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TRANSPORTATION ENGINEERING / PLANNING

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MEMORANDUM

Date: February 5, 2011 Project #: 11049.0
To: Ellen Vanderslice
City of Portland
1120 SW 5th Avenue
Portland, OR 97204
From: Mike Coleman and Jessica Horning
Project: Portland Bikeway Project Development
Subject: North Williams Existing Conditions

This technical memorandum describes the existing transportation conditions on the North Williams Avenue corridor between Weidler Street and Killingsworth Street. The assessment of existing conditions is based on a compilation of parking, transit, and transportation data obtained from available sources and is intended to inform future alternatives analyses. The details of the existing conditions analysis are documented herein.

INTRODUCTION

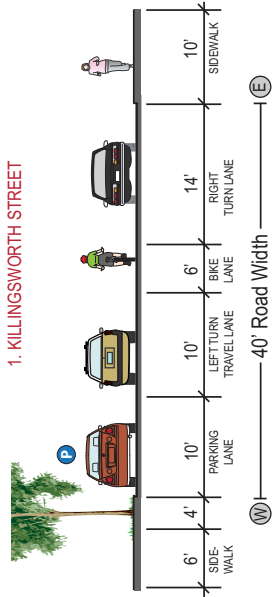
The Portland Bicycle Plan for 2030 sets a new direction for bikeway design and network completion in Portland. The plan emphasizes creating conditions to make bicycling more attractive than driving for short trips, and on completing a bikeway network that attracts new riders. A new generation of bikeway designs is envisioned to make riders feel safer and more comfortable than they would in standard bike lanes. To achieve these objectives, the City aims to pilot and implement a variety of separated in-roadway designs, including cycle tracks, buffered bike lanes, contra-flow bike lanes, and wide bike lanes.

EXISTING CONDITIONS

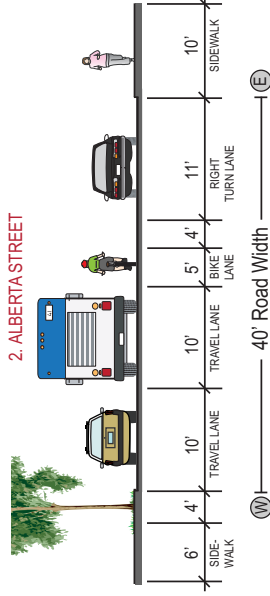
To provide information on opportunities and constraints on potential pedestrian and bicycle design treatments, the existing conditions analysis identifies traffic volumes and operations, parking supply and demand, public transportation supply and demand, and bicycle/pedestrian safety issues along the North Williams corridor. Figure 1 shows existing cross sections on the North Williams corridor.



