

Fourth Plain Boulevard Streetscape Design Study



June 28, 2008

Acknowledgements

Project Advisory Team:

Todd Boulanger, City of Vancouver

Ali Eghtedari, City of Vancouver

Lisa Goorjian, City of Vancouver

Michael Jacobs, City of Vancouver

John Manix, City of Vancouver

Brooke Porter, City of Vancouver

Ahmad Qayoumi, City of Vancouver

Matt Ransom, City of Vancouver

Charles Ray, City of Vancouver

Bryan Snodgrass, City of Vancouver

Phil Wuest, City of Vancouver

Heidi Rosenberg, Vancouver School District

Debbie Elvin-Snyder, C-TRAN

Janeen Loughin, C-TRAN

Jennifer Campos, City of Vancouver

Consultant Team:

Tom Litster, Otak

Maggie Daly, Otak

Kathryn Yagodinski, Otak

Peter Coffey, DKS Associates

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Introduction

In 2006, the City of Vancouver and community stakeholders initiated the Fourth Plain Corridor Subarea Plan. The plan was completed in January 2007 and follows the specific directives of the Implementation Program. Opportunities and challenges were evaluated. Hopes for the future from residents and businesses were documented. One overarching theme was “Change the Street”. A changed street will be a walking street. Intersections will be improved for pedestrians. The sidewalks will be a desirable front door for businesses. It will be a transit street with high-level service and amenities as a priority. To the extent possible, landscaped medians will put the “boulevard” back in Fourth Plain Boulevard, and an overall access management strategy will be implemented.

The vision is clear. What next? A more extensive study of the streetscape with outcomes in the form of detailed design concepts was needed. The Fourth Plain Streetscape Design Study was initiated to meet that need. The study area for the project is from Fort Vancouver Way to N.E. Andresen Street (Figure 1). It is home for multi-ethnic communities, small businesses and significant public facilities. Fourth Plain Boulevard is a “spine” for the surrounding neighborhoods.

A consultant team lead by Otak, Inc. was selected and a Project Advisory Team (PAT) was formed drawing from City of Vancouver, Vancouver School District and C-TRAN staffs.

Developing design concepts for a renewed streetscape included four major steps. (1.) Distinct design areas within the corridor area were identified. (2.) Design principles were identified and a specific Basis of Design matrix (BOD) was developed for each design area. (3.) A design toolkit of potential streetscape improvements was developed. It was understood that the design “tools” for each design area may be unique. Tools are conceptual design solutions for the typical elements of an urban street. They serve as guidelines and illustrations of desired features, dimensions and configurations.

The fourth step was to move from guideline to standards. Several tools were selected to be updated as street design standards that will apply to frontage improvements for Fourth Plain. Improvements will occur through requirements for redevelopment and through a City capital improvements project though usually not at the same time. The intent of tool kit and design standards is twofold: implement the vision for the Fourth Plain Corridor and ensure a consistent design character for the streetscapes within each design area.

The PAT participated in a series of “hands-on” workshops. They provided a link to the Fourth Plain Corridor Subarea Plan, previous outreach to business and citizen groups, and future transit planning for the corridor. They also provided technical and policy review of draft design tools based on City of Vancouver standards, practices, and policies.

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Corridor Design Areas

The corridor was separated into three distinct design areas. Each area reflects existing roadway and right-of-way conditions, business environment, multi-cultural characteristics, and unique opportunities and constraints. The development potential of key nodes, or pulse points, Subarea Plan Pulse Points was considered. The design areas are Village Street, Green Necklace and Commercial Street (Figure 1).

Each design area contains gateway intersections. These are major entries into the corridor from intersecting arterial or collector streets and closely match the gateway intersections from the Fourth Plain Corridor Subarea Plan. A gateway is a high visibility opportunity for special design features and for an emphasis on pedestrian amenities and enhanced transit stops. They are also focus points for future redevelopment.

Village Design Area

The Village area extends from just east of Fort Vancouver Way to the Burnt Bridge Creek Greenway. It includes Pulse Point 1 from the Subarea Plan and two gateway intersections. The Village area is home to some of the oldest development in the corridor. The segment from Fort Vancouver Way to Grand Boulevard has great potential for a Main Street character. The existing right-of-way is relatively narrow with many existing buildings close to the street. The future development focus is on retail, residential and educational uses (Clark College and VSD).

Green Necklace Design Area

The Green Necklace begins at the Burnt Bridge Creek Greenway and extends to the intersection with NE 62nd Avenue. It includes three gateway intersections and Subarea Plan Pulse Point 2, Community Center, and Pulse Point 3, Employment Focus. The planned development

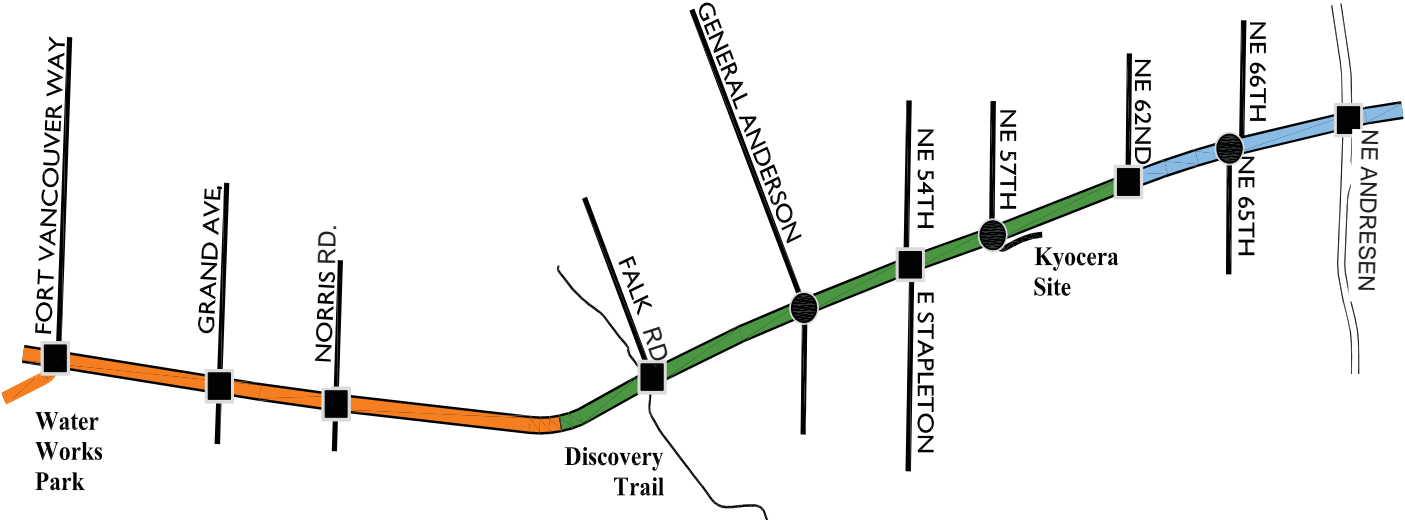
focus includes a consolidated City operations building and additional employment uses.

In this design area, Fourth Plain Boulevard serves as a front door to more public facilities and a mix of employment and commercial uses. The street is also a gateway to the City's regional trail system, with a major trail crossing at NE Falk. Beginning at NE 54th Avenue, there is a meandering walkway on the south side of the street as frontage for the former Kyocera site. The walkway is set back from the street with large areas of informal landscaping. The Green Necklace concept includes continuing an existing meandering and heavily landscaped walkway as frontage for future developments. The concept also celebrates the Burnt Bridge Creek Greenway and opportunity to implement landscaped medians as roadway green space.

Commercial Design Area

The Commercial Design Area extends from NE 62nd Avenue to NE Andresen. It includes two gateways. Subarea Pulse Point 4, Regional Destination, defines the land use environment. It is dominated by newer commercial buildings with large footprints and paved parking areas. Vacant buildings and underutilized lots are infill development opportunities. The existing sidewalks are incomplete or sub-standard in many areas. The intersection of Fourth Plain and NE Andresen is large and pedestrian unfriendly. There are no buildings close to the street to help architecturally define the intersection.

KEY MAP



- Gateway Intersections (Corridor Sub Area Plan)
- Secondary Intersections
- Village Design Area
- Green Necklace Design Area
- Commercial Design Area
- Intersecting Streets

Figure 1

Design Principles

The Subarea Plan identified design principles to implement the vision for the corridor. The principles offered specific direction for enhancing the streetscape. It should tie the Pulse Points and gateway intersections together, providing an attractive front door for businesses, and should celebrate the multicultural diversity and historic past of the corridor. Pedestrian and transit use should be encouraged, and multimodal safety should be improved.

These principles became a starting point for the Fourth Plain Streetscape Design Study. They were linked to specific streetscape elements that would help realize the principles through design concepts. The role of the street in future redevelopment was also considered. Land use and streetscape are elements of a single place. Better street design can create a high-quality and appealing setting. Transportation will benefit from better street design by increasing the comfort of all users and encouraging travel by modes other than the private vehicle. A Basis of Design matrix was developed for each of the three design areas (pages 5 - 7). The BOD summarizes design criteria endorsed by the PAT. It addresses consistency with the vision of the corridor plan as basis for design and suggests potential implementation opportunities.

Implementing Corridor Subarea Plan Design Principles

Corridor Sub Area Design Principles	Streetscape Design Study Focus
Safety improvements	<ul style="list-style-type: none"> • Access management for safety • Pedestrian mobility and safety • Bike lane and intersection improvements for safety • Consolidate C-TRAN stops to intersections • Street light improvements • Moderate traffic speeding
Link Pulse Points with streetscape	<ul style="list-style-type: none"> • Distinct streetscape design areas • Intersection gateway design • Pedestrian crossing opportunities • Sidewalk design character and continuity • Enhanced street “green space”
Attractive front door for business	<ul style="list-style-type: none"> • Sidewalk design character • Enhance street “green space” • Enhance transit stops • Intersection gateway design • Minimize maintenance of old streetscape
A walking street	<ul style="list-style-type: none"> • Sidewalk functional design • Sidewalk character design • Enhance pedestrian crossing opportunities • Improve street lighting • Enhance tree canopy • Driveway closure/consolidation • Infill buildings in setbacks/ heights
A transit street	<ul style="list-style-type: none"> • Sidewalk functional design • Sidewalk character design • Enhanced pedestrian crossing opportunities • Upgrade bus stops to transit stations • Consolidate bus stops • Priority to buses for limited fast services

Basis of Design - Village Design Area (Fort Vancouver Way to Burnt Bridge Creek Trail)

Streetscape Element	Design Criteria	Basis of Design	Implementation Needs
Sidewalk Area Cross-Section	12-foot minimum. 15-foot at intersections.	Retail uses, high pedestrian activity, Main Street character.	Adopt updated street standard details. Adopt proposed Fourth Plain Corridor Overlay District.
Sidewalk Paving	Scored concrete with a pattern for each design area.	Transforming street character, integrate Pulse Points.	Adopt updated street standard details.
Furnishing Zone	5-foot min., 6-foot preferred. Distinctive scoring.	Transforming street character, integrate Pulse Points.	Adopt updated street standard details.
Street Corner Paving	Concrete pavers or distinctly scored concrete.	Gateway treatment, Main Street char- acter.	Adopt updated street standard details.
Pedestrian Crossing Treatments (Intersections)	ADA compliant curb ramps. Tex- tured crosswalks optional.	Walkability, pedestrian safety, Main Street appeal.	Per current City street design standards. Changes to truncated dome list. (gray/black)
Pedestrian Crossing Treatments (mid-block)	Pedestrian refuge 8-foot minimum and landscaping.	Walkability, pedestrian refuge for safety, Main Street appeal.	Adopt updated street standard details, con- sider with other intersection improvements. City of Vancouver Pedestrian Crossing Treat- ment Policy (2007)
Median (landscaped)	12-foot min. width for trees and pedestrian refuge. (can vary due to site constraints)	Access management, safety, and street “green spaces”.	With access management strategy for redevelopment
Bus Stops	Enhanced shelter designs and pas- senger amenities.	Main Street and transit street appeal.	Coordinate design details and implementation with C-TRAN. Consolidate stops.
Street Trees	30 to 35-foot on-center. Select from City tree list.	Visual and pedestrian appeal. Enhance street “green space”.	Funded City streetscape or redevelopment street frontage.
Street Furnishings & Street Lighting	Types and manufacturers to be determined.	Pedestrian comfort and safety. “Front door” for business.	Funded streetscape project funded or rede- velopment requirement.

Basis of Design - Green Necklace Design Area (Burnt Bridge Creek Trail to NE 62nd Avenue)

Streetscape Element	Design Criteria	Basis of Design	Implementation Needs
North Sidewalk Cross-Section	10-foot minimum. 12-foot preferred.	Connect Pulse Points, encourage pedestrian activity.	Adopt updated street standard details. Adopt proposed Fourth Plain Corridor Overlay District.
South Sidewalk Cross-Section	8 feet minimum and meandering alignment. Easement required	Identifying street character, builds on existing features.	Adopt updated street standard details.
Sidewalk Pavement	Scored concrete.	Identifying street character, builds on existing features.	Adopt updated street standard details.
North Sidewalk Furnishing Zone	Landscape planter 4-feet min. 5-feet preferred. Paved with tree wells at street corners.	Secondary “Green Necklace” opportunity for plantings.	Adopt updated street standard details.
South Sidewalk Furnishing Zone	Varies with meandering walk. Paved at intersections.	Primary “Green Necklace” opportunity for plantings.	Adopt updated street standard details.
Pedestrian Crossing Treatments (Intersections)	ADA compliant curb ramps. Marked crosswalks at signalized intersections	Walkability, pedestrian safety. Improved pedestrian access to transit.	Per current City street design standards. Changes to truncated dome list. (gray/black)
Pedestrian Crossing Treatments (mid-block)	Pedestrian refuge in medians. 8-foot minimum width.	Walkability, pedestrian safety. Improved pedestrian access to transit. “Green space” appeal.	Access management strategy for redevelopment. Bus stop relocations/improvements. City of Vancouver Pedestrian Crossing Treatment Policy (2007)
Median (landscaped)	12-foot min. width for trees and pedestrian refuge.	Walkability, tree canopy, access management.	Access management strategy for redevelopment. Bus stop relocations/improvements.
Bus Stops	Enhanced shelters, passenger amenities. Potential relocation for safer pedestrian crossing.	Civic use appeal, priority Transit Street feature.	Coordinate design details and implementation with C-TRAN. Consolidate stops.
Street Trees	30 to 35-foot on-center. Select from City tree list.	Visual and pedestrian appeal. Enhance street “green space”.	Funded City streetscape or redevelopment street frontage.
Street Furnishings and Street Lights	Types and manufacturers to be determined.	Pedestrian comfort and safety. Visual appeal.	Funded streetscape project funded or redevelopment

Basis of Design - Commercial Design Area (NE 62nd Avenue to NE Andresen)

Streetscape Element	Design Criteria	Basis of Design	Implementation
Sidewalk Cross-Section	10-feet minimum. 12-feet preferred.	Set-back commercial uses, low pedestrian activity.	Adopt updated street standard details. Adopt proposed Fourth Plain Corridor Overlay District
Furnishing Zone	4-feet minimum, 5-feet preferred, landscape tree wells.	Transform character, link Pulse Points.	Adopt updated street standard details.
Sidewalk Paving	Scored concrete.	Transform character, link Pulse Points.	Adopt updated street standard details.
Pedestrian Crossing Treatments (Intersections)	ADA compliant curb ramps. Standard marked crosswalks.	Walkability, pedestrian safety.	Per current City street design standards. Update truncated dome detail for use of gray or black panel.
Pedestrian Crossing Treatments (mid-block)	Pedestrian refuge 8-feet minimum and landscaping.	Walkability, pedestrian refuge for safety, Main Street appeal.	Adopt updated street standard details. Access management strategy. City of Vancouver Pedestrian Crossing Treatment Policy (2007)
Median (landscaped)	12-foot min. width for trees.	Access management and street “green spaces”.	Access management strategy or transit stop improvements.
Bus Stops	Potential relocation for safest pedestrian crossing, amenities.	Passenger appeal, priority Transit Street feature.	Coordinate design details and implementation with C-TRAN. Consolidate stops.
Street Trees	30 to 35-feet on-center. Select from City tree list.	Visual and pedestrian appeal. Enhance street “green space”.	Funded City streetscape or redevelopment street frontage.
Street Furnishings and Street Lights	Types and manufacturers to be determined.	Pedestrian comfort and safety. “Front door” for business.	Funded streetscape project funded or redevelopment requirement.

The Tool Kit Concept

Figure 2 illustrates the organization of the design tool kit. It is a spatial organization, focused on three interrelated areas of the street - Border Area, Intersection and Roadway. The tools are concept designs for “on-the-ground” solutions, and expressions of design principles for the corridor. When implemented through construction, the tools will create physical characteristics of walkability and human scale as part of the corridor’s recipe for success. The tool kit maintains existing curb-to-curb distances and travel lane widths. In some cases implementing the concept would require additional right-of-way for a wider Border Area.

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The Border Area

The Border Area is the beginning of the public right-of-way, contained between property lines and curb lines on both sides of the street. It is the most frequently used pedestrian area and provides a buffer between pedestrians and moving cars. Sidewalks and sidewalk furnishings, street trees and lighting are its primary elements. The border should provide visibility and access for existing residences and businesses as well as characteristics important to the safety and comfort of pedestrians.

Street corners and transit stops are also significant elements of the border area. Street corners are more complex in their function than the rest of the sidewalk. They

accommodate multiple pedestrian activities that include storefront activities (where buildings define the street corner), crossing the street, and waiting at a bus stop. Each activity should be accommodated without conflicts from other activities. It is useful to understand that a well-developed border has distinct functional zones. Each zone supports a different set of pedestrian activities.

