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# MEMORANDUM

Date:	April 5, 2018	Project #: 22064.0
To:	Manuel Abarca, PE, City of Longview	
From: Project: Subject:	Matt Bell and Nick Gross, Kittelson & Associates, Inc. 3 <sup>rd</sup> Avenue Pedestrian Crossing Final Pedestrian Crossing Assessment	

# **EXECUTIVE SUMMARY**

This memorandum summarizes the results of a pedestrian crossing assessment prepared on behalf of the City of Longview. The purpose of the assessment is to determine if an enhanced mid-block crossing adjacent to the Canterbury Park and Canterbury Inn residential facilities is supported by the study methodology. The assessment is based on field observations as well as conversations with Canterbury Park and City of Longview staff. Key findings are summarized below.

- A signalized pedestrian crossing is currently provided along 3<sup>rd</sup> Avenue at the 3<sup>rd</sup> Avenue/Hudson Street intersection, approximately 480-feet south of the proposed mid-block crossing.
- A total of 42 pedestrians crossed 3<sup>rd</sup> Avenue at the proposed mid-block crossing location over a 12-hour period (7:00 a.m. to 7:00 p.m.) in February 2018, including five during the morning, 14 during the mid-day, and five during the evening peak hours.
- A total of 15,320 vehicles traveled along 3<sup>rd</sup> Avenue over a 24-hour period in February 2018, including 989 during the morning, 1,177 during the mid-day, and 1,308 during the evening peak hours.
- The 85<sup>th</sup> percentile speeds along 3<sup>rd</sup> Avenue are 32 miles per hour (mph) in the northbound direction and 35 mph in the southbound direction. The posted speed limit is 35 mph.

The results of the assessment indicate that an enhanced mid-block crossing along 3<sup>rd</sup> Avenue adjacent to the Canterbury Park and Canterbury Inn residential facilities is NOT supported by the study methodology due to a lack of pedestrian activity. However, given the potential for increases in pedestrian activity at the proposed mid-block crossing, the City should continue to monitor the crossing and if/when pedestrian activity reaches the minimum requirement (20 crossings during the peak hour), consideration should be given to installing an enhanced mid-block crossing with a high level of crosswalk protection (i.e. curb extensions, high visibility pavement markings and signs, and flashing beacons). Additional information on the study methodology and findings is provided below.

# BACKGROUND

Residents of Canterbury Park and Canterbury Inn residential facilities have expressed the need for an enhanced mid-block crossing on 3<sup>rd</sup> Avenue to facilitate movement between the two facilities. Canterbury Park is an independent living facility located on the west side of 3<sup>rd</sup> Avenue and Canterbury Inn is an assisted living facility located on the east side of 3<sup>rd</sup> Avenue. Given the nature of the facilities, residents often make frequent trips across 3<sup>rd</sup> Avenue. Currently, residents cross at this location without the assistance of a marked crosswalk or travel approximately 960-feet out-of-direction to cross at a the 3<sup>rd</sup> Avenue/Hudson Street intersection.



# STUDY AREA

The study area consists of the segment of 3<sup>rd</sup> Avenue adjacent to the Canterbury Park and Canterbury Inn residential facilities. An existing concrete pathway from Canterbury Park's main entrance leads southeast to 3<sup>rd</sup> Avenue and the location of the proposed mid-block crossing. A similar concrete pathway continues southeast from 3<sup>rd</sup> Avenue to Canterbury Inn's main entrance. The location and orientation of the existing concrete pathways create a natural pathway across 3<sup>rd</sup> Avenue at the proposed mid-block crossing location.

# Land-Uses

Land uses along 3<sup>rd</sup> Avenue primarily consist of high density residential on both sides of the roadway. In addition to Canterbury Park and Canterbury Inn, other residential facilities include the Canterbury Gardens memory care facility, Frontier Rehabilitation and Extended Care Center, and the Fremont Village apartments; each of which are located within close proximity to the proposed mid-block crossing. The surrounding area is generally built out with minimal opportunities for new development.

# TRANSPORTATION FACILITIES

# **Roadway Facilities**

3<sup>rd</sup> Avenue (SR 411) is a principle arterial that travels north-south along the eastern boundary of the City of Longview, parallel to the Cowlitz River. North of the study area, 3<sup>rd</sup> Avenue transitions to 1<sup>st</sup> Avenue and connects to Interstate 5 (I-5) via Allen Street. South of the study area, 3<sup>rd</sup> Avenue connects to downtown Longview via Hudson Street and Tennant Way (SR 432), which also provides access to I-5. 3<sup>rd</sup> Avenue also continues south to Industrial Way (SR 432), which connects to the Lewis and Clark Bridge.

## Jurisdiction

The City of Longview has jurisdiction over 3<sup>rd</sup> Avenue and the adjacent roadways, including Hudson Street.

## Functional Classification

3<sup>rd</sup> Avenue (SR 411) is classified as a principle arterial by the City of Longview Comprehensive Plan (Reference 1). As a principle arterial, 3<sup>rd</sup> Avenue is intended to provide a direct connection to the State highways and other limited access facilities. Arterials provide circulation and access as well as a link with State and federal highways. Arterials are the widest streets and are designed to carry heavy volumes of traffic.

## **Cross Section**

3<sup>rd</sup> Avenue currently has a three-lane cross section within the vicinity of the proposed mid-block crossing, including two 11-foot travel lanes (one in each direction) and one 12-foot center two-way left-turn (TWLT) lane. There are also two 8-foot parking lanes (one in each direction) north of Canterbury Park. South of Canterbury Park, on-street parking is prohibited on the west side of the roadway. The overall paved width of 3<sup>rd</sup> Avenue is approximately 50 feet.

## Traffic Control and Signage

The closest traffic signal is located at the 3<sup>rd</sup> Avenue/Hudson Street intersection approximately 480-feet south of the proposed mid-block crossing location. Marked crosswalks are provided across all four legs of the signalized intersection. The crosswalks are pedestrian actuated with pedestrian pushbuttons and pedestrian signal heads. Per discussions with Canterbury Park staff, there are several challenges associated with using the signal. The challenges identified by Canterbury Park staff include:

- The location of the traffic signal results in out-of-direction travel for Canterbury residents who are elderly and tend to have reduced mobility.
- The traffic signal does not provide sufficient time for pedestrians to cross the street.
  - Per signal timing data provided by the City, the traffic signal provides 5 seconds of walk time followed by 15 seconds of flash don't walk time across the north leg of the intersection.

- The pedestrian heads are not countdown pedestrian heads, which means pedestrians that approach the intersection after it has been actuated do not know how much time they have to cross.
- Motorists do not yield to pedestrians crossing the north leg of the intersection.
  - Per the signal timing data, the eastbound and westbound approaches have permitted left-turn phasing. With permitted left-turn phasing, vehicle and pedestrian movements can occur at the same time.
- The pedestrian ramps do not align with the crosswalks, particularly in the northwest corner of the intersection.

Manual turning movement counts conducted at the intersection show that the eastbound left- and southbound right-turn movements are relatively high during the weekday AM and PM peak hours. An evaluation of the intersection using Synchro 9 modeling software indicates that the intersection is currently operating acceptably per the City's applicable mobility standards during the peak time periods. Further evaluation of the intersection indicates that it would continue to operate acceptable with protected left-turn phasing at the eastbound approach, particularly if the left-turn lags like the northbound and southbound approaches. With the provision of protected left-turn phasing, pedestrians would cross the north leg of the intersection during a separate phase from the left-turn movement. *Attachment "A" contains the turning movement counts conducted at the intersection. Attachment "B" contains the worksheets used to evaluation traffic operations as well as potential mitigation measures.* 

## **Traffic Volumes**

Traffic volume data was collected along 3<sup>rd</sup> Avenue north of Hudson Street in February 2018. The data includes the total number of vehicles that traveled along 3<sup>rd</sup> Avenue over a 24-hour period. Chart 1 displays the hourly traffic volume data by direction.



## Chart 1: Daily Traffic Volumes along 3<sup>rd</sup> Avenue

<sup>■</sup> Northbound ■ Southbound

As shown in Chart 1, traffic volumes along 3<sup>rd</sup> Avenue increase steadily throughout the day with morning, mid-day, and evening peak hours occurring at 7:45 a.m., 12:45 p.m., and 3:45 p.m., respectively. Based on the data, a total of 15,320 vehicles were counted over the 24-hour period, including 989 during the morning, 1,177 during the mid-day, and 1,308 during the evening peak hours. *The traffic volume data is provided in Attachment "C"*.