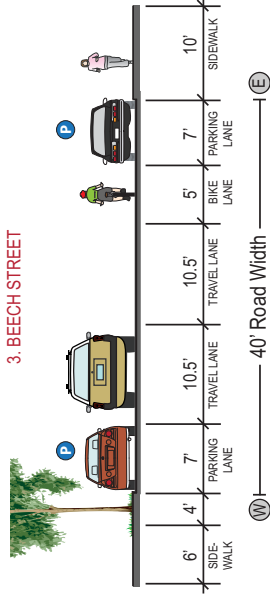
1. KILLINGSWORTH STREET



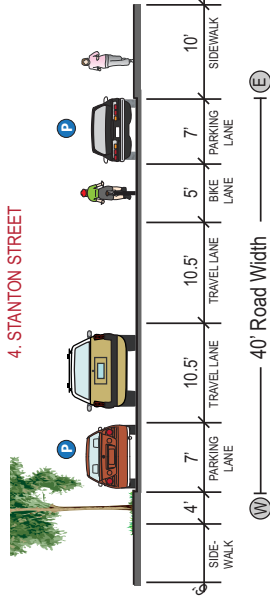
2. ALBERTA STREET



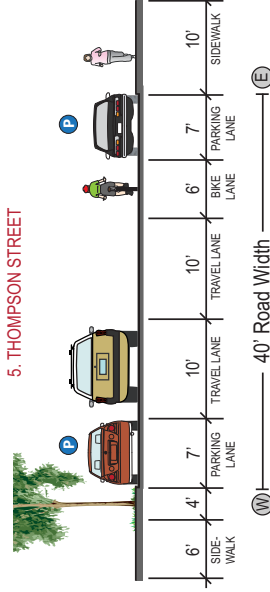
3. BEECH STREET



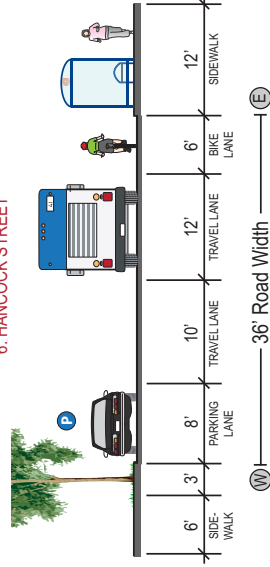
4. STANTON STREET



5. THOMPSON STREET



6. HANCOCK STREET



Measurements taken using GIS from 2009 Ortho Imagery provided by the City of Portland

Traffic Operations

Motor Vehicles

Figure 2 shows existing traffic controls and volumes on the North Williams corridor. P.M. peak hour traffic volumes are relatively consistent along the entire corridor (700 to 1,000 motor vehicles/hour), with the exception of the block between Broadway and the I-5 on-ramp, which serves the highest volume on the corridor, approximately 1,570 motor vehicles/hour.

Intersections with high volumes of turning movements and east/west cross traffic have higher potential for motor vehicle/bicycle conflicts than intersections that serve primarily northbound traffic, due to higher volumes of motor vehicles crossing marked bike lanes and visibility issues. Drivers traveling on low bicycle volume cross streets may also be unaware of the need to be alert for high bicycle volumes on North Williams. Turning movements and cross traffic volumes are highest at the following intersecting streets:

- Broadway/Weidler couplet at the southern end of the corridor;
- Russell Street, which is one of the few surface streets that provides access across I-5;
- Fremont/Cook Street, which provides access/egress to/from I-405's Fremont Bridge;
- Alberta Street neighborhood commercial corridor; and
- Killingsworth Street at the northern end of the corridor.

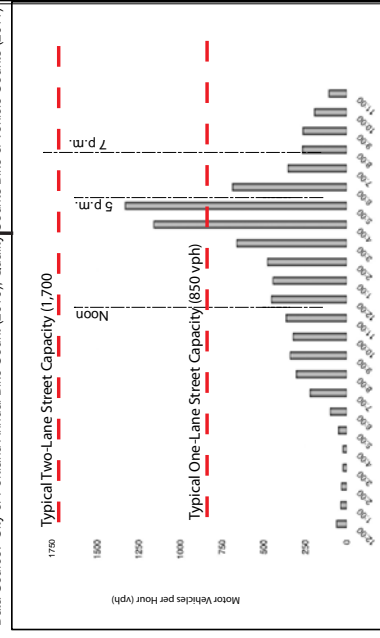
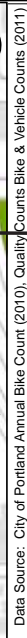
Emanuel Hospital and the related medical office uses are the highest generator of transportation activity along the corridor.

Of the locations analyzed, all of the intersections along the corridor meet City of Portland level-of-service "D" or better conditions. These intersections generally operate well below capacity and at a level-of-service "A" or "B" during both the a.m. and p.m. peak periods.

Figure 3 shows existing speed profiles for select locations on North Williams and North Vancouver Avenue. Both corridors have a posted speed limit of 30 miles per hour. On the North Williams corridor, 31 to 52 percent of motor vehicles were observed to exceed the speed limit and the 85th percentile speed was 33 to 36 miles per hour. In comparison, only 12 percent of motor vehicles on the North Vancouver corridor were found to exceed the speed limit and the 85th percentile speed was 29 miles per hour.

