



STREETScape DESIGN PLAN

TIGARD TRIANGLE STRATEGIC PLAN IMPLEMENTATION

City of Tigard

Final Plan
December 2016



815 SW 2nd Avenue, Suite 200 | Portland, OR 97204

www.migcom.com

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AREA MAP



project overview and planning process

Study Area Overview

Project Vicinity

The Tigard Triangle encompasses an area of approximately 425 acres and is bound by three major highways: 99W/Pacific Highway, I-5 and OR 217. While regional connectivity is excellent, local connectivity is limited to an incomplete road network.

Project Background

The Triangle is located at a crossroads for both Tigard and surrounding communities like Portland, Lake Oswego, Tualatin, Beaverton and Wilsonville.

The **Tigard Triangle Strategic Plan** envisions the area to become a walkable, pedestrian-oriented, mixed-use district that also implements Tigard's Strategic Plan vision to become a highly walkable community. Today, however, the current development pattern is primarily auto-dependent with office buildings of varying size and large-scale, auto-oriented retail development.

Streetscape and Development

There are a number of sites within the Triangle that have near-term development potential. This Streetscape Plan envisions development and streetscape improvements to occur over time and produce an active street and building environment. Streetscape options described in this document are all pedestrian-oriented, as are the building forms depicted in the visualizations, which consistent with the Draft Lean Code for the area.

Relevant Plans and Codes

There are a number of previous and current planning efforts that have informed this document, including:

- Tigard Triangle Strategic Plan (March 2015)
- Tigard Lean Code - draft (January 2016)



Top: The site tour took place with City and consultant team on April 13, 2016
Bottom: Internal workshop

WALKING TOUR AND OPPORTUNITY SITES MAP



- The Value of Place: Planning for Walkability in the Tigard Triangle (June 2016)
- State of Place Index (2016)

These documents served as references for this streetscape plan. Of particular importance are the proposed street sections included in the Draft Tigard Lean Code. Specific applications such as on-street stormwater and other pedestrian amenities were tested to ensure the proposed Lean Code street cross sections could accommodate low-impact development approaches. This plan refines the Lean Code cross sections, and, in some instances, suggests an alternative design or dimensional differences for parking, sidewalks and landscaping/furnishings zone.

Site Tour and Workshop

The project team and City staff completed a site tour in April 2016. The tour (shown on the map to the left) provided opportunities for City and consultant staff to identify issues about the study and existing street types that were not immediately obvious or documented through other resources.

Following the site tour, a one-day internal workshop was held on June 27 to identify specific opportunities for street types, discuss aspects of the Draft Lean Code, and identify elements and issues that could affect the Lean Code or future development opportunities. The



workshop included both design and brainstorming sessions that generated design ideas and a construction funding concept that could be applied to projects in the area, which is described in Appendix A.



*Top: The walking tour provided opportunities for the consultant team to look at a variety of street conditions present in the Triangle
Bottom: Internal workshop*



existing conditions

Right-of-Way Condition

This chapter provides a street by street snapshot of existing conditions as observed in the field via GIS and using Google Earth Street View, whose street images provide a center of right-of-way perspective. A summary table (Table 1: Right-of-Way Condition) and corresponding gallery of images provides an overview of street conditions as of 2016.

A thorough understanding of the current condition of the Tigard Triangle's rights-of-way is important when evaluating the interest, cost and feasibility of implementing proposed improvements described in this and other planning documents. The current street network and design generally reflects the existing development pattern, which is generally low-density residential and auto-oriented commercial land uses connected by a partial

street grid. There are several large sites and dead ends that limit connectivity.

The future condition for both streetscape function and character of the Pedestrian and Access Streets in the Tigard Triangle, described in Chapter 4, reflect a dramatic shift in both land use and transportation from current conditions.



Top: Limited right-of-way connectivity along 70th

Bottom: 72nd is the major connector that serves the Triangle

Opposite: Abrupt end to sidewalk along Hermoso at 72nd

TABLE 1: RIGHT-OF-WAY CONDITION

Street Name	Right-of-Way Width	Lanes	Lean Code Design Classification	Tigard TSP Functional Classification	Material and Condition
Atlanta St (west of 72nd)	30'	No lane markings	None	Minor Residential	Asphalt
Atlanta St (east of 70th)	30'-78'	2 traffic lanes in either direction	Pedestrian Street/Access Street	None	Asphalt
Baylor St	45'-60'	No lane markings, speed bumps	Pedestrian Street (72nd-69th) / Access Street (69th-66th)	Local	Asphalt
Clinton St	50'-60'	No lane markings	Pedestrian Street (72nd-69th) / Access Street (69th-67th)	Local	Asphalt
Coronado St	30'-35'	No lane markings	None	None	Asphalt with concrete patches
Dartmouth St	94'-98'	2 lanes in either direction with a center turn lane, bike lanes	Access Street	Collector	Concrete
Elmhurst St	30-60'	No lane markings	Pedestrian Street (72nd-69th)/ Access Street (69th-68th)	Local	Asphalt
Hermoso St	53'	No lane markings	Access Street	Local	Asphalt
Franklin St	60'	No lane markings; concrete curb one side; on-street parking both sides; pavement good condition	Access Street	Local	Asphalt
Beveland St	56'-70'	No lane markings in some segments, 1 lane in each side with turn lanes in other segments. On-street parking in some segments.	Pedestrian Street	Neighborhood	Asphalt
Gonzaga St	60'	No lane markings, on-street parking on one side	Access Street	Local	Asphalt
Hampton St	60'	2 lanes in either direction with center turn lane	Pedestrian Street (72nd-69th); Access Street (69th-66th)	Collector	Asphalt
Irving St		Private road	Access Street	None	Asphalt

TABLE 1: RIGHT-OF-WAY CONDITION (CONTINUED)

Street Name	Right-of-Way Width	Lanes	Lean Code Design Classification	Tigard TSP Functional Classification	Material and Condition
<i>Numbered Streets</i>					
99W/Pacific Highway	90'-115'	6 traffic lanes, bike lanes, two-way traffic	None	Principal Arterial	Asphalt
74th Ave	60'	No lane markings, two-way traffic	Pedestrian Street (Pacific Hwy-Dartmouth)/ Access Street (Dartmouth -Beveland)	Local	Asphalt
72nd Ave	56'-94'	2 traffic lanes on either directions in some segments, bikes lanes, 1 lane in each direction in narrower segments (between Hermoso and Beveland)	Pedestrian Street	Arterial	Mostly asphalt; some intersections are concrete (72nd and Dartmouth)
70th Ave	28'-60'	No lane markings. 2 way traffic. Some segments have on-street parking on one or both sides (a segment between Dartmouth and Elmhurst and Clinton)	Access Street	None	Asphalt in some segments; unimproved (gravel without curbs) in some segments (between Clinton and Dartmouth)
69th Ave	60'	1 traffic lane each direction (in the south of the Triangle near Franklin). No lane markings and deteriorated roads in some segments (north of Dartmouth).	Pedestrian Street	Local	Asphalt
68th Ave	60'	1 traffic lane each direction. Transit route (bus stops). On-street parking on one side in some segments (Franklin to Elmhurst). Bike lanes (from Dartmouth to Atlanta)	Access Street	Collector	Asphalt
68th Pkwy	80'	1 traffic lane each direction with center landscaped median (trees and street lights)	Access Street	Collector	Asphalt
67th	60'	1 traffic lane each direction; on-street parking from Baylor to Clinton.	Access Street	Local	Asphalt
66th	24'-42'	1 traffic lane each direction; on-street parking from Baylor to Clinton	Access Street	Local	Asphalt
64th	28'-40'	No lane markings; 2-way traffic	Regional and Local Trail	None	Asphalt; deteriorated with cracks and potholes



Left: Atlanta east of 68th | Right: Atlanta west of 72nd



Left: Baylor looking west towards 72nd | Right: Baylor looking east at 70th



Left: Beveland looking west of 72nd | Right: Beveland looking east at 69th



Left: Clinton looking west from 72nd | Right: Coronado Street looking east along 99W/Pacific Highway



