



Near the school, Alberta to the north, Vancouver and Williams to the east and Skidmore to the south, represent the major barrier streets to students walking or riding their bikes to Humboldt. Farther out, Killingsworth to the north, Albina and Mississippi to the west and Martin Luther King, Jr. Blvd to the east are the major barriers.

Martin Luther King, Jr. Blvd is classified as a Major City Traffic street. The primary purpose of a Major City Traffic street is the movement of auto traffic. Killingsworth is classified as a District Collector street. District Collector is the first level of arterial street where the needs of auto traffic typically take precedence over the needs of pedestrians. Vancouver, Williams and Skidmore are classified as a Neighborhood Collector streets. Neighborhood Collectors are streets where auto and non-auto needs are considered equal. The remaining streets around the school, including Alberta, Albina and Mississippi are classified as Local Service streets. Local Service streets are intended to provide pathways between private homes, or businesses, and higher classified streets, and preference is often given to pedestrian needs. In addition to traffic classifications, each street in Portland also has designations for pedestrians, bicycles, transit, freight and emergency response. These designations will be discussed as needed when considering projects on specific streets.

Below is a list of concerns, expressed by the Humboldt SR2S Team, that were felt to deter parents from allowing students to walk, bike or take transit to school. These concerns were provided by school representatives in advance of the walkabout or developed during the walk. The list has been arranged, as determined by PDOT, into broad categories of safety and convenience with a last category for miscellaneous concerns. During it's investigation, PDOT identified additional concerns not listed here, but which are evaluated in the report. Following the first section summarizing concerns is a discussion of collected data and possible solutions. A final section discusses project selection, and summarizes potential short- and long-term solutions. Potential future projects are initially ranked according to how PDOT would recommend prioritizing them. After discussion with the Humboldt SR2S Team and local neighborhood, the project list will be reprioritized for future project selection.

## **Humboldt SR2S Concerns**

### **Safety Concerns**

- A. Vehicle speed is too fast
  - 1. Alberta near school
  - 2. Gantenbein near school
  - 3. Gantenbein south of Skidmore
- B. Crossings
  - 1. Skidmore west of Vancouver
  - 2. Gantenbein at Humboldt
  - 3. Gantenbein at Blandena
  - 4. Killingsworth at Commercial
- C. Pedestrian/Roadway Visibility
  - 1. Vancouver marked crosswalks
- D. Vehicle Congestion
  - 1. PM on Commercial

## 2. AM on Gantenbein

**Convenience Issues**

- A. Pedestrian pathways
  - 1. Gantenbein at Humboldt flooding
  - 2. Vancouver at Blandena flooding
- B. Lack of or poor pedestrian connectivity
  - 1. Commercial north of school
- C. Vehicle Congestion
  - 1. PM on Commercial
  - 2. AM on Gantenbein

**Miscellaneous**

- A. School signing and marked crossing review
- B. School warning signs
- C. Haight Dead End S/Alberta

**Summary of Findings and Solutions****Vehicle Speed and Volumes**

Vehicle counts were reviewed or collected for the area streets and are presented in Table 1, below. From Table 1 it can be seen that vehicle speeds on three streets are excessively high (posted+5 mph, in **bold**) including: Williams north of Going, Alberta west of Commercial and much of Skidmore. Though there were concerns expressed by the Humboldt SR2S Team about speeding traffic on Gantenbein near the school and south of Skidmore, measured vehicle speeds appear to be acceptable and close to posted speeds at this time.

**Table 1. Collected Traffic Data**

<b>Location</b>	<b>Date</b>	<b>Northbnd Speed*</b>	<b>Southbnd Speed*</b>	<b>Posted Speed</b>	<b>Northbnd Volume</b>	<b>Southbnd Volume</b>	<b>Total</b>
Vancouver S/Alberta	5/4/04	-	31	30	-	5187	5,187
Vancouver N/Going	7/10/07	-	33	30	-	5275	5,275
Vancouver S/Failing	5/9/06	-	33	30	-	6550	6550
Williams S/Alberta	7/11/07	30	-	30	3529	-	3,529
<b>Williams N/Going</b>	<b>7/9/07</b>	<b>35</b>	-	<b>30</b>	7094	-	7,094
Williams S/Failing	7/23/07	33	-	30	8286	-	8286
MLK Jr. Blvd N/Alberta	6/18/07	-	-	30	13198	14230	27,428
MLK Jr. Blvd at Prescott	2000	-	-	30	15468	13407	28,875

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MLK Jr. Blvd N/Fremont	7/19/04	-	-	30	12707	13833	26,540
Albina S/Emerson	11/29/04	32	31	30	2424	2164	4,586
Albina S/Alberta	5/4/04	27	25	30	2940	2894	5,834
Albina N/Blandena	1/26/04	32	32	30	2594	2347	4,491
Albina S/Blandena	1/30/07	26	29	30	2979	2859	5,838
Mississippi S/Skidmore	12/8/04	31	30	30	2953	2674	5,627
Michigan N/Emerson	5/5/03	27	26	25	320	344	664
Kerby N/Webster	5/20/08	24	23	25	344	230	574
Kerby S/Blandena	5/20/08	23	24	25	140	188	328
Kerby S/Mason	4/3/06	25	26	25	310	182	492
Gantenbein N/Humboldt	4/10/08	24	24	25***	243	197	440
Gantenbein S/Skidmore	5/20/08	25	25	25	217	191	408
Cleveland N/Alberta	7/18/00	-	-	25	209	200	409
Rodney S/Killingsworth	10/14/04	22	22	25	133	137	270
Mallory N/Alberta	6/18/07	25	26	25	276	155	431
Mallory S/Alberta	10/2/02	28	27	25	215	206	421
Garfield N/Sumner	6/18/07	25	20	25	567	369	936
Garfield N/Alberta	10/7/02	26	27	25	452	144	596
Garfield N/Mason	7/20/05	26	26	25	334	241	575
Garfield N/Beech	7/20/05	27	27	25	312	237	549

<b>Location</b>	<b>Date</b>	<b>Eastbnd Speed*</b>	<b>Westbnd Speed*</b>	<b>Posted Speed</b>	<b>Eastbnd Volume</b>	<b>Westbnd Volume</b>	<b>Total</b>
Killingsworth E/Commercial	2/3/03	31	32	30	6025	5982	12,007
Alberta W/Michigan	2/26/08	30	27	30	6760	6042	12,802
<b>Alberta W/Commercial</b>	<b>2/26/08</b>	<b>36</b>	<b>34</b>	<b>30**</b>	5715	5548	11,263

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Alberta E/Haight	2/27/08	32	30	30	5731	5648	11,379
Alberta W/Mallory	6/13/07	30	31	30	5016	4563	9,579
<b>Skidmore W/Montana</b>	<b>1/22/07</b>	<b>36</b>	<b>36</b>	<b>25</b>	2762	3026	5,788
<b>Skidmore W/Borthwick</b>	<b>1/22/07</b>	<b>33</b>	<b>33</b>	<b>25</b>	2188	2376	4,564
<b>Skidmore W/Garfield</b>	<b>4/3/06</b>	<b>33</b>	<b>32</b>	<b>25</b>	2564	2094	4548
Emerson W/Mallory	10/7/02	24	24	25	171	308	479
Sumner W/Vancouver	5/4/04	20	20	25	257	245	502
Sumner W/Mallory	10/2/02	22	23	25	184	148	232
Blandena W/Kerby	5/20/08	26	24	25	314	320	634
Going E/Mallory	4/3/06	24	24	25	370	550	920
Mason W/Borthwick	5/10/06	24	23	25	207	209	416
Mason W/Gantenbein	5/9/06	25	25	25	287	266	553
Mason E/Williams	8/20/07	24	23	25	296	229	525
Shaver W/Borthwick	5/10/06	24	23	25	562	556	1,118
Shaver W/Gantenbein	5/9/06	27	27	25	584	739	1,323
Shaver E/Cleveland	8/13/07	29	29	25	974	1205	2,179
Failing W/Mallory	8/25/05	27	27	25	367	337	704

\*Miles per hour - 85<sup>th</sup> percentile speed; 15% of drivers exceed this. \*\*20-mph school zone when beacons flashing.

\*\*\*20-mph school zone 7 AM – 5 PM.

## SOLUTIONS FOR SAFETY CONCERNS

### SOLUTIONS FOR SPEEDING

The following streets were identified with excessive speeding and qualify for a traffic calming project.

#### **N Williams, Alberta to Skidmore**

N Williams, Alberta to Skidmore, has a measured 85<sup>th</sup> percentile speed of 35 mph in a 30-mph zone. Williams is a Neighborhood Collector, indicating higher expected use by drivers, but is not a Major Emergency Response route. This means that longer speed bumps, called speed tables, could be used on Williams to slow vehicle speed. Williams has high traffic volumes (over 7,000 vehicles per day) that are a concern to PDOT in regards to traffic diversion. Though rare,

occasionally after constructing a traffic calming project on a busy street, excessive amounts of traffic will move to a parallel route. Because Williams is a Neighborhood Collector street, with a wider area of influence, the process to approve speed tables requires more involvement. Not only do residents along the street need to approve a traffic calming project, but any neighborhood association that the project crosses must also approve the project. It is recommended that three speed tables be constructed along Williams between Alberta and Skidmore. The cost of the project would be \$6,600. PDOT does not currently provide a subsidy for traffic calming on Neighborhood Collector streets, so the project must be fully funded by residents and/or the neighborhood. The Humboldt SR2S Team could consider a partial funding of this traffic calming project to encourage the project's construction.

Williams was also studied as part of the Vancouver-Williams Corridor study funded by PDC. It was common that traffic speeds on Williams were higher than speeds measured on Vancouver. The most common difference between the two streets is the number of travel lanes. Williams consistently has two vehicle travel lanes while Vancouver only has one lane, except at the busier intersections. As part of evaluating potential solutions for speeding on N Williams and Vancouver, PDOT and PDC conducted surveys of area residents to gauge support for different solutions. Traffic calming, though effective, did not stand out as a preferred solution. Speed reader boards, where drivers are reminded of how fast they are driving and the posted speed, were rated high. Unlike speed tables, the likelihood of long-term speed reduction using speed reader boards cannot be determined at this time. In the Vancouver-Williams study pedestrian amenities, like marked crosswalks and curb extensions, were the preferred treatments for increasing pedestrian crossing safety and those are the changes the study funded.

### **N Alberta, Albina to Vancouver**

N Alberta, Albina to Vancouver, has a measured 85<sup>th</sup> percentile speed of 36 mph in a 30-mph zone. There is also a 20-mph school zone (with beacons) around the intersection at Commercial. The school zone speed is only in effect when the beacons are flashing and that is usually 45 minutes when school starts and 45 minutes when school ends. It was also noted during the walkabout that a parcel of land owned by the school that had previously not been in use is now a teaching garden and abuts Alberta Street and Gantenbein. This more active use permits the posting of a second 20-mph school zone on Alberta immediately east of the current zone at Commercial. The new school zone should start west of Vancouver (heading west) and would be in effect from 7AM until 5 PM school days (Figure 2, below; asterisks = new signs). This should make crossing Alberta between Humboldt Elementary and Humboldt Gardens safer.

**Figure 2. Alberta School Speed Zone Adjustments**



Speed tables are another solution to reduce speeding on Alberta. Alberta is a Local Service street, but not a Major Emergency Response Route. The high volume on the street (11,000 vehicles per day) is unusual and the result of Interstate 5 to the west. Construction of I-5 bisected the community, leaving only a few east-west roads to cross the freeway. Alberta is one of those roads, Skidmore is another. Alberta also has freeway ramps where it crosses the freeway that attracts and distributes more traffic than Skidmore does. The high volume on the street will have a wider area of influence, so the process to approve speed tables requires more involvement like a Neighborhood Collector street. Both residents along the street and the neighborhood association must approve the project. It is recommended that 4 speed tables be constructed along Alberta from Albina to Vancouver. The cost of the project would be up to \$8,800. PDOT does not currently provide a subsidy for traffic calming on high volume Local Service streets, so the project must be fully funded by residents and/or the neighborhood. The Humboldt SR2S Team could consider a partial funding of this traffic calming project to encourage the project's construction.