Bicycles

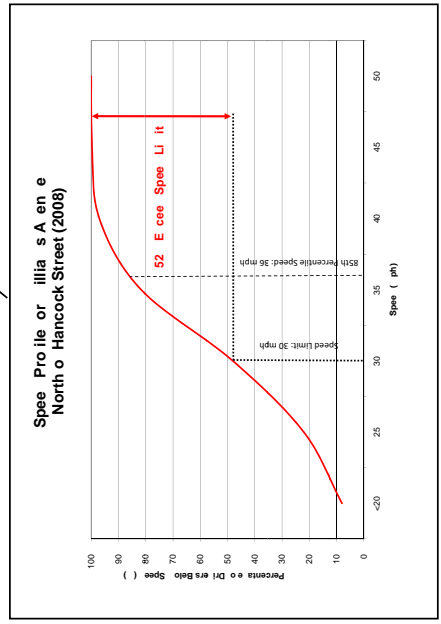
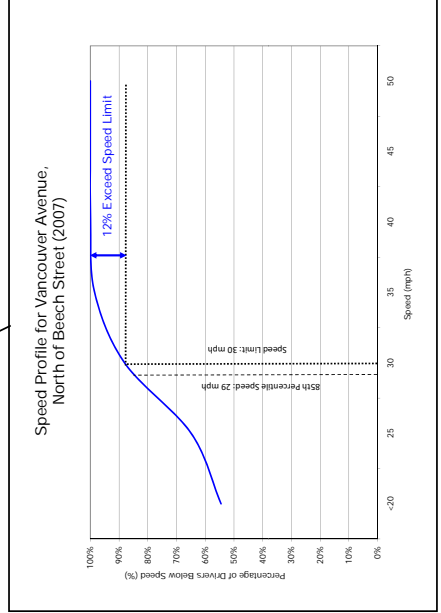
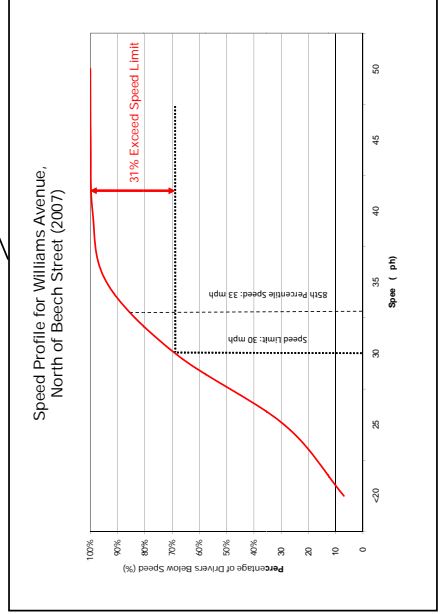
The North Williams corridor is one of the most popular bicycle corridors in the Portland metropolitan area. P.M. peak hour bicycle volumes at various locations along the corridor were observed to be as follows:



**EXISTING CONDITIONS - OPERATIONS
PM PEAK HOUR TRAFFIC VOLUME**

Traffic Volume (motor vehicles/hour)