Left: Dartmouth near 70th | Right: Dartmouth near 72nd



Left: Elmhurst looking towards 70th | Right: Elmhurst at 72nd



Left: Franklin looking west from 68th | Right: Gonzaga looking east from 72nd



Left: Hampton near 70th | Right: Hermosa



Left and Right: Irving at 68th

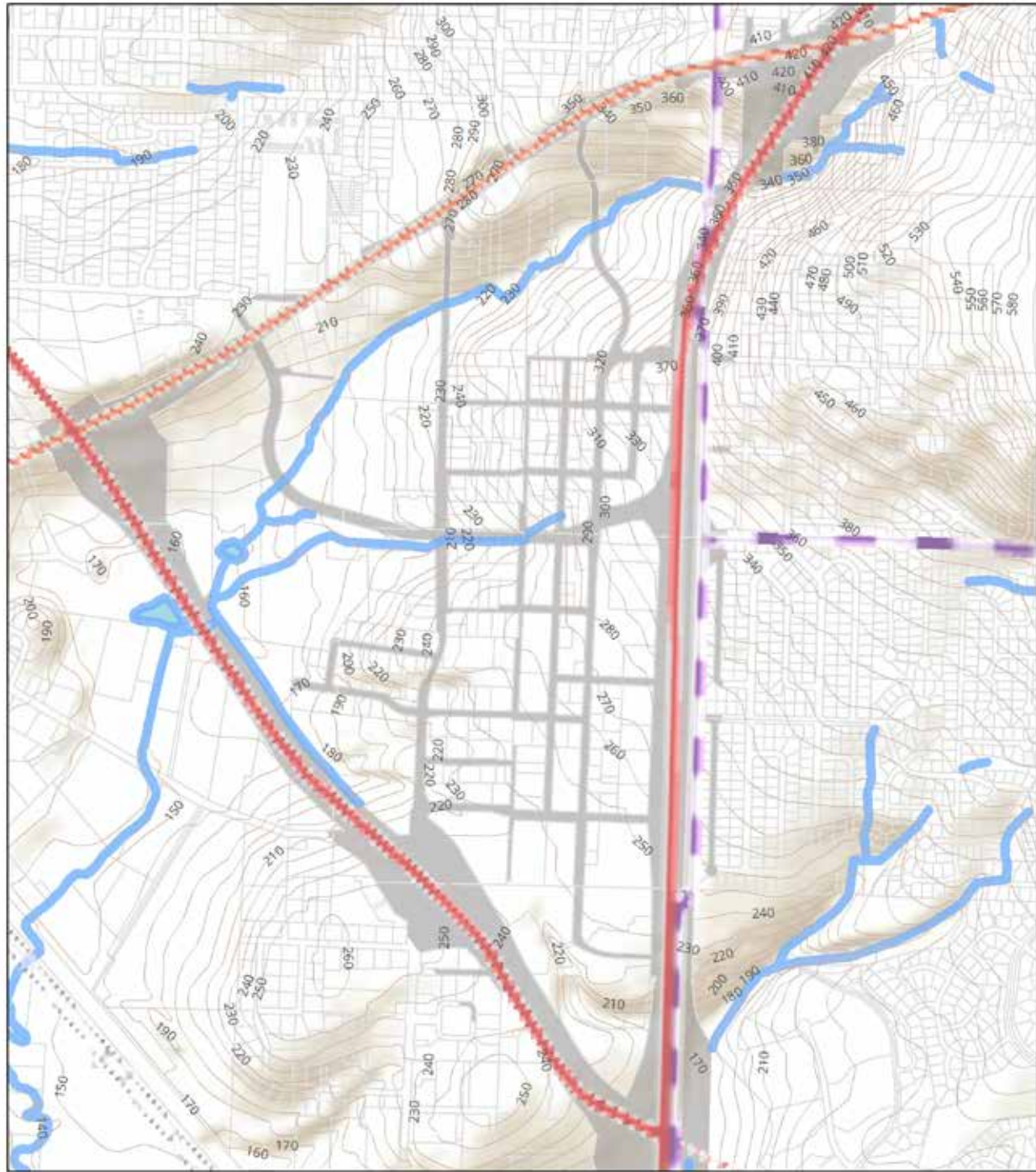


Left: 99W/Pacific Highway at 74th | Right: 99W/Pacific Highway at Dartmouth

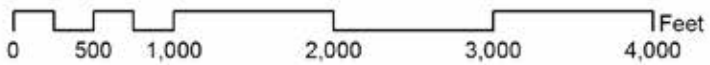


Left: 99W/Pacific Highway service road west of Dartmouth | Right: 72nd looking south from Dartmouth

TOPOGRAPHY



- 10' Contours
- Streams
- Taxlots
- Tigard Triangle ROW



Topography

Topography is a notable feature of the Tigard Triangle landscape. While some of the Triangle is generally flat, the northeastern portion of the project area includes some steeper sections. The topography generally slopes down and away from 99W/Pacific Highway and Atlanta to the Red Rock Creek corridor. South of Atlanta, the land slopes upward to the west, with the greatest grade change occurring near Dartmouth Street.

General topographic slope conditions observed from GIS data:

- North of Red Rock Creek (10-13%)
- West of 72nd Ave (3-5%)
- East of 72nd (3-7%)

Topographic conditions have a direct relationship with the way buildings, roads, driveways, street frontages, parking, gathering places, stormwater run-off, sidewalks and building entries can be managed and designed. For the Triangle's long term success and appeal to the broadest range of people as a center for business, commercial and residential uses, providing accessible routes to and between destinations should be a priority, and street design must account for the needs of people of all ages and abilities.