N Alberta (posted for 30 mph) is designated as a Local Service street while Skidmore to the south is a Neighborhood Collector (posted for 25 mph) and Killingsworth to the north is a District Collector (posted for 30 mph). Skidmore and Killingsworth are more appropriate streets for high volumes of traffic and City policy would support changes that encourage more drivers to use those streets. Speed tables on Alberta are one such change. Another change would be to rescind the current speed limit of 30 mph on Alberta and permit it to be posted at 25 miles per hour. PDOT cannot change speed zones without the permission of ODOT. The residential land uses along Alberta, its narrowness east of Williams and the presence of two schools west of Vancouver would support a request to lower the speed limit on Alberta between Albina and Martin Luther King, Jr. Blvd.

### **Skidmore Street**

Skidmore has a measured 85<sup>th</sup> percentile speed of 33-36 mph in a 25-mph zone. Skidmore is a Neighborhood Collector, indicating higher expected use by autos, and is designated as a Major Emergency Response route in the Transportation System Plan. Portland does not currently have an approved tool for reducing speeding on ER routes. The limited success that has been seen makes using speed reader boards the only tool currently available to address speeding on Skidmore. A safer walking environment will need to focus on other tools, like alternate routes, enforcement, and enhancing the safety of key crossing locations (discussed later).

## **SOLUTIONS FOR CROSSINGS**

Adult crossing guards are often suggested to improve safety at busy crossings. PDOT would not discourage Humboldt Elementary from using paid or volunteer adult crossing guards, but PDOT does not have any pending plans or budget to provide adult crossing guards for elementary schools in Portland.

There are two primary methods to physically change crossings of higher volume roadways and enhance the safety of crossings. The first is the pedestrian refuge island. Pedestrian refuge islands are short medians of full-height curb constructed between auto travel lanes, most often at the centerline of a street. Included in the construction is a pedestrian area where pedestrians may take refuge, pausing for short periods of time. Pedestrian refuge islands permit the crossing of half a street at a time so pedestrians only have to find a gap and concentrate on one direction of traffic at a time (good for younger pedestrians). Pedestrian islands may require auto traffic to



change direction to drive around the island and this may require more parking removal than other treatments. Pedestrian refuge islands cost approximately \$12,000-\$30,000.

The second common physical change is called a curb extension. Curb extensions are short sections of roadside curb that have been constructed closer to the centerline of a street, replacing the existing curb. Curb extensions improve pedestrian crossing opportunities by reducing the distance a pedestrian must cross at street level, enabling the use of shorter gaps in vehicle traffic. Curb extensions increase the visibility between pedestrians and motor vehicle operators by moving pedestrians closer to the street centerline before entering the roadway. With curb extensions, pedestrians must still find a gap in two directions of traffic, but curb extensions typically do not remove as much on-street parking as pedestrian refuge islands. The cost for a curb extension is \$12,000, except when there are storm water management impacts or transit stops, then cost can increase to \$20,000.

Other changes to aid pedestrians crossing busy streets, called operational, include all-way stops and signals. Both types of enhanced control have a series of national and local standards that must be met before they are approved. Also, both types of control can reduce some crashes, but may increase other types and vehicles that repeatedly stop are less efficient and create more pollution. Both types of control also tend to denote main roads and can attract unwanted traffic (especially signals). All-way stops are most appropriate at the intersection of two similar (and lower volume) streets, for example Skidmore at Mississippi. All-way stop-controlled intersections can be safer than most intersections for pedestrian crossings because all drivers are expected (and expecting) to stop every time they arrive there. Unlike signalized intersections, all-way stop-controlled intersections often operate at lower speeds since none of the approaching traffic is provided automatic right of way by a green signal. Stop signs installed where they are not needed can also cause driver frustration and increase vehicle speeds between those unwarranted stop signs. All-way stop control costs approximately \$300 per entering street to install. Signals are similarly used at higher volume intersections. Signals cost at least \$150,000 to install.

There also may be lower-cost parking control or maintenance corrections that would improve the safety of crossings by increasing the visibility between pedestrians and auto drivers.

### **Proposed Walking Routes**

The school service area was reviewed to create a map of recommended walking routes in an attempt to focus on priority crossings needing improvement (Figure 3, next page). These routes are chosen, in part, by moving out from the school along main access streets. Main streets are chosen for pedestrian routes because they have more ‘eyes on the street’ – they naturally have more users who can watch for unsafe activity or behavior from children or strangers. Alternate pathways are chosen when the main roads are considered too busy, or do not have sufficient pedestrian facilities.

Streets identified as barriers to walking or biking to Humboldt Elementary include Alberta, Vancouver, Williams, Skidmore, Killingsworth, Albina, Mississippi and Martin Luther King, Jr. Blvd. It is recommended that students remain on their side of a barrier street and wait to cross at signalized or enhanced crossing locations. Signalized crossings and all-way stop-controlled intersections are the best locations to cross, though they may also be the busiest. Enhanced crossings are the next best location to cross – locations where physical changes have been made to increase visibility, simplify crossings, or shorten crossing distances. Marked and signed



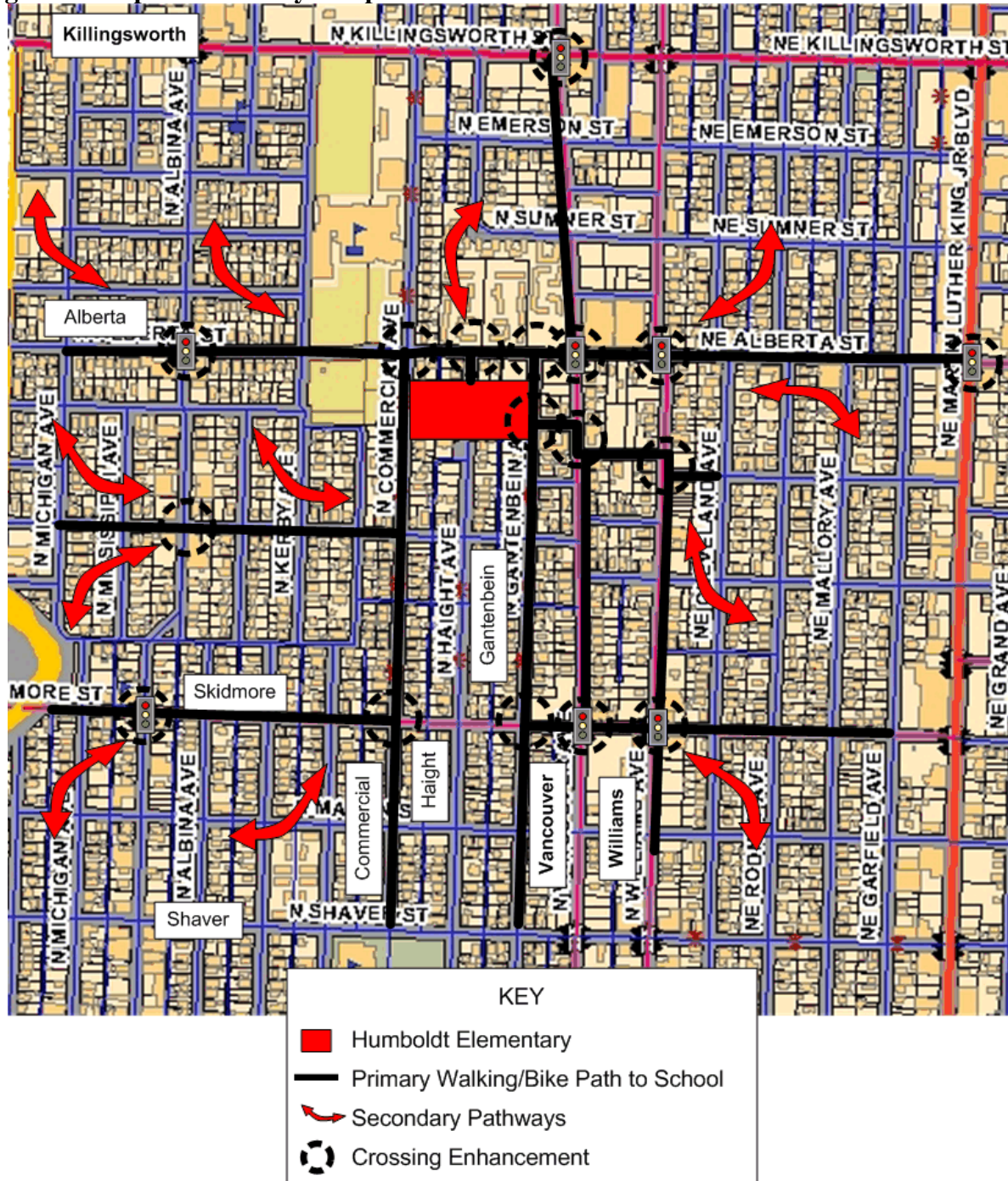
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crossings may alert drivers to the presence of more pedestrians, but students should be warned that a marked crossing is no safer than an unmarked crossing. Figure 3 identifies crossings that are reviewed in this report in more detail with dashed circles.

**Figure 3. Proposed Pathways Map**



Locations identified for review from plotting pathways include:

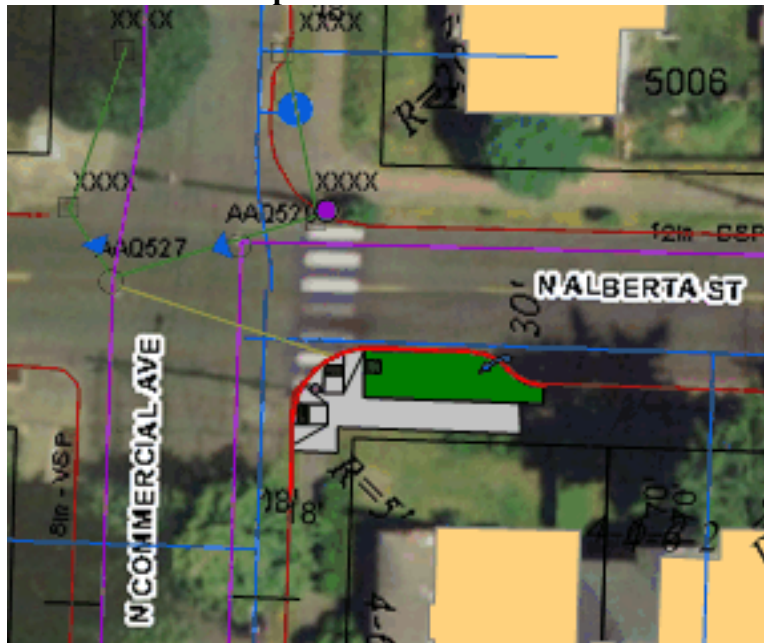
- Alberta at Commercial
- Alberta at Haight
- Alberta at Gantenbein

- Alberta at Vancouver
- Alberta at Williams
- Gantenbein at Humboldt
- Vancouver at Humboldt
- Williams at Wygant
- Vancouver at Skidmore
- Williams at Skidmore
- Gantenbein at Skidmore
- Commercial at Skidmore
- Mississippi at Skidmore
- Blandena at Albina
- Alberta at Albina
- Killingsworth at Vancouver
- MLK Jr. Blvd at Alberta

### **Alberta at Commercial**

Alberta at Commercial is a two-way stop controlled intersection (Commercial stopped). Alberta is a Local Service street, Transit street and City Walkway with a marked school crosswalk at Commercial in a school speed zone with beacons. Commercial is a Local Service street. The intersection had 3 reported crashes from 2003 through 2006. For the estimated 11,900 vehicles entering the intersection each day, 3 crashes in four years translates into 0.18 crashes per million entering vehicles. Portland does not investigate intersections for safety modifications based on vehicle crash history until the four-year crash rate reaches 1 crash per million entering vehicles. Alberta at Commercial appears to be operating very safely, but was identified as a crossing location to investigate for enhancement.

