
<td>172</td>
<td>-22</td>
</tr>
<tr>
<td>2a</td>
<td>22,500</td>
<td>49</td>
<td>84</td>
<td>49</td>
<td>15</td>
<td>61</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>27,443</td>
<td>68</td>
<td>128</td>
<td>68</td>
<td>16</td>
<td>89</td>
<td>21</td>
</tr>
<tr>
<td>5</td>
<td>52,532</td>
<td>218</td>
<td>284</td>
<td>218</td>
<td>30</td>
<td>213</td>
<td>-5</td>
</tr>
<tr>
<td>6</td>
<td>27,443</td>
<td>111</td>
<td>178</td>
<td>111</td>
<td>16</td>
<td>131</td>
<td>20</td>
</tr>
<tr>
<td>7</td>
<td>30,200</td>
<td>49</td>
<td>131</td>
<td>49</td>
<td>15</td>
<td>97</td>
<td>48</td>
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<tr>
<td>8</td>
<td>12,000</td>
<td>67</td>
<td>54</td>
<td>54</td>
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<td>30</td>
<td>-24</td>
</tr>
<tr>
<td>9</td>
<td>1,140</td>
<td>26</td>
<td>6</td>
<td>6</td>
<td>0</td>
<td>5</td>
<td>-1</td>
</tr>
<tr>
<td>10</td>
<td>10,100</td>
<td>25</td>
<td>51</td>
<td>25</td>
<td>7</td>
<td>34</td>
<td>9</td>
</tr>
<tr>
<td>11</td>
<td>8,550</td>
<td>20</td>
<td>43</td>
<td>20</td>
<td>0</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td>12</td>
<td>8,729</td>
<td>55</td>
<td>44</td>
<td>44</td>
<td>0</td>
<td>36</td>
<td>-8</td>
</tr>
<tr>
<td>13</td>
<td>4,379</td>
<td>49</td>
<td>22</td>
<td>22</td>
<td>0</td>
<td>18</td>
<td>-4</td>
</tr>
<tr>
<td>14</td>
<td>1,736</td>
<td>13</td>
<td>9</td>
<td>9</td>
<td>0</td>
<td>7</td>
<td>-2</td>
</tr>
<tr>
<td>Totals</td>
<td>299,220 SF</td>
<td>1,153</td>
<td>1,441</td>
<td>1,039</td>
<td>191</td>
<td>1,026</td>
<td>-9</td>
</tr>
</tbody>
</table>

1. Assumes two story full potential redevelopment
2. Assumes a 25% loss of space for buffer, landscaping and circulation and 350 square feet per parking stall
3. Peak off-street parking demand = Peak parking demand by block - on street available parking
4. Demand for additional parking by block = Peak parking demand - Total number of available off-street parking

Using the city code and the peak hour parking demand by block, analysis for the entire study area using the low development scenario indicates there is an excess of 12 off-street parking spaces. This points to an adequate amount of off-street parking spaces available in the study area given the projected land use and surface parking lot spaces under a low potential redevelopment scenario.

Even with the adequate parking supply for the entire study area, (low potential scenario) there is an imbalance in the parking supply on a block by block basis. The analysis by block shows a higher supply of parking north of Foster Road and a demand for additional parking south of Foster Road. Although there are enough surface parking spaces in the study area to handle the demand for parking, there is a heavier need for parking to the blocks south of Foster Road. Alternative parking management plans would be needed to address this need.
Table 16 summarizes the peak hour parking demand conditions using the high development scenario and Alternative A for on-street parking supply.

**Table 16**

**High Development Scenario**

**Alternative A: Option 1 Peak Parking Analysis Summary**

<table>
<thead>
<tr>
<th>Block</th>
<th>Building square footage</th>
<th>Parking spaces in available lot space for parking</th>
<th>Allowable parking spaces by city code</th>
<th>Total number of available off-street parking</th>
<th>Number of on-street adjacent stalls</th>
<th>Peak off-street parking demand</th>
<th>Demand for additional parking per block</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>67,885</td>
<td>224</td>
<td>279</td>
<td>224</td>
<td>39</td>
<td>197</td>
<td>-27</td>
</tr>
<tr>
<td>2</td>
<td>50,900</td>
<td>193</td>
<td>244</td>
<td>193</td>
<td>37</td>
<td>177</td>
<td>-15</td>
</tr>
<tr>
<td>2a</td>
<td>22,500</td>
<td>49</td>
<td>84</td>
<td>49</td>
<td>15</td>
<td>61</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>135,000</td>
<td>250</td>
<td>506</td>
<td>250</td>
<td>35</td>
<td>422</td>
<td>172</td>
</tr>
<tr>
<td>4</td>
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<td>140</td>
<td>206</td>
<td>140</td>
<td>16</td>
<td>170</td>
<td>30</td>
</tr>
<tr>
<td>5</td>
<td>83,000</td>
<td>200</td>
<td>398</td>
<td>200</td>
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<td>119</td>
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<td>397</td>
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<tr>
<td>7</td>
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<td>8</td>
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<td>9</td>
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<td>24,000</td>
<td>21</td>
<td>90</td>
<td>21</td>
<td>7</td>
<td>74</td>
<td>53</td>
</tr>
<tr>
<td>11</td>
<td>21,600</td>
<td>16</td>
<td>81</td>
<td>16</td>
<td>0</td>
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<td>41</td>
<td>115</td>
<td>41</td>
<td>0</td>
<td>103</td>
<td>62</td>
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<tr>
<td>13</td>
<td>30,000</td>
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<td>113</td>
<td>26</td>
<td>0</td>
<td>101</td>
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<tr>
<td>14</td>
<td>10,800</td>
<td>6</td>
<td>41</td>
<td>6</td>
<td>0</td>
<td>37</td>
<td>31</td>
</tr>
</tbody>
</table>

Totals 766,585 SF 1,388 3,141 1,388 226 2,565 1,177

1. Assumes two story full potential redevelopment
2. Assumes a 25% loss of space for buffer, landscaping and circulation and 350 square feet per parking stall
3. Peak off-street parking demand = Peak parking demand by block - on street available parking
4. Demand for additional parking by block = Peak parking demand - Total number of available off-street parking

Using the high development potential scenario, almost every block except 1 and 2 have a parking demand greater than the supply. In total, the parking demand in the area if the high redevelopment potential was used, would be 1,177 parking spaces. This represents a “worst case” scenario for parking demand in the area using the high development scenario and would need significant mitigation to resolve this large parking demand.

Table 17 summarizes the peak hour parking demand conditions using the low development scenario and Alternative B Option 1 for on-street parking supply.
Table 17
Low Development Scenario
Alternative B: Option 1 Peak Parking Analysis Summary

