Pedestrian Network Analysis
Better Walking Access to Transit in the Portland Metro Region

Draft Technical Memo #3:
Existing Conditions and Needs Analysis for Ten Focus Areas

Submitted to:
Project Technical Advisory Committee

March 2011
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1.0 Introduction

This is the third of three technical memos documenting work conducted by TriMet as part of its Pedestrian Network Analysis project.

The memo has five sections. Section 2 lists common pedestrian concerns related to unsafe driver behavior, unsafe pedestrian behavior, poor walking conditions, and poor conditions at transit stops. Section 3 provides guidance on how to conduct a pedestrian and transit stop accessibility assessment of an area. It suggests key places people may want to access by foot or by transit, what to be aware of as you walk around an area and the type of roadway, sidewalk, intersection, and transit facility design and user information to collect. Section 4 applies the assessment methods to the ten focus areas. Section 5 provides references to additional resources on walkability assessment tools.

The next step for TriMet’s Pedestrian Network Analysis project is to publish a final report. The report will summarize findings; provide generic information on types of treatments communities can pursue to address pedestrian accessibility concerns; and present big picture policy issues to consider at the local, state, regional, and federal levels. The final report will be the culmination of TriMet’s Pedestrian Network Analysis project, but it will not be the end point for advancing work related to pedestrian accessibility to transit stops. It will be a jumping off point to help TriMet and communities continue to create more pedestrian and transit accessible places.
2.0 Common Pedestrian Concerns

As a person walks to or from a transit stop there is often a common set of issues he or she may be concerned with, including driver behavior, their own behavior as a pedestrian, and the physical conditions of the walking environment and transit stop. The list below outlines these concerns.

Unsafe Driver Behaviors
- Not yielding to pedestrians
- Speeding
- Cutting-through neighborhoods
- Running red lights
- Passing illegally
- Intoxicated or distracted driving

Unsafe Pedestrian Behaviors
- Crossing the road without looking
- Darting into the road
- Crossing the road at unsafe locations
- Not obeying traffic signals
- Distracted walking

Poor Walking Conditions
- No place to walk
- Narrow Sidewalks
- Poor walking surfaces
- Blocked pathways
- No buffer
- Difficult street crossings
- Poor connectivity
- Insufficient pedestrian lighting
- Poor guidance
- Conflicts with bicyclists

Poor Conditions at Transit Stops
- Street crossings near the stop are dangerous
- The sidewalk is blocked
- Seating / waiting area is too close to vehicle lanes
- There are no sidewalks
- People walking near the stop take risks, like running to catch the bus
- There is insufficient lighting

(Adapted from FHWA’s A Resident’s Guide for Creating Safe and Walkable Communities)
3.0 How to Assess an Area for Pedestrian and Transit Stop Accessibility

Walkability is a measure of how well an area is suited for pedestrians, meaning people getting around on foot or people using a personal mobility device like a wheelchair. It is dependent on a variety of factors, often related to the design of the built environment. These include, but are not limited to how the streets, sidewalks, and crosswalks are designed, where the buildings are located in relation to the street, and what types of destinations are available to walk to and from.

The questions listed below are designed to help people do their own assessment of an area.

Identify key places to access by foot & transit

Why?

When people walk, they are typically going somewhere (e.g. a store, restaurant, home, work, park, or a transit stop). There needs to be a reason for people to walk. If there is not someplace people want to walk to, within a reasonable distance, then they probably will not walk very often.

Questions to consider:

- What types of activities are located in the area? For example, are there residences, stores, libraries, schools, banks, medical facilities, restaurants, offices, transit stops located within the area?

- Where are these activities located in relation to one another? Are there areas that, under good walking conditions, seem like they would be logical to walk to and from? For example: a senior center to a grocery store, a residential neighborhood to a restaurant, or an office building to a transit stop.

- Where do the transit lines that serve the area go? For example, will they take you downtown, to a major shopping center, university, or transit center?

- Who is coming to or from the area? For example, are there activities, like a school that draws a lot of young children to the area? Are there senior residences that may result in people living in the area who have limited mobility? Do the people living or working in the area have limited English proficiency? What is the mix of income levels for people living, working, or shopping in the area? For all of these factors, think about what this means for a person walking or taking transit.
Walk around and take public transit to the site

Why?

Walking is an extremely sensory experience, and it is often the subtle things that make or break the experience. Pedestrians, bicyclists and drivers take in their surroundings differently. An area may feel fine to a driver, but feel hostile to a pedestrian. Furthermore, the behavior we exhibit as pedestrians is not necessarily like the behavior we exhibit when we drive or bicycle. We need to understand people’s behavior and sensory intakes from a variety of perspectives. It is impossible to fully understand what the pedestrian or transit customer experience is like in an area without experiencing it firsthand. No model or methodology can replace actually experiencing and area as a pedestrian or transit rider.

Questions to consider:

• Do walking routes between places feel safe, direct, and comfortable? Humans have a propensity for taking direct routes. Do you feel inclined to want to cross the street at unprotected crossings or cut across parking lots to get to where you want to go?

• How loud is it where you are walking? High levels of noise can be unpleasant. Can you talk to someone next to you without raising your voice? What types of shrubbery are available to absorb the sound?

• How shaded is the place in summer? Is there any place to get a reprieve from the rain or sun? Is there any place to sit? People like places where they can get away from the elements or rest, even if for a short while.

• Does it feel like you are walking through a desert or does it feel you are surrounded by activity that is at the same scale as you? Do you feel vulnerable around faster moving street users like cars or bicycles? Scale and visual appeal influence how safe and comfortable pedestrians feel by their surroundings.

• What type of pedestrian, bicyclist, and driver behavior are you observing? Are people doing what the street design asks of them? Why or why not? Are drivers speeding or taking turns without looking? Are pedestrians crossing at unsafe locations or obeying traffic signals?

• Where are the places you see the most people walking to and from?

• Where are the places you see the most people accessing by car?

• Where are the people getting off at transit stops going to? Where are the people waiting for a bus coming from?

• Where are the places where there are the most conflicts between people walking, bicycling, and driving?
Collect roadway and pedestrian facility characteristics

Why?

Having roadway and pedestrian facility characteristics in hand while walking an area, allows a person to begin to relate the behavior they observe and the sensations they feel to tangible design characteristics.

Questions to consider:

- What is the posted speed limit? What is the actual speed motor vehicles are traveling (85th percentile speed)? What speed is the roadway designed for (design speed)? The design speed can sometimes be higher than the posted speed. Speed is important to understand because it often determines the severity of a crash. A pedestrian only has a 15 percent chance of survival if they are hit by a car moving at 40 mph. At 30 mph the survival rate is 55 percent. At 20 mph it is 95 percent.

- Are sidewalks present on all roadways? If so, how wide is the pavement? Is there a landscaped buffer (planter, trees, etc.) between the sidewalk pavement and the curb? If so, how wide is it? If the scale of the streetscape matches the scale of the roadway, then the pedestrian feels safer and more comfortable near the motor traffic.

- How many driveways are there along the route? The more driveways there are along a walking route, the more opportunities there are for pedestrians and drivers to conflict. Even the mere expectation of having to watch out for turning movements from cars, can cause a pedestrian to feel unsafe.

- Are buildings in the area oriented toward the sidewalk, with direct pedestrian pathways to their entrance? How inviting is the development to a pedestrian?

- What kind of in-street buffer is there between pedestrians and motor vehicle traffic? Is there on-street parking, a paved shoulder or a bike lane? If so, what is its width?

- How lit is the area at night? Are there streetlights present? If so, what kind? Are they designed at a pedestrian scale?

- How wide is the roadway curb-to-curb? Is there a center-two way turn lane? What are the widths of the travel lanes (outer and inner)? This is important to understand in relation to the type of motor vehicle traffic the facility owner would like to facilitate on the roadway.

- Is there a median equal or greater than 6 ft. in the roadway? If so, how wide is it? Medians restrict turning movements, act as a way to provide a sense of enclosure on the street, calm traffic, and provide a space for pedestrians to wait if they are crossing the roadway.

- On average, what how much motor vehicle traffic is there on the roadway? How busy is the road?
Collect roadway crossing characteristics

Why?

Having roadway crossing characteristics in hand while walking an area, allows a person to begin to relate the behavior they observe and the sensations they feel to tangible design characteristics. TriMet can help you gather this data.

Questions to consider:

• How many protected crossing opportunities are there along the length of the roadway? For the purpose of this assessment, assume protected means there is at least a flashing light. A painted crosswalk or sign, alone, does not constitute a protected crossing.

• How many unprotected crossings are there along the length of the roadway? In Oregon any intersection is a legal crossing, regardless of how it is marked.

• How many lanes do pedestrians have to cross in order to get across the roadway? What is the total crossing distance? Does it vary at different place along the roadway? The longer the distance to cross, the longer a pedestrian is exposed to motor vehicle traffic and the more opportunities there are for conflicts between the two.

• At signalized crossings, how long does a pedestrian have to wait to get a walk phase?

• Once a walk phase comes up at a signal, how long does a pedestrian have to cross the street? Would the time available be sufficient if you were on crutches, in a wheelchair, or pushing a stroller?

• How many motor vehicles make a permitted right-turn-on-red or left turn while the pedestrian phase of the crosswalk is on? The more motor vehicle turning movements there are while pedestrians are crossing, the more chance there is of the two coming in conflict with one another.

• If there is a right turn channelization lane, is there also a pedestrian refuge island?

• What is overall street connectivity like in the area? Are there a lot of dead ends? Can you get directly from one place to another using the existing pedestrian infrastructure or do you have to go out of direction to get to where you are trying to go?
Collect transit facility, service, and usage characteristics

Why?

Having transit facility, service, and usage characteristics in hand while walking an area, allows a person to begin to understand where there is a lot of public transit and pedestrian activity and why people may be exhibiting certain behaviors.

Questions to consider:

- What is the frequency of the transit service on the roadway? Does the bus or train come every 15 minutes, 30 minutes, or 60 minutes? If there are multiple lines operating on the same roadways, what kind of frequency do they provide taken together? For example, two lines serving the same roadway that operate at 30 minute headways, but are staggered can provide 15 minute service.

- Which transit lines operate on the roadways? Where do they connect to?

- How many stops are there on a segment of roadway? The ideal stop spacing, under good walking conditions, is every 800 to 1,000 ft.

- Are there transit stops that do not have a paved front door landing pad? A paved landing pad makes the stop accessible to people using a mobility device.

- Are there sidewalks connections to the stop in all directions? Discontinuous sidewalks can make an area inaccessible to people who use a mobility device.

- What kind of crossing opportunities are there within 150 ft. of the transit stops? Would you consider them protected? To what degree? Is this sufficient?

- How many transit stops with an average of 50 boardings or more a day do not have a shelter present? 50 average boardings a day is TriMet’s threshold for placing a shelter at a stop.

- How many ons and offs are there at all of the transit stops in the area? How many times did a bus deploy its lift or ramp to assist a person boarding or debarking? The number of LIFT deployments is an indicator of the number of people needing an accessible walking environment. What are the total ons and offs by intersection? We can assume every person who got on or off the transit vehicle had to walk for some part of their trip. Therefore, the total number of ons and offs can be used as a minimum proxy for pedestrian counts.
Create a prioritized list of needs

Why?

There may be hundreds of pedestrian and transit stop needed in an area. It is important to know where to start investigating and making investments to make changes. A prioritized list of needs helps people keep focused and makes what may seem like a daunting task manageable. Furthermore, it allows parties to be transparent about what matters most to them, provides a valuable communication tool, and makes it easier to track progress and work as it goes forward. Remember that needs and solutions are different things. Needs should be identified independent of any pre-existing thoughts about costs or the types of solutions that could be used to address the need.

Questions to consider:

- Did you see any parts of the assessment area that are working well from a pedestrian and transit accessibility standpoint? If so, what are its characteristics? How could you replicate those characteristics in other places?

- Think about the pedestrian connections between places. What are the places you would like people to walk to and from? Are they walking there now? If not, why not?

- Are there places where people are walking under suboptimal conditions? If so, where are the most important places to bring up to a higher standard of pedestrian and transit accessibility where people are already walking?

- Where are people taking short cuts, crossing the road where it is currently unprotected, or exhibiting risky or unsafe behavior? Why are they doing what they are doing? Should we try to modify this behavior, or should we embrace it and facilitate it?

- What are the road segments where it is least safe and/or comfortable to walk now? What characteristics make them this way?

- Which are the intersections where it is the least safe and/or comfortable for people to walk? What characteristics make them this way?

- Are facilities in the area compliant with the American with Disabilities Act (ADA)?

- If you could only choose five actions to take first, what would they be? Why?
Review existing plans and codes

Why?

Design codes set standards for roadway designers, property owners, and real estate developers to operate by. If the standards do not give the community the results they want, then it is imperative to review them and consider modification. It is also important to understand what plans other people have developed for the area you are assessing. Plans may have been made with a different perspective in mind or are in sync with your conclusions. Either way, it is good to know what others are recommending for the area.

Questions to consider:

• Do the streets and intersections in the area you are assessing meet your jurisdiction’s current design code? If not, why not? Were they built in a different era or are the design codes not being followed?

• If the area is meeting the design codes, are the results what you would hope? Should the design codes be revisited to get different results?

• Why are the design codes written the way they are? Which types of travelers/roadway users are they centered around? What types of travel—walking, bicycling, public transit, or driving do they facilitate? Do the standards overemphasize one type of user over another?

• Are there any land use plans for the area?

• Are there any roadway, pedestrian, bicycle, or public transit facilities planned for the area?

• If there are both land use and transportation plans for the area, do they speak to one another? Does the planned transportation system enable the type of travel behavior the land uses expect? Do the planned transportation investments enable the type of development desired in the area?

• Are there opportunities to adjust plans, based on this pedestrian and transit accessibility assessment?

• Are there opportunities to move plans forward, bolster, or reinforce efforts already underway, based on the results of the pedestrian and transit accessibility assessment?
4.0 Pedestrian & Transit Assessment for Ten Project Focus Areas

In Technical Memo #2 ten focus areas were identified

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</tbody>
</table>

Recognizing there are innumerable pedestrian and transit accessibility needs in TriMet’s service district, the ten focus areas listed above are intended to serve as starting place where TriMet and its partners can place attention first.

Section 4 of this memo assesses each of the ten focus areas using the methods and considerations outlined in Section 3. The information was collected in a variety of ways: visiting the site, collecting data from TriMet’s automatic passenger counters and bus stop database, looking at satellite imagery, interviewing TriMet customers, and requesting roadway and motor vehicle design and usage information from local traffic engineering sections. For information on how specific attributes were defined and their significance refer to Appendix A.

For each focus area a number of factors were considered. Places to access by foot or by transit in the focus area were identified. Each of the places identified as being accessible by transit are a “one-seat ride” from the focus area, meaning a TriMet customer would not need to transfer to get to the destination identified.

Facility design and user information is presented for high speed and/or high volume roadways and intersections in the focus area, typically where TriMet’s transit service also operates. Likewise, design and user information is provided for each transit stop in the focus area and aggregated up to the intersection level, to get an understanding of, at a minimum, how many pedestrians (who are also transit riders) are moving around the intersection in a week.

Finally, conclusions are drawn and needs are identified. For each focus area we identified specific places to connect with better pedestrian facilities, the areas where things are already working well, and five actions we recommend going forward.
Focus Area 1 – SW Farmington Rd. & SW Murray Blvd.

SW Farmington Rd. & SW Murray Blvd. focus area is located in the City of Beaverton. It is situated approximately one mile from the City’s downtown, an area of particular interest to the City as it works to revitalize the area. The focus area’s close proximity to downtown Beaverton and direct connections to TriMet service make it a prime location for infrastructure investments that will improve a person’s ability to walk to transit stops and local destinations safely, directly, and comfortably.

Places to access locally by foot

If a person walks within this focus area, these are examples of the places he or she could walk to or from:

- Retail (e.g. Kmart, Grocery Outlet, Plaid Pantry, 7-Eleven)
- Housing (senior, multi-family, single-family)
- Sisters of St. Mary Oregon Campus (schools, nursing home, community center)
- Schools (Beaverton High School, Sunshine Montessori Pre-School, German American School of Portland)
- Eichler Park

Places to access regionally by transit

If a person boards a TriMet bus in this focus area, these are examples of the places he or she could travel to without making a transfer:

**Beaverton**: Downtown Beaverton, Beaverton High School, Beaverton Library, Beaverton Farmer’s Market, The Round
**Aloha**: Aloha High School, retail along Tualatin Valley Hwy.
**Hillsboro**: Downtown Hillsboro, Streets of Tanasbourne, Portland Community College (PCC) - Rock Creek Campus and Portland Community College (PCC) – Willow Creek Center
**Tigard**: Washington Square Mall
**Forest Grove and Cornelius**: Pacific University, Downtown Forest Grove and Cornelius

**Transit centers and MAX stations**: Beaverton Transit Center, Sunset Transit Center, Hillsboro Central/SE 3rd Ave Transit Center, Willow Creek/SW 185th Ave Transit Center, Washington Square Transit Center, Millikan Way MAX Station, Beaverton Central MAX station

**2040 growth concept centers**: Beaverton Regional Center, Washington Square Regional Center, Tanasbourne Regional Center, Aloha Town Center, Murray Hill Town Center, Cedar Mill Town Center
Figure 1: SW Farmington Rd. & SW Murray Blvd. - Land Use and Transportation

1. Parking lot for K-Mart and Grocery Outlet on Murray Blvd. Served by Frequent Service Line 57 on T-V Hwy.
2. Entrance to St. Mary’s/Valley Catholic High School on T-V Hwy.
4. Farmington Square on SW Farmington Rd, another retirement community.
5. Eichler Park n SW Farmington Rd (Line 52).
6. Holly Tree Village - the largest of the multi-family developments along Line 62 on SW Murray Blvd.
Pedestrian Network Analysis

Roadways and Sidewalks

There are three high speed, high volume roads running through this focus area.

- SW Tualatin-Valley Hwy.
- SW Farmington Rd.
- SW Murray Blvd.

They connect the area to adjacent cities, a major US highway and two light rail lines. All three have transit service on them.

While these arterial roads provide motor vehicle and transit service access to a variety of regional and local destinations, in their current state, they also act as a barrier to pedestrian and bicyclists.

Figure 2 shows the roadway and sidewalk attributes for the segments of SW Murray Blvd., SW Tualatin-Valley Rd., and SW Farmington Rd. located within the focus area. Key conclusions, based on field visits and information in Figure 2 are outlined below.

**Key Conclusions**

- SW Tualatin-Valley Hwy. is the fastest and widest road in the focus area, with posted speeds of 45mph and measuring 86 ft. at its widest point.

- SW Murray Blvd. is the only road in the focus area with continuous sidewalks on both sides of the street. There are no sidewalks along the entire southern side of SW Tualatin-Valley Hwy., by the railroad tracks. There are major gaps in sidewalks along the southern side of SW Farmington Rd., between SW Murray Blvd. and SW Hocken Ave.

- SW Farmington Rd. has very different design characteristics east and west of SW Murray Blvd. West of SW Murray Blvd., it is more pedestrian friendly than east of it, but it still lacks planted buffers between the curb and the sidewalk.

- In comparison to SW Tualatin-Valley Hwy., SW Farmington Rd. and SW Murray Blvd. have more development oriented toward the sidewalk. However, in general, very little development is oriented toward the sidewalk in this focus area.

- The southern side of SW Farmington Rd. has the most driveways (30) to contend with. SW Tualatin-Valley Hwy. has the fewest driveways, but when there are driveways they are very wide.
### Pedestrian Network Analysis

**Figure 2: SW Farmington Rd. & SW Murray Blvd. - Roadways and Sidewalks**

<table>
<thead>
<tr>
<th>Roadway &amp; Sidewalk Attributes</th>
<th>SW Murray Blvd.</th>
<th>SW Farmington Rd.</th>
<th>SW Tualatin-Valley Hwy.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design speed</td>
<td>45 mph</td>
<td>35 mph</td>
<td>55 mph</td>
</tr>
<tr>
<td>Posted speed limit</td>
<td>35 mph</td>
<td>40 mph</td>
<td>45 mph</td>
</tr>
<tr>
<td>Midblock 85th percentile traffic speed</td>
<td>40 mph</td>
<td>41 mph</td>
<td>Not available</td>
</tr>
<tr>
<td>Presence of sidewalk throughout</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Width of sidewalk</td>
<td>5 to 7 ft.</td>
<td>0 to 7 ft.</td>
<td>0 to 10 ft.</td>
</tr>
<tr>
<td>Width of landscaped buffer between walkway &amp; motorized vehicle traffic (planter, trees, etc.)</td>
<td>0 to 6 ft.</td>
<td>0 to 3 ft.</td>
<td>0 ft.</td>
</tr>
<tr>
<td># of driveways within one mile (does not account for size of driveway)</td>
<td>East side = 16</td>
<td>North side = 15</td>
<td>North side = 10</td>
</tr>
<tr>
<td>Development oriented toward sidewalk</td>
<td>Very Little</td>
<td>Very Little</td>
<td>None</td>
</tr>
<tr>
<td>Width of paved shoulder, bicycle lane, and/or parking lane</td>
<td>0 to 5 ft.</td>
<td>0 to 7 ft.</td>
<td>0 to 5 ft.</td>
</tr>
<tr>
<td>On-street parking</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Presence of streetlights throughout</td>
<td>Yes (cobra)</td>
<td>Yes (pedestrian scale &amp; cobra)</td>
<td>Yes (cobra)</td>
</tr>
<tr>
<td># of travel lanes</td>
<td>4</td>
<td>4</td>
<td>4 to 6</td>
</tr>
<tr>
<td>Width of two-way center lane</td>
<td>12 ft.</td>
<td>14 ft. (West of Murray)</td>
<td>15 ft.</td>
</tr>
<tr>
<td>Width of outside travel lane</td>
<td>12 ft.</td>
<td>12 ft.</td>
<td>12 ft.</td>
</tr>
<tr>
<td>Width of inner travel lanes</td>
<td>11 ft.</td>
<td>11 to 12 ft.</td>
<td>11 to 12 ft.</td>
</tr>
<tr>
<td>Presence/width of median (must be &gt; 6ft and separate two directions of traffic to be considered median). Is it traffic separating, concrete, raised, planted?</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Total width of roadway—curb to curb</td>
<td>68 ft.</td>
<td>53 to 72 ft.</td>
<td>85 ft.</td>
</tr>
<tr>
<td>Annual average daily traffic (AADT)</td>
<td>26,000 (in 2010)</td>
<td>30,000 (in 2011)</td>
<td>37,100 (in 2010)</td>
</tr>
</tbody>
</table>
Crossings and Connectivity

Based on field observation and transit passenger count data two signalized intersections were selected for review. Each appeared to have a relatively high degree of motor vehicle movement, transit stop activity, and pedestrian movement compared to other intersections in the focus area. The two intersections were selected for exemplary purposes. Other intersections in the focus area could also benefit from this type of evaluation and review.

- SW Tualatin-Valley Rd. & SW Murray Blvd.
- SW Farmington Rd. & SW Murray Blvd.

Information was collected on crossing opportunities for three roadway segments on SW Murray Blvd., SW Farmington Rd., and SW Tualatin-Valley Hwy. Figures 3 and 4 present this information.

Figure 8 displays the overall roadway network connectivity in the SW Murray Blvd. & SW Farmington Rd. focus area, using a Route Directness Index (RDI). A RDI score takes the straight line distance from the center of one parcel to the center of all other parcels, within a certain distance, and divides it against the distance it would take to get to the parcel using the actual road network. An RDI score of 1 is the most direct. It means the actual road network distance is the exact same as the straight line distance. Figure 8 shows the connectivity of each parcel to all other parcels within a quarter mile.

Key Conclusions

- SW Farmington Rd. has the greatest number of intersections, or legal crossing opportunities, but only four of the fifteen are marked crossings. This high number of intersections is also reflected in Figure 8, which shows a high degree of parcel connectivity along SW Farmington Rd.

- There are very few crossing opportunities along SW Tualatin-Valley Hwy., with 7 intersections and only 2 of them signalized.

- Of the two intersections assessed, five of the eight legs of the crossings had lengths greater than 100ft.

- Of the two intersections assessed, the intersection of SW Tualatin-Valley Hwy. and SW Murray Blvd. had the highest number of turning movements.

- Pedestrian crossing speeds at the three intersections assessed are as follows:
  - SW Murray Blvd. & SW Farmington Rd. = 3.0 to 3.3 ft./second
  - SW Murray Blvd. & SW Tualatin Valley Hwy. = 2.7 to 3.9 ft/second
Figure 3: SW Farmington Rd. & SW Murray Blvd. – Crossings and Crashes

<table>
<thead>
<tr>
<th>Pedestrian &amp; Bicycle Crashes</th>
<th>Locations of known pedestrian or bike crashes that resulted in a fatality or serious injury between 2007-2009</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• SW Division St. &amp; SW 150th Ct. (bicyclist)</td>
</tr>
<tr>
<td></td>
<td>• SW Farmington Rd. &amp; SW Murray Blvd. (bicyclist)</td>
</tr>
<tr>
<td></td>
<td>• SW Tualaway Ave. &amp; SW Tualatin-Valley Hwy. (bicyclist - Feb. 2011)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Roadway Crossing Attributes</th>
<th>SW Murray Blvd.</th>
<th>SW Farmington Rd.</th>
<th>SW Tualatin-Valley Hwy.</th>
</tr>
</thead>
<tbody>
<tr>
<td># of unmarked crossings in focus area along selected streets</td>
<td>5</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td># of marked crossings in focus area along selected streets</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td># of signalized crossings in focus area along selected streets</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Figure 4: SW Farmington Rd. & SW Murray Blvd. – Intersections

<table>
<thead>
<tr>
<th>Intersection Attributes</th>
<th>SW Murray Blvd. &amp; SW Farmington Rd.</th>
<th>SW Murray Blvd. &amp; SW Tualatin Valley Rd.</th>
</tr>
</thead>
</table>
| # of lanes being crossed by pedestrians at signalized intersections | Murray (N) – 5  
Murray (S) – 5  
Farmington (E) – 5  
Farmington (W) – 5 | Murray (N) – 6  
Murray (S) – 5  
Tualatin Valley (E) – 7  
Tualatin Valley (W) – 7 |
| Effective turning radius at intersection | NW 55 ft.  
NE 55 ft.  
SE 55 ft.  
SW 55 ft. | NW 55 ft.  
NE 55 ft.  
SE 50 ft.  
SW 50 ft. |
| Total crossing distance | Murray (N) – 105 ft.  
Murray (S) – 105 ft.  
Farmington (E) – 85 ft.  
Farmington (W) – 95 ft. | Murray (N) – 110ft.  
Murray (S) – 70 ft.  
Tualatin Valley (E) – 100ft.  
Tualatin Valley (W) – 120ft. |
| Signal cycle length | 1:56 (maximum) | 2:25 (maximum) |
| Pedestrian signal actuated | Yes | Yes |
| Pedestrian crossing time | 0:28 - Farmington  
0:32 - Murray | 0:31 - Tualatin Valley  
0:26 - Murray |
| # of right-turn-on red motor vehicles and the number of motorists making a permitted left turn in a 15-minute period (right/left) | 20 / 103  
(weekday 8:00-9:00am) | 46 / 160  
(weekday 8:00-9:00am) |
| Right turn channelization islands on the crossing | 0 | 1 |
| Pedestrian refuge present | No | No |
Transit Stops

There are three public transit lines providing transportation services to people in the focus area:

- Line 57 – TV Hwy/Forest Grove
- Line 52 - Farmington/185th
- Line 62 - Murray Blvd

Figures 5 and 6 provide detailed information on the transit service and stops in the focus area. Figure 7 provides information from a short, unscientific customer survey asking customers at Stop ID 5599 (Tualatin Valley Hwy. & Murray Blvd) how they would rate various elements of the walking environment located in the immediate vicinity of the transit stop.

Key Conclusions

- SW Tualatin-Valley Hwy. is the only road with frequent bus service, Line 57, running approximately every 15 minutes. SW Farmington Rd. has bus service, Line 52. It operates nearly at the level of frequent service bus on weekdays, but does not run as frequently on weekends.

- The intersections where there are the most TriMet customers getting on or off a bus and walking to or from their destination are SW Tualatin Valley Hwy. & SW Murray Blvd. (2,587/week) and SW Farmington Rd. and SW Murray Blvd. (1,865/week).

- The highest activity transit stop in the focus area on SW Tualatin-Valley Hwy. is the westbound, Line 57 stop, located at the intersection of SW Murray Blvd. and SW Tualatin Valley Hwy. (Stop ID 5599). On average 1,062 people get on or off a bus at this stop every week. This is also the transit stop, on SW Tualatin-Valley Hwy. with the most requests for lift or ramp deployments (avg. of 22 people per month).

- The highest activity transit stop in the focus area on SW Farmington Rd. is the eastbound, line 52 stop, located at the intersection of SW Murray Blvd. and SW Farmington Rd. (Stop ID 1661). On average 685 people get on or off a bus at this stop every week. This is also the transit stop on SW Farmington Rd. with the most requests for lift or ramp deployments (avg. of 22 per month).

- The highest activity transit stop in the focus area on SW Murray Blvd. is the southbound, line 62 stop, located at the 4800 block of SW Murray Blvd. (Stop ID 4061). On average 161 people get on or off a bus at this stop every week. The transit stop on SW Farmington Rd. with the most requests for lift or ramp deployments (avg. of 22 per month) is located at the 5300 block of SW Murray Blvd. (Stop ID 4062).
Figure 5: SW Farmington Rd. & SW Murray Blvd. – Transit Stops

<table>
<thead>
<tr>
<th>Transit Service and Stop Attributes</th>
<th>SW Murray Blvd.</th>
<th>SW Farmington Rd.</th>
<th>SW Tualatin-Valley Hwy.</th>
</tr>
</thead>
<tbody>
<tr>
<td>transit lines and weekday frequencies along selected streets in focus area.</td>
<td>Line 62 (bus) – 30 min</td>
<td>Line 52 (bus) -15 min</td>
<td>Line 57 (frequent service bus) – 15 min</td>
</tr>
<tr>
<td># of transit stops in focus area along selected streets.</td>
<td>Northbound = 8 Southbound = 7 0</td>
<td>Westbound = 7 Eastbound = 7 2</td>
<td>Westbound = 3 Eastbound = 3 3</td>
</tr>
<tr>
<td>Stop IDs: 1669,1667</td>
<td>Stop IDs: 1669,1667</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of transit stops without a paved front door landing pad along selected streets.</td>
<td>0</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Stop IDs:</td>
<td>Stop IDs: 1669,1667</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of transit stops without sidewalk connections to it in all directions along selected streets.</td>
<td>11</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Stop IDs: 5599, 4060,4064,4088,4062, 4070,4072,4061,1660, 8316,4063</td>
<td>Stop IDs: 1669,1667</td>
<td>Stop IDs: 9029, 5617,5600,11003</td>
<td></td>
</tr>
<tr>
<td># of transit stops without a marked crossing within 150 ft. along selected streets.</td>
<td>0</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Stop IDs: 1666,1655,1668,1669, 1667,1663,1662,1656, 1660</td>
<td>Stop IDs: 5599, 5595, 4088, 4070,5617</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of transit stops with avg. weekday boardings &gt; 50 without a shelter along selected streets.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Figure 6: SW Farmington Rd. & SW Murray Blvd. - Transit Ridership

<table>
<thead>
<tr>
<th>Stop Location</th>
<th>Stop ID</th>
<th>Direction</th>
<th>Transit Lines</th>
<th>Weekly Ons &amp; Offs</th>
<th>Pedestrian Count Proxy at Intersection</th>
<th>Monthly LIFTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmington &amp; Menlo</td>
<td>1655</td>
<td>W</td>
<td>52</td>
<td>130</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Farmington &amp; Menlo</td>
<td>1656</td>
<td>E</td>
<td>52</td>
<td>118</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Farmington &amp; 139th</td>
<td>1666</td>
<td>W</td>
<td>52</td>
<td>226</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Farmington &amp; 139th</td>
<td>1667</td>
<td>E</td>
<td>52</td>
<td>183</td>
<td></td>
<td>1</td>
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<tr>
<td>Farmington &amp; 142nd</td>
<td>1668</td>
<td>W</td>
<td>52</td>
<td>88</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Farmington &amp; 142nd</td>
<td>1669</td>
<td>E</td>
<td>52</td>
<td>54</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Farmington &amp; Normandy</td>
<td>1662</td>
<td>W</td>
<td>52</td>
<td>110</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Farmington &amp; Normandy</td>
<td>1663</td>
<td>E</td>
<td>52</td>
<td>47</td>
<td></td>
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<td>Farmington &amp; Murray</td>
<td>1661</td>
<td>E</td>
<td>52</td>
<td>685</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Farmington &amp; Murray</td>
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<td>W</td>
<td>52</td>
<td>530</td>
<td></td>
<td>8</td>
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<tr>
<td>Farmington &amp; Murray</td>
<td>4069</td>
<td>N</td>
<td>62</td>
<td>414</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Farmington &amp; Murray</td>
<td>4068</td>
<td>S</td>
<td>62</td>
<td>236</td>
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<td>6</td>
</tr>
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<td>Farmington &amp; 149th</td>
<td>1671</td>
<td>E</td>
<td>52</td>
<td>173</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Farmington &amp; St Marys Dr</td>
<td>1670</td>
<td>W</td>
<td>52</td>
<td>179</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Farmington &amp; 153rd</td>
<td>1672</td>
<td>E</td>
<td>52</td>
<td>214</td>
<td></td>
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<tr>
<td>Farmington &amp; Mueller Drive</td>
<td>1673</td>
<td>W</td>
<td>52</td>
<td>254</td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stop Location</th>
<th>Stop ID</th>
<th>Direction</th>
<th>Transit Lines</th>
<th>Weekly Ons &amp; Offs</th>
<th>Pedestrian Count Proxy at Intersection</th>
<th>Monthly LIFTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murray 3900 Block</td>
<td>4060</td>
<td>N</td>
<td>62</td>
<td>0</td>
<td></td>
<td>140</td>
</tr>
<tr>
<td>Murray &amp; K-Mart</td>
<td>8316</td>
<td>S</td>
<td>62</td>
<td>140</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Murray &amp; Fountain Apts</td>
<td>4072</td>
<td>N</td>
<td>62</td>
<td>51</td>
<td></td>
<td>51</td>
</tr>
<tr>
<td>Murray 4800 Block</td>
<td>4061</td>
<td>S</td>
<td>62</td>
<td>161</td>
<td></td>
<td>161</td>
</tr>
<tr>
<td>Murray &amp; 6th</td>
<td>4095</td>
<td>N</td>
<td>62</td>
<td>160</td>
<td></td>
<td>160</td>
</tr>
<tr>
<td>Murray 5300 Block</td>
<td>4062</td>
<td>S</td>
<td>62</td>
<td>131</td>
<td></td>
<td>146</td>
</tr>
<tr>
<td>Murray 5400 Block</td>
<td>4063</td>
<td>N</td>
<td>62</td>
<td>14</td>
<td></td>
<td>22</td>
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<tr>
<td>Murray &amp; Bonnie Brae</td>
<td>4064</td>
<td>S</td>
<td>62</td>
<td>79</td>
<td></td>
<td>190</td>
</tr>
<tr>
<td>Murray &amp; Bonnie Brae</td>
<td>4065</td>
<td>N</td>
<td>62</td>
<td>111</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>
**Figure 7: Stop ID 5599 (SW Tualatin Valley Hwy. & SW Murray Blvd.) - Customer Survey**

Survey administered on September 29, 2011 (12-6pm)  
n=36

Primary mode of access (multiple answers possible, so percentages may not total 100 percent): 53%-transferred, 42%-walked, 3%-drove and parked, 3%-dropped off, 0%-bicycled.
Figure 7 displays general opinions regarding various elements of the walking environment in the immediate vicinity of the transit stop. Specific customer comments and concerns are listed below.

**Customer Comments/Concerns**

- This stop is great; Number 62 needs to run longer
The Connectivity Score is based on how well each parcel is connected to other parcels within a quarter-mile radius. This analysis was performed using ViaCity software from the Transpo Group.
Figure 9: SW Farmington Rd. & SW Murray Blvd. - Pedestrian and Transit Needs

1. No sidewalks on South side of SW Tualatin Valley Hwy

2. Waiting for the bus in the 7-11 parking lot

3. No sidewalk on South side of SW Farmington Rd

- Vehicle-pedestrian conflict location
- Sidewalks
- Sidewalk gaps
- TrMet bus lines
- Existing multi-use path
- Proposed multi-use path
- Arterial with sidewalk buffer
- Arterial with minimal sidewalk buffer
- Arterial with no sidewalk buffer
- Stops >150' from marked crosswalk

Walking on the shoulder of Farmington Rd

Drivers accelerate through the crossing at Murray Blvd

Father and small children racing to cross Murray Blvd to reach the bus stop
Infrastructure Needs

Needs are identified below. Future solutions to address these needs will hopefully make people feel safer, entice them to walk more, and help connect people who are living, working, shopping and/or recreating in the area to retail, parks, trails, schools, public services and jobs.

Places to Connect

- St. Mary’s Campus, the senior residences and concentrations of multi-family housing to retail establishments on the North Side of TV Hwy., which include a K-Mart, restaurants, and a Grocery Outlet.

- Senior residences and concentrations of multi-family housing to Echler Park, Lily K Johnson Park, and the Westside/Powerline Trail, west of 158th.

- Concentrations of multi-family housing to Beaverton High School, schools located at St. Mary’s, and the German American School.

- Multifamily housing located north of Tualatin-Valley Hwy. to Multifamily housing located south of it.

- Senior residences, multifamily housing, schools, and retail commercial development to TriMet bus stops and the Millikan Way light rail station.

Observed Behavior

- Cars parked in the shoulder of SW Farmington Rd., east of SW Murray Blvd., on the south side of the road, where no sidewalks are present, forcing pedestrians into the motor vehicle travel lane. Pedestrians walking on the south side where no sidewalks are present, even though there are sidewalks on the north side of the road.

- Transit customers, carrying many items, waiting for the Westbound, Line 52 bus, at SW Farmington Rd. & SW Murray Blvd. without a place to sit.

- People crossing SW Tualatin Valley Hwy. midblock, in unprotected places, across seven lanes of very fast moving motor vehicle traffic. The posted speed limit is 45 mph.

- People crossing SW Farmington Rd. midblock, in unprotected places, against four lanes of fast moving motor vehicle traffic. The posted speed limit ranges from 35 to 40 mph.
• People having to wait a long time before being able to get a walk signal, crossing very long distances, and being on the watch for motor vehicles making permitted right turns on red at the intersections of SW Farmington Rd. & SW Murray Blvd. and SW Murray Blvd. & SW Tualatin Valley Hwy. There are 2,587 people getting on or off a bus at the intersection of SW Murray Blvd. & SW Tualatin Valley Hwy. Most of them likely have to walk across this intersection.

Bright Spots

• Pedestrian scale street lighting and slightly wider sidewalks along SW Farmington Rd., west of SW Murray Blvd.

• The multi-family and senior residential units in the focus area are relatively well-oriented toward the sidewalks.

• The section of sidewalk in front of Echler Park has a wide planted buffer between the sidewalk and the curb.

• St. Mary’s has additional pedestrian pathways through its development.

First Five Actions to Take

1) Build, at least, 10 ft. sidewalks along the south side of SW Farmington Rd., east of SW Murray Blvd, where there are none, and widen the existing sidewalk corridors all along SW Farmington Rd, east and west of SW Murray Blvd., so there is a landscaped buffer between pedestrians and the motor vehicles. The minimum sidewalk corridor width for a busy road like this should be 10 ft, including a landscaped buffer, but wider is better, preferably 14 ft.

2) Provide a shelter at the Stop ID 1660. It has over fifty average boardings (ons) each weekday.

3) Provide additional, frequent, protected pedestrian crossings along SW Tualatin-Valley Hwy.; add sidewalks (minimum 10 ft. with a planted buffer) along the south side of the roadway where there are none, both east and west of where it intersects SW Murray Blvd, parallel to the freight railroad tracks. Work with Portland and Western Railroad to accomplish this. Currently, there are only two protected crossings within one mile. At a minimum, protected pedestrian crossings should be provided at least every 530 ft. Consider treatments like full signalization of intersections, medians with pedestrian refuges, and pedestrian warning signs, like Rectangular Rapid-Flashing Beacons (RRFBs) to assist people.
with crossing the street.