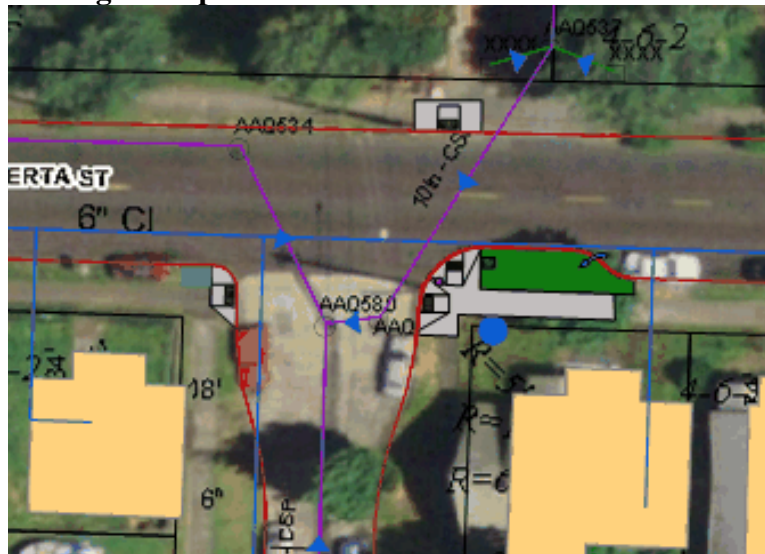
From a field visit it was determined that no corners are missing curb ramps. Enhancing the intersection with curb extensions will improve pedestrian visibility at the intersection and shorten the crossing distance. Figure 4, below, depicts a proposed curb extension. A green curb extension costs \$20,000 to install while a standard curb extension costs \$12,000. An interim project for pedestrian safety would be to remove parking where vehicles approach the intersection to improve pedestrian visibility.

**Figure 4. Alberta at Commercial Proposed Curb Extension****Alberta at Haight**

Alberta at Haight is a stop controlled 'T' intersection (Haight stopped). Haight is a Local Service street that only enters from the south and ends approximately 150 feet south at the Humboldt parking lot. The intersection had no reported crashes from 2003 through 2006. Alberta at Haight appears to be operating very safely, but was identified as a crossing location to investigate for enhancement.

From a field visit it was determined that all corners are missing curb ramps. Reconstructing the south corners to provide curb ramps would cost \$4,000 for each corner. Adding curb ramps to the north side of Alberta would cost \$1,000 each. Enhancing the intersection with curb extensions will improve pedestrian visibility at the intersection and shorten the crossing distance. Figure 5, below, depicts a proposed curb extension and ramps. A green curb extension costs \$20,000 to install while a standard curb extension costs \$12,000. An interim project for pedestrian safety would be to remove parking where vehicles approach the intersection to improve pedestrian visibility.

**Figure 5. Alberta at Haight Proposed Curb Extension**



### **Alberta a Gantenbein**

Alberta a Gantenbein is a stop controlled ‘T’ intersection (Gantenbein stopped). Gantenbein is a Local Service street that only enters from the south. The intersection had 1 reported crash from 2003 through 2006. For the estimated 11,600 vehicles entering the intersection each day, 1 crash in four years translates into 0.06 crashes per million entering vehicles. Alberta a Gantenbein appears to be operating very safely, but was identified as a crossing location to investigate for enhancement.

From a field visit it was determined that all corners are missing curb ramps. Reconstructing the south corners to provide curb ramps would cost \$4,000 for each corner. Adding curb ramps to the north side of Alberta would cost \$1,000 each. Enhancing the intersection with curb extensions will improve pedestrian visibility at the intersection and shorten the crossing distance. Figure 6, next page, depicts a proposed curb extension and ramps. A standard curb extension costs \$12,000. An interim project for pedestrian safety would be to remove parking where vehicles approach the intersection to improve pedestrian visibility.



**Figure 6. Alberta a Gantenbein Proposed Curb Extension**



#### **Alberta at Vancouver**

Alberta at Vancouver is a fully signalized intersection. Vancouver is a Neighborhood Collector street, Transit street, City Bikeway and City Walkway and operates only in the southbound direction. The intersection had 9 reported crashes from 2003 through 2006. For the estimated 15,400 vehicles entering the intersection each day, 9 crashes in four years translates into 0.43 crashes per million entering vehicles. Alberta at Vancouver appears to be operating safely, but was identified as a crossing location to investigate for enhancement.

Because of the volume of traffic on each street, the safest crossings of either Vancouver or Alberta will usually be at signalized intersections. One proposed change is to the pedestrian signal heads, changing them to countdown signal heads (Figure 7). This will provide more information to pedestrians about time remaining to safely cross.

**Figure 7. Countdown Pedestrian Signals**



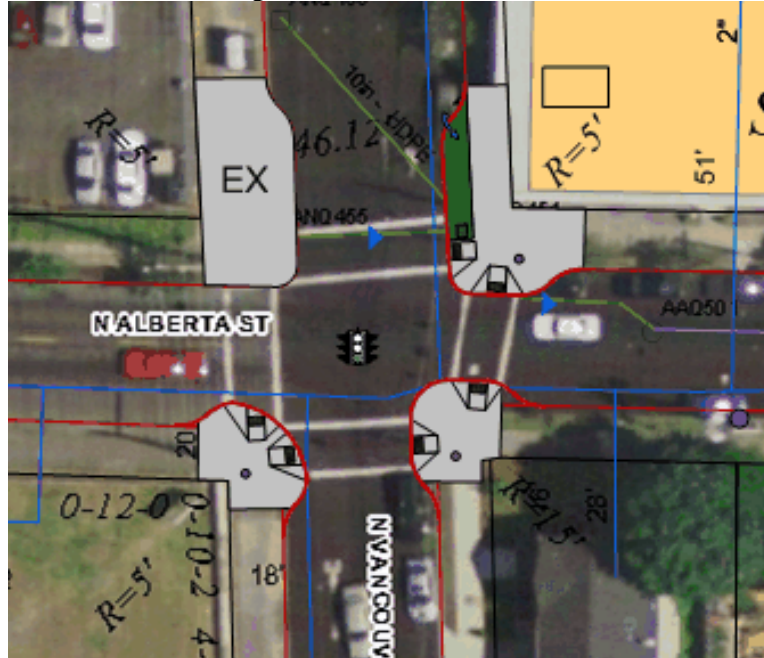
Another potential change is to provide pedestrians crossing busy streets with a head start called a Leading Pedestrian Interval. A Leading Pedestrian Interval (LPI) means that when a pedestrian goes to cross, the first 5-seconds of the WALK phase will occur without auto traffic receiving a green signal. Right turns on red would still be possible, if not already prohibited. Leading Pedestrian Intervals are best used where conflicts exist between pedestrians and turning vehicles and the street being crossed is wide.

Drivers turning left from southbound Vancouver and westbound Alberta have permissive turns,

meaning they are to watch for pedestrians crossing and look for a turn opportunity at the same time. Drivers on Vancouver do not have to watch for on-coming traffic so an LPI would have a reduced benefit for pedestrians crossing Alberta. Only drivers going west on Alberta that turn south on Vancouver might conflict with pedestrians crossing Vancouver. Pedestrians crossing Vancouver gain the most benefit from a Leading Pedestrian Interval and the redevelopment of Humboldt Gardens will increase pedestrian use at this intersection in the future.

From a field visit it was determined that the northeast corner is missing curb ramps. Reconstructing the corner to provide curb ramps would cost \$4,000. Enhancing the intersection with curb extensions will improve pedestrian visibility at the intersection and shorten the crossing distance. Figure 8, below, depicts possible curb extensions. A transit curb extension has already been constructed at the northwest corner as part of the Humboldt Gardens project. A green curb extension costs \$20,000 to install while a standard curb extension costs \$12,000. An interim project for pedestrian safety may be to remove parking where vehicles approach the intersection to improve pedestrian visibility, though the presence of a signal reduces that need.

**Figure 8. Alberta at Vancouver Proposed Curb Extensions**



### **Alberta at Williams**

Alberta at Williams is a fully signalized intersection. Williams is a Neighborhood Collector street, Transit street, City Bikeway and City Walkway and operates only in the northbound direction. The north side of Williams is offset west of the south side such that the intersection with Alberta is the middle of a reverse curve. The intersection had 6 reported crashes from 2003 through 2006. For the estimated 13,800 vehicles entering the intersection each day, 6 crashes in four years translates into 0.32 crashes per million entering vehicles. Alberta at Williams appears to be operating safely, but was identified as a crossing location to investigate for enhancement.

Countdown signal heads were discussed earlier (Figure 7), and are recommended for both streets. Also previously discussed was a Leading Pedestrian Interval. Leading Pedestrian Intervals are best used where conflicts exist between pedestrians and turning vehicles and the street being crossed is wide. Drivers turning left from northbound Williams and eastbound

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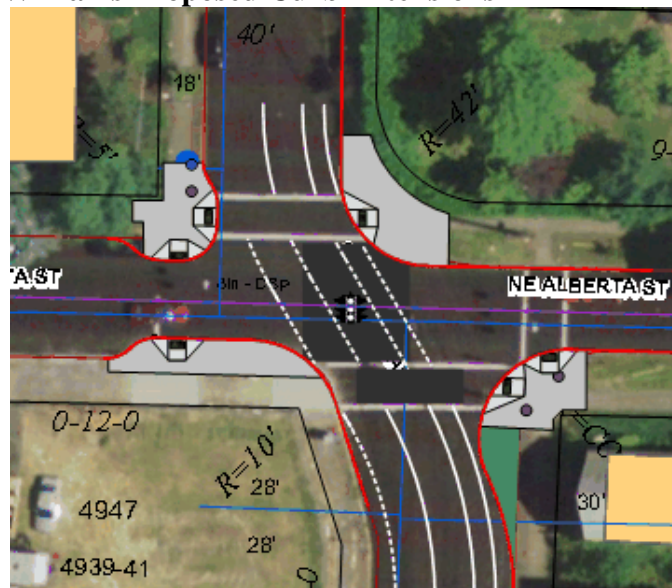
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Alberta have permissive turns, meaning they are to watch for pedestrians crossing and look for a turn opportunity at the same time. Drivers on Williams do not have to watch for on-coming traffic so an LPI may have reduced benefit for pedestrians crossing Alberta. Only drivers going east on Alberta that turn north on Williams might conflict with pedestrians crossing Williams. Pedestrians crossing Williams gain the most benefit from a Leading Pedestrian Interval.

From a field visit it was determined that no corners are missing curb ramps. The intersection has been studied several times in the past and most recently the lane striping was changed to make crossing Alberta on Williams a smoother transition as part of the Vancouver-Williams Transportation Safety Project. Enhancing the intersection with curb extensions may improve pedestrian visibility at the intersection and shorten the crossing distance. Figure 9, below, depicts possible curb extensions. A standard curb extension costs \$12,000. An interim project for pedestrian safety may be to remove parking where vehicles approach the intersection to improve pedestrian visibility, though the presence of a signal reduces that need.