Furnishing Zone

The furnishing zone is the area where pedestrians access on-street parking and transit, wait before crossing a street, or pause to enjoy a public amenity. It is also the area in which permanent signs, poles, and street furnishings are placed. Examples of appropriate furnishings include street trees, benches, bike racks, trash receptacles, lighting, transit structures, drinking fountains, information kiosks, and public art.

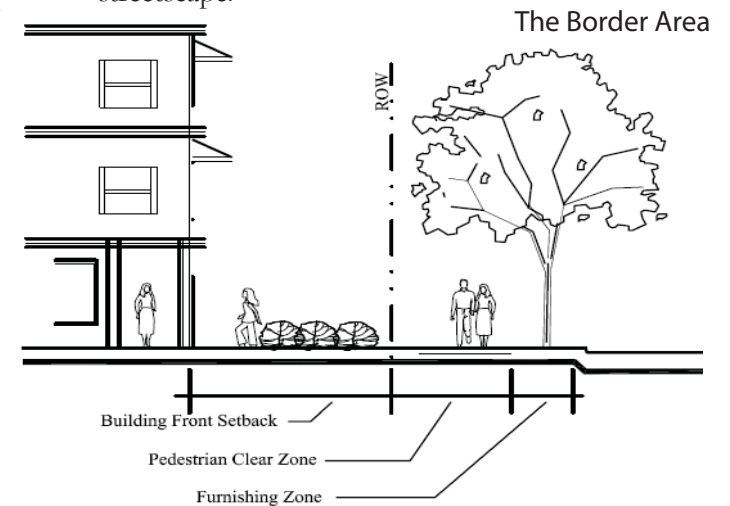
In many cases, the furnishing zone will have a coarser texture, different color or finer scoring pattern than the pedestrian and curb zones. Its appearance suggests limited movement and an opportunity to rest or pause before continuing a walking trip.

Pedestrian Clear Zone

This zone is for through travel by pedestrians. It should remain free at all times of obstructions and street furnishings. It must also comply with all guidelines for accessibility by people with disabilities. The clear zone should have the smoothest and least-detailed surface of the sidewalk zones, suggesting movement, direction and destination at some distance away.

Building Front Setback

The building front setback is a significant streetscape element when buildings are not located at the right-of-way line. The “front yard” landscaping is additional green space along the sidewalks. When right-of-way conditions constrain street tree plantings, tree canopy can still be provided in private landscape areas. In some cases, the City may chose to pursue tree planting easements and maintenance agreements with property owners to supplement the green space of the streetscape.



Intersections

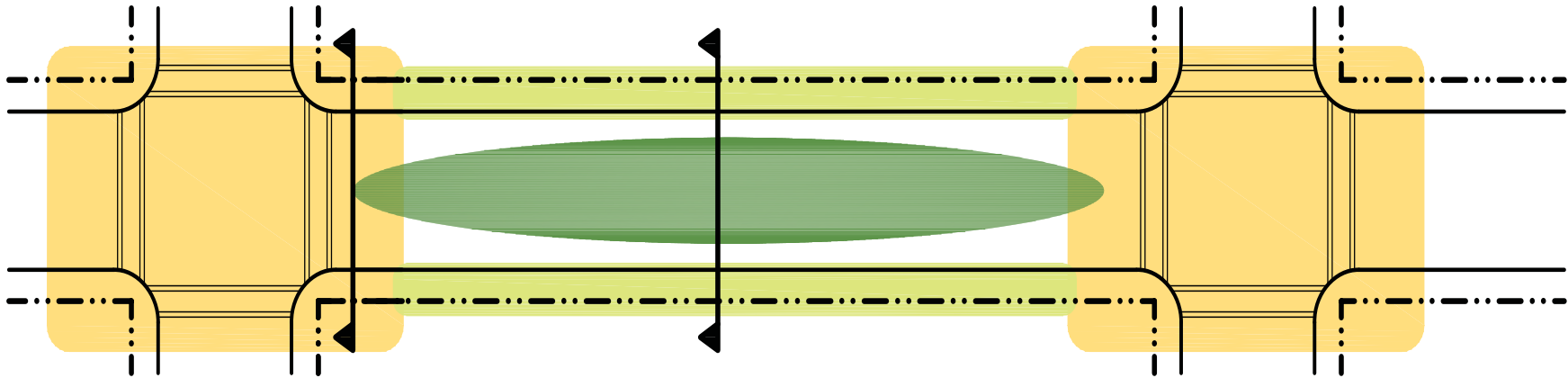
Intersections are gateways. They can provide a first glimpse of the corridor from foot or by car. They can be an organizing focal point for land uses. Intersections are also a major design opportunity within an overall composition of streetscape elements. From the perspective of walkability, nearly all pedestrian trips require one or more street crossings. Intersections are street corners and street corners are integral to the perceived safety and comfort of pedestrian mobility.

The Roadway Area

The roadway provides through travel and local access for vehicles and transit. Its physical design, along with the design for borders and intersections, will influence the speed of vehicles. The roadway is also a crossing area for pedestrians, whether at intersections or intermediate locations between intersections. Moving vehicles are a universal safety concern for pedestrians and bicyclists.

The roadway area of Fourth Plain is also an opportunity for additional streetscape “green space” in the form of landscaped medians or pedestrian refuges. Medians and refuges also improve pedestrian crossing opportunities and reduce the visual scale of the street as an auto-centric part of the urban landscape.

DESIGN TOOL KIT



Design Tools:



Border Area Design

- Sidewalk Design
- Furnishing Zone
- Street Corner
- Transit Stop
- Landscaping
- Driveway Improvements



Roadway Area Design

- Pedestrian Refuge
- Landscaped Medians
- Bike Lanes



Intersection Design

- Pavements and Crosswalks
- Lighting
- Street Corner
- Transit Stop
- Raised Intersections

Figure 2

Developing Tools

Working with the Project Advisory Team, illustrations of conceptual design tools in plan and cross-section drawings were developed. Photographic examples of similar elements were provided. There was an inherent mix and match possibility in this approach, allowing exploration of numerous design concepts in a fairly short time frame. Each tool evolved from the Design Principles and Basis of Design. Consideration was given to unique opportunities, planned land uses, and the potential for significant changes to the street patterns and intersection alignments in the corridor.

The design concepts will provide guidelines for street frontage improvements and the planning approvals process. Clear guidelines provide more tools for implementing the vision for the corridor in a consistent manner. As an extra measure of consistency, several of the design tools were selected and refined as potential updates to City Transportation Standard Details.

Village Design Area

The Village Area is the most likely Main Street segment of the corridor. Many existing buildings are close to the street with the future development focus on retail uses and residences. Further, a city park anchors one

corner of a gateway intersection, and Clark Community College has plans for expansion into the Village Area. Such future uses will generate higher levels of pedestrian and transit activity, contributing to a “village” character.

Border Area

The existing curb-to-curb street widths and intersection spacing are not favorable to pedestrians. The border area is the best opportunity to create an appealing Main Street and pedestrian environment. Key qualities will be a paved furnishing zone, wider pedestrian clear zone, high quality architecture and amenities for transit stops, and a cohesive palette of street furnishings. Sidewalk activity will increase with redevelopment, and a corresponding increase in widths to 12 or 15 feet is recommended. Additional street right-of-way may need to be required to expand the borders. Right-of-way dedication requirements will be determined at the time of the land-use permit applications.

The design objectives of increased width are a fully developed furnishing zone and avoiding pedestrian conflicts with fixed objects and other pedestrians. Sidewalks limited to only 10 feet and with high levels of furnishings, light poles, street trees and transit shelters will feel crowded for walking.



Gateway Intersections

Gateways are visual “portals” in a comprehensively designed streetscape, usually associated with key nodes or intersections. In the Fourth Plain Corridor there is an opportunity to create highly visible portals as beginning and end points for each of the design areas (Village, Green Necklace and Commercial). They signify an overall change in streetscape design, dominant land uses or both. The design and scale of gateways should attract motorist’s attention while still providing pedestrian-friendly details and amenities.

Gateway design and materials should also be functionally linked to other significant pedestrian and bike facilities such as the Burnt Bridge Creek Trail. Expanding the street corner is a special feature of the Village gateways. The sidewalk at intersections would grow to 15 feet. The extra width helps emphasize the role of intersections as “place-makers” in the corridor and will accommodate the complex activities occurring at street corners. A unique Village Gateway feature is a tree bosque near each corner of the intersection. The bosque is a piece of “green architecture” for the street. It creates a portal followed by a small



sidewalk open space at the intersections. Transit stops, benches, bike racks and ornamental lighting furnish the open space. The PAT supported a relatively simple ensemble of street furnishings. Ornamental street lighting at intersections, benches, bike racks and the potential for designed architecture for the transit stop are the key pieces. Coordination with C-TRAN should be continued in order to develop an appropriate transit shelter architecture and package of passenger amenities.

The Roadway Area

The roadway does not meet typical Main Street criteria. There are five lanes including a continuous center turn lane and intersections that are over 1,000 feet apart. This arterial width roadway is contained in a relatively narrow right-of-way. The right-of-way keeps sidewalk widths at less than an optimum width for a Main Street (12- 15 feet). This combination of existing conditions is not a strong invitation to pedestrians. It not as functional and safe for mobility as should be expected in a “village.”

One fairly universal source of concern for pedestrians is moving vehicles, particularly when it comes to crossing streets. From the pedestrian perspective, short curb-to-curb distances and slow moving traffic are very desirable. Wide and fast are not desirable. Intersections more than 400 feet apart limit the

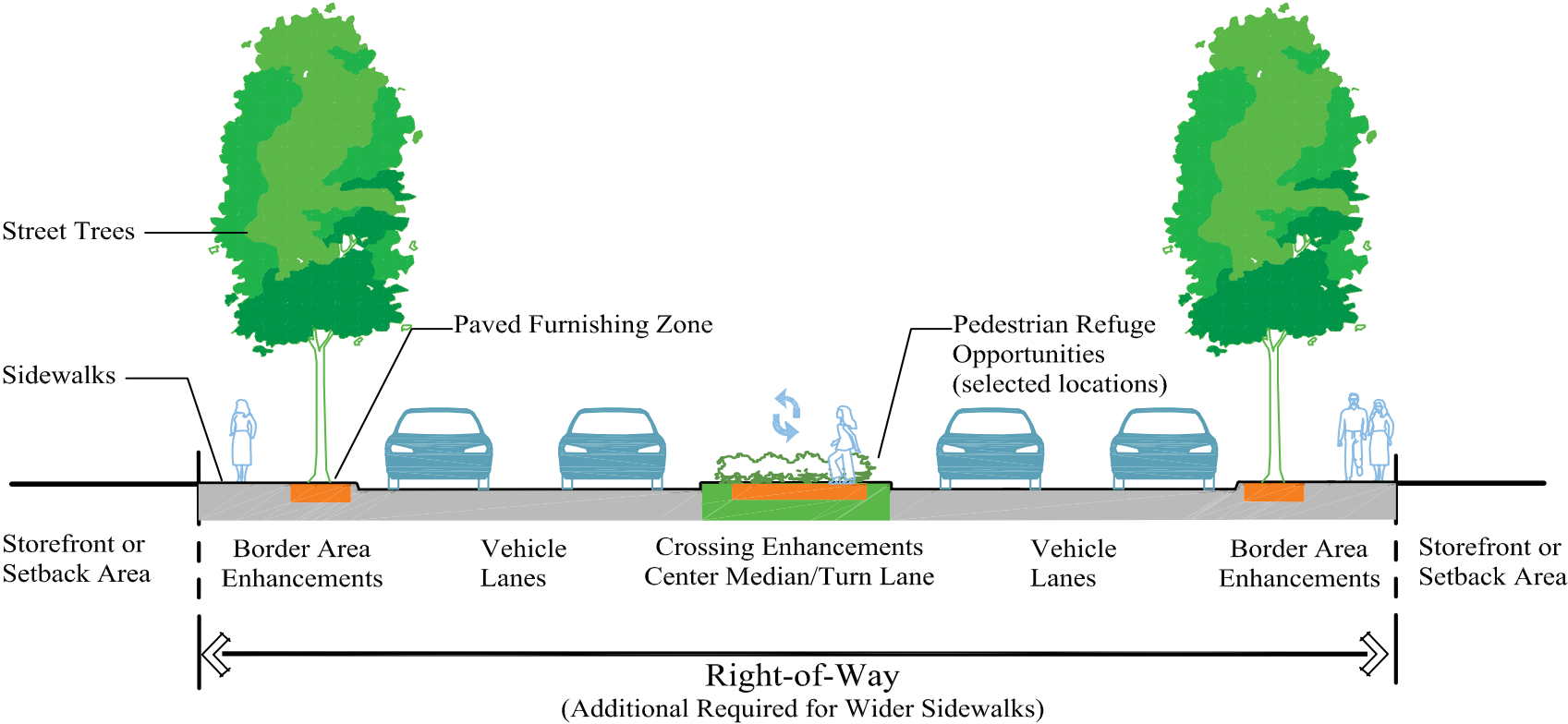
pedestrian crossing points, encouraging the mid-block dash with limited protective measures or refuges. The existing pedestrian refuges do not have the visual qualities of design and material that are streetscape objectives for the Village Area.

There are opportunities for enhancement of the existing mid-block refuge and to construct short segments of landscaped medians. These enhancements will “green the street”, reduce traffic conflicts and slow traffic speeds.



**Village Design Area
(Fort Vancouver Way to
Burnt Bridge Creek Trail)**

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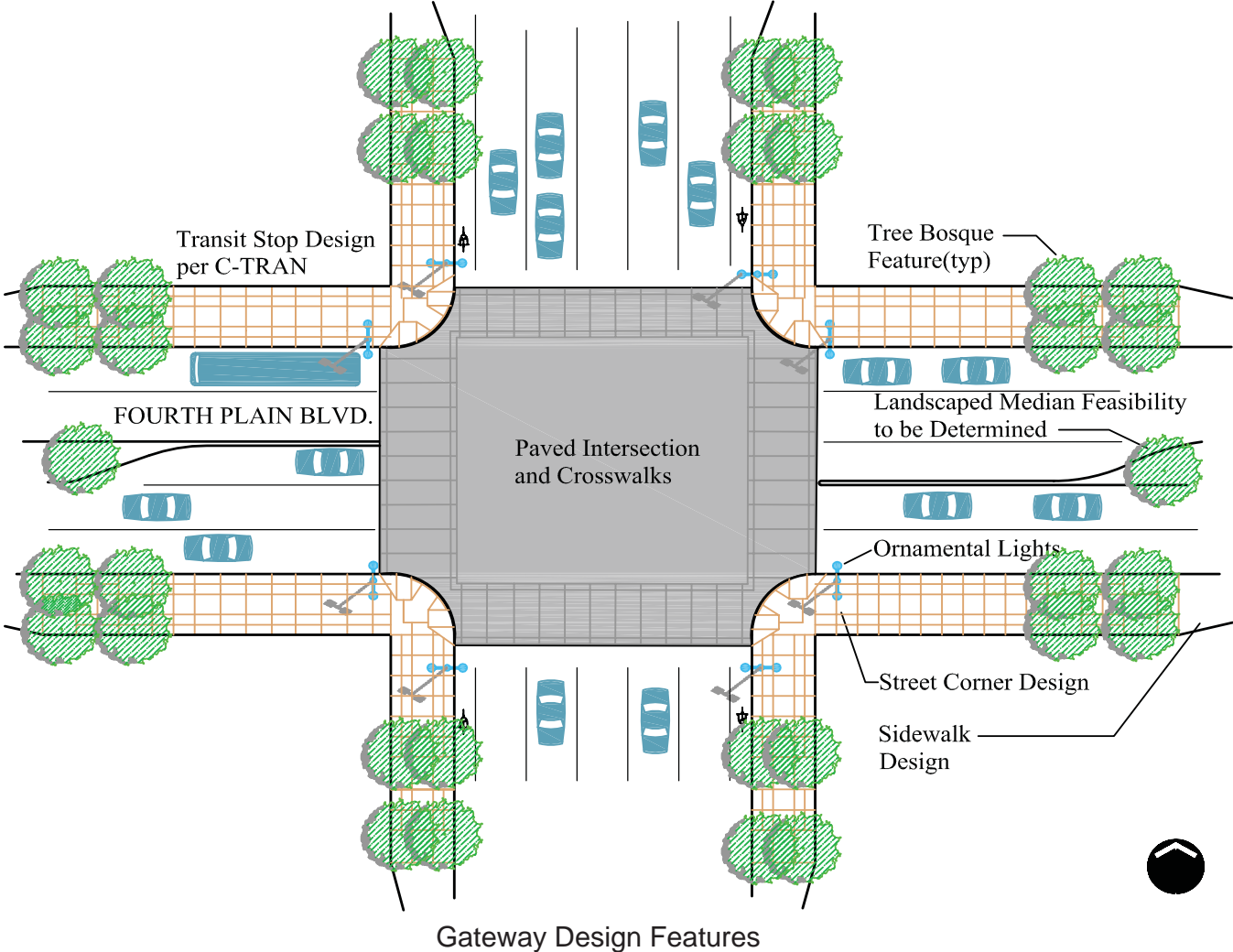