# Travel Speeds

Travel speed data was collected along 3<sup>rd</sup> Avenue north of Hudson Street over a 24-hour period in February 2018. Based on the data, the 85<sup>th</sup> percentile speeds are 32 miles per hour (mph) in the northbound direction and 35 mph in the southbound direction. The posted speed limit is 35 mph. *The travel speed data is provided in Attachment "D"*.

## Heavy Vehicle (Truck) Percentages

Heavy vehicle data was collected along 3<sup>rd</sup> Avenue north of Hudson Street over a 24-hour period in February 2018. Based on the data, approximately 3.6 percent of all northbound traffic and 4.2 percent of all southbound traffic consists of heavy vehicles. *The heavy vehicle percentage data is included in Attachment "E"*.

# **Other Roadway Considerations**

## Illumination

Illumination is currently provided by street lights installed at approximate 230-foot intervals along the both side of 3<sup>rd</sup> Avenue. An existing street light is provided on the west side of the roadway, south of the Canterbury Park entrance and just north of the proposed mid-block crossing.

# Topography

3<sup>rd</sup> Avenue is relatively flat and straight within the vicinity of the proposed mid-block crossing. As indicated below, the horizontal curve to the north does not limit sight-distance at the southbound approach to the proposed mid-block crossing.

## Vegetation

At the time of the field investigation, vegetation along both sides of 3<sup>rd</sup> Avenue was maintained and did not limit sight distance along the roadway or at the proposed mid-block crossing.

## Sight Distance

The posted speed limit of 35 mph was used to calculate stopping sight distance requirements along 3<sup>rd</sup> Avenue in accordance with the methodology identified in the standard reference manual, *A Policy on Geometric Design of Highway and Streets,* published by the American Association of State Highway and Transportation Officials (AASHTO – Reference 2). Accordingly, the stopping sight distance requirement is 246-feet. Given this requirement, there is currently sufficient stopping sight distance along 3<sup>rd</sup> Avenue to safely stop a moving vehicle in advance of the proposed mid-block crossing.

# PEDESTRIAN FACILITIES

# Sidewalks

Continuous sidewalks are provided along both sides of 3<sup>rd</sup> Avenue and appear to be in good condition. A 3-foot landscape strip is provided between the sidewalk and outside travel lane on both sides of the roadway. All sidewalks are free from any impediments such as utility poles, light poles, fire hydrants, etc. Concrete walking paths are also provided at the east and westbound approaches to the proposed midblock crossing location. The concrete pathway on the west side of 3<sup>rd</sup> Avenue connects to the main entrance of Canterbury Park, while the concrete pathway on the east side of 3<sup>rd</sup> Avenue connects to the main entrance of Canterbury Inn.

## Crosswalks

The closest marked crosswalk is located on the north leg of the 3<sup>rd</sup> Avenue/Hudson Street intersection approximately 480-feet south. The intersection includes a pedestrian actuated traffic signal with pedestrian push button and pedestrian signal heads.

# Pedestrian Activity

Pedestrian activity data was collected along 3<sup>rd</sup> Avenue at the proposed mid-block crossing in February 2018. The data includes the total number of pedestrians that crossed 3<sup>rd</sup> Avenue over a 12-hour period from 7:00 a.m. to 7:00 p.m. The following provides a summary of the pedestrian data.

- Five pedestrians crossed 3<sup>rd</sup> Avenue during the morning peak hour for pedestrian activity (8:30 a.m.); two pedestrians crossed during the morning peak hour for vehicles (7:45 a.m.).
- 14 pedestrians crossed 3<sup>rd</sup> Avenue during the afternoon peak for pedestrian activity (1:00 p.m.); eight pedestrians crossed during the afternoon peak hour for vehicles (12:45 p.m.).
- Five pedestrians crossed 3<sup>rd</sup> Avenue during the evening peak hour for pedestrian activity (5:30 p.m.); two pedestrians crossed during the evening peak hour for vehicles (3:45 p.m.).

It should be noted that the pedestrian counts were conducted in February and while no inclement weather was present, anecdotal evidence suggests that pedestrian activity increases during the summer months. Also, while the pedestrian counts were collected at the proposed mid-block crossing location, additional crossings may have occurred further to the north and south of the crossing and could be consolidated by a potential crossing. *The pedestrian crossing data is provided in Attachment "F"*.

# TRANSIT FACILITIES AND SERVICES

## Transit Service

Transit for Longview residents is provided by River Cities Transit (RCT). Information regarding local transit service within the study area was obtained from the current RCT system map and bus schedule. RCT Line 45 provides frequent service along 3<sup>rd</sup> Avenue on approximately 35-minute headways. Service is provided Monday through Friday from 6:34 a.m. to 6:34 p.m. and on Saturday's from 8:04 a.m. to 5:34 p.m. The

closest transit stop is located just north of Canterbury Inn on the east side of 3<sup>rd</sup> Avenue and is served by RCT Line 45.

# PLANNED AND PENDING TRANSPORTATION FACILITIES

The Longview Comprehensive Plan identifies a number of potential projects that will improve traffic safety, increase traffic flow, increase circulation, improve freight mobility, and/or enhance the beatification of the City's roadways. No projects have been identified in the Comprehensive Plan as having the potential to impact conditions along 3<sup>rd</sup>.

# CROSSWALK ASSESSMENT

A crosswalk assessment was conducted to determine if the proposed mid-block crossing would be supported by the study methodology under existing traffic conditions. The results of the assessment are described below.

# Gap Analysis

The National Cooperative Highway Research Program (NCHRP) Report 562 *Improving Pedestrian Safety at Unsignalized Crossings* (Reference 3) provides a methodology for evaluating appropriate levels of crosswalk protection that considers traffic volumes, travel speeds, and pedestrian activity as well as a number of other factors. The methodology was applied to the proposed mid-block crossing under existing traffic conditions.

## Existing Conditions

Table 1 summarizes the existing traffic volumes, travel speeds, and pedestrian activity at the proposed mid-block crossing during the morning, mid-day, and evening peak hours.

	Мо	orning Peak H	our	Afte	ernoon Peak H	lour	Ev	ening Peak Ho	our
Peak Hour	Traffic Volume	Travel Speed	Ped Crossings	Traffic Volume	Travel Speed	Ped Crossings	Traffic Volume	Travel Speed	Ped Crossings
Vehicle Peak	989	35	2	1,177	35	8	1,308	35	2
Pedestrian Peak	913	35	5	1,138	35	14	919	35	5

## Table 1: Existing Conditions – 3<sup>rd</sup> Avenue at Canterbury Park Main Entrance

An assessment of the traffic volumes shown in Table 1 led to the conclusion that an enhanced pedestrian crossing at the proposed mid-block crossing location is *NOT* supported by the study methodology under existing traffic conditions due to a lack of pedestrian activity. *The worksheets used in the existing conditions evaluation are included in Attachment "G"*. The NCHRP 562 methodology requires a minimum of 20 pedestrian crossings during the peak hour to support minimal crossing treatments. As pedestrian crossing volumes increase, the level of crosswalk protection needed also increases.

## Sensitivity Analysis

Given the potential for increases in pedestrian activity at the study location, a sensitivity analysis was conducted to determine the extent to which various crossing treatments could accommodate increases in pedestrian activity and/or traffic volumes. The sensitivity analysis includes the following scenarios:

- Scenario 1 (traffic increase & no pedestrian increase): An increase in traffic volumes of up to 20 percent with no increase in pedestrian crossings.
  - The results of this analysis indicate that an enhanced mid-block crossing is not supported.
- Scenario 2 (no traffic increase & pedestrian increase): No increase in traffic volumes with an
  increase of up to 20 pedestrian crossings this represents an increase of up to 15 pedestrians
  during the morning and evening peak hours and six pedestrians during the mid-day peak
  hour.
  - The results of this analysis indicate that an enhanced mid-block crossing with a high level of crosswalk protection is supported.
- Scenario 3 (traffic increase & pedestrian increase): An increase in traffic volumes of up to 20
  percent with an increase of up to 20 pedestrian crossings.
  - The results of this analysis indicate that an enhanced mid-block crossing with a high level of crosswalk protection is supported.