Steeper grades along 72nd Avenue north of the Red Rock Creek

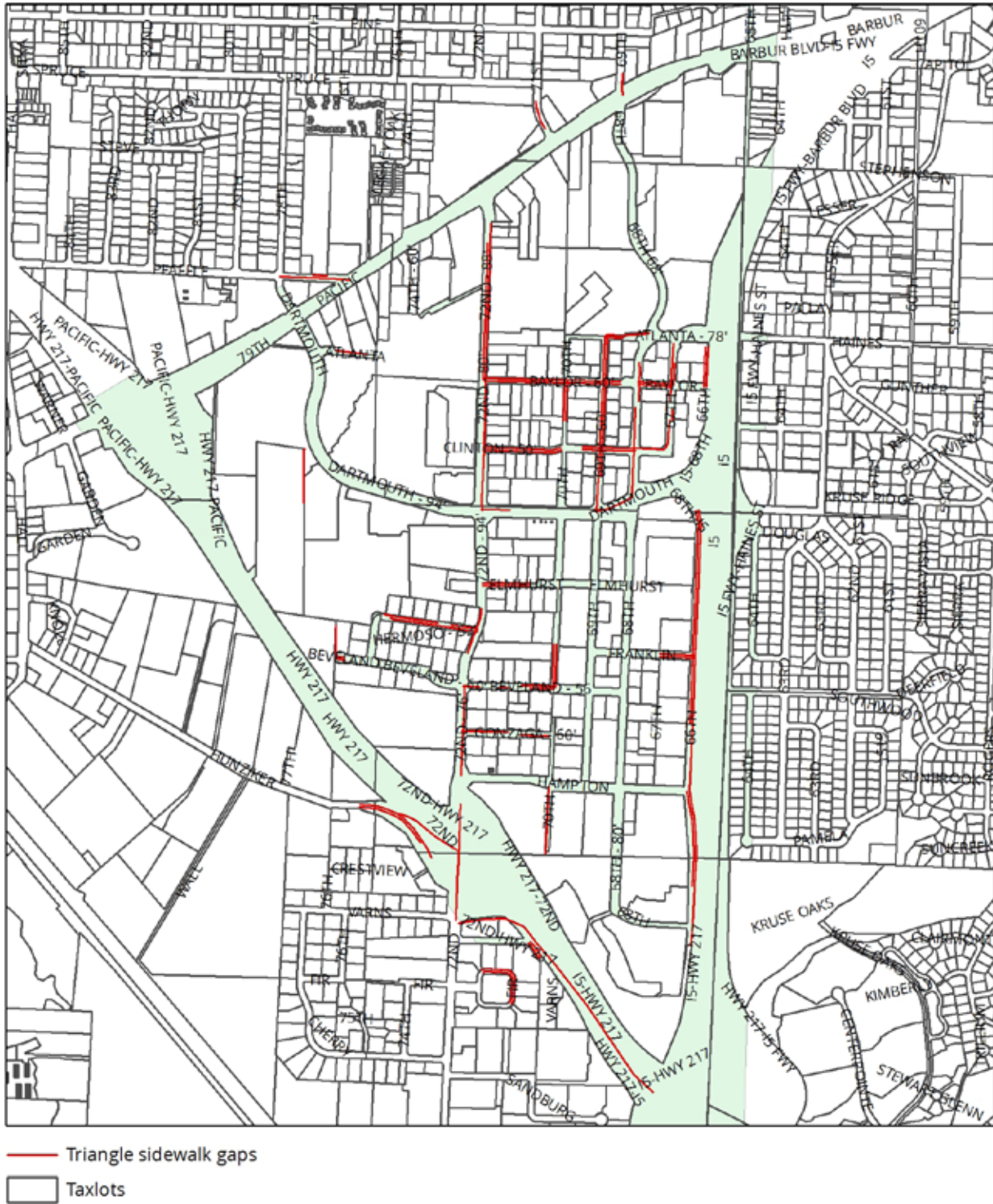


Steeper grades along Dartmouth north of the Red Rock Creek



Steeper grades north of the Red Rock Creek along 68th

MISSING SIDEWALKS



Missing Sidewalks

The availability of sidewalks in the Triangle is generally dependent on location. While newer streets have sidewalks, there are many locations where none exist, either on one or both sides of the streets. Streets with primarily residential uses more commonly have missing sidewalks. The following streets with missing sidewalks are noted:

- Beveland
- Baylor
- Clinton
- Elmhurst
- Hermoso
- 66th
- 69th
- 72nd north of Dartmouth has many segments with sidewalks missing on both sides

Improving walkability in the Tigard Triangle will require a complete network of sidewalks or other safe connections that reach major destinations. The Tigard Triangle proposed street sections, described in Chapter 4, provide ideas of how to physically add protected walks to streets where they are absent in the short-term with low-cost solutions that can provide immediate results.

Additional sidewalk information can be found in Table 2: Inventory of Existing Sidewalks and Street Furnishings.



Missing sidewalks along Baylor near 70th



Missing sidewalks on both sides along Beveland near 70th



Missing sidewalks along Clinton near 70th

TABLE 2: INVENTORY OF EXISTING SIDEWALKS AND STREET FURNISHINGS

STREET NAME	DESCRIPTION
Atlanta St (west of 72nd)	Leads to a dead end behind Babies 'R Us. Lacks 'Atlanta St' signage; treated more like an alley
Atlanta St (east of 70th)	Sidewalks present on both sides
Baylor St	No sidewalk on either side; road is not continuous/incomplete connectivity; road incomplete between 67th and 68th (ends in a turnaround)
Clinton St	No sidewalk on either sides; road is not continuous/incomplete connectivity (between 69th and 70th)
Dartmouth St	Sidewalks present on both sides for most segments except near 69th; steep gradient.
Elmhurst St	No sidewalks on either sides between 72nd to 70th; sidewalks on both sides between 70th to 68th; curbs on certain segments, curbless in other segments; street not continuous/incomplete connectivity (between 69th to 70th)
Hermoso St	Sidewalks missing on both sides near 72nd; curbs on both sides.
Franklin St	On-street parking on both sides; sidewalks missing near 66th
Beveland St	For most segments, there are sidewalks on both sides with street trees buffering from traffic; some segments have sidewalks on one or both sides missing (near 70th); transit route, bus stops and street trees
Gonzaga St	Has sidewalks on both sides in some segments; sidewalk missing on one side in others
Hampton St	Sidewalks on both sides; transit route, bus stops
Irving St	Private street inside a surface parking lot connecting 68th Pkwy
99W/Pacific Highway	Medians landscaped in many segments; sidewalks present in most segments, missing in a few
79th Ave (service road south of 99W)	No sidewalks; curbs on the side adjacent to the highway
74th Ave	Pedestrian scale lighting present; sidewalks present on one side in many segments; on-street parking on both sides; street trees in the sidewalk planting strips buffer pedestrians from traffic
72nd Ave	No sidewalks on both directions in some segments; tree buffering traffic from sidewalk on one side; south of Dartmouth, sidewalk on both sides with tree buffering sidewalks from traffic
70th Ave	In some segments, has sidewalks on both sides with trees buffering from traffic, bulb-outs, stormwater swales; no sidewalks in other segments; road incomplete between Dartmouth and Elmhurst; road incomplete in some segments between Baylor and Clinton; road incomplete in some segments between Beveland and Gonzaga
69th Ave	Sidewalks missing in some segments (mostly to the north of Dartmouth); well-shaded by street trees on both sides; sidewalks missing in some segments (mostly to the north of Dartmouth)
68th Ave	Sidewalks present on both sides; bus stops, street trees
68th Pkwy	Mid-block crossings with street trees as buffers from traffic for sidewalks
67th Ave	Sidewalks present in some segments; missing sidewalks on both sides from Baylor to Atlanta
66th Ave	Sidewalks present on one side in a few segments; sidewalks missing on both sides in many segments; curbless in many segments; for segments with sidewalks on one side, curbs mostly present
64th Ave	No sidewalk and curbless



Left: Curbs and missing sidewalks along Elmhurst at 72nd | Right: Curbs and missing sidewalks along Hermoso



Left: Missing sidewalks on both sides along 66th | Right: Missing sidewalks on both sides along 69th



Left: Missing sidewalk along 72nd at Hermoso | Right: Missing sidewalk along 72nd north of Dartmouth

Signage, Street Furnishings and Landscaping

Street furnishings and landscaping are important amenities for pedestrians, both for functionality and visual interest. Street furnishings and landscaping generally include street trees, shrubs, groundcovers, stormwater planters, street lights, benches or other seating, trash receptacles, banners, signage, parklets, bollards, community kiosks, bike corrals or racks and transit shelters.

At present, most streets in the Triangle are minimally furnished. Existing landscaping consists of street trees, turf groundcovers and some shrubs along private frontages. Some developments feature signage directed at both pedestrians and drivers at small parking lot entrances, such as Well & Good Coffee.

Streets with some degree of furnishings:

- Beveland at transit stops
- 68th north of Elmhurst
- 74th at 99W/Pacific Highway

Streets with minimal or no furnishings include:

- 72nd north of Baylor
- Atlanta
- Baylor
- Clinton



68th has landscaped medians, mid-block crossings and sidewalks to screen parking lots and buffer pedestrians from traffic.



The intersection of 69th and Beveland includes street trees planting strip, well marked crosswalks and roadway lighting, but little else.



Transit shelter and pedestrian entry along Beveland

There is an absence of benches or resting places of all kinds, art work, pedestrian lighting, stormwater planting facilities, signage and bike furnishings. The environment is decidedly stark for a pedestrian walking from their home to run an errand at Lowe's, for a worker trying to find lunch on foot or for visitors trying to orient themselves as they move from one location to the next.