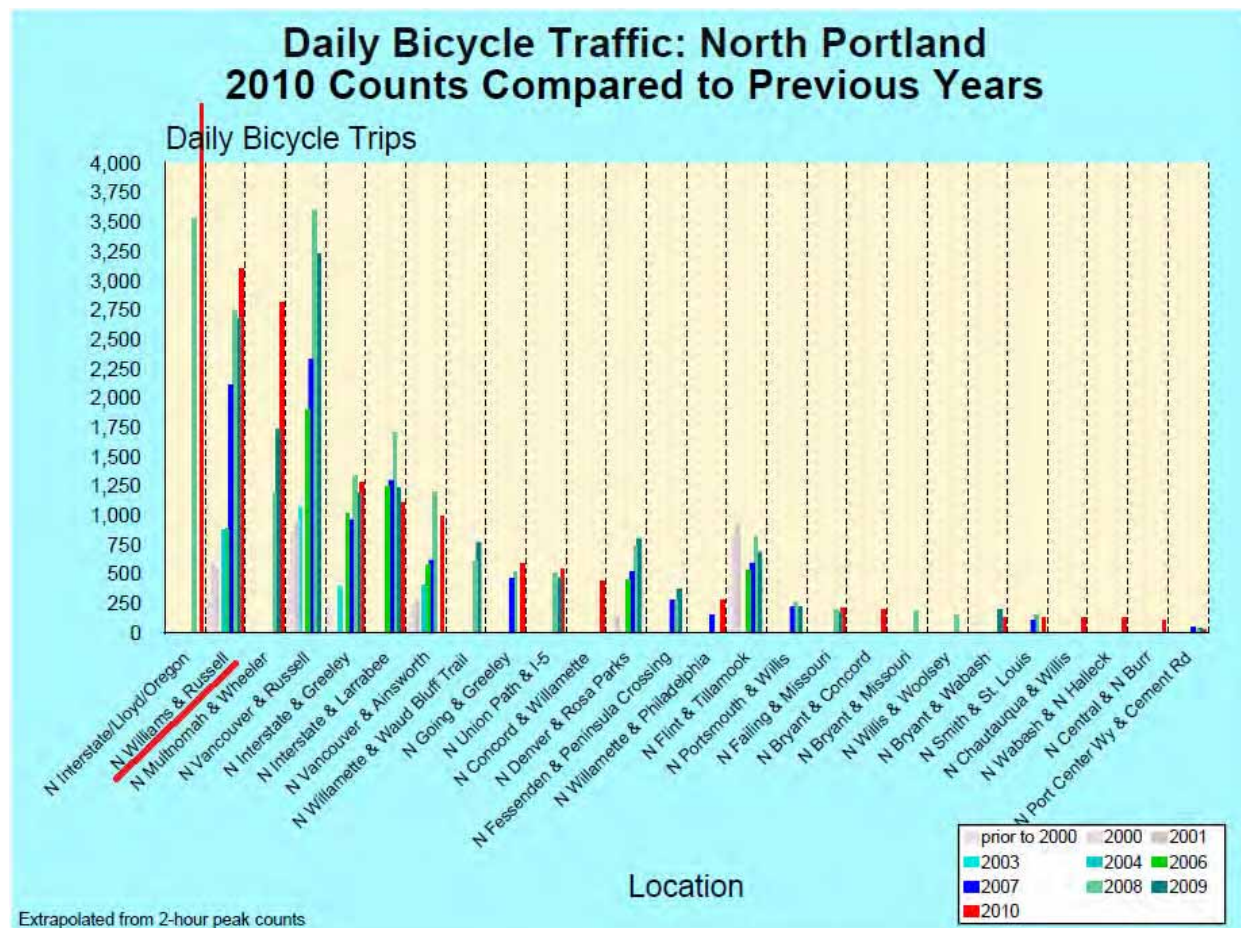




- Williams at Broadway Avenue = 310 bicycles per hour (May 2009)
- Williams at Russell Street = 385 bicycles per hour (August 2010)
- Williams at Cook/Fremont Streets = 235 bicycles per hour (January 2011)

Of the 109 non-bridge intersections that were observed citywide for the City of Portland's 2010 bicycle count, the North Williams/Russell intersection had the 5th highest bicycle traffic volume (over 3,000 daily bicycle trips).¹ Figure 4 compares daily bicycle volumes observed at North Portland intersections during the City's annual bicycle counts since 2000. In 2010, the North Williams corridor was also observed to be one of 10 locations citywide with the highest percentage of female cyclists, an important indicator of success in creating safe, comfortable and attractive conditions for bicycling.

Figure 4 Daily Bicycle Traffic at Select North Portland Intersections



Source: Portland Bicycle Count Report 2010

¹ The four highest non-bridge bicycle traffic volumes were recorded at: North Interstate/Lloyd/Oregon (over 4,000 daily trips), SW Harrison/Ladd Circle and SW Waterfront Park/Morrison (over 3,750 daily trips each), and SW Waterfront Park/Ankeny (over 3,250 daily trips).

On-Street Parking

Figure 5 shows existing on-street parking supply and peak daily demand along the North Williams corridor. In October 2010, a planning level assessment of on-street parking on the North Williams corridor was conducted. The number of on-street parking spaces available and the number of spaces in use was inventoried during the business day and during the evening hours. These counts were used to estimate maximum daily on-street parking usage. Appendix A shows the results of the parking supply and demand estimates for North Williams Avenue.

Based on this inventory, there are 721 on-street parking spaces (375 west side, 346 east side) on the North Williams corridor. On-street parking is also available on most cross streets. Overall, parking spaces on the west side of North Williams are less utilized than those on the east side of the street. Areas where most on-street parking is generally under-utilized during the day (less than 50% utilization) include:

- Broadway to Morris (except near Knott, Sacramento, and Tillamook)), and
- Shaver to Wygant (except near Skidmore and Going).