**Figure 9. Alberta at Williams Proposed Curb Extensions**



### **Gantenbein at Humboldt**

Gantenbein at Humboldt is a stop controlled 'T' intersection (Humboldt stopped) near the front entrance of Humboldt Elementary School and includes a marked school crossing on Gantenbein north of Humboldt Street. Humboldt is a Local Service street that only enters from the east. The intersection had no reported crash from 2003 through 2006. Gantenbein at Humboldt appears to be operating very safely, but was identified as a crossing location to investigate for enhancement.

Gantenbein received a speed bump project in 1995 as part of a previous school safety project (a speed bump is in place on Gantenbein north of Humboldt) and vehicle speeds appear to be under control. From a field visit it was determined that all corners are missing curb ramps.

Reconstructing the east corners to provide curb ramps would cost \$4,000 for each corner.

Constructing ramps on the west side of Gantenbein would cost \$1,000 each. Enhancing the intersection with curb extensions will improve pedestrian visibility at the intersection and shorten the crossing distance. Figure 10, next page, depicts possible curb extensions. A green curb extension costs \$20,000 to install while a standard curb extension costs \$12,000. An interim project for pedestrian safety would be to remove parking where vehicles approach the



intersection to improve pedestrian visibility.

**Figure 10. Gantenbein at Humboldt Proposed Curb Extensions**

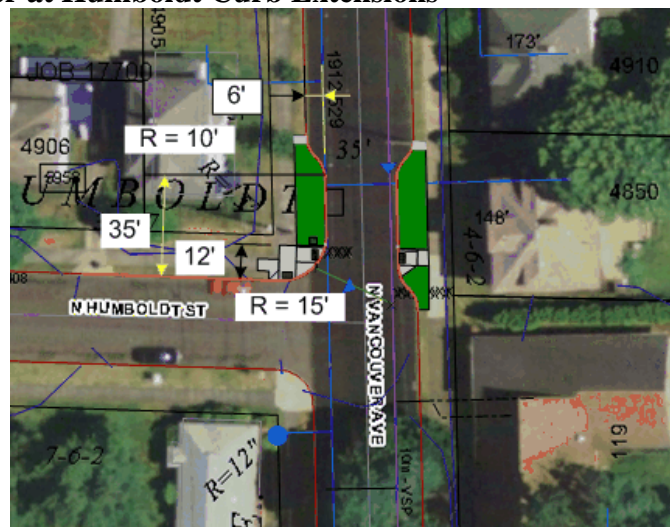


### **Vancouver at Humboldt**

Vancouver at Humboldt is a stop controlled 'T' intersection (Humboldt stopped). Humboldt is a Local Service street that only enters from the west and Vancouver has a marked pedestrian crossing north of Humboldt. The intersection had no reported crashes from 2003 through 2006. Vancouver at Humboldt appears to be operating very safely, but was identified as a crossing location to investigate for enhancement.

From a field visit it was determined that no corners are missing curb ramps. Enhancing the intersection with curb extensions will improve pedestrian visibility at the intersection and shorten the crossing distance. Figure 11, below, depicts proposed curb extensions that are planned for construction as a result of the Vancouver-Williams Transportation Safety Project. An interim project for pedestrian safety would be to remove additional parking where vehicles approach the intersection to improve pedestrian visibility.

**Figure 11. Vancouver at Humboldt Curb Extensions**

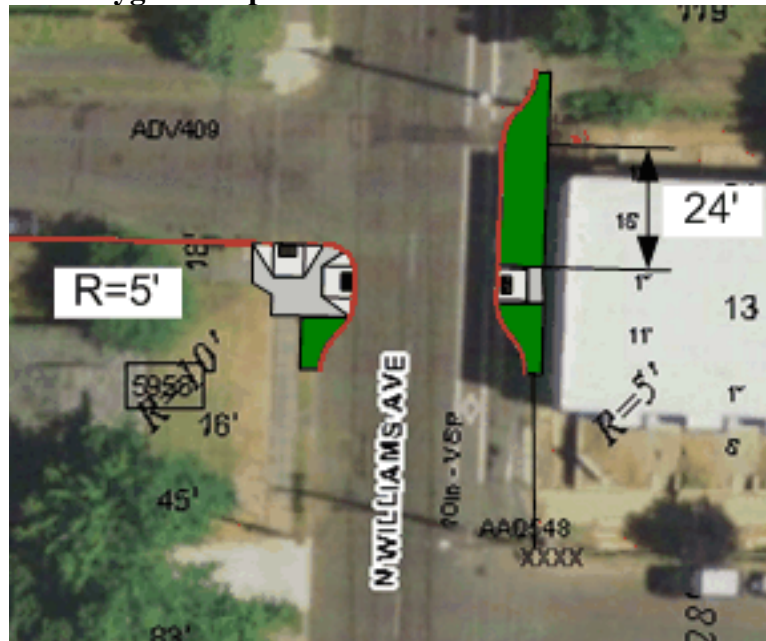


**Williams at Wygant**

Williams at Wygant is a two-way stop controlled intersection (Wygant stopped). Wygant is a Local Service street and the west entry is offset north of the east entry. The intersection had no reported crashes from 2003 through 2006. Williams at Wygant appears to be operating very safely, but was identified as a crossing location to investigate for enhancement.

The Vancouver-Williams project installed a marked pedestrian crossing on Williams south of Wygant that enters from the west. From a field visit it was determined that southwest corner and east side are missing curb ramps. Reconstructing the corner to provide curb ramps would cost \$4,000. Constructing a curb ramp on the east side of Williams would cost \$1,000. Enhancing the intersection with curb extensions will improve pedestrian visibility at the intersection and shorten the crossing distance. Figure 12, below, depicts proposed curb extensions that are planned for construction as a result of the Vancouver-Williams Transportation Safety Project. An interim project for pedestrian safety would be to remove parking where vehicles approach the intersection to improve pedestrian visibility.

**Figure 12. Williams at Wygant Proposed Curb Extensions**

**Gantenbein at Blandena**

Gantenbein at Blandena is a two-way stop controlled intersection (Blandena stopped). Gantenbein and Blandena are both Local Service streets. The intersection had 1 reported crash from 2003 through 2006. For the estimated 800 vehicles entering the intersection each day, 1 crash in four years translates into 0.92 crashes per million entering vehicles. Gantenbein at Blandena appears to be operating safely, but was identified as a crossing location of concern to the Humboldt SR2S Team.

From a field visit it was determined that the south side corners are missing curb ramps. Reconstructing the corners to provide curb ramps would cost \$4,000 for each corner. The high crash rate is due to the current low volume of traffic using the intersection. A correction to improve crossing safety and reduce collisions would be to change the intersection into an all-way stop.

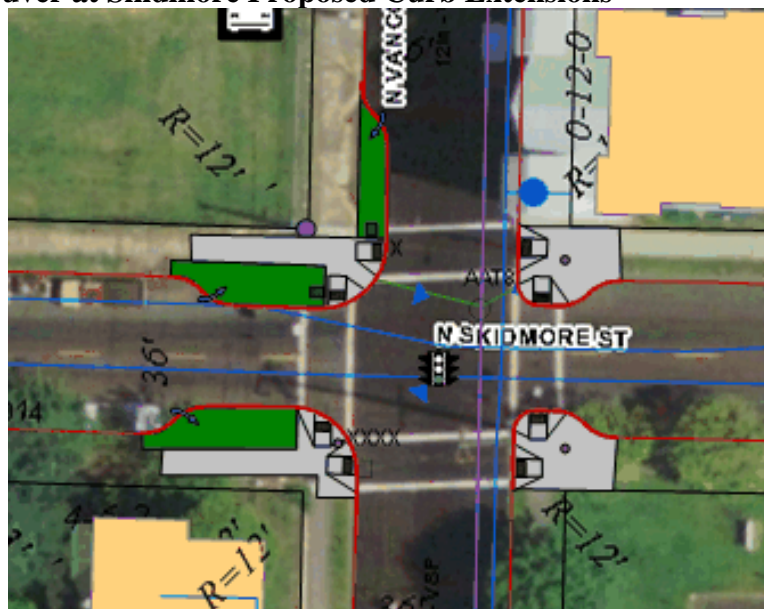
### **Vancouver at Skidmore**

Vancouver at Skidmore is a fully signalized intersection. Skidmore is a Neighborhood Collector street, Transit street, City Bikeway, City Walkway and Major Emergency Response route. The intersection had 7 reported crashes from 2003 through 2006. For the estimated 9,700 vehicles entering the intersection each day, 7 crashes in four years translates into 0.53 crashes per million entering vehicles. Vancouver at Skidmore appears to be operating safely, but was identified as a crossing location to investigate for enhancement.

Countdown signal heads were discussed earlier (Figure 7), and are recommended for both streets. Also previously discussed was a Leading Pedestrian Interval, and this may be suitable for crossing Vancouver. Skidmore is a Neighborhood Collector and Major Emergency Response route and is more sensitive to increased delay. An LPI introduces delay to vehicles and over time this new delay can add up if the intersection is heavily used by pedestrians. Leading Pedestrian Intervals are best used where conflicts exist between pedestrians and turning vehicles and the street being crossed is wide. If approved for crossing Vancouver, it is recommended that LPI time should be taken from auto uses on Vancouver and not Skidmore.

From a field visit it was determined that no corners are missing curb ramps. Enhancing the intersection with curb extensions will improve pedestrian visibility at the intersection and shorten the crossing distance. Figure 14, below, depicts possible curb extensions. A green curb extension costs \$20,000 to install while a standard curb extension costs \$12,000. An interim project for pedestrian safety may be to remove parking where vehicles approach the intersection to improve pedestrian visibility, though the presence of a signal reduces that need.

**Figure 14. Vancouver at Skidmore Proposed Curb Extensions**



**Williams at Skidmore**

Williams at Skidmore is a fully signalized intersection. The intersection had 12 reported crashes from 2003 through 2006. For the estimated 12,500 vehicles entering the intersection each day, 12 crashes in four years translates into 0.70 crashes per million entering vehicles. Williams at Skidmore appears to be operating safely, but was identified as a crossing location to investigate for enhancement.

Countdown signal heads were discussed earlier (Figure 6), and are recommended for both streets. Also previously discussed was a Leading Pedestrian Interval, and this may be suitable for crossing Williams. Leading Pedestrian Intervals are best used where conflicts exist between pedestrians and turning vehicles and the street being crossed is wide. Skidmore is a Neighborhood Collector and Major Emergency Response route and is more sensitive to increased delay. An LPI introduces delay to vehicles and over time this new delay can add up if the intersection is heavily used by pedestrians. If approved for crossing Williams, it is recommended that LPI time should be taken from auto uses on Williams and not Skidmore.

From a field visit it was determined that the northeast, southeast and southwest corners are missing curb ramps. Reconstructing the corners to provide curb ramps would cost \$4,000 for each corner. Enhancing the intersection with curb extensions will improve pedestrian visibility at the intersection and shorten the crossing distance. Figure 15, below, depicts proposed curb extensions. A green curb extension costs \$20,000 to install while a standard curb extension costs \$12,000. An interim project for pedestrian safety may be to remove parking where vehicles approach the intersection to improve pedestrian visibility, though the presence of a signal reduces that need.