4) Provide additional, frequent, protected pedestrian crossings along SW Farmington Rd. At a minimum, protected pedestrian crossings should be provided at least every 530 ft. Consider treatments like medians with pedestrian refuges, and pedestrian warning signs, like Rectangular Rapid-Flashing Beacons (RRFBs) to assist people with crossing the street.

5) Shorten crossing distances, make crosswalks more visible, and provide more time for pedestrians to cross at the intersections of SW Farmington Rd. & SW Murray Blvd. & SW Tualatin-Valley Hwy. & SW Murray Blvd. All signals should, at a minimum, be timed so people have one second to walk 3.5 ft. Given the intersections’ proximity to senior centers and schools, a more appropriate time would be one second for every 2.5 ft. to allow children and senior citizens, who tend to walk more slowly, to cross comfortably under the protection of the walk phase. Consider other signal treatments like leading pedestrian phases, automatic recall for pedestrian actuated signals, and right turn on red restriction. Curb radius reduction and crossing island treatments should also be considered to shorten crossing distances.
Existing Plans and Facility Responsibilities

Facility Ownership / Maintenance:

**SW Murray Blvd.:** Roadway owned and maintained by Washington County. Signals owned and operated by Washington County. The signal at the intersection of SW Tualatin-Valley Hwy. & SW Murray Blvd. is owned/operated Oregon Department of Transportation. Transit stop amenities owned/maintained by TriMet.

**SW Farmington Rd.:** Roadway owned and maintained by City of Beaverton, east of SW Murray Blvd. and by Washington County, west of SW Murray Blvd. Signals owned and operated by Washington County. Transit stop amenities owned by TriMet.

**SW Tualatin-Valley Hwy.:** Roadway owned and maintained by Oregon Department of Transportation. Signals owned and operated by Oregon Department of Transportation. Transit stop amenities owned by TriMet.

Existing Plans:

- The Beaverton Transportation System Plan was adopted by Beaverton City Council in September 2010. It shows anticipated transportation projects through the forecast year of 2035. Projects listed as a high priority for the City of Beaverton, within the focus area, include:
  - **SW Farmington Road (SW Murray Blvd. to SW Hocken Ave.)** Widen to 5 lanes, add turn lanes at intersections, signalize where warranted, add bicycle lanes and sidewalks where there are currently gaps. Project designed. ($6.8 million – unfunded – roughly $800,000 local match available). Under consideration for Washington County MSTIP award.
  - **SW Tualatin-Valley Hwy. (117th Ave. to Hillsboro)** Implement access management strategies ($21.9M)
  - **Intersection of SW Murray Blvd. and SW Farmington Rd.** Double left turn lanes on all approaches, Southbound, Eastbound, and Westbound right turn lanes ($3.78M)

- Aloha Reedville and Tualatin-Valley Hwy. Corridor studies are both currently underway. Portions of these studies include the section of SW Tualatin-Valley Hwy. located in the focus area. The $510,000 Tualatin-Valley Corridor Plan is being led by the City of Hillsboro and will be complete by summer 2012. $245,700 of project was funded through a state Transportation Growth Management award. The $3.1 M Aloha Reedville study is being led by Washington County and will be complete by the end of 2013. $1.5M of the project is funded by a federal Partnership for Sustainable Communities, U.S. Department of
Transportation TIGER II Planning Grant. More information can be found at [http://www.tvhighway.org/](http://www.tvhighway.org/) and [http://www.co.washington.or.us/alohareedville](http://www.co.washington.or.us/alohareedville)

- The Downtown Beaverton Civic Plan was adopted by Beaverton City Council in April 2011. While the Central City does not fall directly within this focus area, it is very nearby. In 2011, The City of Beaverton was awarded a $1M U.S. Department of Housing and Urban Development Community Challenge Grant. The City will use the grant to implement strategies identified in the Civic Plan. More information can be found at [http://www.beavertoncivicplan.com/](http://www.beavertoncivicplan.com/)
Focus Area 2 – Clackamas Town Center Transit Center

The Clackamas Town Center Transit Center is located in Clackamas County. It is situated approximately four miles from the City of Milwaukie’s downtown, 6.5 miles from the City of Oregon City’s downtown, and eight miles from Gateway Regional Center. Light rail and bus connections converge at the Transit Center, and a variety of retail outlets are located directly adjacent to it, in the Clackamas Town Center Mall. The focus area’s abundance of shopping and employment opportunities, located directly adjacent to TriMet’s transit service, makes it a prime location for infrastructure investments that will improve a person’s ability to walk to transit stops and local destinations safely, directly, and comfortably.

Places to access locally by foot

If a person walks within this focus area, these are examples of the places he or she could walk to or from:

- Retail (e.g. Clackamas Town Center Mall, Clackamas Promenade Shopping Center)
- Housing (Senior, Multi-Family, Single-Family)
- Kaiser Permanente Sunnyside Medical Center (hospital)
- Oregon Institute of Technology
- Clackamas Community College Harmony Campus
- Schools (La Salle Catholic High School, Christ the King Catholic High School, Clackamas Middle College)
- Clackamas County Aquatic Center
- Clackamas County Library
- I-205 Trail and Harmony Rd. Neighborhood Park

Places to access regionally by transit

If a person boards a TriMet bus or train in this focus area, these are examples of the places he or she could travel to without making a transfer:

**Milwaukie:** Downtown Milwaukie  
**Oregon City:** Clackamas Community College, Clackamas County Government and Social Services  
**Portland:** East Portland, Gateway Town Center, retail and services along 82nd Ave, downtown  

**Transit centers and MAX stations:** Gateway/NE 99th Ave. Transit Center, Hollywood/NE 42nd Ave. Transit Center, Rose Quarter Transit Center, Oregon City Transit Center, new Milwaukie Light Rail line station, all stations along the Green Line MAX.  

**2040 growth concept centers:** Central City, Clackamas Regional Center, Oregon City Regional Center, Gateway Regional Center, Milwaukie Town Center, Hollywood Town Center
Figure 10: Clackamas Town Center Transit Center - Land Use and Transportation

1. Goodwill store next to Line 72 Frequent Service bus stop at SE 82nd Ave & Causiey St.
2. Entrance to Kaiser Sunnyside Hospital
3. Shoppers walk across the parking lots around Clackamas Town Center Mall to reach the transit center
4. Clackamas TC
5. Target store anchors the shopping center across Sunnyside Rd from Clackamas Town Center
6. Entrance to Kaiser Sunnyside Hospital

C. Maher - 15 May 2011 - Focal_area_land_use.mxd

TriMet stops
Weekly ons & offs
- Under 250
- 250 - 2,500
- Over 2,500

TriMet bus lines
Existing multi-use path
Proposed multi-use path
Multi-family housing
Senior housing
Pre-to-middle school
High school
Library
Health clinic
Grocery store
Parks and open space
Roadways and Sidewalks

There are two high speed, high volume roads running through the focus area. They connect the area to adjacent cities, a major US highway and one light rail line. Only SE 82nd Ave. has transit service on it.

**North-South**

- SE 82nd Ave.

**East-West**

- SE Sunnyside Rd.

While these arterial roads provide motor vehicle and transit service access to a variety of regional and local destinations, in their current state, they also act as barriers to pedestrian and bicyclists.

Figure 12 shows the roadway and sidewalk attributes for the segments of SE 82nd Ave and SE Sunnyside Rd. located within the focus area. Key conclusions, based on field visits and information in Figure 11 are outlined below.

**Key Conclusions**

- SE 82nd Ave. and SE Sunnyside Rd. are both wide and fast roadways, however SE 82nd Ave. is the fastest road in the focus areas, with posted speeds of 45mph and a design speed of 55mph. Roadway width on SE Sunnyside Rd. can get as wide as 105 ft.

- SE Sunnyside Rd. has almost continuous sidewalk coverage on both sides of the street, except near the intersection with SE 82nd Ave. SE 82nd Ave. does not have continuous sidewalk coverage on both sides of the street. There are gaps on the west side.

- Portions of SE Sunnyside Rd. and SE 82nd Ave. have planted buffers between the sidewalk and the roadway. Particularly on SE 82nd Ave., the buffer is inconsistent, with very little of the west side of the street designed with a landscaped buffer.

- The sidewalk on SE Sunnyside Rd., over I-205, is very narrow.

- SE Sunnyside Rd. has planted medians along parts of the roadway and few driveways for pedestrians to contend with; however the driveways that do exist are very large. SE 82nd Ave. has many driveways and no planted median.
### Figure 11: Clackamas Town Center Transit Center - Roadways and Sidewalks

<table>
<thead>
<tr>
<th>Roadway &amp; Sidewalk Attributes</th>
<th>SE 82nd Ave.</th>
<th>SE Sunnyside Rd.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Design speed</strong></td>
<td>55 mph</td>
<td>40 mph (82nd to 101st)</td>
</tr>
<tr>
<td><strong>Posted speed limit</strong></td>
<td>45 mph</td>
<td>45 mph (101st to Valley View Terrace)</td>
</tr>
<tr>
<td><strong>Midblock 85th percentile traffic speed</strong></td>
<td>Not available</td>
<td>35 mph (82nd to 101st)</td>
</tr>
<tr>
<td><strong>Presence of sidewalk throughout</strong></td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Width of sidewalk</strong></td>
<td>5 to 8 ft.</td>
<td>5 to 12 ft.</td>
</tr>
<tr>
<td><strong>Width of landscaped buffer between walkway &amp; motorized</strong></td>
<td>0 to 8 ft.</td>
<td>0 to 8 ft.</td>
</tr>
<tr>
<td><strong># of driveways within one mile</strong></td>
<td>East side = 15</td>
<td>North side = 2</td>
</tr>
<tr>
<td><strong>Development oriented toward sidewalk</strong></td>
<td>Very Little</td>
<td>Very Little</td>
</tr>
<tr>
<td><strong>Width of paved shoulder, bicycle lane, and/or parking</strong></td>
<td>5 ft. (bicycle lane)</td>
<td>5 ft. (bicycle lane)</td>
</tr>
<tr>
<td><strong>On-street parking</strong></td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Presence of streetlights throughout</strong></td>
<td>Yes (cobra)</td>
<td>Yes (cobra)</td>
</tr>
<tr>
<td><strong># of travel lanes</strong></td>
<td>4 Majority Extent</td>
<td>4 to 6</td>
</tr>
<tr>
<td><strong>Width of two-way center lane</strong></td>
<td>(13 to 15 ft. 2-way left turn lanes, with several exclusive left turn lanes)</td>
<td>(no two way left turn lanes. All exclusive 11 to 12 ft left turn lanes)</td>
</tr>
<tr>
<td><strong>Width of outside travel lane</strong></td>
<td>Sunnybrook to Sunnyside (11 to 16 ft)</td>
<td>11 to 12 ft.</td>
</tr>
<tr>
<td><strong>Width of inner travel lanes</strong></td>
<td>Sunnyside to Clackamas Town Center (12 to 24 ft)</td>
<td>11 to 12 ft.</td>
</tr>
<tr>
<td><strong>Width of median (must be &gt;6ft and separate two directions of traffic to be considered median). Is it traffic separating, concrete, raised, planted?</strong></td>
<td>11 to 12 ft.</td>
<td>12 to 20 ft. planted partial extent</td>
</tr>
<tr>
<td><strong>Total width of roadway—curb to curb</strong></td>
<td>Sunnybrook to Sunnyside (11 to 16 ft)</td>
<td>Sunny to Clackamas Town Center (12 to 24 ft)</td>
</tr>
<tr>
<td><strong>Annual average daily traffic (AADT)</strong></td>
<td>80 ft.</td>
<td>70 to 105 ft.</td>
</tr>
<tr>
<td></td>
<td>30,700 (in 2010)</td>
<td>21,400 to 34,700 (in 2008)</td>
</tr>
</tbody>
</table>
Crossings and Connectivity

Based on field observation and transit passenger count data three signalized intersections were selected for review. Each appeared to have a relatively high degree of motor vehicle movement, transit stop activity, and pedestrian movement compared to other intersections in the focus area. The three intersections were selected for exemplary purposes. Other intersections in the focus area could also benefit from this type of evaluation and review.

- SE 82nd Ave. & SE Causey Ave.
- SE 82nd Ave. & SE Sunnyside Rd.
- SE Sunnyside Rd. & I-205 Off-Ramp

Information was collected on crossing opportunities for two roadway segments on 82nd Ave. and SE Sunnyside Rd. Figures 12 and 13 present this information.

Figure 17 displays the overall road network connectivity in the Clackamas Town Center focus area, using a Route Directness Index (RDI). A RDI score takes the straight line distance from the center of one parcel to the center of all other parcels, within a certain distance, and divides it against the distance it would take to get to the parcel using the actual road network. An RDI score of 1 is the most direct. It means the actual road network distance is the exact same as the straight line distance. Figure 17 shows the connectivity of each parcel to all other parcels within a quarter mile.

Key Conclusions

- SE 82nd Ave. and SE Sunnyside Rd. have nearly the same number of crossing opportunities, 8 and 12 respectively in the focus area. All intersections in the focus area on SE Sunnyside Rd. are signalized. Both roadways require pedestrians to walk a relatively long distance to get to the next intersection. This is also reflected in the parcel level connectivity maps, where the connectivity is ok, but not great in these areas.

- The parcels east of I-205 are larger and much less connected to one another than west of I-205. This is partially due to the circuitous nature of the roadways and number of dead end streets.

- Of the three intersections assessed, the intersection of SE 82nd Ave. and SE Sunnyside Rd. had the longest crossings, with both legs of the crossing over 82nd Ave. greater than 100 ft.

- Pedestrians are expected to cross the assessed intersections at these rates:
  - SE 82nd Ave. & SE Sunnyside Rd. = 4.5 to 3.8 ft./second
  - SE 82nd Ave. & SE Causey Ave. = 3.5 to 3.3 ft./second
  - SE Sunnyside Rd. & I-205 Ramp = 3.4 ft./second
Pedestrian Network Analysis

Figure 12: Clackamas Town Center Transit Center – Crossings

<table>
<thead>
<tr>
<th>Pedestrian &amp; Bicycle Crashes</th>
<th>Locations of known pedestrian or bike crashes that resulted in a fatality or serious injury between 2007-2009</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• SE Fuller Rd. &amp; SE Harmony Rd. (pedestrian)</td>
</tr>
<tr>
<td></td>
<td>• SE 85th Ave. &amp; SE Causey Ave. (pedestrian)</td>
</tr>
<tr>
<td></td>
<td>• SE 97th Ave. &amp; SE Sunnyside Ave. (pedestrian)</td>
</tr>
<tr>
<td></td>
<td>• SE 82nd Ave. &amp; SE Otty Rd. (pedestrian – Jan. 2011)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Roadway Crossing Attributes</th>
<th>SE 82nd Ave.</th>
<th>SE Sunnyside Rd.</th>
</tr>
</thead>
<tbody>
<tr>
<td># of unmarked crossings in focus area along selected streets</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td># of marked crossings in focus area along selected streets</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td># of signalized crossings in focus area along selected streets</td>
<td>5</td>
<td>12</td>
</tr>
</tbody>
</table>

Figure 13: Clackamas Town Center Transit Center – Intersections

<table>
<thead>
<tr>
<th>Intersection Attributes</th>
<th>SE 82nd Ave. &amp; SE Causey Ave.</th>
<th>SE 82nd Ave. &amp; SE Sunnyside Rd.</th>
<th>SE Sunnyside Rd. &amp; I-205 ramp</th>
</tr>
</thead>
<tbody>
<tr>
<td># of lanes being crossed by pedestrians at signalized intersections</td>
<td>82nd (N) – 5 82nd (S) – 5  Causey (E) – 4  Causey (W) – 3</td>
<td>82nd (N) – 5 82nd (S) – 6  Sunnyside (E) – 6  Sunnyside (W) – 6</td>
<td>I-205 ramp (N) – 4  I-205 ramp (S) – 3  Sunnyside (E) – NO  Sunnyside(W) – 7</td>
</tr>
<tr>
<td>Effective turning radius at intersection</td>
<td>NW 27 ft.  NE 28 ft.  SE 26 ft.  SW 28 ft.</td>
<td>NW 38 ft.  NE 36 ft.  SE 52 ft.  SW 43 ft.</td>
<td>NW 140 ft.  SE 28 ft.  SW 122 ft.</td>
</tr>
<tr>
<td>Signal cycle length</td>
<td>2:14</td>
<td>2:07</td>
<td>1:40</td>
</tr>
<tr>
<td>Pedestrian signal actuated</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Pedestrian crossing time</td>
<td>0:26 – 82nd  0:18 - Causey</td>
<td>0:24 – Sunnyside  0:28 – 82nd</td>
<td>0:23 – Sunnyside  0:19 – I-205 (W)</td>
</tr>
<tr>
<td># of right-turn-on red motor vehicles and the number of motorists making a permitted left turn in a 15-minute period (right/left)</td>
<td>24/67 (Weekday 9:00-9:15am)</td>
<td>42/52 (Weekday 8:30-8:45am)</td>
<td>76/229 (Weekday 7:00-7:15am)</td>
</tr>
<tr>
<td>Right turn channelization islands on the crossing</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Pedestrian refuge present</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Transit Stops

There are nine public transit lines providing transportation services to people in the focus area:

- Line 28 - Linwood
- Line 29 - Lake/Webster Rd
- Line 30 - Estacada
- Line 31 – King Rd
- Line 71 – 60th Ave / 122nd Ave
- Line 72 – Killingsworth / 82nd
- Line 79 – Clackamas / Oregon City
- Line 152 - Milwaukie
- MAX Green Route to Portland State University

Figures 14 and 15 provide detailed information on the transit service and stops.

Key Conclusions

- SE 82nd Ave. is the only road with frequent bus service, Line 72, running approximately every 15 minutes. Line 71 also runs on SE 82nd Ave. It operates nearly at the levels of frequent service bus on weekdays, but does not run as frequently on weekends. Green line MAX follows the I-205 corridor and runs frequently.

- The intersections, or cluster of stops, where there are the most TriMet customers getting on or off a bus and walking to or from their destination include the Clackamas Town Center Transit Center stops (46,904/week), Clackamas Town Center Mall Stops (21,168/week), intersection of SE 82nd Ave. & SE Causey Ave. (4,212/week).

- The highest activity transit stop in the focus area on 82nd Ave. is the northbound, line72 & line 31 stop, located at the intersection of SE 82nd Ave. & SE Causey Ave. (Stop ID 7941). On average 2,171 people get on or off a bus at this stop every week.

- The three intersections, or cluster of stops, with the highest requests for a ramp or lift to be deployed on a vehicle are:
  - Clackamas Town Center Mall = 599/month
  - Clackamas Town Center Transit Center = 389/month
  - SE Causey Ave. & SE 82nd Ave. = 76/month
Figure 14: Clackamas Town Center Transit Center - Transit Stops

<table>
<thead>
<tr>
<th>Transit Service and Stop Attributes</th>
<th>Clackamas Town Center &amp; Mall</th>
<th>SE 82nd Ave.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit lines and weekday frequencies along selected streets in focus area.</td>
<td>Rte 28 (bus) - 60 min. Rte 29 (bus) - 60 min. Rte 30 (bus) - 30 min/peak, 60 min/other Rte 31 (bus) - 30 min/peak, 60 min/other Rte 71 (bus) - 20 min. Rte 72 (frequent service bus) - 15 min. Rte 79 (bus) - 30 min. Rte 152 (bus) - 60 min. MAX Green Rte (light rail) - 15 min</td>
<td>Rte 28 (bus) - 60 min. Rte 29 (bus) - 60 min. Rte 30 (bus) - 30 min/peak, 60 min/other Rte 31 (bus) - 30 min/peak, 60 min/other Rte 71 (bus) - 20 min. Rte 72 (frequent service bus) - 15 min. Rte 152 (bus) - 60 min.</td>
</tr>
<tr>
<td># of transit stops in focus area along selected streets.</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td># of transit stops without a paved front door landing pad along selected streets.</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td># of transit stops without sidewalk connections to it in all directions along selected streets.</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td># of transit stops without a marked crossing within 150 ft. along selected streets.</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td># of transit stops with avg. weekday boardings &gt; 50 without a shelter along selected streets.</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
### Figure 15: Clackamas Town Center Transit Center - Transit Ridership

<table>
<thead>
<tr>
<th>Stop Location</th>
<th>Stop ID</th>
<th>Direction</th>
<th>Transit Lines</th>
<th>Weekly Ons &amp; Offs</th>
<th>Pedestrian Count Proxy at Intersection</th>
<th>Monthly LIFTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE 82nd Ave</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>82nd &amp; Sunnybrook</td>
<td>10446</td>
<td>S</td>
<td>29,30,79, 152</td>
<td>80</td>
<td></td>
<td>230</td>
</tr>
<tr>
<td>82nd &amp; Sunnybrook</td>
<td>11251</td>
<td>N</td>
<td>29,30,79, 152</td>
<td>150</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>82nd &amp; Harmony</td>
<td>7975</td>
<td>S</td>
<td>29,30,79, 152</td>
<td>321</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>82nd &amp; Sunnyside</td>
<td>8050</td>
<td>S</td>
<td>29,30,79, 152</td>
<td>77</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>82nd &amp; Sunnyside</td>
<td>8049</td>
<td>N</td>
<td>29,30,79, 152</td>
<td>291</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>82nd &amp; McBride</td>
<td>8006</td>
<td>S</td>
<td>29,30,79, 152</td>
<td>170</td>
<td></td>
<td>291</td>
</tr>
<tr>
<td>82nd &amp; McBride</td>
<td>8005</td>
<td>N</td>
<td>29,30,79, 152</td>
<td>121</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>82nd &amp; Causey</td>
<td>7942</td>
<td>S</td>
<td>31,72</td>
<td>1,428</td>
<td></td>
<td>28</td>
</tr>
<tr>
<td>82nd &amp; Causey</td>
<td>7941</td>
<td>N</td>
<td>31,72</td>
<td>2,171</td>
<td></td>
<td>35</td>
</tr>
<tr>
<td>Ross Center &amp; Causey</td>
<td>986</td>
<td>W</td>
<td>28</td>
<td>63</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>82nd &amp; Causey</td>
<td>989</td>
<td>W</td>
<td>71</td>
<td>256</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>8300 Block Causey</td>
<td>8448</td>
<td>E</td>
<td>71</td>
<td>239</td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Clackamas Town Center Mall and Transit Center</th>
<th>Stop ID</th>
<th>Direction</th>
<th>Transit Lines</th>
<th>Weekly Ons &amp; Offs</th>
<th>Pedestrian Count Proxy at Intersection</th>
<th>Monthly LIFTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clackamas Town Center Mall</td>
<td>12921</td>
<td>E</td>
<td>28,29,30, 31,71,72, 79,152, 155,156</td>
<td>8,075</td>
<td></td>
<td>21,168</td>
</tr>
<tr>
<td>Clackamas Town Center Mall</td>
<td>12922</td>
<td>W</td>
<td>28,29,30, 31,71,72, 79,152, 155,156</td>
<td>13,093</td>
<td></td>
<td>345</td>
</tr>
<tr>
<td>Clackamas Town Center Transit Center</td>
<td>13248</td>
<td>S</td>
<td>28,29, 31,71,72, 79,152, 155,156</td>
<td>18,475</td>
<td></td>
<td>46,904</td>
</tr>
<tr>
<td>Clackamas Town Center Transit Center</td>
<td>13132</td>
<td>N</td>
<td>Green Line MAX</td>
<td>28,429</td>
<td></td>
<td>No Info</td>
</tr>
</tbody>
</table>
Figure 16: Stop ID 13248 (Clackamas Town Center Transit Center) - Customer Survey

Survey administered on September 12, 2011 (7:30-10:30am) and September 15, 2011 (12-6pm). n=81

Primary mode of access (multiple answers possible, so percentages may not total 100 percent): 70% - transferred, 11% - walked, 7% - drove and parked, 1% - dropped off, 0% - bicycled, 12% - other.

Figure 16 displays customers’ general opinions regarding various elements of the walking environment in the immediate vicinity of the transit stop. Specific customer comments and concerns are listed below.

Customer Comments/Concerns

- Improve crosswalks at transit center to Penny’s.
- Improve crosswalks.
- Lighting.
- Caution light at transit center crossing.
- Sidewalks on both sides of transit center access.
- Better signage to Kaiser.
- Sign to transit station.
- Lighting/flash at crosswalks.
- Lighting

Don't know
Fair/Poor
Excellent/Good
• Crosswalk north of transit center
• Longer pedestrian walking signal at intersections.
• Lighting
• Giving preference to walkers.
• Need to improve crosswalks at mall and transit center crossing to Penny's.
• Path through parking lot from Apts to Monterey.
• Ongoing conflict with cars at crosswalks.
• Cleanliness.
• Cut through mall - no sidewalks or paths.
• Poor sidewalks around freeway and especially near 122nd.
• Install security phone & clock.
• Cars don't always stop. Add light (flashing) for improvements and safety.
• Conflicts with cars.
• Need drinking fountain, and add path from MAX to Sunnyside Road.
• Add crossing light at crosswalks by stop.
• Cleanliness and need more benches at stops.
• Cleanliness, sweeping, need more seating.
Figure 17:
Clackamas Town Center
Transit Center -
Connectivity Analysis

Connectivity Score*
- < 40 (Poor)
- 40 - 50
- 50 - 60
- 60 - 70
- > 70 (Good)

TriMet Stops

TriMet Bus Lines

TriMet Rail Lines

MAX Blue Line
MAX Green Line
MAX Red Line
MAX Yellow Line
WES

*The Connectivity Score is based on how well each parcel is connected to other parcels within a quarter-mile radius. This analysis was performed using ViaCity software from the Transpo Group.
Vehicle-pedestrian conflicts
Sidewalk close to traffic
Sidewalk next to traffic
Sidewalk gaps
TriMet stops
Stops >150' from marked crosswalk

Miles

Figure 18: Clackamas Town Center Transit Center - Pedestrian and Transit Needs

1. Busy crosswalk at SE 82nd & Causey

2. To reach Kaiser Sunnyside Hospital from Clackamas TC, people must cross high-speed traffic exiting I-205.

3. Busy crossing of Sunnyside Rd between the hospital and the shopping center.

4. Hurrying to make it across Harmony Rd within the allowed crossing time (24 sec).
Infrastructure Needs

Needs are identified below. Future solutions to address these needs will hopefully make people feel safer, entice them to walk more, and help connect people who are living, working, shopping and/or recreating in the area to retail, parks, trails, schools, public services and jobs.

Places to Connect

- Clackamas Town Center Transit Center to Kaiser Sunnyside Hospital and residential/retail east of I-205.

- Clackamas Town Center Transit Center to retail development south of Sunnyside Rd., for example the Clackamas Promenade Shopping Center.

- Clackamas Town Center Transit Center and Clackamas Town Center Mall stops to the North Clackamas Aquatic Center, Clackamas Community College Harmony campus, and retail/housing west of 82nd Ave.

- Concentrations of multi-family housing and senior residences in the neighborhood north of mall to the Clackamas Town Center Transit Center.

- Residential neighborhoods to the North Clackamas District Park and I-205 multi-use path.

Observed Behavior

- Many people cutting through expansive surface parking lots, near the Clackamas Town Center Mall, to reach the transit center. Common routes taken by pedestrians include cutting through the frequently unused parking lot between the transit center and Sunnyside Rd. and walking between points along SE Monterey Ave. to the transit center. Pedestrians were observed making their way through landscaped buffers and down steep slopes.

- People having to walk out of direction and wait through long signal cycles to cross intersections on SE Sunnyside Rd., where pedestrian crossings are not allowed in all four directions. For example, at the intersections of SE Sunnyside Rd. & 93rd Ave. and the entrance to the Clackamas Town Center mall on SE Sunnyside Rd.

- People having to wait a long time before being able to get a walk signal, crossing very long distances, and being on the watch for motor vehicles making permitted right turns on red at SE 82nd Ave. & SE Sunnyside Rd.
- People walking along the west side of SE 82nd Ave. on uneven and sometimes unpaved sections of parking lot, where there are no sidewalks. For example, between SE Causey Ave. & SE Monterey Ave. in front of Clackamas Cycle World.

- Numerous motor vehicles turning into wide driveways located along SE 82nd Ave.

**Bright Spots**

- The intersection of SE 82\textsuperscript{nd} Ave. & SE Causey Ave. is a manageable size for pedestrians and has pedestrian specific intersection treatments.

- The residential neighborhood north of mall has good sidewalk coverage, narrow streets, and on-street parking.

- SE Monterey Ave. has a landscaped buffer between the sidewalk and roadway, pedestrian scale street lighting, and street furniture.

- SE Sunnyside Rd. has good auto access management in place, limiting conflicts between pedestrians and turning motor vehicles.

- I-205 Path along SE Sunnyside Rd. is a wide, buffered path that provides a direct connection with the Clackamas Town Center Transit Center and other MAX Green Line stations.

**First Five Actions to Take**

1. Create additional, safe, desirable, pathways from SE Monterey Rd. & SE Sunnyside Rd., through mall parking lot to the transit center. Consider ways to temporarily activate normally unused portions of surface parking lots near the transit center. For example, set up a farmer’s market in the space or program it with events to make the space feel more inviting and less auto-dominated. Add wayfinding, including signage that direct people from the MAX station to SE Sunnyside Rd., via the I-205 multi-use path.

2. Re-open closed crosswalks at signals, with the exception of the I-205 ramps. Design intersections, with treatments that shorten the crossing distance, like pedestrian refuges, and provide ample time for slower pedestrians to cross the street.

3. Shorten crossing distances, make crosswalks more visible, and provide more time for pedestrians to cross at the intersection of SE 82nd Ave. & SE Sunnyside Rd. All signals should, at a minimum, be timed so people have one second to make it 3.5 ft. Given the intersections’ proximity to the aquatic center and major retail centers, a more appropriate time would be one second for every 2.5 ft, to allow for children and seniors, who tend to walk more slowly, to cross comfortably under the protection of the walk phase. Consider other signal timing treatments like leading pedestrian phases, automatic recall for
pedestrian actuated signals, and right turn on red restrictions. Curb radius reduction and crossing island treatments should also be considered to shorten crossing distances.

4. Build, at least 10 ft. wide sidewalks along SE 82nd Ave. where there are none, and widen the existing sidewalk corridors, where it is less than 10 ft, so there is a landscaped buffer between pedestrians and the motor vehicles. The minimum sidewalk corridor width for a busy road like this should be 10 ft., including a landscaped buffer, but wider is better, preferably 14 ft.

5. Consolidate and redesign driveways turning along SE 82nd Ave., reducing width and turning radii of driveways to make turning movements slower and reduce conflict points with pedestrians. Also consider adding a planted median to the roadway to reduce the number of turning movements into driveways and to create a sense of enclosure.

**Existing Plans and Facility Responsibilities**

**Facility Ownership / Maintenance:**

SE 82nd Ave.: Roadway owned and maintained by Oregon Department of Transportation (ODOT); signals owned and operated by ODOT; transit stop amenities owned and maintained by TriMet.

SE Sunnyside Rd.: Roadway owned and maintained by Clackamas County; signals owned and operated by Clackamas County; signal at SE 82nd Ave. & SE Sunnyside Rd. owned and operated by ODOT. Transit stop amenities owned and maintained by TriMet.

**Existing Plans:**

- The Clackamas County Transportation System Plan is currently being updated. It will show anticipated transportation projects through the forecast year of 2035 (ongoing – complete 2013) [http://www.clackamascountytsp.com/](http://www.clackamascountytsp.com/)
- Clackamas Regional Center Pedestrian Bicycle Connection Project (ongoing – complete in July 2012) [http://www.clackamas.us/transportation/bikes/connect.htm](http://www.clackamas.us/transportation/bikes/connect.htm)
- Harmony Community Campus Conceptual Master Plan (2009) [http://www2.clackamas.edu/harmonyvision/dd/HCC_conceptual_master_plan.pdf](http://www2.clackamas.edu/harmonyvision/dd/HCC_conceptual_master_plan.pdf)
- Clackamas Town Center Area Development Plan (2005) [http://clackamas.us/transportation/renewal/ctc.htm](http://clackamas.us/transportation/renewal/ctc.htm)
Focus Area 3 – SE Division St. & SE 182nd Ave.

The SE Division St. and SE 182nd Ave. focus area is located in the City of Gresham. It is situated approximately two miles from the City of Gresham’s downtown and one mile from the City’s Rockwood Neighborhood. Within the focus area a variety of retail and service outlets are located along SE Division St. & SE 182nd Ave. Its concentration of destinations and close proximity to Gresham’s Downtown and the Rockwood Neighborhood, a center of attention for reinvestment in Gresham, makes this focus area a prime location for infrastructure investments that will improve a person’s ability to walk to transit stops and local destinations safely, directly, and comfortably.

Places to access locally by foot

If a person walks within this focus area, these are examples of the places he or she could walk to or from:

- Retail (e.g. Dollar Tree, Grocery Outlet, Volunteer of America Resale Outlet, Save-A-Lot, Dairy Queen, Dutch Bros. Coffee)
- Housing (Senior, Multi-Family, Single-Family)
- Multnomah County Rockwood Community Health Center Primary Care Clinic
- Places of Worship (Rockwood Adventist, Ascension Lutheran, Covenant Presbyterian, Church of Jesus Christ of Latter-Day Saints)
- Schools (Centennial High School and Middle School, Lunch Meadows Elementary School)
- Cascade Athletic Club and Vance Park
- United States Social Security Administration Office

Places to access regionally by transit

If a person boards a TriMet bus or train in this focus area, these are examples of the places he or she could travel to or from without making a transfer:

**Gresham:** Downtown Gresham, Mount Hood Community College  
**East Portland:** Shopping and Service along Division St. (e.g. Walmart)  
**Portland:** Downtown and Portland State University, Portland Community College (PCC) southeast campus, airport way employment area, cascade station  
**North Portland:** Portland Community College, Shopping and Service along Williams, Mississippi and St. Johns.  
**Rose Quarter:** Rose Garden Arena and Convention Center  
**Troutdale:** Downtown Troutdale

**Transit centers and MAX stations:** Gresham Central Transit Center, 181st MAX Station

**2040 growth concept centers:** Central City, Gresham Regional Center, Rockwood Town Center
Figure 19: SE Division St. & SE 182nd Ave. - Land Use and Transportation

Many lots along Division East of 182nd are undeveloped.

Sign pointing to the places of worship along 182nd Ave. SE 182nd Ave is served by Line 82.

Sav-a-lot grocery store at 174th Ave.

Corner of SE Division and 182nd - two gas stations and a strip mall are located at the intersection.

Bus stop for Frequent Service Line 4 next to a Dairy Queen at SE 174th and Division.

Centennial Middle School. Nearby are Centennial High School and the Seventh Day Adventist Academy.

TriMet stops
Weekly on & offs
- TriMet bus lines
- Existing multi-use path
- Proposed multi-use path

Under 250
250 - 2,500
Over 2,500

Multi-family housing
Senior housing
Pre-to-middle school
High school
Library
Health clinic
Grocery store
Parks and open space

0 0.25 0.5 Miles
Roadways and Sidewalks

There are two high speed, high volume roads running through the focus area. They connect the area to adjacent cities, a major US highway and two light rail lines. Both have transit service on them.

North-South

- SE 182nd Ave.

East-West

- SE Division St.

While these arterial roads provide motor vehicle and transit service access to a variety of regional and local destinations, in their current state, they also act as barriers to pedestrian and bicyclists, who are moving around the area and accessing destinations.

Figure 20 shows the roadway and sidewalk attributes for the segments of Division St. and 182nd Ave. located within the focus area. Key conclusions, based on field visits and information in Figure 20 are outlined below.

Key Conclusions

- SE Division St. is the fastest road in the focus area, with posted speeds of 40 mph and recorded 85th percentile speeds of 41 mph. Both SE 182nd Ave. and SE Division St. are approximately the same width.

- SE 182nd Ave. has continuous sidewalks on both sides of the street. SE Division St. has many missing sidewalk segments east of SE 182nd Ave., both on the south and north side of the street.

- Generally there is not a landscaped buffer between pedestrians and the roadway on SE 182nd Ave. or SE Division St. A few exceptions exist on SE Division St., where redevelopment has occurred.

- Development along SE 182nd Ave. and SE Division St. is generally set back slightly from the street.

- There are many driveways from single family homes located along both sides of SE Division St. and the west side of SE 182nd Ave.
Figure 20: SE Division St. & SE 182nd Ave - Roadways and Sidewalks

<table>
<thead>
<tr>
<th>Roadway &amp; Sidewalk Attributes</th>
<th>SE 182nd Ave.</th>
<th>SE Division St.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design speed</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>Posted speed limit</td>
<td>35 mph</td>
<td>40 mph</td>
</tr>
<tr>
<td>Midblock 85th percentile traffic speed</td>
<td>Not Available</td>
<td>41 mph</td>
</tr>
<tr>
<td>Presence of sidewalk throughout</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Width of sidewalk</td>
<td>4 to 8 ft.</td>
<td>0 to 6 ft.</td>
</tr>
<tr>
<td>Width of landscaped buffer between walkway &amp; motorized vehicle traffic (planter, trees, etc.)</td>
<td>0 ft.</td>
<td>0 ft. – 6 ft</td>
</tr>
<tr>
<td># of driveways within one mile (does not account for size of driveway)</td>
<td>East side = 18</td>
<td>North side = 36</td>
</tr>
<tr>
<td></td>
<td>West side = 40</td>
<td>South side = 39</td>
</tr>
<tr>
<td>Development oriented toward sidewalk</td>
<td>Some</td>
<td>Very Little</td>
</tr>
<tr>
<td>Width of paved shoulder, bicycle lane, and/or parking lane</td>
<td>7 ft. parking lane</td>
<td>10 ft. (parking or buffered bicycle lane)</td>
</tr>
<tr>
<td></td>
<td>5 ft. bicycle lane</td>
<td></td>
</tr>
<tr>
<td>On-street parking</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Presence of streetlights throughout</td>
<td>Yes (cobra)</td>
<td>Yes (cobra)</td>
</tr>
<tr>
<td># of travel lanes</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Width of two-way center lane</td>
<td>12 ft.</td>
<td>12 ft.</td>
</tr>
<tr>
<td>Width of outside travel lane</td>
<td>10.5 to 11 ft.</td>
<td>11 ft. to 12 ft.</td>
</tr>
<tr>
<td>Width of inner travel lanes</td>
<td>10 to 10.5 ft.</td>
<td>11 ft. to 11.5 ft.</td>
</tr>
<tr>
<td>Presence/width of median (must be &gt; 6ft and separate two directions of traffic to be considered median). Is it traffic separating, concrete, raised, planted?</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Total width of roadway—curb to curb</td>
<td>75 ft.</td>
<td>76 ft.</td>
</tr>
<tr>
<td>Annual average daily traffic (AADT)</td>
<td>22,500 (in 2010)</td>
<td>29,300 (in 2010)</td>
</tr>
</tbody>
</table>
Crossings and Connectivity

Three signalized intersections were selected for review, based on field observation and transit passenger count data. Each appeared to have a relatively high degree of motor vehicle movement, transit stop activity, and pedestrian movement compared to other intersections in the focus area. The three intersections were selected for exemplary purposes. Other intersections in the focus area could also benefit from this type of evaluation and review.

- SE Division St. & SE 174th Ave.
- SE Division St. & SE 182nd Ave.
- SE Division St. & SE 190th Ave.

Information was collected on crossing opportunities for two roadway segments on SE Division St. and SE 182nd Ave. Figures 21 and 22 present this information.

Figure 26 displays the overall road network connectivity in the SE Division St. and SE 182nd Ave. focus area, using a Route Directness Index (RDI). A RDI score takes the straight line distance from the center of one parcel to the center of all other parcels, within a certain distance, and divides it against the distance it would take to get to the parcel using the actual road network. An RDI score of 1 is the most direct. It means the actual road network distance is the exact same as the straight line distance. Figure 26 shows the connectivity of each parcel to all other parcels within a quarter mile. Key conclusions are outlined below.

Key Conclusions

- SE 182nd Ave. and SE Division St. have 14 intersections, or legal crossing opportunities, in the focus area. Most are unmarked crossings. Only 2 are marked on SE 182nd Ave. Four are marked on SE Division St., with three of them being full signals and one being a rapid, rectangular, flashing beacon.