Special pavement treatment at a plaza at the intersection at Dartmouth and 72nd



Pedestrian-scale lighting along 74th near 99W/Pacific Highway

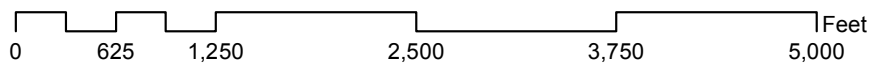
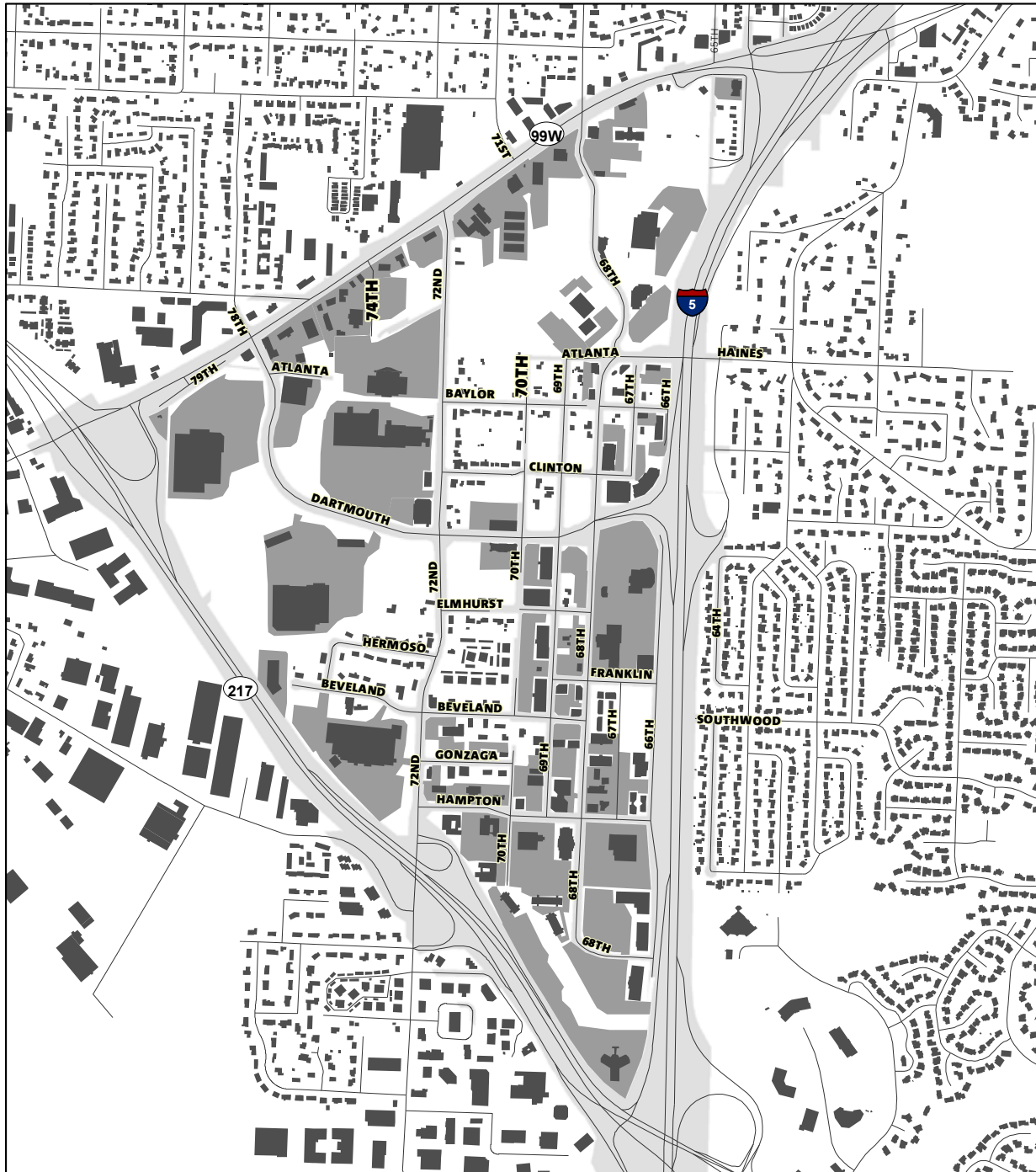


Mailbox along 72nd installed in new concrete sidewalk



Custom made commercial signage located along Beveland

SURFACE PARKING LOCATIONS



- Streets
- Building Footprints
- Surface Parking Lots
- Street ROW within the Triangle

Surface Parking Locations

Existing surface parking lots are a character-defining element of the Tigard Triangle that prioritizes vehicle use over pedestrian comfort or desire. Many office and commercial buildings have large off-street surface parking lots, although some structured parking has been developed for individual sites. Shopping centers rely on surface parking lots, most of which act as the primary street frontage for the development. In some instances, parking is located at the rear or side of the building, but building frontages still generally lack streetside entrances.

The map at left depicts a concentration of surface parking lots surrounding large buildings in the western part of the Triangle. Single-family residential land uses do not have adjacent surface lots, but these residences are still car-dependent given the lack of sidewalks and other street furnishings that create a friendly pedestrian atmosphere.

On-street, unmetered parking is widely available in the Tigard Triangle, although not permitted on high-volume streets such as 72nd and Dartmouth. Utilization of both surface lots and on-street parking spaces is low.



Large surface parking lots along Dartmouth and 72nd



The Ford dealership has a surface parking lot along most of its frontage on 68th



Screened surface parking near Triangle Corporate Park III along 68th

chapter 2: existing conditions



Commercial development with shared parking lot at side and rear along Dartmouth. No building entrances are provided along street



On-street parking along 70th serving nearby commercial and retail uses



On-street parking and surface parking along 67th

Drainage and Stormwater

Drainage and stormwater utility conditions in the Tigard Triangle are affected by the site's steep perimeter topography and uneven provision of sewer facilities. Paved parking lots for large-scale development generate a significant amount of stormwater that is currently deposited into surrounding wetlands and local streams. Red Rock Creek is an open and piped stream running east/west through the Triangle. It has a long history as an area with drainage issues and scouring, undermining sewer infrastructure adjacent to the stream.

Parking lots throughout the Triangle have not been designed to treat or retain stormwater on-site with rain gardens, detention basins or flow-through planters typical of a modern, in-street or on-site low-impact development approaches for collection, detention or treatment.

There are a number of properties in the Triangle that are part of a designated sanitary sewer reimbursement district. These properties are not connected to a centralized sanitary sewer system and rely on individual septic systems, some of which have failed, creating environmental and public health hazards.