Existing Conditions



Figure 3

Village Gateway Intersection

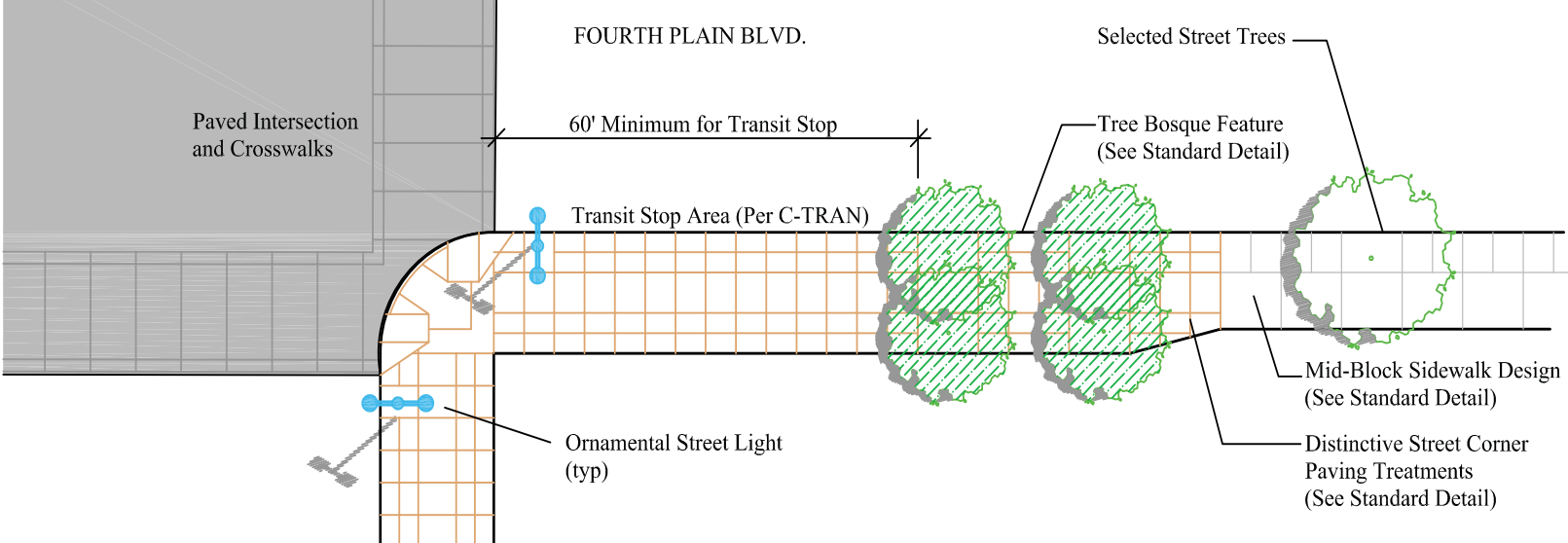


Design Considerations

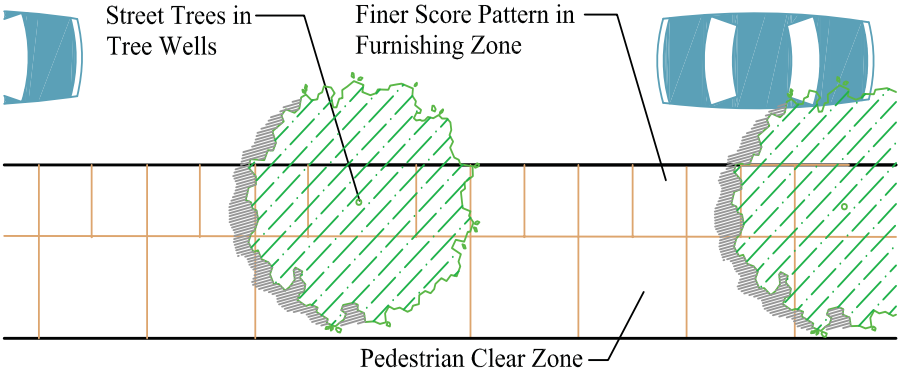
Gateway intersections “set a good tone” for the entire corridor. A complex set of pedestrian, vehicular, transit, and land use activities occurs here. Within the Village Design Area these are main street intersections. Redevelopment should be encouraged to “fill in the corners,” with buildings close to the street. Complementary streetscape qualities come from wider and typical Border Areas (sidewalk and furnishing zone), ornamental street lights, intersections that are fully paved with a distinctive concrete material, and high quality transit stops. In order to give a full sense of “gateway,” streetscape features should be extended along intersecting streets for up to 80 feet. Raised or “table top” intersections should also be considered as part of a full intersection improvement.

Figure 4

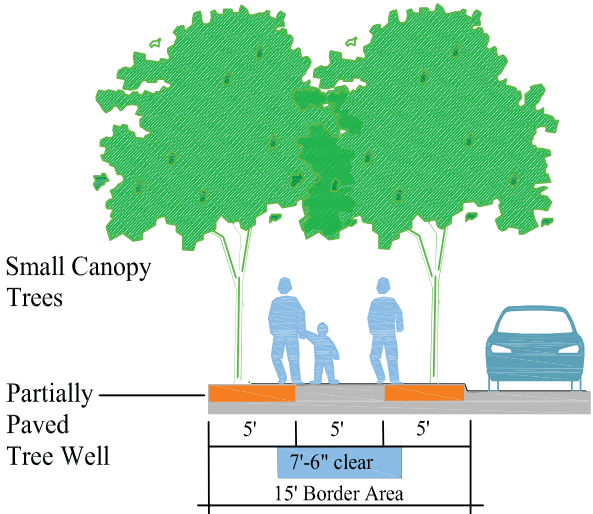
Village Street Corner and Sidewalk Design



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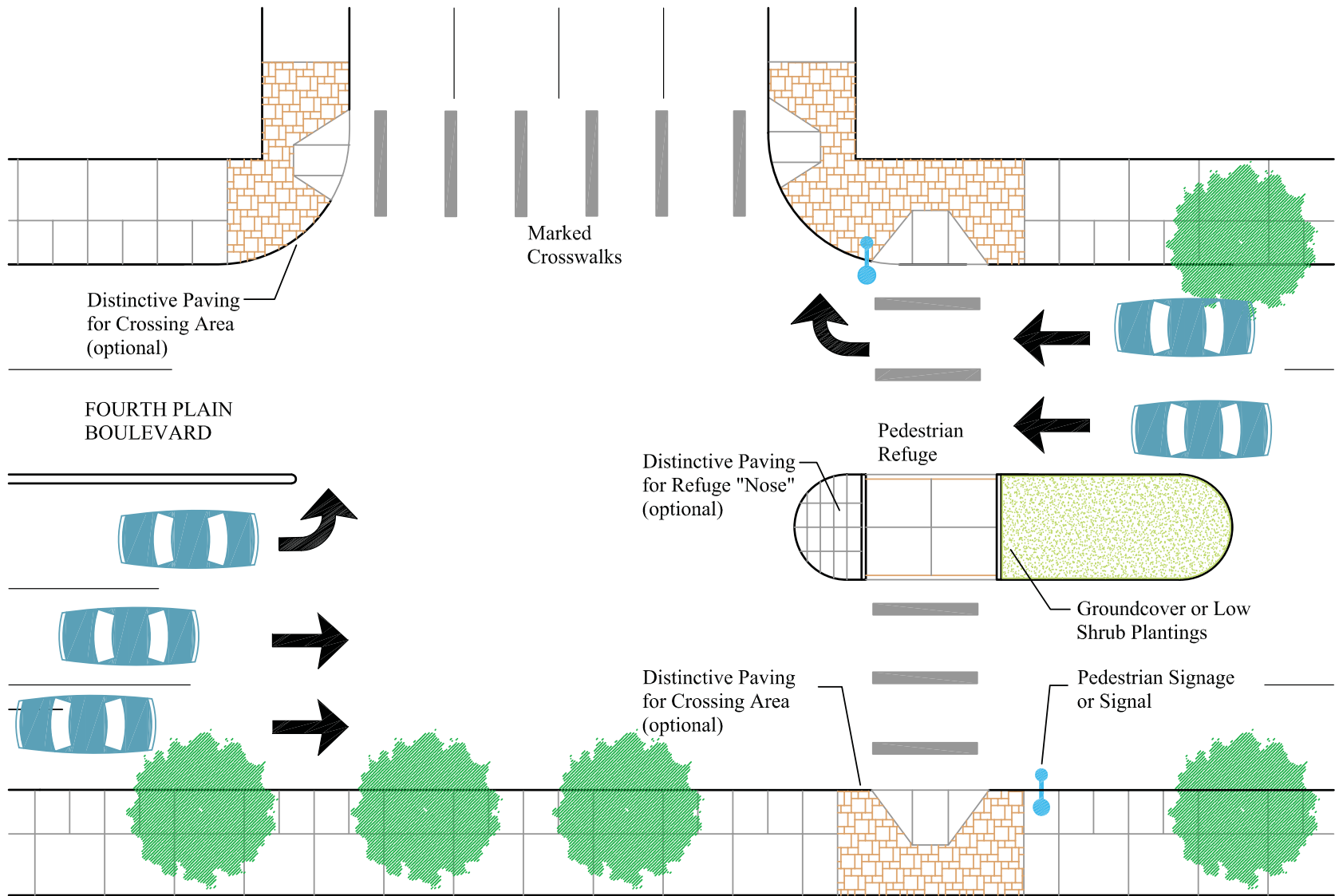
Village Sidewalk Design



Tree Bosque Concept

Figure 5

Village Pedestrian Refuge



Pedestrian Crossing with Refuge at "T" Intersection

Figure 6

Green Necklace Design Area

The Green Necklace Area is an employment, commercial and community services area. Compared to the Village Area, buildings tend to be set back further from the street and have a larger “footprint.” This is likely to be the future land use pattern in this area, with the new City Operations Building as near-term development. Celebrating the Burnt Bridge Creek Greenway, the Discovery Trail, and maximizing “green space” within the street right-of-way are key design themes. An existing BPA corridor provides an open space opportunity that can be visually and functionally integrated with the street.

The north side is the more the typical continuous walkway and planter strip. The preferred combined width is 12 feet, which will support a healthy street canopy. A healthy and extensive tree canopy is a key expression of the design themes. Additional street right-of-way may be required at the time of redevelopment.

The Roadway Area

With five lanes to cross curb-to-curb, a continuous center turn lane and intersections spaced 600 to 1000 feet apart, the roadway presents familiar sources of concern for pedestrians crossing streets, encouraging the mid-block dash with limited protective measures or refuges. Some transit stop locations increase the propensity for a mid-block crossing on foot. Access management and pedestrian crossing strategies using landscaped medians are a significant opportunity to realize the design area theme of roadway green space. Implementing landscaped medians is also an opportunity to coordinate with C-TRAN regarding potential relocation of bus stops, service changes and the potential for enhanced transit stop designs.

Gateway Intersections

Gateways are more varied in configuration and design opportunities than in other design areas. The NE Falk Road gateway is distinguished by proximity to the Burnt Bridge Creek Greenway and the trail crossing. It is a high pedestrian activity gateway. Safety and functional needs are complicated by the two types of crossing activity. The BPA corridor and greenway are design opportunities to integrate street and open space.

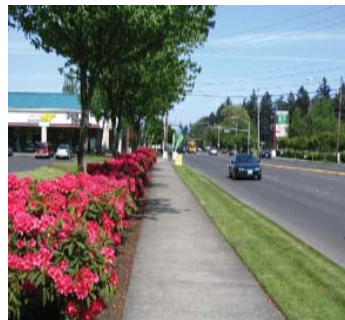
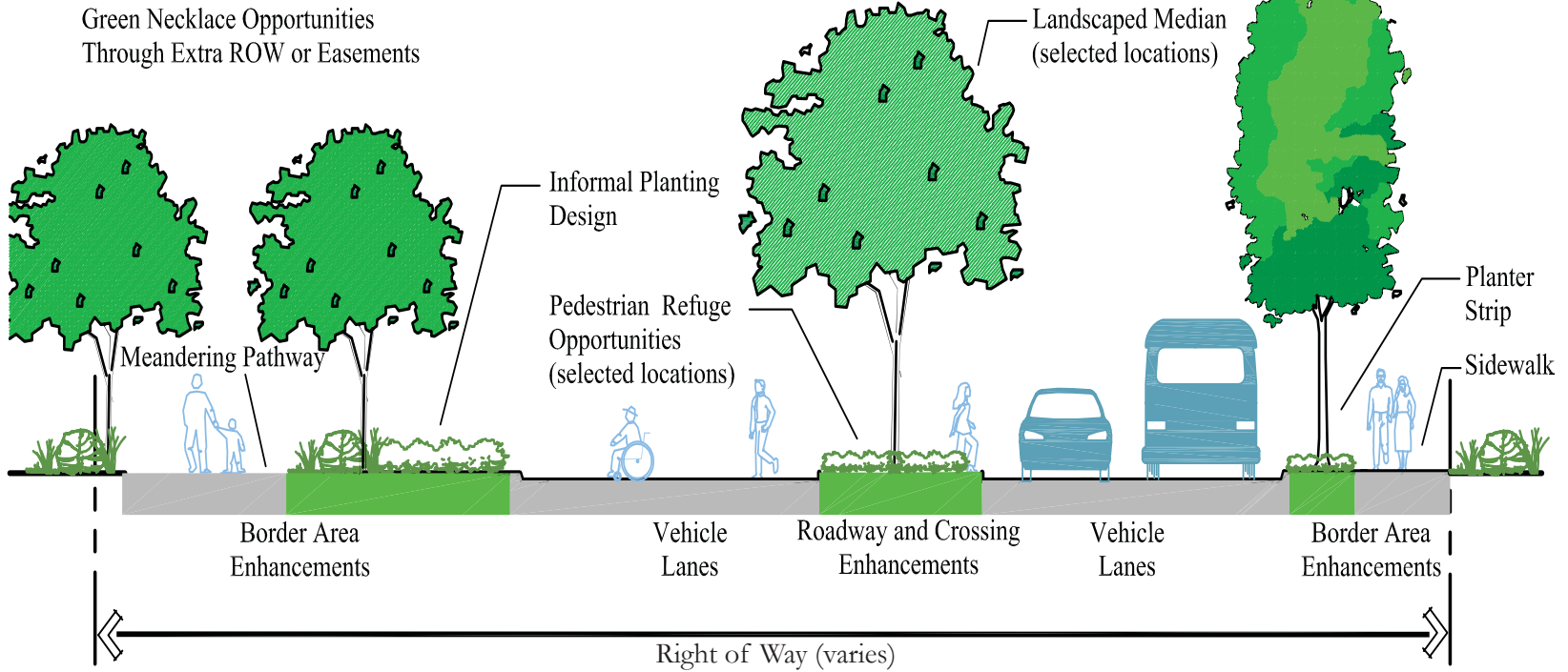
Remaining Green Necklace intersections have functional objectives similar to other major intersections in the corridor — pedestrian, vehicular, transit and land use. Paving of intersections and crosswalks with distinctive materials and ornamental street lights are not recommended. However, high quality transit stop design and amenities should be included. The gateway opportunities at NE 54th will change dramatically if an SR 500 access is constructed.

Border Area

Border design is an asymmetrical concept. Dimensions and design character are different for the north side and the south side of the street. For the south side, a meandering concrete pathway can continue in a manner similar to the existing frontage for the Kyocera site. This can be a striking feature to express the themes of the Green Necklace. The pathway will define an irregular landscape strip rather than the more conventional planted furnishing zone. Landscaping should be informal groupings of coniferous and deciduous trees with understory planting up to three feet high and groundcovers. Planting design should use a preponderance of native plants. Additional street right-of-way will likely be required at the time of redevelopment.

Green Necklace Design Area (Burnt Bridge Creek Trail to NE 62nd Avenue)

Cross Section Design Concept



Existing Conditions

Figure 7

Green Necklace Intersection Design Falk Road

Design Considerations

This gateway is distinctive within the Green Necklace Design Area. In addition to intersecting a significant traffic street, Fourth Plain Boulevard crosses the Discovery Trail here. Combining trail activities with typical pedestrian crossings makes the functional aspects of the intersection even more complex.

A large BPA corridor provides an open space border at the south side. This corridor, the Burnt Bridge Creek Greenway, and the street corners provide opportunities for additional enhancements announcing the key theme for this design area. The intersection could also be the beginning point of a meandering pathway roughly parallel to the street. The pathway will become a key Green Necklace feature.

This Falk Road intersection is also an opportunity to construct a raised intersection (e.g. “table top”) to enhance the experience of the Burnt Bridge Creek pathway.