- The connectivity between parcels along SE Division St. and SE 182nd Ave, south of SE Division St. is moderate. The area north of SE Division St. and east of SE 190th has poor connectivity. This is largely due to how large the parcels are in this area.

- Crossing distances in the focus area are moderate. The longest crossing is 95 ft. over SE Division St. at the intersection of SE 182nd Ave.

- Pedestrians are expected to cross the assessed intersections at these rates:
  - SE 174th Ave. & SE Division St. = 1.5 to 3.7 ft./second
  - SE 182nd Ave. & SE Division St. = 3.5 to 3.7 ft./second
  - SE 190th Ave. & SE Division St. = 1.6 to 2.9 ft./second
Figure 21: SE Division St. & SE 182nd Ave. – Crossings

<table>
<thead>
<tr>
<th>Pedestrian &amp; Bicycle Crashes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Locations of known pedestrian or bike crashes that resulted in a fatality or serious injury between 2007-2009</td>
<td>• SE Division St. &amp; SE 176th Ave. (pedestrian)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Roadway Crossing Attributes</th>
<th>SE 182nd Ave.</th>
<th>SE Division St.</th>
</tr>
</thead>
<tbody>
<tr>
<td># of unmarked crossings in focus area along selected streets</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td># of marked crossings in focus area along selected streets</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td># of signalized crossings in focus area along selected streets</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Figure 22: SE Division St. & SE 182nd Ave. – Intersections

<table>
<thead>
<tr>
<th>Intersection Attributes</th>
<th>SE 174th Ave. &amp; SE Division St.</th>
<th>SE 182nd Ave. &amp; SE Division St.</th>
<th>SE 190th Ave. &amp; SE Division St.</th>
</tr>
</thead>
<tbody>
<tr>
<td># of lanes being crossed by pedestrians at signalized intersections</td>
<td>174th (N) – 3 174th (S) – 3 Division (E) – 6 Division (W) – 6</td>
<td>182nd (N) – 6 182nd (S) – 6 Division (E) – 6 Division (W) – 6</td>
<td>190th (N) – 2 190th (S) – 2 Division (E) – 5 Division (W) – 5</td>
</tr>
<tr>
<td>Effective turning radius at intersection</td>
<td>NW 37 ft. NE 37 ft. SE 33 ft. SW 33 ft.</td>
<td>NW 18 ft. NE 22 ft. SE 32 ft. SW 21 ft.</td>
<td>NW 18 ft. NE 25 ft. SE 29 ft. SW 18 ft.</td>
</tr>
<tr>
<td>Total crossing distance</td>
<td>174th (N) – 65 ft. 174th (S) – 60 ft. Division (E) – 90 ft. Division (W) – 95 ft.</td>
<td>182nd (N) – 75 ft. 182nd (S) – 85 ft. Division (E) – 80 ft. Division (W) – 75 ft.</td>
<td>190th (N) – 50 ft. 190th (S) – 30 ft. Division (E) – 75 ft. Division (W) – 75 ft.</td>
</tr>
<tr>
<td>Signal cycle length</td>
<td>1:30</td>
<td>1:25</td>
<td>1:04</td>
</tr>
<tr>
<td>Pedestrian signal actuated</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Pedestrian crossing time</td>
<td>0:39 - 174th 0:26 - Division</td>
<td>0:23 - 182nd 0:23 - Division</td>
<td>0:19 - 190th 0:26 - Division</td>
</tr>
<tr>
<td># of right-turn-on red motor vehicles and the number of motorists making a permitted left turn in a 15-minute period (right/left)</td>
<td>28 / 51 (Weekday 8:30-9:30am)</td>
<td>60 / 110 (Weekday 8:30-9:30 am)</td>
<td>2 / 0 (Weekday 8:30-9:30am)</td>
</tr>
<tr>
<td>Right turn channelization islands on the crossing</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Pedestrian refuge present</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Transit Stops

There are two public transit lines providing transportation services to people in the focus area:

- Line 4 – Division / Fessenden
- Line 82 – Eastman / 182nd

Figures 23 and 24 provide detailed information on the transit service and stops. Key conclusions are provided below.

**Key Conclusions**

- SE Division St. is the only road with frequent bus service, Line 4, running approximately every 15 minutes. SE 182nd Ave. has bus service, Line 82, however it only runs every 60 minutes.

- The intersections where there are the most TriMet customers getting on or off a bus and walking to or from their destination are SE Division St. & SE 182nd Ave. (2,136/week) and SE Division St. & SE 174th Ave. (1,769/week).

- The highest activity transit stop in the focus area is the westbound, Line 4 stop located at the intersection of SE Division St. & SE 182nd Ave. (Stop ID 1428). On average, 1,046 people get on or off a bus at this stop every week.

- The intersections with the most TriMet customers requesting that the vehicle ramp or lift be deployed are:
  
  - SE 174th Ave. & SE Division St. = 117/month
  - SE 182nd Ave. & SE Division St. = 55/month
Figure 23: SE Division St. & SE 182nd Ave. – Transit Stops

<table>
<thead>
<tr>
<th>Transit Service and Stop Attributes</th>
<th>SE 182nd Ave.</th>
<th>SE Division St.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit lines and weekday frequencies along selected streets in focus area.</td>
<td>Rte 82 (bus) - 60 min.</td>
<td>Rte 4 (frequent service bus) - 15 min</td>
</tr>
<tr>
<td># of transit stops in focus area along selected streets.</td>
<td>Northbound = 5 SOUTHBOUND = 5</td>
<td>WESTBOUND = 8 EASTBOUND = 8</td>
</tr>
<tr>
<td># of transit stops without a paved front door landing pad along selected streets.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td># of transit stops without sidewalk connections to it in all directions along selected streets.</td>
<td>0</td>
<td>5 Stop IDs: 1312, 9416, 1433, 1434, 1429</td>
</tr>
<tr>
<td># of transit stops without a marked crossing within 150 ft. along selected streets.</td>
<td>9 Stop IDs: 6936, 6940, 6924, 6937, 6933, 6934, 6943, 6935, 1427</td>
<td>13 Stop IDs: 1326, 1423, 6936, 1430, 1427, 9416, 1312, 1334, 1429, 1424, 1425, 1426, 10638</td>
</tr>
<tr>
<td># of transit stops with avg. weekday boardings &gt; 50 without a shelter along selected streets.</td>
<td>0</td>
<td>1 Stop ID: 1423</td>
</tr>
</tbody>
</table>

Figure 24: SE Division St. & SE 182nd Ave. – Transit Ridership

<table>
<thead>
<tr>
<th>Stop Location</th>
<th>Stop ID</th>
<th>Direction</th>
<th>Transit Lines</th>
<th>Weekly Ons &amp; Offs</th>
<th>Pedestrian Count Proxy at Intersection</th>
<th>Monthly LIFTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>182nd &amp; Mill</td>
<td>6940</td>
<td>N</td>
<td>82</td>
<td>8</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>182nd &amp; Stephens</td>
<td>6943</td>
<td>S</td>
<td>82</td>
<td>12</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>182nd 1900 Block</td>
<td>6924</td>
<td>N</td>
<td>82</td>
<td>25</td>
<td>27</td>
<td>2</td>
</tr>
<tr>
<td>182nd &amp; Lincoln</td>
<td>6937</td>
<td>S</td>
<td>82</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>182nd &amp; Clinton</td>
<td>6934</td>
<td>N</td>
<td>82</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>182nd &amp; Brooklyn Ct.</td>
<td>6930</td>
<td>N</td>
<td>82</td>
<td>17</td>
<td>27</td>
<td>1</td>
</tr>
<tr>
<td>182nd &amp; Tibbetts</td>
<td>6944</td>
<td>S</td>
<td>82</td>
<td>10</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>182nd 3400 Block</td>
<td>6931</td>
<td>N</td>
<td>82</td>
<td>38</td>
<td>68</td>
<td>0</td>
</tr>
<tr>
<td>182nd 3500 Block</td>
<td>13199</td>
<td>S</td>
<td>82</td>
<td>30</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
**SE Division St.**

<table>
<thead>
<tr>
<th>Stop Location</th>
<th>Stop ID</th>
<th>Direction</th>
<th>Transit Lines</th>
<th>Weekly Ons &amp; Offs</th>
<th>Pedestrian Count Proxy at Intersection</th>
<th>Monthly LIFTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Division &amp; 174th</td>
<td>1422</td>
<td>E</td>
<td>4</td>
<td>892</td>
<td>1,769</td>
<td>62</td>
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<tr>
<td>Division &amp; 174th</td>
<td>1423</td>
<td>W</td>
<td>4</td>
<td>878</td>
<td>757</td>
<td>55</td>
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<tr>
<td>Division &amp; 176th</td>
<td>1424</td>
<td>E</td>
<td>4</td>
<td>409</td>
<td>480</td>
<td>12</td>
</tr>
<tr>
<td>Division &amp; 176th</td>
<td>1425</td>
<td>W</td>
<td>4</td>
<td>348</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>Division &amp; 179th</td>
<td>1426</td>
<td>E</td>
<td>4</td>
<td>298</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Division &amp; 179th</td>
<td>10638</td>
<td>W</td>
<td>4</td>
<td>181</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Division &amp; 182nd</td>
<td>1427</td>
<td>E</td>
<td>4</td>
<td>972</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Division &amp; 182nd</td>
<td>1428</td>
<td>W</td>
<td>4</td>
<td>1,046</td>
<td>2,136</td>
<td>29</td>
</tr>
<tr>
<td>Division &amp; 182nd</td>
<td>6935</td>
<td>S</td>
<td>82</td>
<td>45</td>
<td></td>
<td>2</td>
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<tr>
<td>Division &amp; 182nd</td>
<td>6936</td>
<td>N</td>
<td>82</td>
<td>73</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Division &amp;185th</td>
<td>1429</td>
<td>E</td>
<td>4</td>
<td>111</td>
<td>285</td>
<td>1</td>
</tr>
<tr>
<td>Division &amp;185th</td>
<td>1430</td>
<td>W</td>
<td>4</td>
<td>174</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Division &amp;190th</td>
<td>1433</td>
<td>E</td>
<td>4</td>
<td>153</td>
<td>293</td>
<td>0</td>
</tr>
<tr>
<td>Division &amp;190th</td>
<td>1434</td>
<td>W</td>
<td>4</td>
<td>141</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Division 3100 Block</td>
<td>1312</td>
<td>E</td>
<td>4</td>
<td>158</td>
<td>300</td>
<td>1</td>
</tr>
<tr>
<td>Division 19200 Block</td>
<td>1326</td>
<td>W</td>
<td>4</td>
<td>141</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Division &amp; Eastwood</td>
<td>1334</td>
<td>W</td>
<td>4</td>
<td>135</td>
<td>135</td>
<td>6</td>
</tr>
<tr>
<td>Division 2700 Block</td>
<td>9416</td>
<td>E</td>
<td>4</td>
<td>146</td>
<td>146</td>
<td>3</td>
</tr>
</tbody>
</table>

**Figure 25: Stop ID 1428 (Division & 182nd) - TriMet Customer Survey**

*Don't know
  - Fair/Poor
  - Excellent/Good*
Survey administered on September 7, 2010 (12-5pm)

n= 21

Primary mode of access (multiple answers possible, so percentages may not total 100 percent): 10%-transferred, 71%-walked, 0%-drove and parked, 10%-dropped off, 10%-bicycled., 5%-other

Figure 25 displays customers’ general opinions regarding various elements of the walking environment in the immediate vicinity of the transit stop. Specific customer comments and concerns are listed below.

**Customer Comments/Concerns**

- 182nd dark – light.
The Connectivity Score is based on how well each parcel is connected to other parcels within a quarter-mile radius. This analysis was performed using ViaCity software from the Transpo Group.

Figure 26: SE Division St. & SE 182nd Ave. Connectivity Analysis

Connectivity Score*
- < 40 (Poor)
- 40 - 50
- 50 - 60
- 60 - 70
- > 70 (Good)

TriMet Stops

TriMet Bus Lines
- MAX Blue Line
- MAX Green Line
- MAX Red Line
- MAX Yellow Line
- MAX Orange Line
- MAX Purple Line
- MAX Pink Line
- WES

*The Connectivity Score is based on how well each parcel is connected to other parcels within a quarter-mile radius. This analysis was performed using ViaCity software from the Transpo Group.
Figure 27: SE Division St. & SE 182nd Ave. - Pedestrian and Transit Needs

1. Crossing 7 lanes of traffic with a stroller on Division St. at 174th
2. Waiting for left turn cycle to cross Division at 182nd
3. Overgrown brush blocks the sidewalk

Some segments of Division lack sidewalks.

Crossing Division St. mid-block to reach the bus stop. There are no crosswalks on Division between 174th and 182nd.
Infrastructure Needs

Needs are identified below. Future solutions to address these needs will hopefully make people feel safer, entice them to walk more, and help connect people who are living, working, shopping and/or recreating in the area to retail, parks, trails, schools, public services and jobs.

Places to Connect

- Concentrations of multi-family housing located along SE Division St. and the senior residences located on SE 182\textsuperscript{nd} Ave. to retail, services, and multiple places of worship located along SE Division St. and SE 182\textsuperscript{nd} Ave. including two grocery stores, Grocery Outlet and Save-A-Lot.

- Multnomah County Rockwood Community Health Center Primary Care Clinic and United States Social Security Administration to transit stops located along SE Division St. and SE 182\textsuperscript{nd} Ave.

- Concentrations of multi-family housing located along SE Division St. and the senior residences located on SE 182\textsuperscript{nd} Ave. to Vance Neighborhood Park and the Gresham-Fairview Trail.

- Concentrations of multi-family housing located along SE Division St. to Centennial Middle School and Lynch Meadows Elementary School.

Observed Behavior

- People walking along the south side of SE Division St., east of SE 190th Ave., on the grass, where there are no sidewalks.

- Students going to Centennial Middle School and senior citizens accessing the bus stop at SE 182nd Ave. & SE Division St., crossing the intersection, where crossings are long, curb cuts are not available on every corner, and pedestrians must be on the watch for motor vehicles making permitted right turns on red. There are 2,136 people getting on or off a bus at this intersection every week. Most of them likely have to walk across this intersection.

- People crossing mid-block at unmarked intersections along SE Division St., particularly in the stretch between SE 174th Ave. and SE 182nd Ave.

- Many people waiting for the bus, without a place to sit, at the westbound, Line 4 Division bus stop located just east of SE 174th Ave.
• People stepping off the sidewalk into the roadway, to find a clear pathway, due to overgrown landscaping on the north side of SE Division St., east of SE 190th Ave.

**Bright Spots**

• Connections to the Gresham-Fairview Trail in the focus area.

• Recently installed rapid rectangular flashing beacon, providing a marked crossing for pedestrians, at the entrance of the Gresham-Fairview Trail.

• Where redevelopment has occurred, there is a landscaped buffer between the sidewalk and the roadway, for example in front of the Dutch Bros. coffee stand, located on SE Division St., near SE 174th Ave.

• Both SE 182nd Ave. and SE Division St. has a lot of unutilized on-street parking that could be repurposed for other things, like installing a landscaped buffer between the sidewalk and the roadway.

• City of Gresham was recently awarded money to fill in sidewalk gaps along SE Division St. and provide a multi-use path just east of the focus area, near NW Birdsdale Ave.

**First Five Actions to Take**

1. Build, at least, 10 ft. wide sidewalks along the south side of SE Division St., where there are none and widen existing sidewalk corridors all along SE Division St., so there is landscaped buffer between pedestrians and the motor vehicles. The minimum sidewalk corridor width for a busy road like this should be 10 ft., including a landscaped buffer, but wider is better, preferably 14 ft.

2. Install ADA accessible curb cuts on all corners, shorten crossing distances, make crosswalks more visible, and provide more time for pedestrians to cross at the intersection of SE Division St. and SE 182nd Ave. All signals should, at a minimum, be timed so people have one second to walk 3.5 ft. Given the intersection’s proximity to a school, a more appropriate time would be one second for every 2.5 ft. to allow for children and senior citizens, who tend to walk more slowly, to cross comfortably under the protection of the walk phase. Consider other signal treatments like leading pedestrian phases, automatic recall for pedestrian actuated signals, and right turn on red restriction. Curb radius reduction and crossing island treatments should also be considered to shorten crossing distances.

3. Provide additional, frequent, and protected pedestrian crossings along SE Division St. At a minimum, protected crossings should be provided every 530 ft. to allow people to cross the street frequently in a safe manner. Consider treatments like medians with pedestrian
refuges, and pedestrian warning signs, like Rectangular Rapid-Flash Beacons (RRFBs) to assist people with crossing the street. In particular consider a mid-block crossing between the two signalized intersections of 174th Ave. & 182nd Ave., near SE 179th Ave. to provide access to Centennial Middle School.

4. Provide a shelter at the bus stop located at the intersection of SE 174th Ave. & SE Division St., serving the westbound Line 4-Division bus route (ID 1422). The stop has 35 average boardings each weekday and 66 lift or ramp deployments at the stop each month.

5. Enforce landscaping codes along SE Division St., where shrubbery is overgrown, preventing a clear 5 ft. pathway along the sidewalk. Re-grade driveways to make the entire length of the sidewalk corridor ADA accessible and provide curb cuts at intersections along SE Division St. where they are missing.

Existing Plans and Facility Responsibilities

Facility Ownership / Maintenance:

SE 182nd Ave.: Roadway owned and maintained by the City of Gresham, Signals owned and operated by the City of Gresham, Transit stop amenities owned and maintained by TriMet.

SE Division St.: Roadway owned and maintained by the City of Portland, from SE 174th Ave. west and by the City of Gresham, from SE 174th Ave. east. Signals owned and operated by City of Gresham; signal at SE Division St. & SE 174th Ave. owned and operated by Portland Bureau of Transportation. Transit stop amenities owned and maintained by TriMet.

Existing Plans:

- City of Gresham Transportation System Plan is currently being updated. It will show anticipated transportation projects through the forecast year of 2035 (ongoing – complete by August 2012) http://greshamoregon.gov/tsp/


- City of Gresham Comp Plan Map showing district zoning, including corridor mixed use, corridor multi-family, and moderate commercial. http://greshamoregon.gov/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=6604
Focus Area 4 – Tanasbourne Town Center

The Tanasbourne Town Center focus area is located in the City of Hillsboro. It is situated approximately six miles from the City of Hillsboro’s downtown and the City of Beaverton’s downtown. Light rail and bus connections converge at three transit centers accessible by bus from the focus area. The closest one is the Willow Creek/SW 185th Ave Transit Center. Within the focus area a variety of retail and service providers are located along NW185th Ave. The mix of uses in the area makes this focus area a prime location for infrastructure investments that will improve a person’s ability to walk to transit stops and local destinations safely, directly, and comfortably. It is an area of attention for the City of Hillsboro as it thinks about how to attract new investment.

Places to access locally by foot

If a person walks within this focus area, these are examples of the places he or she could walk to or from:

- Retail (e.g. Streets of Tanasbourne, Tanasbourne Village, Tanasbourne Center)
- Housing (senior, multi-family, single-family)
- Kaiser Medical Facility (under construction)
- McKinley Elementary School
- Rock Creek Trail, Evergreen Park

 Places to access regionally by transit

If a person boards a TriMet bus or train in this focus area, these are examples of the places he or she could travel to or from without making a transfer:

**Hillsboro:** Downtown Hillsboro, SW Evergreen Pkwy and SW Cornell Rd. Employment Corridors, Hillsboro Airport, Pacific University (Hillsboro Campus)

**Aloha:** Aloha High School

**Beaverton:** Downtown Beaverton, Beaverton High School, Valley Catholic High School

**Transit centers and MAX stations:** Willow Creek/SW 185th Ave Transit Center, Hillsboro Central/SE 3rd Ave Transit Center, Beaverton Transit Center

**2040 growth concept centers:** Tanasbourne Regional Center, Hillsboro Regional Center, Beaverton Regional Center, Aloha Town Center
Figure 28: Tanasbourne Town Center - Land Use and Transportation

1. Kaiser medical facility under construction on NW Evergreen Pkwy
2. NW Stucki Rd connects office parks to shopping centers on Cornell Rd. Line 46 serves Cornell Rd and Evergreen Pkwy
3. Whole Foods grocery store anchors the shopping center at NW Cornell Rd & Stucki
4. Magnolia park - ringed by newer residential development
5. Shopping centers in Tanasbourne served by Line 52 along NW 185th Ave
Roadways and Sidewalks

There are three high speed, high volume roads running through the focus area. They connect the area to adjacent cities, a major US highway and one light rail line. All three have transit service on them.

**North-South**

- NW 185th Ave.

**East-West**

- NW Evergreen Pkwy.
- NW Cornell Rd.

While these arterial roads provide motor vehicle and transit service access to a variety of regional and local destinations, in their current state, they also act as a barrier to pedestrian and bicyclists.

Figure 29 shows the roadway and sidewalk attributes for the segments of NW 185th Ave., NW Cornell Rd., and NW Evergreen Pkwy. located within the focus area. Key conclusions, based on field visits and information in Figure 29 are outlined below.

**Key Conclusions**

- All three major roadways in the focus area, NW 185th Ave., NW Evergreen Pkwy., and NW Cornell Rd. have posted speed limits of 45 mph. NW 185th Ave. is slightly wider than the others.

- NW 185th Ave., NW Evergreen Pkwy., and NW Cornell Rd. all have continuous sidewalks on along them on both sides. Other major roadways, like NW Walker Rd., located in the AmberGlen business park area, do not have continuous sidewalks.

- NW Evergreen Pkwy. is the only roadway with consistently wide, landscaped buffers between the sidewalk and the roadway. NW Cornell Rd. and NW 185th Ave. occasionally have a landscaped buffer.

- Residential development on NW Cornell Rd. and NW Evergreen Pkwy. is relatively well oriented toward the street. Likewise, some of the large format retail is oriented toward the street. Development along NW 185th is generally not oriented toward the street.

- Driveway access on NW 185th Ave., NW Evergreen Pkwy., and NW Cornell Rd. is very limited. However, when there are driveways, they tend to be very large.
### Figure 29: Tanasbourne Town Center - Roadways and Sidewalks

<table>
<thead>
<tr>
<th>Roadway &amp; Sidewalk Attributes</th>
<th>NW 185th Ave.</th>
<th>NW Cornell Rd.</th>
<th>NW Evergreen Pkwy.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design speed</td>
<td>45 mph</td>
<td>45 mph</td>
<td>45 mph</td>
</tr>
<tr>
<td>Posted speed limit</td>
<td>45 mph</td>
<td>45 mph</td>
<td>45 mph</td>
</tr>
<tr>
<td>Midblock 85th percentile traffic speed</td>
<td>37 mph</td>
<td>42 mph</td>
<td>42 mph</td>
</tr>
<tr>
<td>Presence of sidewalk throughout</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Width of sidewalk</td>
<td>5 ft.</td>
<td>5 ft.</td>
<td>5 ft.</td>
</tr>
<tr>
<td>Width of landscaped buffer between walkway &amp; motorized vehicle traffic (planter, trees, etc.)</td>
<td>0 to 7 ft</td>
<td>0 to 14 ft.</td>
<td>12 ft.</td>
</tr>
<tr>
<td># of driveways within one mile (does not account for size of driveway)</td>
<td>East side = 4</td>
<td>North side = 2</td>
<td>North side = 1</td>
</tr>
<tr>
<td></td>
<td>West side = 4</td>
<td>South side = 3</td>
<td>South side = 2</td>
</tr>
<tr>
<td>Development oriented toward sidewalk</td>
<td>Very Little</td>
<td>Some</td>
<td>Some</td>
</tr>
<tr>
<td>Width of paved shoulder, bicycle lane, and/or parking lane</td>
<td>6 ft. (bicycle lane)</td>
<td>0 to 6 ft. (bicycle lane)</td>
<td>6 ft. (bicycle lane)</td>
</tr>
<tr>
<td>On-street parking</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Presence of streetlights throughout</td>
<td>Yes (cobra)</td>
<td>Yes (cobra)</td>
<td>Yes (cobra)</td>
</tr>
<tr>
<td># of travel lanes</td>
<td>4 to 6</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Width of two-way center lane</td>
<td>Partial Extent (14 ft.)</td>
<td>Partial Extent (14 ft.)</td>
<td>Partial Extent (13 ft.)</td>
</tr>
<tr>
<td>Width of outside travel lane</td>
<td>12 ft.</td>
<td>12 ft.</td>
<td>12 ft.</td>
</tr>
<tr>
<td>Width of inner travel lanes</td>
<td>12 ft.</td>
<td>12 ft.</td>
<td>12 ft.</td>
</tr>
<tr>
<td>Presence/width of median (must be &gt; 6ft and separate two directions of traffic to be considered median). Is it traffic separating, concrete, raised, planted?</td>
<td>No</td>
<td>No</td>
<td>Yes (8 ft.)</td>
</tr>
<tr>
<td>Total width of roadway — curb to curb</td>
<td>70 to 90 ft.</td>
<td>70 ft.</td>
<td>70 ft.</td>
</tr>
<tr>
<td>Annual average daily traffic (AADT)</td>
<td>29,600 (in 2010)</td>
<td>20,400 (in 2010)</td>
<td>16,400 (in 2010)</td>
</tr>
</tbody>
</table>
Crossings and Connectivity

Based on field observation and transit passenger count data three signalized intersections were selected for review. Each appeared to have a relatively high degree of motor vehicle movement, transit stop activity, and pedestrian movement compared to other intersections in the focus area. The three intersections were selected for exemplary purposes. Other intersections in the focus area could benefit from this type of evaluation and review.

- NW 185th Ave. & NW Cornell Rd.
- NW 185th Ave. & NW Evergreen Pkwy.
- NW Stucki Pl. & NW Cornell Rd.

Information was also collected on crossing opportunities for three roadway segments on NW Cornell Rd., NW 185th Ave, and NW Evergreen Pkwy. Figures 30 and 31 present this information.

Figure 35 displays the overall road network connectivity in the Tanasbourne Town Center focus area, using a Route Directness Index (RDI). A RDI score takes the straight line distance from the center of one parcel to the center of all other parcels, within a certain distance, and divides it against the distance it would take to get to the parcel using the actual road network. An RDI score of 1 is the most direct. It means the actual road network distance is the exact same as the straight line distance. Figure 35 shows the connectivity of each parcel to all other parcels within a quarter mile.

Key Conclusions

- There are about seven to nine crossing opportunities on each of the three streets: NW 185th Ave., NW Evergreen Pkwy., and NW Cornell Rd. in the focus area. Distances are relatively long between crossing opportunities. The majority of crossings along 185th Ave. and NW Cornell Rd. are full signals.

- The areas between NW Evergreen Pkwy and NW Cornell Rd. have moderate parcel level connectivity. Areas in the AmberGlen business park area, off of NW Walker Rd. and Stucki Ave. have the worst connectivity.

- All of the assessed crossings in the focus area are over 100 ft., with the largest being 135th ft. across NW 185th Ave. at Evergreen Pkwy.

- Pedestrians are expected to cross the assessed intersections at these rates:
  - NW 185th & NW Cornell Rd. = 3.8 to 4.2 ft./second
  - NW 185th & NW Evergreen Pkwy. = 3.8 to 4.7 ft./second
  - NW Stucki Ave. & NW Cornell Rd. = 3.8 to 4.4 ft./second
Figure 30: Tanasbourne Town Center – Crossings

<table>
<thead>
<tr>
<th>Pedestrian &amp; Bicycle Crashes</th>
<th>Locations of known pedestrian or bike crashes that resulted in a fatality or serious injury between 2007-2009</th>
<th>no fatal or severe injury bicycle/pedestrian crashes between 2007-2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roadway Crossing Attributes</td>
<td>NW 185th Ave.</td>
<td>NW Cornell Rd.</td>
</tr>
<tr>
<td># of unmarked crossings in focus area along selected streets</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td># of marked crossings in focus area along selected streets</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td># of signalized crossings in focus area along selected streets</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

Figure 31: Tanasbourne Town Center – Intersections

<table>
<thead>
<tr>
<th>Intersection Attributes</th>
<th>NW Cornell Rd. &amp; NW 185th Ave.</th>
<th>NW Evergreen Pkwy &amp; NW 185th Ave.</th>
<th>NW Stucki Pl. &amp; NW Cornell Rd.</th>
</tr>
</thead>
<tbody>
<tr>
<td># of lanes being crossed by pedestrians at signalized intersections</td>
<td>185th (N) – 7 185th (S) – 6 Cornell (E) – 7 Cornell (W) – 7</td>
<td>185th (N) – 8 185th (S) – 8 Evergreen (E) – 6 Evergreen (W) – 6</td>
<td>Stucki (N) – 5 Stucki (S) – 7 Cornell (E) – 7 Cornell (W) – 6</td>
</tr>
<tr>
<td>Effective turning radius at intersection</td>
<td>NW 70 ft. NE 72 ft. SE 70 ft. SW 70 ft.</td>
<td>NW 65 ft. NE 65 ft. SE 53 ft. SW 65 ft.</td>
<td>NW 31 ft. NE 59 ft. SE 43 ft. SW 35 ft.</td>
</tr>
<tr>
<td>Signal cycle length</td>
<td>2:00</td>
<td>1:57</td>
<td>1:20</td>
</tr>
<tr>
<td>Pedestrian signal actuated</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Pedestrian crossing time</td>
<td>0:30 - Cornell 0:31 - 185th</td>
<td>0:26 - Evergreen 0:29 - 185th</td>
<td>0:27 - Stucki 0:33 - Cornell</td>
</tr>
<tr>
<td># of right-turn-on red motor vehicles and the number of motorists making a permitted left turn in a 15-minute period (right/left)</td>
<td>60/236 (Weekday 5:00 - 6:30pm)</td>
<td>24/334 (Weekday 5:00 - 6:30pm)</td>
<td>45/190 (Weekday 5:00 - 6:30pm)</td>
</tr>
<tr>
<td>Right turn channelization islands on the crossing</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Pedestrian refuge present</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Transit Stops

There are three public transit lines providing transportation services to people in the focus area:

- Line 52 – Farmington / 185th
- Line 47 – Baseline / Evergreen
- Line 48 - Cornell

Figures 32 and 33 provide detailed information on the transit service and stops.

Key Conclusions

- NW 185th Ave., NW Cornell Rd., and NW Evergreen Pkwy. have bus service on them. NW 185th Ave. has Lines, 52, 47, and 48. Line 52 operates nearly at the level of frequent service buses on weekdays, approximately every 15 minutes, but does not run as frequently on weekends. Lines 47 and 48 operate every 30 to 40 minutes.

- The intersections where there are the most TriMet customers getting on or off a bus and walking to or from their destination are NW 185th Ave. & NW Cornell Rd. (2,363/week) and NW 185th Ave. & NW Tanasbourne Rd. (2,011/week).

- The highest activity transit stop in the focus area is the southbound, Line 52 stop, located at the intersection of NW 185th Ave. and NW Cornell Rd. On average 1,099 people get on or off a bus at this stop every week.

- The intersections with the most TriMet customers requesting that the vehicle ramp or lift be deployed are:
  - NW 185th Ave. & NW Tanasbourne Rd. = 63/month
  - NW 185th Ave. & NW Cornell Rd. = 47/month
**Figure 32: Tanasbourne Town Center - Transit Stops**

<table>
<thead>
<tr>
<th>Transit Service and Stop Attributes</th>
<th>NW 185th Ave.</th>
<th>NW Cornell Rd.</th>
<th>NW Evergreen Pkwy.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit lines and weekday frequencies along selected streets in focus area.</td>
<td>Rte 47(bus)-40min&lt;br&gt;Rte 48(bus)-30min&lt;br&gt;Rte 52(bus)-15min</td>
<td>Rte 48(bus)-30min</td>
<td>Rte 47(bus)-40min</td>
</tr>
<tr>
<td># of transit stops in focus area along selected streets.</td>
<td>Northbound = 4&lt;br&gt;Southbound = 5</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td># of transit stops without a paved front door landing pad along selected streets.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td># of transit stops without sidewalk connections to it in all directions along selected streets.</td>
<td>0</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td># of transit stops without a marked crossing within 150 ft. along selected streets.</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td># of transit stops with avg. weekday boardings &gt; 50 without a shelter along selected streets.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Figure 33: Tanasbourne Town Center - Transit Ridership

<table>
<thead>
<tr>
<th>Stop Location</th>
<th>Stop ID</th>
<th>Direction</th>
<th>Transit Lines</th>
<th>Weekly Ons &amp; Offs</th>
<th>Pedestrian Count Proxy at Intersection</th>
<th>Monthly LIFTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW 185th Ave</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>185th &amp; McKinley School</td>
<td>6986</td>
<td>N</td>
<td>47,48,52</td>
<td>239</td>
<td>562</td>
<td>5</td>
</tr>
<tr>
<td>185th &amp; Sunset Square</td>
<td>6987</td>
<td>S</td>
<td>47,48,52</td>
<td>322</td>
<td>11</td>
<td>11</td>
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<tr>
<td>185th &amp; Tanasbrook Dr</td>
<td>7017</td>
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<td>47,48,52</td>
<td>182</td>
<td>279</td>
<td>1</td>
</tr>
<tr>
<td>185th &amp; Tanasbrook Dr</td>
<td>7016</td>
<td>S</td>
<td>47,48,52</td>
<td>97</td>
<td>1</td>
<td>1</td>
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<tr>
<td>185th &amp; Cornell</td>
<td>9010</td>
<td>E</td>
<td>47</td>
<td>62</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>185th &amp; Cornell</td>
<td>6961</td>
<td>N</td>
<td>52</td>
<td>908</td>
<td>2,363</td>
<td>12</td>
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<td>185th &amp; Cornell</td>
<td>6964</td>
<td>S</td>
<td>47,48,52</td>
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<td>25</td>
<td></td>
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<td>185th &amp; Cornell</td>
<td>9012</td>
<td>W</td>
<td>48</td>
<td>294</td>
<td></td>
<td></td>
</tr>
<tr>
<td>185th &amp; McDonald's</td>
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<td>N</td>
<td>52</td>
<td>776</td>
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<td>185th &amp; Tanasbourne Rd</td>
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<td>535</td>
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<td></td>
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<tr>
<td>185th &amp; Tanasbourne Village</td>
<td>6967</td>
<td>S</td>
<td>52</td>
<td>701</td>
<td></td>
<td></td>
</tr>
<tr>
<td>185th &amp; Evergreen</td>
<td>9022</td>
<td>S</td>
<td>52</td>
<td>717</td>
<td>717</td>
<td>33</td>
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<td>NW Cornell Rd.</td>
<td></td>
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</tr>
<tr>
<td>Cornell &amp; Aloclek</td>
<td>10013</td>
<td>W</td>
<td>48</td>
<td>98</td>
<td>150</td>
<td>0</td>
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<tr>
<td>Cornell &amp; Aloclek</td>
<td>10025</td>
<td>E</td>
<td>48</td>
<td>52</td>
<td></td>
<td>0</td>
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<td>Cornell Block 20800</td>
<td>10012</td>
<td>W</td>
<td>48</td>
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<td>Cornell Block 20800</td>
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<td></td>
<td>0</td>
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<tr>
<td>Cornell &amp; John Olsen</td>
<td>10011</td>
<td>W</td>
<td>48</td>
<td>108</td>
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<td>10</td>
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<tr>
<td>Cornell &amp; John Olsen</td>
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<td>E</td>
<td>48</td>
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<tr>
<td>Cornell &amp; Amberbrook Dr</td>
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<tr>
<td>Cornell &amp; Amberbrook Dr</td>
<td>10022</td>
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<tr>
<td>Cornell &amp; Amberwood</td>
<td>10009</td>
<td>W</td>
<td>48</td>
<td>86</td>
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<tr>
<td>Cornell &amp; Amberwood</td>
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<td>E</td>
<td>48</td>
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<tr>
<td>Cornell &amp; Stucki</td>
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<td>162</td>
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<td>E</td>
<td>48</td>
<td>136</td>
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<tr>
<td>Cornell &amp; 192nd</td>
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<td>92</td>
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<td>Cornell &amp; 192nd</td>
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<td>Cornell &amp; 188th</td>
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<td>W</td>
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<td>6</td>
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<td>Cornell Block 18600</td>
<td>9498</td>
<td>E</td>
<td>48</td>
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## NW Evergreen Pkwy.

<table>
<thead>
<tr>
<th>Stop Location</th>
<th>Stop ID</th>
<th>Direction</th>
<th>Transit Lines</th>
<th>Weekly Ons &amp; Offs</th>
<th>Pedestrian Count Proxy at Intersection</th>
<th>Monthly LIFTs</th>
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<tr>
<td>Evergreen &amp; John Olsen</td>
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<td>47</td>
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<td>35</td>
<td>120</td>
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<td>Evergreen Block 18000</td>
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<td>S</td>
<td>47</td>
<td>67</td>
<td>0</td>
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</tr>
</tbody>
</table>

### Figure 34: Stop ID (185th & Cornell) - TriMet Customer Survey

![Customer Survey Chart](chart.png)

- Bar Graph showing the percentage of responses for different aspects of the walk environment, including:
  - Sidewalks
  - Crosswalks
  - Time Available to Cross the Street
  - Lighting at Night
  - Your Safety Near Auto Traffic
  - Your Security During the Day
  - Your Security at Night

- Legends for the chart include:
  - Don't know
  - Fair/Poor
  - Excellent/Good
Survey administered on October 6, 2011 (11am-5pm).
n=40

Primary mode of access (multiple answers possible, so percentages may not total 100 percent): 28%-transferred, 73%-walked, 0%-drove and parked, 3%-dropped off, 0%-bicycled

Figure 34 displays customers’ general opinions regarding various elements of the walking environment in the immediate vicinity of the transit stop. Specific customer comments and concerns are listed below.

**Customer Comments/Concerns**

- Number 48 is really unreliable.
- Could be better, not good.
- Does not feel safe at Willow Creek MAX line and littering is a problem.
- Does not run late enough and #62 is a problem with scheduling MAX connection going eastbound.
- Lost and found was great! Would like to see the #89 run more frequently.
- Not enough time to cross the street sometimes have to run.
- Speeding cars.
- Sprinklers spray sidewalks.
The Connectivity Score is based on how well each parcel is connected to other parcels within a quarter-mile radius. This analysis was performed using ViaCity software from the Transpo Group.
Figure 36: Tanasbourne Town Center - Pedestrian and Transit Needs

1. No bus landing pads along NW Evergreen Pkwy
2. No shelters at bus stops (NW Cornell & Stucki)
3. High posted speed on NW Cornell Rd
4. No sidewalk or lighting along NW Walker Rd
5. Crossing 8+ travel lanes on NW 185th to reach the bus stop at Cornell

Vehicle-pedestrian conflicts
Sidewalk close to traffic
Sidewalk next to traffic
Sidewalk gaps
TriMet stops
Stops >150' from marked crosswalk

TrMet bus lines
Existing multi-use path
Proposed multi-use path
Multi-family housing
Senior housing
Pre-to-middle school
High school
Library
Health clinic
Grocery store
Commercial: other
Parks and open space

Miles
0.25
0.5

C. Maher - 15 May 2011 - Focus_Area_Existing_Cond.mxd
Infrastructure Needs

Needs are identified below. Future solutions to address these needs will hopefully make people feel safer, entice them to walk more, and help connect people who are living, working, shopping and/or recreating in the area to retail, parks, trails, schools, public services and jobs.

Places to Connect

- Concentrations of multi-family housing located between NW Evergreen Pkwy. and NW Cornell Rd. to employment areas south, west, and north.

- Concentrations of multi-family and senior housing located between NW Evergreen Pkwy. and NW Cornell Rd. to retail and services located in the same vicinity and east of NW 185th Ave.

- Concentrations of multi-family, senior housing, and employment located in the focus area to retail to bus stops located on NW 185th Ave., NW Cornell Rd., and NW Evergreen Pkwy.

- Concentrations of multi-family housing to Rock Creek Trail.

- New Kaiser hospital and medical facilities to housing, retail, and bus stops.

Observed Behavior

- People having to wait a long time before being able to get a walk signal, crossing very long distances, and being on the watch for motor vehicles making permitted right turns on red at the intersection of NW Cornell Rd. & NW 185th Ave. There are 2,363 people who get on or off a bus at this intersection every week. Most of them likely have to walk across this intersection.