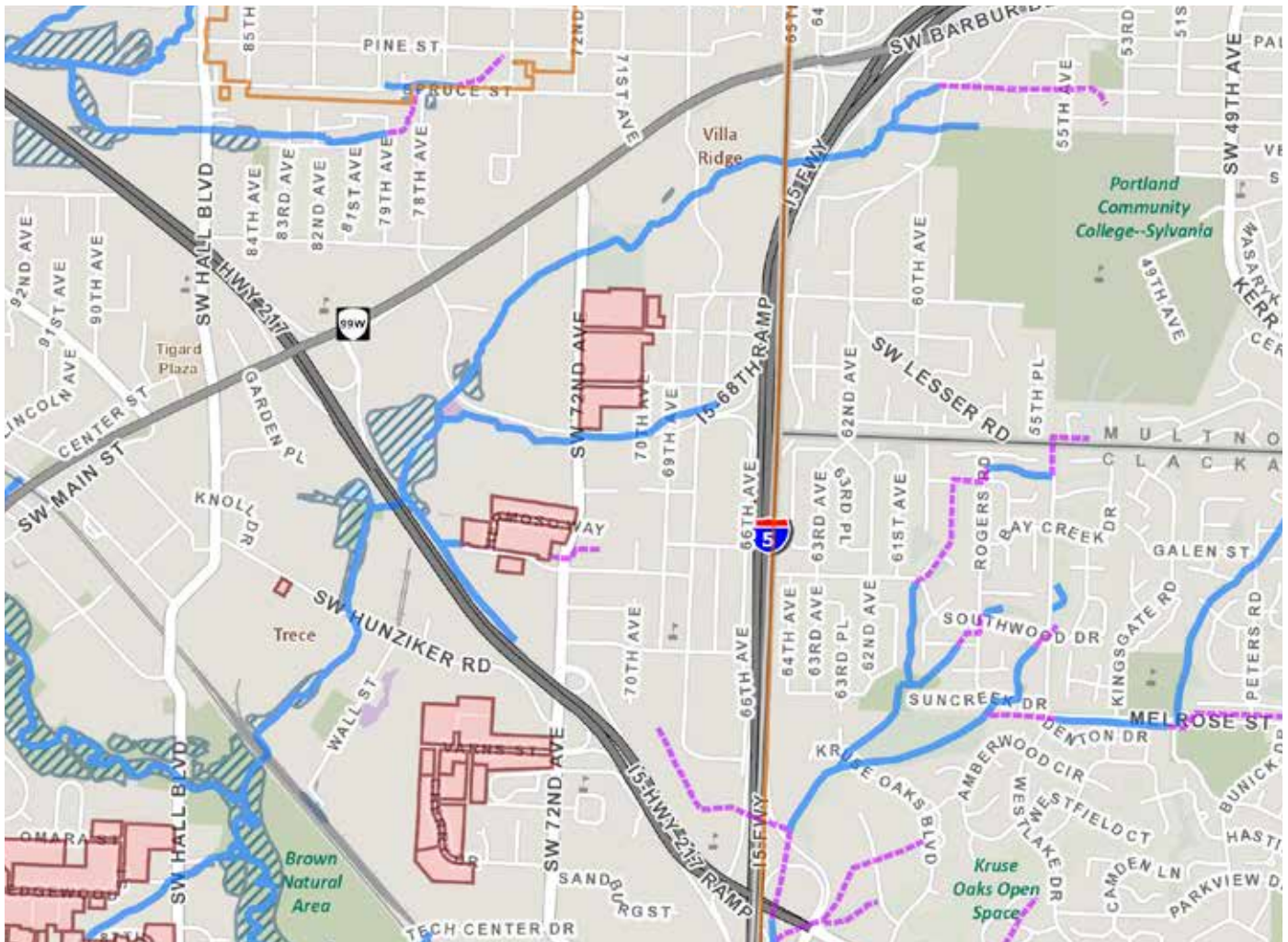


A local wetland accepts drainage from surrounding development near the Costco, Winco and Walmart



Open stormwater ditch along Baylor

WETLANDS, CREEKS AND SITES WITHOUT CENTRALIZED SEWER



Source: Tigardmaps.com

- CWS Streams (open)
- CWS Streams (piped)
- Wetland
- Sanitary sewer reimbursement districts (completed)

The City’s Sanitary Sewer Extension Program seeks to establish reimbursement districts that provide opportunities for owners to connect to public lines. Other conditions include the lack of piped stormwater facilities along residential streets where surface drainage flows into grassy ditches at the edges of paved

roads. The ditches drain to catch basins that are connected to the centralized stormwater system. Roads with these conditions typically do not have sidewalks or other pedestrian facilities.

urban design framework

Strategic Plan Principles

The Tigard Triangle Strategic Plan identifies a series of planning principles that guide future improvements in the Triangle. These principles set the foundation for the Streetscape Design Plan as follows:

- Provide a **safe and effective** multimodal (auto, bicycle, pedestrian, and transit) network circulation and access to, from, and in the Triangle that not only considers existing development, but also interfaces with future transit and future transit- and pedestrian-oriented development;
- **Integrate land use and transportation** planning to ensure a vibrant town center by identifying the right mix of uses and densities;
- **Build upon existing characteristics** that make the Triangle unique and desirable in order to develop a community with a clear identity; and

- Is **marketable** to developers and the public, and is **implementable**. Identified improvements are feasible from both a financial and a construction perspective, with no “red flag” obstacles.

Design Principles

Building on these planning principles, there are several specific design principles that emerged during the planning process that provide a framework for designing, building and retrofitting streets. This urban design framework considers the following:

- Easy to navigate and identify by foot, car, bus and bike
- Friendly to pedestrians and bicyclists
- Fun places along the way
- Accessibility
- Safety
- Sustainable design/context sensitive

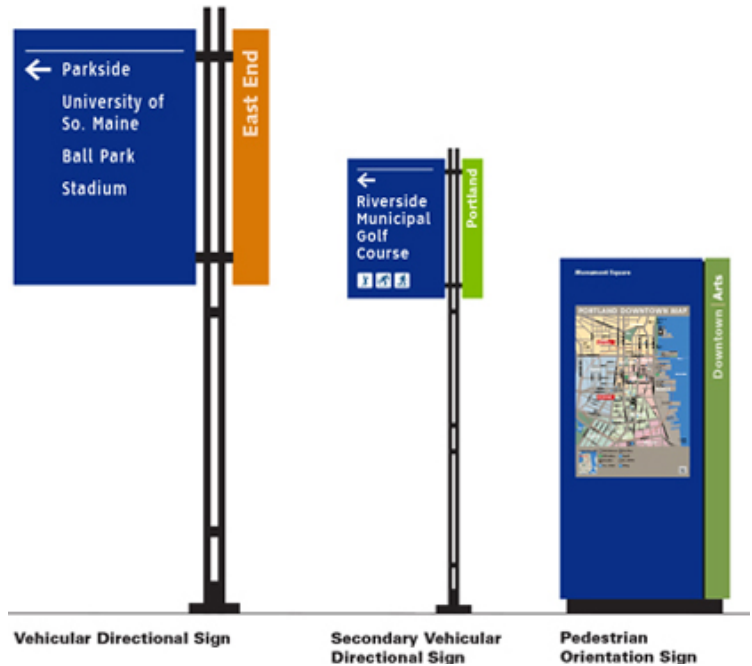


- Vehicular access management
- Parking management

Easy to navigate and identify by foot, car, bike and bus

The street network within Tigard Triangle should be easy to navigate by users of all transportation modes. Streetscape features such as signage and wayfinding elements should be designed at two scales: vehicular and pedestrian scales.

Vehicular-scale wayfinding includes directional signage for motorists to get to the highway and interstate system (I-5, 99W and Pacific Highway). Along local streets within the Triangle, wayfinding should be at a pedestrian scale using streetscape elements such as gateways, public art, use of notable landmarks and directional signage at intersections and route changes. Signage should also inform cyclists who desire direct routes to various destinations both within and beyond the Triangle.



Friendly to pedestrians and bicyclists

Streets in pedestrian-oriented areas of the Triangle should provide spaces where people feel safe and welcome. Pedestrian and bicycle-friendly streets are characterized by a number of elements, including:

- Shorter block lengths;
- Well-marked crosswalks;
- Curb extensions;
- Frequent intersections;
- Fewer or consolidated access and egress points into the street;
- Landscaping; and
- Appropriately-scaled signage and lighting.

Streets that are more auto-oriented will also benefit from many of these elements, encouraging slower speeds and attention to other road users.



Fun places along the way

Streets in the Triangle should be designed to create memorable experiences and spark interaction between people. Design elements should include public art, places to sit and observe, landscaped stormwater facilities, and smaller gathering spaces or parklets.

Adding these amenities will encourage visitors, residents and workers to respond and interact by stopping to read an interpretive sign, listen to music or engage with public art or sculpture.



Accessibility

As streets become more walkable, bike-able and transit oriented, it is critical they are also functional and inclusive for people of all ages and abilities—wheelchair users, persons with vision impairments, parents with strollers, children, older adults and all other populations.

Sidewalks, curb ramps, parking, street crossings, landscaping elements, resting places and public art in the Triangle must be designed to meet minimum Americans with Disabilities Act (ADA) standards, while striving to reduce barriers to create environments for everyone.



Safety

Streets in the Triangle should be designed to enable safe access for all users, regardless of age, ability, or mode of transportation. Drivers, transit users, pedestrians and bicyclists should be able to interact and use the same streets, while minimizing conflict.

Several existing streets in the Triangle lack sidewalks, curbs and safe crossing opportunities. Amenities that increase safety should include a range of design treatments, including:

- Buffered sidewalks;
- Crosswalks with contrasting materials or colors;
- Median islands or refuges;
- Buffered bike lanes;
- Directional and identification signage;
- Convenient and accessible transit stops;
- Pedestrian-scale lighting; and
- Curb extensions or bulb-outs.