<table>
<thead>
<tr>
<th>Block</th>
<th>Building square footage</th>
<th>Parking spaces in available lot space for parking</th>
<th>Allowable parking spaces by city code</th>
<th>Total number of available off-street parking</th>
<th>Number of on-street adjacent stalls</th>
<th>Peak off-street parking demand</th>
<th>Demand for additional parking per block</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>44,655</td>
<td>209</td>
<td>172</td>
<td>172</td>
<td>39</td>
<td>101</td>
<td>-70</td>
</tr>
<tr>
<td>2</td>
<td>49,688</td>
<td>194</td>
<td>238</td>
<td>194</td>
<td>37</td>
<td>172</td>
<td>-22</td>
</tr>
<tr>
<td>2a</td>
<td>22,500</td>
<td>49</td>
<td>84</td>
<td>49</td>
<td>15</td>
<td>61</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>27,443</td>
<td>68</td>
<td>128</td>
<td>68</td>
<td>16</td>
<td>89</td>
<td>21</td>
</tr>
<tr>
<td>5</td>
<td>52,532</td>
<td>218</td>
<td>284</td>
<td>218</td>
<td>30</td>
<td>213</td>
<td>-5</td>
</tr>
<tr>
<td>6</td>
<td>27,443</td>
<td>111</td>
<td>178</td>
<td>111</td>
<td>16</td>
<td>131</td>
<td>20</td>
</tr>
<tr>
<td>7</td>
<td>30,200</td>
<td>49</td>
<td>131</td>
<td>49</td>
<td>14</td>
<td>98</td>
<td>48</td>
</tr>
<tr>
<td>8</td>
<td>12,000</td>
<td>67</td>
<td>54</td>
<td>54</td>
<td>8</td>
<td>38</td>
<td>-24</td>
</tr>
<tr>
<td>9</td>
<td>1,140</td>
<td>26</td>
<td>6</td>
<td>6</td>
<td>0</td>
<td>5</td>
<td>-1</td>
</tr>
<tr>
<td>10</td>
<td>10,100</td>
<td>25</td>
<td>51</td>
<td>25</td>
<td>7</td>
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<td>9</td>
</tr>
<tr>
<td>11</td>
<td>8,550</td>
<td>20</td>
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<td>20</td>
<td>0</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td>12</td>
<td>8,729</td>
<td>55</td>
<td>44</td>
<td>44</td>
<td>0</td>
<td>36</td>
<td>-8</td>
</tr>
<tr>
<td>13</td>
<td>4,379</td>
<td>49</td>
<td>22</td>
<td>22</td>
<td>0</td>
<td>18</td>
<td>-4</td>
</tr>
<tr>
<td>14</td>
<td>1,736</td>
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<td>9</td>
<td>9</td>
<td>0</td>
<td>7</td>
<td>-2</td>
</tr>
<tr>
<td>Totals</td>
<td>299,220 SF</td>
<td>1,153</td>
<td>1,441</td>
<td>1,039</td>
<td>182</td>
<td>1,038</td>
<td>0</td>
</tr>
</tbody>
</table>

1. Assumes two story full potential redevelopment
2. Assumes a 25% loss of space for buffer, landscaping and circulation and 350 square feet per parking stall
3. Peak off-street parking demand = Peak parking demand by block - on street available parking
4. Demand for additional parking by block = Peak parking demand - Total number of available off-street parking

The parking supply for Alternative B, Option 1 is equal to the parking demand as an aggregate for the entire study area using a low redevelopment scenario. This represents a balance of parking demand and parking supply. However, similar to Alternative A (Option 1), there is a higher need for parking in the blocks south of Foster Road as compared to the blocks north of Foster Road. The use of parking demand management techniques such as shared parking should balance out the parking demand per block for the study area.

Table 18 summarizes the peak hour parking demand conditions using the high development scenario and Alternative B Option 1 for on-street parking supply.
Table 18
High Development Scenario
Alternative B: Option 1 Peak Parking Analysis Summary

<table>
<thead>
<tr>
<th>Block</th>
<th>Building square footage(^2)</th>
<th>Parking spaces in available lot space for parking(^2)</th>
<th>Allowable parking spaces by city code</th>
<th>Total number of available off-street parking</th>
<th>Number of on-street adjacent stalls</th>
<th>Peak off-street parking demand(^3)</th>
<th>Demand for additional parking per block(^4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>67,885</td>
<td>224</td>
<td>279</td>
<td>224</td>
<td>39</td>
<td>197</td>
<td>-27</td>
</tr>
<tr>
<td>2</td>
<td>50,900</td>
<td>193</td>
<td>244</td>
<td>193</td>
<td>37</td>
<td>177</td>
<td>-15</td>
</tr>
<tr>
<td>2a</td>
<td>22,500</td>
<td>49</td>
<td>84</td>
<td>49</td>
<td>15</td>
<td>61</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>135,000</td>
<td>250</td>
<td>506</td>
<td>250</td>
<td>35</td>
<td>422</td>
<td>172</td>
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<td>140</td>
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</tr>
<tr>
<td>5</td>
<td>83,000</td>
<td>200</td>
<td>398</td>
<td>200</td>
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<td>320</td>
<td>119</td>
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<td>6</td>
<td>98,100</td>
<td>57</td>
<td>470</td>
<td>57</td>
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<td>340</td>
</tr>
<tr>
<td>7</td>
<td>59,700</td>
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<td>224</td>
<td>32</td>
<td>15</td>
<td>188</td>
<td>156</td>
</tr>
<tr>
<td>8</td>
<td>29,500</td>
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<td>55</td>
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<td>180</td>
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<td>0</td>
<td>162</td>
<td>84</td>
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<td>21</td>
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<td>74</td>
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<td>11</td>
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<td>16</td>
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<td>73</td>
<td>57</td>
</tr>
<tr>
<td>12</td>
<td>30,600</td>
<td>41</td>
<td>115</td>
<td>41</td>
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<td>103</td>
<td>62</td>
</tr>
<tr>
<td>13</td>
<td>30,000</td>
<td>26</td>
<td>113</td>
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<td>10,800</td>
<td>6</td>
<td>41</td>
<td>6</td>
<td>0</td>
<td>37</td>
<td>31</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>766,585 SF</strong></td>
<td><strong>1,388</strong></td>
<td><strong>3,141</strong></td>
<td><strong>1,388</strong></td>
<td><strong>217</strong></td>
<td><strong>2,574</strong></td>
<td><strong>1,186</strong></td>
</tr>
</tbody>
</table>

1. Assumes two story full potential redevelopment
2. Assumes a 25% loss of space for buffer, landscaping and circulation and 350 square feet per parking stall
3. Peak off-street parking demand = Peak parking demand by block - on-street available parking
4. Demand for additional parking by block = Peak parking demand - Total number of available off-street parking

Using this transportation alternative for the parking demand analysis for a high development potential in the area, the same parking demand conditions exist as in Alternative A. There is a high demand for parking for the blocks south of Foster Road, and only two blocks have a supply of parking (blocks 1 and 2). The demand for 1,186 parking spaces in the area significantly outweighs the supply of 42 parking spaces available on blocks 1 and 2.

Another option for parking supply in the area is to allow parking along the south sides of Foster Road and Woodstock Boulevard. Table 19 summarizes the peak hour parking demand conditions for Alternative B using Option 2 for the low development scenario which allows parking along the north and south sides of Foster Road and Woodstock Boulevard.
### Table 19
Low Development Scenario
Alternative B: Option 2 Peak Parking Analysis Summary

<table>
<thead>
<tr>
<th>Block</th>
<th>Building square footage</th>
<th>Available lot space for parking</th>
<th>Allowable parking spaces by city code</th>
<th>Total number of available off-street parking</th>
<th>Number of on-street adjacent stalls</th>
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1. Assumes two story full potential redevelopment
2. Assumes a 25% loss of space for buffer, landscaping and circulation and 350 square feet per parking stall
3. Peak off-street parking demand = Peak parking demand by block - on street available parking
4. Demand for additional parking by block = Peak parking demand - Total number of available off-street parking

The additional parking along the south side of Woodstock Boulevard and Foster Road in this parking alternative helps create more supply of parking in the area and lessen the demand for parking by the blocks south of Foster Road. There is still an imbalance of parking on a block by block basis. This does represent a peak parking condition and a worst case scenario for parking demand using the low development scenario.

Table 20 summarizes the peak hour parking demand conditions using the high development scenario and Alternative B Option 2 for on-street parking supply.
### Table 20
#### High Development Scenario
#### Alternative B: Option 2 Peak Parking Analysis Summary

<table>
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<tr>
<th>Block</th>
<th>Building square footage</th>
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1. Assumes two story full potential redevelopment
2. Assumes a 25% loss of space for buffer, landscaping and circulation and 350 square feet per parking stall
3. Peak off-street parking demand = Peak parking demand by block - on street available parking
4. Demand for additional parking by block = Peak parking demand - Total number of available off-street parking

As with the previous high development scenarios, there is a large demand for parking in the area due to the high redevelopment. The demand for 1,140 parking spaces in the area significantly outweighs the supply of 42 parking spaces available on blocks 1 and 2.

Each alternative and sub-option for parking (using the low potential redevelopment) allows for adequate off-street surface parking during the peak hour parking demand period for the entire study area. On a block by block analysis there are still some imbalances in the supply and demand, but parking management techniques such as shared parking would be able to balance the parking demand with the parking supply.