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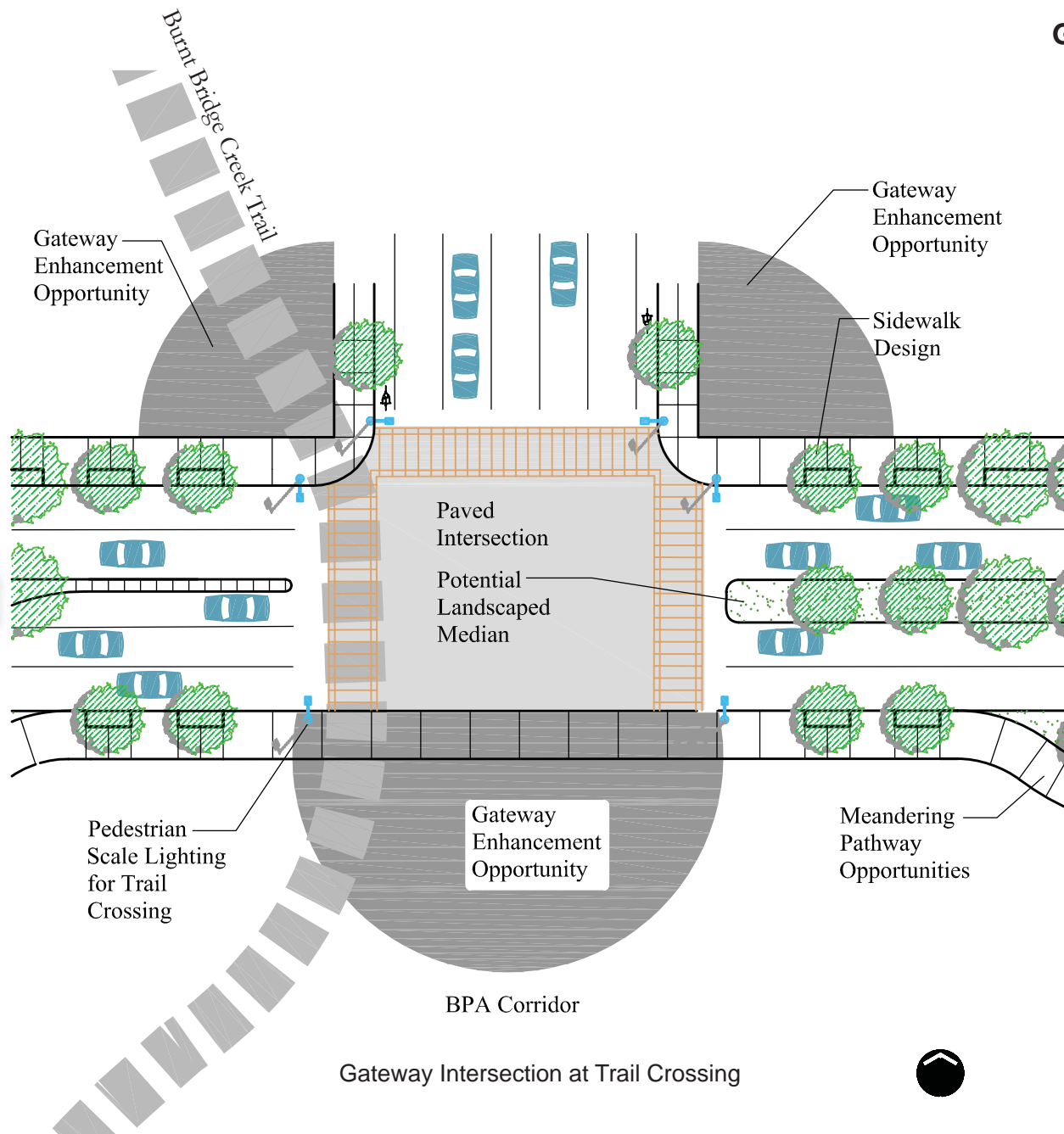
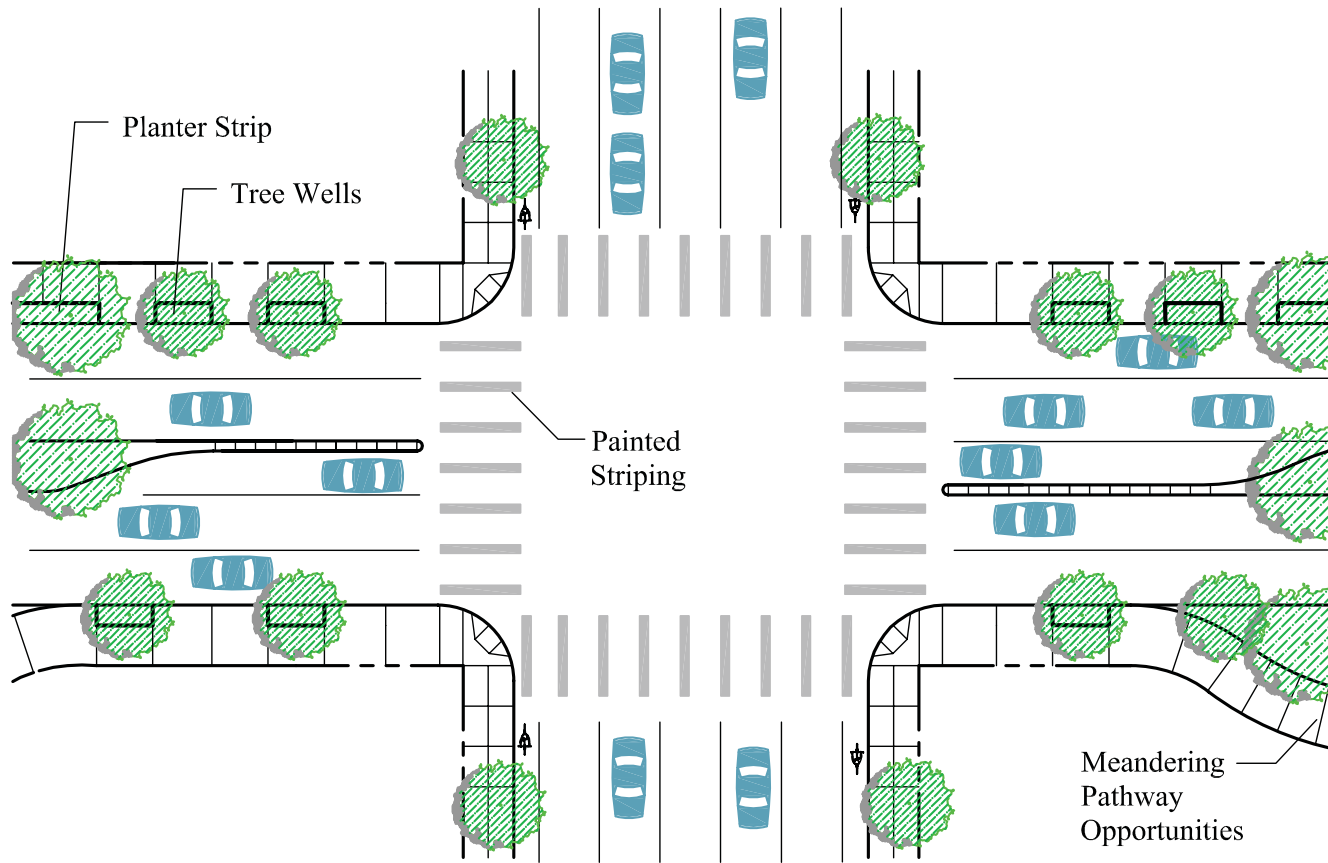


Figure 8

Green Necklace Intersection Design

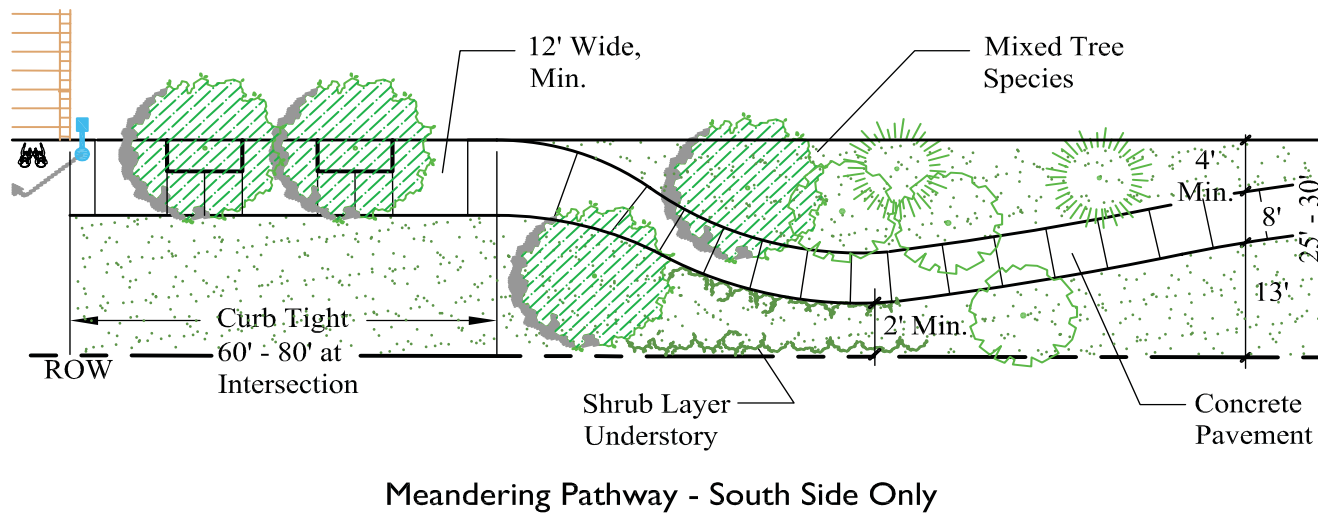


4-Way Green Necklace Intersection

Design Considerations

Four-way Green Necklace intersections mix the same complex activities of other major intersections in the corridor - pedestrian, vehicular, transit and land use. Unlike Village Gateways, the intersections and crosswalks should not be paved with a distinctive concrete material. Ornamental lighting at the street corners is not recommended. However, the continuous landscape planters should give way to landscaped tree wells and paved furnishing zones at the intersections.

Green Necklace Sidewalk Design



Design Considerations

For the Green Necklace area, the border design is asymmetrical. Dimensions, configuration and character of the furnishing zones are different for the north and south sides of Fourth Plain Boulevard. For the south side, a meandering concrete pathway defines an irregular landscape strip rather than the more typical continuous planter strip along the north side. South side landscaping should include informal groupings of coniferous and deciduous trees with understory planting, using a preponderance of native plants.

The meandering path is intended to continue the street frontage character east of Stapleton and adjacent to the former Kyocera property.

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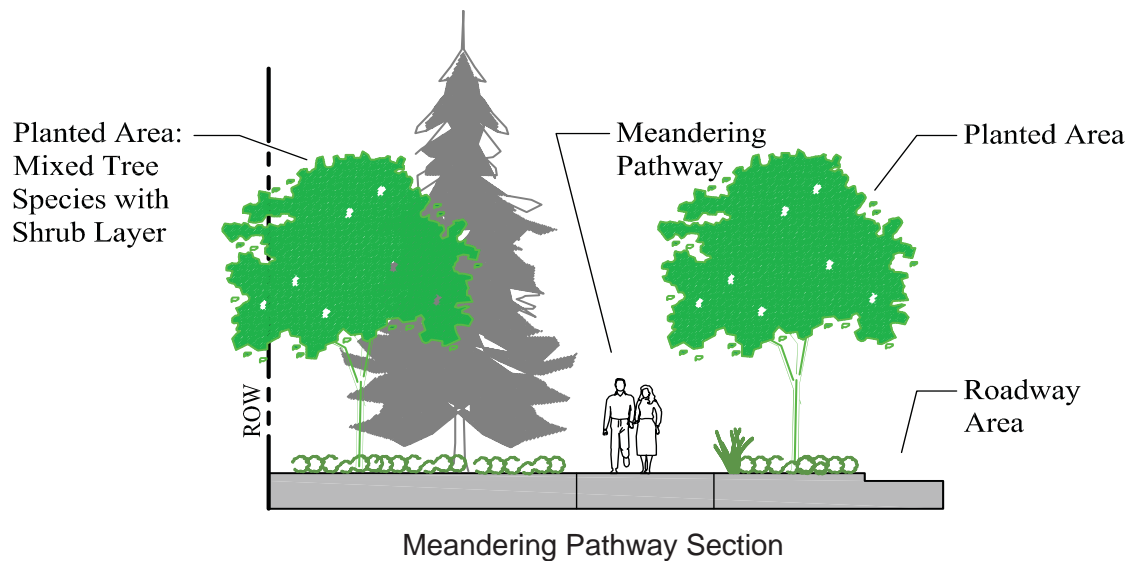
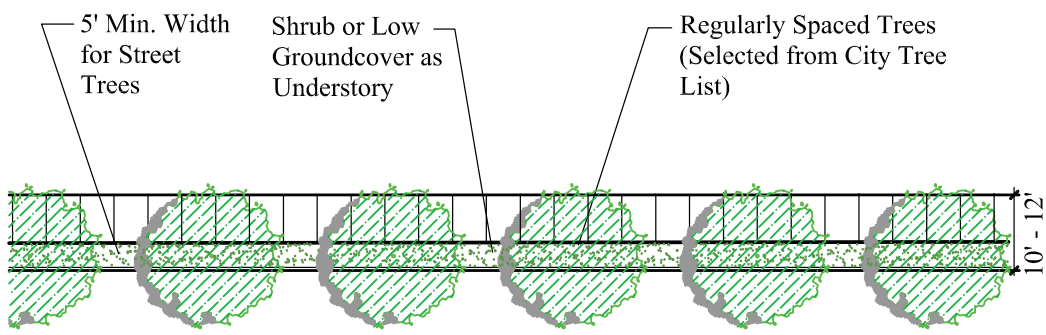
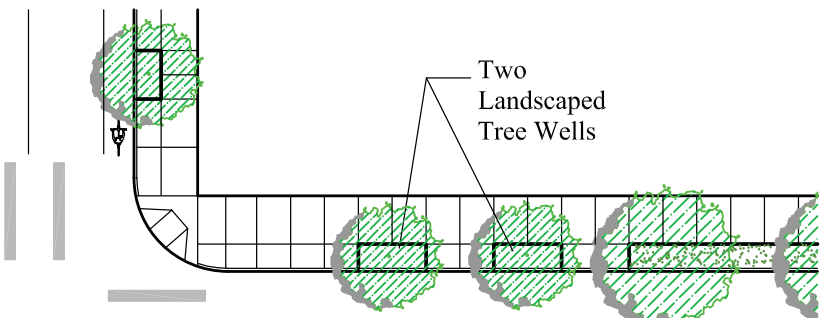


Figure 10

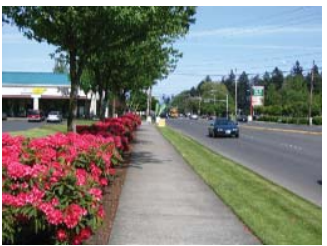
Green Necklace Sidewalk Design



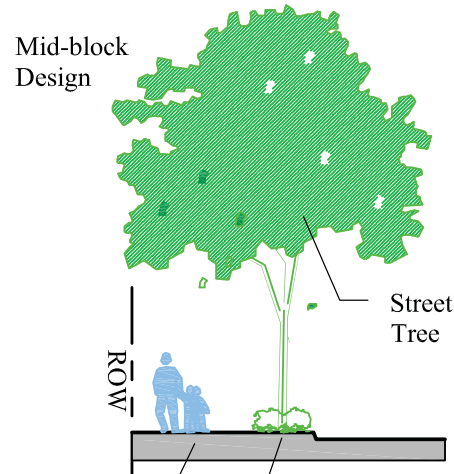
Sidewalk Design - North Side



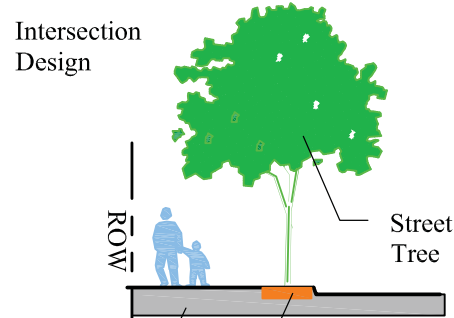
Street Corner - North Side



Existing Conditions



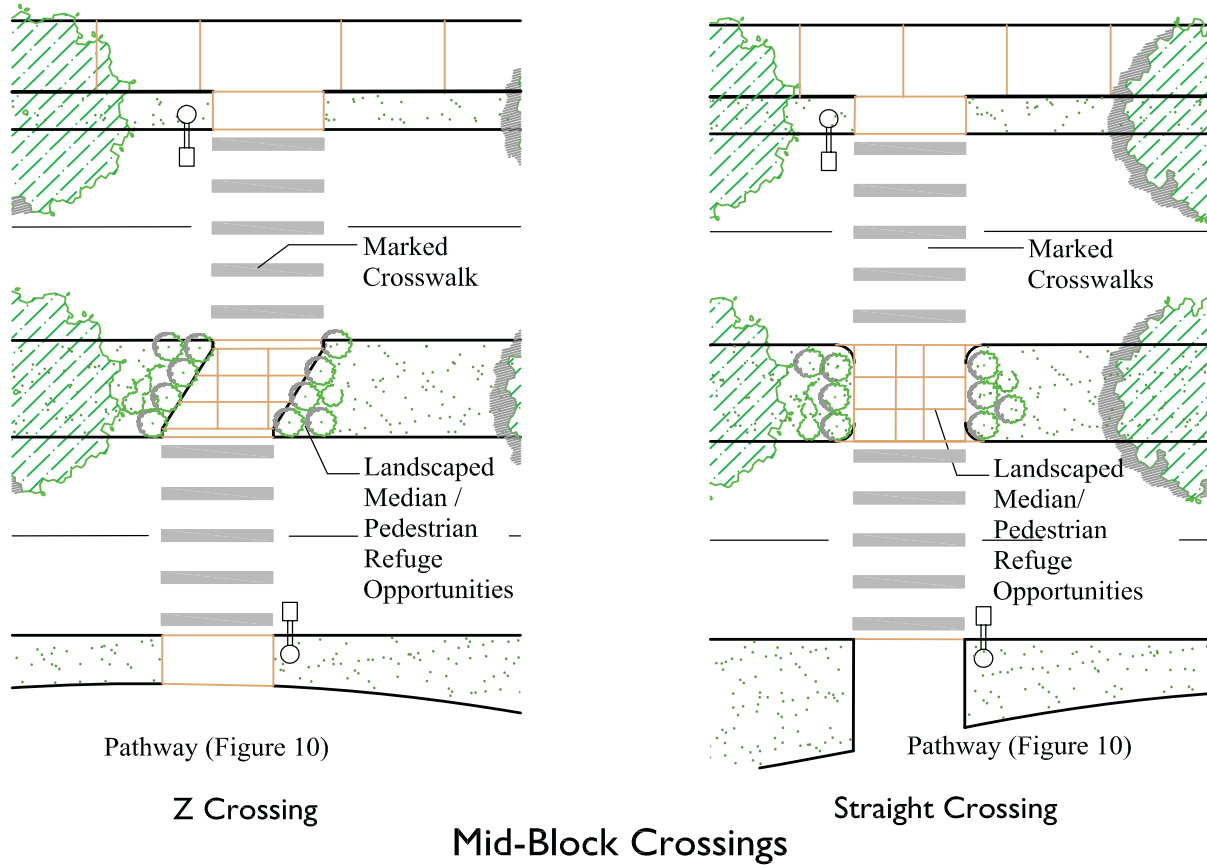
Pedestrian Zone
Planting Strip in Furnishing Zone



Pedestrian Zone
Partially Paved Furnishing Zone

Figure 11

Green Necklace Mid-Block Crossing



Design Considerations

Thematically, the Green Necklace area would benefit from implementing landscaped medians with mid-block pedestrian refuges. The roadway “green space”, along with the Discovery Trail and extensively planted furnishing zones, would be a key streetscape feature. The locations of transit stops and land uses may also benefit from these additional crossing points. Landscape medians would be implemented as part of an overall access management strategy for the corridor. That strategy has not been determined. Smaller pedestrian refuges may be used where continuous raised medians are not feasible (see Figure 6).