- People having to wait a long time before being able to get a walk signal, crossing very long distances, and being on the watch for motor vehicles making permitted right turns on red at the intersection of NW Evergreen Pkwy. & NW 185th Ave.

- Pedestrians crossing NW Stucki Ave., mid-block, at the driveway entrance to Tanasbourne Town Center to get to retail located on the other side of the street.
- People walking in the roadway on NW Walker Rd., where there are no sidewalks, between NW Amberglen Pkwy. & 185th Ave., near Oregon Health & Science University.

- People with strollers boarding the bus at the corner of NW Evergreen Pkwy. and NW 188th Ave., where there are no bus landing pads.

**Bright Spots**

- NW Evergreen Pkwy. has wide sidewalks, a wide planted buffer between the roadway and the sidewalk, good tree canopy, and is generally pleasant to walk along.

- The multi-family and senior residential units in the focus area are relatively well-oriented toward the sidewalks.

- NW 188th Ave. has a wide, buffered sidewalk with very nice tree canopy between NW Evergreen Pkwy. and NW Cornell Rd.

- Many of the multi-family housing units surrounding Evergreen Park have internal pedestrian pathways through the development.

**First Five Actions to Take**

1. Shorten crossing distances and provide more time for pedestrians to cross at the intersection of NW 185th Ave. & NW Cornell Rd. All signals should, at a minimum, be timed so people have one second to walk 3.5 ft. Given the intersection’s proximity to senior centers and a major retail center, a more appropriate time would be one second for every 2.5 ft. to allow children and senior citizens, who tend to walk more slowly, to cross comfortably under the protection of the walk phase. Consider other signal treatments like leading pedestrian phases, automatic recall for pedestrian actuated signals, and right turn on red restrictions. Curb radius reduction and crossing island treatments should also be considered to shorten crossing distances.

2. Shorten crossing distances and provide more time for pedestrians to cross at the intersection NW 185th & NW Evergreen Pkwy. All signals should, at a minimum, be timed so people have one second to walk 3.5 ft. Given the intersection’s proximity to senior centers and a major retail center, a more appropriate time would be one second for every 2.5 ft. to allow children and senior citizens, who tend to walk more slowly, to cross comfortably under the protection of the walk phase. Consider other signal treatments like leading pedestrian phases, automatic recall for pedestrian actuated signals, and right turn on red restrictions. Curb radius reduction and crossing island treatments should also be considered to shorten crossing distances.
3. Consider crossing treatments, like medians with pedestrian refuges, and pedestrian warning signs, like Rectangular Rapid-Flashing Beacons (RRFBs) to assist people with crossing the street at the driveway into the Tanasbourne Town Center on NW Stucki Ave.

4. Build sidewalks along NW Walker Rd., between NW Amberglen Pkwy. & 185th Ave. where there are none. Ensure there is a landscaped buffer between pedestrians and motor vehicles.

5. Provide ADA accessible landing pads at bus stops along Evergreen Pkwy. to makes stops accessible to people using mobility devices.

**Existing Plans and Facility Responsibilities**

**Facility Ownership / Maintenance:**

- **NW 185th Ave.:** Roadway owned and maintained by Washington County, signals owned and operated by Washington County, transit stop amenities owned by TriMet.

- **NW Cornell Rd.:** Roadway owned and maintained by Washington County, signals owned and operated by Washington County, transit stop amenities owned by TriMet.

- **NW Evergreen Pkwy.:** Roadway owned and maintained by Washington County, signals owned and operated by Washington County, transit stop amenities owned by TriMet.

**Existing Plans:**

- Washington County TSP will show anticipated transportation projects through the forecast year of 2035 (ongoing)

- City of Hillsboro TSP shows anticipated transportation projects through the forecast year of 2020. (2004 – scheduled for update by 2013)
  [http://www.ci.hillsboro.or.us/Planning/documents/Transportation_System_Plan_Update.pdf](http://www.ci.hillsboro.or.us/Planning/documents/Transportation_System_Plan_Update.pdf)

  - Walker Rd.: AmberGlen to 185th widen to 5 lanes
  - 185th Ave. & Walker Rd. intersection: Add 2nd southbound and eastbound turn lanes and westbound right turn lane. This intersection is a potential grade separation candidate.
o 185th Ave. & Cornell Rd. intersection: Add northbound and southbound double turn lanes, add northbound right turn lane, and make 185th 7 lanes. This intersection is a potential grade separation candidate.

- NW John Olsen Avenue – NW Cornell Rd to NW Evergreen Pkwy planned bicycle lanes.
- Rock Creek Trail crossing at NW Evergreen Pkwy., from mid-block crossing east of NW Aloclek Pl. to West of NW John Olsen Ave.
- Evergreen & 185th Ave intersection: Add southbound right turn lane and northbound 2nd left turn lane.

- City of Hillsboro AmberGlen Community Plan
  [http://www.ci.hillsboro.or.us/Planning/OHSUAmberGlen.aspx](http://www.ci.hillsboro.or.us/Planning/OHSUAmberGlen.aspx)

- City of Hillsboro Rock Creek Trail Extension
  [http://www.ci.hillsboro.or.us/ParksRec/ParksnTrails/RockCreekFAQs.aspx#TrailExtension](http://www.ci.hillsboro.or.us/ParksRec/ParksnTrails/RockCreekFAQs.aspx#TrailExtension)
Focus Area 5 – Clackamas County Red Soils Campus

The Clackamas County Red Soils Campus focus area is located in the City of Oregon City. It is situated approximately 1.5 miles from Oregon City’s downtown and seven miles from Clackamas Regional Center. There are connections to bus lines at the Oregon City Transit Center, located in downtown Oregon City. Within the focus area there is a variety of retail and services. Nearly all of the County’s offices and services are located in this focus area at its Red Soils Campus. The fact the County has all of it services located in the area, combined with the mix of uses makes it a good location for infrastructure investments that will improve a person’s ability to walk to transit stops and local destinations safely, directly, and comfortably.

Places to access locally by foot

If a person walks within this focus area, these are examples of the places he or she could walk to or from:

- Retail (e.g. Hilltop Mall, Fred Meyer, Goodwill)
- Housing (Senior, Multi-family, Single-Family)
- Clackamas County Red Soils Campus
- Schools (Gardiner Middle School, Mt. Pleasant Elementary School)
- Park (Hillendale Park, Singer Creek Park)

Places to access regionally by transit

If a person boards a TriMet bus or train in this focus area, these are examples of the places he or she could travel to or from without making a transfer:

**Oregon City:** Downtown Oregon City, Clackamas Community College  
**Clackamas Town Center:** Clackamas Town Center  
**Milwaukie:** Downtown Milwaukie  
**Portland:** Downtown Portland, Portland State University

**Transit centers and MAX stations:** Oregon City Transit Center, Clackamas Town Center Transit Center, new Portland to Milwaukie light rail line stations

**2040 growth concept centers:** Central City, Oregon City Regional Center, Clackamas Regional Center, Milwaukie Town Center
Figure 37: Clackamas County Red Soils Campus - Land Use and Transportation

- TriMet stops
- TriMet bus lines
- Existing multi-use path
- Proposed multi-use path
- Under 250
- 250 - 2,500
- Over 2,500
- Multi-family housing
- Senior housing
- Pre-to-middle school
- High school
- Parks and open space
- Library
- Health clinic
- Grocerystore
- Parks and open space

1. Grocery Outlet on Mollalla Ave
2. Mt. Pleasant Elementary
3. Clackamas County Red Soils Campus
4. Hilltop Mall with Safeway store under construction
5. Bi-Mart store across Mollalla Ave from Mountainview apartment complex
Roadways and Sidewalks

There are two relatively high speed, high volume road running through the focus area. Molalla Ave. connects the area to adjacent cities, via OR-213, Hwy 99E, and I-205. Both Molalla and S. Beaver Creek have transit service on them.

**North-South**

- Molalla Ave.

**East-West**

- S. Beaver Creek Rd.

While Molalla Ave. provides motor vehicle and transit service access to a variety of regional and local destinations, in its current state, it also acts as barrier to pedestrians and bicyclists, who are moving around the area and accessing destinations.

Figure 38 shows the roadway and sidewalk attributes for the segments of Molalla Ave. and S. Beaver Creek Rd. located within the focus area.

**Key Conclusions**

- Both S. Beaver Creek Rd. and Molalla Ave. have posted speed limits between 30 to 35 mph, however S. Beaver Creek Rd. has recorded 85th percentile speeds above the posted speed, at 39 mph. This is in contrast to Molalla Ave. where recorded 85th percentile speeds have been below the posted speed limit, at 28 mph.

- Molalla Ave. generally has sidewalks on both sides of the street. S. Beaver Creek Rd. does not have continuous sidewalks along both sides of the street. Large segments of sidewalks are missing in areas where there has not been any development. Most sections of the roadway have sidewalks on at least one side. An exception is at the intersection of S. Beaver Creek Rd. & Warner Milne Rd. where sidewalks are not available on either side.

- Molalla Ave. is a relatively narrow roadway, ranging from 44 to 74 ft., with two-travel lanes and a turn lane in most parts. Sections of the roadway, for example, near the intersection with Holmes Ln. have pedestrian scale lighting, planted buffers between the sidewalk and the roadway, and midblock, pedestrian refuge crossing treatments.

- Molalla Ave. has some buildings oriented toward the sidewalk. S. Beaver Creek Rd. has fewer and is more auto-centric.

- Molalla Ave. has more driveways than S. Beaver Creek Rd. for pedestrians to contend with.
### Pedestrian Network Analysis

**Figure 38: Clackamas County Red Soils Campus - Roadways and Sidewalks**

<table>
<thead>
<tr>
<th>Roadway &amp; Sidewalk Attributes</th>
<th>Molalla Ave.</th>
<th>S. Beavercreek Rd.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Design speed</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 mph Mountain View to</td>
<td>35 mph</td>
<td></td>
</tr>
<tr>
<td>Beavercreek</td>
<td>South of</td>
<td></td>
</tr>
<tr>
<td>35 mph South of Beavercreek</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 mph Mountain View to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beavercreek</td>
<td>35 mph</td>
<td></td>
</tr>
<tr>
<td><strong>Posted speed limit</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 mph Mountain View to</td>
<td>35 mph</td>
<td></td>
</tr>
<tr>
<td>Beavercreek</td>
<td>South of</td>
<td></td>
</tr>
<tr>
<td>35 mph South of Beavercreek</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Presence of sidewalk throughout</strong></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Width of sidewalk</strong></td>
<td>7 ft.</td>
<td>7 ft.</td>
</tr>
<tr>
<td><strong>Width of landscaped buffer between walkway &amp; motorized vehicle traffic (planter, trees, etc.)</strong></td>
<td>0 to 4 ft.</td>
<td>0 to 20 ft.</td>
</tr>
<tr>
<td><strong># of driveways within one mile (does not account for size of driveway)</strong></td>
<td>East side = 21 West side = 26</td>
<td>North side = 15 South side = 8</td>
</tr>
<tr>
<td><strong>Development oriented toward sidewalk</strong></td>
<td>Some</td>
<td>Some</td>
</tr>
<tr>
<td><strong>Width of paved shoulder, bicycle lane, and/or parking lane</strong></td>
<td>5 ft.</td>
<td>5 ft.</td>
</tr>
<tr>
<td>(bicycle lane)</td>
<td>(bicycle lane)</td>
<td></td>
</tr>
<tr>
<td><strong>On-street parking</strong></td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Presence of streetlights throughout</strong></td>
<td>Yes (cobra and pedestrian scale)</td>
<td>Yes (cobra)</td>
</tr>
<tr>
<td><strong># of travel lanes</strong></td>
<td>2 to 4 (mostly 2)</td>
<td>2 to 4 (mostly 2)</td>
</tr>
<tr>
<td><strong>Width of two-way center lane</strong></td>
<td>Majority Extent (12-14ft)</td>
<td>Majority Extent (11-14ft)</td>
</tr>
<tr>
<td><strong>Width of outside travel lane</strong></td>
<td>11 ft.</td>
<td>11 ft.</td>
</tr>
<tr>
<td><strong>Width of inner travel lanes</strong></td>
<td>11 ft.</td>
<td>11 ft.</td>
</tr>
<tr>
<td><strong>Presence/width of median (must be &gt; 6ft and separate two directions of traffic to be considered median). Is it traffic separating, concrete, raised, planted?</strong></td>
<td>No</td>
<td>Yes (limited intermittent planted medians)</td>
</tr>
<tr>
<td><strong>Total width of roadway—curb to curb</strong></td>
<td>44 to 74 ft.</td>
<td>42 to 72 ft.</td>
</tr>
<tr>
<td><strong>Annual average daily traffic (AADT)</strong></td>
<td>15,000 to 21,000 (in 2008)</td>
<td>10,000 to 17,300 (in 2008)</td>
</tr>
</tbody>
</table>
Crossings and Connectivity

Based on field observation and transit passenger count data two signalized intersections were selected for review. Each appeared to have a relatively high degree of motor vehicle movement, transit stop activity, and pedestrian movement compared to other intersections in the focus area. The two intersections were selected for exemplary purposes. Other intersections in the focus area could benefit from this type of evaluation and review.

- S. Beavercreek & Molalla Ave.
- Clairmont Way & Molalla Ave.

Information was also collected on crossing opportunities for two roadway segments on Molalla Ave. and S. Beavercreek Rd. Figures 39 and 40 present this information.

Figure 44 displays the overall road network connectivity in the Clackamas County Red Soils Campus focus area, using a Route Directness Index (RDI). A RDI score takes the straight line distance from the center of one parcel to the center of all other parcels, within a certain distance, and divides it against the distance it would take to get to the parcel using the actual road network. An RDI score of 1 is the most direct. It means the actual road network distance is the exact same as the straight line distance. Figure 44 shows the connectivity of each parcel to all other parcels within a quarter mile.

Key Conclusions

- Molalla Ave. has far more intersections than S. Beavercreek Rd., 21 and 6 respectively.
- Less than half, 10 of 27 intersections located on S. Beavercreek Rd. and Molalla Ave. in the focus area are fully signalized. 15 are unmarked.
- Of the 2 intersections assessed, S. Beavercreek & Molalla Ave. and Clairmont Way & Molalla, only one leg has a span equal or greater than 100 ft. for a pedestrian to cross.
- The areas surrounding Warner Milne Rd. & S. Beavercreek Rd. are not well connected. There are few street connections and large parcels of land in this area.
- Pedestrian crossing speeds at the two intersections assessed are as follows:
  - Molalla Ave. & S. Beavercreek Rd. = 4.3 ft./second
  - Molalla Ave. & Clairmont Way = 3.5 to 4 ft./second
Figure 39: Clackamas County Red Soils Campus – Crossings

<table>
<thead>
<tr>
<th>Pedestrian &amp; Bicycle Crashes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Locations of known pedestrian or bike crashes that resulted in a fatality or serious injury between 2007-2009</td>
<td></td>
</tr>
<tr>
<td>• Linn Ave. &amp; AV Davis Rd. (bicyclist)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Roadway Crossing Attributes</th>
<th>Molalla Ave.</th>
<th>S. Beavercreek Rd.</th>
</tr>
</thead>
<tbody>
<tr>
<td># of unmarked crossings in focus area along selected streets</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td># of marked crossings in focus area along selected streets</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td># of signalized crossings in focus area along selected streets</td>
<td>7</td>
<td>3</td>
</tr>
</tbody>
</table>

Figure 40: Clackamas County Red Soils Campus – Intersections

<table>
<thead>
<tr>
<th>Intersection Attributes</th>
<th>S. Beavercreek Rd. &amp; Molalla Ave.</th>
<th>Clairmont Way &amp; Molalla Ave.</th>
</tr>
</thead>
</table>
| # of lanes being crossed by pedestrians at signalized intersections | Molalla (N) – 5  
Molalla (S) – 5  
Beavercreek (E) – 6  
Beavercreek (W) – 5 | Molalla (N) – 3  
Molalla (S) – 3  
Clairmont (E) – 2  
Clairmont(W) – 3 |
| Effective turning radius at intersection | NW 41 ft.  
NE 49 ft.  
SE 43 ft.  
SW 41 ft. | NW 53 ft.  
NE 53 ft.  
SE 53 ft.  
SW 50 ft. |
| Total crossing distance | Molalla (N) – 75 ft  
Molalla (S) – 90 ft  
Beavercreek (E) – 100 ft  
Beavercreek (W) – 80 ft | Molalla (N) – 80 ft.  
Molalla (S) – 80 ft.  
Clairmont (E) – 80 ft  
Clairmont(W) – 80 ft |
| Signal cycle length | 1:30 to 1:50 | 1:30 to 1:50 |
| Pedestrian signal actuated | Yes | Yes |
| Pedestrian crossing time | 0:23 S. Beavercreek  
0:21 Molalla | 0:23 Clairmont Way  
0:20 Molalla |
| # of right-turn-on red motor vehicles and the number of motorists making a permitted left turn in a 15-minute period (right/left) | 34 / 105  
(Weekday) | 36 / 45  
(Weekday) |
| Right turn channelization islands on the crossing | 0 | 0 |
| Pedestrian refuge present | No | No |
Transit Stops

There are three public transit lines providing transportation services to people in the focus area:

- Line 32 – Oatfield
- Line 33 – McLoughlin
- Line 99 – McLoughlin Express

Figures 41 and 42 provide detailed information on the transit service and stops.

Key Conclusions

- Both Molalla Ave. & S. Beavercreek Rd. have bus service operating on them. Line 33 runs along S. Beavercreek Rd. and then turns south down Molalla Ave. It runs approximately every 30 min. From the Oregon City Transit Center, Line 33 runs approximately every 15 minutes heading to downtown Portland. Line 32 runs on Molalla, north of S. Beavercreek Rd. and then turns east on S. Beavercreek Rd. It runs every 40 to 60 minutes.

- The intersections where the most TriMet customers get on or off a bus and walk to or from their destination are:
  - Beavercreek Rd. & Library Ct. = 617/week
  - Molalla Ave. & Clairmont Way = 1,210/week

- The highest activity bus stop in the focus area, located on Beavercreek Rd. is the northbound, Line 33, stop located at Beavercreek Rd. & Library Ct. (Stop ID 9517). On average, it 355 people get on or off a bus at this stop every week.

- The highest activity bus stop in the focus area, located on Molalla Ave. is the southbound, Line 33 and Line 99, stop located at Molalla Ave. & Clairmont Way (Stop ID 2838). On average, it 654 people get on or off a bus at this stop every week.

- The intersections with the most request for lift or ramp deployments are:
  - Molalla Ave. & Gaffney Ln. = 23 requests/month
  - Molalla Ave. & Clairmont Way = 22 requests/month
## Pedestrian Network Analysis

### Figure 41: Clackamas County Red Soils Campus - Transit Stops

<table>
<thead>
<tr>
<th>Transit Service and Stop Attributes</th>
<th>Molalla Ave.</th>
<th>S. Beavercreek Rd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit lines and weekday frequencies along selected streets in focus area.</td>
<td>Rte 32 (bus) – 40 min peak 60 off peak Rte 33 (bus) – 30 min peak Rte 99 (bus) – 20 min peak only</td>
<td>Rte 32 (bus) – 40 min peak 60 off peak Rte 33 (bus) – 30 min peak</td>
</tr>
<tr>
<td># of transit stops in focus area along selected streets.</td>
<td>Northbound = 9 Southbound = 8</td>
<td>Westbound = 5 Eastbound = 7</td>
</tr>
<tr>
<td># of transit stops without a paved front door landing pad along selected streets.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td># of transit stops without sidewalk connections to it in all directions along selected streets.</td>
<td>0</td>
<td>1 Stop ID: 9517</td>
</tr>
<tr>
<td># of transit stops without a marked crossing within 150 ft. along selected streets.</td>
<td>9 Stop IDs: 3985, 11473, 13187, 2842, 2865, 2866, 3981, 3984, 3992</td>
<td>6 Stop IDs: 9579, 10469, 9581, 6115, 6116, 6122</td>
</tr>
<tr>
<td># of transit stops with avg. weekday boardings &gt; 50 without a shelter along selected streets.</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Figure 42: Clackamas County Red Soils Campus - Transit Ridership

<table>
<thead>
<tr>
<th>Stop Location</th>
<th>Stop ID</th>
<th>Direction</th>
<th>Transit Lines</th>
<th>Weekly Ons &amp; Offs</th>
<th>Pedestrian Count Proxy at Intersection</th>
<th>Monthly LIFTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beaver Creek &amp; Warner Milne</td>
<td>6118</td>
<td>E</td>
<td>33</td>
<td>113</td>
<td>113</td>
<td>1</td>
</tr>
<tr>
<td>Beaver Creek &amp; Library Ct</td>
<td>9517</td>
<td>N</td>
<td>33</td>
<td>355</td>
<td>617</td>
<td>4</td>
</tr>
<tr>
<td>Beaver Creek &amp; Library Ct</td>
<td>6117</td>
<td>S</td>
<td>33</td>
<td>262</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Beaver Creek &amp; Red Soils Ct</td>
<td>6122</td>
<td>E</td>
<td>33</td>
<td>144</td>
<td>301</td>
<td>0</td>
</tr>
<tr>
<td>Beaver Creek 300 Block</td>
<td>6115</td>
<td>W</td>
<td>33</td>
<td>157</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Beaver Creek 400 Block</td>
<td>10469</td>
<td>E</td>
<td>33</td>
<td>121</td>
<td>413</td>
<td>0</td>
</tr>
<tr>
<td>Beaver Creek 400 Block</td>
<td>6116</td>
<td>W</td>
<td>33</td>
<td>292</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Beaver Creek 1600 Block</td>
<td>9581</td>
<td>E</td>
<td>32</td>
<td>105</td>
<td>207</td>
<td>6</td>
</tr>
<tr>
<td>Beaver Creek 1600 Block</td>
<td>9579</td>
<td>W</td>
<td>32</td>
<td>103</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Beaver Creek 1700 Block</td>
<td>9582</td>
<td>E</td>
<td>32</td>
<td>72</td>
<td>124</td>
<td>8</td>
</tr>
<tr>
<td>Beaver Creek 2000 Block</td>
<td>9578</td>
<td>W</td>
<td>32</td>
<td>53</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>
Molalla Ave.

<table>
<thead>
<tr>
<th>Stop Location</th>
<th>Stop ID</th>
<th>Direction</th>
<th>Transit Lines</th>
<th>Weekly Ons &amp; Offs</th>
<th>Pedestrian Count Proxy at Intersection</th>
<th>Monthly LIFTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molalla &amp; Mountain View</td>
<td>11932</td>
<td>N</td>
<td>32</td>
<td>240</td>
<td>387</td>
<td>3</td>
</tr>
<tr>
<td>Molalla &amp; Mountain View</td>
<td>11933</td>
<td>S</td>
<td>32</td>
<td>147</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Molalla &amp; Hilda</td>
<td>3983</td>
<td>N</td>
<td>32</td>
<td>112</td>
<td>162</td>
<td>2</td>
</tr>
<tr>
<td>Molalla &amp; Holmes</td>
<td>3985</td>
<td>S</td>
<td>32</td>
<td>50</td>
<td>101</td>
<td>1</td>
</tr>
<tr>
<td>Molalla &amp; Harris</td>
<td>13187</td>
<td>N</td>
<td>32</td>
<td>81</td>
<td>101</td>
<td>1</td>
</tr>
<tr>
<td>Molalla &amp; Warner</td>
<td>3992</td>
<td>S</td>
<td>32</td>
<td>20</td>
<td>57</td>
<td>1</td>
</tr>
<tr>
<td>Molalla &amp; Hillcrest</td>
<td>3984</td>
<td>N</td>
<td>32</td>
<td>31</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Molalla &amp; Beverly</td>
<td>3981</td>
<td>S</td>
<td>32</td>
<td>26</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Molalla 1100 Block</td>
<td>2865</td>
<td>N</td>
<td>32</td>
<td>71</td>
<td>71</td>
<td>2</td>
</tr>
<tr>
<td>Molalla &amp; Warner - Milne</td>
<td>2866</td>
<td>S</td>
<td>32</td>
<td>127</td>
<td>127</td>
<td>4</td>
</tr>
<tr>
<td>Molalla 1400 Block</td>
<td>11473</td>
<td>N</td>
<td>32</td>
<td>142</td>
<td>320</td>
<td>2</td>
</tr>
<tr>
<td>Molalla &amp; Beavercreek</td>
<td>9516</td>
<td>E</td>
<td>33</td>
<td>178</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Molalla &amp; Clairmont</td>
<td>2837</td>
<td>N</td>
<td>33,99</td>
<td>556</td>
<td>1,210</td>
<td>7</td>
</tr>
<tr>
<td>Molalla &amp; Clairmont</td>
<td>2838</td>
<td>S</td>
<td>33,99</td>
<td>654</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>Molalla &amp; Gaffney</td>
<td>2842</td>
<td>S</td>
<td>33</td>
<td>142</td>
<td>404</td>
<td>6</td>
</tr>
<tr>
<td>Molalla &amp; Gaffney</td>
<td>2841</td>
<td>N</td>
<td>33</td>
<td>263</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Molalla &amp; Garden Meadow</td>
<td>11846</td>
<td>S</td>
<td>33</td>
<td>63</td>
<td>125</td>
<td>2</td>
</tr>
<tr>
<td>Molalla &amp; Post Office</td>
<td>9042</td>
<td>N</td>
<td>33</td>
<td>62</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Figure 43: Stop ID 6116 (412 S. Beavercreek Rd) - TriMet Customer Survey
Survey administered on October 12, 2011 (11am-5pm)  
n=6  

Primary mode of access (multiple answers possible, so percentages may not total 100 percent):  
0%-transferred, 83%-walked, 0%-drove and parked, 17%-dropped off, 0%-bicycled  

Figure 43 displays customers’ general opinions regarding various elements of the walking  
environment in the immediate vicinity of the transit stop. Specific customer comments and  
concerns are listed below.  

**Customer Comments/Concerns**  

- Cars don't stop when crossing in crosswalk.
The Connectivity Score is based on how well each parcel is connected to other parcels within a quarter-mile radius. This analysis was performed using ViaCity software from the Transpo Group.
Figure 45: Clackamas County Red Soils Campus - Pedestrian and Transit Needs

1. Crosswalk at intersection of Warner Parrot & Central Point is out of direction for children going to Mt. Pleasant ES.
2. Teens walking in the bike lane on a segment of Warner Milne Rd with no sidewalks.
4. Crossing several lanes of traffic on Beavercreek at the intersection of Molalla Ave.
5. Residents cross Molalla mid-block to reach the Bi-Mart. Crosswalk at the next intersection is out of direction.
6. Women pushing strollers in the bike lane on Clairmont Rd.
Infrastructure Needs

Needs are identified below. Future solutions to address these needs will hopefully make people feel safer, entice them to walk more, and help connect people who are living, working, shopping and/or recreating in the area to retail, parks, trails, schools, public services and jobs.

Places to Connect

- Concentrations of multifamily housing to Gardiner Middle School and Mt. Pleasant Elementary School.

- Clackamas County services campus, senior residences, and concentrations of multi-family housing to retail establishments on Molalla Ave., which include places like the Hilltop Mall, Fred Meyer, and Goodwill.

- Senior residences and concentrations of multi-family housing to Hillendale Park and Singer Creek Park.

- Senior residences, multifamily housing, schools, and retail commercial development to TriMet bus stops.

Observed Behavior

- People walking in bicycle lanes along Warner Milne Rd. where no sidewalks exist on the south side of the road, between Leland Rd. & Beavercreek Rd.

- People pushing young children in strollers along neighborhood streets with no sidewalks in the residential neighborhoods located off of Clairmont Way & S. Gaffney La.

- Motor vehicles inconsistently yielding for pedestrians at mid-block crossings along Molalla Ave.

- People crossing, just north of Clairmont Way, from apartments on Westside of Molalla Ave. to the shopping center on the east side of the street.

- People walking through grass, on Beavercreek Rd. where there is no sidewalk, to reach the bus stop located at Library Ct.
Bright Spots

- The Clackamas County campus has a good system for internal pedestrian circulation on the campus.

- Streetscaping investments, including sidewalks, landscaping, and a mid-block crossing, pedestrian refuge near Grocery Outlet, located at Molalla Ave. & Homes Ln.

- Streetscaping investments, including sidewalks and landscaping near the Oregon City Post Office, located on Molalla Ave., between Garden Meadow Dr. and Char Diaz Dr.

- Streetscaping investments, including sidewalks and landscaping near the Fred Meyer, located on Beavercreek Rd., located at Beavercreek Rd. and Fir St.

- Molalla Ave. is a width that promotes lower vehicle speeds and easier crossing for pedestrians.

First Five Actions to Take

1. Build, at least, 10 ft. sidewalks along Warner Milne Rd., where there are none. Ensure there is a landscaped buffer between pedestrians and the roadway.

2. Build sidewalks on both sides of the street on local, residential streets, particularly those that connect to roadways with transit service, for example on Clairmont Way and on S. Gaffney La.

3. Install additional pedestrian warning systems at mid-block crossings along Molalla Ave. Consider treatments like Rectangular Rapid-Flashing Beacons (RRFBs) to provide more visibility to drivers and assist pedestrians with crossing the street.

4. Provide an additional, protected pedestrian crossing on Molalla Ave, just North of Clairmont Way, to connect the apartments on the west side of Molalla to the shopping center on the east side of the street. Consider treatments like medians with pedestrian refuges, and pedestrian warning signs, like Rectangular Rapid-Flashing Beacons (RRFBs) to assist people with crossing the street.

5. Build sidewalks, where there are none, along the north edge of Beavercreek Rd., west of Molalla Ave. Ensure there is a landscaped buffer between pedestrians and motor vehicles.
Existing Plans and Facility Responsibilities

Facility Ownership / Maintenance:

Molalla Ave.: Roadway owned and maintained by Oregon City; signals owned and operated by Clackamas County, Transit stop amenities owned and maintained by TriMet.

S. Beavercreek Rd.: Roadway owned and maintained by Clackamas County; signals owned and operated by Clackamas County, Transit stop amenities owned and maintained by TriMet.

Existing Plans:

• Oregon City Transportation System Plan (last updated in 2001 – scheduled to be updated by 2013) It will show anticipated transportation projects for the forecast year of 2035. http://www.orcity.org/publicworks/transportation-system-plan

• Clackamas County Transportation System Plan (update ongoing – scheduled to be complete by fall 2013) It will show anticipated transportation projects for the forecast year of 2035. http://clackamascountytsp.com/


Focus Area 6 – SE Division St. & SE 122nd Ave.

The SE Division St. & SE 122nd Ave. focus area is located in the City of Portland. It is situated approximately seven miles from the City of Portland’s downtown, five miles from City of Gresham’s downtown, and three miles from Portland’s Gateway Regional Center. Light rail and bus connections converge nearby at the MAX Green Line Division St. Station and the MAX Blue Line E 122nd Ave Station. Within the focus area a variety of retail and service providers are located along SE 122nd Ave. & SE Division St. The high existing transit ridership in this area combined with the mix of land uses makes this focus area a good location for infrastructure investments that will improve a person’s ability to walk to transit stops and local destinations safely, directly, and comfortably.

Places to access locally by foot

If a person walks within this focus area, these are examples of the places he or she could walk to or from:

- Retail (e.g. Albertsons, Safeway, Starbucks, Walgreens)
- Housing (multi-family and single-family)
- Schools (South Powellhurst Middle School, West Powellhurst Elementary, and Mill Park Elementary)
- Parks (West Powellhurst Park and Mill Park)
- Multnomah County Mid County Health Center Primary Care Clinic

Places to access regionally by transit

If a person boards a TriMet bus or train in this focus area, these are examples of the places he or she could travel to or from without making a transfer:

**Clackamas:** Clackamas Town Center Mall  
**Gresham:** Downtown Gresham  
**Portland:** Downtown Portland, Rose Quarter, and North Portland,

**Transit centers and MAX stations:** Parkrose/Sumner Transit Center, Clackamas Town Center Transit Center, Gresham Central Transit Center, Lents/SE Foster Rd MAX Station, NE 60th Ave MAX Station

**2040 growth concept centers:** Central City, Clackamas Regional Center, Gresham Regional Center, Lents Town Center
Figure 46: SE Division St. & SE 122nd Ave. - Land Use and Transportation

- TriMet stops
- TriMet bus lines
- Existing multi-use path
- Proposed multi-use path

- Multi-family housing
- Senior housing
- Pre-to-middle school
- High school
- Parks and open space
- Library
- Health clinic
- Grocery store
- Mobile home park
- Mobile home park at SE 119th & Division
- Vacant storefronts dot the Division streetscape, as well
- Auto repair shops are prevalent along SE Division St.
- Small markets cater to several immigrant communities
- Several grocery stores and strip mall shopping centers line SE 122nd Ave.
Roadways and Sidewalks

There are two high speed, high volume roads running through the focus area. They connect the area to adjacent cities, a major US highway and two light rail lines. Both have transit service on them.

**North-South**

- SE 122nd Ave.

**East-West**

- SE Division St.

While these arterial roads provide motor vehicle and transit service access to a variety of regional and local destinations, in their current state, they also act as barriers to pedestrian and bicyclists.

Figure 47 shows the roadway and sidewalk attributes for the segments of SE 122nd Ave. and SE Division St. located within the focus area. Key conclusions, based on field visits and information in Figure 47 are outlined below.

**Key Conclusions**

- SE 122nd Ave. and SE Division St. have posted speed limits of 35 mph and are 78 ft. wide. SE Division St. has recorded 85th percentile speeds above the posted speed, at 39 mph.

- SE 122nd Ave. and SE Division St. generally have sidewalks on both sides of the street.

- Neither SE 122nd Ave. nor SE Division St. has pedestrian friendly designs. Neither have much, if any, landscaped buffer between the sidewalk and the roadway.

- Few buildings along SE 122nd Ave. and SE Division St. have buildings oriented toward the sidewalk. Both streets have a very auto-centric design.

- There are many driveways for pedestrians to contend with on both SE 122nd Ave. and SE Division St., approximately 34 per side.
### Figure 47: SE Division St. & SE 122nd Ave. - Roadways and Sidewalks

<table>
<thead>
<tr>
<th>Roadway &amp; Sidewalk Attributes</th>
<th>SE 122nd Ave.</th>
<th>SE Division St.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design speed</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>Posted speed limit</td>
<td>35 mph</td>
<td>35 mph</td>
</tr>
<tr>
<td>Midblock 85th percentile traffic speed</td>
<td>31 mph</td>
<td>39 mph</td>
</tr>
<tr>
<td>Presence of sidewalk throughout</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Width of sidewalk</td>
<td>5 to 6 ft.</td>
<td>8 ft.</td>
</tr>
<tr>
<td>Width of landscaped buffer between walkway &amp; motorized vehicle traffic (planter, trees, etc.)</td>
<td>0 ft.</td>
<td>0 to 3 ft.</td>
</tr>
</tbody>
</table>
| # of driveways within one mile (does not account for size of driveway) | East side = 34  
West side = 34  
Some | North side = 34  
South side = 24  
Very Little |
| Development oriented toward sidewalk | 8 ft. parking  
5 ft. bicycle lane | 8 ft. parking  
5 ft. bicycle lane |
| On-street parking             | Yes           | Yes           |
| Presence of streetlights throughout | Yes  
(cobra) | Yes  
(cobra) |
| # of travel lanes             | 4             | 4             |
| Width of two-way center lane  | 11 to 12 ft.  | 12 ft.        |
| Width of outside travel lane  | 10 ft.        | 10 ft.        |
| Width of inner travel lanes   | 10 ft.        | 10 ft.        |
| Presence/width of median (must be > 6ft and separate two directions of traffic to be considered median). Is it traffic separating, concrete, raised, planted? | No | No |
| Total width of roadway — curb to curb | 78 ft. | 78 ft. |
| Annual average daily traffic (AADT) | 22,700 | 19,200 |
Crossings and Connectivity

Three signalized intersections were selected for review, based on field observation and transit passenger count data. Each appeared to have a relatively high degree of motor vehicle movement, transit stop activity, and pedestrian movement compared to other intersections in the focus area. The three intersections were selected for exemplary purposes. Other intersections in the focus area could benefit from this type of evaluation and review.

- SE 122nd Ave. & SE Market St.
- SE 122nd Ave. & SE Division St.
- SE 122nd Ave. & SE Powell Blvd.

Information was also collected on crossing opportunities for two roadway segments on SE 122nd Ave. and SE Division St. Figures 48 and 49 present this information.

Figure 53 displays the overall road network connectivity in the SE 122nd Ave. & SE Division St. focus area, using a Route Directness Index (RDI). A RDI score takes the straight line distance from the center of one parcel to the center of all other parcels, within a certain distance, and divides it against the distance it would take to get to the parcel using the actual road network. An RDI score of 1 is the most direct. It means the actual road network distance is the exact same as the straight line distance. Figure 53 shows the connectivity of each parcel to all other parcels within a quarter mile.

Key Conclusions

- Within the focus area, SE 122nd Ave. and SE Division St. have about the same number of intersections, approximately 15 on each roadway.

- Of the 31 intersections located in the focus area, 7 are fully signalized, 2 are marked, and 22 are unmarked.

- All 3 intersections assessed have relatively short crossing distances for pedestrians, between 40 and 80 ft. None had any legs of the crossing with spans equal or greater than 100 ft.

- Generally parcels are well connected in the focus area. The exception is the area between SE Division St. and SE Powell Blvd., east of 122nd Ave., where there are a number of dead end streets.

- Pedestrian crossing speeds at the three intersections assessed are as follows:
  - SE 122nd Ave. & SE Market St. = 0.6 to 2.7 ft./second
  - SE 122nd Ave. & SE Division St. = 2.7 to 2.9 ft./second
  - SE 122nd Ave. & SE Powell Blvd. = 2.5 to 3.1 ft./second
Figure 48: SE Division St. & SE 122nd Ave. - Crossings

<table>
<thead>
<tr>
<th>Pedestrian &amp; Bicycle Crashes</th>
<th>SE 122nd Ave. &amp; SE Mill St. (bicyclist)</th>
<th>SE 122nd Ave. &amp; SE Lincoln St. (2 pedestrians)</th>
<th>SE 122nd Ave. &amp; SE Division St. (bicyclist)</th>
<th>SE 125th Ave. &amp; SE Division St. (pedestrian)</th>
<th>SE 122nd Ave. &amp; SE Powell Blvd. (bicyclist)</th>
<th>SE 123rd Ave. &amp; SE Powell Blvd. (bicyclist)</th>
<th>SE 125th Pl. &amp; SE Powell Blvd. (pedestrian)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locations of known pedestrian or bike crashes that resulted in a fatality or serious injury between 2007-2009</td>
<td>• SE 122nd Ave. &amp; SE Mill St. (bicyclist)</td>
<td>• SE 122nd Ave. &amp; SE Lincoln St. (2 pedestrians)</td>
<td>• SE 122nd Ave. &amp; SE Division St. (bicyclist)</td>
<td>• SE 125th Ave. &amp; SE Division St. (pedestrian)</td>
<td>• SE 122nd Ave. &amp; SE Powell Blvd. (bicyclist)</td>
<td>• SE 123rd Ave. &amp; SE Powell Blvd. (bicyclist)</td>
<td>• SE 125th Pl. &amp; SE Powell Blvd. (pedestrian)</td>
</tr>
</tbody>
</table>

Roadway Crossing Attributes

<table>
<thead>
<tr>
<th># of unmarked crossings in focus area along selected streets</th>
<th>11</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td># of marked crossings in focus area along selected streets</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td># of signalized crossings in focus area along selected streets</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Figure 49: SE Division St. & SE 122nd Ave. - Intersections

<table>
<thead>
<tr>
<th>Intersection Attributes</th>
<th>SE 122nd Ave. &amp; SE Market St.</th>
<th>SE 122nd Ave. &amp; SE Division St.</th>
<th>SE 122nd Ave. &amp; SE Powell Blvd.</th>
</tr>
</thead>
<tbody>
<tr>
<td># of lanes being crossed by pedestrians at signalized intersections</td>
<td>122nd (N) – 5 122nd (S) – 5 Market (E) – 2 Market (W) – 2</td>
<td>122nd (N) – 5 122nd (S) – 5 Division (E) – 6 Division (W) – 6</td>
<td>122nd (N) – 6 122nd (S) – 6 Powell (E) – 4 Powell (W) – 3</td>
</tr>
<tr>
<td>Effective turning radius at intersection</td>
<td>NW 23 ft. NE 22 ft. SE 23 ft. SW 23 ft.</td>
<td>NW 23 ft. NE 23 ft. SE 20 ft. SW 20 ft.</td>
<td>NW 29 ft. NE 37 ft. SE 25 ft. SW 23 ft.</td>
</tr>
<tr>
<td>Total crossing distance</td>
<td>122nd (N) – 75 ft 122nd (S) – 75 ft Market (E) – 40 ft Market (W) – 40 ft</td>
<td>122nd (N) – 65 ft 122nd (S) – 65 ft Division (E) – 65 ft Division (W) – 70 ft</td>
<td>122nd (N) – 80 ft 122nd (S) – 75 ft Powell (E) – 65 ft Powell (W) – 60 ft</td>
</tr>
<tr>
<td>Signal cycle length</td>
<td>1:45</td>
<td>1:19 (running free)</td>
<td>1:28</td>
</tr>
<tr>
<td>Pedestrian signal actuated</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Pedestrian crossing time</td>
<td>0:28 – 122nd 1:00 - Market</td>
<td>0:24 – 122nd 0:24 - Division</td>
<td>0:26 – 122nd 0:24 - Powell</td>
</tr>
<tr>
<td># of right-turn-on red motor vehicles and the number of motorists making a permitted left turn in a 15-minute period(right/left)</td>
<td>20 / 23 (Weekday 8:00 – 9:30am)</td>
<td>77 / 185 (Weekday 8:00 – 9:30am)</td>
<td>67 / 122 (Weekday 8:00 – 9:30am)</td>
</tr>
<tr>
<td>Right turn channelization islands on the crossing</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Pedestrian refuge present</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Transit Stops

There are three public transit lines providing transportation services to people in the focus area:

- Line 4 – Division / Fessenden
- Line 9 – Powell / Broadway
- Line 71 – 60th Ave / 122nd Ave

Figures 50 and 51 provide detailed information on the transit service and stops.