**Figure 15. Williams at Skidmore Proposed Curb Extensions**

**Marked crossings on Skidmore west of Vancouver**

The Humboldt Elementary SR2S Team requested marked crosswalks on Skidmore west of Vancouver. Skidmore is a Neighborhood Collector street with an identified speeding problem. Marked crossings do not increase the safety of pedestrians crossing a street, though signing and marking may increase awareness of pedestrians to drivers. A better strategy to create a safe



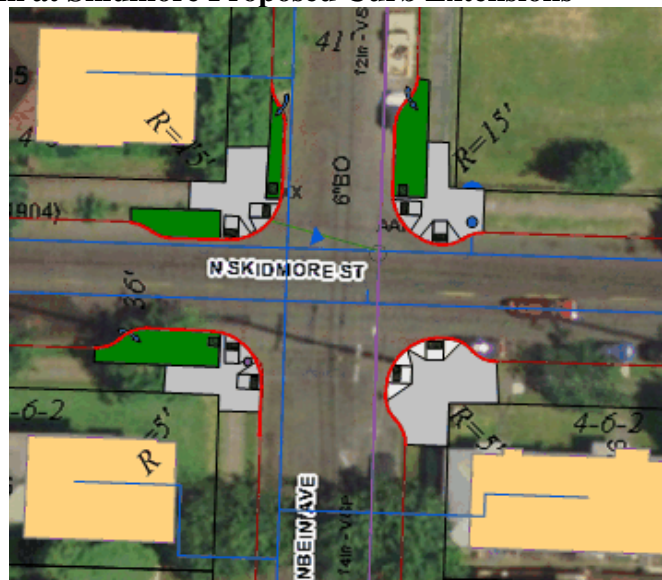
crossing on Skidmore would be to concentrate on one or two locations where students would be encouraged to cross and making that crossing as safe as possible. Improvements at three intersections south of Humboldt Elementary on Skidmore west of Vancouver (Gantenbein, Haight and Commercial) are discussed below.

### **Gantenbein at Skidmore**

Gantenbein at Skidmore is a two-way stop controlled intersection (Gantenbein stopped). Gantenbein is a Local Service street. The intersection had 3 reported crashes from 2003 through 2006. For the estimated 4,900 vehicles entering the intersection each day, 3 crashes in four years translates into 0.44 crashes per million entering vehicles. Gantenbein at Skidmore appears to be operating safely, but was identified as a crossing location to investigate for enhancement.

From a field visit it was determined that all corners are missing curb ramps. Reconstructing the corners to provide curb ramps would cost \$4,000 for each corner. Enhancing the intersection with curb extensions will improve pedestrian visibility at the intersection and shorten the crossing distance. Figure 16, below, depicts possible curb extensions. A green curb extension costs \$20,000 to install while a standard curb extension costs \$12,000. An interim project for pedestrian safety would be to remove parking where vehicles approach the intersection to improve pedestrian visibility.

**Figure 16. Gantenbein at Skidmore Proposed Curb Extensions**



### **Haight at Skidmore**

Haight at Skidmore is a two-way stop controlled intersection (Haight stopped). Haight is a Local Service street. The intersection had 1 reported crash from 2003 through 2006. For the estimated 4,800 vehicles entering the intersection each day, 1 crash in four years translates into 0.15 crashes per million entering vehicles. Haight at Skidmore appears to be operating very safely, but was identified as a crossing location to investigate for enhancement.

From a field visit it was determined that the north side and southwest corners are missing curb ramps. Reconstructing the corners to provide curb ramps would cost \$4,000 for each corner. Enhancing the intersection with curb extensions will improve pedestrian visibility at the intersection and shorten the crossing distance. Figure 17, next page, depicts possible curb extensions. A green curb extension costs \$20,000 to install while a standard curb extension costs

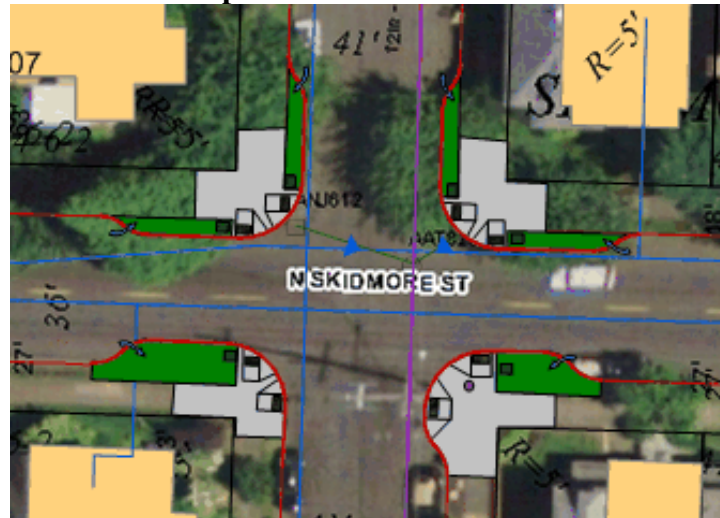
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\$12,000. An interim project for pedestrian safety would be to remove parking where vehicles approach the intersection to improve pedestrian visibility.

**Figure 17. Haight at Skidmore Proposed Curb Extensions**

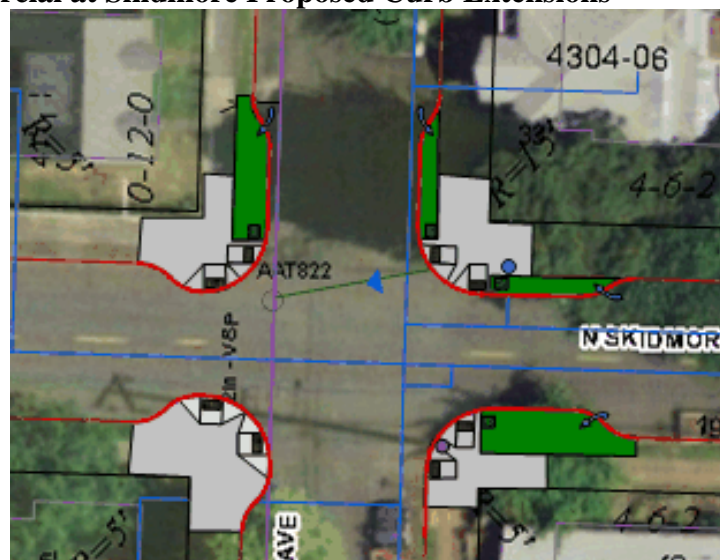


### Commercial at Skidmore

Commercial at Skidmore is a two-way stop controlled intersection (Commercial stopped). Commercial is a Local Service street. The intersection had no reported crashes from 2003 through 2006. Commercial at Skidmore appears to be operating very safely, but was identified as a crossing location to investigate for enhancement.

From a field visit it was determined that all corners are missing curb ramps. Reconstructing the corners to provide curb ramps would cost \$4,000 for each corner. Enhancing the intersection with curb extensions will improve pedestrian visibility at the intersection and shorten the crossing distance. Figure 18, below, depicts possible curb extensions. A green curb extension costs \$20,000 to install while a standard curb extension costs \$12,000. An interim project for pedestrian safety would be to remove parking where vehicles approach the intersection to improve pedestrian visibility.

**Figure 18. Commercial at Skidmore Proposed Curb Extensions**

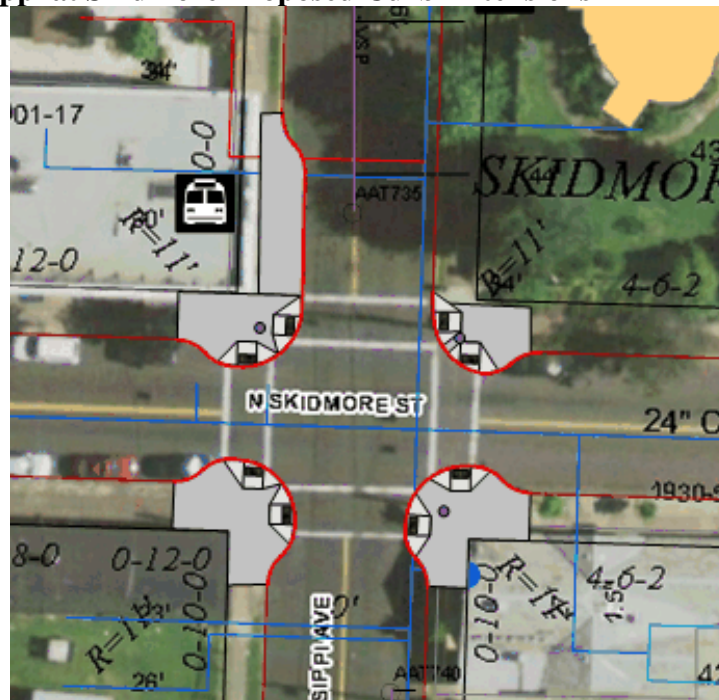


**Mississippi at Skidmore**

Mississippi at Skidmore was recently converted from a signal to an all-way stop controlled intersection. Mississippi is a Local Service street, Transit street and City Walkway. The intersection had 7 reported crashes from 2003 through 2006. For the estimated 10,900 vehicles entering the intersection each day, 7 crashes (one pedestrian) in four years translates into 0.47 crashes per million entering vehicles. Mississippi at Skidmore appears to be operating safely, but was identified as a crossing location to investigate for enhancement.

From a field visit it was determined that no corners are missing curb ramps. Enhancing the intersection with curb extensions will improve pedestrian visibility at the intersection and shorten the crossing distance. Figure 19, below, depicts possible curb extensions. A transit curb extension costs \$20,000 to install while a standard curb extension costs \$12,000. An interim project for pedestrian safety would be to remove parking where vehicles approach the intersection to improve pedestrian visibility.

**Figure 19. Mississippi at Skidmore Proposed Curb Extensions**

**Blandena at Albina**

Blandena at Albina is a two-way stop controlled intersection (Blandena stopped). Albina is a Local Service street, Transit street and City Walkway. Blandena is a Local Service street. The intersection had 1 reported crash from 2003 through 2006. For the estimated 4,800 vehicles entering the intersection each day, 1 crash in four years translates into 0.15 crashes per million entering vehicles. Blandena at Albina appears to be operating very safely, but was identified as a crossing location to investigate for enhancement.

From a field visit it was determined that no corners are missing curb ramps. Enhancing the intersection with curb extensions will improve pedestrian visibility at the intersection and shorten the crossing distance. Figure 20, next page, depicts possible curb extensions. A green curb extension costs \$20,000 to install while a standard curb extension costs \$12,000. An interim



project for pedestrian safety would be to remove parking where vehicles approach the intersection to improve pedestrian visibility.

### Figure 20. Blandena at Albina Proposed Curb Extensions



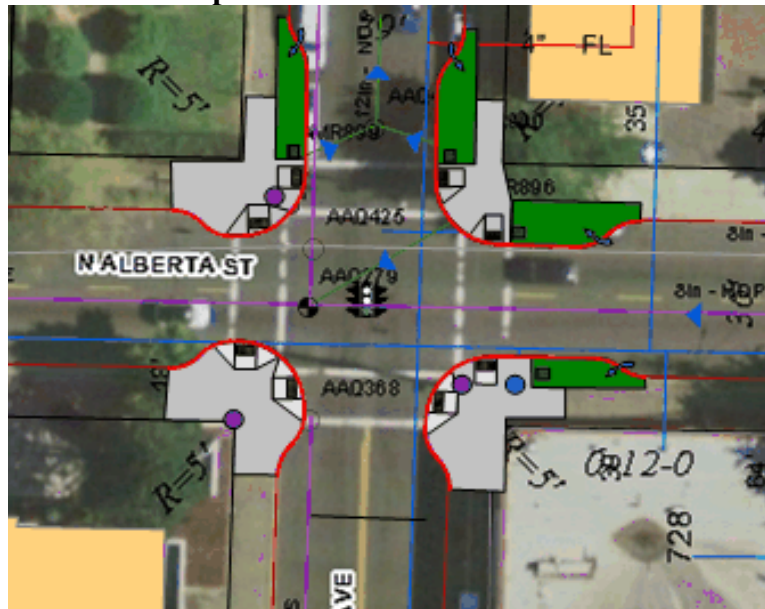
## Alberta at Albina

Alberta at Albina is a fully signalized intersection. Alberta is a Local Service street, Transit street and City Walkway. The intersection had 12 reported crashes (one pedestrian) from 2003 through 2006. For the estimated 17,400 vehicles entering the intersection each day, 12 crashes in four years translates into 0.51 crashes per million entering vehicles. Alberta at Albina appears to be operating safely, but was identified as a crossing location to investigate for enhancement.