The results of the sensitivity analysis indicate that an increase in pedestrian activity has a more significant impact on the need for an enhanced mid-block crossing than an increase in vehicle activity. In addition, once the minimum number of pedestrians needed to support an enhanced mid-block crossing is reached, the type of crossing treatment necessary to support the minimum level of pedestrian activity can accommodate a significant increase in pedestrian activity. *The work sheets used in the sensitivity evaluations are included in Attachment "H"*.

# FINDINGS AND RECOMMENDATIONS

The results of the assessment indicate that an enhanced mid-block crossing along 3<sup>rd</sup> Avenue adjacent to the Canterbury Park and Canterbury Inn assisted living facilities is NOT supported by the study methodology. However, given the potential for increases in pedestrian activity at the proposed mid-block crossing, the City should continue to monitor the crossing and if/when pedestrian activity reaches the minimum requirement (20 crossings during the peak hour), consideration should be given to installing an enhanced mid-block crossing with a high level of crosswalk protection. The following summarizes the recommended crossing treatments needed to improve pedestrian and vehicle access and circulation.

# Recommended Crossing Treatments

Recognizing that the implementation of enhanced crossing treatments will likely depend on policies, priorities and available funding, the following recommendations are presented according to their simplicity and anticipated time and cost constraints. All crosswalk treatments should be consistent with the guidelines found in the Manual on Uniform Traffic Control Devices (MUTCD – Reference 4).

- Modify the eastbound approach to the 3<sup>rd</sup> Avenue/Hudson Street intersection to provide a separate eastbound left-turn lane and a shared through/right-turn lane.
  - This may require modifications to the signing and striping at the eastbound and westbound approaches to the intersection.
- Modify the traffic signal at the 3<sup>rd</sup> Avenue/Hudson Street intersection to provide protected left-turn phasing at the eastbound approach – lag the left-turn movement and increase the walk time for the east-west movement.
- Upgrade the pedestrian signal heads with countdown modules at the 3<sup>rd</sup> Avenue/Hudson Street intersection.
  - This improvement may trigger the need to update the pedestrian ramps to current Americans with Disabilities Act (ADA) standards.
- Monitor the proposed mid-block crossing and if/when pedestrian activity reaches the minimum requirement, consideration should be given to installing an enhanced mid-block crossing with the following crossing treatments:
  - Curb extensions on both sides of the proposed mid-block crossing.
  - ADA compliant pedestrian ramps at both ends of the crossing per City standards.
  - High visibility crosswalk pavement markings and signs per the MUTCD.
  - Rectangular Rapid Flash Beacons (RRFB) on the crosswalk signs.
  - Advance stop bars at each approach with "Stop Here for Pedestrian" signs.
  - Advance warning signs at each approach.

Figure 1 illustrates the potential mid-block pedestrian crossing treatments.





- 2. American Association of State Highway and Transportation Officials. *A Policy on Geometric Design of Highway and Streets.* 2012.
- 3. The National Cooperative Highway Research Program (NCHRP). *Report 562 Improving Pedestrian Safety at Unsignalized Crossings*. 2006.
- 4. Federal Highway Administration (FHWA). *Manual on Uniform Traffic Control Devices for Streets and Highways*. 2009.

# ATTACHMENTS

- A. Turning Movement County
- B. Existing Conditions Worksheets with Mitigation
- C. Traffic Volumes
- D. Travel Speeds
- E. Vehicle Classifications
- F. Pedestrian Volumes
- G. NCHRP 562 Worksheets: Existing Conditions
- H. NCHRP 562 Worksheets: Sensitivity Analysis

Attachment A Turning Movement Counts



Comments: Report generated on 2/14/2018 2:19 PM

Pedestrians

**Bicycles** 

Railroad Stopped Buse

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212



**Bicycles** Railroad Stopped Bus Comments:

Pedestrians

Report generated on 2/14/2018 2:19 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Attachment B Existing Conditions Worksheets with Mitigations

# Existing Traffic Conditions 1: 3rd Avenue & Hudson Street

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	1		\$		۲	4		٦	<b>†</b>	1
Traffic Volume (vph)	157	33	48	9	17	13	35	183	8	15	311	348
Future Volume (vph)	157	33	48	9	17	13	35	183	8	15	311	348
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes		1.00	0.98		1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.96		1.00	0.99		1.00	1.00	0.85
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1754	1529		1662		1703	1752		1687	1827	1583
Flt Permitted		0.73	1.00		0.91		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1340	1529		1533		1703	1752		1687	1827	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	174	37	53	10	19	14	39	203	9	17	346	387
RTOR Reduction (vph)	0	0	31	0	10	0	0	1	0	0	0	160
Lane Group Flow (vph)	0	211	22	0	33	0	39	211	0	17	346	227
Confl. Peds. (#/hr)			2	2					1			
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	3%	9%	4%	0%	18%	0%	6%	8%	0%	7%	4%	2%
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)		16.1	25.2		16.1		9.1	25.4		2.4	18.7	18.7
Effective Green, g (s)		16.1	25.2		16.1		9.1	25.4		2.4	18.7	18.7
Actuated g/C Ratio		0.26	0.41		0.26		0.15	0.41		0.04	0.30	0.30
Clearance Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)		3.0	2.0		2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		348	770		398		250	718		65	551	478
v/s Ratio Prot			0.00				c0.02	c0.12		0.01	c0.19	
v/s Ratio Perm		c0.16	0.01		0.02							0.14
v/c Ratio		0.61	0.03		0.08		0.16	0.29		0.26	0.63	0.48
Uniform Delay, d1		20.1	11.0		17.3		23.0	12.2		28.9	18.6	17.6
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		3.0	0.0		0.0		0.1	0.1		0.8	1.6	0.3
Delay (s)		23.1	11.0		17.3		23.2	12.3		29.7	20.2	17.9
Level of Service		С	В		В		С	В		С	С	В
Approach Delay (s)		20.7			17.3			14.0			19.2	
Approach LOS		С			В			В			В	
Intersection Summary												
HCM 2000 Control Delay			18.5	Н	CM 2000	Level of S	Service		В			
HCM 2000 Volume to Capacit	y ratio		0.53									
Actuated Cycle Length (s)			61.9	S	um of lost	time (s)			18.0			
Intersection Capacity Utilization	n		54.3%	IC	CU Level of	of Service			А			
Analysis Period (min)			15									
c Critical Lane Group												

# Existing Traffic Conditions 1: 3rd Avenue & Hudson Street

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	1		\$		۲	4Î		۲	<b>†</b>	7
Traffic Volume (vph)	331	34	87	17	27	36	77	412	8	15	261	260
Future Volume (vph)	331	34	87	17	27	36	77	412	8	15	261	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes		1.00	0.98		0.99		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		0.99	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.94		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1760	1558		1700		1736	1813		1504	1845	1549
Flt Permitted		0.69	1.00		0.89		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1261	1558		1537		1736	1813		1504	1845	1549
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	352	36	93	18	29	38	82	438	9	16	278	277
RTOR Reduction (vph)	0	0	24	0	18	0	0	1	0	0	0	158
Lane Group Flow (vph)	0	388	69	0	67	0	82	446	0	16	278	119
Confl. Peds. (#/hr)	3		1	1		3						
Confl. Bikes (#/hr)			1			1			1			1
Heavy Vehicles (%)	3%	0%	2%	6%	4%	0%	4%	4%	25%	20%	3%	2%
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4	. 5		8		5	2		1	6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)		34.8	50.6		34.8		15.8	33.3		2.3	19.8	19.8
Effective Green, g (s)		34.8	50.6		34.8		15.8	33.3		2.3	19.8	19.8
Actuated g/C Ratio		0.39	0.57		0.39		0.18	0.38		0.03	0.22	0.22
Clearance Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)		3.0	2.0		2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		496	997		605		310	682		39	413	346
v/s Ratio Prot			0.01				c0.05	c0.25		0.01	0.15	
v/s Ratio Perm		c0.31	0.03		0.04							0.08
v/c Ratio		0.78	0.07		0.11		0.26	0.65		0.41	0.67	0.34
Uniform Delay, d1		23.5	8.4		17.0		31.3	22.8		42.4	31.3	28.8
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		7.9	0.0		0.0		0.2	1.7		2.5	3.4	0.2
Delay (s)		31.3	8.4		17.0		31.5	24.5		44.9	34.7	29.0
Level of Service		С	А		В		С	С		D	С	С
Approach Delay (s)		26.9			17.0			25.6			32.3	
Approach LOS		С			В			С			С	
Intersection Summary												
HCM 2000 Control Delay			27.8	Н	CM 2000	Level of S	Service		С			
HCM 2000 Volume to Capacity	/ ratio		0.71									
Actuated Cycle Length (s)			88.4	S	um of lost	t time (s)			18.0			
Intersection Capacity Utilizatio	n		69.8%	IC	CU Level o	of Service			С			
Analysis Period (min)			15									
c Critical Lane Group												