The high development scenario with each transportation alternative do not provide enough off-street parking spaces to adequately meet the demand for parking in the area. Structured parking would be warranted in certain locations. Growth and redevelopment in the area is incremental.
and the parking demand would be also. Determination of the need for a structured parking facility should be done on a development basis to determine if the area being redeveloped would warrant the need for a structured parking facility.

The following section discusses parking management alternatives that could help these imbalances.

**PARKING MANAGEMENT ALTERNATIVES**

This section addresses the various ways that the future parking demand in the Lents Business District could possibly be managed. Alternatives focused on:

- Demand Management
- Time Restrictions
- Shared Parking
- Structured Parking

The following text represents different alternatives to consider for meeting the future potential parking demand created by the Lents Business District redevelopment. These alternatives should be viewed as different options to chose from in order to accommodate the future parking demand. A mix of these alternatives would most likely be necessary to accommodate the future parking demand.

**Alternative 1: Demand Management**

There are many components to transportation and parking demand management. One of the easiest solutions are to create additional parking opportunities within an area is restriping to change current parking from parallel to angled or 90-degree parking. This type of management technique can add multiple parking stalls if the space is available to do so. There are some safety and right-of-way issues that are associated with angled/90-degree parking in an area. If angled/90-degree parking is allowed, the amount of right-of-way needed for a roadway is greater than that needed with parallel parking. Typically this type of parking is head-in parking which can create a visibility/safety concern for vehicles backing out into traffic.

Due to the constraints on roadway width for all of the main corridors in the study area, changing parking alignment from parallel to angled or 90 degree is not an option (with the possible exception of 91st Avenue between Foster Road and Woodstock Boulevard depending on redevelopment).

**Alternative 2: Time Restrictions**

Another parking management strategy would be to create time restrictions for on-street or off-street parking spaces in order to increase the turnover rate within the area. This effectively tries to create additional parking spaces during peak parking periods through more effective utilization of on-street parking spaces.
Time restrictions can be used for on-street parking spaces through the use of parking meters or signage that limits the time for parking. They can also be used in off-street surface lots if so desired. Time restricted parking may create a higher turnover rate for parking in the area, but it may also adversely affect the surrounding neighborhood parking supply which does not have time restrictions. This type of time restricted parking does have some costs associated with it due to installation of signage and parking meters, and the cost associated with enforcing the time restrictions to limit the number of long term parking.

Short term parking in the area can be supplied by metered parking or time restricted parking, but long term parking demand by employees in the area is not supplied. The demand for long term parking may be directing to the surrounding neighborhoods which have no time restrictions on the parking if it is not provided for in the redeveloped area.

An adequate supply of long-term parking needs to be available for employees of the area and for people making trips longer than time restricted parking would allow. This type of parking is generally provided off-street and allows for the on-street parking to be primarily used for short term parking such as retail users. Other concepts could be used to help balance the supply and demand for long term parking such as transportation demand management, parking pricing and alternative modes of travel.

**Alternative 3: Shared Parking**

Shared parking can be defined as the use of a parking space by more than one land use without conflict or encroachment. When effectively planned, complementary land uses can share parking facilities to provide fewer total parking spaces while meeting individual land use needs. In suburban settings, parking has typically been provided for one type of land uses, which is usually enforced by code required off-street parking. However, in central business districts, the use of parking by complementary land uses occurs.

Opportunities to implement shared parking is the result of two conditions:

- Variations in peak parking accumulation among different land use types (which vary by hour of day, day of week and month of year)
- Relationships between land uses that result in peoples attraction to two or more land uses on a single auto trip

Extensive research regarding shared parking was conducted by the Urban Land Institute (ULI), and documented in *Shared Parking*. Key elements which must be present for shared parking to exist generally include a mix of land uses, walking distances to parking within the 500 to 1000 foot range, reasonably predictable parking demand patterns, and significant integration of pedestrian amenities. While three of these elements can be dictated by land development, the ULI research provides the best data for estimating the parking demand patterns. The ULI data focus on office, retail, restaurant, hotel cinema and residential land uses.

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**Lents Town Center**
Future Parking Demand Analysis

**DKS Associates**
June, 1999
Based upon the research conducted, parking supply can be reduced in a well designed, mixed-use environment compared to individual accumulation of parking by use type. It is important to note that reduced parking through mixed uses does not occur without extensive planning.

While it would be easy to assume that substantial parking reductions through shared parking are inherent with mixed use, this is not always the case. Over reliance on shared parking can result in significant problems:

- As land uses change over time, the dynamics of matching peak parking accumulations with low demand of various uses can result in under supply of parking.
- Mixing the wrong uses can result in project failures. For example, while residential uses have low demand in the middle of a weekday, most residential tenants want a designated space, particularly on weekends. While sharing parking for the visitor component of residential parking demand works well, sharing the tenant parking can have significant problems.
- Agreements between land owners and between public agencies and land owners can become significantly complicated. Maintenance, management and liability issues of multiple property owners can be a problem. The desire to assure parking adequacy generally can be a major stumbling block.
- Parking cannot be reserved for 24 hours for a particular use.
- Poor mixing of uses can result in encroachment of parking, reducing availability. This can manifest itself, for example, as commuters using shared parking structures or restaurant/cinema uses too close to other conflicting uses.

**Guidelines for Shared Parking**

Case studies and research conducted to date provide a set of guidelines which should be followed to implement shared parking successfully:

- Design of a pedestrian circulation system is integral to the success of shared parking. Without convenient pathways to encourage multiple stops for a single vehicle trip, the concept of shared parking will not succeed. Designing parking and land uses to achieve the 500 to 1000 foot walking distance is one consideration. Pedestrian amenities is another consideration to maintain interest for the walk trip. Where uses do not compete for parking spaces and serve captive markets, minimum separation and walking distances should be achieved.
- Guaranteed or exclusive parking commitment should be held to a minimum to allow shared parking to work.
- Good internal access and circulation is critical to successful shared parking, including good signing, markings and other forms of communication.
- Integrate transit into the design, rather than as an appendage of the design of the mixed use center. Transit served mixed use centers have had the greatest ability to reduce the peaking of parking demand in high use times (not necessarily the base level of parking).
• Focusing on "good" use mixes. These can be analytically defined using the ULI research for variation in peak parking demand by hour of day, day of week and month of year. Proven successful mixes include pairs such as nighttime entertainment with daytime employment, transit parking with weekend oriented uses, retail/restaurant/support uses within large employment areas, hotel and residential uses with daytime employment areas, and weekend uses (such as a church) with weekday daytime uses (such as employment).
• Work with uses with reasonably predictable parking demand patterns. Special event centers can cause problems due to their unpredictability.
• Get good spatial separation between potential uses which may have parking demand conflicts. Balance the provision of parking spatially over a site area (using the walking criteria) and do not rely on simple total or overall numbers of parking spaces to achieve a shared parking balance.
• Seek to create a better "captive market" in mixing land uses to increase the number of stops per trip.
• The city will need to facilitate development of legal agreements between property owners to encourage development of shared parking. The city can encourage shared parking proactively by providing municipal parking facilities, organizing parking assessment districts and acting as a liaison among potential private sharers of parking.
• Seek special use activities which can share the space used for parking and "fit" into the parking demand profile.

Three important shared parking criteria that are found in the Lents Business District are; a mix of land uses in place, pedestrian amenities being available and accessibility within a 500-1000 foot walking distance. The ability to link trips in an area is crucial to help reduce the amount of vehicle trips in an area. The redevelopment of the Lents Business District allows the opportunity to create a pedestrian friendly environment where "trip-linking" can occur and help reduce the number of auto oriented trips in an area. All of these make shared parking a feasible parking management alternative in the area.

Using these guidelines shared parking within the study should help to address the imbalance of parking occurring north and south of Foster Road. For example, using Alternative B (Option 1), block seven which has the highest demand for parking in the area at 49 additional stalls, can share parking with blocks 2, 8 and 12 which (in total) have a supply of 46 parking spaces.