Countdown signal heads were discussed earlier (Figure 7), and are recommended for both streets. Also previously discussed was a Leading Pedestrian Interval, and this may be suitable for crossing Albina. The heavier volume of traffic on Alberta means more conflicts between vehicles turning from Alberta and pedestrians crossing Albina. Over time this new delay can add up if the intersection is heavily used by pedestrians. If approved for crossing Albina, it is recommended that LPI time should be taken from auto uses on Albina and not Alberta.

From a field visit it was determined that no corners are missing curb ramps. Enhancing the intersection with curb extensions will improve pedestrian visibility at the intersection and shorten the crossing distance. Figure 21, next page, depicts possible curb extensions. A green curb extension costs \$20,000 to install while a standard curb extension costs \$12,000. An interim project for pedestrian safety may be to remove parking where vehicles approach the intersection to improve pedestrian visibility, though the presence of a signal reduces that need.

**Figure 21. Alberta at Albina Proposed Curb Extensions**



### **Killingsworth at Commercial**

Killingsworth at Commercial is a two-way stop controlled intersection (Commercial stopped). Killingsworth is a District Collector street, Transit and Truck street, City Walkway and Major Emergency Response route. Commercial is a Local Service street. The intersection had 9 reported crashes (one pedestrian) from 2003 through 2006. For the estimated 12,900 vehicles entering the intersection each day, 9 crashes in four years translates into 0.51 crashes per million entering vehicles. Killingsworth at Commercial appears to be operating safely, but was identified as a crossing location to investigate for enhancement.

From a field visit it was determined that no corners are missing curb ramps. Killingsworth at Commercial was recently improved with curb extensions and no further improvements are recommended at this time (Figure 22).

**Figure 22. Killingsworth at Commercial Curb Extensions**

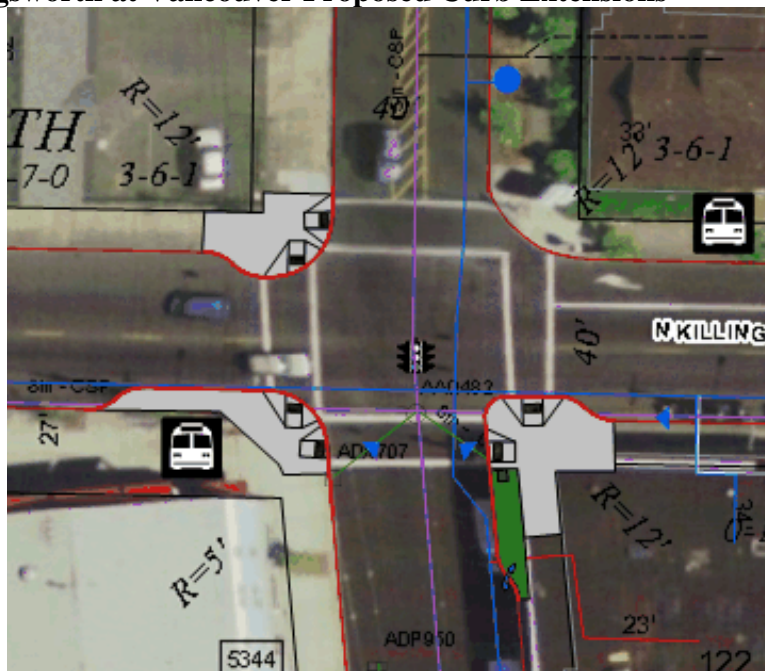


Killingsworth at Vancouver is a fully signalized intersection. Vancouver is a Neighborhood Collector street, Transit street, City Bikeway and City Walkway. The intersection had 8 reported crashes (one pedestrian) from 2003 through 2006. For the estimated 18,600 vehicles entering the intersection each day, 8 crashes in four years translates into 0.32 crashes per million entering vehicles. Killingsworth at Vancouver appears to be operating safely, but was identified as a crossing location to investigate for enhancement.

Countdown signal heads were discussed earlier (Figure 7), and are recommended for both streets. Also previously discussed was a Leading Pedestrian Interval, and this may be suitable for crossing Vancouver. Leading Pedestrian Intervals are best used where conflicts exist between pedestrians and turning vehicles and the street being crossed is wide. Over time this new delay can add up if the intersection is heavily used by pedestrians. Killingsworth is a District Collector and Major Emergency Response route and is particularly sensitive to increased delay, making an LPI for crossing Killingsworth undesirable. If approved for crossing Vancouver, it is recommended that LPI time should be taken from auto uses on Vancouver and not Killingsworth.

From a field visit it was determined that no corners are missing curb ramps. Enhancing the intersection with curb extensions will improve pedestrian visibility at the intersection and shorten the crossing distance. Figure 23, below, depicts possible curb extensions. A transit curb extension costs \$20,000 to install while a standard curb extension costs \$12,000. An interim project for pedestrian safety may be to remove parking where vehicles approach the intersection to improve pedestrian visibility, though the presence of a signal reduces that need.

### Figure 23. Killingsworth at Vancouver Proposed Curb Extensions

**MLK Jr. Blvd at Alberta**

MLK Jr. Blvd at Alberta is a fully signalized intersection. MLK Jr. Blvd is a Major City Traffic street, Transit and Truck street, City Bikeway, City Walkway and Major Emergency Response route. Alberta is a Local Service street, Transit street and City Walkway west of MLK Jr. Blvd

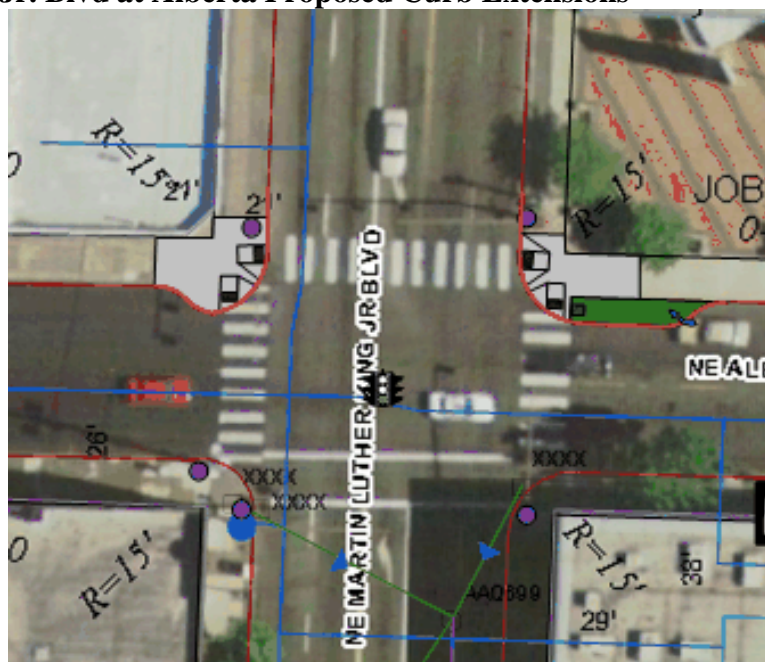


and is a Neighborhood Collector, Transit street and City Walkway east of MLK Jr. Blvd. The intersection had 34 reported crashes (one pedestrian) from 2003 through 2006. For the estimated 40,100 vehicles entering the intersection each day, 34 crashes in four years translates into 0.62 crashes per million entering vehicles. MLK Jr. Blvd at Alberta appears to be operating safely, but was identified as a crossing location to investigate for enhancement.

Countdown signal heads were discussed earlier (Figure 7), and are recommended for both streets. Also previously discussed was a Leading Pedestrian Interval, and this may be suitable for crossing MLK Jr. Blvd. Traffic turning left from MLK Jr. Blvd has protected left turn lanes, where turning vehicles and pedestrians crossing Alberta are separated in time. Traffic turning left from Alberta does not have protected turns, meaning drivers are to watch for pedestrians crossing MLK Jr. Blvd at the same time they are looking for a gap in oncoming traffic. Leading Pedestrian Intervals are best used where conflicts exist between pedestrians and turning vehicles and the street being crossed is wide. These conditions exist for pedestrians crossing MLK Jr. Blvd at Alberta. Over time this new delay can add up if the intersection is heavily used by pedestrians. MLK Jr. Blvd is a Major City Traffic street and Major Emergency Response route and is sensitive to increased delay. If approved for crossing MLK Jr. Blvd, it is recommended that LPI time be taken from auto uses on Alberta and not MLK Jr. Blvd.

From a field visit it was determined that no corners are missing curb ramps. All available space on MLK Jr. Blvd is currently being used for vehicle travel or turn lanes, so other enhancements are not possible there. Alberta currently has parking lanes that can be used to shorten the crossing distance and improve pedestrian visibility with curb extensions. Figure 24, below, depicts proposed curb extensions. A green curb extension costs \$20,000 to install while a standard curb extension costs \$12,000. An interim project for pedestrian safety would be to remove parking where vehicles approach the intersection to improve pedestrian visibility, though the presence of a signal reduces that need.

**Figure 24. MLK Jr. Blvd at Alberta Proposed Curb Extensions**



**SOLUTIONS FOR VISIBILITY ISSUES****Vancouver Marked Crosswalks**

The Humboldt Elementary SR2S Team expressed concern that the recently marked crosswalks on Vancouver do not have adequate visibility between pedestrians and vehicles. At those locations identified for school walking routes, parking clearances can be increased to provide more visibility until more permanent improvements like curb extensions can be built.

**SOLUTIONS FOR VIOLATIONS**

Most children that are driven to school are dropped off on Gantenbein and picked up on Commercial. During the walkabout, some of the parking control signing appeared faded and should be replaced. PDOT will continue to work with the Humboldt SR2S Team to determine the best parking control signs that meet the needs of the school.

**Double Parking**

Enforcement of traffic laws during school hours may go the farthest to reducing this type of driver error. Additional parking changes elsewhere around the school may also alleviate this behavior and are discussed later in the report.

**Crosswalk Law**

Current State law requires drivers to stop and stay stopped for pedestrians attempting to cross at legal crosswalks, marked or unmarked. If the Humboldt SR2S Team believes that there are issues related to violations of crosswalk law near the school, PDOT can arrange for targeted enforcement by the Portland Police Bureau and a program where a decoy pedestrian is used. Past traffic safety enforcement actions have been successful at citing many drivers, cyclists and pedestrians for traffic violations.

**SOLUTIONS FOR VEHICLE CONGESTION****Commercial**

The Humboldt Elementary SR2S Team expressed concern about the PM pick-up congestion on Commercial Avenue. Of particular concern was the safety of children crossing Commercial to reach vehicles parked on the west side of the street. The Humboldt SR2S Team requested a marked school crossing with parking clearances for visibility. PDOT can install this improvement once a letter requesting it is received from the school principal stating the school crossing will be patrolled. This would also enable the placement of a 20-mph school zone on Commercial along the school frontage in addition to the advance warning signs currently in place. An enhancement would be to add curb extensions (Figure 25, next page) and perhaps a raised crosswalk by relocating the nearby speed bump.