# Existing Traffic Conditions (Mitigated) 1: 3rd Avenue & Hudson Street

	٦	-	$\mathbf{\hat{z}}$	∢	-	•	1	1	1	6	Ļ	~
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	٦	4			\$		۲	4Î		٦	<b>†</b>	1
Traffic Volume (vph)	157	33	48	9	17	13	35	183	8	15	311	348
Future Volume (vph)	157	33	48	9	17	13	35	183	8	15	311	348
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99			1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.91			0.96		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1610			1662		1703	1752		1687	1827	1583
Flt Permitted	0.95	1.00			0.89		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1752	1610			1502		1703	1752		1687	1827	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	174	37	53	10	19	14	39	203	9	17	346	387
RTOR Reduction (vph)	0	34	0	0	13	0	0	1	0	0	0	156
Lane Group Flow (vph)	174	56	0	0	30	0	39	211	0	17	346	231
Confl. Peds. (#/hr)			2	2					1			
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	3%	9%	4%	0%	18%	0%	6%	8%	0%	7%	4%	2%
Turn Type	Prot	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases				8								6
Actuated Green, G (s)	14.3	25.2			4.9		5.8	26.2		2.3	22.7	22.7
Effective Green, g (s)	14.3	25.2			4.9		5.8	26.2		2.3	22.7	22.7
Actuated g/C Ratio	0.20	0.35			0.07		0.08	0.37		0.03	0.32	0.32
Clearance Time (s)	6.0	6.0			6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0			2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	349	565			102		137	640		54	578	501
v/s Ratio Prot	c0.10	0.03					c0.02	0.12		0.01	c0.19	
v/s Ratio Perm					c0.02							0.15
v/c Ratio	0.50	0.10			0.29		0.28	0.33		0.31	0.60	0.46
Uniform Delay, d1	25.5	15.6			31.8		31.0	16.4		33.9	20.7	19.6
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.1	0.1			0.6		0.4	0.1		1.2	1.1	0.2
Delay (s)	26.6	15.7			32.3		31.4	16.5		35.1	21.8	19.8
Level of Service	С	В			С		С	В		D	С	В
Approach Delay (s)		22.9			32.3			18.8			21.1	
Approach LOS		С			С			В			С	
Intersection Summary												
HCM 2000 Control Delay			21.4	Н	CM 2000	Level of S	Service		С			
HCM 2000 Volume to Capa	city ratio		0.50									
Actuated Cycle Length (s)			71.7	S	um of lost	time (s)			24.0			
Intersection Capacity Utiliza	tion		52.7%	IC	CU Level o	of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

# Existing Traffic Conditions (Mitigated) 1: 3rd Avenue & Hudson Street

	٦	-	$\mathbf{i}$	∢	-	•	1	Ť	1	5	Ļ	~
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	۲	4			4		۲	4î		٦	1	1
Traffic Volume (vph)	331	34	87	17	27	36	77	412	8	15	261	260
Future Volume (vph)	331	34	87	17	27	36	77	412	8	15	261	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98			0.99		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.89			0.94		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1643			1697		1736	1813		1504	1845	1549
Flt Permitted	0.95	1.00			0.89		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1752	1643			1528		1736	1813		1504	1845	1549
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	352	36	93	18	29	38	82	438	9	16	278	277
RTOR Reduction (vph)	0	52	0	0	21	0	0	1	0	0	0	158
Lane Group Flow (vph)	352	77	0	0	64	0	82	446	0	16	278	119
Confl. Peds. (#/hr)	3		1	1		3						
Confl. Bikes (#/hr)	• • (	• • • •	1	• • • •	40/	1	10/	10/	1		• • •	1
Heavy Vehicles (%)	3%	0%	2%	6%	4%	0%	4%	4%	25%	20%	3%	2%
Turn Type	Prot	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases				8								6
Actuated Green, G (s)	25.9	39.8			7.9		11.2	29.1		2.3	20.2	20.2
Effective Green, g (s)	25.9	39.8			7.9		11.2	29.1		2.3	20.2	20.2
Actuated g/C Ratio	0.29	0.45			0.09		0.13	0.33		0.03	0.23	0.23
Clearance Time (s)	6.0	6.0			6.0		6.0	6.0		6.0	6.0	6.0
	3.0	3.0			2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vpn)	508	/33			135		217	591		38	417	350
V/S Ratio Prot	CU.2U	0.05			-0.04		CU.U5	CU.25		0.01	0.15	0.09
V/S Ratio Perm	0.60	0.11			CU.U4		0.20	0.76		0 40	0.67	0.08
V/C Rallo	0.09	0.11			0.47		0.00	0.70		0.4Z	0.07	0.04
Drinorm Delay, d I	20.1	14.4			30.7		30.0 1.00	20.9		42.0	31.4	20.9
Incremental Delay d2	1.00	0.1			1.00		0.4	1.00		2.7	1.00	0.2
Delay (s)	32.2	1/ /			39.6		36.2	4.9		15.5	34.5	20.2
Level of Service	52.2 C	R			00.0 D		00.2 D	01.7 C		ч <u></u> .5 П	04.0 C	23.1
Approach Delay (s)	U	27.4			39.6		D	32.4		D	32.2	U
Approach LOS		27.4 C			00.0 D			02.4 C			02.2 C	
Intersection Summary												
HCM 2000 Control Delay			31.3	Н	CM 2000	Level of S	Service		С			
HCM 2000 Volume to Capa	city ratio		0.70									
Actuated Cycle Length (s)			89.2	S	um of lost	time (s)			24.0			
Intersection Capacity Utiliza	tion		68.0%	IC	CU Level o	of Service			С			
Analysis Period (min)			15									
c Critical Lane Group												

Attachment C Traffic Volumes

Type of report: T	ube Count - \	Volume Da	ta							Page 1 of 1
LOCATION:	3rd Ave nor	rth of Hud	son St							QC JOB #: 14551906
SPECIFIC LC	OCATION:	3rd Ave n	orth of Hudsor	i St						DIRECTION: NB
CITY/STATE	: Longview,	WA				1			DATE	: Feb 07 2018 - Feb 07 2018
	Mon	Tue	Wed	Thu	Fri	Average Weekday	Sat	Sun	Average Week	Average Week Profile
Start Time			07-Feb-18			Hourly Traffic			Hourly Traffic	
12:00 AM			43			43			43	
1:00 AM			32			32			32	
2:00 AM			39			39			39	
3:00 AM			35			35			35	
4:00 AM			50			50			50	
5:00 AM			78			78			78	
6:00 AM			127			127			127	
7:00 AM			306			306			306	
8:00 AM			372			372			372	
9:00 AM			380			380			380	
10:00 AM			424			424			424	
11:00 AM			478			478			478	
12:00 PM			574			574			574	
1:00 PM			548			548			548	
2:00 PM			630			630			630	
3:00 PM			715			715	~ )		715	
4:00 PM			760			760			760	
5:00 PM			664			664			664	
6:00 PM			439			439			439	
7:00 PM			329			329			329	
8:00 PM			192			192			192	
9:00 PM			113			113			113	
10:00 PM			81			81			81	
11:00 PM			83			83			83	
Day Total			7492			7492			7492	
% Weekday										
Average			100.0%							
% Week										
Average			100.0%			100.0%				
AM Peak			11:00 AM			11:00 AM			11:00 AM	
Volume			478			478			478	
PM Peak			4:00 PM			4:00 PM			4:00 PM	
Volume			760			760			760	
Comments:										