Areas where virtually all on-street parking is utilized during the day (greater than 85% usage) include:

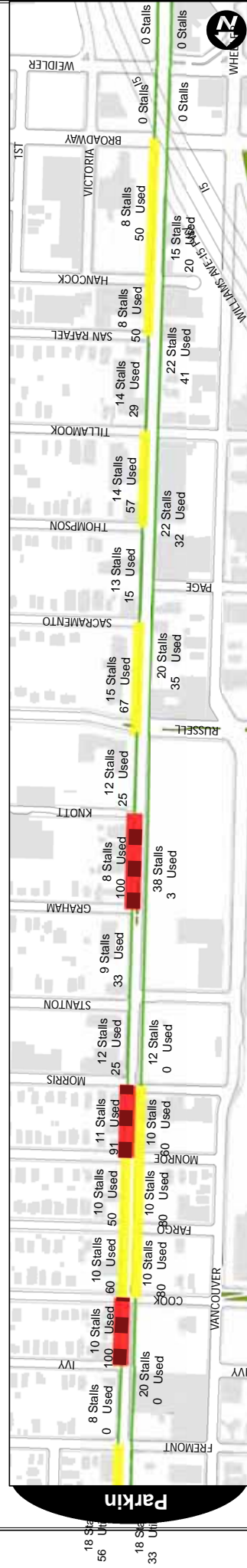
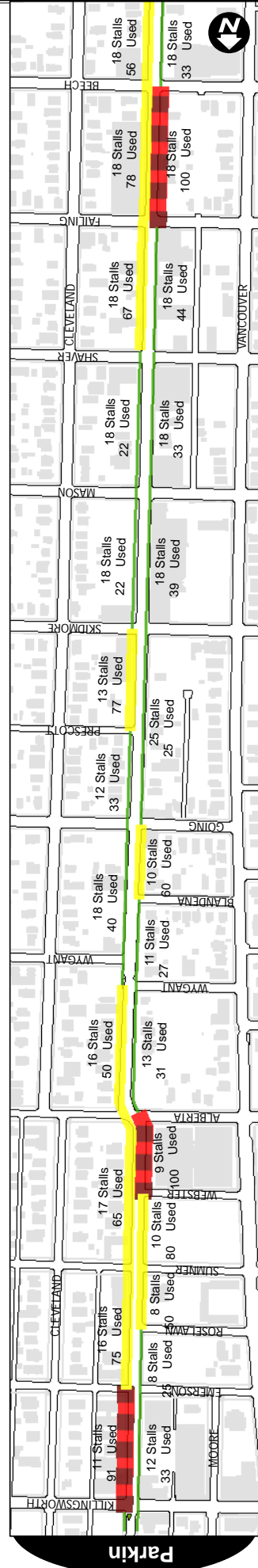
- Alberta to Killingsworth near multiple businesses and community uses,
- Morris to Shaver near multiple businesses and community uses, and
- Knott to Graham near Legacy Hospital.

Safety

Figure 6 shows the locations of reported bicycle and pedestrian crashes between January 1, 2005 and December 31, 2009 on the North Williams corridor. Over this period, 24 bicycle crashes and four pedestrian crashes were reported. Appendix B includes a detailed summary of reported bicycle and pedestrian crashes on North Williams Avenue between 2005 and 2009.

Seven of the reported bicycle crashes involved westbound motor vehicles making right turns from Broadway to North Williams Avenue. Striping and signal changes - including addition of a "No Turn on Red" LED signal and bike signal - were implemented at this intersection in October, 2010 in an attempt to reduce bicycle/motor vehicle conflicts and crashes at this intersection. Future crash volumes at this intersection should be monitored to evaluate the effectiveness of these treatments and the potential need for additional safety improvements.

Seven crashes (six bicycle and one pedestrian) were also reported at the Cook and Fremont intersections between 2005 and 2009. This concentration of crashes is likely due to the high volume of motor vehicles accessing and egressing I-405's Fremont Bridge via these streets, resulting in a high volume of turning movements and east/westbound cross traffic compared to the rest of the corridor. The majority of crashes at the Cook and Fremont intersections involved turning motor vehicles, however, no clear trend is observable from the available data.



***Note:** Number of parking stalls in use during the weekday AM and PM peak hours was observed. The higher of these was used to calculate usage.

FIGURE 5

**EXISTING CONDITIONS - PARKING
ON-STREET PARKING SUPPL AND PEAK USE**

LEGEND PARKING

On-Street Parking Use

0 - 49	(Lo Parkin Usa e)
50 - 84	(oderate Parkin Usa e)
85 - 100	(i h Parkin Usa e)





Four crashes (two bicycle and two pedestrian) were reported at the North Williams/Killingsworth intersection between 2005 and 2009; however, no crashes involving bicycles or pedestrians have been reported at the intersection since 2006, indicating that intersection improvements since this time may have adequately addressed safety issues. The remainder of reported crashes on North Williams occurred on low traffic cross streets and involved east/westbound through movements or left turns. This trend may indicate a need for signage to alert drivers on cross streets to the presence of cyclists on Williams.