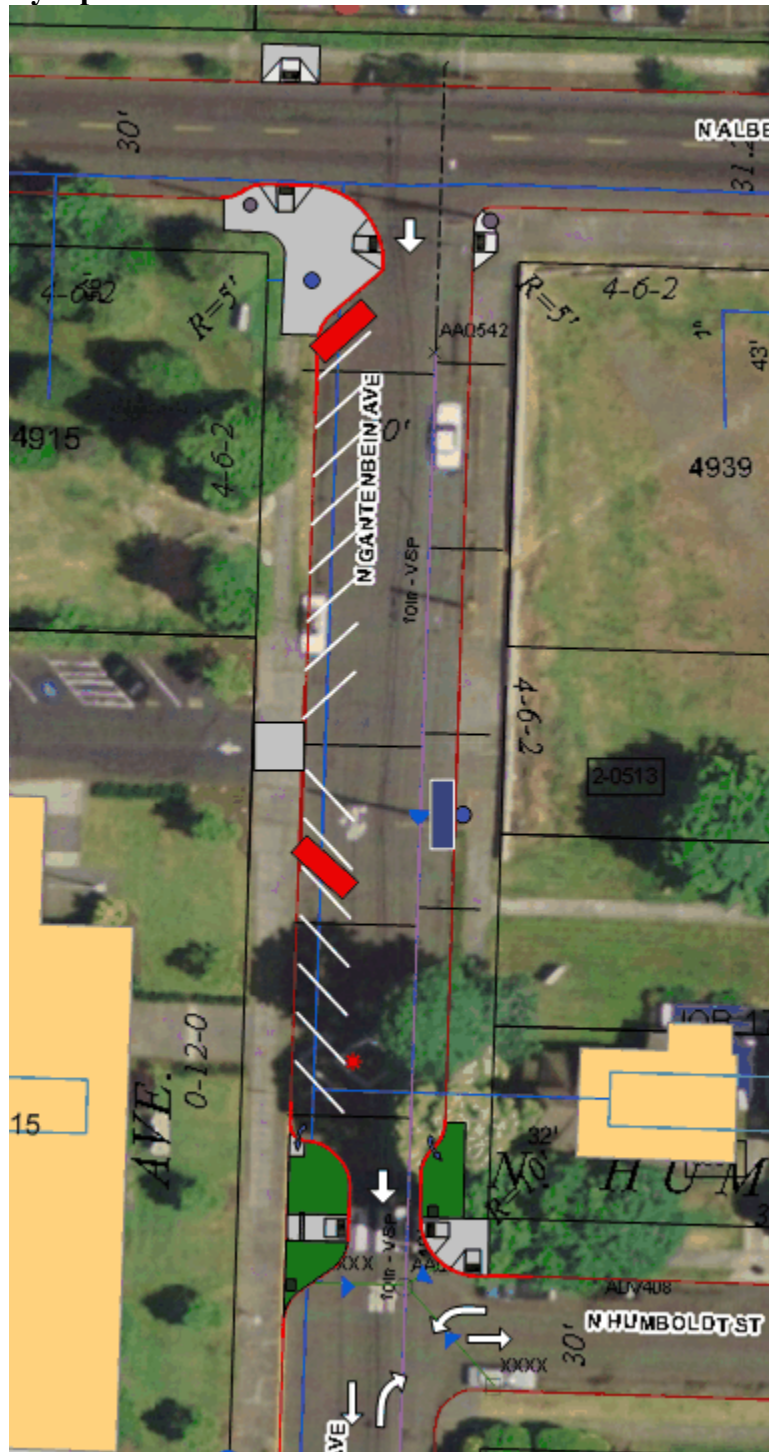
**Figure 25. Commercial Mid-Block Curb Extensions****Gantenbein**

The Humboldt Elementary SR2S Team expressed concern about the AM drop-off congestion on Gantenbein Avenue. Congestion can be alleviated by two common methods. The first is reduction of traffic and the second is better management of existing traffic.

One method to reduce traffic on Gantenbein near Humboldt Elementary (other than increasing the number of students walking or biking to school) is to alter drop-off and pick-up activities. With streets and access points on two sides of the school comes the possibility of dividing where drop-off and pick-up of students occurs based on grade (or last name). For example, if younger students continued to be served on Gantenbein and older students on Commercial, smoother operations on both streets may be possible.

One way streets may alleviate some of the congestion problems. One way operation can be accomplished with signing alone, but is more successful when enforcement or physical restrictions are also used. In order to change a local street to one-way operation PDOT would need substantial support from the local residents, whom the change primarily affects. The cost for signing a street one way is about \$1000 per street. One way operation typically needs a street width of at least 28 feet for parking to remain on both sides after the change. With wider streets, alternate parking layouts become possible. Gantenbein is wide enough that angle parking on one side becomes possible and this can greatly increase the available on-street parking. Figure X, next page, depicts one possible change on Gantenbein that includes enhanced curb extensions to reinforce the one-way operation and back in angle parking. The current potential parallel parking on the west side of Gantenbein is about 11 parking spaces. About 15 angle parking spaces could fit on the west side without removing parking on the east side of Gantenbein. Angle parking spaces should reinforce one-way operation. The curb extensions in Figure 26, next page, eliminates the need for visibility parking restrictions. Also angle parking spaces can be signed as NO PARKING during the AM drop off and PM pick up times to permit drivers to load and unload passengers, instead of angle parking.

### Figure 26. One-way Operation on STREET



Reducing drop-off and/or pick-up congestion may also be possible with other, similar changes to driver behavior. Dropping off children near the school, instead of on school grounds, and letting them walk a short distance could also alleviate congestion.



## SOLUTIONS FOR CONVENIENCE CONCERNS

### SOLUTIONS FOR FLOODED CORNERS

A curb extension may alleviate localized flooding. Curb extensions cost approximately \$12,000 to construct. Another solution would be to add catch basins upstream of the curb ramps to intercept storm water. A catch basin would cost about \$2,000 to install.

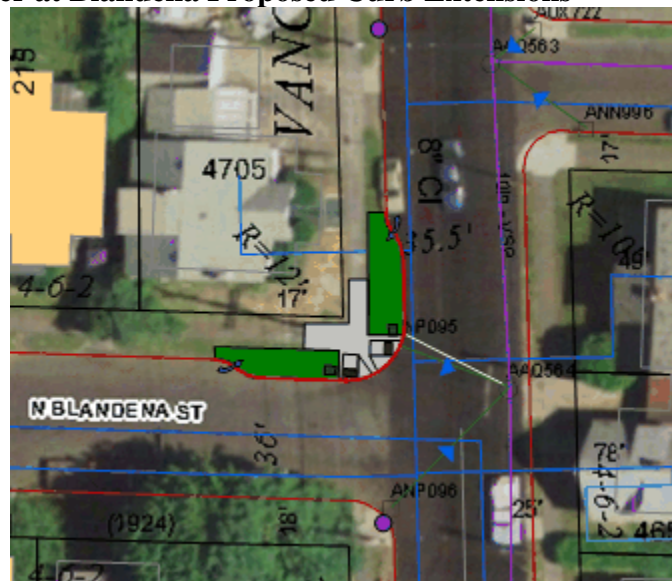
#### Gantenbein at Humboldt

During the walkabout it was noted that the catch basin on the east side of Gantenbein north of Humboldt was blocked and a large portion of Gantenbein was flooded. Humboldt east of Gantenbein is a proposed walking path and keeping it suitable for walking is very important. A green curb extension at this location as was previously discussed (Figure 10) would assist in keeping this corner from flooding in the future.

#### Vancouver at Blandena

During the walkabout flooding was also noted at the corner of Vancouver and Blandena. A green curb extension at this location (Figure 27, below) would assist in keeping this corner from flooding in the future.

**Figure 27. Vancouver at Blandena Proposed Curb Extensions**



### SOLUTIONS FOR POOR PATHWAY CONNECTIVITY

As part of this report, walking paths were identified so as to focus safety improvement efforts on key crossing locations. The pathways identified include: Alberta from Michigan to MLK Jr. Blvd, Commercial Avenue from Alberta to Shaver, Blandena Street from Michigan to Commercial, Skidmore from Michigan to Garfield, Gantenbein from Alberta to Shaver, Vancouver from Killingsworth to Alberta, Williams from Wygant to Mason and Humboldt/Wygant from Gantenbein to Williams. The Humboldt Elementary SR2S Team also expressed concern about a lack of curb ramps on Commercial Avenue north of the school.

A survey of the proposed walking routes was conducted to review for existing sidewalks and curb ramps and needed maintenance. The results of the survey are presented below for each

route. The locations reviewed below do not include locations where crossing enhancements have already been discussed. Each corner reconstructed to provide curb ramps is estimated to cost \$4,000.

#### **Commercial Avenue, North of Alberta**

Along Commercial there were no observed gaps in sidewalk. From the survey of curb ramps, it appears all ramps are complete on Commercial (Table 2).

**Table 2. Commercial Avenue, North of Alberta Intersections**

Cross Street	Corner			
	Northeast	Northwest	Southwest	Southeast
Emerson	Ok	Ok	Ok	Ok

#### **Alberta, Michigan to MLK JR. Blvd Pathway Deficiencies**

Along Alberta there were no observed gaps in sidewalk. From the survey of curb ramps, it appears that adding ramps to 6 additional intersections would complete paths on Alberta (Table 3). Reconstructing 11 corners is estimated to cost \$44,000.

**Table 3. Alberta, Michigan to MLK JR. Blvd Intersections**

Cross Street	Corner			
	Northeast	Northwest	Southwest	Southeast
Michigan	Ok	No ramp	No ramp	Ok
Kerby	Ok	No ramp	Ok	Ok
Cleveland	Ok	Ok	No ramp	No ramp
Rodney	Ok	Ok	No ramp	No ramp
Mallory	No ramp	No ramp	Ok	No ramp
Garfield	Ok	Ok	Ok	No ramp

#### **Commercial Avenue, Alberta to Shaver Pathway Deficiencies**

Along Commercial there were no observed gaps in sidewalk. From the survey of curb ramps, it appears that adding ramps to three intersections would complete paths on Commercial (Table 4). Reconstructing 12 corners is estimated to cost \$48,000.

**Table 4. Commercial Avenue, Alberta to Shaver Intersections**

Cross Street	Corner			
	Northeast	Northwest	Southwest	Southeast
Blandena	Ok	Ok	Ok	Ok
Going	No ramp	No ramp	No ramp	No ramp
Mason	No ramp	No ramp	No ramp	No ramp
Shaver	No ramp	No ramp	No ramp	No ramp

#### **Blandena Street, Michigan to Commercial Pathway Deficiencies**

Along Blandena there were no observed gaps in sidewalk. From the survey of curb ramps, it appears that adding ramps to six intersections would complete paths on Blandena (Table 5). Reconstructing 17 corners is estimated to cost \$68,000.

**Table 5. Blandena Street, Michigan to Commercial Intersections**

Cross Street	Corner			
	Northeast	Northwest	Southwest	Southeast

Michigan	No ramp	Ok	Ok	No ramp
Mississippi	Ok	Ok	Ok	No ramp
Borthwick	No ramp	No ramp	No ramp	No ramp
Kerby	Ok	No ramp	No ramp	No ramp
Congress	No ramp	No ramp	No ramp	Ok
Commercial	No ramp	No ramp	No ramp	No ramp

#### **Skidmore Street, Michigan to Garfield Pathway Deficiencies**

Along Skidmore there were no observed gaps in sidewalk. From the survey of curb ramps, it appears that adding ramps to 6 intersections would complete paths on Skidmore (Table 6). Reconstructing 18 corners is estimated to cost \$72,000.

**Table 6. Skidmore Street, Michigan to Garfield Intersections**

<b>Cross Street</b>	<b>Corner</b>			
	<b>Northeast</b>	<b>Northwest</b>	<b>Southwest</b>	<b>Southeast</b>
Michigan	Ok	Ok	Ok	Ok
Albina	Ok	Ok	Ok	Ok
Borthwick	No ramp	Ok	No ramp	No ramp
Kerby	No ramp	Ok	No ramp	No ramp
Cleveland	No ramp	Ok	No ramp	No ramp
Rodney	No ramp	No ramp	No ramp	No ramp
Mallory	Ok	No ramp	No ramp	No ramp
Garfield	No ramp	Ok	No ramp	Ok

#### **Gantenbein Avenue, Alberta to Shaver Pathway Deficiencies**

Along Gantenbein there were no observed gaps in sidewalk. From the survey of curb ramps, it appears that adding ramps 4 intersections would complete paths on Gantenbein (Table 7). Reconstructing 11 corners is estimated to cost \$44,000.