Sustainable design/context sensitive

Streets should be designed for long-term operations, maintenance and usability. These considerations should help lower operation and maintenance costs, minimize environmental impacts, provide wildlife and plant habitat and create places that contribute to neighborhood sustainability.

The Streetscape Design Plan establishes a set of street types for the Triangle. These street types should serve as a guide for designing appropriate streetscape environments while also responding to the surrounding land use context and transportation network.

All streets in the Triangle should be designed holistically, where built features integrate with natural systems. From pervious pavement and flow-through planters that manage storm-water run-off, to street trees that provide shade, every streetscape element should embody sustainable design and reflect the characteristics of the local environment.



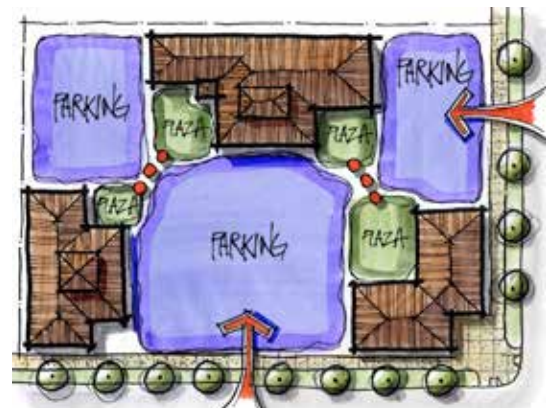
Vehicular access management

Street design should minimize conflicts between pedestrians and automobiles, through management of curb cuts and access points along the street.

Vehicular access to each commercial or business site should be consolidated to the extent practicable, prioritizing safe and direct access for pedestrians, cyclists and transit users.

Each development should consider the layout of on-site parking and loading areas, vehicular, bike, and pedestrian circulation patterns with the adjacent street in mind.

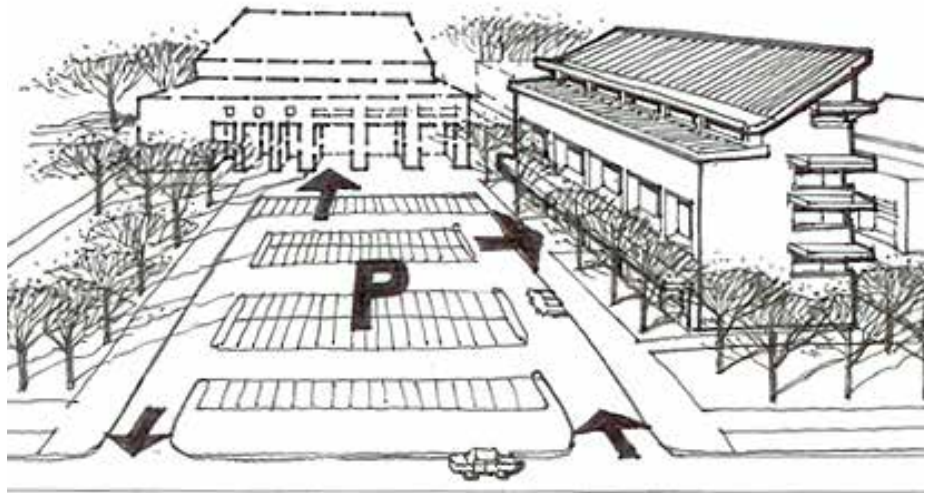
Effective access management guidelines will address unregulated curb cuts from commercial development along major streets in the Triangle by providing guidelines for traffic signal spacing, location of driveways, median openings, and multi-modal options.



Parking management

Parking in the Triangle should be planned around a management system that maximizes use of existing parking while balancing demand. Improving the utilization and efficiency of the existing parking supply should involve several strategies:

- Creating a clear and consistent system to find and navigate to available parking;
- Designing shared parking facilities serving multiple uses;
- Reducing the minimum off-street parking requirements to support the development of pedestrian-oriented districts;
- Providing real-time data on parking availability and dynamic pricing for spaces
- Incentivizing transit and bicycle usage by completing first and final-mile connections¹; and
- Converting surface parking to structured parking in the long-term.



¹ The "first and final-mile" connection describes the beginning or end of an individual trip made primarily by public transportation. The gap from public transit to destination is termed as first or final-mile connection.

plan recommendations

Street Types

There are four street types that should guide the future design of public streets in the Triangle. These include:

- Pedestrian streets;
- Access streets;
- Transitional streets; and
- Stormwater streets/sites

These classifications stem from the existing Lean Code, as well as design solutions that respond to the conditions facing the Triangle.



Pedestrian streets

A pedestrian street is a roadway held to the highest standards in terms of building frontages and streetscape. Pedestrian streets incorporate pedestrian supportive elements such as visually interesting and accessible buildings, on-street parking, street trees and slow vehicle speeds. Pedestrian streets are also intended to formalize many rights-of-way in the Triangle that lack basic elements such as sidewalks, stormwater tie-ins, safe crosswalks, street trees, and shared travel lanes for bikes and cars. They are also important connections between transit, employment, and residential uses.

At full build out, pedestrian streets can enhance pedestrian visibility and comfort with on-street parking, bike sharrows (where needed to create interconnected bike routes), shorter distance crosswalks, mid-block crossings, seating areas, pedestrian street lighting, bulbouts, street trees and other landscaping. All features should be designed for universal accessibility (meeting and going beyond the Americans with Disabilities Act guidelines) and improved pedestrian visibility. Where appropriate, in-street stormwater facilities can be added to pedestrian streets as an overlay (see Stormwater Streets).





PEDESTRIAN STREET - TYPICAL CROSS-SECTION
 LOCATION: 69TH AVE AND HAMPTON
TIGARD TRIANGLE STREETScape DESIGN PLAN



PEDESTRIAN STREET - AERIAL VIEW
LOCATION: 69TH AVE AND HAMPTON

TIGARD TRIANGLE STREETScape DESIGN PLAN



Buildings provide enclosure

Benches designed for pedestrian streets support social interaction as well as provide visual interest and detail

Speed tables reduce traffic speed and serve as mid-block crossings (recommended height of 3-3.5 inches and width of 22 feet (<http://nacto.org/>))

Curb extensions and distinctive paving patterns facilitate safe pedestrian crossings

On-street parking reduces traffic speed and provides a buffer for pedestrians

Pedestrian-scaled lighting provides a functional service as well as visual interest and detail

PEDESTRIAN STREET - MID-BLOCK CROSSING
TIGARD TRIANGLE STREETSCAPE DESIGN PLAN

Access streets

An access street is a roadway that provides access to parking and other necessary services for businesses and residents. Compared to pedestrian streets, it has reduced requirements for building frontages and streetscapes but still provides pedestrian access as well as bicycle lanes.

Access streets in the Triangle are important from a vehicular standpoint in that they directly link to adjacent major highways (99W) and freeways (I-5). They also provide access to the Triangle's popular destinations, such as shopping centers, business parks and educational facilities.

Access streets should also function well for pedestrians with an emphasis on pedestrian crossings, street and sidewalk lighting, strategically placed branding and identity elements, and street furnishings at key intersections. At the same time, access streets also provide improved function for motorists and bicyclists with directional signage, enhanced visibility/sightlines at intersections and curb cuts into parking and/or loading areas.





ACCESS STREET - TYPICAL CROSS-SECTION
LOCATION: 68TH AVE AND ELMHURST
TIGARD TRIANGLE STREETScape DESIGN PLAN



ACCESS STREET - AERIAL VIEW
LOCATION: 68TH AVE AND ELMHURST
TIGARD TRIANGLE STREETSCAPE DESIGN PLAN



- Intersection with contrasting paving provides visual interest and detail
- Curb cuts at driveways with contrasting paving patterns facilitate safe pedestrian crossing
- Landscaping buffer screens off-street parking
- Furnishing zone accommodates bike racks, wayfinding and landscaping
- Buildings provide enclosure

ACCESS STREET - INTERSECTION TREATMENT
LOCATION: 68TH AVE AND ELMHURST
TIGARD TRIANGLE STREETSCAPE DESIGN PLAN

Transitional streets

Transitional streetscape designs allow for lower-cost, interim improvements to address network deficiencies for people traveling by active modes (walking, bicycling and accessing transit).