Public Transportation

Figure 7 shows the locations of existing bus stops and average daily ridership at stops on the North Williams corridor. TriMet routes 4, 24, and 44 provide service on the corridor on weekdays with 10 to 30 minute peak hour headways.

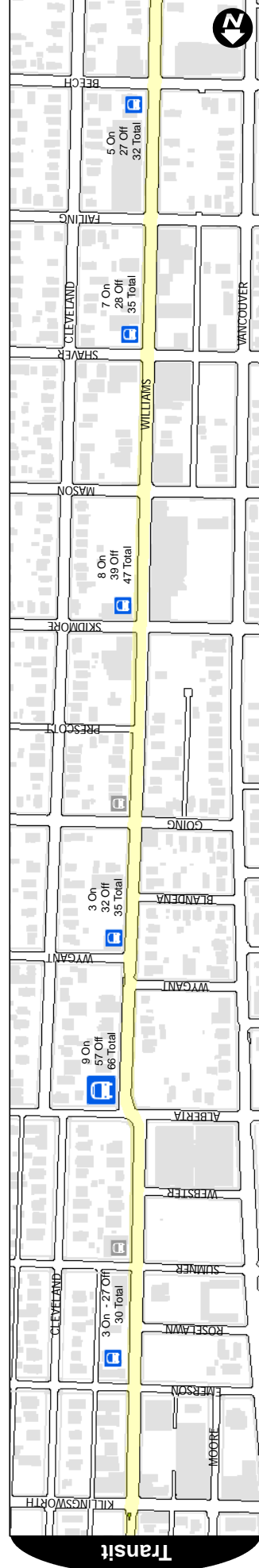
- Route 4 provides service between St. Johns, downtown Portland, and Gresham;
- Route 24 provides east west service along the Fremont corridor; and
- Route 44 provides service between St. Johns, downtown Portland, and the PCC Sylvania campus.

Appendix C shows a summary of daily bus stop usage for the North Williams Avenue corridor. Bus stops at Cook, Morris, Graham, Russell, and Thompson each have average daily ridership (ons and offs) of over 100 passengers. In several locations on North Williams, bus stops are located on curb bump outs, resulting in buses stopping in the marked bike lane when serving the stop and requiring cyclists to stop or move into motor vehicle travel lanes. There does not appear to be a correlation between bus stop and bicycle/pedestrian crash locations on the corridor, with the exception of the Cook and Fremont intersections; however, these intersections are also high cross traffic and turning movement locations.

CONCLUSIONS

In summary, the existing conditions analysis reveals that North Williams Avenue currently meets City of Portland operations standards for motor vehicles. The safety analysis reveals that reported bicycle and pedestrian crashes have occurred most frequently at the intersections of North Williams with Broadway, Fremont, and Cook Streets. Recent signal and striping improvements at the Broadway intersection may have addressed the “right-hooks” that resulted in most crashes at this intersection, but should continue to be monitored. The project team recommends that the Fremont and Cook intersections be the focus of future safety efforts on North Williams. Potential improvements should address the high volume of cross traffic and turning movements at these intersections and alert drivers on Fremont and Cook to the presence of high volumes of bicycles on Williams.

On-street parking on North Williams is generally adequate to accommodate typical weekday demands. Several low usage (less than 50% peak utilization) areas have been identified where



Data Source: Tri et Spm 2010

LEGEND

- TRANSIT**
- North Williams Avenue (Study Corridor)
 - Average Daily Ridership at Bus Stop
 - No Data
 - < 50 On's & Off's
 - 50 - 100 On's & Off's
 - > 100 On's & Off's



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changes to current on-street parking arrangements to accommodate bikeways or other improvements may have a minimal impact on adjacent land uses. However, several areas with high on-street parking usage (greater than 85% peak utilization) have also been identified where changes to current on-street parking supplies would have a significant impact on adjacent land uses. Areas with concentrations of bicycle/pedestrian crashes generally coincide with areas of high on-street parking usage associated with businesses and community uses on North Williams, which may indicate a need to reevaluate the relationship between bike lanes and on-street parking in these areas. Though not specifically observed in this analysis, special events at the Rose Quarter may also influence parking demand at the southern end of the corridor.