**Table 7. Gantenbein Avenue, Alberta to Shaver Intersections**

<b>Cross Street</b>	<b>Corner</b>			
	<b>Northeast</b>	<b>Northwest</b>	<b>Southwest</b>	<b>Southeast</b>
Wygant	No ramp	No ramp	No ramp	No ramp
Blandena	Ok	Ok	No ramp	No ramp
Going	Ok	No ramp	No ramp	No ramp
Mason	Ok	Ok	Ok	Ok
Shaver	No ramp	No ramp	Ok	Ok

#### **Vancouver Avenue, Killingsworth to Alberta Pathway Deficiencies**

Along Vancouver there were no observed gaps in sidewalk. From the survey of curb ramps, it appears that adding ramps to one intersection would complete paths on Vancouver (Table 8). Reconstructing one corner is estimated to cost \$4,000.

**Table 8. Vancouver Avenue, Killingsworth to Alberta Intersections**

<b>Cross Street</b>	<b>Corner</b>			
	<b>Northeast</b>	<b>Northwest</b>	<b>Southwest</b>	<b>Southeast</b>
Emerson	No ramp	Ok	Ok	Ok
Roselawn	Ok	Ok	Ok	Ok
Sumner	Ok	Ok	Ok	Ok

Webster	Ok	Ok	Ok	Ok
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### **Williams Avenue, Wygant to Mason Pathway Deficiencies**

Along Williams there were no observed gaps in sidewalk and no additional missing ramps (Figure 9).

**Table 9. Williams Avenue, Wygant to Mason Intersections**

Cross Street	Corner			
	Northeast	Northwest	Southwest	Southeast
Blandena	Ok	Ok	Ok	Ok
Going	Ok	Ok	Ok	Ok
Prescott	Ok	Ok	Ok	Ok
Mason	Ok	Ok	Ok	Ok

## **SOLUTIONS FOR DEFICIENT BIKE STORAGE**

It is recommended that bike racks be installed near the front entrance at a location that provides a clear view from regularly occupied classrooms, offices and/or foot traffic. It is also recommended that the bike storage area provide protection from inclement weather, particularly rain.

## **MISCELLANEOUS**

### **Review School Signing and Crosswalk Maintenance**

PDOT reviewed the existing school zone signing on Alberta, Gantenbein and Commercial and determined they were in satisfactory condition.

PDOT reviewed the existing crosswalk markings on Alberta and Gantenbein and determined they were in satisfactory condition. The westbound crosswalk sign on Alberta at Commercial was obscured by a tree. A work order has been forwarded to the Bureau of Maintenance to make the needed corrections.

### **School Warning Signs**

The Humboldt Elementary SR2S Team expressed concern the there were not sufficient warnings to motorists of the presence of an elementary school. City policy dictates where warnings of school activity can be posted. Warnings of school crossings for elementary schools are only installed where the school agrees to patrol the crossing. Adjustment to the school speed zone on Alberta was discussed earlier and the advance warnings for that school zone may help with driver awareness.

### **Haight Avenue**

The Humboldt Elementary SR2S Team expressed concern that there was not sufficient warning for motorists that Haight Avenue is not a through street. Haight south of Alberta is about 150 feet long before ending at the Humboldt Elementary parking lot. One DEAD END sign is in place on the west side of Haight. A second sign is recommended for the east side of Haight. Also recommended is a DO NOT ENTER sign for the driveway exit at the end of the street.

## PROJECT SUMMARY AND RECOMMENDED PRIORITY

When considering how to prioritize projects many factors influence the decision-making process. Safety, ease of construction and available funds are only a few of the things to consider. As part of the development of potential solutions PDOT has traditionally sought to find the best solutions without consideration of cost and only after the best solutions are identified to consider which projects to move forward. When seeking to encourage walking and biking to school, safety is PDOT's first goal and increasing the pleasantness of the commute is secondary.

When determining what projects to move forward, cost is often the greatest influence. For this reason, once a list of strategies is determined, the potential solutions are usually divided into categories of short-term and long-term. Short-term projects have been completed or are easily attainable in one to two years. Long-term projects are usually cost-prohibitive, are mutually exclusive of other projects, or conflict with SR2S Team desires. An example of mutually exclusive projects is the choice between a center turn lane or on-street parking where there is not space for both. Long-term projects are included in this report in the event additional funding becomes available.

Below is a list of the possible solutions discussed in this report (Table 10). Future short-term projects are listed first. Projects that PDOT believes provide the greatest safety benefit are listed before projects that are primarily for convenience. Future long-term projects are listed in a similar fashion with safety ahead of convenience. Short-term projects are anticipated to be achievable within a 5-year time frame while long-term projects have significant funding challenges to overcome.

**Table 10. Humboldt SR2S Prioritized Strategies List**

Vancouver-Williams Approved Projects				
Location		Project	Page	
Vancouver at Humboldt		Curb Extensions (2)	16	
Williams at Wygant		Curb Extensions (2)	17	
Short-term– Ranked by PDOT				
Rank	Location	Project	Page	Estimated Cost
1	Gantenbein, Commercial	Divide Pick-up activities	27	0
2	Various	Alternate drop-off Locations	28	0
3	Gantenbein, Commercial	Parking Enforcement	26	0
4	Gantenbein	Crosswalk Enforcement	26	0
5	Alberta, Commercial to Vancouver	School 20-mph Zone, 7 AM to 5 PM	6	\$1,200
6	Gantenbein at Blandena	All-Way STOP	17	\$600
7	Williams, Alberta to Skidmore	Speed Reader Boards	6	\$5,000
8	Skidmore, Mississippi to Williams	Speed Reader Boards	7	\$5,000
9	Haight south of Alberta	DEAD END sign	32	\$200

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10	Haight south of Alberta	DO NOT ENTER sign	32	\$200
11	Commercial	Marked Crossing with parking clearances	26	\$1,500
12	Alberta, Albina to MLK JR. Blvd	ODOT Speed Study	7	\$500
13	Alberta at Commercial	Visibility Parking Removal	10	\$500
14	Alberta at Gantenbein	Visibility Parking Removal	11	\$500
15	Alberta at MLK JR. Blvd	Visibility Parking Removal	25	\$500
16	Alberta at Haight	Visibility Parking Removal	11	\$500
17	Skidmore at Vancouver	Visibility Parking Removal	17	\$500
18	Skidmore at Williams	Visibility Parking Removal	18	\$500
19	Skidmore at Gantenbein	Visibility Parking Removal	19	\$500
20	Skidmore at Haight	Visibility Parking Removal	19	\$500
21	Skidmore at Commercial	Visibility Parking Removal	20	\$500
22	Alberta at Vancouver	Visibility Parking Removal	13	\$500
23	Alberta at Williams	Visibility Parking Removal	14	\$500
24	Gantenbein at Humboldt	Visibility Parking Removal	14	\$500
25	Vancouver at Humboldt	Visibility Parking Removal	15	\$500
26	Williams at Wygant	Visibility Parking Removal	16	\$500
27	Skidmore at Mississippi	Visibility Parking Removal	21	\$500
28	Blandena at Albina	Visibility Parking Removal	22	\$500
29	Alberta at Albina	Visibility Parking Removal	22	\$500
30	Killingworth at Vancouver	Visibility Parking Removal	24	\$500
31	Gantenbein	One-way Operation	27, 28	\$1,000
32	Gantenbein	Angle Parking	27, 28	\$1,000
33	Alberta at MLK JR. Blvd	Leading Pedestrian Intervals	24, 25	\$500
34	Killingworth at Vancouver	Leading Pedestrian Intervals	23	\$500

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35	Alberta at Albina	Leading Pedestrian Intervals	22	\$500
36	Skidmore at Vancouver	Leading Pedestrian Intervals	17	\$500
37	Skidmore at Williams	Leading Pedestrian Intervals	18	\$500
38	Alberta at Vancouver	Leading Pedestrian Intervals	12, 13	\$500
39	Alberta at Williams	Leading Pedestrian Intervals	13, 14	\$500
41	Alberta at Vancouver	Pedestrian Countdown Signals	12	\$7,000
42	Alberta at Williams	Pedestrian Countdown Signals	13	\$7,000
43	Skidmore at Williams	Pedestrian Countdown Signals	18	\$7,000
44	Skidmore at Vancouver	Pedestrian Countdown Signals	17	\$7,000
45	Alberta at Albina	Pedestrian Countdown Signals	22	\$7,000
46	Killingworth at Vancouver	Pedestrian Countdown Signals	23	\$7,000
4	Alberta at MLK JR. Blvd	Pedestrian Countdown Signals	24	\$7,000
				<b>\$77,700</b>
<b>Long-term – Ranked by PDOT</b>				
<b>Rank</b>	<b>Location</b>	<b>Project</b>	<b>Page</b>	<b>Estimated Cost</b>
1	Alberta, Albina to Vancouver	Speed Tables (4)	6, 7	\$8,800
2	Williams, Alberta to Skidmore	Speed Tables (3)	6	\$6,600
3	Alberta at Commercial	Curb Extension	10	\$20,000
4	Gantenbein at Skidmore	Curb Extensions	19	\$90,000
5	Blandena at Albina	Curb Extensions	21, 22	\$115,000
6	Alberta at Gantenbein	Enhanced Curb Extension	27, 28	\$20,000
7	Gantenbein at Humboldt	Enhanced Curb Extension	27, 28	\$20,000
8	Alberta a Gantenbein	Curb Extensions	11, 12	\$12,000
9	MLK Jr. Blvd at Alberta	Curb Extensions	25	\$32,000
10	Gantenbein at Humboldt	Curb Extensions	14	\$40,000
11	Alberta at Haight	Curb Extension	11	\$20,000
12	Haight at Skidmore	Curb Extensions	19, 20	\$120,000
13	Commercial at Skidmore	Curb Extensions	20	\$105,000
14	Vancouver Walking Path	Curb Ramps	31, 32	\$4,000
15	Commercial Walking Path	Curb Ramps	30	\$48,000
16	Alberta at Vancouver	Corner Reconstruct	13	\$4,000
17	Gantenbein at Blandena	Curb Ramps	17	\$8,000



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18	Gantenbein at Humboldt	Curb Ramps	14	\$9,000
19	Alberta at Haight	Curb Ramps	11	\$9,000
20	Alberta a Gantenbein	Curb Ramps	11	\$9,000
21	Haight at Skidmore	Corner Reconstruct	19	\$12,000
22	Williams at Skidmore	Corner Reconstruct	18	\$12,000
23	Gantenbein at Skidmore	Corner Reconstruct	19	\$16,000
24	Commercial at Skidmore	Corner Reconstruct	20	\$16,000
25	Alberta Walking Path	Curb Ramps	30	\$44,000
26	Gantenbein Walking Path	Curb Ramps	31	\$44,000
27	Blandena Walking Path	Curb Ramps	30, 31	\$68,000
28	Skidmore Walking Path	Curb Ramps	31	\$72,000
29	Mississippi at Skidmore	Curb Extensions	21	\$80,000
30	Killingsworth at Vancouver	Curb Extensions	24	\$60,000
31	Alberta at Vancouver	Curb Extensions	13	\$60,000
32	Alberta at Williams	Curb Extensions	14	\$70,000
33	Williams at Skidmore	Curb Extensions	18	\$70,000
34	Vancouver at Skidmore	Curb Extensions	17	\$84,000
35	Alberta at Albina	Curb Extensions	22, 23	\$120,000
				\$1,528,400