Transitional streetscape improvements enhance walkability by providing continuous pedestrian facilities while the Triangle redevelops. These designs also facilitate behavior change among roadway users consistent with the streetscape characteristics planned for full build-out. Implementing transitional streetscape designs will be key to enhancing walkability and slowing vehicular speeds in anticipation of future development.

There are several types of design interventions that should be deployed at strategic locations in the short-term using low-cost materials such as asphalt paving, manufactured concrete curb stops, striping, road paint and a range of landscape materials.

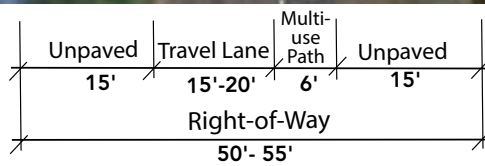
The images on this page generally illustrate potential elements, space requirements, and other considerations for transitional streets in the Tigar Triangle.





Above: Residential street with no sidewalks

Below: Transitional street with curb stop protected pedestrian zone, driveway striping and planting buffer





TRANSITIONAL STREET - STREETSCAPE ELEMENTS
LOCATION: CLINTON STREET NEAR 72ND AVE
TIGARD TRIANGLE STREETSCAPE DESIGN PLAN

Stormwater streets/sites

Designated stormwater streets and stormwater sites in the Tigard Triangle can help the city meet its stormwater management goal from the 2027 Comprehensive Plan (Goal 11, Section 1). Potential facilities consist of a range of low-impact development approaches (LIDA) such as flow-through planters, infiltration rain gardens and planters, porous pavement, vegetated swales, filter strips, and stormwater conveyance art pieces.



Stormwater streets/sites should be designed to provide the following benefits:

- Handle stormwater onsite;
- Enhance the streetscape environment with attractive, functional and sustainable infrastructure that create memorable and unique places for pedestrians;
- Provide water quality benefits and replenishment of groundwater;
- Provide new locations for pedestrian access, public art and gathering spots; and
- Reduce impact on existing stormwater management facilities.

Stormwater management shall be required on all streets, and, where feasible, LIDA facilities shall be prioritized over other types of facilities. Facilities may



be installed along the roadway and also at crossings with adjacent sidewalk facilities to encourage pedestrian interaction. All facilities shall consider universal design, accessibility, visibility and safety. Landscape plantings should be selected in coordination with the stormwater facility function, urban forestry, adjacent land use and roadway classifications.





PEDESTRIAN STREET WITH STORMWATER TREATMENT
LOCATION: 69TH AVE AND HAMPTON
TIGARD TRIANGLE STREETSCAPE DESIGN PLAN



ACCESS STREET WITH STORMWATER TREATMENT
LOCATION: 68TH AVE AND ELMHURST
TIGARD TRIANGLE STREETSCAPE DESIGN PLAN

Materials Palette Menu

The proposed materials palette menu for the Tigard Triangle outlines a list of options or considerations for designing and constructing new facilities that meet the intent of the four street types. The palette allows for flexibility to match conditions facing the Triangle, while providing inspiration, creativity and functionality in building new streets and street elements.

SIDEWALK IMPROVEMENTS

CROSSINGS

STREET TREES AND STRUCTURAL SOILS

ON-STREET PARKING

STREET AND PEDESTRIAN LIGHTING

LIDA STORMWATER

STREET FURNISHINGS

BRANDING AND IDENTITY

SIDEWALK IMPROVEMENTS

Sidewalks provide opportunities for human interaction, while providing safe and efficient pedestrian travel. Sidewalks must be designed for universal accessibility, durability and drainage. Materials should be determined based around one of the following zones.

- **Frontage zone:** An extension of the building where seating, signage and other uses can occur (top photo). This zone can have contrasting accents (such as dark aggregate or pavers) to distinguish between the pedestrian zone.
- **Pedestrian through zone:** An accessible pathway that parallels the street and should be a minimum of 5-7 feet wide in residential settings, or wider (8-12 feet) in commercial areas (middle photo). With the highest amount of traffic, this zone should use a smooth and durable surface such as cast-in-place concrete panels.
- **Furnishings zone:** Intended for street trees and grates, stormwater facilities, signage, street furniture and other pedestrian/bicyclist amenities such as trash/recycling and bicycle racks (bottom photo). This zone can include use of permeable pavement or pavers, or soft paving such as decomposed granite where appropriate.



CROSSINGS

Crosswalks, mid-block crossings and intersections are important in assuring the visibility and safety of pedestrians, bicyclists, dog walkers, children and individuals using wheelchairs. Clearly marked, articulated crossings are also used to direct pedestrians to designated crossing locations, ideally where people naturally assemble and have a desire to cross.



The type of street where a crosswalk is located dictates its design. Factors to consider include crossing distance, number of lanes, design speed of street, relationship of the crosswalk to the destination(s) and topographic aspects that may improve or hinder driver visibility.



Design elements of crosswalks that can improve safety and visibility include median refuges with raised crosswalks that also act as speed humps for cars, crosswalk paint striping, signage, change of pavement types/color, pedestrian activated RRFB (rectangular rapid flashing beacons), and landscaping that provides drivers cues that speeds are slowing.



STREET TREES AND STRUCTURAL SOILS

Given the need to provide room to a multitude of street functions - travel lanes, narrow or dedicated bike lanes, on-street parking, and bulbout crossing - the space leftover for street trees can be compromised resulting in narrow tree wells bound by hardscape and utilities.

As a result, manufacturers of structural soil systems have responded with products that allow for compact, highly utilized street space with healthy, established street trees. Structural soil systems limit soil compaction and are installed underneath pavement to provide room for needed lateral tree root growth. As a result, trees are healthier and have better protection from a range of urban disturbances (parked cars, nearby utility boxes or lines, foot traffic).

Education is needed for public works personnel who maintain and repair street utilities within structural soil systems. The modular design of structural soil systems, however, makes routine repairs and replacement of street utilities very achievable while minimizing disturbance for pedestrians or drivers.



ON-STREET PARKING

Unmetered, on-street parking is ample in the Tigard Triangle, though typically underutilized similar to many surface parking lots. On-street parking design, placement and related standards can and should adjust to provide this resource more efficiently with less impact to all user groups.

- **Clustered parking:** Identifying strategies to cluster on-street parking where it tends to be in high demand is one way to improve its utilization.
- **Marked parking:** Marking of on-street parking spots with paint may be appropriate where demand and turnover is higher.
- **Use flexibility:** In certain instances, on-street parking could be used for other uses, such as temporary or permanent landscaping, bike parking or seating.
- **Specific uses:** Designating certain on-street locations for delivery parking only during certain hours is good for business efficiency and also improves safety of drivers by placing these spaces in highly visible locations with easy access to building or warehouse entrances.
- **Utility needs:** Future electrical needs should also be considered for access to parking meters or recharge stations.



STREET AND PEDESTRIAN LIGHTING

When specifying street and pedestrian lighting, safety, cost, aesthetics, and function are always primary concerns. Public works agencies across the country are making efforts to optimize maintenance and efficiency of roadway and pedestrian lighting by transitioning to use of light-emitting diode (LED) fixtures. While these fixtures have longer life spans and lower operating costs, they also can create undesired night time light pollution.

The following should be taken into consideration when specifying street and pedestrian lighting in Tigard Triangle:

- Use full cut-off shielded (pointing downward) lighting fixtures to keep light directed at streets and sidewalks
- Retrofit existing metal halide and sodium lighting fixtures with shields and flat lenses
- Use only lighting sources with correlated color “temperature” no higher than 3000K, which minimizes blue spectrum light.¹ Most lighting products provide this information on their package labeling.
- Use centralized timers and dimmers to control length of time and brightness of lights

¹ *International Dark Sky Association, Residential and Business Lighting*



LIDA STORMWATER

The desire to manage stormwater in place is changing how streets are designed and function. On-site management using low-impact development approaches (LIDA) can also be attractive to developers in that they can lower project costs by eliminating some piping and engineering structures and reduce need for excavation. They can also meet Clean Water Services' (CWS) stormwater quality requirements for both new and redevelopment sites.