Type of report: T	ube Count - V	Volume Da	ta							Page 1 of 1
LOCATION:	3rd Ave not	rth of Hud	son St							QC JOB #: 14551906
SPECIFIC LC	OCATION:	3rd Ave n	orth of Hudsor	n St						DIRECTION: SB
CITY/STATE	: Longview,	, WA				1			DATE	: Feb 07 2018 - Feb 07 2018
	Mon	Tue	Wed	Thu	Fri	Average Weekday	Sat	Sun	Average Week	Average Week Profile
Start Time			07-Feb-18			Hourly Traffic			Hourly Traffic	
12:00 AM			22			22			22	
1:00 AM			24			24			24	
2:00 AM			24			24			24	
3:00 AM			38			38			38	
4:00 AM			134			134			134	
5:00 AM			303			303			303	
6:00 AM			489			489			489	
7:00 AM			565			565			565	
8:00 AM			582			582			582	
9:00 AM			500			500			500	
10:00 AM			493			493			493	
11:00 AM			502			502			502	
12:00 PM			561			561			561	
1:00 PM			590			590			590	
2:00 PM			596			596			596	
3:00 PM			552			552	~ )		552	
4:00 PM			530			530			530	
5:00 PM			400			400			400	
6:00 PM			345			345			345	
7:00 PM			168			168			168	
8:00 PM			164			164			164	
9:00 PM			133			133			133	
10:00 PM			88			88			88	
11:00 PM			25			25			25	
Day Total			7828			7828			7828	
% Weekday										
Average			100.0%							
% Week										
Average			100.0%			100.0%				
AM Peak			8:00 AM			8:00 AM			8:00 AM	
Volume			582			582			582	
PM Peak			2:00 PM			2:00 PM			2:00 PM	
Volume			596			596			596	
Comments:										

Type of report: T	ube Count -	Volume Da	ta							Page 1 of 1
LOCATION:	3rd Ave no	rth of Hud	lson St							QC JOB #: 14551906
SPECIFIC LC	OCATION:	3rd Ave r	orth of Hudsor	i St						DIRECTION: NB/SB
CITY/STATE	: Longview	, WA				1			DATE	: Feb 07 2018 - Feb 07 2018
	Mon	Tue	Wed	Thu	Fri	Average Weekday	Sat	Sun	Average Week	Average Week Profile
Start Time			07-Feb-18			Hourly Traffic			Hourly Traffic	
12:00 AM			65			65			65	
1:00 AM			56			56			56	
2:00 AM			63			63			63	
3:00 AM			73			73			73	
4:00 AM			184			184			184	
5:00 AM			381			381			381	
6:00 AM			616			616			616	
7:00 AM			871			871			871	
8:00 AM			954			954			954	
9:00 AM			880			880			880	
10:00 AM			917			917			917	
11:00 AM			980			980			980	
12:00 PM			1135			1135			1135	
1:00 PM			1138			1138			1138	
2:00 PM			1226			1226			1226	
3:00 PM			1267			1267	~ 7		1267	
4:00 PM			1290			1290			1290	
5:00 PM			1064			1064			1064	
6:00 PM			784			784			784	
7:00 PM			497			497			497	
8:00 PM			356			356			356	
9:00 PM			246			246			246	
10:00 PM			169			169			169	
11:00 PM			108			108			108	
Day Total			15320			15320			15320	
% Weekday										
Average			100.0%							
% Week										
Average			100.0%			100.0%				
AM Peak			11:00 AM			11:00 AM			11:00 AM	
Volume			980			980			980	
PM Peak			4:00 PM			4:00 PM			4:00 PM	
Volume			1290			1290			1290	
Comments:										

Attachment D Travel Speeds

Type of report.	Tube Cou	int - Spee	d Data															Page 1 of 2
LOCATION:	3rd Ave	e north o	f Hudso	n St												Q	C JOB #: <sup>·</sup>	14551906
SPECIFIC L	OCATIO	N: 3rd	Ave nort	h of Huc	lson St											DI	<b>RECTION:</b>	NB
CITY/STATE	: Longv	view, WA	١													DA	ATE: Feb	07 2018
	1	16	21	26	31	36	41	46	51	56	61	66	71	76			Pace	Number
Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999		Total	Speed	in Pace
12:00 AM	0	0	1	8	24	8	2	0	0	0	0	0	0	0		43	26-35	32
1:00 AM	1	0	0	5	17	5	4	0	0	0	0	0	0	0		32	27-36	22
2:00 AM	0	0	0	9	25	5	0	0	0	0	0	0	0	0		39	26-35	34
3:00 AM	1	3	0	8	17	6	0	0	0	0	0	0	0	0		35	28-37	24
4:00 AM	0	0	3	15	17	14	1	0	0	0	0	0	0	0		50	30-39	31
5:00 AM	2	0	5	27	32	12	0	0	0	0	0	0	0	0		78	26-35	59
6:00 AM	7	0	8	38	54	18	2	0	0	0	0	0	0	0		127	26-35	92
7:00 AM	28	1	20	112	114	29	2	0	0	0	0	0	0	0		306	26-35	226
8:00 AM	26	5	30	165	131	15	0	0	0	0	0	0	0	0		372	26-35	296
9:00 AM	32	3	39	175	111	20	0	0	0	0	0	0	0	0		380	26-35	286
10:00 AM	38	7	49	212	105	12	1	0	0	0	0	0	0	0		424	26-35	317
11:00 AM	37	12	48	246	126	9	0	0	0	0	0	0	0	0		478	26-35	372
12:00 PM	39	10	102	264	143	15	0	0	0	0	0	0	0	1		574	26-35	407
1:00 PM	53	8	91	258	119	19	0	0	0	0	0	0	0	0		548	26-35	376
2:00 PM	49	13	148	294	117	8	1	0	0	0	0	0	0	0	1	630	21-30	441
3:00 PM	58	11	172	336	124	13	1	0	0	0	0	0	0	0	1	715	21-30	508
4:00 PM	64	4	171	394	114	13	0	0	0	0	0	0	0	0	-	760	21-30	565
5:00 PM	34	15	127	356	125	7	0	0	0	0	0	0	0	0		664	21-30	483
6:00 PM	16	2	78	234	96	12	1	0	0	0	0	0	0	0	110	439	26-35	330
7:00 PM	9	1	16	150	137	16	0	0	0	0	0	0	0	0		329	26-35	286
8:00 PM	1	1	10	98	70	10	1	1	0	0	0	0	0	0		192	26-35	168
9:00 PM	4	1	2	40	48	18	0	0	0	0	0	0	0	0		113	26-35	87
10:00 PM	0	0	2	29	40	8	2	0	0	0	0	0	0	0		81	26-35	69
11:00 PM	0	0	2	25	51	5	0	0	0	0	0	0	0	0		83	26-35	76
Day Total	499	97	1124	3498	1957	297	18	1	0	0	0	0	0	1		7492	26-35	5454
Percent	6.7%	1.3%	15.0%	46.7%	26.1%	4.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%				
ADT 7492								_		_		_	_	_				
AM Peak	10:00 AM	11:00 AM	10:00 AM	11:00 AM	8:00 AM	7:00 AM	1:00 AM									11:00 AM		
Volume	38	12	49	246	131	29	4									478		
PM Peak	4:00 PM	5:00 PM	3:00 PM	4:00 PM	12:00 PM	1:00 PM	10:00 PM	8:00 PM						12:00 PM		4:00 PM		
Volume	64	15	172	394	143	19	2	1						1		760		
Comments:																		

Type of report: T	Tube Cou	nt - Spee	d Data				SUM	MARY -	Tube C	ount - S	peed Da	ata						Page 2 of 2
LOCATION: SPECIFIC LO	3rd Ave	north o N: 3rd	f Hudso Ave nort	n St :h of Huc	lson St											Q D	C JOB #: RECTION:	14551906 NB
CITY/STATE	: Longv	iew, WA	١												DA	TE: Feb 0	<u>7 2018 - Fe</u>	<u>b 07 2018</u>
	1	16	21	26	31	36	41	46	51	56	61	66	71	76			Pace	Number
Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999		Total	Speed	in Pace
Grand Total	499	97	1124	3498	1957	297	18	1	0	0	0	0	0	1		7492	26-35	5454
Percent	6.7%	1.3%	15.0%	46.7%	26.1%	4.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%				
Cumulative Percent	6.7%	8.0%	23.0%	69.6%	95.8%	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%				
ADT 7492							_	_	_	_	_		_			۶ Mean S	35th Percent	ile 32 MPH ]e)∶27 MPH
Comments:																	Medi Mod	an 27 MPH le: 28 MPH