Any additional parking in the area can also be supplied by block one which has a supply of 70 additional parking spaces. These could be used by blocks 4, 6, 10 and 11. The total parking demand for those four blocks is 65 additional spaces. This peak demand parking analysis is for the peak hour of parking throughout the day. This represents a worst case (highest demand) scenario for parking in the area. Other hours throughout the day would experience a lower parking demand per block and a higher number of available off-street parking spaces.
Alternative 4: Structured Parking
Parking structures make the greatest use of available land within a constrained area, but are very costly. Parking structures generally cost approximately $20,000 per parking stall to construct. Because of this associated cost, it is not feasible to construct a structured parking facility until the demand for parking in an area becomes critical.

Considering the cost for parking structures, it is critical to locate a facility where it will be best utilized. Using Alternative B Option 2, the parking demand is the highest on blocks 5, 6 and 7. Collectively these blocks have a parking demand of 594 additional parking spaces using the high potential redevelopment scenario during the peak hour parking demand.

A central block that has the most available space to serve all of these blocks within a 500 - 1000 foot walking distance (a maximum distance for accessibility for shared parking facilities) would be block five. The parking demand for block five is 320 off-street parking spaces and 200 of these are accommodated off-street. This leaves 120 off-street parking spaces in demand. In total, block 5 would need to accommodate an additional 594 parking spaces and the 200 it would already accommodate off-street bringing the total number of parking spaces for a structured facility on block five to 694 parking spaces. This represents a 4 level parking structure on block 5. This structure would cost approximately $13.8 million dollars at $20,000 per parking stall.

Another alternative location for structured parking would be block 2. The high development scenario has a supply of 15 spaces on this block, and if blocks 5,6 and 7 were to use a structured parking facility located on block 2, the structure would need to hold approximately 772 spaces. Block two has the capability under the high development scenario to hold 193 off-street stalls. In order to have a structure in the available space for parking on block 2 to hold 772 spaces, the structure would need to be 4 levels and would cost approximately $15.4 million dollars at $20,000 per parking stall.

One parking structure alone does not address the additional parking demand on all other blocks in the area. Each of the blocks in the high development scenario has a parking demand ranging anywhere from 12 to 172 additional spaces. With a parking demand of 1,140 additional spaces needed structured parking is warranted (using the high development scenario). Some shared parking could exist utilizing blocks 1 and 2, but it would not supply enough parking to adequately handle the parking demand in the area.

Underground parking is another alternative to structured parking. The cost of underground parking facilities is generally higher than structured parking because of the excavation needed to create the facility. When a development occurs that could have the potential for underground parking, there is the opportunity to create this parking. This could be pursued on an as needed basis for each development if it is desired.
SUMMARY

Overall, the total future parking supply in the area would accommodate the total future parking demand assuming a low potential redevelopment scenario. This low potential development scenario is reaching maximum parking supply to demand ratio during the peak parking demand hour of the day. Any additional development in the area beyond this low development scenario would start to trigger the need for a parking management plan.

The mixed uses being proposed, and the proximity from one block to another allows the opportunity for shared parking. Shared parking would be able to address the imbalance that occurs during the peak hour parking demand for the low development scenario.

Other opportunities could also be pursued as redevelopment is phased in over time. These could include time restricted parking that would allow for on-street parking to be utilized by short-term parkers and off-street parking to be utilized by long-term parkers, “sunken” parking to add parking supply to a block without building a multi-level parking structure and as a final step, structured parking could be developed (on a block by block basis) if the demand for parking warranted it.

Parking conditions that were analyzed were for the peak hour parking demand throughout the day which assumed worst case (highest parking demand) scenario in the study area. Any reductions in the amount of potential redevelopment in the area (using the same type of land uses) would decrease the parking demand and the imbalance of parking in the area during the peak parking period.
APPENDIX B
STREETSCAPE/URBAN DESIGN PLAN
Lents Urban Design Concept

Urban Design Principles

Good urban design offers a quality future for the rebuilding of our towns, cities and suburbs, and for Lents in particular. The Lents neighborhood is mostly compact and pedestrian friendly. However, much of the commercial and employment development along SE Foster is predominately auto-oriented. To qualify as a good urban area, the commercial and employment uses should have an appropriate location and character, and include some mixture of residential uses. As a commercial and transportation corridor, SE Foster should be both functional and attractive.

Good urban design should preserve and improve land values for residential and commercial uses. It should also protect fragile environments and enhance or create new open space to form a permanent and integrated part of the total landscape. Good urban design should accommodate the auto and it’s parking place without compromising civic values. This is a particular challenge for Lents at the Interstate 205 exchange with SE Foster and SE Woodstock that dominates part of the landscape and floods the area with through-traffic.

Good urban design should create a wholeness that one still finds in authentic cities, villages and neighborhoods. Good design is a discipline, a physical order based on awareness and respect for the surrounding environment, harmony and tradition. For example, streets and buildings should honor or respect each other, meaning that the design of roads and buildings need to be worth honoring. The two, streets and structures, should mutually reinforce each other and create sense of place within the landscape. The one-way couplet at SE Foster and SE Woodstock has resulted in the removal of most historic buildings and well-defined public space. The couplet currently functions as a barrier to pedestrians and pedestrian-oriented businesses.

Good urban design requires an order or pattern of connecting relationships to buildings, streets and open space rather than express a landscape of disconnected objects. These patterns are derived partly from traditions hundreds or thousands of years old, partly from common sense, and from accommodating changes in geography and technology at the regional level, through cities, villages, neighborhoods, blocks and buildings. Lents, prior to the installation of Interstate 205, contained this hierarchy of streets, buildings and parks.

These historic patterns should express vitality, stability and harmony. For instance, the fronts of buildings should connect to the street, streets should be framed by trees and/or buildings, streets should interconnect frequently, in hierarchical and coherent circulation patterns. Neighborhoods should have a discernible center or focus which is about 1/4 mile to it’s edge or limit, about a 5 minute walk. While the Lents area includes a diversity of housing and a large park, a central, public place that functions as a town center, square or loci appears to be missing.
Lents Urban Design Concept

The proposed Portland Development Commission mixed use project by Morrison Companies on the north side of Foster should incorporate as many of the patterns and principles of good urban design as possible. A connecting street or pedestrian right-of-way from SE Foster to SE Reedway will help connect the project to the neighborhood north of SE Foster.

All new streets should be "attractive, safe and convenient", the benchmarks of good design. It is very important that the streetscape on SE Foster should anticipate well-designed future projects. All streets should have a clearly-defined pedestrian zone featuring sidewalks, clearly marked crossings and landscaping. In particular, SE 92nd could, with good planning and design, re-emerge as an authentic main street as it once was before the Interstate construction. If vehicle access from SE Foster and SE Woodstock continues as one-way, automobile trips to SE 92nd will depend on access from SE Foster westbound, SE Powell to the north and internal streets. In this event, the intersections will be especially important places to implement good design in order to attract business.

SE Foster and SE 92nd appear to be poised for development and redevelopment. As such, the streets, like the intersections, require careful land planning and design to hold the land values and protect existing homes and businesses. The commercial core area should accommodate both large and small scale retail uses with the potential to serve a market area of tens of thousands of households as well as the immediate neighborhood. The core could serve a community stretching from SE 103rd to SE 87th along the SE Foster and SE Woodstock corridor. Most trips to the area will depend upon the automobile and ease of access and adequate parking are important features of the core. However, transit, pedestrian and bicycle trips should also be accommodated and encouraged.

The commercial core area should be planned in a form that meets the current and future operational needs of retailers. The plan must also allow for future phases of development that could lead to a mix of uses and increased density. The Metro town center designation density of about 40 units per acre should be viewed as a target, but not as an upper limit. Commercial core strategies should include:

- User and building visibility, ease of access, and convenient access to parking should be elements critical to the success of retailers.

- Opportunities for future phases, including additional retail, office, residential and civic uses with the potential for future structured parking should be retained through site planning.