In addition to motor vehicles and bicycles, North Williams serves a high volume of transit riders. Five bus stops on the corridor served over 100 passengers a day in 2010. Although no clear correlation between bus stop locations and high crash areas was found in this analysis, the high volume of transit users and bicycles on North Williams confirms that there is potential for conflicts between bicycles and buses. In order to reduce potential conflicts between bicycles, buses, and motor vehicles near stops located on curb bump outs, innovative bicycle design treatments may be needed.

Appendix A: Parking Summary

Table 1 North Williams Avenue On-Street Parking Summary: Supply & Demand

Block	West Side			East Side			Total		
	Supply	AM Demand	PM Demand	Supply	AM Demand	PM Demand	Supply	AM Demand	PM Demand
Emerson to Killingsworth	12	4	4	11	10	7	23	14	11
Roselawn to Emerson	8	1	2	8	4	2	16	5	4
Sumner to Roselawn	8	4	3	8	8	7	16	12	10
Webster to Sumner	10	0	8	10	3	6	20	3	14
Alberta to Webster	9	2	9	7	2	5	16	4	14
Wygant N to Alberta	13	4	3	13	5	7	26	9	10
Wygant S to Wygant N	3	0	0	3	1	1	6	1	1
Blandena to Wygant S	8	3	2	8	3	3	16	6	5
Going to Blandena	10	6	4	10	1	4	20	7	8
Prescott to Going	12	4	4	12	3	4	24	7	8
Skidmore to Prescott	13	2	1	13	10	5	26	12	6
Mason to Skidmore	18	7	0	18	4	0	36	11	0
Shaver to Mason	18	0	6	18	2	4	36	2	10
Failing to Shaver	18	8	8	18	7	12	36	15	20
Beech to Failing	18	18	16	18	14	12	36	32	28
Fremont to Beech	18	6	4	18	10	8	36	16	12
Ivy to Fremont	11	0	0	8	0	0	19	0	0
Cook to Ivy	9	0	0	9	2	10	18	2	10
Fargo to Cook	10	0	8	10	0	6	20	0	14
Monroe to Fargo	10	2	8	10	3	5	20	5	13
Morris/Dawson Park to Monroe	10	0	6	11	6	10	21	6	16
Stanton to Morris/Dawson Park	12	0	0	12	0	3	24	0	3
Graham to Stanton	13	0	1	9	2	3	22	2	4
Knott to Graham	13	0	0	8	6	8	21	6	8
Russell to Knott	12	0	0	12	3	3	24	3	3
Sacramento to Russell	15	6	6	15	6	10	30	12	16
Page to Sacramento	5	1	1	5	1	3	10	2	4
Thompson to Page	8	0	1	8	1	0	16	1	1
Tillamook to Thompson	14	0	6	14	2	8	28	2	14
San Rafael to Tillamook	14	3	4	14	0	4	28	3	8
Hancock to San Rafael	8	3	5	8	0	4	16	3	9
Broadway to Hancock	15	3	3	0	0	0	15	3	3
Weidler to Broadway	0	0	0	0	0	0	0	0	0
TOTAL	375	87	123	346	119	164	721	206	287

Appendix B: Bicycle/Pedestrian Crash Summary

Table 2 Reported Bicycle and Pedestrian Crashes on North Williams (2005-2009)