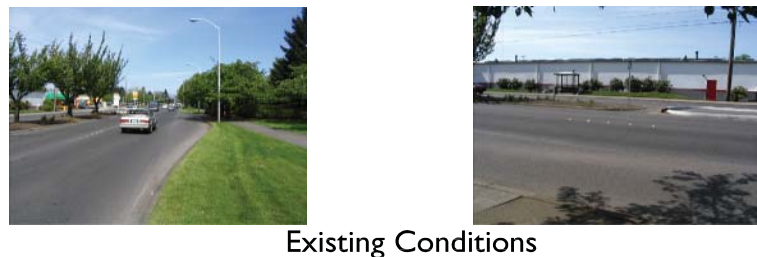


Figure 12

Commercial Design Area

The Commercial Area is the most challenging segment of the corridor with regard to improving the pedestrian and transit environments. Large building land use, gas stations and vacant parcels create an urban landscape seemingly devoted to moving cars and surface parking lots rather than storefronts and walking. Much of the large scale development is relatively new, and the future land use patterns tend toward these types of commercial uses rather than a more Main Street mix of retail and housing.

Border Area

The border area is underdeveloped and disrupted by numerous driveways. The existing sidewalks and border area are narrow and there are gaps where the walkway is simply missing. Creating a uniform and continuous border area with street trees will be a significant improvement. Key qualities will be a paved furnishing zone with landscaped tree wells, and a simple palette of street furnishings. Sidewalk improvement should be coordinated with driveway closure and/or consolidation efforts. High quality architecture and amenities for transit stops are encouraged.

The design objectives of increased sidewalk width are to reduce pedestrian conflicts with driveways and curb cuts, provide visual cohesiveness, and establish a furnishing zone capable of supporting street trees. Sidewalks limited to ten feet or less will feel crowded for walking, and any kind pole, shelter, or furnishing may become an obstacle to pedestrians.

Gateway Intersections

The intersection at NE Andresen is physically the most expansive of the gateway intersections. Expanding the street corner similar to the Village gateway intersections is not a recommended tool since right-of-way acquisition is costly and the expected levels of pedestrian activity are relatively low. Coordination with C-TRAN should be continued in order to develop an appropriate transit shelter architecture and package of passenger amenities.

The Roadway Area

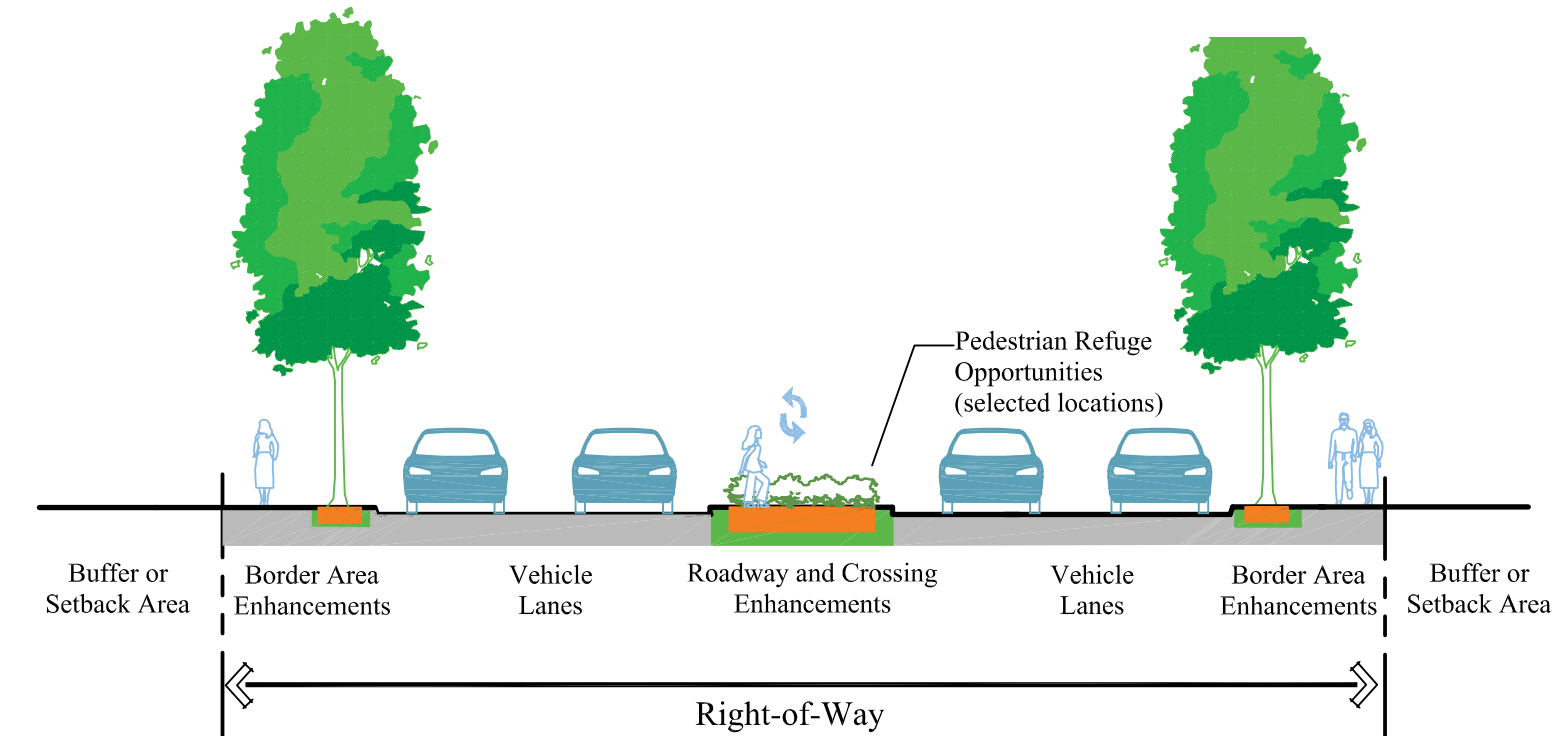
For most of the segment, there are five lanes, including a continuous center turn lane and widely spaced intersections. No changes to the number of lanes or curb-

to-curb distances are being recommended which constrains sidewalk widths at less than an optimum width. This combination of existing roadway conditions and poor quality sidewalks is not an invitation to pedestrians. Existing land uses do little to overcome that.

Commercial Design Area NE 62nd to NE Andresen

Cross Section Design Concept

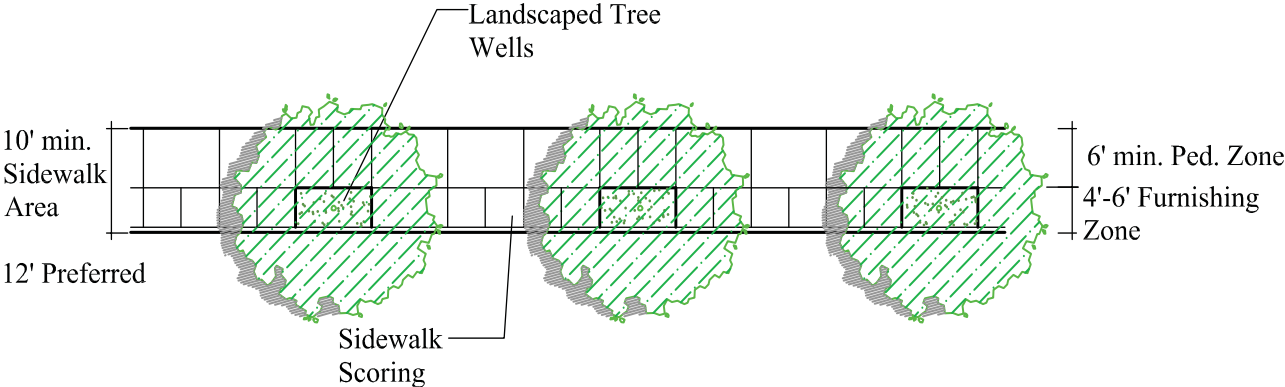
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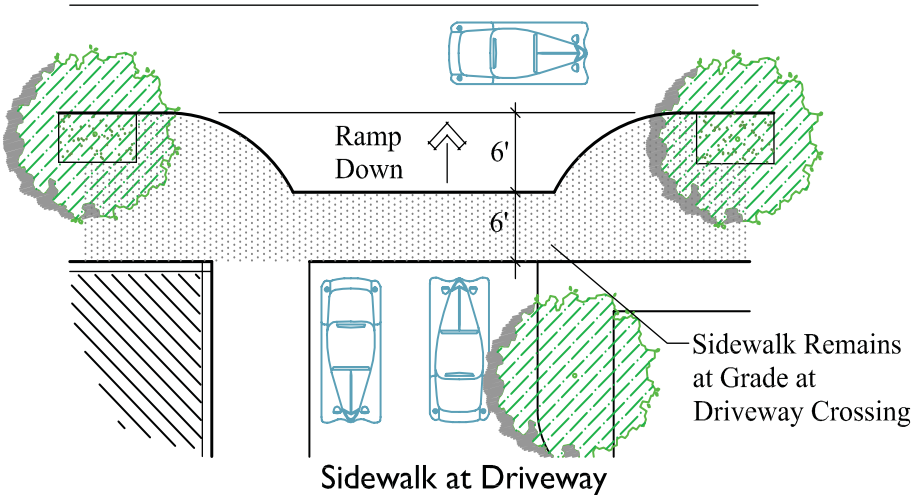
Existing Conditions

Figure 13

Commercial Sidewalk Design



Sidewalk Design at Mid-Block



Existing Conditions

Figure 14

Commercial Intersection Design

Design Considerations

The Commercial Design Area gateway at NE Andresen is very auto-centric. Its size, crossing distances for pedestrians, and land use make it challenging to redesign with a significant pedestrian focus. However, higher quality transit stops and improved sidewalk designs (Figure 14) will help. If redevelopment allows driveway closure and/or consolidation, the existing right-of-way should be evaluated for a continuous landscaped median. The large landscaped or underdeveloped areas at each street corner could be used to bring additional attractive “green space” into the perceived streetscape.

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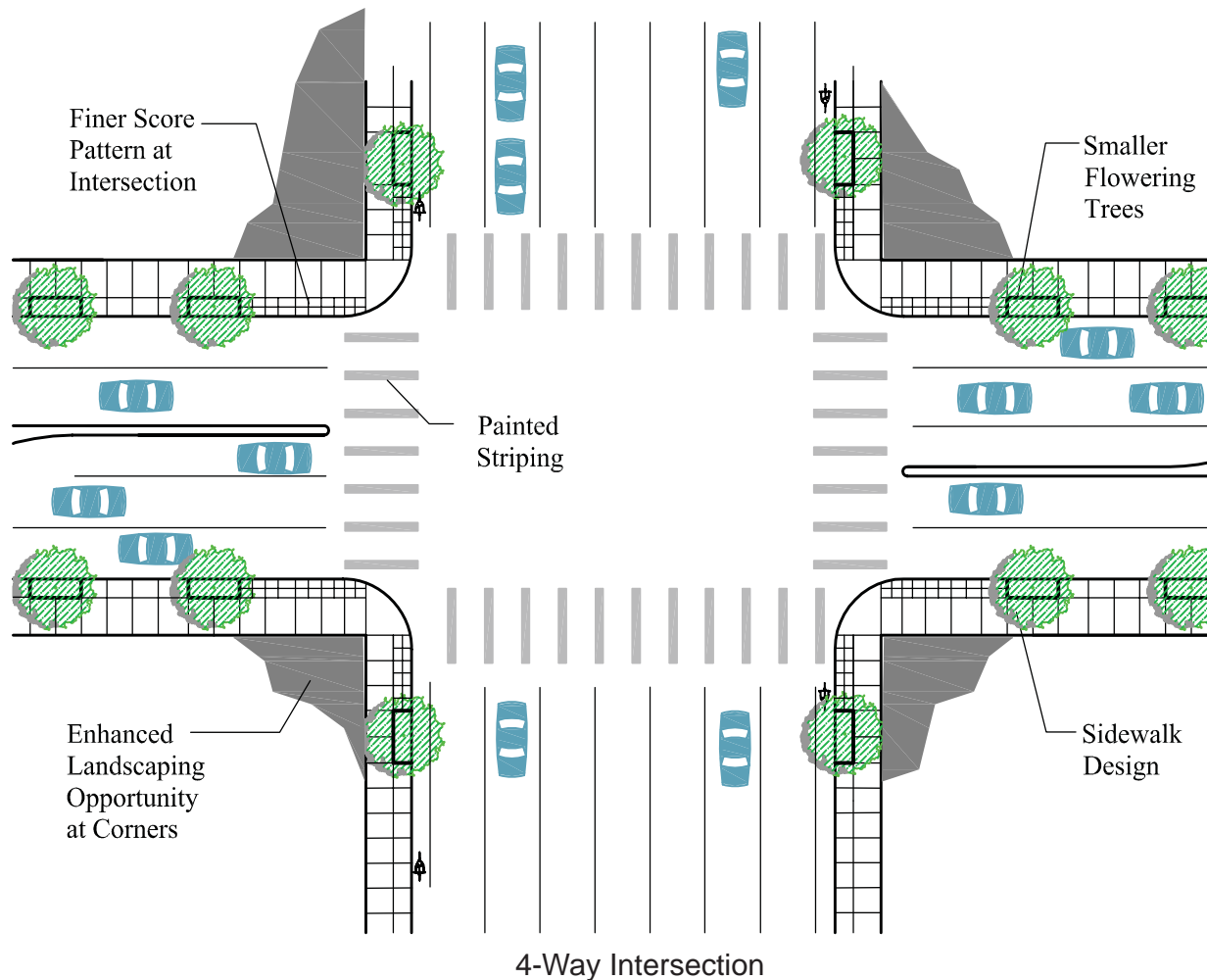


Figure 15

Multi-modal Transportation

Change the street. That was the first call for action in the Fourth Plain Corridor Subarea Plan. Fourth Plain Boulevard is the “spine street” of the corridor. In many ways it can be the signature for revitalization. However, the street cannot simply be auto-centric in function or design. All users of the transportation system should have equal access and mobility and high quality facilities. Motorists, pedestrians, bicyclists and transit are all “design vehicles” for the street.

Improving the Pedestrian Environment

The pedestrian environment of Fourth Plain Boulevard has an important “place-making” role in remaking the corridor. Most pedestrians don’t experience the streetscape as a set of roadway standards that have been met. The walking experience tends to focus on qualities of “place”. The street is also a “teacher,” conveying important messages about the values, vitality and livability of the community. Residents and visitors alike will learn about the corridor from their experience on Fourth Plain Boulevard.

For streets to be good places we need a better design vocabulary. Improved roadway and engineering standards are a well understood and accepted part of the design vocabulary. However, the part of the vocabulary that

speaks to walking and the quality of place is not as well understood or accepted. There is not a well-developed level of service for pedestrians. In evaluating a walking trip, pedestrians typically consider the following:

Distance and Time - Perceptions of “not too far” and “not too much time” vary from person to person, but they are usually fundamental factors. If walking conditions are safe and enjoyable, and you encounter minimal delays at street crossings, you are less likely to perceive your walk as too far or too long. That is known as “cognitive distance.”

Continuous Path - There needs to be a designated walking area, clearly defined and as distinct as possible from vehicle travel routes.

Personal Safety - Feelings of safety can be very personal and affected by many things. One fairly universal source of concern is vehicles, particularly when it comes to crossing streets. Street crossings are a critical link in the continuous path from here to there.

Comfort - This is part of safety, but is also more than safety. It depends on shade from sun; protection from rain, noise and odors; and how attractive the surroundings are.

Understanding - This means simplicity and clarity. How to use the pedestrian system needs to be easily understood by all age groups. Where to be as a pedestrian should be clear to everyone, including motorists.

Part of remaking the pedestrian environment includes adopting clear design standards for pedestrian facilities. At minimum, standards should establish widths for Border Areas (sidewalks and functional furnishing zones) and design criteria for safety and location of the pedestrian street crossing opportunities.

Improvements to Existing Transit

The walking street and the transit street are functionally linked. Transit riders begin and end as pedestrians. They must walk across a street at least once as part of their transit trip. The “choice” rider (transit riders who could have made the same trip by private vehicle) are likely to be influenced by the quality of bus stops and the pedestrian environment. Enhancing the streetscape is an opportunity to enhance the transit environment.

C-TRAN is reviewing stop locations along the corridor, including the possibility of relocating some stops in response to land use changes or operational efficiencies. Current bus service includes a local fixed route and limited stop service during extended peak hours. The limited stop locations are shared by local service.

The Future of High Capacity Transit in the Corridor

Fourth Plain has been identified as a potential High Capacity Transit (HCT) corridor. Three types of transit modes or facilities are generally considered to provide HCT. They are Bus Rapid Transit (BRT), Dedicated Busway, or Light Rail Transit (LRT). Each mode usually requires a dedicated lane, free of any other through vehicle traffic, to function effectively. Different design standards apply to each mode. This in turn can affect lane and overall right-of-way widths. Streetcars have also been mentioned as a future transit option in the corridor. Streetcars are not generally considered an HCT option. They do not require a dedicated lane and can operate in mixed traffic with typical lane widths.