- Any new surface parking lots in initial phases of development should be laid out with the perimeter drive lanes designed with sidewalks and street trees. This design element will strengthen pedestrian access throughout the commercial core area and will allow for the future conversion of surface parking areas to development sites.
Lents Urban Design Concept

The Commercial Core Area should include specific development strategies and design elements that encourage pedestrian activity and provide open space relief. Recommendations include:

• A Town Center or Square: An open space area of approximately 20-40,000 square feet could be set aside for public acquisition and development as a Lents town center or square. Ideally, the square should be bounded on at least two sides by pedestrian-scale local streets. One potential location for this feature could be the southeast corner of SE Reedway and SE 91st to the west of the Fire House, or at the northeast corner of SE Foster and SE 92nd.

• A “Main Street” in the core: SE 92nd appears to meet some of the criteria necessary to build an authentic main street. Bordering the commercial core area on the east, SE 92nd, Lent’s historic main street, could be developed as a pedestrian-oriented retail street with two travel lanes, ample sidewalks, street trees and on-street parking. Its design will serve to link, not separate, residential uses west of 92nd with the retail uses to the south and create a public amenity and identifiable place for the community.
Summary

The Lents commercial corridor, an east-west axis centered on SE Foster and SE Woodstock, is a marginally successful business district surrounded by low and moderate income neighborhoods. The area is visually impacted by large expanses of roads and transportation right-of-ways, and is physically constrained by north-south and east-west transportation corridors that also restrict pedestrian access. Located just west of the Interstate 205 exchange that decimated its historic shopping area, Lents nevertheless functions as a vehicular gateway to Southeast Portland to the west, and to recent residential growth to the east of I-205. The existing shopping district is under-performing and does not adequately serve the adjacent neighborhood. Though the area primarily consists of independent highway-related business, Lents has the potential to evolve into a cohesive, viable shopping area.

Through an upgrade in the vehicular traffic, circulation and parking conditions, and installation of design and pedestrian amenities, Lents has the opportunity to attract auto and pedestrian businesses offering goods and services that will service the adjacent neighborhoods and the growing regional retail traffic. Concurrently, the area could significantly improve its identity and "sense of place" with the addition of a well-designed public realm and features such as wider sidewalks buffered by on-street parking, street trees, good signage, lighting and some well placed civic art or monuments.

Existing Conditions and Opportunities

Lents in the outer southeast was one of Portland's oldest suburban shopping districts and street car neighborhoods. In the early part of this century, the commercial area offered plenty of parking and was centrally located to the growing neighborhoods. Business continued to prosper until the rise of two auto-related events: the development of the area's auto-oriented regional and strip shopping centers including Mall 205, Eastport Shopping Plaza, the Fred Meyers center, and Clackamas Town Center; the construction of I-205 completed in about 1975 that cut off over half Lent's trade area.

The resulting highway interchange at I-205, SE Foster and SE Woodstock contributes to high traffic volumes that peak during AM and PM rush hours. Most of the existing commercial businesses located in the study area depend upon on SE Foster commuter traffic for their trade. The study area has several destination type of retailers such as the Copper Penny Restaurant. It is typical of marginal auto-oriented shopping environments like Lents that customers shop only one destination, and do not cross-shop between businesses, limiting the overall sales potential. The shopping potential may be further negatively impacted by the dated and uninspired appearance of the commercial area.

Short-term convenient parking is generally available assisting the potential for impulse shopping. While the addition of more short-term on street parking could significantly benefit overall trade and sales for retailers, many existing businesses have their own on-site parking lots that preclude the need for structured parking, at least in the forseeable future. These parking lots also function as potential redevelopment sites that will allow future infill and densification along the commercial corridor of SE Foster.

As noted above, the construction of the I-205 freeway was largely responsible for the quick decline in the shopping district's sales and quality of goods and services. The neighborhoods located east of I-205 are partially landlocked by the freeway and limit the Lents business area's ability to attract the east
neighborhoods’ shopping.

The business located on SE Foster (as opposed to SE Woodstock) have the best vehicular access and on-street parking, and generally appear to be the healthiest in the study area. Businesses that continue to locate on SE Foster and Woodstock should benefit from growing retail sales due to the high quantity of vehicle commuters. What’s more, the Portland Development Commission’s urban renewal strategy should encourage medium-high density residential development that could have an important positive impact on the area’s economy.

The general commercial area is beginning to attract new developers and retailers. The available developed and redevelopable sites located on and visible from the west side of the freeway may hold special potential for development as anchor retailers, medium-high density residential, hotel or signature office buildings. However, strictly auto-dependent business such as the new auto body shop located at SE 91st and SE Foster may limit the area’s attraction for more pedestrian-oriented retailers.

Recommendations

Traffic speed along SE Foster should be slowed or calmed to allow for better cross-shopping within the district. On-street parking should be maintained or added where possible. Short-term parking is essential for most retail businesses. The entire district should be visually upgraded from building facades to streetscapes. While building upgrades will depend on an increase in quality retail market activity and the adoption of design standards, SE Foster, SE Woodstock and SE 92nd Street should significantly upgrade the level of pedestrian and street amenities including better lighting, wider sidewalks, street trees and good signage. The streetscape improvements should, in turn, lead to a stronger and broader real estateand retail market interest in Lents.

To insure a minimal level of good urbanism, design standards should be implemented to encourage quality building design and materials, and a public program to encourage the introduction of civic art and monuments along SE Foster. These actions will help to overcome the district’s lack of a unique character and sense of place. The area should implement a section of main street approximately 1,000 feet long with an adjacent landscaped green or square in a central location along the street. The south end of SE 92nd appears to provide the most likely location for a potential main street that will help to encourage restaurants, cafés, unique businesses and residential development. Portland Development Commission’s continued efforts to redevelop Lents, in partnership with private developers and neighborhood organizations, will, with good planning and design, result in a Lents that residents, business owners and shoppers can be proud of.
Overview

There are three essential street functions that, depending on where and how they are used, can support or undermine urban renewal and commercial revitalization: The street as an auto-dominated transportation realm with auto-dependent businesses, the street as a mixed transportation and commercial realm that supports both auto and pedestrians business, and the street that functions as a retail “marketplace”, where cars and pedestrians have relative equal status in the public realm.

- Transportation Corridor: The street that functions primarily as vehicular place and pedestrian barrier is called a Transportation Corridor. Local examples include SE Powell and 82nd Ave where the “car is king”.

- Commercial Streets: Streets such as SE Foster and SE Grande have the dual function of carrying large amounts of traffic and supporting some pedestrian-accessible commercial businesses. Commercial streets may be more or less pedestrian-friendly depending whether the fulcrum is moved towards traffic flow or pedestrians.

- Main Streets: Retail market streets are less concerned with moving traffic quickly than making retail convenient to vehicles and pedestrians. Examples such as NW 23rd Ave. and SE Hawthorne are often filled with people and cars co-mingled in the public realm.

These street types may change from one part of town to another just as SE Belmont changes from a one-way commercial street at the Morrison Bridge to a two-way main street from SE 28th to SE 39th. The surrounding land uses are both impacted by and directly affect the street’s function and attributes. Generally, one way traffic increases vehicle movement and decreases the ability for retailers to attract both the work-bound and home-bound commuters.

Thus, main streets need two-way traffic that moves relatively slowly and require on-street parking that allows at least the perception of convenient vehicle access. Commercial streets and transportation corridors can be one-way routes that facilitate traffic flow. While commercial streets require at least some on-street parking to allow pedestrian-oriented business to survive, transportation corridors can forego on-street parking that slows the flow of traffic.

In terms of streetscape design, transportation corridors are generally viewed from a vehicle’s interior. Landscaping, good signage and street lighting, however, will still improve the auto and pedestrian realms. Tree-lined boulevards are examples of attractive transportation-dominant streets.

An ideal “Main Street” environment
Commercial streets should require buildings with a minimum of two stories at least half of which front directly on the street, not behind parking lots, plus adequate sidewalks and other pedestrian amenities to prevent a strip retail environment.

Finally, main streets, with their historic legacy of people, public transit and private vehicles in close proximity, need continuous, lively storefront facades, wide sidewalks and good lighting to create the kind of “outdoor rooms” that attract people and business.