Date	Time	Collision	Crash Type	Cross Street	Vehicle Type	Movement	From/To
9/19/2006	4PM	TURN	BIKE	N KILLINGSWORTH	PSNGR CAR	TURN-L	S to W
8/16/2006	10AM	PED	PED	N KILLINGSWORTH	PSNGR CAR	TURN-L	S to W
1/3/2006	3PM	PED	PED	N KILLINGSWORTH	PSNGR CAR	TURN-L	S to W
1/3/2005	3PM	TURN	BIKE	N KILLINGSWORTH	PSNGR CAR	TURN-R	S to E
7/12/2006	1PM	REAR	BIKE	N GOING ST	PSNGR CAR	STOP	E to W
7/27/2008	11AM	TURN	BIKE	N BLANDENA ST	PSNGR CAR	TURN-L	S to W
2/10/2007	10PM	TURN	BIKE	N SKIDMORE ST	PSNGR CAR	TURN-L	W to N
11/2/2006	6PM	ANGL	BIKE	N MASON ST	PSNGR CAR	STRGHT	W to E
11/3/2008	6PM	ANGL	BIKE	N BEECH ST	PSNGR CAR	STRGHT	W to E
10/23/2008	9AM	PED	PED	N FREMONT ST	PSNGR CAR	TURN-L	W to N
10/16/2008	6AM	ANGL	BIKE	N FREMONT ST	PSNGR CAR	TURN-R	E to N
9/2/2005	5PM	ANGL	BIKE	N FREMONT ST	PSNGR CAR	TURN-R	S to E
8/4/2005	4PM	ANGL	BIKE	N FREMONT ST	SEMI TOW	STRGHT	S to N
3/3/2009	3PM	TURN	BIKE	N COOK ST	PSNGR CAR	TURN-L	W to N
6/25/2007	5PM	ANGL	BIKE	N COOK ST	PSNGR CAR	STRGHT	W to E
10/3/2006	5PM	ANGL	BIKE	N COOK ST	PSNGR CAR	STRGHT	S to N
4/28/2009	3PM	ANGL	BIKE	N STANTON ST	PSNGR CAR	STRGHT	W to E
1/2/2005	6PM	ANGL	BIKE	N STANTON ST	PSNGR CAR	STRGHT	W to E
7/17/2007	5PM	TURN	BIKE	N MONROE ST	PSNGR CAR	TURN-L	W to N
1/26/2005	7PM	PED	PED	N RUSSELL ST	PSNGR CAR	STRGHT	E to W
8/7/2009	6PM	TURN	BIKE	NE BROADWAY	PSNGR CAR	TURN-R	E to N
7/30/2009	8PM	TURN	BIKE	N BROADWAY	PSNGR CAR	TURN-R	E to N
1/22/2009	8AM	TURN	BIKE	N BROADWAY	PSNGR CAR	TURN-R	E to N
9/25/2008	4PM	TURN	BIKE	N BROADWAY	PSNGR CAR	TURN-R	E to N
3/6/2007	11AM	TURN	BIKE	N BROADWAY	PSNGR CAR	TURN-R	E to NW
12/2/2006	8AM	TURN	BIKE	N BROADWAY	PSNGR CAR	TURN-R	E to N
10/11/2007	4PM	ANGL	BIKE	N BROADWAY	PSNGR CAR	STRGHT	E to W
8/3/2005	5PM	ANGL	BIKE	N WEIDLER ST	PSNGR CAR	STRGHT	W to E

Appendix C: Transit Summary

Table 3 TriMet Bus Stop Usage

Route #	Stop Location	Direction	Ons	Offs	Total	Monthly Lifts
44	N Williams at Emerson	N	3	27	30	2
44	N Williams at NE Alberta	N	9	57	66	33
44	N Williams at NE Wygant	N	3	32	35	5
44	N Williams at NE Skidmore	N	8	39	47	3
44	N Williams at NE Shaver	N	7	28	35	3
44	N Williams at NE Beech	N	5	27	32	2
44	N Williams at NE Fremont	N	4	18	22	1
4	N Williams at NE Cook	N	16	68	84	6
24	N Williams at NE Cook	N	3	0	3	0
44	N Williams at NE Cook	N	7	20	27	3
4	N Williams at NE Morris	N	68	85	153	70
24	N Williams at NE Morris	N	10	1	11	2
44	N Williams at NE Morris	N	18	31	49	24
4	N Williams at NE Graham	N	25	101	126	38
24	N Williams at NE Graham	N	10	3	13	0
44	N Williams at NE Graham	N	7	34	41	10
4	N Williams at NE Russell	N	52	81	133	78
44	N Williams at NE Russell	N	16	34	50	17
4	N Williams at NE Thompson	N	32	44	76	6
44	N Williams at NE Thompson	N	17	19	36	2
4	N Williams at NE Tillamook	N	14	27	41	8
44	N Williams at NE Tillamook	N	5	14	19	1
4	N Williams at NE Broadway	N	27	19	46	16
44	N Williams at NE Broadway	N	10	8	18	3
TOTAL			376	817	1193	333