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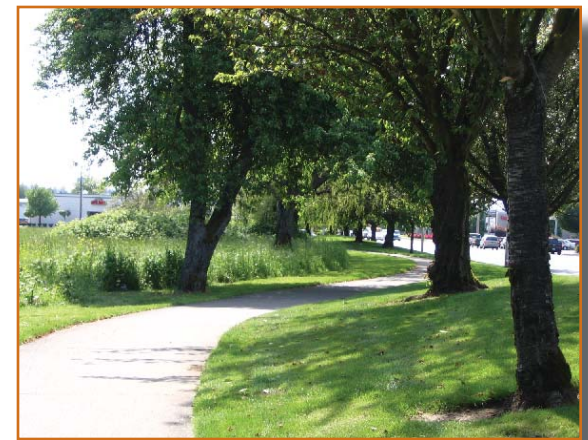
The future of HCT is uncertain. The Corridor Subarea Plan suggests exploring HCT options such as light rail or streetcar as public investments to support private investments. Current planning has not indicated a specific mode of high-capacity transit. It indicates these transit improvements on Fourth Plain Boulevard as lower-priority, achieved in the long term rather than being a higher-priority and short-term project. Without specificity or certainty, HCT was not reflected in the design tools or proposed street cross-sections for this project. However, nothing in the Fourth Plain Boulevard Streetscape Study should be construed as precluding HCT in the corridor.

On-Street Bike Lanes

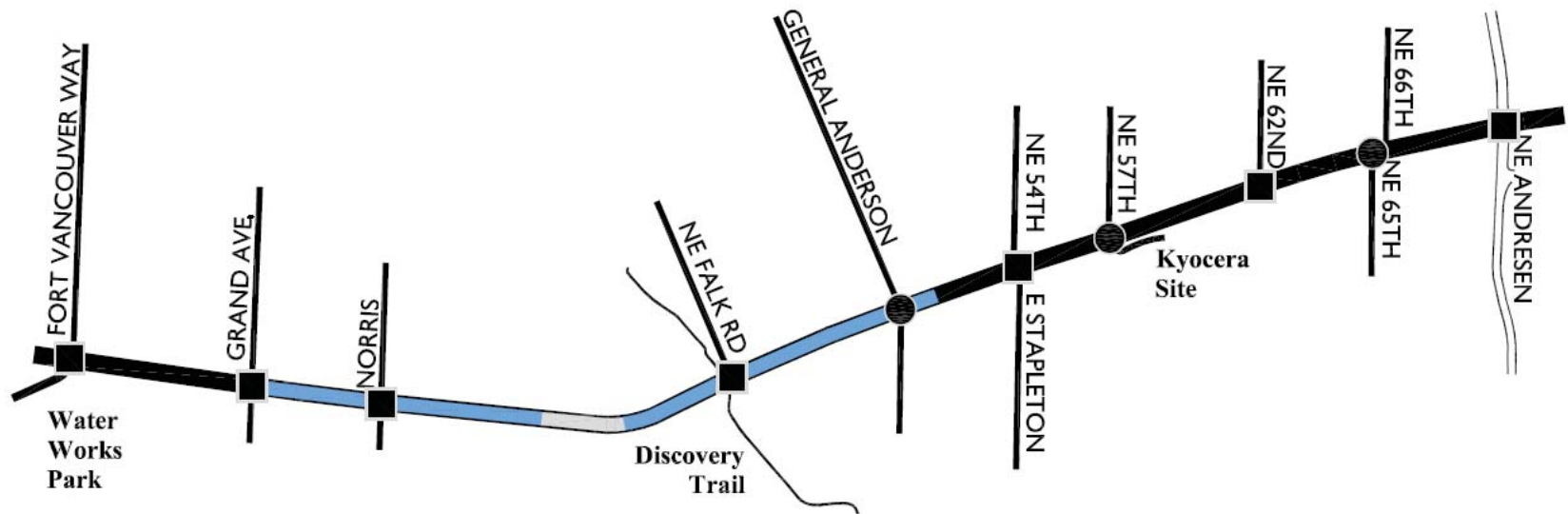
On-street bike lanes for Fourth Plain Boulevard are not a primary transportation goal of the Corridor Subarea Plan or the Vancouver Transportation Plan. Bikes lanes are not reflected in proposed street cross-sections or design tools. Existing curb-to-curb distances do not provide the dimensions needed for directional bike lanes. Bike travel is and would continue to be primarily in shared lanes.

The potential for adding on-street bike lanes was explored through an alternate cross-section (Figure 16). The cross-section was developed assuming no change to the existing curb lines but a reduction of travel lane widths to 10 feet and the addition of bikes lanes at 5 feet in width. Even with these adjustments to lane width standards it appears there were sections of the street where the minimum width requirement could not be met (Figure 16). That assessment was based on limited field measurement data.

At this time, reducing travel lanes widths, compromising sidewalk widths through curb reconstruction or acquiring additional right-of-way were not supported by the PAT. Further analysis and policy discussions may take place in the future.



BIKE LANE STUDY



- Gateway Intersections
- Secondary Intersections
- Roadway conditions meet minimum widths
- Alternative treatment/facility required
- Roadway conditions do not meet minimum widths for bike lanes

Assessment of existing curb-to-curb widths is preliminary and based on limited field measurement data. See Bike Design Concepts for East Fourth Plain in the Appendix for an updated bikeway discussion. Additional right-of-way may have to be required of future development

Alternative Cross-Section
10' - 11' Travel Lanes -- 5' Bike Lanes

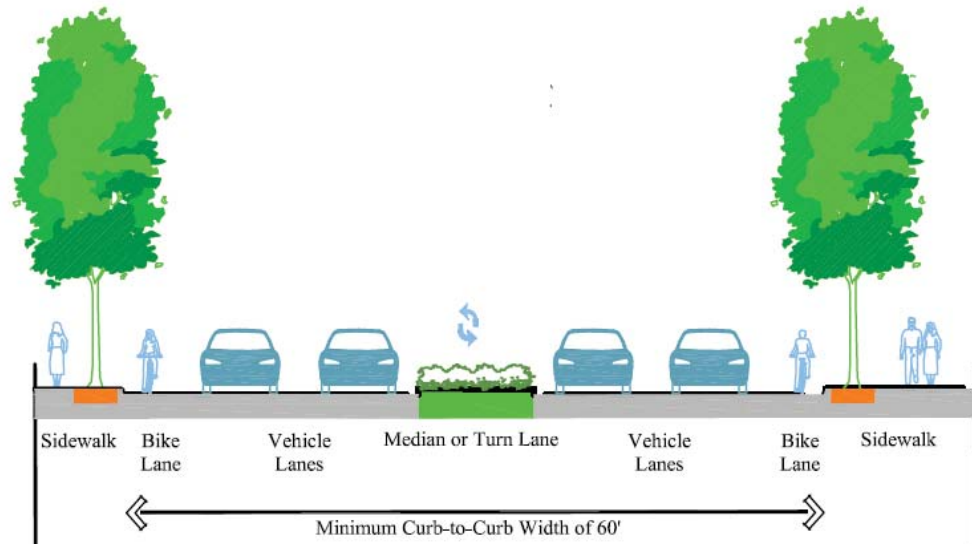


Figure 16

Access Management Strategies

A corridor access management plan is part of the Implementation Program for the Fourth Plain Corridor Subarea Plan. The adopting ordinance is the Fourth Plain Corridor Subarea Plan Action Ordinance. It will achieve access management parcel by parcel with redevelopment and by a future corridor access management plan. The objectives are to increase safety and efficiency. The improvements should include pedestrian refuges, landscaped medians, consolidated driveways and side street access for properties.

The current study did not develop that access management plan or identify specific implementation areas. It considered potential design tools that could be implemented during preliminary or construction engineering for street improvements. The access management plan should be developed in coordination with property owners and redevelopment in the future.

Design Tools

The primary tools considered were raised medians and driveway consolidation (Figures 17-18). In addition to improving traffic and pedestrian safety, raised medians are landscaping opportunities for additional street “green space.” Green space helps put “boulevard” back into Fourth Plain Boulevard. Implementing medians can help achieve an

overall pedestrian environment objective of a street crossing opportunity every 400 feet to 600 feet. Current signal spacing at intersections is greater than that. Driveway consolidation reduces conflict points between vehicle and pedestrians and between vehicles and bikes. Fewer driveways also mean a more continuous furnishing zone for street trees and other landscaping.

An ideal model for a landscaped median length might be 300 feet to 500 feet, with left turn opportunities at intersections and possibly at mid-block. The mid-block design might allow left turns into a property but no left turns out. In addition to driveway consolidation, construction of new driveways should maintain a level pedestrian zone for walking. This will require a minimum combined 12 foot wide sidewalk and furnishing zone. (See Figure 14.)

Specific driveways for consolidation or locations for raised medians were not determined as part of this study. These decisions would be made as part of an access management plan. However, the appropriateness of landscaped medians as a streetscape character element in the three distinct design areas was discussed.

Village Design Area

Medians are generally not an aspect of a Main Street character. However, the Village Area is unlikely to redevelop as a true Main Street due the five lane cross-section and building setbacks from the sidewalks. A landscape median could provide better pedestrian links to bus stops; better links between future retail and commercial uses; and provide a green space element beyond what will be possible with sidewalk and furnishing zones.

Successful implementation of a continuously landscaped median would require reduction in the number of driveways, particularly between Fort Vancouver Way and NE Brandt Street. From NE Brandt to NE Falk the limited number of existing driveways may provide an implementation opportunity for a landscaped median.

Green Necklace Design Area

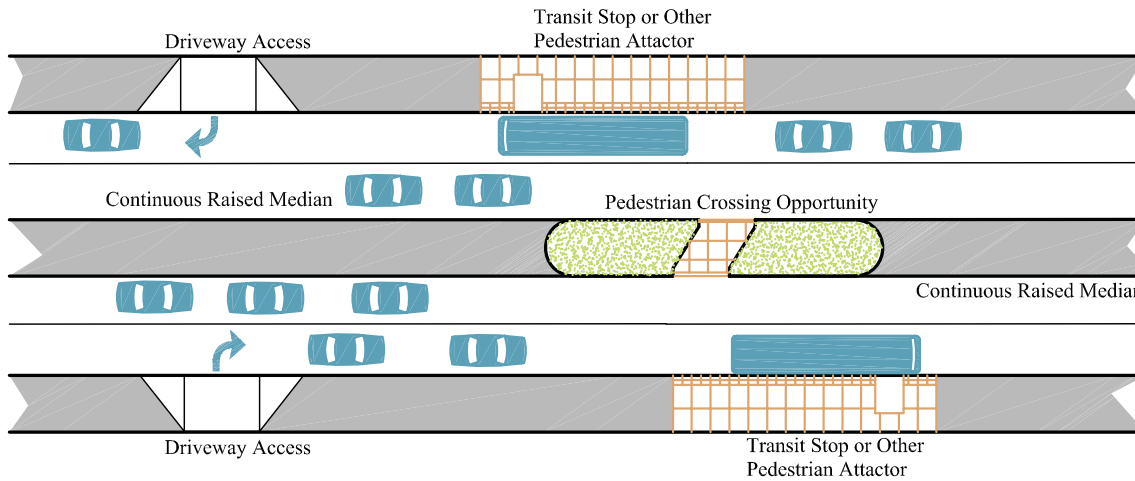
Continuing a landscaped median from NE Falk to NE Wintler is also an implementation opportunity, especially if the intersection offset for NE Wintler and NE Caples is corrected. The greater thematic opportunity for the Green Necklace area is a broad landscaped area and meandering pathway along the south side of Fourth Plain. It may prove to be a better investment in street green space than a continuous landscaped median

Commercial Design Area

This is the most constrained of the design areas with regard to streetscape improvements in general. In much of this segment the existing curb-to-curb widths are too narrow to accommodate a 10 foot to 12 foot landscaped median. Constructing new and wider sidewalks with far fewer interruptions by driveways is probably a better investment in improving the pedestrian environment.



CONTINUOUS RAISED MEDIAN
(per access management plan)



Access Management Strategies
Boulevard Opportunities

Pedestrian refuge areas within continuous raised medians can improve pedestrian access to transit stops or other frequent attractors for pedestrian crossings at a predictable point. These refuge areas may also be appropriate pedestrian enhancements at “T” intersections and where driveway closures/consolidations create full width sidewalks on both sides of the street.

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CONSOLIDATED DRIVEWAY WITH
RAISED MEDIAN

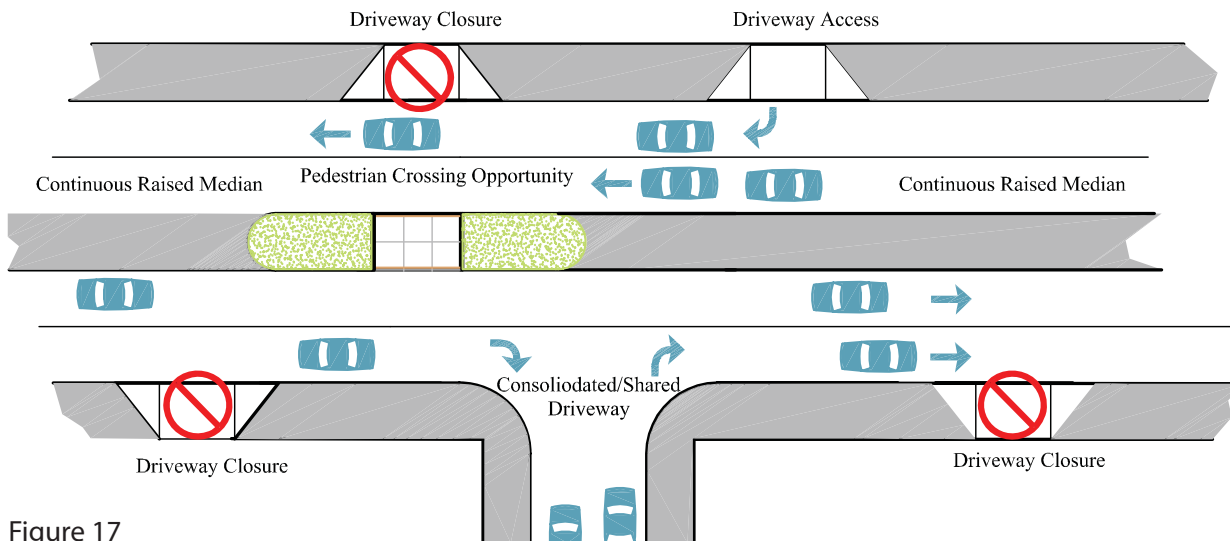
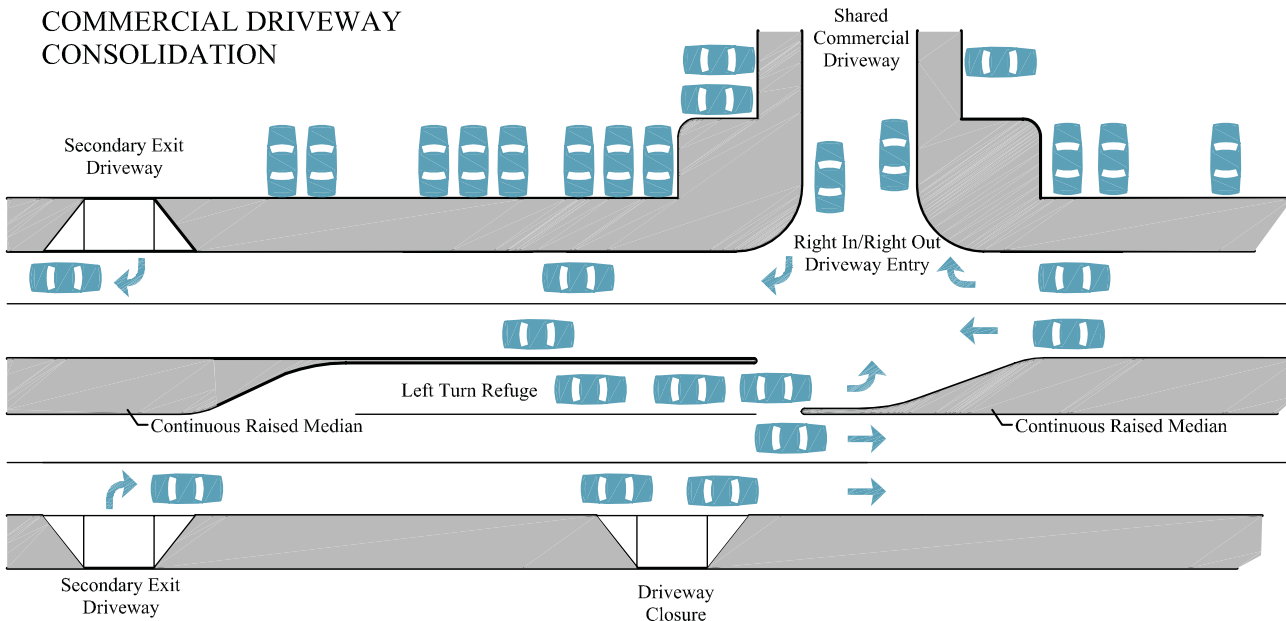
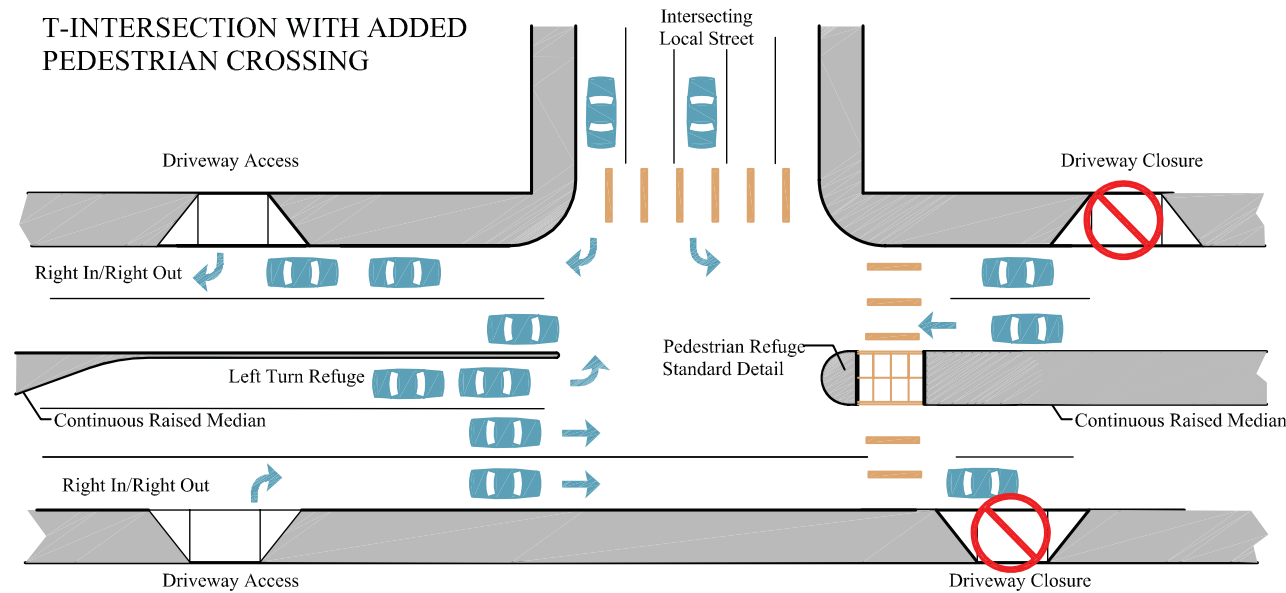


Figure 17

Refuges areas should be developed according to City of Vancouver design standards. Location of refuges should be coordinated with a future access management plan and with the service and transit stop plans of C-TRAN. There may be opportunities for C-TRAN to relocate stops to take advantage of enhanced crossing opportunities created by an access management plan.