The two Alternatives on the attached pages describe the attributes and recommended features of the Main Street, Commercial Street and Transportation Corridor.
<table>
<thead>
<tr>
<th>Recommended Street Features</th>
<th>Main Street</th>
<th>Main Street</th>
<th>Transportation Street</th>
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<tr>
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<td>at minimum 50% of intersections</td>
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<td>*necessary for retailers and connections to neighborhoods</td>
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<tr>
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<td>where ROW allows</td>
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<tr>
<td>Center medians with street trees</td>
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<tr>
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<td>yes</td>
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<td>Example</td>
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<td>SE Hawthorne</td>
<td>NE/SE 82nd</td>
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© June 1999 Lennertz Coyle Associates
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<th>Street Types:</th>
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<th>Transportation Street</th>
<th>Comments</th>
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<td>SE Woodstock, SE 90th to SE 97th</td>
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</table>

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GUIDELINES

Sidewalks. 12' where the sidewalk allows; 4' for furnishing zone; 8' for through pedestrian zone (in conformance with Portland Pedestrian Design Guide).

Curb cuts, driveways. Consolidate driveways and minimize curb cuts.

Curb extensions. At all corners, except on east and west corners of 88th at Foster.

Marked crosswalks. At all corners, painted or scored concrete (preferred).

Lighting. Two alternatives are illustrated, see plans. Especially on commercial streets, the white light of a metal halide luminaire is preferred, over the orange light produced by City standard sodium vapor. Pedestrian scale pole-mounted luminaire is preferred. See “Alternative Lighting and Tree Planting Designs” for specifications.

Trees. 20’-30’ spacing, depending on the species selected: Trees with a 20’ spread, plant 20’ o.c.; trees with a 30’ spread, plant 30’ o.c. (in conformance with Portland Urban Forestry Street Tree Planting Guidelines). Canopy type tree preferred. See Canopy-type Tree list.

Streetscape Design Guidelines for Commercial Street
Southeast 88th Avenue and Foster Road

Lents Town Center Plan
City of Portland • Lennertz Coyle & Associates • DKS • Urbisworks, Inc.
Alternative A: Single ornamental light standard at corners; City standard cobra-style light poles located midblock.
Alternative B: Single ornamental light standards at corners and midblock, 127’ spacing. See “Alternative Lighting and Tree Planting Designs”.

GUIDELINES

Sidewalks. 12’ where the sidewalk allows; 4’ for furnishing zone; 8’ for through-pedestrian zone (in conformance with Portland Pedestrian Design Guide).

On-street parking. Maximize, where possible.

Curb cuts, driveways. Consolidate driveways and minimize curb cuts.

Curb extensions. At north corners of Foster at 92nd.

Marked crosswalks. At all corners, painted or scored concrete (preferred).

Lighting. Two alternatives are illustrated, see plans. Especially on commercial streets, the white light of a metal halide luminaire is preferred, over the orange light produced by City standard sodium vapor. Pedestrian scale pole-mounted luminaire is preferred. See “Alternative Lighting and Tree Planting Designs” for specifications.

Trees. 20’-30’ spacing, depending on the species selected. Trees with a 20’ spread, plant 20’ o.c.; trees with a 30’ spread, plant 30’ o.c. (in conformance with Portland Urban Forestry Street Tree Planting Guidelines) canopy type tree preferred. For possible canopy-type street tree species, see Canopy-type Tree list.

Streetscape Design Guidelines for Commercial Street
Southeast 92nd Avenue and Foster Road

Lents Town Center Plan
City of Portland • Lennertz Coyle & Associates • DKS • Urbsworks, Inc.
Alternative A: Single ornamental light standard at corners; City standard cobra-style light poles located midblock.

Alternative B: Single ornamental light standards at corners and midblock, 127’ spacing. See “Alternative Lighting and Tree Planting Designs”.

GUIDELINES

Sidewalks. 12’ where the sidewalk allows; 4’ for furnishing zone; 8’ for through-pedestrian zone (in conformance with Portland Pedestrian Design Guide).

On-street parking. Maximize, where possible.

Curb cuts, driveways. Consolidate driveways and minimize curb cuts.

Curb extensions. At north corners of Woodstock at 92nd.

Marked crosswalks. At all corners, painted or scored concrete (preferred).

Lighting. Two alternatives are illustrated, see plans. Especially on commercial streets, the white light of a metal halide luminaire is preferred, over the orange light produced by City standard sodium vapor. Pedestrian scale pole-mounted luminaire is preferred. See “Alternative Lighting and Tree Planting Designs” for specifications.

Trees. 20’-30’ spacing, depending on the species selected: Trees with a 20’ spread, plant 20’ o.c.; trees with a 30’ spread, plant 30’ o.c. (in conformance with Portland Urban Forestry Street Tree Planting Guidelines) canopy type tree preferred. For possible canopy-type street tree species, see Canopy-type Tree list. Plant trees 25’ from the curb line of intersections.

Streetscape Design Guidelines for Transportation Corridor
Southeast 92nd Avenue and Woodstock Boulevard

Lents Town Center Plan
City of Portland • Lennertz Coyle & Associates • DKS • Urbworks, Inc.
92nd Main Street Alternative A
Trees spaced 30-35'
Same pole and luminaire as at 91st.
Light poles spaced 120-135', or one at each end of block and one at center. Similar to spacing at improved segment of 91st.

92nd Main Street Alternative B
Trees spaced 60-70'
Same pole and luminaire as at 91st.
Light poles spaced 60-70', or at quarter block intervals. Within 200', this spacing is similar to lighting at South Park blocks in downtown Portland.

**Lighting on Woodstock and Foster, Alternative B Specifications**

Single ornamental light standards at corners and midblock, 127' staggered spacing, resulting in a pole every 63.5', at alternate sides of the street.

- **Pole:** Aluminum or fiberglass, 18' high
- **Luminaire:** Acorn type
- **Average footcandle** (.9 min. required for major arterial per IES): .92
- **Uniformity** (3:1 max, per IES): 2.09:1
- **Veiling luminance** (3:1 per IES): .297:1

**Alternative Lighting and Tree Planting Designs**

For 92nd Main Street and Foster/Woodstock

**Lents Town Center Plan**

City of Portland • Lennertz Coyle & Associates • DKS • Urbworks, Inc.
GUIDELINES

Sidewalks. 12' required: 4' for furnishing zone; 8' for through pedestrian zone; 15' preferred: 4' for furnishing zone; 8' through-pedestrian zone; 2'6" storefront frontage zone, (in conformance with Portland Pedestrian Design Guide). For additional information, see "Sidewalk Details".

On-street parking. Provide a maximum number of spaces.

Curb cuts, driveways. Consolidate driveways and minimize curb cuts.

Lighting. Two alternatives are illustrated, see "Alternative Lighting and Tree Planting Plans". Especially on commercial streets, the white light of a metal halide luminaire is preferred, over the orange light produced by City standard sodium vapor. Pedestrian scale pole-mounted luminaire is preferred.

Trees. Two alternatives are illustrated, see "Alternative Lighting and Tree Planting Plans". Plans show a columnar-type tree. Trees must be located 25' from light poles. Between light poles, plant trees at 10'-20' spacing, depending on the species selected: trees with a 10' spread, plant 10' o.c.; trees with a 20' spread, plant 20' o.c. (in conformance with Portland Urban Forestry Street Tree Planting Guidelines). For possible columnar-type street tree species, see Columnar-type Tree list. Plant trees 25' from the curb line of intersections.

Section through 92nd Avenue

Streetscape Design Guidelines for Main Street
Southeast 92nd Avenue north of Foster Road

Lents Town Center Plan
City of Portland • Lennertz Coyle & Associates • DKS • Urbsworks, Inc.
SIDEWALK DESIGN GUIDELINES

Trees, light poles and street furniture such as benches, drinking fountains, bike racks, planters and garbage receptacles should occupy the 4' space between the curb zone and the through-pedestrian zone. When benches are placed next to the curb, they should face the storefront, not the street. Benches, removable planters and temporary cafe seating can also be located in the frontage zone (next to the building), as long as the through-pedestrian zone remains clear.