**Key Conclusions**

- Both SE 122nd Ave. and SE Division St. have bus service operating on them. Line 4 runs on SE Division St. It is frequent bus service and runs approximately every 15 min. Line 71 runs on SE 122nd Ave. It runs approximately every 15 min. on weekdays, nearly at the level of frequent service, but the service does not run as frequently on weekends.

- The intersections where there are the most TriMet customers getting on or off a bus and walking to or from their destination are:
  - SE 122nd Ave. & SE Division St. = 8,925/week
  - SE 122nd Ave. & SE Powell Blvd. = 5,401/week

  Six other intersections in the focus area have close to 1,500 customer ons and offs a week.

- The highest activity bus stop in the focus area, located on SE Division St. is the westbound, Line 4, stop located at SE 122nd Ave. & SE Division St. (Stop ID 1381). On average, 2,444 people get on or off a bus at this stop every week.

- The highest activity bus stop in the focus area, located on SE Division St. is the northbound, Line 71, stop located at SE 122nd & SE Powell Blvd. (Stop ID 6655). On average, 1,852 people get on or off a bus at this stop every week.

- The intersections with the most request for lift or ramp deployments are:
  - SE 122nd Ave. & SE Division St. = 266 requests/month
  - SE 122nd Ave. & SE Powell Blvd. = 156 requests/month

  Many of the stops along SE Division St. have people requesting the ramp or lift be deployed. Within the focus area, on SE Division St., there are 485 ramp or lift requests per month.
**Figure 50: SE Division St. & SE 122nd Ave. - Transit Stops**

<table>
<thead>
<tr>
<th>Transit Service and Stop Attributes</th>
<th>SE 122nd Ave.</th>
<th>SE Division St.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit lines and weekday frequencies along selected streets in focus area.</td>
<td>Rte 71 (bus) – 20 min</td>
<td>Rte 4 (frequent service bus) – 15 min</td>
</tr>
<tr>
<td># of transit stops in focus area along selected streets.</td>
<td>Northbound = 7</td>
<td>Westbound = 6</td>
</tr>
<tr>
<td># of transit stops without a paved front door landing pad along selected streets.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td># of transit stops without sidewalk connections to it in all directions along selected streets.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td># of transit stops without a marked crossing within 150 ft. along selected streets.</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Stop IDs: 6629,6640,9499,6630,6631,6675,6676,6641,1381,4573,8236</td>
<td></td>
<td>Stop IDs: 1382,1383,1388,1370,1387,6630,6631,1308,1381,1371,1309,1363</td>
</tr>
<tr>
<td># of transit stops with avg. weekday boardings &gt; 50 without a shelter along selected streets.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Stop ID: 9499</td>
<td></td>
<td>Stop IDs: 1369,1382</td>
</tr>
</tbody>
</table>

**Figure 51: SE Division St. & SE 122nd Ave. – Transit Ridership**

<table>
<thead>
<tr>
<th>Stop Location</th>
<th>Stop ID</th>
<th>Direction</th>
<th>Transit Lines</th>
<th>Weekly Ons &amp; Offs</th>
<th>Pedestrian Count Proxy at Intersection</th>
<th>Monthly LIFTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>122nd &amp; Market</td>
<td>6645</td>
<td>N</td>
<td>71</td>
<td>640</td>
<td>1,400</td>
<td>3</td>
</tr>
<tr>
<td>122nd &amp; Market</td>
<td>6646</td>
<td>S</td>
<td>71</td>
<td>760</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>122nd &amp; Stephens</td>
<td>9499</td>
<td>N</td>
<td>71</td>
<td>549</td>
<td>549</td>
<td>1</td>
</tr>
<tr>
<td>122nd &amp; Lincoln</td>
<td>6640</td>
<td>N</td>
<td>71</td>
<td>227</td>
<td>919</td>
<td>3</td>
</tr>
<tr>
<td>122nd &amp; Lincoln</td>
<td>6641</td>
<td>S</td>
<td>71</td>
<td>692</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>SE 122nd &amp; Powell</td>
<td>8236</td>
<td>S</td>
<td>71</td>
<td>1,384</td>
<td>1,384</td>
<td>50</td>
</tr>
<tr>
<td>SE 122nd &amp; Woodward</td>
<td>6675</td>
<td>N</td>
<td>71</td>
<td>111</td>
<td>183</td>
<td>1</td>
</tr>
<tr>
<td>SE 122nd &amp; Woodward</td>
<td>6676</td>
<td>S</td>
<td>71</td>
<td>72</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SE 122nd &amp; Powell</td>
<td>6655</td>
<td>N</td>
<td>71</td>
<td>1,852</td>
<td></td>
<td>62</td>
</tr>
<tr>
<td>SE 122nd &amp; Powell</td>
<td>8843</td>
<td>S</td>
<td>71</td>
<td>1,270</td>
<td></td>
<td>36</td>
</tr>
<tr>
<td>SE 122nd &amp; Powell</td>
<td>4573</td>
<td>E</td>
<td>9</td>
<td>1,312</td>
<td>5,401</td>
<td>35</td>
</tr>
<tr>
<td>SE 122nd &amp; Powell</td>
<td>4572</td>
<td>W</td>
<td>9</td>
<td>967</td>
<td></td>
<td>23</td>
</tr>
</tbody>
</table>
### SE Division St.

<table>
<thead>
<tr>
<th>Stop Location</th>
<th>Stop ID</th>
<th>Direction</th>
<th>Transit Lines</th>
<th>Weekly Ons &amp; Offs</th>
<th>Pedestrian Count Proxy at Intersection</th>
<th>Monthly LIFTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Division &amp; 112th</td>
<td>1368</td>
<td>E</td>
<td>4</td>
<td>682</td>
<td>1,389</td>
<td>33</td>
</tr>
<tr>
<td>Division &amp; 112th</td>
<td>1369</td>
<td>W</td>
<td>4</td>
<td>706</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Division &amp; 115th</td>
<td>1370</td>
<td>E</td>
<td>4</td>
<td>339</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Division &amp; 116th</td>
<td>1371</td>
<td>W</td>
<td>4</td>
<td>290</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Division &amp; 119th</td>
<td>1373</td>
<td>E</td>
<td>4</td>
<td>1,019</td>
<td>1,481</td>
<td>35</td>
</tr>
<tr>
<td>Division &amp; 119th</td>
<td>1374</td>
<td>W</td>
<td>4</td>
<td>463</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Division &amp; 122nd</td>
<td>1379</td>
<td>E</td>
<td>4</td>
<td>2,305</td>
<td></td>
<td>74</td>
</tr>
<tr>
<td>Division &amp; 122nd</td>
<td>1381</td>
<td>W</td>
<td>4</td>
<td>2,444</td>
<td></td>
<td>82</td>
</tr>
<tr>
<td>Division &amp; 122nd</td>
<td>6630</td>
<td>N</td>
<td>71</td>
<td>2,243</td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>Division (Clinton) &amp; 122nd</td>
<td>6629</td>
<td>N</td>
<td>71</td>
<td>495</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>Division &amp; 122nd</td>
<td>6631</td>
<td>S</td>
<td>71</td>
<td>1,438</td>
<td></td>
<td>29</td>
</tr>
<tr>
<td>Division &amp; 124th</td>
<td>1383</td>
<td>E</td>
<td>4</td>
<td>510</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Division &amp; 125th</td>
<td>1382</td>
<td>W</td>
<td>4</td>
<td>1,074</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>Division 12700 Block</td>
<td>1308</td>
<td>E</td>
<td>4</td>
<td>740</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>Division &amp; 130th</td>
<td>1386</td>
<td>E</td>
<td>4</td>
<td>575</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Division &amp; 130th</td>
<td>1387</td>
<td>W</td>
<td>4</td>
<td>1,106</td>
<td></td>
<td>28</td>
</tr>
<tr>
<td>Division &amp; 131st</td>
<td>1388</td>
<td>E</td>
<td>4</td>
<td>425</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Division 13100 Block</td>
<td>1309</td>
<td>W</td>
<td>4</td>
<td>350</td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>

**Figure 52: Stop ID 1381 (Division & SE 122nd) - TriMet Customer Survey**

![Customer Survey Results](image)
Survey administered on September 28, 2011 (12-4pm).
n = 26

Primary mode of access (multiple answers possible, so percentages may not total 100 percent):
58%-transferred, 85%-walked, 0%-drove and parked, 0%-dropped off, 0%-bicycled

Figure 52 displays customers’ general opinions regarding various elements of the walking environment in the immediate vicinity of the transit stop. Specific customer comments and concerns are listed below.

**Customer Comments/Concerns**

- Almost get hit every day by cars.
- Cars through pedestrian crosswalk when it's pedestrian's turn.
- Cars won't stop - cars are impatient.
- Closer stops on same side of street for transfer i.e. # 71 stop on south side behind # 1379 Stop.
- Crazy drivers, almost get hit every day.
- Crosswalks takes too long.
- Gang violence loitering, drug use and dealing - need more police.
- Needs more seating.
- No pedestrian right of away-In fear of being hit.
- Not enough time for crosswalks.
- Not enough time to cross and you get run over. A Hassel To get to the other side.
- Not enough time to cross almost run over by cars.
- Not enough time to cross or too long of a wait.
- Sidewalks needs repainting - cars pull into crosswalk often.
Figure 53: SE Division St. & SE 122nd Ave. Connectivity Analysis

Connectivity Score*  
- < 40 (Poor)  
- 40 - 50  
- 50 - 60  
- 60 - 70  
- > 70 (Good)

TriMet Stops

TriMet Bus Lines

TriMet Rail Lines

MAX Blue Line  
MAX Green Line  
MAX Red Line  
MAX Yellow Line  
WES

*The Connectivity Score is based on how well each parcel is connected to other parcels within a quarter-mile radius. This analysis was performed using ViaCity software from the Transpo Group.
Figure 54: SE Division St. & SE 122nd Ave - Pedestrian and Transit Needs

There are 8,430 weekly boardings at SE 122nd & Division resulting in heavy pedestrian traffic cross the intersection.

Drivers also encroach into the crosswalks.

SE Powell Blvd has many segments that lack sidewalks and many undefined driveways.

Right-turning drivers look for gaps in traffic, rather than for people trying to cross the street.

Driveways create conflicts between pedestrians and vehicles.

A typical segment of SE Powell Blvd near 122nd Ave. People walk in the bike lane.
Infrastructure Needs

Needs are identified below. Future solutions to address these needs will hopefully make people feel safer, entice them to walk more, and help connect people who are living, working, shopping and/or recreating in the area to retail, parks, trails, schools, public services and jobs.

Places to Connect

- Concentrations of multifamily housing to Powellhurst and Mill Park Elementary Schools.
- Concentrations of multi-family housing to retail establishments on SE Division St. and SE 122nd Ave., which include places like Albertsons, Safeway, Starbucks, Walgreens.
- Multnomah County Mid County Health Center, multifamily housing, schools, and retail commercial development to TriMet bus stops.

Observed Behavior

- Many people crossing the street on foot and motor vehicles turning at the intersection of SE 122nd Ave. & SE Powell Blvd. There are 5,401 people getting on or off a bus at this intersection every week. Most of them likely have to walk across this intersection.
- Many people crossing the street on foot and motor vehicles turning at the intersection of SE122nd Ave. & SE Division St. There are 8,925 people getting on or off a bus at this intersection every week. Most of them likely have to walk across this intersection.
- People walking in the roadway, or on the shoulder of the road, along SE Powell Blvd. where no sidewalks are present. The posted speed limit on SE Powell Blvd. is 35 mph.
- People crossing mid-block, or at unprotected intersections, along SE Division St. and SE 122nd Ave.
- People walking on curb tight sidewalks along SE Division St., where there is no landscaped buffer and the on-street parking, which is supposed to provide a buffer between pedestrians and traffic, is going unused.

Bright Spots
• There is relatively good connectivity between land parcels in the focus area.

• Much of the multi-family housing, retail, and services are clustered around existing frequent service bus or near frequent bus service.

• Curb cuts were recently installed at intersections on SE Division St., making the street more accessible to people with disabilities and people using mobility devices.

• The effective turning radii at the major intersections are relatively modest and promote lower vehicle turning speeds.

First Five Actions to Take

1. Shorten crossing distances, make crosswalks more visible, and provide more time for pedestrians to cross at the intersection SE Division St. & SE 122nd Ave. Consider other signal treatments like leading pedestrian phases, automatic recall for pedestrian actuated signals, and right turn on red restrictions. Curb radius reduction, curb extension, and crossing island treatments should also be considered to shorten crossing distances.

2. Shorten crossing distances, make crosswalks more visible, and provide more time for pedestrians to cross at the intersection SE Powell Blvd. & SE 122nd Ave. Consider other signal treatments like leading pedestrian phases, automatic recall for pedestrian actuated signals, and right turn on red restrictions. Curb radius reduction, curb extension, and crossing island treatments should also be considered to shorten crossing distances.

3. Build, at least, 10 ft. wide sidewalks along SE Powell Blvd., where there are none, and widen existing sidewalk corridors all along SE Powell Blvd., so there is landscaped buffer between pedestrians and the motor vehicles. The minimum sidewalk corridor width for a busy road like this should be 10 ft., including a landscaped buffer, but wider is better, preferably 14 ft.

4. Provide additional, frequent, and protected pedestrian crossings along SE Division St. & SE122nd Ave. At a minimum, protected crossings should be provided every 530 ft. Consider treatments like medians with pedestrian refuges, and pedestrian warning signs, like Rectangular Rapid-Flashing Beacons (RRFBs) to assist people with crossing the street.

5. Widen existing sidewalk corridors all along SE Division St. & SE 122nd Ave., so there is landscaped buffer between pedestrians and the motor vehicles. The minimum sidewalk corridor width for a busy road like this should be 10 ft, including a landscaped buffer, but wider is better, preferably 14 ft.
Existing Plans and Facility Responsibilities

Facility Ownership / Maintenance:

SE 122nd Ave.: Roadway owned and maintained by City of Portland; signals owned and operated by City of Portland; signal located at SE 122nd & SE Powell Blvd. owned and operated by Oregon Department of Transportation (ODOT); transit stop amenities owned and maintained by TriMet.

SE Division St.: Roadway owned and maintained by City of Portland; signals owned and operated by City of Portland; transit stop amenities owned and maintained by TriMet.

Existing Plans:

- City of Portland Transportation System Plan (last amended in 2011)

- The Portland Plan (ongoing)


- Outer SE Powell Blvd. Conceptual Design Plan (from I-205 to SE 174th Ave.)

- East Portland in Motion (2011)

- East Portland Action Plan (2009)
  [http://eastportland.org/sites/default/files/Adopted%20EPAP%20ACTION%20PLAN%20February%202009.pdf](http://eastportland.org/sites/default/files/Adopted%20EPAP%20ACTION%20PLAN%20February%202009.pdf)

- Outer Southeast Community Plan (1996)

- SE Neighborhood Greenways
Focus Area 7 – SE Powell Blvd. & SE 82nd Ave.

The SE Powell Blvd. & SE 82nd Ave. focus area is located in the City of Portland. It is situated approximately six miles from the City of Portland’s downtown, seven miles from City of Gresham’s Downtown, and 2.5 miles from Portland’s Gateway Regional Center. Light rail and bus connections converge nearby at the MAX Green Line Powell St. Station and the MAX Red/Blue Line 82nd Ave. Station. Within the focus area a variety of retail and service providers are located along SE 82nd Ave. and SE Powell Blvd. The high existing transit ridership in this area combined with the mix of land uses makes this focus area a good location for infrastructure investments that will improve a person’s ability to walk to transit stops and local destinations safely, directly, and comfortably.

Places to access locally by foot

If a person walks within this focus area, these are examples of the places he or she could walk to or from:

- Retail (e.g. Eastport Plaza, WalMart, Food 4 Less, Goodwill Superstore, Fubonn Supermarket, Columbia Medical Clinic)
- Housing (senior, multi-family, single-family)
- Health Centers (e.g. Rosewood Family Health Center)
- Multnomah County Library – Holgate Branch
- Schools (Marysville Elementary School)
- Parks (Essex Park, Lents Park, Multnomah Park Cemetery)

Places to access regionally by transit

If a person boards a TriMet bus or train in this focus area, these are examples of the places he or she could travel to or from without making a transfer:

Portland: Downtown Portland, North Portland, Southeast Portland,
Clackamas Regional Center: Clackamas Town Center Mall
Gresham: Downtown Gresham

Transit centers and MAX stations: Gateway/NE 99th Ave Transit Center, Clackamas Town Center Transit Center, Hollywood/NE 42nd Ave Transit Center, Rose Quarter Transit Center, Gresham Central Transit Center, NE 82nd Ave MAX Station, all stations along the MAX Green Line

2040 growth concept centers: Central City, Gateway Regional Center, Clackamas Regional Center, Gresham Regional Center,
Figure 55: SE Powell Blvd. & SE 82nd Ave. - Land Use and Transportation
Roadways and Sidewalks

There are three high speed, high volume roads running through the focus area. They connect the area to adjacent cities, a major US highway and three light rail lines. All have transit service on them.

**North-South**
- SE 82nd Ave

**East-West**
- SE Powell Blvd.
- SE Holgate Blvd.

While these arterial roads provide motor vehicle and transit service access to a variety of regional and local destinations, in their current state, they also act as barriers to pedestrian and bicyclists.

Figure 56 shows the roadway and sidewalk attributes for the segments of SE 82nd Ave., SE Powell Blvd., and SE Holgate Blvd. located within the focus area. Key conclusions, based on field visits and information in Figure 56 are outlined below.

**Key Conclusions**
- SE 82nd Ave. and SE Powell Blvd. have posted speed limits of 35 mph and are approximately 60-70 ft. wide. Both are designed for travel speeds of 45 mph.

- SE 82nd Ave. and SE Powell Blvd. generally have sidewalks on both sides of the street. However, sidewalks become much sparser on Powell Blvd. just past the focus area boundaries, east of I-205.

- The existence or width of a landscaped buffer between the sidewalk and the roadway on SE 82nd Ave. and SE Powell Blvd. varies greatly.

- Few buildings along SE 82nd Ave. and SE Powell Blvd. have buildings oriented toward the sidewalk. Both streets have a very auto-centric design.

- There are many driveways for pedestrians to contend with on SE 82nd Ave., SE Powell Blvd., and SE Holgate Blvd., ranging from 13 to 32 per side. Most of the driveways on Holgate Blvd. are small residential driveways, versus larger commercial driveways located on SE Powell and SE 82nd Ave.
Figure 56: SE Powell Blvd. & SE 82nd Ave. - Roadways and Sidewalks

<table>
<thead>
<tr>
<th>Roadway &amp; Sidewalk Attributes</th>
<th>SE 82nd Ave.</th>
<th>SE Powell Blvd.</th>
<th>SE Holgate Blvd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design speed</td>
<td>40 mph</td>
<td>40 mph</td>
<td>Not Available</td>
</tr>
<tr>
<td>Posted speed limit</td>
<td>35 mph</td>
<td>35 mph</td>
<td></td>
</tr>
<tr>
<td>Midblock 85th percentile traffic speed</td>
<td>Not available</td>
<td>Not available</td>
<td>32 mph</td>
</tr>
<tr>
<td>Presence of sidewalk throughout</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Width of sidewalk</td>
<td>0 to 10 ft.</td>
<td>6 to 8 ft.</td>
<td>5 to 10 ft.</td>
</tr>
<tr>
<td>Width of landscaped buffer between walkway &amp; motorized vehicle</td>
<td>0 to 12 ft.</td>
<td>0 to 20 ft.</td>
<td>0 to 3 ft.</td>
</tr>
<tr>
<td>Development oriented toward sidewalk</td>
<td>East side = 18</td>
<td>North side = 32</td>
<td>North side = 24</td>
</tr>
<tr>
<td>Width of paved shoulder, bicycle lane, and/or parking lane</td>
<td>West side = 25</td>
<td>South side = 13</td>
<td>South side = 27</td>
</tr>
<tr>
<td>On-street parking</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Presence of streetlights throughout</td>
<td>Yes (cobra)</td>
<td>Yes (cobra)</td>
<td>Yes (cobra)</td>
</tr>
<tr>
<td># of travel lanes</td>
<td>4</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Width of two-way center lane</td>
<td>12 ft.</td>
<td>12 ft.</td>
<td>No</td>
</tr>
<tr>
<td>Width of outside travel lane</td>
<td>12 ft.</td>
<td>12 to 13 ft.</td>
<td>10 ft.</td>
</tr>
<tr>
<td>Width of inner travel lanes</td>
<td>11 ft.</td>
<td>12 ft.</td>
<td>N/A</td>
</tr>
<tr>
<td>Presence/width of median (must be &gt; 6ft and separate two</td>
<td>No</td>
<td>10 ft. (planted)</td>
<td>No</td>
</tr>
<tr>
<td>directions of traffic to be considered median). Is it traffic</td>
<td></td>
<td>partial extent</td>
<td></td>
</tr>
<tr>
<td>separating, concrete, raised, planted?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total width of roadway—curb to curb</td>
<td>60 to 70 ft.</td>
<td>60 ft.</td>
<td>60 ft.</td>
</tr>
<tr>
<td>Annual average daily traffic (AADT)</td>
<td>26,000 (in 2010)</td>
<td>26,000 (in 2010)</td>
<td>12,700</td>
</tr>
</tbody>
</table>
Crossings and Connectivity

Based on field observation and transit passenger count data three signalized intersections were selected for review. Each appeared to have a relatively high degree of motor vehicle movement, transit stop activity, and pedestrian movement compared to other intersections in the focus area. The three intersections were selected for exemplary purposes. Other intersections in the focus area could also benefit from this type of evaluation and review.

- SE 82nd Ave. & SE Division St.
- SE 82nd Ave. & SE Powell Blvd.
- SE 82nd Ave. & SE Holgate Blvd.

Information was collected on crossing opportunities for three roadway segments on 82nd Ave, Powell Blvd, and Holgate Blvd. Figures 57 and 58 present this information.

Figure 62 displays the overall road network connectivity in the SE 82nd Ave. & SE Powell Blvd. focus area, using a Route Directness Index (RDI). A RDI score takes the straight line distance from the center of one parcel to the center of all other parcels, within a certain distance, and divides it against the distance it would take to get to the parcel using the actual road network. An RDI score of 1 is the most direct. It means the actual road network distance is the exact same as the straight line distance. Figure 62 shows the connectivity of each parcel to all other parcels within a quarter mile.

Key Conclusions

- Within the focus area, SE 82nd Ave. has the greatest number of intersections (24 intersections), but SE Holgate Blvd. and SE Powell Blvd. also have a relatively high numbers of intersections, 18 and 19 respectively.

- Only 5 of 24 intersections on SE 82nd Ave. have full signals, one is marked, and 18 are unmarked.

- Crossing distances at all assessed intersections are relatively short for pedestrians, typically between 60 and 70 ft. None had any legs of the crossing with spans equal or greater than 100 ft. The longest legs, 96 ft., are over Division St., at 82nd Ave.

- Generally parcels are well connected in the focus area.

- Pedestrian crossing speeds at the three intersections assessed are as follows:
  - SE 82nd Ave. & SE Division St. = 2.5 to 3.0 ft./second
  - SE 82nd Ave. & SE Powell Blvd. = 2.7 to 3.1 ft. /second
  - SE 82nd Ave. & SE Holgate Blvd. = 1.6 to 3.2 ft./second
Figure 57: SE Powell Blvd. & SE 82nd Ave. – Crossings

<table>
<thead>
<tr>
<th>Pedestrian &amp; BicycleCrashes</th>
<th>SE 82nd Ave. &amp; SE Division St. (pedestrian)</th>
<th>SE 82nd Ave. &amp; SE Woodward St. (pedestrian)</th>
<th>SE 84th Ave. &amp; SE Powell Blvd. (pedestrian)</th>
<th>SE 86th Ave. &amp; SE Powell Blvd. (2 pedestrians)</th>
<th>SE 75th Ave. &amp; SE Holgate Blvd. (bicyclist)</th>
<th>SE 11th Ave. &amp; SE Foster Rd. (bicyclist)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locations of known pedestrian or bike crashes that resulted in a fatality or serious injury between 2007-2009</td>
<td>• SE 82nd Ave. &amp; SE Division St. (pedestrian)</td>
<td>• SE 82nd Ave. &amp; SE Woodward St. (pedestrian)</td>
<td>• SE 84th Ave. &amp; SE Powell Blvd. (pedestrian)</td>
<td>• SE 86th Ave. &amp; SE Powell Blvd. (2 pedestrians)</td>
<td>• SE 75th Ave. &amp; SE Holgate Blvd. (bicyclist)</td>
<td>• SE 11th Ave. &amp; SE Foster Rd. (bicyclist)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Roadway Crossing Attributes</th>
<th>SE 82nd Ave.</th>
<th>SE Holgate Blvd.</th>
<th>SE Powell Blvd.</th>
</tr>
</thead>
<tbody>
<tr>
<td># of unmarked crossings in focus area along selected streets</td>
<td>18</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td># of marked crossings in focus area along selected streets</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td># of signalized crossings in focus area along selected streets</td>
<td>5</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

Figure 58: SE Powell Blvd. & SE 82nd Ave. – Intersections

<table>
<thead>
<tr>
<th>Intersection Attributes</th>
<th>82nd &amp; Division</th>
<th>82nd &amp; Powell</th>
<th>82nd &amp; Holgate</th>
</tr>
</thead>
</table>
| # of lanes being crossed by pedestrians at signalized intersections | 82nd (N) – 5  
82nd (S) – 5  
Division (E) – 6  
Division (W) – 6 | 82nd (N) – 5  
82nd (S) – 5  
Powell (E) – 6  
Powell (W) – 5 | 82nd (N) – 5  
82nd (S) – 5  
Holgate (E) – 3  
Holgate (W) – 3 |
| Effective turning radius at intersection | NW 26 ft.  
NE 18 ft.  
SE 32 ft.  
SW 25 ft. | NW 28 ft.  
NE 23 ft.  
SE 21 ft.  
SW 21 ft. | NW 33 ft.  
NE 30 ft.  
SE 25 ft.  
SW 27 ft. |
| Total crossing distance | 82nd (N) – 60 ft.  
82nd (S) – 70 ft.  
Division (E) – 96 ft.  
Division (W) – 96 ft. | 82nd (N) – 70 ft.  
82nd (S) – 60 ft.  
Powell (E) – 80 ft.  
Powell (W) – 70 ft. | 82nd (N) – 70 ft.  
82nd (S) – 60 ft.  
Holgate (E) – 65 ft.  
Holgate (W) – 60 ft. |
| Signal cycle length | 1:40 | 2:38 (running free) | 1:50 |
| Pedestrian signal actuated | Yes | Yes | Yes – Powell  
No - Holgate |
| Pedestrian crossing time | 0:20 82nd  
0:38 Division | 0:22 82nd  
0:26 Powell | 0:22 82nd  
0:37 Holgate |
| # of right-turn-on red motor vehicles and the number of motorists making a permitted left turn in a 15-minute period (right/left) | 25 / 77  
(Weekday) | 38 / 179  
(Weekday) | 24 / 101  
(Weekday) |
| Right turn channelization islands on the crossing | 0 | 0 | 0 |
| Pedestrian refuge present | No | No | No |


Transit Stops

There are five public transit lines providing transportation services to people in the focus area:

- Line 4 – Division / Fessenden
- Line 9 – Powell / Broadway
- Line 17 – Holgate / NW 21st
- Line 72 – Killingsworth / 82nd
- MAX – Green Line

Figures 59 and 60 provide detailed information on the transit service and stops.

Key Conclusions

- SE 82\textsuperscript{nd} Ave., SE Powell Blvd. and SE Holgate Blvd. all have frequent bus service operating on them, running approximately every 15 min. Line 72 runs on SE Powell Blvd. Line 9 runs on SE Powell Blvd. Past I-205, line 9 runs every 30 min. Line 17 runs on SE Holgate Blvd.

- The intersections where there are the most TriMet customers getting on or off a bus and walking to or from their destination are:
  - SE 82\textsuperscript{nd} Ave. & SE Division St. = 17,953/week
  - SE 82\textsuperscript{nd} Ave. & SE Powell Blvd. = 17,782/week

- 14 other intersections in the focus area have greater than 1,000 customer ons and offs a week.

- The highest activity bus stop in the focus area, located on SE 82\textsuperscript{nd} Ave. is the southbound, Line 72, stop located at SE 82\textsuperscript{nd} Ave. & SE Powell Blvd. (Stop ID 8024). On average, 5,296 people get on or off a bus at this stop every week.

- The highest activity bus stop in the focus area, located on SE Powell Blvd. is the southbound, Green Line MAX, stop located at Powell Blvd. & I-205 (Stop ID 13126). On average, 3,370 people get on or off a train at this stop every week.

- The highest activity bus stop in the focus area, located on SE Holgate Blvd. is the eastbound, Line 17, stop located at SE 83\textsuperscript{rd} & SE Holgate Blvd. (Stop ID 2762). On average, 2,710 people get on or off a bus at this stop every week.
The intersections with the most request for lift or ramp deployments are:

- SE 82nd Ave. & SE Division St. = 401 requests/month
- SE 82nd Ave. & SE Powell Blvd. = 379 requests/month

Many of the stops along SE 82nd Ave. have people requesting the ramp or lift be deployed. Within the focus area, on SE 82nd Ave., there are 1,274 ramp or lift requests per month.

Figure 59: SE Powell Blvd. & SE 82nd Ave. - Transit Stops

<table>
<thead>
<tr>
<th>Transit Service and Stop Attributes</th>
<th>SE 82nd Ave.</th>
<th>SE Powell Blvd.</th>
<th>SE Holgate Blvd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit lines and weekday frequencies along selected streets in focus area.</td>
<td>Rte 72 (frequent bus service) – 15 min</td>
<td>Rte 9 (frequent bus service) – 15 min MAX Green Line (light rail) – 15 min</td>
<td>Rte 17 (frequent bus service) – 20 min MAX Green Line (light rail) – 15 min</td>
</tr>
<tr>
<td># of transit stops in focus area along selected streets.</td>
<td>Northbound = 9 Southbound = 8</td>
<td>Westbound = 8 Eastbound = 7</td>
<td>Westbound = 9 Eastbound = 8</td>
</tr>
<tr>
<td># of transit stops without a paved front door landing pad along selected streets.</td>
<td>0</td>
<td>0</td>
<td>5 2754, 2755, 2756, 2757, 2758</td>
</tr>
<tr>
<td># of transit stops without sidewalk connections to it in all directions along selected streets.</td>
<td>2 Stop IDs: 7957, 7948</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td># of transit stops without a marked crossing within 150 ft. along selected streets.</td>
<td>11 Stop IDs: 7984, 7943, 7944, 8041, 8029, 8040, 8052, 8053, 7948, 8031, 7947</td>
<td>10 Stop IDs: 4704, 4709, 4691, 4706, 11922, 13126, 4692, 11923, 13137</td>
<td>6 Stop IDs: 2762, 7984, 10593, 2767, 2757, 2756</td>
</tr>
<tr>
<td># of transit stops with avg. weekday boardings &gt; 50 without a shelter along selected streets.</td>
<td>6 Stop IDs: 8052, 8031, 8237, 7935, 8029, 8009</td>
<td>1 Stop ID: 4700</td>
<td>0</td>
</tr>
</tbody>
</table>
### Figure 60: SE Powell Blvd. & SE 82nd Ave. - Transit Ridership

<table>
<thead>
<tr>
<th>Stop Location</th>
<th>Stop ID</th>
<th>Direction</th>
<th>Transit Lines</th>
<th>Weekly Ons &amp; Offs</th>
<th>Pedestrian Count Proxy at Intersection</th>
<th>Monthly LIFTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>82nd &amp; Division</td>
<td>1497</td>
<td>E</td>
<td>4</td>
<td>4,486</td>
<td>17,953</td>
<td>105</td>
</tr>
<tr>
<td>82nd &amp; Division</td>
<td>1499</td>
<td>W</td>
<td>4</td>
<td>4,442</td>
<td></td>
<td>93</td>
</tr>
<tr>
<td>82nd &amp; Division</td>
<td>7957</td>
<td>N</td>
<td>72</td>
<td>4,712</td>
<td></td>
<td>114</td>
</tr>
<tr>
<td>82nd &amp; Division</td>
<td>7958</td>
<td>S</td>
<td>72</td>
<td>4,305</td>
<td></td>
<td>89</td>
</tr>
<tr>
<td>82nd &amp; Clinton</td>
<td>7947</td>
<td>N</td>
<td>72</td>
<td>198</td>
<td>442</td>
<td>2</td>
</tr>
<tr>
<td>82nd &amp; Clinton</td>
<td>7948</td>
<td>S</td>
<td>72</td>
<td>245</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>82nd &amp; Tibbetts</td>
<td>8052</td>
<td>N</td>
<td>72</td>
<td>513</td>
<td>978</td>
<td>3</td>
</tr>
<tr>
<td>82nd &amp; Tibbetts</td>
<td>8053</td>
<td>S</td>
<td>72</td>
<td>465</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>82nd &amp; Powell</td>
<td>4693</td>
<td>E</td>
<td>9</td>
<td>4,081</td>
<td></td>
<td>466</td>
</tr>
<tr>
<td>82nd &amp; Powell</td>
<td>4695</td>
<td>W</td>
<td>9</td>
<td>3,150</td>
<td></td>
<td>43</td>
</tr>
<tr>
<td>82nd &amp; Powell</td>
<td>8023</td>
<td>N</td>
<td>72</td>
<td>5,254</td>
<td>17,782</td>
<td>125</td>
</tr>
<tr>
<td>82nd &amp; Powell</td>
<td>8024</td>
<td>S</td>
<td>72</td>
<td>5,296</td>
<td></td>
<td>114</td>
</tr>
<tr>
<td>82nd &amp; Rhone</td>
<td>8031</td>
<td>N</td>
<td>72</td>
<td>466</td>
<td>2,783</td>
<td>35</td>
</tr>
<tr>
<td>82nd &amp; Francis</td>
<td>7943</td>
<td>N</td>
<td>72</td>
<td>1,304</td>
<td></td>
<td>28</td>
</tr>
<tr>
<td>82nd &amp; Francis</td>
<td>7944</td>
<td>S</td>
<td>72</td>
<td>1,479</td>
<td></td>
<td>3084</td>
</tr>
<tr>
<td>82nd &amp; Boise</td>
<td>7935</td>
<td>N</td>
<td>72</td>
<td>1,642</td>
<td></td>
<td>59</td>
</tr>
<tr>
<td>82nd &amp; Boise</td>
<td>8237</td>
<td>S</td>
<td>72</td>
<td>1,442</td>
<td></td>
<td>54</td>
</tr>
<tr>
<td>82nd &amp; Holgate</td>
<td>7984</td>
<td>N</td>
<td>72</td>
<td>3,532</td>
<td></td>
<td>95</td>
</tr>
<tr>
<td>82nd &amp; Holgate</td>
<td>7986</td>
<td>S</td>
<td>72</td>
<td>3,186</td>
<td></td>
<td>80</td>
</tr>
<tr>
<td>82nd &amp; Holgate</td>
<td>2763</td>
<td>W</td>
<td>17</td>
<td>2,053</td>
<td></td>
<td>63</td>
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<tr>
<td>82nd &amp; Schiller</td>
<td>8040</td>
<td>N</td>
<td>72</td>
<td>246</td>
<td>391</td>
<td>8</td>
</tr>
<tr>
<td>82nd &amp; Schiller</td>
<td>8041</td>
<td>S</td>
<td>72</td>
<td>145</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>82nd &amp; Raymond</td>
<td>8030</td>
<td>S</td>
<td>72</td>
<td>680</td>
<td>680</td>
<td>11</td>
</tr>
<tr>
<td>82nd &amp; Raymond Ct.</td>
<td>8029</td>
<td>N</td>
<td>72</td>
<td>1,152</td>
<td>1,152</td>
<td>36</td>
</tr>
<tr>
<td>82nd &amp; Woodward</td>
<td>8061</td>
<td>N</td>
<td>72</td>
<td>700</td>
<td>1,359</td>
<td>5</td>
</tr>
<tr>
<td>82nd &amp; Woodward</td>
<td>8062</td>
<td>S</td>
<td>72</td>
<td>659</td>
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<td>2</td>
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### Powell Blvd

<table>
<thead>
<tr>
<th>Stop Location</th>
<th>Stop ID</th>
<th>Direction</th>
<th>Transit Lines</th>
<th>Weekly Ons &amp; Offs</th>
<th>Pedestrian Count Proxy at Intersection</th>
<th>Monthly LIFTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Powell &amp; 72nd</td>
<td>4686</td>
<td>E</td>
<td>9</td>
<td>563</td>
<td>1,240</td>
<td>27</td>
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<tr>
<td>Powell &amp; 71st</td>
<td>4684</td>
<td>W</td>
<td>9</td>
<td>677</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Powell &amp; 75th</td>
<td>11922</td>
<td>E</td>
<td>9</td>
<td>310</td>
<td>625</td>
<td>0</td>
</tr>
<tr>
<td>Powell &amp; 75th</td>
<td>11923</td>
<td>W</td>
<td>9</td>
<td>316</td>
<td>1</td>
<td></td>
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<tr>
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<td>E</td>
<td>9</td>
<td>626</td>
<td>1,159</td>
<td>5</td>
</tr>
<tr>
<td>Powell &amp; 79th</td>
<td>4692</td>
<td>W</td>
<td>9</td>
<td>533</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Powell &amp; 84th</td>
<td>4698</td>
<td>W</td>
<td>9</td>
<td>587</td>
<td>587</td>
<td>21</td>
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<td>Powell &amp; 86th</td>
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<td>E</td>
<td>9</td>
<td>588</td>
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<tr>
<td>Powell &amp; 87th</td>
<td>4700</td>
<td>W</td>
<td>9</td>
<td>494</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Powell &amp; 90th</td>
<td>4704</td>
<td>E</td>
<td>9</td>
<td>304</td>
<td>476</td>
<td>5</td>
</tr>
<tr>
<td>Powell &amp; 90th</td>
<td>4706</td>
<td>W</td>
<td>9</td>
<td>173</td>
<td></td>
<td>5</td>
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<tr>
<td>Powell &amp; 92nd</td>
<td>4707</td>
<td>E</td>
<td>9</td>
<td>1,536</td>
<td>2,758</td>
<td>24</td>
</tr>
<tr>
<td>Powell &amp; 92nd</td>
<td>4709</td>
<td>W</td>
<td>9</td>
<td>1,223</td>
<td></td>
<td>19</td>
</tr>
<tr>
<td>Powell MAX Station</td>
<td>13137</td>
<td>N</td>
<td>Green</td>
<td>2,956</td>
<td>6,326</td>
<td></td>
</tr>
<tr>
<td>Powell MAX Station</td>
<td>13126</td>
<td>S</td>
<td>Green</td>
<td>3,370</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SE Holgate Blvd.