Access Management Strategies Boulevard Opportunities



“T” intersections can be opportunities to close or relocate driveways in order to focus turning movements onto the public side street rather than driveways. This reduction in demand for turning movements allows a full width landscaped median with an enhanced pedestrian crossing.

Where a major commercial driveway functions almost like a “T” intersection, it may be desirable to control turning movements with a full width raised median that allows left turns in but only right turns out. As with other raised medians, this is an opportunity to add landscaping “green space” to the street and to provide pedestrian crossing points directly related to a building entry.

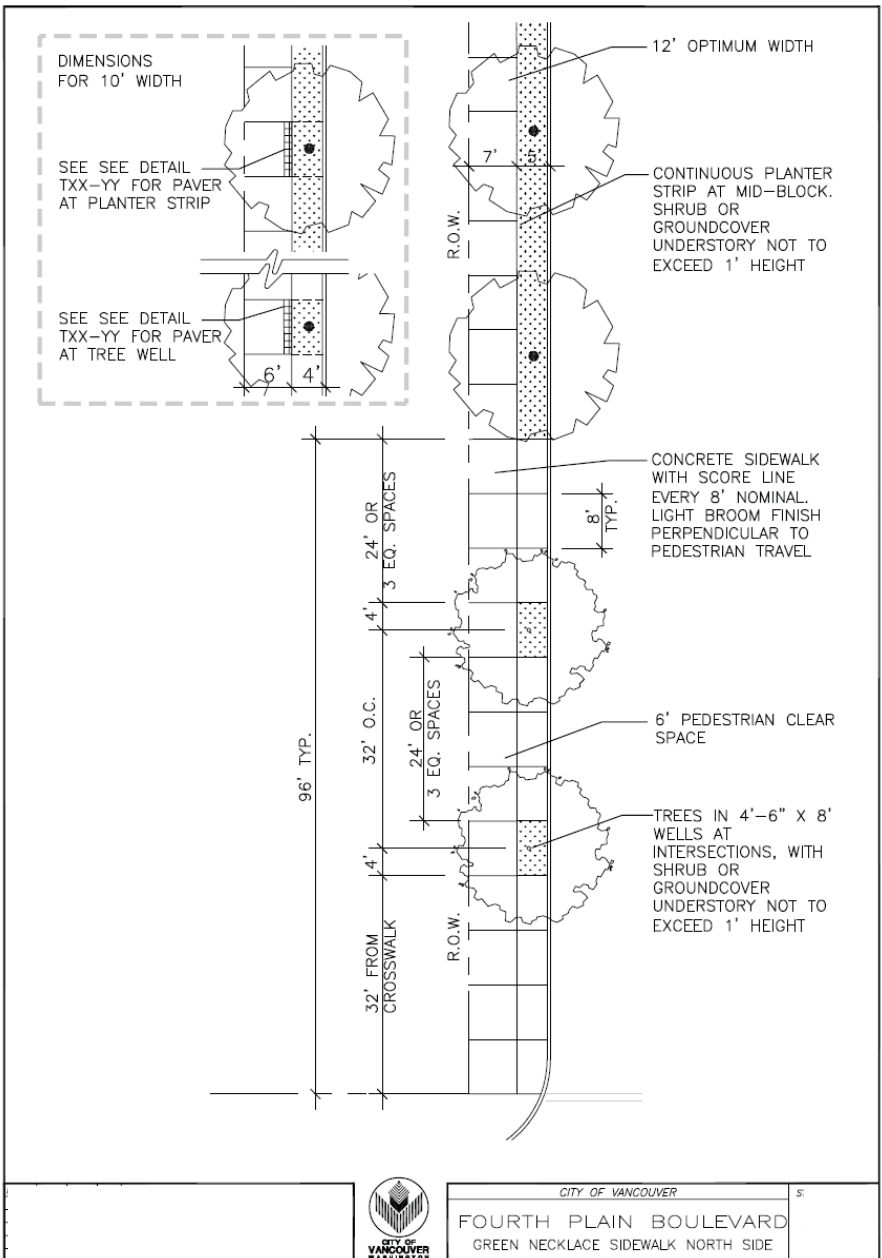
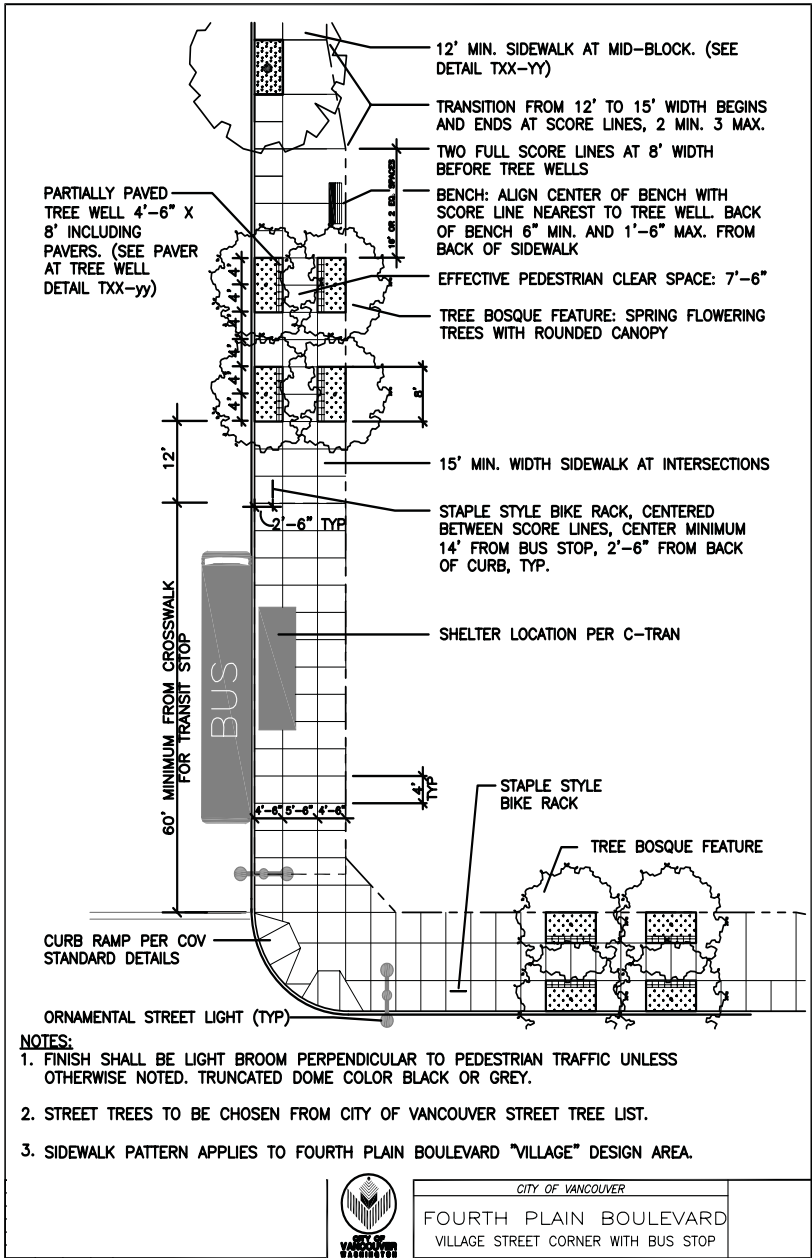
Figure 18

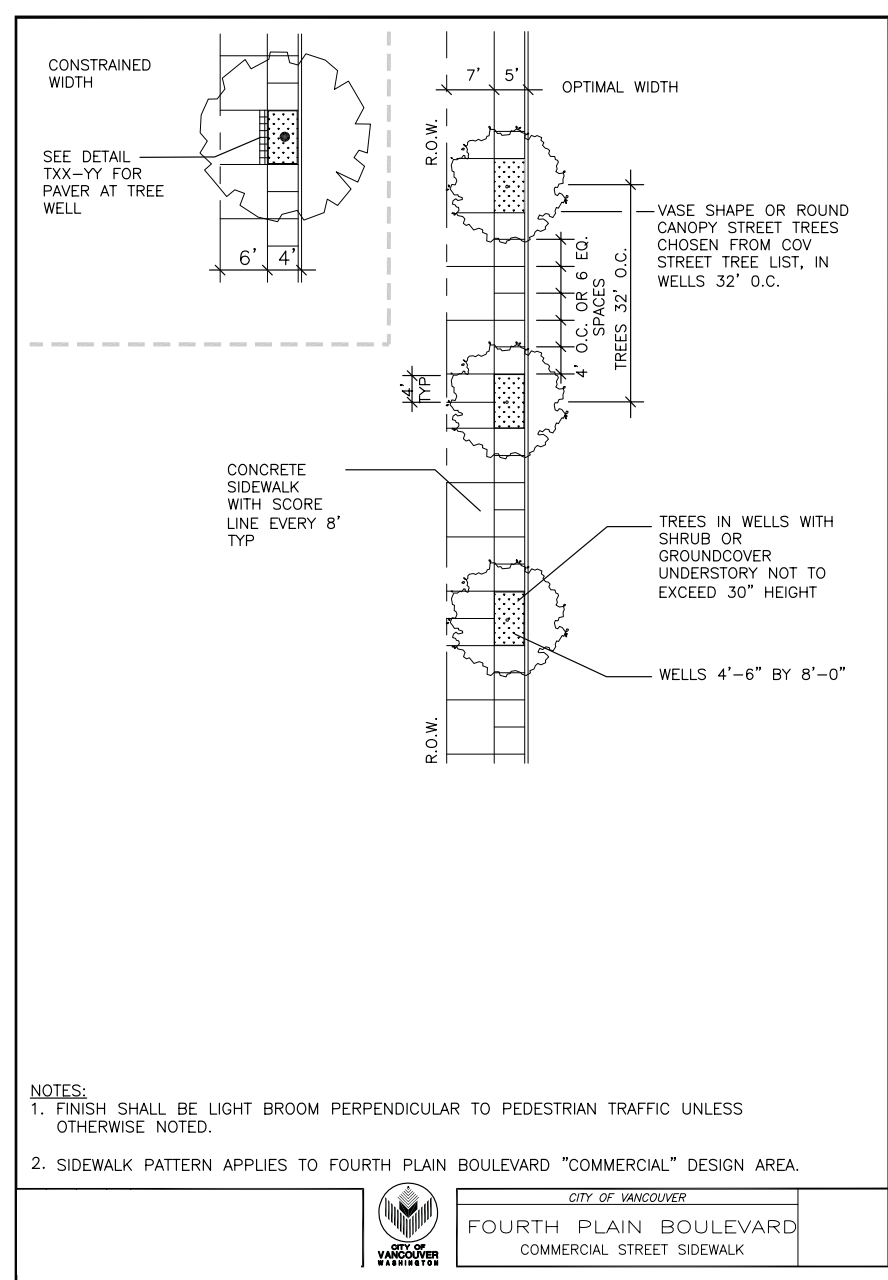
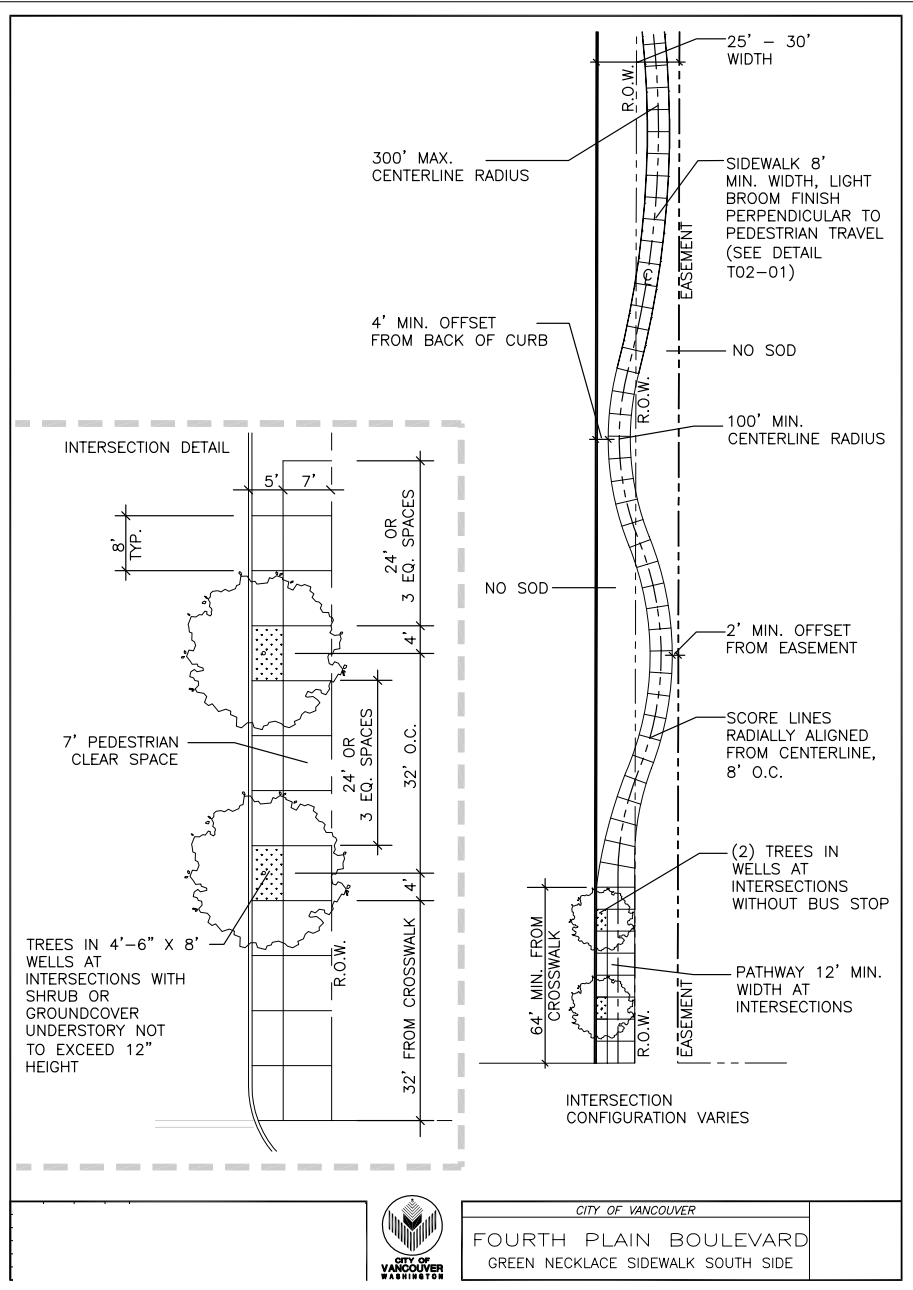
Standard Design Details

The following street standard details were developed directly from the design tool kit for the Streetscape Design Study. They are intended to update existing City of Vancouver standard details. They are applicable in the Fourth Plain Streetscape Study area for this project. As street frontage improvements are made through redevelopment or implementation of capital improvement projects, these details will ensure a consistency of construction and meet the visual and functional characteristics of the three streetscape design areas. Specific and certain locations for pedestrian refuges or landscaped medians have not been determined.

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C-TRAN is in the process of updating design standards and passenger amenities for bus stops. The key elements of shelter location and providing additional streetscape benches are reflected in these details. Actual shelter sizes, types, and locations of other stop features such as signage or landing pads for wheelchair lifts will be guided by C-TRAN details. The clear stop areas shown in these details will accommodate the standard size buses currently in use as well as the longer articulated buses in the future.





APPENDIX

Street Tree Guidelines

Street trees are an important element in creating an appealing living, working, shopping, walking and motoring environment for Fourth Plain Boulevard. Properly placed and maintained street trees return direct economic, environmental and safety returns over the lifetime of a tree. Those benefits include:

- Reduced urban traffic speeds
- Safer and more comfortable walking environments
- Improved business appeal
- Potential to reduce stormwater drainage infrastructure
- Lower urban air temperatures
- Overall sense of care and investment in the corridor

The following are guidelines for tree selection for the three design areas of the project area (Fort Vancouver Way to NE Andresen Road). Larger caliper trees at least 3” or greater should be planted. For root barrier within the tree wells or planter strips, specify Deep Root or Vespro Panel systems.