Type of report:	Tube Coι	unt - Spee	ed Data														Page 1 of 2
LOCATION:	3rd Av	e north o	of Hudso	n St											Q	C JOB #: <sup>·</sup>	14551906
SPECIFIC L	OCATIC	<b>N:</b> 3rd	Ave nort	th of Huo	dson St										D	<b>RECTION:</b>	SB
CITY/STATE	: Long	view, WA	١												D	ATE: Feb	07 2018
	1	16	21	26	31	36	41	46	51	56	61	66	71	76		Pace	Number
Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed	in Pace
12:00 AM	0	0	0	4	11	5	2	0	0	0	0	0	0	0	22	31-40	16
1:00 AM	0	0	1	1	11	10	1	0	0	0	0	0	0	0	24	31-40	21
2:00 AM	0	1	0	1	11	9	1	0	0	0	0	0	1	0	24	31-40	19
3:00 AM	0	0	0	3	15	16	3	1	0	0	0	0	0	0	38	31-40	31
4:00 AM	0	0	0	2	31	81	18	2	0	0	0	0	0	0	134	31-40	112
5:00 AM	4	0	3	33	114	126	22	1	0	0	0	0	0	0	303	31-40	239
6:00 AM	6	4	11	60	212	171	24	1	0	0	0	0	0	0	489	31-40	383
7:00 AM	31	1	11	102	277	128	15	0	0	0	0	0	0	0	565	31-40	405
8:00 AM	21	4	15	119	335	83	4	1	0	0	0	0	0	0	582	26-35	454
9:00 AM	23	3	26	106	255	82	5	0	0	0	0	0	0	0	500	26-35	361
10:00 AM	30	8	29	152	222	52	0	0	0	0	0	0	0	0	493	26-35	373
11:00 AM	43	6	43	153	203	48	5	1	0	0	0	0	0	0	502	26-35	356
12:00 PM	47	11	57	183	219	42	2	0	0	0	0	0	0	0	561	26-35	401
1:00 PM	51	9	50	224	222	31	3	0	0	0	0	0	0	0	590	26-35	445
2:00 PM	64	12	49	189	240	39	3	0	0	0	0	0	0	0	596	26-35	429
3:00 PM	70	5	34	157	233	50	3	0	0	0	0	0	0	0	552	26-35	390
4:00 PM	68	7	24	146	217	62	5	0	0	1	0	0	0	0	530	26-35	362
5:00 PM	41	2	28	113	164	48	4	0	0	0	0	0	0	0	400	26-35	277
6:00 PM	22	4	20	109	146	39	5	0	0	0	0	0	0	0	345	26-35	254
7:00 PM	5	1	4	21	97	37	2	1	0	0	0	0	0	0	168	31-40	134
8:00 PM	2	0	1	37	86	35	3	0	0	0	0	0	0	0	164	26-35	123
9:00 PM	1	1	3	22	64	37	5	0	0	0	0	0	0	0	133	31-40	101
10:00 PM	0	0	1	10	42	28	6	1	0	0	0	0	0	0	88	31-40	69
11:00 PM	0	0	1	2	11	10	1	0	0	0	0	0	0	0	25	31-40	21
Day Total	529	79	411	1949	3438	1269	142	9	0	1	0	0	1	0	7828	26-35	5387
Percent	6.8%	1.0%	5.3%	24.9%	43.9%	16.2%	1.8%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
ADT																	
7828																	
									_			_	_				
AM Peak	11:00 AM	10:00 AM	11:00 AM	11:00 AM	8:00 AM	6:00 AM	6:00 AM	4:00 AM					2:00 AM		8:00 AM		
Volume	43	8	43	153	335	171	24	2					1		582		
PM Peak	3:00 PM	2:00 PM	12:00 PM	1:00 PM	2:00 PM	4:00 PM	10:00 PM	7:00 PM		4:00 PM					2:00 PM		
Volume	70	12	57	224	240	62	6	1		1					596		
Comments:																	

Type of report: 7	Tube Cou	nt - Spee	ed Data				SUM	MARY -	Tube C	ount - S	peed Da	ata						Page 2 of 2
LOCATION: SPECIFIC LO	3rd Ave OCATIO : Longv	e north o N: 3rd iew, WA	f Hudso Ave nort	n St h of Huc	lson St										DA	Q D TE: Feb 0	C JOB #: 7 IRECTION: 07 2018 - Fe	14551906 SB eb 07 2018
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999		Total	Pace Speed	Number in Pace
Grand Total Percent	529 6.8%	79 1.0%	411 5.3%	1949 24.9%	3438 43.9%	1269 16.2%	142 1.8%	9 0.1%	0 0.0%	1 0.0%	0 0.0%	0 0.0%	1 0.0%	0 0.0%		7828	26-35	5387
Cumulative Percent	6.8%	7.8%	13.0%	37.9%	81.8%	98.0%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%				
ADT 7828								_	_	_	_		_			ہ Mean Sj	35th Percent	i <b>le</b> 35 MPH <b>]e)</b> ∶29 MPH
Comments:																	Medi Mod	an 31 MPH de: 33 MPH



Type of report:	Tube Cou	unt - Spee	ed Data															Page 1 of 2
LOCATION:	3rd Av	e north o	of Hudso	n St												Q	C JOB #: <sup>·</sup>	14551906
SPECIFIC L	OCATIC	<b>N:</b> 3rd	Ave nort	th of Hud	dson St											DI	<b>RECTION:</b>	NB/SB
<b>CITY/STATE</b>	: Long	view, WA	۱													D	ATE: Feb	07 2018
	1	16	21	26	31	36	41	46	51	56	61	66	71	76			Pace	Number
Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999		Total	Speed	in Pace
12:00 AM	0	0	1	12	35	13	4	0	0	0	0	0	0	0		65	31-40	47
1:00 AM	1	0	1	6	28	15	5	0	0	0	0	0	0	0		56	31-40	43
2:00 AM	0	1	0	10	36	14	1	0	0	0	0	0	1	0		63	31-40	49
3:00 AM	1	3	0	11	32	22	3	1	0	0	0	0	0	0		73	31-40	54
4:00 AM	0	0	3	17	48	95	19	2	0	0	0	0	0	0		184	31-40	143
5:00 AM	6	0	8	60	146	138	22	1	0	0	0	0	0	0		381	31-40	284
6:00 AM	13	4	19	98	266	189	26	1	0	0	0	0	0	0		616	31-40	454
7:00 AM	59	2	31	214	391	157	17	0	0	0	0	0	0	0		871	26-35	605
8:00 AM	47	9	45	284	466	98	4	1	0	0	0	0	0	0		954	26-35	750
9:00 AM	55	6	65	281	366	102	5	0	0	0	0	0	0	0		880	26-35	647
10:00 AM	68	15	78	364	327	64	1	0	0	0	0	0	0	0		917	26-35	691
11:00 AM	80	18	91	399	329	57	5	1	0	0	0	0	0	0		980	26-35	727
12:00 PM	86	21	159	447	362	57	2	0	0	0	0	0	0	1		1135	26-35	809
1:00 PM	104	17	141	482	341	50	3	0	0	0	0	0	0	0		1138	26-35	823
2:00 PM	113	25	197	483	357	47	4	0	0	0	0	0	0	0		1226	26-35	840
3:00 PM	128	16	206	493	357	63	4	0	0	0	0	0	0	0		1267	26-35	850
4:00 PM	132	11	195	540	331	75	5	0	0	1	0	0	0	0	1.0	1290	26-35	871
5:00 PM	75	17	155	469	289	55	4	0	0	0	0	0	0	0		1064	26-35	757
6:00 PM	38	6	98	343	242	51	6	0	0	0	0	0	0	0		784	26-35	585
7:00 PM	14	2	20	171	234	53	2	1	0	0	0	0	0	0		497	26-35	404
8:00 PM	3	1	11	135	156	45	4	1	0	0	0	0	0	0		356	26-35	291
9:00 PM	5	2	5	62	112	55	5	0	0	0	0	0	0	0		246	26-35	173
10:00 PM	0	0	3	39	82	36	8	1	0	0	0	0	0	0		169	26-35	121
11:00 PM	0	0	3	27	62	15	1	0	0	0	0	0	0	0		108	26-35	89
Day Total	1028	176	1535	5447	5395	1566	160	10	0	1	0	0	1	1		15320	26-35	10842
Percent	6.7%	1.1%	10.0%	35.6%	35.2%	10.2%	1.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%				
ADT 15320		_						_										
AM Peak	11:00 AM	11:00 AM	11:00 AM	11:00 AM	8:00 AM	6:00 AM	6:00 AM	4:00 AM					2:00 AM			11:00 AM		
Volume	80	18	91	399	466	189	26	2					1			980		
PM Peak	4:00 PM	2:00 PM	3:00 PM	4:00 PM	12:00 PM	4:00 PM	10:00 PM	7:00 PM		4:00 PM				12:00 PM		4:00 PM		
Volume	132	25	206	540	362	75	8	1		1				1		1290		
Comments:																		
L																		