<table>
<thead>
<tr>
<th>Stop Location</th>
<th>Stop ID</th>
<th>Direction</th>
<th>Transit Lines</th>
<th>Weekly Ons &amp; Offs</th>
<th>Pedestrian Count Proxy at Intersection</th>
<th>Monthly LIFTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holgate &amp; 72nd</td>
<td>2754</td>
<td>E</td>
<td>17</td>
<td>157</td>
<td>310</td>
<td>4</td>
</tr>
<tr>
<td>Holgate &amp; 72nd</td>
<td>2755</td>
<td>W</td>
<td>17</td>
<td>153</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Holgate &amp; 74th</td>
<td>2757</td>
<td>E</td>
<td>17</td>
<td>132</td>
<td>263</td>
<td>1</td>
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<tr>
<td>Holgate &amp; 75th</td>
<td>2756</td>
<td>W</td>
<td>17</td>
<td>131</td>
<td></td>
<td>1</td>
</tr>
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<td>Holgate &amp; 77th</td>
<td>2758</td>
<td>E</td>
<td>17</td>
<td>86</td>
<td>169</td>
<td>0</td>
</tr>
<tr>
<td>Holgate &amp; 77th</td>
<td>2759</td>
<td>W</td>
<td>17</td>
<td>83</td>
<td></td>
<td>0</td>
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<td>Holgate &amp; 79th</td>
<td>2760</td>
<td>E</td>
<td>17</td>
<td>388</td>
<td>738</td>
<td>5</td>
</tr>
<tr>
<td>Holgate &amp; 79th</td>
<td>2761</td>
<td>W</td>
<td>17</td>
<td>350</td>
<td></td>
<td>3</td>
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<tr>
<td>Holgate &amp; 83rd</td>
<td>2762</td>
<td>E</td>
<td>17</td>
<td>2,710</td>
<td>2,710</td>
<td>104</td>
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<tr>
<td>Holgate &amp; 85th</td>
<td>10593</td>
<td>W</td>
<td>17</td>
<td>1,039</td>
<td>1,039</td>
<td>61</td>
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<tr>
<td>Holgate &amp; 88th</td>
<td>2767</td>
<td>E</td>
<td>17</td>
<td>193</td>
<td>342</td>
<td>2</td>
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<tr>
<td>Holgate &amp; 88th</td>
<td>2768</td>
<td>W</td>
<td>17</td>
<td>150</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Holgate &amp; 92nd</td>
<td>2770</td>
<td>E</td>
<td>17</td>
<td>207</td>
<td>439</td>
<td>2</td>
</tr>
<tr>
<td>Holgate &amp; 92nd</td>
<td>2771</td>
<td>W</td>
<td>17</td>
<td>232</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>
Figure 61: Stop ID 8023 (Powell & 82nd) - TriMet Customer Survey

Survey administered on September 30, 2011 (1-5pm)
n= 42

Primary mode of access (multiple answers possible, so percentages may not total 100 percent):
83%-transferred, 12%-walked, 0%-drove and parked, 0%-dropped off, 5%-bicycled

Figure 61 displays customers’ general opinions regarding various elements of the walking environment in the immediate vicinity of the transit stop. Specific customer comments and concerns are listed below.

**Customer Comments/Concerns**

- In general it's great, good - loves TriMet.
- Smells bad.
- Smells dirty.
- Stop is dirty and smells bad.
Figure 62: SE Powell Blvd. & SE 82nd Ave. Connectivity Analysis

Connectivity Score*
- < 40 (Poor)
- 40 - 50
- 50 - 60
- 60 - 70
- > 70 (Good)

TriMet Stops

TriMet Bus Lines

TriMet Rail Lines

MAX Blue Line
MAX Green Line
MAX Red Line
MAX Yellow Line
WES

*The Connectivity Score is based on how well each parcel is connected to other parcels within a quarter-mile radius. This analysis was performed using ViaCity software from the Transpo Group.
Figure 63: SE Powell Blvd. & SE 82nd Ave. - Pedestrian and Transit Needs

1. SE 82nd Ave & Division is the transfer point for the two highest-ridership bus lines in the region (Lines 4 & 72).
2. Some residential streets are unimproved.
3. Long crossing distance for bus transfers at SE 82nd Ave & Powell (transfer point for Frequent Service Lines 9 & 72).
4. Many riders cross I-205 on ramps to transfer from Line 9 to MAX.

The pavement on Division is too rough to roll a walker across.
Infrastructure Needs

Needs are identified below. Future solutions to address these needs will hopefully make people feel safer, entice them to walk more, and help connect people who are living, working, shopping and/or recreating in the area to retail, parks, trails, schools, public services and jobs.

Places to Connect

- Concentrations of multifamily housing, particularly between SE 82nd Ave. and I-205, senior residences to retail establishments on SE 82nd Ave. and SE Powell Blvd., which include places like the East Port Plaza, Walmart, Food 4 Less, Goodwill, and Fubon Market.

- Senior residences and multi-family housing to Essex Park, Lents Park, and the I-205 trail.

- Senior residences, multifamily housing, schools, the library, medical and social service providers, and retail development to TriMet bus stops.

Observed Behavior

- Many people crossing the street on foot and cars turning at the intersection of SE 82nd Ave. & SE Powell Blvd. In addition, motor vehicles were observed running red lights at this intersection, mostly on left turns. There are 17,782 people getting on or off a bus at this intersection every week. Most of them likely have to walk across this intersection.

- Many people crossing the street on foot and cars turning at the intersections of SE 82nd Ave. & SE Division St. and SE 82nd Ave. & SE Holgate Blvd. There are 17,953 people getting on or off a bus at this intersection every week. Most of them likely have to walk across this intersection.

- People walking along the side of the road on SE Powell Blvd., east of I-205, where the sidewalk ends. The posted speed limit on SE Powell Blvd. is 35 mph.

- Motor vehicles not stopping for people trying to cross SE Powell Blvd. at mid-block crossings and people crossing outside of marked mid-block crossings. Also, elderly residents crossing SE Powell Blvd. at SE 84th Ave., near Kirkland Manor, to reach Westbound, Line 9 stop. There are no crosswalk or pedestrian facilities at this intersection.

- People walking on curb tight sidewalks along SE 82nd Ave., where there is no landscaped buffer between pedestrians and traffic.
Bright Spots

- There is relatively good connectivity between land parcels in the focus area.

- Much of the multi-family housing, retail, and services are clustered around existing frequent service bus or near frequent bus service.

- Rapid, rectangular flashing beacons and a concrete pedestrian refuge were recently installed at SE 82nd Ave. and SE Francis St. making pedestrians more visible to motor vehicle traffic and allowing them an easier crossing of SE 82nd Ave.

- The effective turning radii at the major intersections are relatively modest and promote lower vehicle turning speeds and crossing distances are not huge.

First Five Actions to Take

1. Shorten crossing distances, make crosswalks more visible, and provide more time for pedestrians to cross at the intersection of SE Powell Blvd. & SE 82nd Ave. All signals should, at a minimum, be timed so people have one second to walk 3.5 ft. Given the intersection’s proximity to senior centers and retail, a more appropriate time would be one second for every 2.5 ft. to allow children and senior citizens, who tend to walk more slowly, more time to cross the street comfortably under the protection of the walk phase. Consider other signal treatments like leading pedestrian phases, automatic recall for pedestrian actuated signals, and right turn on red restrictions. Curb radius reduction, curb extension, and crossing island treatments should also be considered to shorten crossing distances. Red light cameras could help prevent people running red lights.

2. Shorten crossing distances, make crosswalks more visible, and provide more time for pedestrians to cross at the intersections of SE Division St. & SE 82nd Ave. and SE Holgate Blvd. & SE 82nd. All signals should, at a minimum, be timed so people have one second to walk 3.5 ft. Given the intersection’s proximity to senior centers and schools, a more appropriate time would be one second for every 2.5 ft. to allow children and senior citizens, who tend to walk more slowly, more time to cross the street comfortably under the protection of the walk phase. Consider other signal treatments like leading pedestrian phases, automatic recall for pedestrian actuated signals, and right turn on red restrictions. Curb radius reduction, curb extension, and crossing island treatments should also be considered to shorten crossing distances.

3. Build, at least, 10 ft. wide sidewalks along SE Powell Blvd., where there are none, and widen existing sidewalk corridors all along SE Powell Blvd., so there is landscaped buffer between pedestrians and the motor vehicles. The minimum sidewalk corridor width for a busy road like this should be 10 ft., including a landscaped buffer, but wider is better, preferably 14 ft.
4. Install additional pedestrian warning systems at mid-block crossings along SE Powell Blvd. Consider treatments like Rectangular Rapid-Flashing Beacons (RRFBs) to provide more visibility to drivers and assist pedestrians with crossing the street.

5. Build, at least, 10 ft wide sidewalks along SE 82nd Ave, where there are none, and widen existing sidewalk corridors all along SE 82nd Ave, so there is landscaped buffer between pedestrians and the motor vehicles. The minimum sidewalk corridor width for a busy road like this should be 10 ft., including a landscaped buffer, but wider is better, preferably 14 ft.

Existing Plans and Facility Responsibilities

Facility Ownership / Maintenance:

SE 82nd Ave.: Roadway owned and maintained by Oregon Department of Transportation (ODOT); signals owned and operated by ODOT; transit stop amenities owned and maintained by TriMet.

SE Powell Blvd.: Roadway owned and maintained by Oregon Department of Transportation (ODOT); signals owned and operated by ODOT; transit stop amenities owned and maintained by TriMet.

SE Holgate Blvd.: Roadway owned and maintained by City of Portland; signals owned and operated by City of Portland; signal located at SE 82nd Ave. & SE Holgate Blvd. owned and operated by ODOT; transit stop amenities owned and maintained by TriMet.

Existing Plans:

- City of Portland Transportation System Plan (last amended in 2011) http://www.portlandonline.com/transportation/index.cfm?c=52495

- The Portland Plan (ongoing) http://www.portlandonline.com/portlandplan/


• East Portland in Motion (2011)
  http://www.portlandonline.com/transportation/index.cfm?c=54306

• East Portland Action Plan (2009)
  http://eastportland.org/sites/default/files/Adopted%20EPAP%20ACTION%20PLAN%20February%202009.pdf

• Outer Southeast Community Plan (1996)
  http://www.portlandonline.com/bps/index.cfm?a=88069&c=34248
Focus Area 8 – Hillsdale

The Hillsdale focus area is located in the City of Portland. It is situated approximately three miles from the City of Portland’s downtown, 5.5 miles from the City of Beaverton’s Downtown, and five miles from the City of Tigard’s Downtown. Light rail and bus connections converge at Portland’s Transit Mall and at the Beaverton Transit Center. Connections to WES Commuter Rail can be made at Tigard or Beaverton Transit Centers. Within the focus area a variety of retail and service providers are located along SW Capitol Hwy. and SW Barbur Blvd. The mix of land uses and plans for future high capacity transit service makes this focus area a good location for infrastructure investments that will improve a person’s ability to walk to transit stops and local destinations safely, directly, and comfortably.

Places to access locally by foot

If a person walks within this focus area, these are examples of the places he or she could walk to or from:

- Retail (e.g. Hillsdale Plaza, Fred Meyer, Safeway)
- Housing (multi-family and single family)
- Wilson Pool
- Multnomah County Library – Hillsdale Branch
- Schools (Wilson High School, Reike Elementary School, Gray Middle School, Alpha Bet Jewish Day School)
- Parks & Trails (George Himes Park and Trail, Fulton Park & Community Garden, Stephens Creek Natural Area, and Dewitt Park, Fanno Creek Greenway)

Places to access regionally by transit

If a person boards a TriMet bus or train in this focus area, these are examples of the places he or she could travel to or from without making a transfer:

**Portland:** Downtown Portland, Portland State University, Marquam Hill, Northeast Portland, Lewis and Clark College, Multnomah Village

**Beaverton:** Downtown Beaverton

**Tigard:** Downtown Tigard, retail along SW Pacific Hwy., Washington Square Mall

**Sherwood / King City:** Downtown Sherwood

**Transit centers and MAX stations:** Barbur Blvd Transit Center, Beaverton Transit Center, Tigard Transit Center, Washington Square Transit Center

**2040 growth concept centers:** Central City, Beaverton Regional Center, Washington Square Regional Center, Raleigh Hills Town Center, Hillsdale Town Center, West Portland Town Center, Tigard Town Center, King City Town Center, Sherwood Town Center
Roadways and Sidewalks

There are two high speed, high volume roads running through the focus area. They connect the area to adjacent cities and a major US highway. Both have transit service on them.

East-West

- SW Capitol Hwy.
- SW Barbur Blvd.

While these arterial roads provide motor vehicle and transit service access to a variety of regional and local destinations, in their current state, they also act as major barriers to pedestrian and bicyclists.

Figure 65 shows the roadway and sidewalk attributes for the segments of SW Capitol Hwy. and SW Barbur Blvd. located within the focus area. Key conclusions, based on field visits and information in Figure 65 are outlined below.

Key Conclusions

- SW Barbur Blvd. (99W) has a posted speed limit of 35 mph and is designed for speeds of 40 mph. It is up to 90 ft. wide in sections.

- Neither SW Capitol Hwy. nor SW Barbur Blvd. has continuous sidewalks on both sides of the street. There are major gaps on both roadways.

- SW Capitol Hwy. between SW Sunset Blvd. and SW Bertha Blvd. has pedestrian friendly designs. SW Barbur Blvd. does not have a landscaped buffer between the sidewalk and the roadway. When sidewalks exist, they are typically curb tight.

- Both streets have a very auto-centric design; however SW Barbur Blvd. has much bigger building setbacks with a lot of large format retail.

- SW Capitol Hwy. has more driveways, 15 to 16 per side, than SW Barbur Blvd. which has 7 to 11 per side.
Figure 65: Hillsdale - Roadways and Sidewalks

<table>
<thead>
<tr>
<th>Roadway &amp; Sidewalk Attributes</th>
<th>SW Capitol Hwy</th>
<th>SW Barbur Blvd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design speed</td>
<td>Not Available</td>
<td>40 mph</td>
</tr>
<tr>
<td>Posted speed limit</td>
<td>25 to 30 mph</td>
<td>35 mph north of Spring Garden</td>
</tr>
<tr>
<td>Midblock 85th percentile traffic speed</td>
<td>30 mph</td>
<td>40 mph south of Spring Garden</td>
</tr>
<tr>
<td>Presence of sidewalk throughout</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Width of sidewalk</td>
<td>0 to 6 ft.</td>
<td>6 ft.</td>
</tr>
<tr>
<td>Width of landscaped buffer between walkway &amp; motorized vehicle traffic (planter, trees, etc.)</td>
<td>4 ft.</td>
<td>0 to 20 ft.</td>
</tr>
<tr>
<td># of driveways within one mile (does not account for size of driveway)</td>
<td>North side = 16 South side = 15</td>
<td>North side = 7 South side = 11</td>
</tr>
<tr>
<td>Development oriented toward sidewalk</td>
<td>Some</td>
<td>Very Little</td>
</tr>
<tr>
<td>Width of paved shoulder, bicycle lane, and/or parking lane</td>
<td>4 to 5 ft.</td>
<td>5 ft.</td>
</tr>
<tr>
<td>On-street parking</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Presence of streetlights throughout</td>
<td>Yes (cobra)</td>
<td>Yes (cobra)</td>
</tr>
<tr>
<td># of travel lanes</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Width of two-way center lane</td>
<td>No</td>
<td>12 ft.</td>
</tr>
<tr>
<td>Width of outside travel lane</td>
<td>10 to 14 ft.</td>
<td>12 ft.</td>
</tr>
<tr>
<td>Width of inner travel lanes</td>
<td>11 ft.</td>
<td>12 ft.</td>
</tr>
<tr>
<td>Presence/width of median (must be &gt; 6ft and separate two directions of traffic to be considered median). Is it traffic separating, concrete, raised, planted?</td>
<td>No</td>
<td>12 ft.</td>
</tr>
<tr>
<td>(planted) Partial extent</td>
<td></td>
<td>(planted) Partial extent</td>
</tr>
<tr>
<td>Total width of roadway—curb to curb</td>
<td>33 to 78 ft.</td>
<td>70 to 90 ft.</td>
</tr>
<tr>
<td>Annual average daily traffic (AADT)</td>
<td>13,400</td>
<td>24,000 (in 2010)</td>
</tr>
</tbody>
</table>
Crossings and Connectivity

Based on field observation and transit passenger count data three signalized intersections were selected for review. Each appeared to have a relatively high degree of motor vehicle movement, transit stop activity, and pedestrian movement compared to other intersections in the focus area. The two intersections were selected for exemplary purposes. Other intersections in the focus area could also benefit from this type of evaluation and review.

- SW Capitol Blvd. & SW Bertha Blvd.
- SW Barbur Blvd. & SW Bertha Blvd.

Information was collected on crossing opportunities for two roadway segments on SW Capitol Hwy. and SW Barbur Blvd. Figures 66 and 67 present this information.

Figure 71 displays the overall road network connectivity in the SW Bertha Blvd/Hillsdale focus area, using a Route Directness Index (RDI). A RDI score takes the straight line distance from the center of one parcel to the center of all other parcels, within a certain distance, and divides it against the distance it would take to get to the parcel using the actual road network. An RDI score of 1 is the most direct. It means the actual road network distance is the exact same as the straight line distance. Figure 71 shows the connectivity of each parcel to all other parcels within a quarter mile.

Key Conclusions

- Within the focus area, SW Barbur Blvd. and SW Capitol Hwy. have about the same number of intersections, 10 and 11 respectively each roadway.

- Of the 21 intersections located in the focus area 7 are fully signalized and 13 are unmarked.

- Of the intersections assessed, crossing distances on SW Barbur Blvd. are much longer than on SW Capitol Hwy. Crossing distances for pedestrians on SW Barbur Blvd. are approximately 90 to 95 ft.

- Generally parcels are fairly connected in the focus area along SW Capitol Hwy. Parcels on not very well connected along SW Barbur Blvd., where the roads are circuitous and there are many dead ends.

- Pedestrian crossing speeds at the three intersections assessed are as follows:
  - SW Bertha Blvd. & SW Capitol Hwy. = 3.0 to 3.4 ft./second
  - SW Bertha Blvd. & SW Barbur Blvd. = 2.5 to 3.8 ft./second
**Figure 66: Hillsdale – Crossings**

<table>
<thead>
<tr>
<th>Pedestrian &amp; Bicycle Crashes</th>
<th>SW Capitol Hwy.</th>
<th>SW Barbur Blvd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locations of known pedestrian or bike crashes that resulted in a fatality or serious injury between 2007-2009</td>
<td>• SW Capitol Hwy. &amp; SW Vermont St. (2 bicyclists)</td>
<td>• SW Capitol Hwy. &amp; SW Sunset Blvd. (bicyclist)</td>
</tr>
<tr>
<td><strong>Roadway Crossing Attributes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of unmarked crossings in focus area along selected streets</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td># of marked crossings in focus area along selected streets</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td># of signalized crossings in focus area along selected streets</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

**Figure 67: Hillsdale – Intersections**

<table>
<thead>
<tr>
<th>Intersection Attributes</th>
<th>SW Capitol Hwy. &amp; SW Bertha Blvd.</th>
<th>SW Barbur Blvd. &amp; SW Bertha Blvd.</th>
</tr>
</thead>
<tbody>
<tr>
<td># of lanes being crossed by pedestrians at signalized intersections</td>
<td>Bertha (N) – NO Bertha (S) – 2 Capitol (E) – 5 Capitol (W) – NO</td>
<td>Bertha (N) – 3 Bertha (S) – No Crossing Barbur (E) – No Crossing Barbur (W) – 5</td>
</tr>
<tr>
<td>Effective turning radius at intersection</td>
<td>SE 36 ft. SW 24 ft.</td>
<td>NW 58 ft. NE 58 ft. SW 58 ft.</td>
</tr>
<tr>
<td>Total crossing distance</td>
<td>Bertha (N) – NO Bertha (S) – 30 ft Capitol (E) – 78 ft Capitol (W) – NO</td>
<td>Bertha (N) – 95 ft Bertha (S) – No Crossing Barbur (E) – No Crossing Barbur (W) – 90 ft</td>
</tr>
<tr>
<td>Signal cycle length</td>
<td>1:34</td>
<td>1:40</td>
</tr>
<tr>
<td>Pedestrian signal actuated</td>
<td>No – Bertha Yes – Capitol</td>
<td>No – Bertha Yes – Barbur</td>
</tr>
<tr>
<td>Pedestrian crossing time</td>
<td>0:10 Bertha Blvd. 0:23 Capitol Hwy.</td>
<td>0:24 Barbur Blvd. 0:38 Bertha Blvd.</td>
</tr>
<tr>
<td># of right-turn-on red motor vehicles and the number of motorists making a permitted left turn in a 15-minute period (right/left)</td>
<td>8 Right 17 Left (Weekday 9:00-9:15am)</td>
<td>37 Right 100 Left (Weekday 9:30-9:45am)</td>
</tr>
<tr>
<td>Right turn channelization islands on the crossing</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Pedestrian refuge present</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Transit Stops

There are thirteen public transit lines providing transportation services to people in the focus area:

- Line 1 – Vermont
- Line 12 – Barbur / Sandy Blvd
- Line 38 – Boones Ferry Rd
- Line 39 – Lewis & Clark
- Line 44 – Capitol Hwy. / Mocks Crest
- Line 45 – Garden Home
- Line 54 – Beaverton-Hillsdale Hwy.
- Line 55 – Hamilton
- Line 56 – Scholls Ferry Rd
- Line 61 – Marquam Hill / Beaverton
- Line 64 – Marquam Hill / Tigard
- Line 65 – Marquam Hill / Barbur Blvd
- Line 94 – Sherwood / Pacific Hwy. Express

Figures 68 and 69 provide detailed information on the transit service and stops.

Key Conclusions

- Both SW Capitol Hwy. and SW Barbur Blvd. have frequent bus service operating on them, running approximately every 15 min. Lines 54 and 56 run on SW Capitol Hwy. Line 12 runs on SW Barbur Blvd.

- The intersections where there are the most TriMet customers getting on or off a bus and walking to or from their destination are:
  - SW Bertha Blvd. & SW Sunset Blvd. = 8,158/week
  - SW Bertha Blvd. & SW Barbur Blvd. = 2,863/week

- The highest activity bus stop in the focus area, located on SW Capitol Hwy. is the westbound, Line 39/44/45/54/56/61/64, stop located at SW Capitol Hwy. & SW Sunset Blvd. (Stop ID 955). On average, 4,124 people get on or off a bus at this stop every week.

- The highest activity bus stop in the focus area, located on SW Barbur Blvd. is the westbound, Line1/12/39/65/94, stop located at SW Barbur Blvd. & SW Bertha Blvd. (Stop ID 199). On average, 2,011 people get on or off a bus at this stop every week.


• The intersections with the most request for lift or ramp deployments are:
  
  o SW Capitol Hwy. & SW Sunset Blvd. = 104 requests/month
  o SW Barbur Blvd. & SW Bertha Blvd. = 26 requests/month

Figure 68: Hillsdale - Transit Stops

<table>
<thead>
<tr>
<th>Transit Service and Stop Attributes</th>
<th>Capitol Hwy.</th>
<th>Barbur Blvd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rte 1 (bus) – 30 min peak only</td>
<td>Rte 1 (bus) – 30 min peak only</td>
<td></td>
</tr>
<tr>
<td>Rte 39 (bus) – 40 min</td>
<td>Rte 12 (frequent service bus) – 15 min</td>
<td></td>
</tr>
<tr>
<td>Rte 44 (bus) – 20 min</td>
<td>Rte 38 (bus) – 40 min peak only</td>
<td></td>
</tr>
<tr>
<td>Rte 45 (bus) – 30 peak/60 off peak</td>
<td>Rte 39 (bus) – 40 min peak only</td>
<td></td>
</tr>
<tr>
<td>Rte 54 (frequent service bus) – 15 min</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rte 55 (bus) – 60 min peak only</td>
<td>Rte 65 (bus) – 30 min peak only</td>
<td></td>
</tr>
<tr>
<td>Rte 56 (frequent service bus) – 15 min</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rte 61 (bus) – 30 min peak only</td>
<td>Rte 94 (bus) – 10 min peak only</td>
<td></td>
</tr>
<tr>
<td>Rte 64 (bus) – 30 min peak only</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rte 65 (bus) – 30 min peak only</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th># of transit stops in focus area along selected streets.</th>
<th>Westbound = 5 Eastbound = 5</th>
<th>Westbound = 6 Eastbound = 7</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th># of transit stops without a paved front door landing pad along selected streets.</th>
<th>1 Stop ID: 943</th>
<th>2 Stop IDs: 167,201</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th># of transit stops without sidewalk connections to it in all directions along selected streets.</th>
<th>5 Stop IDs: 943,964,963,957,956</th>
<th>6 Stop IDs: 167,207,191,10848,180,201</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th># of transit stops without a marked crossing within 150 ft. along selected streets.</th>
<th>4 Stop IDs: 925,6031,942,943</th>
<th>6 Stop IDs: 167,180,201,10848,199,11211</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th># of transit stops with avg. weekday boardings &gt; 50 without a shelter along selected streets.</th>
<th>1 Stop ID: 363</th>
<th>0</th>
</tr>
</thead>
</table>
### SW Barbur Blvd.

<table>
<thead>
<tr>
<th>Stop Location</th>
<th>Stop ID</th>
<th>Direction</th>
<th>Transit Lines</th>
<th>Weekly Ons &amp; Offs</th>
<th>Pedestrian Count Proxy at Intersection</th>
<th>Monthly LIFTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barbur &amp; Evans</td>
<td>201</td>
<td>W</td>
<td>12,39</td>
<td>207</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Barbur &amp; Moss</td>
<td>180</td>
<td>E</td>
<td>12,39</td>
<td>165</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Barbur &amp; 13th</td>
<td>11271</td>
<td>N</td>
<td>12</td>
<td>335</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Barbur &amp; 13th</td>
<td>200</td>
<td>W</td>
<td>12,39</td>
<td>181</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Barbur &amp; Bertha</td>
<td>10848</td>
<td>E</td>
<td>12,65,94</td>
<td>784</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Barbur &amp; Bertha</td>
<td>11211</td>
<td>E</td>
<td>1,12,39, 65,94</td>
<td>2,011</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Barbur &amp; Bertha</td>
<td>199</td>
<td>W</td>
<td>1,12,39, 65,94</td>
<td>669</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Barbur &amp; Terwilliger</td>
<td>193</td>
<td>E</td>
<td>1,12,38</td>
<td>126</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Barbur &amp; Terwilliger</td>
<td>191</td>
<td>W</td>
<td>1,12,39,65</td>
<td>739</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Barbur &amp; 3rd</td>
<td>207</td>
<td>W</td>
<td>1,12,38</td>
<td>473</td>
<td></td>
<td>889</td>
</tr>
<tr>
<td>Barbur &amp; 2nd</td>
<td>203</td>
<td>N</td>
<td>1,12,38</td>
<td>416</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

### SW Capitol Hwy.

<table>
<thead>
<tr>
<th>Stop Location</th>
<th>Stop ID</th>
<th>Direction</th>
<th>Transit Lines</th>
<th>Weekly Ons &amp; Offs</th>
<th>Pedestrian Count Proxy at Intersection</th>
<th>Monthly LIFTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capitol &amp; 26th</td>
<td>965</td>
<td>E</td>
<td>1</td>
<td>85</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Capitol &amp; 26th</td>
<td>966</td>
<td>W</td>
<td>1</td>
<td>57</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Capitol &amp; Idaho</td>
<td>942</td>
<td>N</td>
<td>44,45</td>
<td>126</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Capitol &amp; Idaho</td>
<td>943</td>
<td>W</td>
<td>44,45</td>
<td>153</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Capitol &amp; Nebraska</td>
<td>963</td>
<td>E</td>
<td>44,45</td>
<td>213</td>
<td></td>
<td>607</td>
</tr>
<tr>
<td>Capitol &amp; Nebraska</td>
<td>964</td>
<td>W</td>
<td>44,45</td>
<td>394</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Beaverton-Hillsdale &amp; 18th</td>
<td>363</td>
<td>W</td>
<td>54,56</td>
<td>738</td>
<td>738</td>
<td>12</td>
</tr>
<tr>
<td>Capitol &amp; Bertha Ct</td>
<td>925</td>
<td>E</td>
<td>39,44,45, 54,56</td>
<td>1,542</td>
<td>1,542</td>
<td>23</td>
</tr>
<tr>
<td>Capitol &amp; Sunset</td>
<td>929</td>
<td>E</td>
<td>39,44,45, 54,56,61, 64</td>
<td>4,034</td>
<td>8,158</td>
<td>57</td>
</tr>
<tr>
<td>Capitol &amp; Sunset</td>
<td>955</td>
<td>W</td>
<td>39,44,45, 54,56,61, 64</td>
<td>4,124</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>Capitol &amp; Terwilliger</td>
<td>956</td>
<td>E</td>
<td>39,44,45, 54,55,56</td>
<td>294</td>
<td>543</td>
<td>1</td>
</tr>
<tr>
<td>Capitol &amp; Terwilliger</td>
<td>957</td>
<td>W</td>
<td>39,44,45, 54,55,56</td>
<td>249</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
Figure 70: Stop ID 202 (19th & Barbur) - TriMet Customer Survey

Survey administered on October 6, 2011 (8am-3pm).
n=34

Primary mode of access (multiple answers possible, so percentages may not total 100 percent):
29%-transferred, 65%-walked, 3%-drove and parked, 3%-dropped off, 0%-bicycled

Figure 70 displays customers’ general opinions regarding various elements of the walking environment in the immediate vicinity of the transit stop. Specific customer comments and concerns are listed below.

**Customer Comments/Concerns**

- Number 12 bus is really full at mid day
- Number 12 bus is often late at night
- Can Number 12 run later?
- I love TriMet.
- More Crosswalks
- Need more Sidewalks
- No Sidewalks, needs more street lighting
- No Sidewalks on SW19th and Multnomah
- Shouldn't be a giant pole in front of stop Driver can't see you
- Stop is convenient. 2 hour pass is good
The Connectivity Score is based on how well each parcel is connected to other parcels within a quarter-mile radius. This analysis was performed using ViaCity software from the Transpo Group.

*Connectivity Score*
- < 40 (Poor)
- 40 - 50
- 50 - 60
- 60 - 70
- > 70 (Good)

TriMet Stops
- MAX Blue Line
- MAX Green Line
- MAX Red Line
- MAX Yellow Line
- WES

Figure 71: Hillsdale Connectivity Analysis
Person using a mobility device traveling alongside traffic in the bike lane on Barbur Blvd.

Marked crosswalks are often several blocks apart on Barbur Blvd.

Long crossing distance (78') at intersection of SW Capitol Hwy at Bertha Ct.

Crossing over Multnomah Blvd on Barbur Blvd requires walking in the roadway.

When there is a break in traffic, he crosses Barbur Blvd. mid-block to reach the bus stop.

Parent and child have to run across Barbur Blvd. from the bus stop to reach Fred Meyer in the time allowed (23').
Infrastructure Needs

Needs are identified below. Future solutions to address these needs will hopefully make people feel safer, entice them to walk more, and help connect people who are living, working, shopping and/or recreating in the area to retail, parks, trails, schools, public services and jobs.

Places to Connect

- Concentrations of multifamily housing located along SW Capitol Hwy., SW Vermont St., SW Bertha Blvd., and SW Barbur Blvd. to Reike Elementary School, Gray Middle School, Wilson High School, and Alpha Bet Jewish Day School.

- Multi-family housing to retail establishments on SW Capitol Hwy. and SW Barbur Blvd. which include places like the Hillsdale Plaza and Fred Meyer.

- Senior residences and concentrations of multi-family housing to George Himes Park, Stephen Creek Nature Area, Fulton Park & Community Gardens, Fanno Creek Greenway and Wilson Pool.

- Multifamily housing, schools, and retail commercial development to TriMet bus stops.

Observed Behavior

- People walking in the bicycle lane of SW Barbur Blvd., between SW Moss St. and SW Evan St., including people using mobility devices, immediately adjacent to fast moving traffic, where there are no sidewalks present. The posted speed limit is 35 mph.

- People crossing SW Barbur Blvd. at SW Bertha Blvd., many of them elderly or with children, and not making it across the street within the allowed amount of time to cross.

- People attempting to cross mid-block on SW Barbur Blvd., including a person in a wheelchair crossing at unmarked midblock point near intersection of SW 17th Ave. & SW Barbur Blvd., to reach an Eastbound, Line 12 bus stop.

- People having to wait a long time before being able to get a walk signal and crossing long distances at the intersection of SW 19th Ave. & SW Barbur Blvd.

- People walking in the bike lane on SW Capitol Hwy., east of SW Sunset Blvd., where there are no sidewalks present.
Bright Spots

- The streetscaping along SW Capitol Hwy., between SW Sunset Blvd. and SW Bertha Blvd. provides for a pleasant walking environment and there is a full signal, across from the Hillsdale shopping center, for pedestrians to cross SW Capitol Blvd.

- Much of the multi-family housing, retail, and services are clustered around existing frequent service bus or near frequent bus service.

- Curb cuts were recently installed at intersections in the residential neighborhood east of Bertha Blvd., making the street more accessible to people with disabilities and people using mobility devices.

- Wayfinding signs for pedestrians are present throughout the neighborhood, helping people navigate their way on sidewalks and pathways.

First Five Actions to Take

1. Build, at least, 10 ft wide sidewalks along SW Barbur Blvd., where there are none, and widen existing sidewalk corridors all along Blvd, so there is landscaped buffer between pedestrians and the motor vehicles. The minimum sidewalk corridor width for a busy road like this should be 10 ft, including a landscaped buffer, but wider is better, preferably 14 ft.

2. Shorten crossing distances, make crosswalks more visible, and provide more time for pedestrians to cross at the intersection SW Barbur Blvd. and SW Bertha Blvd. All signals should, at a minimum, be timed so people have one second to walk 3.5 ft. Given the intersection’s proximity to senior centers and a major retail center, a more appropriate time would be one second for every 2.5 ft. to allow children and senior citizens, who tend to walk more slowly, to cross more comfortably under the protection of the walk phase. Consider other signal treatments like leading pedestrian phases, automatic recall for pedestrian actuated signals, right turn on red restrictions, and automatic pedestrian detection to extend the phase for slower moving pedestrians. Curb radius reduction, curb extension, and crossing island treatments should also be considered to shorten crossing distances.

3. Provide additional, frequent, and protected pedestrian crossings along SW Barbur Blvd. At a minimum, protected crossings should be provided every 530 ft. to allow people to cross the street frequently in a safe manner. Consider treatments like medians with pedestrian refuges, and pedestrian warning signs, like Rectangular Rapid-Flashing Beacons (RRFBs) to assist people with crossing the street. In particular consider adding additional pedestrian warning signage to the crossing island at SW Barbur Blvd. and SW 13th Ave.

4. Shorten crossing distances, make crosswalks more visible, and provide more time for pedestrians to cross at the intersection SW Barbur Blvd. and SW 19th Ave. All signals should, at a minimum, be timed so people have one second to walk 3.5 ft. Given the
intersection’s proximity to senior centers and a major retail center, a more appropriate time would be one second for every 2.5 ft. to allow children and senior citizens, who tend to walk more slowly, to cross more comfortably under the protection of the walk phase. Consider other signal treatments like leading pedestrian phases, automatic recall for pedestrian actuated signals, and right turn on red restrictions. Curb radius reduction, curb extension, and crossing island treatments should also be considered to shorten crossing distances.

5. Build, at least, 10 ft sidewalks along SW Capitol Blvd., where there are none. The minimum sidewalk corridor width for a busy road like this should be 10 ft, including a landscaped buffer, but wider is better, preferably 14 ft.

Existing Plans and Facility Responsibilities

Facility Ownership / Maintenance:

SW Capitol Hwy.: Roadway owned and maintained by the City of Portland; signals owned and operated by the City of Portland; transit stop amenities owned and maintained by TriMet.

SW Barbur Blvd.: Roadway owned and maintained by Oregon Department of Transportation (ODOT); signals owned and operated by ODOT; transit stop amenities owned and maintained by TriMet.

Existing Plans:

- City of Portland Transportation System Plan (last amended in 2011)

- The Portland Plan (ongoing)

- Barbur Streetscape Plan (1999)

- SW Barbur and SW Capitol Hwy at I-5 Safety Study (2010)

- SW Corridor Plan (ongoing)

- Barbur Concept Plan (ongoing)
Focus Area 9 – Tigard Transit Center

The Tigard Transit Center focus area is located in the City of Tigard. It is situated in the City of Tigard’s downtown and is 4.5 miles from the City of Beaverton’s Downtown and 3.5 miles from the City of Tualatin’s Downtown. Commuter Rail and bus connections converge at Tigard Transit Center and connections to light rail can be made at Beaverton Transit Center. Within the focus area a variety of neighborhood retail and services are located along Pacific Hwy. The mix of land uses and plans for future light rail service makes this focus area a good location for infrastructure investments that will improve a person’s ability to walk to transit stops and local destinations safely, directly, and comfortably.

Places to access locally by foot

If a person walks within this focus area, these are examples of the places he or she could walk to or from:

- Retail (e.g. Tigard Plaza Shopping Center, neighborhood retail along downtown Tigard’s Main St., and retail along SW Pacific Hwy.)
- Housing (senior, multi-family, single-family)
- Tigard Public Library
- St. Anthony Catholic School
- Parks & Trails (Fanno Creek Trail & Park, Jim Griffith Memorial Skate Park, Commercial Park, Main Street Park)

Places to access regionally by transit

If a person boards a TriMet bus or train in this focus area, these are examples of the places he or she could travel to or from without making a transfer:

**Tigard:** Washington Square Mall, Bridgeport Village

**Beaverton:** Downtown Beaverton

**Portland:** Downtown Portland, Multnomah Village, Northeast Portland, Marquam Hill

**Tualatin:** Downtown Tualatin

**Lake Oswego:** Downtown Lake Oswego

**Sherwood/King City:** Downtown Sherwood

**Transit centers and MAX stations:** Tigard Transit Center, Beaverton Transit Center, Washington Square Transit Center, Barbur Blvd Transit Center, Lake Oswego Transit Center

**2040 growth concept centers:** Central City, Beaverton Regional Center, Washington Square Regional Center, Tigard Town Center, Raleigh Hills Town Center, Hillsdale Town Center, West Portland Town Center, King City Town Center, Sherwood Town Center, Tualatin Town Center, Lake Grove Town Center, Lake Oswego Town Center
Figure 73: Tigard Transit Center - Land Use and Transportation

1. Shopping center at Pacific Hwy and Hall Blvd.
2. Pacific Hwy streetscape adjacent to Main St.
3. Frequent Service Line 12 serves Pacific Hwy. Land use is typical of a state highway - buildings set back from street.
4. Main St in downtown Tigard - building frontage comes up to the curb.
5. Tigard Transit Center on Commerical St. Served by WES commuter rail, Frequent Service Line 12 and other bus lines.
6. Senior housing development under construction on Hall Blvd.

TriMet stops
Weekly ons & offs
- TriMet bus lines
- Existing multi-use path
- Proposed multi-use path

Under 250
250 - 2,500
Over 2,500

Multi-family housing
Senior housing
Health clinic
Grocery store
Parks and open space

Library
Pre-to-middle school
High school

Miles
0 0.25 0.5

°

Pacific Hwy streetscape adjacent to Main St.

C. Maher - 15 May 2011 - Focus Area Land Use.mxd
Roadways and Sidewalks

There are three high speed, high volume roads running through the focus area. They connect the area to adjacent cities and a major US highway. Two have transit service on them.

**North-South**
- SW Greenburg Rd.
- SW Hall Blvd.

**East-West**
- 99W – Pacific Hwy.

While these arterial roads provide motor vehicle and transit service access to a variety of regional and local destinations, in their current state, they also act as major barriers to pedestrian and bicyclists.