Village Area:

European Hornbeam (*Carpinus betulus*)

Autumn Gold Ginkgo (*Ginkgo biloba*)

European Hophornbeam (*Ostrya carpinifolia*)

Autumn Applause Ash (*Fraxinus americana*)

Commercial Area:

Pacific Sunset Maple (*Acer truncatum* x *A. platanoides*)

Frontier Elm (*Ulmus* ‘Frontier’)

Hackberry (*Celtis occidentalis*)

Black Tupelo (*Nyssa sylvatica*)

Green Necklace Area:

Green Mountain (Sugar Maple *Acer saccharum*)

Marshall Ash (*Fraxinus pennsylvanica* ‘Marshall’)

Douglas Fir (*Pseudotsuga menziesii*)

Western Red Cedar (*Thuja plicata*)

Autumn Brilliance Serviceberry (*Amelanchier* x *grandiflora*)

Cascara (*Rhamnus purshiana*)

Bosque:

Redspire Pear (*Pyrus calleryana*)

Spring Flurry Serviceberry (*Amelanchier laevis*)

Cascade Snow Cherry (*Prunus*)

Snow Goose Cherry (*Prunus*)

Chinese Fringetree (*Chionanthus retusus*)

Galaxy Magnolia (*Magnolia galaxy*)

For under utilities in all Areas:

Rocky Mountain Glow Maple (*Acer grandidentatum*)

Autumn Brilliance Serviceberry (*Amelanchier* x *grandiflora*)

Chinese Fringetree (*Chionanthus retusus*)

Japanese Hornbeam (*Carpinus japonica*)

Goldenrain Tree (*Koelreuteria paniculata*)

Cascade Snow Cherry (*Prunus*)

Snow Goose Cherry (*Prunus*)

Medians

Green Vase Zelkova (*Zelkova serrata*)

Tulip Tree (*Liriodendron tulipifera*)

Hackberry (*Celtis occidentalis*)

Marshall Ash (*Fraxinus pennsylvanica*)

Macho Cork Tree (*Phellodendron amurense*)

Sterling Silver Linden (*Tilia tomentosa*)

Green Mountain Sugar Maple (*Acer saccharum*)

Frontier Elm *Ulmus* (‘Frontier’)

Transportation Services
4400 N.E. 77th Avenue, Suite 350
P.O. Box 1995
Vancouver, WA 98668-1995



Phone: (360) 487-7700
Fax: (360) 487-7699
www.cityofvancouver.us/transportation

MEMORANDUM

DATE: July 1, 2008

TO: File

FROM: Ahmad Qayoumi, Transportation Program Manager

RE: Implementation Program for the Fourth Plain Streetscape Standard Plan
Details and Lighting District

A handwritten signature in black ink, appearing to be "AQ", is written over the "FROM" line.

The Fourth Plain Streetscape Standard Plan Details and Lighting District will be implemented as individual parcels are developed as conditioned by the City of Vancouver's Municipal Code and Development Review Process. This is a general guidance for the expected plan details, as additional review may be required on a case by case basis.

Chapter 11.90 STREET STANDARDS--DEVELOPMENT REGULATIONS

Section 11.90.020 Developments--Abutting street--Frontage improvements.

(a) Required Improvements. Unless already fully developed, and subject to the limitations of Section 11.90.010 and the modification provisions of Section 11.90.120, a half-width street improvement shall be constructed to the applicable standards set out in this chapter to that portion of a street, which abuts the parcel being developed, as a requirement of development approval; provided, that all developments, which the director, based upon an engineering traffic study, finds will not result in an increase in site trip generations of more than ten percent shall only be required to make intersection and sight distance frontage improvements in accordance with Sections 11.90.050 and 11.90.060, unless the director determines that additional frontage improvements are clearly necessary in order to provide minimally safe access to such development.

TYPE ONE THROUGH TYPE FOUR REVIEW:

- Public right of way dedication
- Safety mitigation
- ADA ramps
- ADA complaint driveways and sidewalks

TYPE TWO THROUGH TYPE FOUR REVIEW:

- Sidewalk construction/ reconstruction
- Curb and drainage
- ADA ramps
- Street trees and landscaping
- Tree well with pavers
- Roadway striping: bike lanes, crosswalks, etc.
- Access management

TYPE THREE AND TYPE FOUR REVIEW:

- Street furniture (benches, bike racks, etc.)
- Ornamental street lighting
- Construction of C-TRAN bus stop(s)
- Public right of way dedication for bike lanes and transit (including high capacity transit)
- Undergrounding of utilities
- Access management

City of Vancouver

TRANSPORTATION SERVICES

Thank You For Keeping Vancouver Moving!

Transportation Services
4400 N.E. 77th Avenue, Suite 350
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Vancouver, WA 98668-1995



Phone: (360) 487-7700
Fax: (360) 487-7699
www.cityofvancouver.us/transportation

MEMORANDUM

DATE: July 2, 2007

TO: File

FROM: FROM: Matt Ransom, Transportation Planning Manager *MR*

RE: Road Diet/ Bikeway Design Concepts for East Fourth Plain

BACKGROUND

Out of the ongoing community dialog with business owners and developers there has been a repeated call for investigating changing the lane configuration of Fourth Plain Boulevard to better support multimodal traffic (bicycles and pedestrians) and parking, slow speeding traffic, and perform capitol construction changes to revitalize the streetscape while minimizing property takes. These objectives are typically implemented as part of either a high capacity transit project or an interim road diet project. This memo will discuss the latter design concept.

East Fourth Plain's four lane configuration currently does not meet the City's standard for lane widths on a four lane principal arterial with center left turn lane¹ or accommodate bicycle traffic.² The Washington State DOT sponsored Fourth Plain Safety Corridor study found that many of the bicyclist collisions were due to riding on the sidewalk to avoid higher speed motor vehicle traffic. This was Washington's first traffic safety corridor project off of a state route.

FOURTH PLAIN STREETSCAPE BIKE LANE STUDY

The Fourth Plain Streetscape Plan reported on an initial planning level investigation of adding bike lanes to the existing arterial (page 29) in the fall of 2007. Bike lanes would be for the most part limited to the eastern end of the Village Design Area and the western end of the Green Necklace Design Area. During the development of a bike lane striping plan for the Subarea it was found out through field measurements that bike lanes could only be easily added between Falk and 54th Avenue within the Green Necklace Design Area and isolated blocks within the Village Design Area (see the Fourth Plain Bicycle Lanes striping plan – project number 071435). The lane configuration for this proposal was four eleven foot travel lanes, a ten foot center turn lane, and two five foot bike lanes. This layout would provide a moderate bike level of service but leave bicyclists little room to avoid existing catch basins and expansion joints.

STANDARD PRACTICE

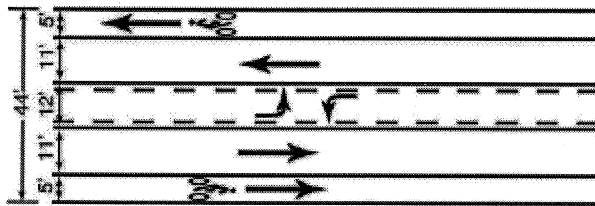
The implementation of arterial road diets by US jurisdictions has become more common over the last ten years. Typically a road diet is undertaken to reduce the number of travel lanes in order to improve operational safety on older urban corridors with limited right of way by returning lane widths to ideal widths and simplifying the lane layout. The City of Vancouver has successfully undertaken two principal arterial road diets by converting Grand

¹ T10-07 Four Lane Principal Arterial with Center Left Turn Lane is 60 feet wide with two 12' travel lanes, two 11' travel lanes, and one 14' median/ turn lane.

² T10-06 Four Lane Principal Arterial with Center Left Turn Lane is 70 feet wide with two 5' bike lanes, two 12' travel lanes, two 11' travel lanes, and one 14' median/ turn lane.

Boulevard and West Fourth Plain Boulevard into a two lane arterial with bike lanes and a center turn lane.³ These arterials have operationally experienced improved traffic safety while still accommodating moderate traffic volumes⁴ at consistent travel speeds closer to the posted speed limit with a minor increase in peak hour congestion. Residents and property owners have been pleased with the changes from a safety and accessibility perspective.⁵

FIGURE 1: A Representative Road Diet with Bike Lanes⁶



Note: Minimal lane widths shown above and without access management

Existing road diets in the region accommodate as much as 30,000 vehicles per day^{7 8}, though standard practice suggests the following ranges and feasibility in order to avoid congestion diverting traffic to other routes:⁹

- Less than or equal to 15,000 vpd – feasibility probable
- Greater than 15,000 vpd to 20,000 vpd – exercise caution
- Greater than 20,000 vpd – feasibility less likely due to congestion and traffic diversion

Based on the recent volumes on East Fourth Plain (Figure 2) a road diet conversion may be possible along much of the corridor within the City of Vancouver. However further study is needed to assess the probability and long term sustainability of such a roadway configuration.

ROAD DIET CONCEPT - Traditional

The East Fourth Plain Boulevard within the Fourth Plain Subarea can accommodate a road diet with bike lanes as there is enough physical room for this lane configuration.¹⁰ This layout would provide a higher bicycle level of service and leave bicyclists a lot of room to avoid existing catch basins. Some of the wider sections could allow buffered bike lanes, wider sidewalks, wider travel lanes or center turn lane/median or limited on-street parking. Traffic volumes are within 20,000 vehicles per day for all sections between I-5 and I-205, except for the intersections of Andresen and Burton. Additionally, traffic volumes for much of this corridor are about a fourth lower¹¹ than the historic highs in the 1980s and 1990s, except for the intersections of Andresen and Burton. East Fourth Plain in the Subarea was converted to its existing lane layout in the 1980s to accommodate increased traffic volumes before State Route 500 was constructed. Similar reductions in traffic volumes have occurred along Fourth Plain Boulevard during the same period (Table 3).

ROAD DIET CONCEPT – Unconventional

C-TRAN is currently in the process of consolidating stop locations and developing a superstop type platform design for Fourth Plain. These changes could be supported by a transit supportive road diet design. A low cost interim design would be to convert the existing number two lane into a shared lane for buses and bicyclists. This modified or

³ West Fourth Plain was a four and five lane arterial (48' wide) and Grand was a four lane arterial before the road diet conversions.

⁴ West Fourth Plain road diet at Broadway handles as much as 16,858 VPD since its conversation.

⁵ Only 21.4% of survey respondents would not recommend a road diet on other arterials in the City. Fourth Plain Survey and Case Study, *Road Diet Handbook: Setting Trends for Livable Streets* by Jennifer Rosales, PE. Parsons Brinckerhoff. 2006 Pg. 141.

⁶ *Evaluation of Lane Reduction "Road Diet" Measures on Crashes and Injuries*; by Herman Huang et al., UNC Safety Research Center, 2002. Figure 1: A Representative Road Diet.

⁷ Tacoma Street, Portland OR; Lake Washington Blvd, Kirkland WA. *ibid.* Rosales, pgs. 25 to 28.

⁸ *Grand Boulevard Safety Improvement Project, Traffic and Safety Study Report*; Parsons Brinckerhoff. 2002 Pg.15.

⁹ Table 4.1: Road Diet Feasibility Factors..., *ibid.* Rosales, pgs. 108 to 110.

¹⁰ 59 feet to 64 feet in existing width vs. 46 feet minimum for a road diet. This configuration is similar to T10-12 Three Lane Minor Arterial with Bike Lanes.

¹¹ 13% to 39% less traffic volume. 2008 RTC data.

unconventional road diet would allow much of the existing lane layout to remain along with the loop detector locations. This lane could be stenciled with text and symbols denoting its shared use. There should be only infrequent bike and bus conflicts given the existing low bike volumes and 15 minute transit headways. It is expected that a rider at 10 mph would encounter two to three buses during their travel through this corridor vs. as many as 20 cars.¹² Additional conflict with a bus could occur while performing a lift or if a bicyclist and bus were to continually pass one another. It is expected that vehicles entering and leaving driveways would still cross this shared lane, much as they do so for bike lanes. This scenario would have no on-street parking.

¹² The existing frequency of bike and car conflicts can occur as frequently as 1 to 2 times per minute on average. Field conditions during peak commute hour with a bike commuter traveling an average of 10 mph on a 30 mph roadway.

Figure 2: **EAST FOURTH PLAIN ROAD VOLUMES**

	RECENT COUNT	RECENT YEAR	PEAK COUNT	PEAK YEAR	TOTAL CHANGE	PERCENT CHANGE
FT VANCOUVER (East Leg)	18,866	2004	28,646	1980	-9,780	66%
(West Leg)	16,570	2004	22,359	1980	-5,789	74%
GRAND (East Leg)	16,783	2006	22,138	1995	-5,355	76%
(West Leg)	17,151	2006	21,752	1990	-4,601	79%
BRANDT (East Leg)	17,519	2007	20,706	1984	-3,187	85%
(West Leg)	17,105	2007	27,867	1981	-10,762	61%
FALK (East Leg)	18,916	2006	26,199	1981	-7,283	72%
(West Leg)	19,956	2003	22,889	1996	-2,933	87%
STAPELTON (East Leg)	17,377	2007	24,121	2002	-6,744	72%
(West Leg)	16,339	2007	22,839	1996	-6,500	72%
ANDRESEN (East Leg)	24,847	2006	28,540	2000	-3,693	87%
(West Leg)	21,743	2006	27,833	2000	-6,090	78%
BURTON (East Leg)	21,840	2002	20,288	1997	1,552	108%
(West Leg)	25,667	2002	26,696	1997	-1,029	96%
NE 86th AVE (East Leg)	18,055	2007	18,159	1986	-104	99%
(West Leg)	13,635	2007	17,387	2002	-3,752	78%
THURSTON WAY (East Leg)	18,404	2004	14,039	1996	4,365	131%
(West Leg)	20,178	2004	16,509	1996	3,669	122%

SOURCE: Southwest Washington Regional Transportation Council

Figure 3: **W FOURTH PLAIN ROAD VOLUMES (Before and After Road Diet)**

	RECENT COUNT	RECENT YEAR	PEAK COUNT	PEAK YEAR	TOTAL CHANGE	PERCENT CHANGE
KAUFFMAN (East Leg)	10,768	2007	18,330	1996	-7,562	59%
(West Leg)	9611	2007	18,102	1996	-8,491	53%
MAIN (East Leg)	14,767	2007	19,965	1994	-5,198	74%
(West Leg)	13,102	2003	21,047	1996	-7,945	62%
BROADWAY (East Leg)	16,858	2003	22,854	1998	-5,996	74%
(West Leg)	14,767	2007	19,627	1996	-4,860	75%

SOURCE: Southwest Washington Regional Transportation Council

Transportation Services
4400 N.E. 77th Avenue, Suite 350
P.O. Box 1995
Vancouver, WA 98668-1995



Phone: (360) 487-7700
Fax: (360) 487-7699
www.cityofvancouver.us/transportation

MEMORANDUM

DATE: July 2, 2008

TO: File

FROM: Matt Ransom, Transportation Planning Manager

RE: Future E. Fourth Plain High Capacity Transit

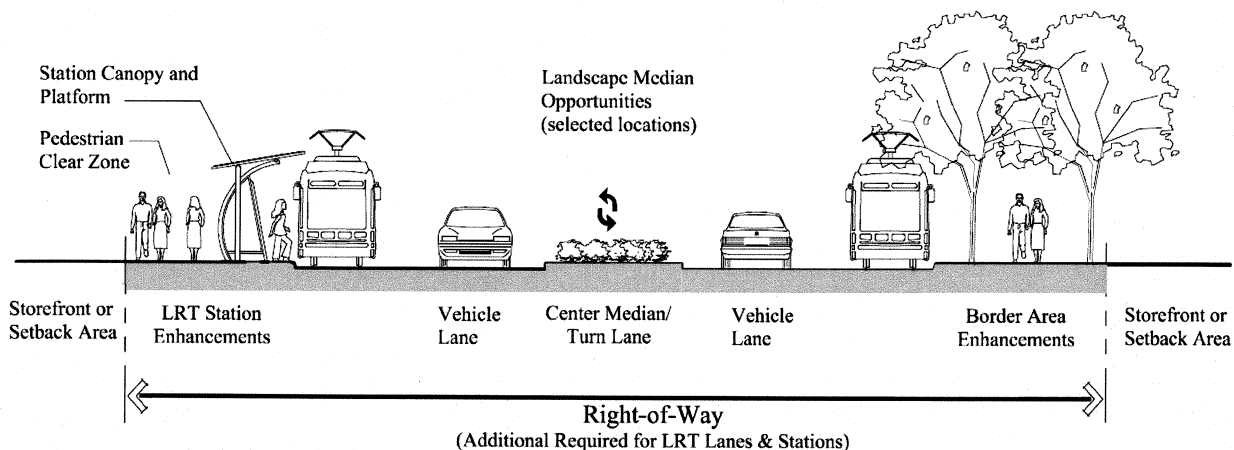
A handwritten signature in black ink, appearing to be "MR", written over the "FROM" line.

Fourth Plain historically has been one of the primary transit routes within the city and to the county from the days when streetcar service ran along Main Street to 26th Street (Fourth Plain) and on to Sifton in the early twentieth century. Currently Fourth Plain is CTRAN's most productive route and has the highest ridership of any route in the system.¹ This is to be expected given its mix of commercial land uses, government and educational facilities and higher density residential districts. Fourth Plain currently is the only city arterial with a limited ('skip stop') service. The CTRAN Route #44 reaches from Vanmall Transit Center to Portland's MAX system with 25 minute headways.

The portion of East Fourth Plain within the Fourth Plain Subarea Plan has long been identified as a high capacity transit (HCT) corridor. There are two on-going efforts related to HCT service near and along East Fourth Plain by the Southwest Washington Regional Transportation Council (RTC) and the Columbia River Crossing. The RTC is evaluating HCT type and routes along East Fourth Plain and other roadways within Clark County.

High Capacity Transit as it is currently discussed for Fourth Plain could take the form of either a rail (streetcar or light rail) or rubber wheeled (bus rapid transit) vehicle. And operationally either bus rapid transit or light rail/streetcar service would most likely operate within the Fourth Plain Subarea in its own dedicated lane along side a single traffic lane (see the preliminary diagram by OTAK below). Additional right of way will likely be required.

Village Design Concept Future LRT Service



¹ Debbie Elvin-Snyder, C-TRAN. July 2, 2008. Ridership for CTRAN #4 Route in 2007: 1,161,105 (21.8%)