Type of report: 7	Tube Cou	nt - Spee	ed Data				SUM	MARY -	Tube C	ount - S	peed Da	ata						Page 2 of 2
LOCATION: SPECIFIC LO	3rd Ave	north a N: 3rd	f Hudson Ave nort	n St h of Huc	lson St										D۵	Q Di TE: Eeb 0	C JOB #: 1 IRECTION: 17 2018 - Fe	14551906 NB/SB
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999		Total	Pace Speed	Number in Pace
Grand Total Percent	1028 6.7%	176 1.1%	1535 10.0%	5447 35.6%	5395 35.2%	1566 10.2%	160 1.0%	10 0.1%	0 0.0%	1 0.0%	0 0.0%	0 0.0%	1 0.0%	1 0.0%		15320	26-35	10842
Cumulative Percent	6.7%	7.9%	17.9%	53.4%	88.6%	98.9%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%				
ADT 15320								_		_		_	_	_		۶ Mean S	35th Percent peed(Averag	ile 34 MPH je)∶28 MPH
Comments:																	Medi Moc	an 29 MPH le: 28 MPH



Attachment E Vehicle Classifications

Type of report:	Tube Count	- Vehicle C	lassification	Data											Page 1 of 2
LOCATION:	3rd Ave r	orth of Hu	dson St										Q	C JOB #: 1	4551906
SPECIFIC L	OCATION	: 3rd Ave	north of H	udson St									D	<b>RECTION:</b>	NB
CITY/STATE	: Longvie	w, WA											D	ATE: Feb 0	7 2018
	Motor-	Cars &	2 Axle	Buses	2 Axle	3 Axle	4 Axle	<5 Axle	5 Axle	>6 Axle	<6 Axle	6 Axle	>6 Axle	Not	
Start Time	cycles	Trailer	Long		6 Tire	Single	Single	Double	Double	Double	Multi	Multi	Multi	Classified	Total
12:00 AM	0	30	9	0	4	0	0	0	0	0	0	0	0	0	43
1:00 AM	0	20	7	0	1	2	0	0	0	1	0	0	0	1	32
2:00 AM	0	26	7	0	6	0	0	0	0	0	0	0	0	0	39
3:00 AM	0	21	5	0	3	3	0	1	1	0	0	0	0	1	35
4:00 AM	6	23	13	0	6	1	0	0	1	0	0	0	0	0	50
5:00 AM	4	42	18	0	6	4	2	0	1	0	0	0	0	1	78
6:00 AM	6	68	31	0	10	4	0	0	0	0	0	0	1	7	127
7:00 AM	7	179	64	0	20	5	0	1	2	0	0	0	0	28	306
8:00 AM	8	211	79	0	42	1	1	3	1	0	0	0	0	26	372
9:00 AM	8	219	86	2	32	2	0	1	0	0	0	0	0	30	380
10:00 AM	5	246	95	2	27	5	1	1	2	1	0	0	1	38	424
11:00 AM	10	277	106	1	36	5	2	2	3	0	0	0	0	36	478
12:00 PM	14	357	122	0	38	2	0	2	0	0	0	0	0	39	574
1:00 PM	5	329	111	1	40	12	0	4	0	0	0	0	0	46	548
2:00 PM	13	379	132	1	46	6	2	3	0	0	0	0	0	48	630
3:00 PM	8	432	170	0	38	3	0	5	2	0	0	0	0	57	715
4:00 PM	7	481	146	2	55	3	0	4	0	0	0	0	0	62	760
5:00 PM	4	463	113	0	45	2	1	2	0	0	0	0	0	34	664
6:00 PM	6	292	93		24	2	0	2	3	0	0	0	0	16	439
7:00 PM	4	230	69	0	16	0	0	1	0	0	0	0	0	9	329
8:00 PM	2	143	40	0	7	0	0	0	0	0	0	0	0	0	192
9:00 PM	1	94	11	0	3	0	0	0	0	0	0	0	0	4	113
10:00 PM	0	58	19	0	3	0	0	1	0	0	0	0	0	0	81
11:00 PM	0	68	14	0	1	0	0	0	0	0	0	0	0	0	83
Day Total	118	4688	1560	10	509	62	9	33	16	2	0	0	2	483	7492
Percent	1.6%	62.6%	20.8%	0.1%	6.8%	0.8%	0.1%	0.4%	0.2%	0.0%	0.0%	0.0%	0.0%	6.4%	
ADT 7492														_	
AM Peak	11:00 AM	11:00 AM	11:00 AM	9:00 AM	8:00 AM	7:00 AM	5:00 AM	8:00 AM	11:00 AM	1:00 AM			6:00 AM	10:00 AM	11:00 AM
Volume	10	277	106	2	42	5	2	3	3	1			1	38	478
PM Peak	12:00 PM	4:00 PM	3:00 PM	4:00 PM	4:00 PM	1:00 PM	2:00 PM	3:00 PM	6:00 PM					4:00 PM	4:00 PM
Volume	14	481	170	2	55	12	2	5	3					62	760
Comments:															
L															

Type of report:	Fube Count	- Vehicle C	lassification	Data	SUMM	ARY - Tub	e Count -	Vehicle C	lassificat	ion Data					Page 2 of 2
LOCATION:	3rd Ave r	orth of Hu	dson St										Q	C JOB #: 1	4551906
SPECIFIC L	OCATION	: 3rd Ave	north of H	udson St									D	IRECTION:	NB
CITY/STATE	: Longvie	w, WA										DA	<b>TE:</b> Feb 0	<u>)7 2018 - Fe</u>	b 07 2018
	Motor-	Cars &	2 Axle	Buses	2 Axle	3 Axle	4 Axle	<5 Axle	5 Axle	>6 Axle	<6 Axle	6 Axle	>6 Axle	Not	
Start Time	cycles	Trailer	Long		6 Tire	Single	Single	Double	Double	Double	Multi	Multi	Multi	Classified	Total
Grand Total	118	4688	1560	10	509	62	9	33	16	2	0	0	2	483	7492
Percent	1.6%	62.6%	20.8%	0.1%	6.8%	0.8%	0.1%	0.4%	0.2%	0.0%	0.0%	0.0%	0.0%	6.4%	
ADT 7492				_			_	_	_	_					
Comments:															



Type of report:	Tube Count	- Vehicle C	lassification	Data											Page 1 of 2
LOCATION:	3rd Ave r	north of Hu	idson St										Q	C JOB #: 1	4551906
SPECIFIC L	OCATION	: 3rd Ave	north of H	udson St									DI	<b>RECTION:</b>	SB
CITY/STATE	: Longvie	w, WA											D	ATE: Feb 0	7 2018
	Motor-	Cars &	2 Axle	Buses	2 Axle	3 Axle	4 Axle	<5 Axle	5 Axle	>6 Axle	<6 Axle	6 Axle	>6 Axle	Not	
Start Time	cycles	Irailer	Long		6 lire	Single	Single	Double	Double	Double	Multi	Multi	Multi	Classified	Total
12:00 AM	0	14	4	0	3	0	0	1	0	0	0	0	0	0	22
1:00 AM	0	19	4	0	0	0	0	0	1	0	0	0	0	0	24
2:00 AM	0	17	3	0	4	0	0	0	0	0	0	0	0	0	24
3:00 AM	0	22	4	1	11	0	0	0	0	0	0	0	0	0	38
4:00 AM	0	64	34	0	32	2	0	0	2	0	0	0	0	0	134
5:00 AM	3	155	60	0	77	1	0	1	1	1	0	0	0	4	303
6:00 AM	3	228	137	1	108	2	0	1	1	2	0	0	1	5	489
7:00 AM	6	329	117	0	73	4	0	4	2	1	0	0	0	29	565
8:00 AM	2	344	134	1	76	2	0	1	1	0	0	0	0	21	582
9:00 AM	2	292	109	0	54	4	1	4	8	2	0	0	1	23	500
10:00 AM	3	274	116	2	52	8	0	3	3	1	0	0	1	30	493
11:00 AM	2	297	100	0	45	6	0	7	1	1	0	0	0	43	502
12:00 PM	2	322	130	1	52	7	0	5	3	1	0	0	1	37	561
1:00 PM	3	347	118	3	55	6	0	3	2	1	0	0	1	51	590
2:00 PM	6	353	117	2	49	2	0	4	0	0	0	0	ູ 1	62	596
3:00 PM	5	305	119	2	40	1	1	6	1	3	0	0	1	68	552
4:00 PM	9	306	98	0	43	5	0	3	0	0	0	0	0	66	530
5:00 PM	6	234	81	1	34	1	0	2	0	0	0	0	0	41	400
6:00 PM	2	205	89	0	25	0	0	2	0	0	0	0	0	22	345
7:00 PM	0	110	33	0	20	0	0	0	0	0	0	0	0	5	168
8:00 PM	0	114	42	0	6	0	0	0	0	0	0	0	0	2	164
9:00 PM	1	91	31	0	9	0	0	0	0	0	0	0	0	1	133
10:00 PM	0	63	18	0	6	0	0	0	1	0	0	0	0	0	88
11:00 PM	0	19	3	1	1	0	0	0	1	0	0	0	0	0	25
Day Total	55	4524	1701	15	875	51	2	47	28	13	0	0	7	510	7828
Percent	0.7%	57.8%	21.7%	0.2%	11.2%	0.7%	0.0%	0.6%	0.4%	0.2%	0.0%	0.0%	0.1%	6.5%	
ADT 7828														_	
AM Peak	7:00 AM	8:00 AM	6:00 AM	10:00 AM	6:00 AM	10:00 AM	9:00 AM	11:00 AM	9:00 AM	6:00 AM			6:00 AM	11:00 AM	8:00 AM
Volume	6	344	137	2	108	8	1	7	8	2			1	43	582
PM Peak	4:00 PM	2:00 PM	12:00 PM	1:00 PM	1:00 PM	12:00 PM	3:00 PM	3:00 PM	12:00 PM	3:00 PM			12:00 PM	3:00 PM	2:00 PM
Volume	9	353	130	3	55	7	1	6	3	3			1	68	596
Comments:															
L															