Figure 74 shows the roadway and sidewalk attributes for the segments of 99W, SW Greenburg Rd., and SW Hall Blvd. located within the focus area. Key conclusions, based on field visits and information in Figure 74 are outlined below.

**Key Conclusions**

- 99W and SW Greenburg Rd. have posted speed limits of 35 mph. However, 99W has much higher recorded 85th percentile speeds, ranging between 35 and 50 mph. It is designed for speeds of 45 mph and is much wider than SW Greenburg Rd., measuring 88 to 98 ft. wide.

- SW Greenburg Rd. has continuous sidewalks on both sides of the street. There are gaps in the sidewalk along 99W.

- Neither 99W nor SW Greenburg Rd. has much of a landscaped buffer between the sidewalk and the roadway.

- Both streets have a very auto-centric design; however 99W has much bigger building setbacks with a lot of large format retail.

- 99W has about half as many driveways, 12 to 14 per side, than SW Greenburg Rd. which has 20 to 34 per side. Many of the driveways on SW Greenburg Rd. are for single family houses; where as many of the majority of driveways on 99W are for retail establishments.
Figure 74: Tigard Transit Center - Roadways and Sidewalks

<table>
<thead>
<tr>
<th>Roadway &amp; Sidewalk Attributes</th>
<th>99W</th>
<th>SW Greenburg Rd.</th>
<th>SW Hall Blvd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design speed</td>
<td>40 mph</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>Posted speed limit</td>
<td>35 mph</td>
<td>35 mph</td>
<td>30 mph</td>
</tr>
<tr>
<td>Midblock 85th percentile traffic speed</td>
<td>Not available</td>
<td>35 mph</td>
<td>30 mph</td>
</tr>
<tr>
<td>Presence of sidewalk throughout</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Width of sidewalk</td>
<td>0 to 6 ft.</td>
<td>5 to 8 ft.</td>
<td>0 to 6 ft.</td>
</tr>
<tr>
<td>Width of landscaped buffer between walkway &amp; motorized vehicle traffic (planter, trees, etc.)</td>
<td>0 to 3 ft.</td>
<td>0 to 4 ft.</td>
<td>0 to 4 ft.</td>
</tr>
<tr>
<td># of driveways within one mile (does not account for size of driveway)</td>
<td>East side = 14 North side = 20 North side = 28</td>
<td>West side = 12 South side = 24 South side = 34</td>
<td></td>
</tr>
<tr>
<td>Development oriented toward sidewalk</td>
<td>Very Little</td>
<td>Some</td>
<td>Some</td>
</tr>
<tr>
<td>Width of paved shoulder, bicycle lane, and/or parking lane</td>
<td>5 ft. (bicycle lane)</td>
<td>5 ft. (bicycle lane)</td>
<td>5 ft. (bicycle lane)</td>
</tr>
<tr>
<td>On-street parking</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Presence of streetlights throughout</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td># of travel lanes</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Width of outside travel lane</td>
<td>11 ft.</td>
<td>11 ft.</td>
<td>11 ft.</td>
</tr>
<tr>
<td>Width of inner travel lanes</td>
<td>11 ft.</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Presence/width of median (must be &gt; 6 ft and separate two directions of traffic to be considered median). Is it traffic separating, concrete, raised, planted?</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Total width of roadway—curb to curb</td>
<td>88 to 98 ft.</td>
<td>43 ft. (53 ft. at 99W)</td>
<td>32 to 61 ft.</td>
</tr>
<tr>
<td>Annual average daily traffic (AADT)</td>
<td>37,000 (in 2010)</td>
<td>10,000</td>
<td>11,000</td>
</tr>
</tbody>
</table>
Crossings and Connectivity

Three signalized intersections were selected for review, based on field observation and transit passenger count data. Each appeared to have a relatively high degree of motor vehicle movement, transit stop activity, and pedestrian movement compared to other intersections in the focus area. The three intersections were selected for exemplary purposes. Other intersections in the focus area could also benefit from this type of evaluation and review.

- 99W-Pacific Hwy. & SW Hall Blvd.
- 99W-Pacific Hwy. & SW Greenburg Rd.
- 99W-Pacifica Hwy. & SW Johnson St.

Information was collected on crossing opportunities for three roadway segments on SW Barbur Blvd., SW Greenburg Rd., and SW Hall Blvd. Figures 75 and 76 present this information.

Figure 80 displays the overall road network connectivity in the Tigard Transit Center focus area, using a Route Directness Index (RDI). A RDI score takes the straight line distance from the center of one parcel to the center of all other parcels, within a certain distance, and divides it against the distance it would take to get to the parcel using the actual road network. An RDI score of 1 is the most direct. It means the actual road network distance is the exact same as the straight line distance. Figure 80 shows the connectivity of each parcel to all other parcels within a quarter mile.

Key Conclusions

- Within the focus area, SW Greenburg/Main St. has about double the number of intersections as 99W, 17 and 9 respectively along each roadway.

- Of the 9 intersections located in the focus area on 99W 6 are fully signalized, but the distance between crossings is long.

- All of the intersections assessed in the focus area have very long crossing distances for pedestrians, greater than 100 ft. and ranging between 100 to 125 ft.

- Parcels north of 99W are much less connected than the areas south of 99W. Hwy 217 and the WES/Pacific and Western railroad tracks act as major barrier for pedestrians.

- Pedestrian crossing speeds at the three intersections assessed are as follows:
  - 99W & SW Hall Blvd. = 2.9 to 3.7 ft./second
  - 99W & SW Greenburg Rd. = 3.1 to 5.0 ft./second
  - 99W & SW Johnson St. = 2.9 to 3.8 ft./second
Figure 75: Tigard Transit Center – Crossings

<table>
<thead>
<tr>
<th>Pedestrian &amp; Bicycle Crashes</th>
<th>99W</th>
<th>SW Greenburg Rd. &amp; SW 90th Ave.</th>
<th>SW Hall Blvd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locations of known pedestrian or bike crashes that resulted in a fatality or serious injury between 2007-2009</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• SW Greenburg Rd. &amp; SW 90th Ave. (bicyclist)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roadway Crossing Attributes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of unmarked crossings in focus area along selected streets</td>
<td>3</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td># of marked crossings in focus area along selected streets</td>
<td>0</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td># of signalized crossings in focus area along selected streets</td>
<td>6</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>
Figure 76: Tigard Transit Center – Intersections

<table>
<thead>
<tr>
<th>Intersection Attributes</th>
<th>99W &amp; SW Hall Blvd.</th>
<th>99W &amp; SW Greenburg Rd.</th>
<th>99W &amp; SW Johnson St.</th>
</tr>
</thead>
<tbody>
<tr>
<td># of lanes being crossed by pedestrians at signalized</td>
<td>Hall (N) – 3</td>
<td>Greenburg (N) – 3</td>
<td>Johnson (N) – 2</td>
</tr>
<tr>
<td>intersections</td>
<td>Hall (S) – 3</td>
<td>Greenburg (S) – 3</td>
<td>Johnson (S) – 4</td>
</tr>
<tr>
<td></td>
<td>99W(E) – 6</td>
<td>99W (E) – 6</td>
<td>99W (E) – 6</td>
</tr>
<tr>
<td></td>
<td>99W(W) – 6</td>
<td>99W(W) – 7</td>
<td>99W(W) – 7</td>
</tr>
<tr>
<td>Effective turning radius at intersection</td>
<td>NW 30 ft.</td>
<td>NW 41 ft.</td>
<td>NW 31 ft.</td>
</tr>
<tr>
<td></td>
<td>NE 30 ft.</td>
<td>NE 62 ft.</td>
<td>NE 20 ft.</td>
</tr>
<tr>
<td></td>
<td>SE 20 ft.</td>
<td>SE 39 ft.</td>
<td>SE 58 ft.</td>
</tr>
<tr>
<td></td>
<td>SW 25 ft.</td>
<td>SW 37 ft.</td>
<td>SW 73 ft.</td>
</tr>
<tr>
<td>Total crossing distance</td>
<td>Hall (N) – 100 ft</td>
<td>Greenburg (N) – 65 ft</td>
<td>Johnson (N) – 80 ft</td>
</tr>
<tr>
<td></td>
<td>Hall (S) – 85 ft</td>
<td>Greenburg (S) – 110 ft</td>
<td>Johnson (S) – 70 ft</td>
</tr>
<tr>
<td></td>
<td>99W(E) – 110 ft</td>
<td>99W (E) – 110 ft</td>
<td>99W (E) – NO</td>
</tr>
<tr>
<td></td>
<td>99W(W) – 110 ft</td>
<td>99W(W) – 115 ft</td>
<td>99W (W) – 125 ft</td>
</tr>
<tr>
<td>Signal cycle length</td>
<td>2:05</td>
<td>2:02</td>
<td>1:53</td>
</tr>
<tr>
<td>Pedestrian signal actuated</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Pedestrian crossing time</td>
<td>0:25(S)/0:35(N) Hall</td>
<td>0:32 99W</td>
<td>0:33 99W</td>
</tr>
<tr>
<td></td>
<td>0:30 99W</td>
<td>0:22 Greenburg</td>
<td>0:24 Johnson</td>
</tr>
<tr>
<td># of right-turn-on red motor vehicles and the number of</td>
<td>20 / 110</td>
<td>52 / 110</td>
<td>24 / 42</td>
</tr>
<tr>
<td>motorists making a permitted left turn in a 15-minute period</td>
<td>(Weekday)</td>
<td>(Weekday)</td>
<td>(Weekday)</td>
</tr>
<tr>
<td>(right/left)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right turn channelization islands on the crossing</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pedestrian refuge present</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Transit Stops

There are six public transit lines providing transportation services to people in the focus area:

- Line 12 – Barbur / Sandy Blvd
- Line 45 – Garden Home
- Line 64 – Marquam Hill / Tigard
- Line 76 – Beaverton / Tualatin
- Line 78 – Beaverton / Lake Oswego
- WES - Commuter Rail

Figures 77 and 78 provide detailed information on the transit service and stops.

Key Conclusions

- Both 99W and SW Greenburg Rd. have bus service operating on them. Line 12 is frequent bus service, running approximately every 15 minutes on 99W. Lines 76 and 78 run on SW Greenburg Rd. They both run every approximately every 30 minutes, but taken together their frequency is about every 15 min. to Tigard Transit Center.

- The intersections where there are the most TriMet customers getting on or off a bus and walking to or from their destination are:
  - Tigard Transit Center = 18,378/week
  - SW Main St. & SW Scoffins St. = 1,885/week

- The two highest activity bus stops in the focus area are located on SW Greenburg Rd. and SW Main St. The first is the is the westbound, Line 12/76/78, stop located at SW Main St. & SW Scoffins St. (Stop ID 3673). On average, 1,273 people get on or off a bus at this stop every week. The second is the northbound, Line 76/78, stop located at SW Greenburg Rd. & SW Center St. (Stop ID 2232). On average, 752 people get on or off a bus at this stop every week.

- The intersections with the most request for lift or ramp deployments are:
  - Tigard Transit Center = 194 requests/month
  - SW Main St. & SW Scoffins St. = 16 requests/month
  - SW Greenburg Rd. & SW Center St. = 14 requests/month
### Figure 77: Tigard Transit Center - Transit Stops

<table>
<thead>
<tr>
<th>Transit Service and Stop Attributes</th>
<th>99W-Pacific Hwy.</th>
<th>SW Greenburg Rd./SW Main St.</th>
</tr>
</thead>
</table>
| **Transit lines and weekday frequencies along selected streets in focus area.** | Rte 12 (frequent service bus) – 15 min  
Rte 94 (bus) – 10 min  
peak only | Rte 12 (frequent service bus) – 15 min  
Rte 76 – 30 min  
Rte 78 – 30 min  
Rte 45 - 30 peak/60 off-peak |
| **# of transit stops in focus area along selected streets.** | Eastbound = 3  
Westbound = 4 | Northbound = 8  
Southbound = 8 |
| **# of transit stops without a paved front door landing pad along selected streets.** | 0 | 0 |
| **# of transit stops without sidewalk connections to it in all directions along selected streets.** | 2  
Stop IDs: 4251,10847 | 0 |
| **# of transit stops without a marked crossing within 150 ft. along selected streets.** | 5  
Stop IDs: 4251,4319,10847,3669,4253 | 13  
Stop IDs: 2440,2246,2243,2242,3648,10847,3646,2232,2239,3669,2233,2237,2238 |
| **# of transit stops with avg. weekday boardings > 50 without a shelter along selected streets.** | 0 | 2  
Stop IDs: 2232, 3655 |
### 99W – Pacific Hwy./Main St.

<table>
<thead>
<tr>
<th>Stop Location</th>
<th>Stop ID</th>
<th>Direction</th>
<th>Transit Lines</th>
<th>Weekly Ons &amp; Offs</th>
<th>Pedestrian Count Proxy at Intersection</th>
<th>Monthly LIFTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacific Hwy. 11600 Block</td>
<td>4251</td>
<td>E</td>
<td>12</td>
<td>465</td>
<td>935</td>
<td>4</td>
</tr>
<tr>
<td>Pacific Hwy. &amp; 78th</td>
<td>4305</td>
<td>W</td>
<td>12</td>
<td>470</td>
<td>195</td>
<td>0</td>
</tr>
<tr>
<td>Pacific Hwy. 11700 Block</td>
<td>4252</td>
<td>E</td>
<td>12</td>
<td>102</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pacific Hwy. 11700 Block</td>
<td>4253</td>
<td>W</td>
<td>12</td>
<td>93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pacific Hwy. &amp; Garden Place</td>
<td>13457</td>
<td>E</td>
<td>12</td>
<td>527</td>
<td>1,254</td>
<td>2</td>
</tr>
<tr>
<td>Pacific Hwy. &amp; Warner</td>
<td>4319</td>
<td>W</td>
<td>12</td>
<td>727</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Pacific Hwy. &amp; Hall</td>
<td>4290</td>
<td>E</td>
<td>12</td>
<td></td>
<td>Stop Under Construction – no data</td>
<td></td>
</tr>
<tr>
<td>Pacific Hwy. &amp; Main</td>
<td>3669</td>
<td>N</td>
<td>12</td>
<td>1,227</td>
<td>1,227</td>
<td>6</td>
</tr>
<tr>
<td>Main &amp; Scoffins</td>
<td>3655</td>
<td>E</td>
<td>12,76,78</td>
<td>612</td>
<td>1,885</td>
<td>6</td>
</tr>
<tr>
<td>Main &amp; Scoffins</td>
<td>3673</td>
<td>W</td>
<td>12,76,78</td>
<td>1,273</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Main &amp; Burnham</td>
<td>3654</td>
<td>E</td>
<td>12,45</td>
<td>74</td>
<td></td>
<td>212</td>
</tr>
<tr>
<td>Main &amp; Burnham</td>
<td>3653</td>
<td>W</td>
<td>12,45</td>
<td>138</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Main 12500 Block</td>
<td>3646</td>
<td>E</td>
<td>12,45</td>
<td>180</td>
<td>357</td>
<td>2</td>
</tr>
<tr>
<td>Main 12500 Block</td>
<td>3648</td>
<td>W</td>
<td>12,45</td>
<td>177</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

### SW Greenburg Rd.

<table>
<thead>
<tr>
<th>Stop Location</th>
<th>Stop ID</th>
<th>Direction</th>
<th>Transit Lines</th>
<th>Weekly Ons &amp; Offs</th>
<th>Pedestrian Count Proxy at Intersection</th>
<th>Monthly LIFTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenburg &amp; 98th</td>
<td>2246</td>
<td>E</td>
<td>76,78</td>
<td>152</td>
<td>308</td>
<td>2</td>
</tr>
<tr>
<td>Greenburg &amp; 98th</td>
<td>2245</td>
<td>W</td>
<td>76,78</td>
<td>156</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Greenburg &amp; 95th</td>
<td>2243</td>
<td>E</td>
<td>76,78</td>
<td>94</td>
<td>147</td>
<td>0</td>
</tr>
<tr>
<td>Greenburg &amp; 95th</td>
<td>2242</td>
<td>W</td>
<td>76,78</td>
<td>54</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Greenburg &amp; 92nd</td>
<td>2237</td>
<td>E</td>
<td>76,78</td>
<td>121</td>
<td>248</td>
<td>0</td>
</tr>
<tr>
<td>Greenburg &amp; 92nd</td>
<td>2239</td>
<td>W</td>
<td>76,78</td>
<td>127</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Greenburg &amp; 90th</td>
<td>2238</td>
<td>W</td>
<td>76,78</td>
<td>84</td>
<td>84</td>
<td>0</td>
</tr>
<tr>
<td>Greenburg &amp; Lincoln</td>
<td>2240</td>
<td>S</td>
<td>76,78</td>
<td>101</td>
<td>101</td>
<td>0</td>
</tr>
<tr>
<td>Greenburg &amp; Center</td>
<td>2232</td>
<td>N</td>
<td>76,78</td>
<td>752</td>
<td>1,470</td>
<td>8</td>
</tr>
<tr>
<td>Greenburg &amp; Center</td>
<td>2233</td>
<td>S</td>
<td>76,78</td>
<td>718</td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>
Figure 79: Tigard Transit Center - TriMet Customer Survey

Survey administered on October 4, 2011 (1-5pm).

n= 97

Primary mode of access (multiple answers possible, so percentages may not total 100 percent): 85%-transferred, 12%-walked, 0%-drove and parked, 2%-dropped off, 0%-bicycled, 1%-other.

Figure 79 displays customers’ general opinions regarding various elements of the walking environment in the immediate vicinity of the transit stop. Specific customer comments and concerns are listed below.
Customer Comments/Concerns

- 76 needs to run more often and the 12 at night.
- Always windy and cold.
- Better lighting and security.
- Come sooner.
- Doing good
- Don't throw babies off the bus.
- Driver can be rude at times.
- Excellent service and company (translated from Spanish)
- Excellent transit center
- Good service
- Gresham bad. It needs more light & security.
- Had to call the cops a few times.
- Have buses wait for other buses to unload for those customers to have time to get to.
- Hold on for people running to the bus when the bus is about to leave.
- I like it.
- Many drunks come around at night.
- More buses at this stop.
- More security and lights.
- Need a clock placed at station.
- Needs more light & security.
- No shield from wind or rain.
- No shield from wind or rain.
- Please have the 96 run on the weekend.
- Scary at night / not monitor [sic] well.
- Stop being late.
- TriMet does a great Job.
- Water goes under shelter during rain.
- Wish # 76 ran all day and nights and weekends.
The Connectivity Score is based on how well each parcel is connected to other parcels within a quarter-mile radius. This analysis was performed using ViaCity software from the Transpo Group.
Figure 81: Tigard Transit Center - Pedestrian and Transit Needs

1. Short trail connection creates a direct route from one side of Pacific Hwy to the other. Not paved or lighted.

2. Crossing Pacific Hwy at Greenburg Rd.

3. Crossing of Pacific Hwy at Hall Blvd. is wider due to slip lanes for turning traffic.

4. Little buffer between sidewalk and fast-moving traffic on Pacific Hwy

5. Parent walks holding their child on the outside of a curve on Scoffins St
Infrastructure Needs

Needs are identified below. Future solutions to address these needs will hopefully make people feel safer, entice them to walk more, and help connect people who are living, working, shopping and/or recreating in the area to retail, parks, trails, schools, public services and jobs.

Places to Connect

- Concentrations of multifamily housing located along SW Greenburg Rd., SW Hall Blvd., and 99W to retail establishments on 99W, which include places like the Tigard Plaza Shopping Center, neighborhood retail along Tigard’s Main St., and large format retail along 99W.

- Multi-family housing to Fanno Creek Trail & Park, Jim Griffith Memorial Skate Park, Commercial Park, and Main St. Park.

- Multifamily housing, schools, and retail development to the Tigard Transit Center and TriMet bus stops.

Observed Behavior

- People walking on the south side of SW Pacific Hwy. (99W) east of SW Dartmouth St, where there are no sidewalks present.

- People walking in the street, with children, along SW Scoffins St. where there are no sidewalks. There is also a senior affordable housing complex being constructed nearby at SW Hall Blvd. & SW Scoffins St.

- People cutting through neighborhood on informal path, from SW Commercial St. to SW Center St., parallel to SW Pacific Hwy. (99W). This provides direct access to SW Greenburg Rd. & SW Hall Blvd., via the Tigard Plaza parking lot.

- People exiting the trail at the southern end of TriMet’s Tigard WES station park and ride lot and continuing through the parking lot, without a designated path, to reach SW Main St.

- People having to wait a long time before being able to get a walk signal, crossing very long distances, and being on the watch for motor vehicles making permitted right turns on red at the intersections of SW Pacific Hwy. (99W) & SW Greenburg Rd., 99W & SW Hall Blvd, and 99W & SW Dartmouth St.
Bright Spots

- Recent sidewalk and streetscaping investments along Main St. and Burnham St. provide a pleasant walking environment and good access to the Tigard Transit Center.

- Much of the retail and services are clustered around existing frequent service bus on 99W.

- Recent sidewalk and intersection investments on 99W, near SW Hall Blvd. provide pedestrians with accessible sidewalks and slightly easier crossings, although crossing distances and roadway designs continue to be oriented to motor vehicle traffic.

- The Tigard Transit Center is centrally located in downtown Tigard.

First Five Actions to Take

1. Build, at least, 10 ft wide sidewalks along SW Pacific Hwy. (99W), where there are none, and widen existing sidewalk corridors all along 99W, so there is landscaped buffer between pedestrians and the motor vehicles. The minimum sidewalk corridor width for a busy road like this should be 10 ft, including a landscaped buffer, but wider is better, preferably 14 ft.

2. Build sidewalks, where there are none, along SW Scoffins St. & SW Ash St. These streets are near the Tigard Transit Center and provide access to it. Ensure there is a landscaped buffer between pedestrians and motor vehicles.

3. Formalize the informal path running from Center Street Connection from SW Commercial St. to SW Hall Blvd., by paving it, making it ADA accessible, providing lighting, and wayfinding signage.

4. Provide a designated pedestrian path through the transit center park and ride lot, connecting to SW Main St.

5. Shorten crossing distances, make crosswalks more visible, and provide more time for pedestrians to cross at the intersections of 99W and SW Greenburg Rd., 99W & SW Hall Blvd., and 99W & SW Dartmouth St. All signals should, at a minimum, be timed so people have one second to walk 3.5 ft. Given the SW Greenburg Rd. & SW Hall Blvd. intersection’s proximity to senior centers and retail, a more appropriate time would be one second for every 2.5 ft. to allow children and senior citizens, who tend to walk more slowly, to cross comfortably under the protection of the walk phase. Consider other signal treatments like leading pedestrian phases, automatic recall for pedestrian actuated signals, and right turn on red restrictions. Curb radius reduction, curb extension, and crossing island treatments should also be considered to shorten crossing distances.
Existing Plans and Facility Responsibilities

Facility Ownership / Maintenance:

99W: Roadway owned and maintained by Oregon Department of Transportation (ODOT); signals owned and operated by ODOT; transit stop amenities owned and maintained by TriMet.

SW Greenburg Rd.: Roadway owned by City of Tigard; signals owned and operated by Washington County; transit stop amenities owned and maintained by TriMet.

SW Hall Blvd.: Roadway owned by ODOT; signals owned and operated by ODOT; transit stop amenities owned and maintained by TriMet.

Existing Plans:

• Tigard Transportation System Plan (2010)
  http://www.tigard-or.gov/city_hall/departments/cd/transportation_plan/default.asp

  Bicycle Projects
  
  o Tigard Transit Center Bicycle Hub
  o Add bicycle lanes on 99W

  Intersection Projects
  
  o Hall/Hunziker/Scoffins intersection Realignment - Realign offset intersection to cross intersection and alleviate congestion and address safety issues.
  
  o Main Street/Tigard Street - Install a traffic signal at Main Street/Tigard Street. The project need will be reevaluated after Highway 99W/Greenburg Road/Hall Boulevard improvements and Main Street improvements are completed.
  
  o Highway 99W/Greenburg Road/Main Street - Intersection adjustments such as exclusive side street left-turn lanes on Greenburg Road and Main Street providing exclusive left, through, and right-turn lanes on both approaches, additional eastbound and westbound through lane on 99W.
  
  o Highway 99W/Hall Boulevard - Intersection adjustments such as an additional eastbound and westbound through lane on 99W, exclusive left-, through-, and right-turn lanes on each side street approach.
  
  o Highway 217 SB Ramps/Highway 99W - Intersection capacity adjustments such as a 2nd right turn lane from off ramp
Pedestrian Network Analysis

- **Highway 217 NB Ramps/Highway 99W** - Intersection capacity adjustments such as a second northbound left turn lane

- **Highway 99W/Dartmouth St.** - Intersection adjustments such as a southbound through lane for 500 fee

- **Pfaffle St/Hall Blvd.** - Traffic signal or other intersection treatment

**Multi-Use Path Projects**

- **Tiedeman Avenue/Main Street Rail Trail** - Convert a segment of inactive railroad right-of-way adjacent to Tigard Street from Tiedeman Avenue to Main Street to a multiuse path

**Neighborhood Trails**

- **98th Ave to Tigard St**
- **Hall Blvd to Steve St Extension**
- **Steve St to 84th Ave Extension**
- **Dartmouth St to Beveland Rd**
- **Burnham St to Commercial Parking Lot**
- **Grant Ave Extension - Tigard St to Commercial St**
- **Spruce St to 79th Ave**
- **94th Ave extension; Dakota St to Greenburg St**
- **92nd Ave extension; Dakota St to Greenburg St**
- **Spruce St. to 82nd Extension**

**Pedestrian Projects**

- **Hunziker Street Sidewalks** - Install sidewalk on both sides of the street from 72nd Avenue to Hall Boulevard.

- **Tigard Street** - Install sidewalks on both sides of the street from 115th Avenue to Highway 99W.

- **Commercial Street** - Install sidewalks on both sides of the street from Main Street to Lincoln Street.

- **Hall Boulevard** - Complete gaps in sidewalk on alternating sides of street from Hunziker Street to the South City Limits.

- **Tigard Town Center (Downtown) Pedestrian Improvements** - Improve sidewalks, lighting, crossings, bus shelters and benches throughout the downtown including:
Highway 99W, Hall Blvd, Main Street, Hunziker, Walnut.

- **Greenburg/95th Raised Pedestrian Refuge and Marked Crosswalk** - Construct a refuge median and marked crosswalk at the existing unsignalized crosswalk at Greenburg/95th.

**Roadway Projects**

- **Walnut to Ash Street Extension** - Extend Walnut east of OR 99W to meet Ash Avenue.

- **Ash Ave Extension (Maplewood to Burnham)** - Extend Ash Avenue from Maplewood, across Fanno Creek, to Burnham.

- **Greenburg Road Widening N. Dakota to 99W** - Tiedeman to OR 99W, Widen to 5 lanes with bikeways and sidewalks.

- **North Dakota-Pfaffle Highway 217 over crossing** - Pfaffle-North Dakota east-west connection with Hwy 217 over-crossing to provide a neighborhood route.

- **Dartmouth Street Widening** - Complete 5-lane section from Costco to 72nd Ave (small section missing in eastbound direction only).

- **Ash Ave Extension (Burnham to Commercial)** - Extend Ash Avenue across the railroad tracks from Burnham to Commercial Street.

- **Atlanta Street extension** - Extend Atlanta Street west to Dartmouth Street.

- **Hall Boulevard Widening, Oleson to 99W** - Widen to 3 lanes; build sidewalks and bike lanes; safety adjustments.

- **Hall Boulevard Widening, Highway 99W to Fanno Creek** - Preserve ROW for 3 lanes plus on-street parking (or potential 5 lanes); build sidewalks and bike lanes; safety adjustments.

- **Hunziker Street Realignment**

- **Main Street Green Street (Phase I)** - Provide 2 travel lanes, turn lanes where necessary, on-street parking, good sidewalks, and lots of pedestrian-friendly amenities on Main Street from the railroad tracks north to Highway 99W.
o **Main Street Green Street (Phase II)** – Provide 2 travel lanes, turn lanes where necessary, on-street parking, good sidewalks, and lots of pedestrian-friendly amenities on Main Street from the railroad tracks south to Highway 99W.

o **99W Intersection Improvements** - Provide increased capacity at priority intersections, including bus queue bypass lanes at some locations, improved sidewalks, priority pedestrian crossings, and an access management plan, while retaining existing 4/5-lane facility (plus aux lanes) from I-5 to Durham Rd.

- City Center Urban Renewal Area (2005)  
  [http://www.tigard-or.gov/downtown_tigard/about/docs/urban_renewal_plan.pdf](http://www.tigard-or.gov/downtown_tigard/about/docs/urban_renewal_plan.pdf)

- Tigard Downtown Circulation Plan (2010)  
  [http://www.tigard-or.gov/downtown_tigard/behind_the_scenes/circulation_plan.asp](http://www.tigard-or.gov/downtown_tigard/behind_the_scenes/circulation_plan.asp)

- Tigard High Capacity Land Use Plan (2011)  
  [http://www.tigard-or.gov/sw_corridor/planning.asp](http://www.tigard-or.gov/sw_corridor/planning.asp)

- Main Street Green Street (ongoing)  

- Greenway Trails Master Plan (2011)  
  [http://www.tigard-or.gov/community/parks/trail_system_master_plan.asp](http://www.tigard-or.gov/community/parks/trail_system_master_plan.asp)

- SW Corridor Plan (ongoing)  
Focus Area 10 – SW Beaverton-Hillsdale Hwy. & SW Scholls Ferry Rd.

The SW Beaverton-Hillsdale Hwy. & SW Scholls Ferry Rd. focus area is located in Washington County, on the border of the City of Beaverton and the City of Portland. It is situated 2.5 miles from downtown Beaverton, five miles from downtown Portland, and 4.5 miles from downtown Tigard. Commuter Rail and bus connections converge at Tigard and Beaverton Transit Centers and connections to light rail can be made at Beaverton Transit Center. Within the focus area a variety of neighborhood retail and services are located along SW Beaverton-Hillsdale Hwy. The mix of land uses and abundance of senior housing in this focus area make it a good location for infrastructure investments that will improve a person’s ability to walk to transit stops and local destinations safely, directly, and comfortably.

Places to access locally by foot

If a person walks within this focus area, these are examples of the places he or she could walk to or from:

- Retail (e.g. Raleigh Hills Plaza, Fred Meyer, New Seasons, Safeway, Walgreens)
- Housing (senior, multi-family, single-family)
- Raleigh Hills Elementary School
- Parks (Raleighwood Park and Bauman Park)

Places to access regionally by transit

If a person boards a TriMet bus or train in this focus area, these are examples of the places he or she could travel to or from without making a transfer:

**Portland:** Downtown Portland, Portland State University, Marquam Hill  
**Beaverton:** Downtown Beaverton  
**Tigard:** Downtown Tigard, Washington Square Mall

**Transit centers and MAX stations:** Beaverton Transit Center, Tigard Transit Center, Washington Square Transit Center

**2040 growth concept centers:** Central City, Beaverton Regional Center, Washington Square Regional Center, Raleigh Hills Town Center, Tigard Town Center, Hillsdale Town Center
Figure 82: SW Beaverton-Hillsdale Hwy. & SW Scholls Ferry Rd. - Land Use and Transportation

1. Courtyard Village senior housing on SW 78th Ave, which lacks sidewalks.
2. Many roads in the area maintain their rural character (SW Laurelwood Ave pictured).
5. SW Scholls Ferry Rd looking towards Portland.
6. Shopping centers along SW Beaverton-Hillsdale Hwy are served by Frequent Service Lines 54 and 56.
Roadways and Sidewalks

There are three high speed, high volume roads running through the focus area. They connect the area to adjacent cities and a major US highway. Two have transit service on them.

**North-South**

- SW Scholls Ferry Rd.
- SW Oleson Rd.

**East-West**

- SW Beaverton-Hillsdale Hwy.

While these arterial roads provide motor vehicle and transit service access to a variety of regional and local destinations, in their current state, they also act as major barriers to pedestrian and bicyclists.

Figure 83 shows the roadway and sidewalk attributes for the segments of SW Scholls Ferry Rd., SW Oleson Rd., and SW Beaverton-Hillsdale Hwy. located within the focus area. Key conclusions, based on field visits and information in Figure 83 are outlined below.

**Key Conclusions**

- SW Beaverton-Hillsdale Hwy. has a posted speed limit of 35 mph and is designed for speeds of 45 mph. SW Scholls Ferry Rd. has a posted speed of 30 mph, is designed for speeds of 45 mph, and has recorded 85\textsuperscript{th} percentile speeds of 43 mph.

- SW Beaverton-Hillsdale Hwy. is the only roadway in the focus area to have continuous sidewalks on both sides of the street. There are major gaps in the sidewalk network on SW Scholls Ferry Rd.

- All sidewalks on SW Beaverton-Hillsdale Hwy., SW Oleson Rd., and SW Scholls Ferry Rd. are curb tight, with a few exceptions they do not have landscaped buffer between the sidewalk and the roadway.

- SW Scholls Ferry Rd. has some development oriented toward the sidewalk, SW Beaverton-Hillsdale Hwy. has much bigger building setbacks with a lot of large format retail. Both roads are very auto-centric in their design.

- SW Beaverton-Hillsdale Hwy, SW Oleson Rd., and SW Scholls Ferry Rd. have about the same number of driveways, 15 to 20 on each side of the roadway.
Figure 83: SW Beaverton-Hillsdale Hwy. & SW Scholls Ferry Rd. - Roadways and Sidewalks

<table>
<thead>
<tr>
<th>Roadway &amp; Sidewalk Attributes</th>
<th>SW Beaverton-Hillsdale Hwy.</th>
<th>SW Scholls Ferry Rd.</th>
<th>SW Oleson Rd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design speed</td>
<td>45 mph</td>
<td>45 mph</td>
<td>35 mph</td>
</tr>
<tr>
<td>Posted speed limit</td>
<td>35 to 40 mph</td>
<td>30 mph</td>
<td>35 mph</td>
</tr>
<tr>
<td>Midblock 85th percentile traffic speed</td>
<td>Not Available</td>
<td>43 mph</td>
<td>39 mph</td>
</tr>
<tr>
<td>Presence of sidewalk throughout</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Width of sidewalk</td>
<td>5 to 6 ft</td>
<td>0 to 6 ft.</td>
<td>0 to 7 ft.</td>
</tr>
<tr>
<td>Width of landscaped buffer between walkway &amp; motorized vehicle</td>
<td>0 ft.</td>
<td>0 ft.</td>
<td>0 ft.</td>
</tr>
<tr>
<td>Development oriented toward sidewalk</td>
<td>Very little</td>
<td>Some</td>
<td>Some</td>
</tr>
<tr>
<td>Width of paved shoulder, bicycle lane, and/or parking lane</td>
<td>0 to 6 ft. (bicycle lane)</td>
<td>0 to 6 ft. (bicycle lane)</td>
<td>6 ft. (bicycle lane)</td>
</tr>
<tr>
<td>On-street parking</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Presence of streetlights throughout</td>
<td>Yes (cobra)</td>
<td>Yes (cobra)</td>
<td>Yes (cobra)</td>
</tr>
<tr>
<td># of travel lanes</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Width of two-way center lane</td>
<td>13 ft.</td>
<td>No</td>
<td>12.5 ft.</td>
</tr>
<tr>
<td>Width of outside travel lane</td>
<td>13.5 ft.</td>
<td>12 ft.</td>
<td>12 ft.</td>
</tr>
<tr>
<td>Width of inner travel lanes</td>
<td>11.5 ft.</td>
<td>11 ft.</td>
<td>N/A</td>
</tr>
<tr>
<td>Presence/width of median (must be &gt; 6 ft and separate two</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>directions of traffic to be considered median). Is it traffic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>separating, concrete, raised, planted?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total width of roadway—curb to curb</td>
<td>63 ft.</td>
<td>34 to 62 ft.</td>
<td>32 to 42 ft.</td>
</tr>
<tr>
<td>Annual average daily traffic (AADT)</td>
<td>25,500</td>
<td>18,200 (in 2010)</td>
<td>11,100 (in 2010)</td>
</tr>
</tbody>
</table>
Crossings and Connectivity

Based on field observation and transit passenger count data three signalized intersections were selected for review. Each appeared to have a relatively high degree of motor vehicle movement, transit stop activity, and pedestrian movement compared to other intersections in the focus area. The three intersections were selected for exemplary purposes. Other intersections in the focus area could also benefit from this type of evaluation and review.

- SW Beaverton-Hillsdale Hw. & SW Scholls Ferry Rd.
- SW Beaverton-Hillsdale Hwy. & SW Oleson Rd.
- SW Beaverton-Hillsdale Hwy. & SW Laurelwood Rd.

Information was collected on crossing opportunities for three roadway segments on SW Beaverton-Hillsdale Hwy., SW Oleson Rd., and SW Scholls Ferry Rd. Figures 84 and 85 present this information.

Figure 89 displays the overall road network connectivity in the SW Beaverton-Hillsdale Hwy. and SW Scholls Ferry Rd. focus area, using a Route Directness Index (RDI). A RDI score takes the straight line distance from the center of one parcel to the center of all other parcels, within a certain distance, and divides it against the distance it would take to get to the parcel using the actual road network. An RDI score of 1 is the most direct. It means the actual road network distance is the exact same as the straight line distance. Figure 89 shows the connectivity of each parcel to all other parcels within a quarter mile.

Key Conclusions

- Within the focus area, SW Scholls Ferry Rd. has about double the number of intersections as Oleson Rd. or Beaverton-Hillsdale Hwy., 17 compared to 9.

- 6 of 9 intersections have full signals on Beaverton-Hillsdale Hwy. There are long distances between each crossing opportunity.

- Of the intersections assessed, crossing distances for pedestrians at SW Beaverton-Hillsdale Hwy. & SW Scholls Ferry Rd. are very long, 101 to 135 ft., and one leg is closed.

- With the exception of small areas around the intersections of SW Beaverton-Hillsdale Hwy. & SW Scholls Ferry Rd. and SW Beaverton-Hillsdale Hwy. and SW 78th parcels are not very well connected. Parcel sizes are large and many roads dead end.

- Pedestrian crossing speeds at the three intersections assessed are as follows:
  - SW Beaverton-Hillsdale Hwy. & SW Scholls Ferry Rd. = 3.6 ft./second
  - SW Beaverton-Hillsdale Hwy. & SW Oleson Rd. = 2.3 to 2.8 ft./second
  - SW Beaverton-Hillsdale Hwy. & SW Laurelwood Ave. = 3.2 to 3.4 ft. second
Figure 84: SW Beaverton-Hillsdale Hwy. & SW Scholls Ferry Rd. – Crossings

Pedestrian & Bicycle Crashes

Locations of known pedestrian or bike crashes that resulted in a fatality or serious injury between 2007-2009

- SW Beaverton-Hillsdale Hwy. & SW 62nd Ave. (2 pedestrians)
- SW Beaverton-Hillsdale Hwy. & SW Scholls Ferry Rd. (bicyclist)
- SW Scholls Ferry Rd. & SW Stephen Ln. (pedestrian)
- SW Scholls Ferry Rd. & SW 77th Ave. (pedestrian)

Roadway Crossing Attributes

<table>
<thead>
<tr>
<th></th>
<th>SW Beaverton-Hillsdale Hwy.</th>
<th>SW Scholls Ferry Rd.</th>
<th>SW Oleson Rd.</th>
</tr>
</thead>
<tbody>
<tr>
<td># of unmarked crossings in focus area along selected streets</td>
<td>3</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td># of marked crossings in focus area along selected streets</td>
<td>0</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td># of signalized crossings in focus area along selected streets</td>
<td>6</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Figure 85: SW Beaverton-Hillsdale Hwy. & SW Scholls Ferry Rd. – Intersections

Intersection Attributes

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td># of lanes being crossed by pedestrians at signalized intersections</td>
<td>Scholls Ferry (N) - 3 Scholls Ferry (S) - 5 B-H (E) - NO B-H (W) - 6</td>
<td>Oleson (N) - 4 Oleson (S) - 3 B-H (E) - 5 B-H (W) - 5</td>
<td>Laurelwood (N) - 3 Laurelwood (S) - 3 B-H (E) - 5 B-H (W) - 5</td>
</tr>
<tr>
<td>Effective turning radius at intersection</td>
<td>NW 150 ft. SE 66 ft. SW 30 ft.</td>
<td>NE 27 ft. SE 27 ft. SW 27 ft.</td>
<td>NW 40 ft. NE 31 ft. SE 75 ft. SW 40 ft.</td>
</tr>
<tr>
<td>Total crossing distance</td>
<td>Scholls (N) - 107 ft Scholls (S) - 101 ft B-H (E) - No Crossing B-H (W) - 135 ft</td>
<td>Oleson (N) - 65 ft Oleson (S) - 65 ft B-H (E) - 68 ft B-H (W) - 67 ft</td>
<td>Laurelwood (N)-55ft Laurelwood(S)-55ft B-H (E) - 70 ft B-H (W) - 75 ft</td>
</tr>
<tr>
<td>Signal cycle length</td>
<td>1:20 (off-peak) 1:50 (peak)</td>
<td>1:20 (off-peak) 1:50 (peak)</td>
<td>1:05 (off-peak) 1:30 (peak)</td>
</tr>
<tr>
<td>Pedestrian signal actuated</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Pedestrian crossing time</td>
<td>0:37 Beaverton-Hillsdale Hwy</td>
<td>0:25 Beaverton-Hillsdale Hwy.</td>
<td>0:22 Beaverton-Hillsdale Hwy.</td>
</tr>
<tr>
<td></td>
<td>0:30 Scholls Ferry Rd.</td>
<td>0:28 Oleson Rd.</td>
<td>0:17 Laurelwood</td>
</tr>
<tr>
<td># of right-turn-on red motor vehicles and the number of motorists making a permitted left turn in a 15-minute period (right/left)</td>
<td>27 / 99 (Weekday 8:45-9:00am)</td>
<td>6 / 61 (Weekday 8:30-8:45am)</td>
<td>10 / 50 (Weekday 8:00-8:15am)</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Right turn channelization islands on the crossing</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Pedestrian refuge present</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Transit Stops

There are four public transit lines providing transportation services to people in the focus area:

- Line 54 – Beaverton-Hillsdale Hwy.
- Line 55 – Hamilton
- Line 56 – Scholls Ferry Rd
- Line 61 – Marquam Hill / Beaverton

Figures 86 and 87 provide detailed information on the transit service and stops.