Where existing buildings prevent sidewalk from reaching an ideal 12'-0" width, adjustments can be made to the frontage zone and/or the furnishings zone. The through pedestrian zone can be reduced to 4'-6". Furnishings zone can be reduced to 3'-0". Reduction to less than 3'-0" is not recommended but in certain cases may be unavoidable. (Less than 3'-0" generally prohibits tree planting). The frontage zone can be reduced to 0'.

Trees are protected by Portland City standard tree grates, either with 4' x 4' size preferred. Select grates similar in style to those located on the improved portion of 91st street.

Sidewalk Details

Lents Town Center Plan

City of Portland • Lennertz Coyle & Associates • DKS • Urbsworks, Inc.
## CANOPY-TYPE TREES, from Portland Urban Forestry Street Tree List

<table>
<thead>
<tr>
<th>Name</th>
<th>Latin name</th>
<th>Description</th>
<th>Mature Height</th>
<th>Canopy Spread</th>
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<tr>
<td>Paperbark Maple</td>
<td>Acer griseum</td>
<td>round in habit, green w/ silver under foliage, bright red-orange fall color</td>
<td>30'</td>
<td>20'</td>
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<tr>
<td>Pyramidal European Hornbeam</td>
<td>Carpinus betulus 'Fastigiata'</td>
<td>broadly oval, dark green foliage, yellow fall color</td>
<td>35'</td>
<td>20'</td>
</tr>
<tr>
<td>Glorybower Tree</td>
<td>Clerodendrum trichotomum</td>
<td>round in habit, dark green foliage, white clusters of fragrant flowers, blue-green fruit</td>
<td>20'</td>
<td>20'</td>
</tr>
<tr>
<td>Lavalle Hawthorn</td>
<td>Crataegus x lavallei</td>
<td>more erect and less twiggy growth than other hawthorns. very handsome tree</td>
<td>30'</td>
<td>20'</td>
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<tr>
<td>Newport Plum</td>
<td>Prunus cerasifera 'Newport'</td>
<td>oval to round in habit, dark purple, light pink flowers, red fruit</td>
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<tr>
<td>Chancellor Linden</td>
<td>Tilia cordata 'Chancole'</td>
<td>pyramidal in habit, dark green foliage, yellow fall color</td>
<td>35'</td>
<td>20'</td>
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<tr>
<td><strong>25' CANOPY</strong></td>
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<td>Hedge Maple</td>
<td>Acer campestre</td>
<td>round in habit, dark green foliage, yellow fall color</td>
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<td>Cleveland Norway Maple</td>
<td>Acer platanoides 'Cleveland'</td>
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<td>Variegated Norway Maple</td>
<td>Acer platanoides 'Drummondii'</td>
<td>broadly oval in habit, light green with white margin foliage</td>
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<td>Pacific Sunset Maple</td>
<td>Acer truncatum x A. platanoides 'Warrenred'</td>
<td>upright in habit, dark green foliage, yellow to orange-red fall color</td>
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<td>Robinson Crab</td>
<td>Malus 'Robinson'</td>
<td>upright in habit, red to bronze foliage, deep pink flowers, dark red fruit</td>
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<td>American Hophornbeam</td>
<td>Ostrya virginiana</td>
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<td>25'</td>
</tr>
<tr>
<td><strong>30' CANOPY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Queen Elizabeth Maple</td>
<td>Acer campestre 'Evelyn'</td>
<td>upright habit, dark green foliage, yellow fall color</td>
<td>35'</td>
<td>30'</td>
</tr>
<tr>
<td>Chinese Dogwood</td>
<td>Cornus kousa chinensis</td>
<td>round in habit, green foliage, white flowers, yellow fall color</td>
<td>30'</td>
<td>30'</td>
</tr>
<tr>
<td>Saratoga Ginkgo</td>
<td>Ginkgo biloba 'Saratoga'</td>
<td>extremely free of pests, very tolerant of pollution and salt, requires little maintenance, slow-growing and long-livew</td>
<td>30'</td>
<td>30'</td>
</tr>
<tr>
<td>Kobus Magnolia</td>
<td>Magnolia kobus</td>
<td>round in habit, dark green foliage, year-round, white flowers</td>
<td>40'</td>
<td>30'</td>
</tr>
<tr>
<td>Forest Green Oak</td>
<td>Quercus trainetto</td>
<td>upright with strong central leader, glossy deep green foliage, a good street tree where no power lines exist</td>
<td>50'</td>
<td>30'</td>
</tr>
</tbody>
</table>
# Columnar-Type Trees

**Columnar Sargent Cherry**  
*Prunus sargentii 'Columnaris'*  
Fastigiate in habit, green foliage, deep pink flowers, orange-red fall color  
**Mature Height:** 30'  
**Canopy Spread:** 10'

**Capital Pear**  
*Pyrus calleryana 'Capital'*  
Columnar in habit, medium green foliage, white flower clusters, orange-red fall color  
**Mature Height:** 35'  
**Canopy Spread:** 12'

**Tsconoski Crab**  
*Malus tsconoskii*  
Upright in habit, silvery green foliage, white flowers, orange-red-purple fall color, green fruit but sparse  
**Mature Height:** 28'  
**Canopy Spread:** 14'

**Flowering Ash**  
*Fraxinus ornus*  
Pyramidal to round in habit, medium green foliage, off-white fragrant flowers, yellow fall color  
**Mature Height:** 30'  
**Canopy Spread:** 15'

**Columnar Norway Maple, Compact**  
*Acer platanoides 'Columnar'*  
Compact form  
Narrow, upright in habit, dark green foliage, yellow fall color  
**Mature Height:** 35'  
**Canopy Spread:** 15'

**Cleveland Select Pear**  
*Pyrus calleryana 'Cleveland Select'*  
Upright, pyramidal in habit  
Glossy green foliage, white flowers, purplish-red fall color  
**Mature Height:** 30'  
**Canopy Spread:** 18-20'
street trees

storefront façade improvements

lighting: single ornamental style, metal halide luminaires preferred

awnings over sidewalk

blade type signs

benches

textured crosswalks
APPENDIX C
PUBLIC INVOLVEMENT CHRONOLOGY
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>Feb. 10, '99</td>
<td>Lents Neighborhood Association Board</td>
</tr>
<tr>
<td></td>
<td><em>Overview of project</em></td>
</tr>
<tr>
<td>Mar 3, '99</td>
<td>Citizens Advisory Committee #1</td>
</tr>
<tr>
<td></td>
<td><em>Review process, existing condition report, define goals and objectives</em></td>
</tr>
<tr>
<td>Apr 5, '99</td>
<td>Citizens Advisory Committee #2</td>
</tr>
<tr>
<td></td>
<td><em>Alternatives development</em></td>
</tr>
<tr>
<td>Apr 13, '99</td>
<td>Community Open House #1</td>
</tr>
<tr>
<td>Apr 22, '99</td>
<td>Technical Advisory Committee #1</td>
</tr>
<tr>
<td>May 19, '99</td>
<td>Citizens Advisory Committee #3</td>
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<tr>
<td></td>
<td><em>Alternatives evaluation</em></td>
</tr>
<tr>
<td>June 8, '99</td>
<td>Community Open House #2</td>
</tr>
<tr>
<td>June 8, '99</td>
<td>Lents Urban Renewal Plan/ Redevelopment Comm.</td>
</tr>
<tr>
<td></td>
<td><em>Presentation of plan alternatives</em></td>
</tr>
<tr>
<td>June 24, '99</td>
<td>Citizens Advisory Committee #4</td>
</tr>
<tr>
<td></td>
<td><em>Alternatives evaluation</em></td>
</tr>
<tr>
<td>July 20, '99</td>
<td>Technical Advisory Committee #2</td>
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<tr>
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<td><em>Alternatives evaluation</em></td>
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<tr>
<td>July 27, '99</td>
<td>Lents Neighborhood Association</td>
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<tr>
<td></td>
<td><em>Presentation of project to date</em></td>
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<tr>
<td>Aug 5, '99</td>
<td>Citizens Advisory Committee #5</td>
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<tr>
<td></td>
<td><em>Recommendation discussion, design issues</em></td>
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<tr>
<td>Aug 26, '99</td>
<td>Citizens Advisory Committee #6</td>
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<tr>
<td></td>
<td><em>Recommendation discussion, design issues, streetscape plan</em></td>
</tr>
<tr>
<td>Sept 14, '99</td>
<td>Foster Area Business Association</td>
</tr>
<tr>
<td></td>
<td><em>Presentation of the plan recommendation</em></td>
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<tr>
<td>Sept 16, '99</td>
<td>Citizens Advisory Committee #7</td>
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<tr>
<td></td>
<td><em>Adoption of draft recommendations</em></td>
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<tr>
<td>Oct 12, '99</td>
<td>Lents Urban Renewal Advisory Committee</td>
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<tr>
<td></td>
<td><em>Presentation of recommendations</em></td>
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</tbody>
</table>
APPENDIX D
PREFERRED ALTERNATIVE COST ESTIMATE
Memorandum