Providing LIDA facilities may qualify a project for credits for green building. Reduced operational and maintenance costs for projects that feature LIDA facilities is also an attractive incentive.

Flow-through planters next to large buildings can move stormwater from a roof to a series of infiltration planters or rain gardens. In-street flow-through planters and check dam infiltration planters along slopes are all potential ways to manage stormwater where it is generated. Different site conditions warrant different LIDA facilities. Selection should be based on criteria established by CWS.



STREET FURNISHINGS

As development continues to make the Triangle a denser urban environment, there is a need to improve the amount, quality and design of street furnishings along streets and at intersections. Currently, there are just a handful of locations where pedestrians are provided amenities such as seating, safety bollards, trash receptacles and bike racks.

The look and feel of street furnishings in the Triangle should reflect the aesthetic and function of surrounding land uses. Locations where people come and go between classes and offices could benefit from addition of seating that is itself a destination, using materials that warm in the sun and provide various opportunities for sitting, gathering, people watching and relaxing. Other furnishings provide a higher degree of utilitarian use when located near bus stops and street intersections.



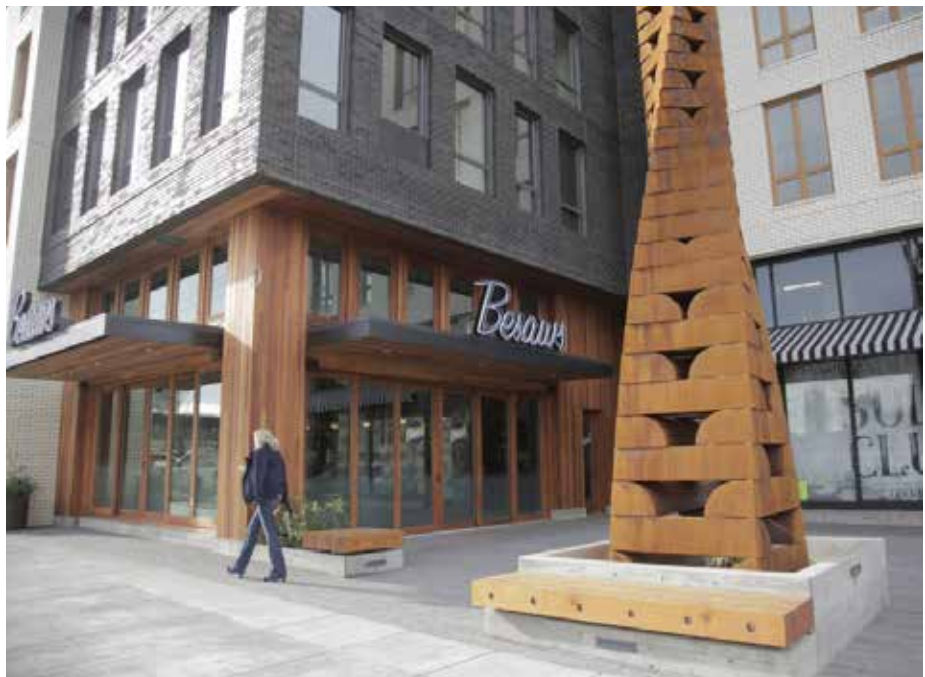
BRANDING AND IDENTITY

A branding and identity strategy for the Tigard Triangle will enhance and attract investor confidence in the area. It will also help workers, shoppers, residents and students orient themselves, navigate and better understand the area's identity, layout, landmarks, transportation options and major destinations.

Typical elements of a district branding effort include an assessment of character-defining features or assets, public outreach and engagement plan, a brand story and message, logo and style guide, and mock up concepts for web, print, signage, and guidelines for private sector development.

A high degree of community involvement must be met in order for any branding and identity effort to "stick" and be adopted by a diverse community of business owners, workers, shoppers, students and residents.

Character-defining aspects to investigate with the community are the presence of Red Rock Creek, the role of the Triangle as a regional shopping destination, and the strategic location of the area bound by three major highways.



appendices

Appendix A

Funding Concept for Transitional Street Improvements

The transitional street design concept is intended to provide immediate, low-cost improvements that facilitate pedestrian safety and behavior change amongst roadway users. While the improvements are temporary and inexpensive, they are not cost free. All street improvements need funds for their construction, permitting, periodic repair and maintenance.

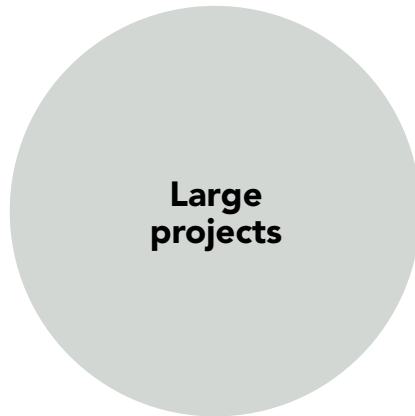
The City of Tigard typically requires street frontage upgrades when proposed projects exceed a certain construction budget or trip generation threshold. For larger projects that span multiple parcels, the result can highly improve the pedestrian environment and provide better access to the project area and adjacent areas, as well. For smaller projects that meet certain

criteria, the owner/developer will instead pay a fee in lieu of construction for frontage improvements that typically provide for sidewalks, crossings, landscaping, street trees, street furniture, stormwater conveyance, and required curb cuts.

City staff and the consultant team took an opportunity at the June 27 charrette to determine how the improvements and maintenance for transitional street improvements could be funded. Figure 1 on the following page summarizes a three tier approach to funding street improvements. Future discussion between the City, owners and developers will be needed to refine the concept, as well as identify other challenges and opportunities in providing transitional street improvements in the Triangle.

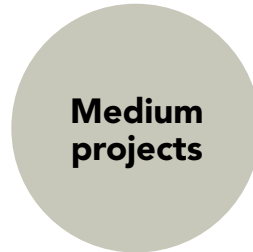
Appendix A

TIGARD TRIANGLE STREET IMPROVEMENT FUNDING CONCEPT



Large projects

- high trip generation
- project impacts allow City to exact full street improvements and right-of-way width
- street improvements designed, permitted, constructed and paid for by owner/developer
- improvements directly serve the project



Medium projects

- medium trip generation
- project impacts allow City to exact full street improvements and right-of-way width
- owner/developer provides transitional street improvements along entire block face, not just along development frontage, in lieu of full street improvements
- improvements directly serve the project



Small projects

- no/low trip generation
- owner/developer pays a fee in lieu of construction of full or partial street improvements
- fee is an estimate of required full or partial street improvements
- funds must be spent within a designated timeframe
- pooled funds are used to provide City-built full street improvements that directly serve the project

Appendix B

WALLGRAPHIC FROM INTERNAL CHARRETTE

Tigard Triangle

DESIGN CHARRETTE 6.27.16

MTS GOALS

1. TEST LEAN CODE INTERACTION w/ EXISTING CONDITIONS
2. CONSIDER DESIGN @ OPP SITES
3. DESIGN TRANSITIONAL STREETS
 - ▷ TRESHOLDS FOR WHEN
 - ▷ TRAILS
4. DESIGN ACCESS STREETS

DESIGN QUESTIONS

- ▷ EXISTING v FULL ROW? TIMING DESIGN
- ▷ LEAN CODE EXCEPTIONS? TIMING DESIGN
- ▷ ACCESSIBILITY? CONNECTING
- ▷ PRIORITIZING IMPROVEMENTS?
- ▷ MORE THAN APPLICATION PER STREET TYPE/CYCLE
 - * STORMWATER FOCUSED OVERLAY
 - * PEDESTRIAN FOCUSED
 - * ACCESS FOCUSED
- ▷ MAINTENANCE OBLIGATIONS

DESIGN PRINCIPLES



Appendix B

WALLGRAPHIC FROM INTERNAL CHARRETTE (CONTINUED)