Key Conclusions

- Both SW Scholls Ferry Rd. and SW Beaverton-Hillsdale Hwy. have bus service operating on them. Lines 54 and 56 operate on SW Beaverton-Hillsdale Hwy., running approximately every 15 min. Line 56 operate on SW Scholls Ferry Rd., running every 30 min.

- The intersections where there are the most TriMet customers getting on or off a bus and walking to or from their destination are:
  - SW Beaverton-Hillsdale Hwy. & SW Oleson Rd. = 1,857/week
  - SW Beaverton-Hillsdale Hwy. & SW 62nd Ave. = 1,018/week
  - 5100 Block of SW Scholls Ferry Rd. = 711/week

- The highest activity bus stop in the focus area, located on SW Beaverton-Hillsdale Hwy. is the eastbound, Line 54/56/61, stop located at SW Beaverton-Hillsdale Hwy. & SW Oleson Rd. (Stop ID 348). On average, 1,094 people get on or off a bus at this stop every week.

- The highest activity bus stop in the focus area, located on SW Scholls Ferry Rd. is the eastbound, Line 56, stop located at the 5100 Block of SW Scholls Ferry Rd. (Stop ID 5193). On average, 392 people get on or off a bus at this stop every week.

- The intersections with the most request for lift or ramp deployments are:
  - SW Beaverton-Hillsdale Hwy. & SW 62nd Ave. = 35 requests/month
  - SW Beaverton-Hillsdale Hwy. & SW Oleson Rd. = 26 requests/month

There are very few ramp deployment requests along SW Scholls Ferry Rd.
Pedestrian Network Analysis

Figure 86: SW Beaverton-Hillsdale Hwy. & SW Scholls Ferry Rd. - Transit Stops

<table>
<thead>
<tr>
<th>Transit Service and Stop Attributes</th>
<th>SW Beaverton – Hillsdale Hwy.</th>
<th>SW Scholls Ferry Rd.</th>
</tr>
</thead>
</table>
| Transit lines and weekday frequencies along selected streets in focus area. | Rte 54 - (frequent bus service) – 15 min  
Rte 56 - (frequent bus service) – 15 min  
Rte 55 – 60 min peak only  
Rte 61 – 30 min peak only | Rte 55 – 60 min peak only  
Rte 56 (bus) – 30 min |
| # of transit stops in focus area along selected streets. | Westbound = 9  
Eastbound = 9 | Northbound = 8  
Southbound = 9 |
| # of transit stops without a paved front door landing pad along selected streets. | 0 | 7  
Stop IDs: 5196,5195,5198,5199,5172,5135,5185 |
| # of transit stops without sidewalk connections to it in all directions along selected streets. | 0 | 11  
Stop IDs: 5196,5195,5198,5194,5199,5172,5125,5153,5185,5192,5187 |
| # of transit stops without a marked crossing within 150 ft. along selected streets. | 12  
Stop IDs: 5184,331,328,332,381,384,335,349,330,383,333,9765 | 14  
Stop IDs: 5185,5195,5196,5184,5152,5192,5199,5186,5194,2470,5193,5153,5198,2465 |
| # of transit stops with avg. weekday boardings > 50 without a shelter along selected streets. | 0 | 0 |

TriMet
Figure 87: SW Beaverton-Hillsdale Hwy. & SW Scholls Ferry Rd. – Transit Ridership

<table>
<thead>
<tr>
<th>Stop Location</th>
<th>Stop ID</th>
<th>Direction</th>
<th>Transit Lines</th>
<th>Weekly Ons &amp; Offs</th>
<th>Pedestrian Count Proxy at Intersection</th>
<th>Monthly LIFTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scholls Ferry &amp; Hamilton</td>
<td>2465</td>
<td>E</td>
<td>55</td>
<td>5</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>Scholls Ferry &amp; Hamilton</td>
<td>2470</td>
<td>W</td>
<td>55</td>
<td>7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Scholls Ferry &amp; Seymour</td>
<td>5196</td>
<td>N</td>
<td>55</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Scholls Ferry &amp; Seymour</td>
<td>5195</td>
<td>S</td>
<td>55</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Scholls Ferry 6800 Block</td>
<td>5198</td>
<td>S</td>
<td>55</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Scholls Ferry 4400 Block</td>
<td>5194</td>
<td>N</td>
<td>55</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Scholls Ferry 4400 Block</td>
<td>5199</td>
<td>S</td>
<td>55</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Scholls Ferry &amp; Dogwood</td>
<td>5172</td>
<td>W</td>
<td>55</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Scholls Ferry &amp; Stephen Lane</td>
<td>5186</td>
<td>E</td>
<td>56</td>
<td>73</td>
<td>226</td>
<td>1</td>
</tr>
<tr>
<td>Scholls Ferry 4900 Block</td>
<td>5152</td>
<td>W</td>
<td>56</td>
<td>153</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Scholls Ferry 5100 Block</td>
<td>5193</td>
<td>E</td>
<td>56</td>
<td>392</td>
<td>711</td>
<td>1</td>
</tr>
<tr>
<td>Scholls Ferry 5000 Block</td>
<td>5153</td>
<td>W</td>
<td>56</td>
<td>319</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Scholls Ferry &amp; Montclair</td>
<td>5185</td>
<td>E</td>
<td>56</td>
<td>27</td>
<td>56</td>
<td>0</td>
</tr>
<tr>
<td>Scholls Ferry 5200 Block</td>
<td>5192</td>
<td>W</td>
<td>56</td>
<td>29</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Scholls Ferry &amp; Nicol</td>
<td>5187</td>
<td>E</td>
<td>56</td>
<td>94</td>
<td>199</td>
<td>0</td>
</tr>
<tr>
<td>Scholls Ferry &amp; Nicol</td>
<td>5188</td>
<td>W</td>
<td>56</td>
<td>105</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stop Location</th>
<th>Stop ID</th>
<th>Direction</th>
<th>Transit Lines</th>
<th>Weekly Ons &amp; Offs</th>
<th>Pedestrian Count Proxy at Intersection</th>
<th>Monthly LIFTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-H Hwy. &amp; Apple Way</td>
<td>335</td>
<td>E</td>
<td>54</td>
<td>62</td>
<td>104</td>
<td>0</td>
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<tr>
<td>B-H Hwy. &amp; Poplar</td>
<td>349</td>
<td>W</td>
<td>54</td>
<td>41</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>B-H Hwy. &amp; Laurelwood</td>
<td>347</td>
<td>E</td>
<td>54</td>
<td>193</td>
<td>373</td>
<td>5</td>
</tr>
<tr>
<td>B-H Hwy. &amp; Laurelwood</td>
<td>346</td>
<td>W</td>
<td>54</td>
<td>180</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>B-H Hwy. &amp; 78th</td>
<td>386</td>
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Figure 88: Stop ID 348 (Beaverton-Hillsdale & Oleson) - TriMet Customer Survey

Survey administered on October 7, 2011 (6-10am).
n=27

Primary mode of access (multiple answers possible, so percentages may not total 100 percent):
0%-transferred, 44%-walked, 48%-drove and parked, 15%-dropped off, 0%-bicycled, 0%-other

Figure 88 displays customers’ general opinions regarding various elements of the walking environment in the immediate vicinity of the transit stop. Specific customer comments and concerns are listed below.

Customer Comments/Concerns

- Crosswalk dangerous
- Crosswalk needs lead time for pedestrians, cars don’t stop.
- Crosswalks take too long - dangerous.
- Drivers don’t have consideration for pedestrians.
- Fast Road, avoid cycling on it.
- No good pedestrian access to the stop - need a larger covered area.
- No sidewalks on Dogwood.
- Parts of Oleson Rd no sidewalks.
- Pedestrian access could be improved immensely.
- People can’t see you in intersection, cars just blow through.
- So many people at stop it congests sidewalk.
- Stop needs a garbage can, and not enough sidewalk space.
- Unit areas off Beaverton-Hillsdale Rd. crossing streets at night dangerous.
Figure 89: SW Beaverton-Hillsdale Hwy. & SW Scholls Ferry Rd. Connectivity Analysis

Connectivity Score*
- < 40 (Poor)
- 40 - 50
- 50 - 60
- 60 - 70
- > 70 (Good)

TriMet Stops

TriMet Bus Lines

TriMet Rail Lines
- MAX Blue Line
- MAX Green Line
- MAX Red Line
- MAX Yellow Line
- WES

*The Connectivity Score is based on how well each parcel is connected to other parcels within a quarter-mile radius. This analysis was performed using ViaCity software from the Transpo Group.
Figure 90: SW Beaverton-Hillsdale Hwy. & SW Scholls Ferry Rd. - Pedestrian and Transit Needs

1. No sidewalks on Scholls Ferry Rd. People walk to Raleigh Hills Elementary in the bike lane.
2. Crossing mid block to reach New Seasons Grocery store. Nearest crosswalk is at B-H Hwy in the background.
3. No buffer between sidewalk and high-speed traffic on Beaverton-Hillsdale Hwy.

Vehicle-pedestrian conflicts
Sidewalk close to traffic
Sidewalk next to traffic
Sidewalk gaps
TriMet stops
Stops >150' from marked crosswalk

Existing multi-use path
Proposed multi-use path
Multi-family housing
Senior housing
Pre-to-middle school
High school
Library
Health clinic
Grocery store
Commercial: other
Parks and open space

Lo (135') diagonal crossing of Beaverton-Hillsdale Hwy at Scholls Ferry Rd

Running to cross Beaverton-Hillsdale Hwy

Conflicts with vehicles at undefined driveways on Scholls Ferry Rd (approaching Beaverton-Hillsdale Hwy)
Infrastructure Needs

Needs are identified below. Future solutions to address these needs will hopefully make people feel safer, entice them to walk more, and help connect people who are living, working, shopping and/or recreating in the area to retail, parks, trails, schools, public services and jobs.

Places to Connect

• Concentrations of multifamily housing located along SW Beaverton-Hillsdale Hwy., SW Scholls Ferry Rd., and SW Oleson Rd. to Raleigh Hills Elementary School.

• Senior residences and multi-family housing to retail establishments on SW Beaverton-Hillsdale Hwy. which include places like Fred Meyer, New Seasons, and Safeway.

• Senior residences and concentrations of multi-family housing to Raleigh Scholls Park, Raleighwood Park, and Bauman Park.

• Senior residences, multifamily housing, schools, and retail commercial development to TriMet bus stops.

Observed Behavior

• People having to wait a long time before being able to get a walk signal, crossing very long distances, being on the watch for motor vehicles making permitted right turns on red, and hurrying or running to cross the intersection of SW Beaverton Hillsdale Hwy. & SW Oleson Rd. because they cannot make it across the road in the time allotted to cross. There are 1,857 people getting on or off a bus at this intersection every week. Most of them likely have to walk across this intersection.

• People crossing SW Scholls Ferry Rd. mid-block or at unprotected intersections.

• People walking on 6 ft. curb tight sidewalks along Beaverton-Hillsdale Hwy., where there is no landscaped buffer between pedestrians and traffic. The posted speed limit is 40 mph.
Bright Spots

- Concrete pedestrian refuge installed at 62nd Ave. and Beaverton-Hillsdale Hwy. allowing pedestrians an easier crossing of Beaverton-Hillsdale Hwy.

- Much of the multi-family housing, senior residences, retail, and services are clustered around existing frequent bus service on SW Beaverton-Hillsdale Hwy.

- Sidewalks were recently installed along SW Oleson Rd., making the street more accessible to people with disabilities and people using mobility devices and a marked midblock crossing, with a pedestrian refuge was installed at SW Oleson Rd. & SW Dover St.

First Five Actions to Take

1. Shorten crossing distances, make crosswalks more visible, and provide more time for pedestrians to cross at the intersection of SW Beaverton-Hillsdale Hwy. & SW Oleson Rd. All signals should, at a minimum, be timed so people have one second to walk 3.5 ft. Given the intersection’s proximity to senior centers and retail, a more appropriate time would be one second for every 2.5 ft to allow children and senior citizens, who tend to walk more slowly, to cross comfortably under the protection of the walk phase. Consider other signal treatments like leading pedestrian phases, automatic recall for pedestrian actuated signals, and right turn on red restrictions. Curb radius reduction, curb extension, and crossing island treatments should also be considered to shorten crossing distances.

2. Shorten crossing distances, make crosswalks more visible, and provide more time for pedestrians to cross at the intersection of SW Beaverton-Hillsdale Hwy. & SW Scholls Ferry Rd. All signals should, at a minimum, be timed so people have one second to walk 3.5 ft. Given the intersection’s proximity to senior centers and retail, a more appropriate time would be one second for every 2.5 ft. to allow children and senior citizens, who tend to walk more slowly, to cross comfortably under the protection of the walk phase. Consider other signal treatments like leading pedestrian phases, automatic recall for pedestrian actuated signals, and right turn on red restrictions. Curb radius reduction, curb extension, and crossing island treatments should also be considered to shorten crossing distances.

3. Build, at least, 10 ft wide sidewalks along SW Scholls Ferry Rd., where there are none, and widen existing sidewalk corridors all along SW Scholls Ferry Rd., so there is landscaped buffer between pedestrians and the motor vehicles. The minimum sidewalk corridor width for a busy road like this should be 10 ft, including a landscaped buffer, but wider is better, preferably 14 ft.

4. Provide additional, frequent, and protected pedestrian crossings along SW Scholls Ferry Rd. At a minimum, protected crossings should be provided every 530 ft. Consider treatments like medians with pedestrian refuges, and pedestrian warning signs, like Rectangular Rapid-Flashing Beacons (RRFBs) to assist people with crossing the street.
5. Widen existing sidewalk corridor along SW Beaverton-Hillsdale Hwy., so there is
landscaped buffer between pedestrians and the motor vehicles. The minimum sidewalk
corridor width for a busy road like this should be 10 ft, including a landscaped buffer, but
wider is better, preferably 14 ft.
Existing Plans and Facility Responsibilities

Facility Ownership / Maintenance:

SW Beaverton-Hillsdale Hwy.: Roadway owned and maintained by Oregon Department of Transportation (ODOT); signals owned and operated ODOT; transit stop amenities owned and maintained by TriMet.

SW Scholls Ferry Rd.: Roadway owned and maintained by Washington County; signals owned and operated by Washington County; signal located at SW Scholls Ferry Rd. & SW Beaverton-Hillsdale Hwy. owned and operated by ODOT; transit stop amenities owned by TriMet.

SW Oleson Rd.: Roadway owned and maintained by Washington County; signals owned and operated by Washington County; signal located at SW Oleson Rd. & SW Beaverton-Hillsdale Hwy. owned and operated by ODOT; transit stop amenities owned and maintained by TriMet.

Existing Plans:

- City of Portland Transportation System Plan (last amended in 2011)
  http://www.portlandonline.com/transportation/index.cfm?c=52495

- The Portland Plan (ongoing)
  http://www.portlandonline.com/portlandplan/

- City of Portland Beaverton-Hillsdale Hwy. High Crash Corridor Safety Project (ongoing)

- Washington County TSP will show anticipated transportation projects through the forecast year of 2035 (ongoing)
  http://www.co.washington.or.us/LUT/Divisions/LongRangePlanning/Publications/tran sportation-plan.cfm

- Oleson Rd. Realignment Project at Beaverton-Hillsdale Highway (ongoing)
  http://www.fixbhos.org/

  http://www.co.washington.or.us/LUT/Divisions/LongRangePlanning/Publications/ralei gh-hills-cp.cfm
5.0 References and Resources

Design treatments

TriMet Bus Stops Guidelines (2010)
TriMet

U.S. Department of Transportation, Federal Highway Administration
http://www.walkinginfo.org/pedsafe/

Safety Benefits of Walkways, Sidewalks, and Paved Shoulders (2011)
U.S. Department of Transportation, Federal Highway Administration

Safety Benefits of Raised Medians and Pedestrian Refuge Areas (2011)
U.S. Department of Transportation, Federal Highway Administration

U.S. Department of Transportation, Federal Highway Administration

Safer Stops for Vulnerable Customers (2003)
State of Florida Department of Transportation

U.S. Department of Transportation, Federal Highway Administration

Smart Transportation Guidebook: Planning and Designing Highways and Streets that Support Sustainable and Livable Communities (2008)
New Jersey and Pennsylvania Departments of Transportation

Institute of Transportation Engineers

Pedestrian and Bicycle Information Center
http://www.pedbikeinfo.org/
United States Access Board: A Federal Agency Committed to Accessible Design
http://www.access-board.gov/

California Department of Transportation

Metro Regional Services
http://www.oregonmetro.gov/index.cfm/go/by.web/id=235

City of Portland Office of Transportation Engineering and Development
http://www.portlandonline.com/shared/cfm/image.cfm?id=84048

Walking audits

U.S. Department of Transportation, Federal Highway Administration

American Association of Retired Persons (AARP)
http://createthegood.org/sites/default/files/how-to/SidewalksStreets.pdf

Community Health Research Unit, a partnership between University of Ottawa and the City of Ottawa Department of Public Health Services and Long Term Care.

Healthy Development Checklist
Walkable Communities

City Planning and Development Department City of Kansas City, Missouri

Pedestrian Road Safety Audit Guidelines and Prompt Lists (2007)
U.S. Department of Transportation, Federal Highway Administration
http://katana.hsrc.unc.edu/cms/downloads/PedRSA.reduced.pdf
Appendix A: Glossary of Terms

The glossary of terms provides information on how the roadway, sidewalk, crossing, intersection, and transit stop attributes listed in Chapter 4 are defined and how the findings may be interpreted. Terms are listed in the same order as in the tables provided in Chapter 4.

Roadways and Sidewalks

**Design speed:** is a selected speed used to determine the various geometric features of the roadway. The assumed speed should be a logical one with respect to topography, anticipated operating speed, the adjacent land use, and the functional classification of the highway (Source: AASHTO)

**Posted speed limit:** By law, the Oregon Department of Transportation is responsible for establishing speed zones on all highways in Oregon. The Traffic-Roadway Section is responsible for the overall administration of the program. Regional traffic engineering staff conducts engineering investigations to determine recommendations for safe speeds on local roads and streets. Cities and counties may appeal speed zoning recommendations to the Speed Zone Review Panel. (Source: ODOT)

**Midblock 85th percentile traffic speed:** The speed at which 85 percent of the traffic is moving. Most speed limits are set at or below this speed.

**Presence of sidewalk throughout:** Yes indicates there is a continuous sidewalk along the roadway, on both sides, without gaps. No indicates segments of sidewalk are missing. Even a small missing segment of sidewalk can make a roadway inaccessible to a person using a mobility device or force out of direction travel.

**Width of sidewalk:** The width of the paved sidewalk, measured from the curb of the roadway or the edge of the landscaped buffer. Both FHWA and the Institute of Transportation Engineers (ITE) recommend a minimum width of 5 ft for a sidewalk or walkway, which allows two people to pass comfortably or to walk side-by-side. Wider sidewalks should be installed near schools, at transit stops, in downtown areas, or anywhere high concentrations of pedestrians exist. (Source: walkinginfo.org) If there is not a sidewalk, then the width is marked as 0 ft.

**Width of landscaped buffer between walkway & motorized vehicle traffic:** The width of the landscaped buffer, measured from the curb of the roadway to edge of the paved sidewalk. To be counted as a landscaped buffer the impervious surface needed to be continuous, versus a few trees planted in tree wells, surrounded by concrete. A buffer zone of 4 to 6 ft is desirable and should be provided to separate pedestrians from the street. (Source: walkinginfo.org) If there is no landscaped buffer, then the width is marked as 0 ft.
Number of driveways within the focus area: The number of driveways along the roadway. Very large driveways, with physical separation between the entry and exit lanes, were counted as two separate driveways. When there are fewer driveways, then there are fewer points for pedestrian/motor vehicle conflicts. All driveways should be level and comply with ADA standards.

Development oriented toward sidewalk: This is a subjective assessment of how much development, located along the roadway, is oriented toward the pedestrian.

Width of paved shoulder, bicycle lane, and/or parking lane: The width of the roadway, measured from the curb to the start of the outer travel lane. Roadway shoulders, bicycle lanes, and/or parking lanes all act as paved, in-roadway buffers between pedestrians and moving motor vehicles. If there is no shoulder, bicycle lane, or parking lane, then the width is marked as 0 ft.

On-street parking: Yes indicates there is on-street parking present along some portion of the roadway. No indicates there is no on-street parking allowed on the roadway.

Presence of streetlights throughout: Yes or no indicating whether there is any street lighting present and type of lighting, either cobra head or pedestrian scale. Spacing of streetlights significantly varied from site to site. For the purpose of this assessment, cobra head lighting is lighting that emanates from large, bright, light fixtures, rising far above the street, spaced far apart, with illumination geared toward automobile users. For the purpose of this assessment, pedestrian scale lighting is lighting that emanates from small light fixtures, located lower to the ground, typically 12 to 15 feet above the sidewalk, with lower light levels, but spaced closer together. Pedestrian scale lighting improves illumination for people walking.

Number of travel lanes: The number of travel lanes along the roadway, in both directions.

Width of two-way center lane: The width of the two-way center turn lane. The presence of exclusive, one-way, center turn lanes are also indicated when present. If there is no lane, then the width is marked as 0 ft.

Width of outside travel lane: The width of the outer travel lane.

Width of inner travel lanes: The width of the inner travel lanes. If the roadway is only two lanes, then this attribute is marked as not applicable and the width of the lane is indicated in the outer lane row.

Presence/width of median: Medians are the portion of a divided roadway that separates traffic flows heading in opposite directions. Raised medians make the pedestrian more visible to motorists and they are easier for people with vision impairments to detect.

Total width of roadway: The width of the pavement from curb to curb, including all travel lanes, turning lanes, bicycle lanes, parking lanes and shoulders.
Annual average daily traffic (AADT): The average number of vehicles, going both directions, passing a specific point in a 24-hour period, normally measured through a year. AADT provides a rough guide to how much motor vehicle traffic is on a section of roadway.

Crossings and Crashes

Locations of known pedestrian or bicycle crashes that resulted in a fatality or serious injury between 2007 and 2009: The cross streets where a crash resulted in a serious injury or fatality to pedestrian or a bicyclist. The information is from the Oregon Department of Transportation. A serious injury (noted as “Injury A” in ODOT’s database) is one that prevents a person from walking, driving, or continuing normal activities which the person was capable of prior to sustaining the injury.

Number of unmarked crossings in focus area along selected streets: The number of intersections where there is no visible marked crossing. In Oregon any public street intersection is considered a legal crossing for a pedestrian, even if unmarked.

Number of marked crossings in focus area along selected streets: The number of intersections or mid-block locations where there is a visible, marked crossing. For the purpose of this study, markings include white painted lines on the roadway and/or rapid flashing beacons. In Oregon, legal crossings can exist between intersections (mid-block) only if they are marked with white painted lines.

Number of signalized crossings in focus area along selected streets: The number of signalized intersections. Signalized intersections offer pedestrians the greatest number of protections when crossing the roadway.

Intersections

Number of lanes being crossed by pedestrians at signalized intersections: The total number of lanes, including travel, center and turning lanes, a person must cross to reach the opposite side of the roadway.

Effective turning radius at intersection: The effective turning radius takes into account the wheel tracking of the design vehicle utilizing the width of parking and bicycle lanes. Use of the effective turning radii allows a smaller curb-return radius while retaining the ability to accommodate larger design vehicles, like buses or trucks. (Source: ITE Context Sensitive Solutions)

Total crossing distance: The distance a person must travel to cross a roadway, measured as a straight line, or a path otherwise marked, from the midpoint of the corner to the midpoint of the opposite corner.
Signal cycle length: The total time it takes to give both streets the right-of-way or the amount of time it takes for the lights on one street of an intersection to go from green to yellow to red and back to green. The time recorded is based on in-field observation and may vary slightly depending on time of day. In general, shorter cycle lengths and longer walk intervals provide better service to pedestrians and encourage better signal compliance. (Source: walkinfo.org)

Pedestrian signal actuated: Yes indicates there is a traffic signal present where a button must be pushed to receive a walk phase. No indicates it is a fixed-time signal where the walk phase automatically comes on for pedestrians during every signal cycle. For optimal pedestrian service, fixed-time signal operation usually works best. (Source: walkinfor.org)

Pedestrian crossing time: The amount of time a pedestrian has to cross the roadway, measured as the time the walk sign begins, to the time when the pedestrian sees a solid red hand. The time recorded is based on in-field observation and may vary slightly depending on time of day. Prior to 2003, the MUTCD identified the “normal” walking speed as 4 ft/sec. In 2009, the recommended speed changed to 3.5 ft/sec. The 15th percentile walk speed for older adults is 3.11 ft/sec. (Source: NCHRP Report 562) The City of San Francisco sets pedestrian crossing times based on a walking speed of 2.8 ft/second. Research suggests elderly pedestrians are comfortable walking between 2.8 and 2.2 ft/second.

Number of right-turn-on red motor vehicles and the number of motorist making a permitted left turn in a 15-minute period: The number of motor vehicles turning right or left at an intersection in a 15-minute time period, usually during the AM or PM peak period of traffic. When available the time period when the counts were taken was listed in the table. While the law requires motorists to come to a full stop and yield to cross-street traffic and pedestrians prior to turning right on red, many motorists do not fully comply with the regulations, especially at intersections with wide turning radii. Motorists are so intent on looking for traffic approaching on their left that they may not be alert to pedestrians approaching on their right. In addition, motorists usually pull up into the crosswalk to wait for a gap in traffic, blocking pedestrian crossing movements. In some instances, motorists simply do not come to a full stop. (Source: walkinginfo.org) In Oregon, the law says a driver must stop and remain stopped for pedestrians until they have cleared the lane into which the vehicle is turning and at least 6 ft. of the next lane. (Source: ODOT)

Right turn channelization islands on the crossing: The number of right turn channelization islands located at the intersection. While right-turn slip lanes are generally a negative facility from the pedestrian perspective—due to the emphasis on easy and fast motor vehicle travel—they can be designed to be less problematic. At many arterial street intersections, pedestrians have difficulty crossing due to right-turn movements and wide crossing distances. Well-designed right-turn slip lanes provide pedestrian crossing islands within the intersection and a right-turn lane that is designed to optimize the right-turning motorist's view of the pedestrian and of vehicles to his or her left. Pedestrians are able to cross the right-turn lane and wait on the crossing island for their walk signal. Channelized right turn-lanes remain a challenge for visually-impaired pedestrians. First, there are difficulties associated with knowing where the crosswalk is located or knowing where to cross. Second, it is difficult for a pedestrian who is visually-impaired to know when a vehicle has yielded right-of-way. (Source: walkinginfo.org)
Pedestrian refuge present: For purpose of this study, pedestrian refuges are raised medians placed in the center of the street at an intersection to help protect crossing pedestrians from motor vehicles. They are appropriate at signalized crossings though they should never be used to create a two-phased pedestrian crossing at a signalized intersection. If there is enough width, center crossing islands and curb extensions can be used together to create a highly improved pedestrian crossing. Detectable warnings are needed at cut-throughs to identify the pedestrian refuge area. (walkinginfo.org)

Transit Stops

Transit lines and weekday frequencies along selected streets in focus area: Weekday frequencies are indicated by line number and distinguishes between peak and off-peak times when there is a large discrepancy between the two times of day. The frequencies are for weekdays only. Some of the lines listed in this section may have reduced or no service on Saturday and Sunday.

Number of transit stops in focus area along selected streets: This is the number of transit stops located in the focus area along select streets. The location and spacing of transit stops is based on ensuring the safety of passengers and vehicles and providing easy access to surrounding neighborhoods, major transit generators, and/or intersecting transit service. TriMet generally expects a customer to walk up to a quarter of a mile to reach a stop.

Number of transit stops without a paved front door landing pad along selected streets: This is the number of TriMet transit stops without a paved front door landing pad. Front door landing pads allow passengers with mobility devices to use fixed route transit service, and ensures there is adequate room to deploy a bus ramp or lift to board and alight passengers.

Number of transit stops without sidewalk connections to it in all directions along selected streets: This is the number of transit stops without a continuous stretch of sidewalk, for at least 500 ft. without any breaks in it, along the roadway in which the stop is located. It does not take into account places where the local cross streets that connect to the stop do not have sidewalks.

Number of transit stops without a marked crossing within 150 ft. along selected streets: This is the number of transit stops without a marked crossing, as defined above, within 150 ft. of a transit stop. Due to site constraints in some areas, it is possible to have stops located near intersections, but not within this threshold, for example, 175 ft. This assessment was done using Geographic Information Systems (GIS) software, so any stop located even slightly more than 150 ft. was counted.

Number of transit stops with average weekday boardings greater than 50 without a shelter along selected streets: This is the number of transit stops with 50 or more boardings, on average, every weekday, without a shelter present. Ridership is the primary criteria TriMet uses to determine where to consider placing shelters. TriMet prefers minimum 50 daily boardings and 35 minimum boardings on routes with infrequent service (headways less than 17 minutes during the weekday peak).

Transit Ridership
Stop Location: The cross streets the stop is located at. When no cross street is available the block number is listed.

Stop ID: TriMet’s unique identifier for every transit stop. The stop can be used to find information about arrivals and departures at the stop or to look up its location.

Direction: The direction the bus or train is headed. It is listed as East, West, North or South.

Transit Lines: The transit lines that service the stop. Line numbers correspond to TriMet’s bus and train routes. Full line names and maps can be found by referring to this number.

Weekly Ons & Offs: The number of people getting on or off at an individual stop every week, including all weekdays, Saturday and Sunday. TriMet collects this information using automatic passenger counters on its vehicles.

Pedestrian Count Proxy at Intersection: The number of people getting on or off a TriMet bus or train, every week, at transit stops located at an intersection or at a pair of stops located nearly directly across the street from one another. Since we know every person who gets on or off a transit vehicle has to walk to get on or off the bus, then we can assume the aggregated weekly ons and offs provide a base-level proxy for the number of people walking in the vicinity of an intersection. This proxy is not an accurate stand-in for pedestrian counts, since not all people who are walking around the area plan to take public transit and some transit customers may be double counted if they are transferring lines at that specific intersection. However, the number does provide a starting point for conceptualizing how many people, at a minimum, are likely walking in the vicinity of an intersection when pedestrian counts are not available.

Monthly Lifts: The number of people, every month, requesting a lift or ramp deployment on a fixed route transit vehicle. Stops with a high number of vehicle ramp or lift deployments indicate where people are currently taking fixed route transit service and are in need of a walking environment that meets universal access standards. Often these are stops where someone needs the ramp/lift because they are using a mobility device, stroller, shopping cart, etc.
Appendix B: Template used to assess the ten focus areas

The template outlined below was used for this project. Technical Memo #3 shows it filled out for each of the ten focus areas. The template below is left blank, but general instructions are included to help guide a new person through the process.

**Introduce your assessment area**

Describe the characteristics of the area and explain why the area was chosen for the pedestrian and transit accessibility assessment.

**Places to access locally on foot**

List places to walk to in the area, for example:

- Grocery Stores
- Community gathering places (civic centers, libraries, senior centers, community centers)
- Places of workshop
- Schools (all grade levels)
- Retail stores and services (banks, salons, gyms)
- Food and drink establishments
- Parks
- Residential developments (senior housing, multi-family housing, single-family housing)

**Places to access regionally by transit**

List places people can take the bus or train to without having to make a transfer, for example:

- Nearby neighborhoods
- Adjacent cities
- Major retail areas (malls, downtowns, main streets)
- Transit centers
- Major attractors (stadiums, farmers markets, large employment sites)

**Map places to access on foot**

Create a map of the area using google.com or trimet.org and identify where transit stops and the places you identified above are located, in relation to another.
Assess the roadways and sidewalks

List the high speed, high volume roads running through the area you are assessing. Look for roads that exhibit these characteristics:

- Posted speed limits of 35mph or greater
- Four or more lanes dedicated to motorized traffic
- Traffic congestion during morning or afternoon rush hours

Describe where the roads listed above connect people to and how they appear to be functioning for all users, including pedestrians, bicyclists, buses, commercial trucks, and private automobiles.

Fill out the table below. You can use Google Maps or Google Earth to measure some things like intersection distance and the number of driveways within an area. For other attributes like, sidewalk width and the width of the landscaped buffer, go into the field, measure, and observe. Finally, for Average Daily Traffic, 85th percentile speed, and design speed, consult your local transportation engineering department.

Based on your field observations and the information you collected, list the most important things you noted about the sidewalks and roadways.
## Roadways and sidewalks table

<table>
<thead>
<tr>
<th>Roadway &amp; sidewalk attributes</th>
<th>Name of road #1</th>
<th>Name of road #2</th>
<th>Name of road #3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design speed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posted speed limit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Midblock 85th percentile traffic speed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence of sidewalk throughout</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width of sidewalk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width of landscaped buffer between walkway &amp; motorized vehicle traffic (planter, trees, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of driveways within one mile (does not account for size of driveway)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Development oriented toward sidewalk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width of paved shoulder, bicycle lane, and/or parking lane</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On-street parking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence of streetlights throughout</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of travel lanes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width of two-way center lane</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width of outside travel lane</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width of inner travel lanes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence/width of median (must be &gt; 6ft and separate two directions of traffic to be considered median). Is it traffic separating, concrete, raised, planted?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total width of roadway — curb to curb</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual average daily traffic (AADT)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Assess roadway crossings and how often people have to walk out of direction to get to where they are going

Choose two or three signalized intersections to review, based on field observations and transit passenger activity. Look for intersections that exhibit these characteristics:

- High number of turning vehicles
- High number of pedestrians
- High number of transit customers boarding and alighting at stops near the intersection.
- At least two bus lines meet at the intersection and customers can transfer between them.

Describe how well connected the road system is, e.g. do you often get stuck at dead ends, or find yourself not having any safe place to cross? Describe how the intersections appear to be functioning for all users, including pedestrians (particularly the very young and very old), bicyclists, buses, commercial trucks, and private automobiles.

Fill out the table below. You can use Google Maps or Google Earth to measure some things like the number of marked intersections and unmarked crossings along a stretch of roadway. For other attributes like number of seconds allowed to cross the street, go into the field, measure, and observe. Finally, for turning radii and signal cycle length, consult your local transportation engineering department.

Based on your field observations and the information you collected list the most important things you noted about the crossings and intersections.
## Crossings table

<table>
<thead>
<tr>
<th>Roadway crossing attributes</th>
<th>name of road #1</th>
<th>name of road #2</th>
<th>name of road #3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locations of known pedestrian or bicycle crashes that resulted in a fatality or serious injury within the past 5 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of unmarked crossings in one mile</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of marked crossings in one mile</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of signalized crossings in one mile</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Intersection table

<table>
<thead>
<tr>
<th>Intersection attributes</th>
<th>Name of intersection #1</th>
<th>Name of intersection #2</th>
</tr>
</thead>
<tbody>
<tr>
<td># of lanes being crossed by pedestrians at signalized intersections</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effective turning radius at intersection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total crossing distance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signal cycle length</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pedestrian signal actuated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pedestrian crossing time</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of right-turn-on red motor vehicles and the number of motorists making a permitted left turn in a 15-minute period (right/left)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right turn channelization islands on the crossing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pedestrian refuge present</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Assess the transit service and stops in the area

List all of the fixed route transit lines operating in the area. Make sure to include:

- Bus routes
- Light rail lines
- Commuter rail lines

Fill out the table below. You can use trimet.org to collect most of the transit information. For ridership data contact TriMet directly.

Based on your field observations and the information you collected, list the most important things you noted transit service and transit stops.
### Transit stops table

<table>
<thead>
<tr>
<th>Transit service and stop attributes</th>
<th>Road #1</th>
<th>Road #2</th>
<th>Road #3</th>
</tr>
</thead>
<tbody>
<tr>
<td>transit lines and weekday frequencies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of transit stops in one mile</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of transit stops without a paved front door landing pad</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of transit stops without sidewalk connections to it in all directions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of transit stops without a marked crossing within 150 ft.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of transit stops with avg. weekday boardings &gt; 50 without a shelter</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Transit ridership table

<table>
<thead>
<tr>
<th>Stop location</th>
<th>Stop ID</th>
<th>direction</th>
<th>Transit lines</th>
<th>Weekly ons and offs</th>
<th>Intersection ped count proxy</th>
<th>Monthly LIFTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop pair #1 – stop A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stop pair #1 – stop B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stop pair #2 – stop A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stop pair #2 – stop B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection #1 – stop A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection #1 – stop B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection #1 – stop C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection #1 – stop D</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
What are the infrastructure needs in the area?

Identify where there are opportunities to make the area safer, more convenient, and/or more comfortable to walk and take public transit. List these pedestrian and transit needs in a table.

Places to connect

List the key places to connect in an area. For example:

- Senior housing to grocery store
- Multi-family housing to elementary school
- Bus stop to health clinic

Observed behavior

List the travel behavior you observed, by all people, including drivers, pedestrians, and bicyclists. For example:

- Locations where people are crossing an intersection without any protection from oncoming traffic.
- Locations where drivers are not yielding to pedestrians trying to cross the street.
- Locations where there are people with mobility devices waiting for the bus, but there is not any seating available.
- Locations where people walk along the side of the road when the sidewalk ends.

Bright spots

To varying degrees, all areas have some bright spots to build from. List these bright spots, so people understand they are not starting from scratch. For example, bright spots may include:

- Basic infrastructure characteristics like, curb cuts to make an intersection ADA accessible and 5 ft. sidewalks.
- Treatments preventing many turning movements along the roadway, like medians.
- Landscaping
- Mid-block crossing treatments
- Traffic calming treatments

First five actions to take

List the first five actions to take to make the area more pedestrian and transit accessible and create a table outlining a more comprehensive list of needs.
Priority needs table

<table>
<thead>
<tr>
<th>Facility name</th>
<th>Roadway/sidewalks</th>
<th>Crossings</th>
<th>Transit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roadway #1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roadway #2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roadway #3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Review existing plans and codes for the area

Review existing plans and codes, to see what they call for in regard to:

- Sidewalk Widths
- Sidewalk Buffers
- Curb Radius
- Roadway Design Speeds
- Intersection & Crossing Spacing
- Building Site Location
- Parking

For each major roadway and intersection, list which agencies own and maintain it.

Review Transportation System Plans, Comprehensive Plans, and Local Area Plans to understand past, present, and future planning efforts in the area.