October 6, 1999

to: Rich Newlands/Crystal Atkins
   Lents Project Manager

from: Mel Mohning
   Transportation Engineering

re: Lents Town Center Project Estimate and Schedule

Please accept this base estimate and schedule for the Lents Town Center Project. Phase I, Phase III, and Phase IV are included herein. No work is included for a proposed Phase II. This would have been a signal at SE 94th and Woodstock and the pedestrian signal at SE Henry Street and SE Foster Road. The first signal fits logically in Phase III and the pedestrian signal fits in Phase IV.

Project Scope: (Sketch Attached)

A. Phase I is the north side of SE Foster Blvd, from SE 87th Ave. to and including SE 92nd Avenue. Also included is the SE/NE corner of Woodstock/Foster/90th intersection. Three new signals are included, the Woodstock/Foster/90th intersection, the 91st and Foster intersection, and the replacement of the Foster and SE 92nd Ave. signal.

B. No improvements are included for Phase II: the signal at 91st and SE Woodstock and the pedestrian signal at SE Henry St. and SE Foster Road for this proposed phase are included in Phase III and Phase IV.

C. Phase III is the South side of SE Foster 87th to 92nd, SE Foster 92nd to west side I-205 off-ramp and SE Woodstock from 90th to the west side I-205 on-ramp. Two new signals are included, SE 91st and Woodstock and SE 92nd and Woodstock.

D. Phase IV is SE Foster and SE Woodstock from the West Side I-205 on/off ramp to SE 102nd Avenue. Two new pedestrian signals are included at SE Henry St. and SE Foster Road. This signal was considered to cost the same as one regular traffic signal.

Schedule:

A. Phase I Construction Begins
   1. Survey
      Target Date: June 30, 2000
      Oct 1, 1999 - Nov 1, 1999
   2. Base Maps/Field Checks
      Nov 1, 1999 - Dec 1, 1999
   3. 30-50% Design
      Nov 1, 1999 - Dec 15, 1999
   4. 50-95% Design
      Dec 15, 1999 - Feb 15, 2000
   5. Contract Documents
      Feb 15, 2000 - Mar 30, 2000

Estimate:

A. The 1999/2000 budgeted amount is $31,928 (CDS/883) broken down as follows:
   1. Design Engineer, Drafter, and Senior Engineer: $23,198
2. Survey Crew (Data Collection): $7,830
3. Miscellaneous $900
   As you know the budget serves as a guideline only; it is not based on precise estimating methods.

B. The detailed estimated cost for Phase I is $2.824M. The estimated cost for Phase III is $3.10M, and Phase IV is $3.70M

Assumptions:

1. No provision is included in the base estimate for pavement reconstruction, except for new pavement areas from realignment or street widening and the adjacent 3' along the new curb face in existing pavement areas.
2. New inlets and leads are required and connect to existing sump or other storm/combined system; does not include new sumps or manholes.
3. Stormwater quality/quantity treatment as required by the BES Storm Water Management Manual is not included in this estimate. We expect, but are not certain, the contingency will cover this item.
4. No Bus shelter pads, bike racks, or street furniture are included; this may be considered part of the contingency.
5. Sidewalks and curb are completely rebuilt to along the entire length of widened sidewalk areas.
6. No Striping revisions are included in the base estimate, but would also be part of the contingency.
7. An estimated amount of signing, 6 sq. ft per every 100 ft of new curb.
8. Street lighting is included (single ornamental poles and lights)
9. Street trees and tree grates/frames are included.
10. There is inclusion of landscaping and irrigation for the median in Phase IV.
11. Contingency of 40% (estimate is based on conceptual layout without detailed information on utilities, design, etc.; this percentage is our standard contingency factor at this stage of a project)
12. Construction Engineering/Contract Management of 15% (basically includes engineer, technician, survey crew, and construction inspector; estimate does not include your time as project manager)
13. Preliminary Engineering/Design of 25% (includes engineering, drafting, survey, etc.; does not include your time as project manager)
14. **No estimate was made for right-of-way or building demolition/relocation.**

C. A more precise estimate for Phase I Engineering will be provided as the design gets underway. This estimate will be provided by November 1, 1999, if you agree to proceed. Please contact Christine Leon at ext. 7441 to discuss.
Cost Estimate  
SE Lents Town Center  
Detailed Estimate Enclosed  
S:\AE\PROJECTS\37017\Est\FCM\lents.xls

### Phase I

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Contract</td>
<td>1,397,633</td>
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<td>Contingency (5%)</td>
<td>68,380</td>
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<td><strong>Total Contract</strong></td>
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<tr>
<td>Preliminary Engineering (PE) 25%</td>
<td>359,000</td>
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<td>Construction Engineering (CE) 15%</td>
<td>215,400</td>
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<tr>
<td>Estimate Contingency 40%</td>
<td>804,165</td>
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<td><strong>Grand Total</strong></td>
<td><strong>2,814,578</strong></td>
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### Phase III

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<td>75,190</td>
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<td><strong>Total Contract</strong></td>
<td><strong>1,578,910</strong></td>
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<td>Preliminary Engineering (PE) 25%</td>
<td>394,730</td>
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<td>Construction Engineering (CE) 15%</td>
<td>236,840</td>
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<td>Estimate Contingency 40%</td>
<td>884,192</td>
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<td><strong>Grand Total</strong></td>
<td><strong>3,094,672</strong></td>
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### Phase IV

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<td>Contingency (5%)</td>
<td>89,740</td>
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<td><strong>Total Contract</strong></td>
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<td>Preliminary Engineering (PE) 25%</td>
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<td>Estimate Contingency 40%</td>
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<tr>
<td><strong>Grand Total</strong></td>
<td><strong>3,693,640</strong></td>
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**APPROVED**

Division Manager  
Transportation Engineering Services Division  
S:\AE\PROJECTS\37017\CITY\LENTS SCOPe.doc
<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEMS OF WORK AND MATERIALS</th>
<th>UNIT UNIT PRICE</th>
<th>QUANT.</th>
<th>AMOUNT</th>
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<tbody>
<tr>
<td>1</td>
<td>Mobilization</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Temp. Pole &amp; Dir. of Traffic</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Temporary Baricades</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Erosion Control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Towers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Fences</td>
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</tr>
<tr>
<td>7</td>
<td>CC Pedestrian Detectors</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>30&quot; Concrete Curb</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Berms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>12&quot; Concrete Sidewalk</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>8&quot; Reinforced Concrete</td>
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<tr>
<td>12</td>
<td>Landscape Lighting</td>
<td></td>
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</table>

**Total Costs:**

<p>| | |</p>
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<tr>
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<tbody>
<tr>
<td>SUBTOTAL Estimate:</td>
<td>$1,400,000.00</td>
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<td>Contingency (15%)</td>
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<tr>
<td>Subtotal:</td>
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<tr>
<td>PE Engineering (25%)</td>
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<td>CE Engineering (15%)</td>
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<tr>
<td>TOTAL:</td>
<td>$2,263,000.00</td>
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*Preliminary estimate expanded.*