Type of report:	Tube Count	- Vehicle C	lassification	Data	SUMM	ARY - Tub	e Count -	Vehicle C	lassificat	ion Data					Page 2 of 2
LOCATION:	3rd Ave r	orth of Hu	dson St										Q	C JOB #: 1	4551906
SPECIFIC L	OCATION	: 3rd Ave	north of H	udson St									D	<b>RECTION:</b>	SB
CITY/STATE	: Longvie	w, WA										DA	TE: Feb 0	<u>7 2018 - Fe</u>	b 07 2018
	Motor-	Cars &	2 Axle	Buses	2 Axle	3 Axle	4 Axle	<5 Axle	5 Axle	>6 Axle	<6 Axle	6 Axle	>6 Axle	Not	
Start Time	cycles	Trailer	Long		6 Tire	Single	Single	Double	Double	Double	Multi	Multi	Multi	Classified	Total
Grand Total	55	4524	1701	15	875	51	2	47	28	13	0	0	7	510	7828
Percent	0.7%	57.8%	21.7%	0.2%	11.2%	0.7%	0.0%	0.6%	0.4%	0.2%	0.0%	0.0%	0.1%	6.5%	
ADT 7828				_				_	_	_			_		
Comments:															



Type of report:	Tube Count	- Vehicle C	lassification	Data											Page 1 of 2
LOCATION:	3rd Ave r	north of Hu	dson St										Q	C JOB #: 1	4551906
SPECIFIC L	OCATION	: 3rd Ave	north of H	udson St									D	<b>RECTION:</b>	NB/SB
CITY/STATE	: Longvie	w, WA											D	ATE: Feb 0	7 2018
	Motor-	Cars &	2 Axle	Buses	2 Axle	3 Axle	4 Axle	<5 Axle	5 Axle	>6 Axle	<6 Axle	6 Axle	>6 Axle	Not	
Start Time	cycles	Trailer	Long		6 Tire	Single	Single	Double	Double	Double	Multi	Multi	Multi	Classified	Total
12:00 AM	0	44	13	0	7	0	0	1	0	0	0	0	0	0	65
1:00 AM	0	39	11	0	1	2	0	0	1	1	0	0	0	1	56
2:00 AM	0	43	10	0	10	0	0	0	0	0	0	0	0	0	63
3:00 AM	0	43	9	1	14	3	0	1	1	0	0	0	0	1	73
4:00 AM	6	87	47	0	38	3	0	0	3	0	0	0	0	0	184
5:00 AM	7	197	78	0	83	5	2	1	2	1	0	0	0	5	381
6:00 AM	9	296	168	1	118	6	0	1	1	2	0	0	2	12	616
7:00 AM	13	508	181	0	93	9	0	5	4	1	0	0	0	57	871
8:00 AM	10	555	213	1	118	3	1	4	2	0	0	0	0	47	954
9:00 AM	10	511	195	2	86	6	1	5	8	2	0	0	1	53	880
10:00 AM	8	520	211	4	79	13	1	4	5	2	0	0	2	68	917
11:00 AM	12	574	206	1	81	11	2	9	4	1	0	0	0	79	980
12:00 PM	16	679	252	1	90	9	0	7	3	1	0	0	1	76	1135
1:00 PM	8	676	229	4	95	18	0	7	2	1	0	0	1	97	1138
2:00 PM	19	732	249	3	95	8	2	7	0	0	0	0	1	110	1226
3:00 PM	13	737	289	2	78	4	1	11	3	3	0	0	1	125	1267
4:00 PM	16	787	244	2	98	8	0	7	0	0	0	0	0	128	1290
5:00 PM	10	697	194	1	79	3	1	4	0	0	0	0	0	75	1064
6:00 PM	8	497	182	1	49	2	0	4	3	0	0	0	0	38	784
7:00 PM	4	340	102	0	36	0	0	1	0	0	0	0	0	14	497
8:00 PM	2	257	82	0	13	0	0	0	0	0	0	0	0	2	356
9:00 PM	2	185	42	0	12	0	0	0	0	0	0	0	0	5	246
10:00 PM	0	121	37	0	9	0	0	1	1	0	0	0	0	0	169
11:00 PM	0	87	17	1	2	0	0	0	1	0	0	0	0	0	108
Day Total	173	9212	3261	25	1384	113	11	80	44	15	0	0	9	993	15320
Percent	1.1%	60.1%	21.3%	0.2%	9.0%	0.7%	0.1%	0.5%	0.3%	0.1%	0.0%	0.0%	0.1%	6.5%	
ADT 15320														_	
AM Peak Volume	7:00 AM 13	11:00 AM 574	8:00 AM 213	10:00 AM 4	6:00 AM 118	10:00 AM 13	5:00 AM 2	11:00 AM 9	9:00 AM 8	6:00 AM 2			6:00 AM 2	11:00 AM 79	11:00 AM 980
PM Peak	2:00 PM	4:00 PM	3:00 PM	1:00 PM	4:00 PM	1:00 PM	2:00 PM	3:00 PM	12:00 PM	3:00 PM			12:00 PM	4:00 PM	4:00 PM
Volume	19	787	289	4	98	18	2	11	3	3			1	128	1290
Comments:															

Type of report:	Fube Count	- Vehicle C	lassification	Data	SUMM	ARY - Tub	e Count -	Vehicle C	lassificat	ion Data					Page 2 of 2
LOCATION:	3rd Ave n	orth of Hu	dson St										Q	C JOB #: 1	4551906
SPECIFIC L	OCATION	: 3rd Ave	north of H	udson St									D	<b>IRECTION:</b>	NB/SB
CITY/STATE	: Longvie	w, WA										DA	TE: Feb 0	<u>17 2018 - Fe</u>	b 07 2018
	Motor-	Cars &	2 Axle	Buses	2 Axle	3 Axle	4 Axle	<5 Axle	5 Axle	>6 Axle	<6 Axle	6 Axle	>6 Axle	Not	I
Start Time	cycles	Trailer	Long		6 Tire	Single	Single	Double	Double	Double	Multi	Multi	Multi	Classified	Total
Grand Total	173	9212	3261	25	1384	113	11	80	44	15	0	0	9	993	15320
Percent	1.1%	60.1%	21.3%	0.2%	9.0%	0.7%	0.1%	0.5%	0.3%	0.1%	0.0%	0.0%	0.1%	6.5%	I
ADT 15320								_	_	_					
Comments:															



Attachment F Pedestrian Volumes



## Location: 3rd Ave & Hudson Jaywalkers Date: 2/7/2018 Order Number: 145519

	Jaywalkers
Time:	
7:00 AM	0
7:05 AM	0
7:10 AM	0
7:15 AM	0
7:20 AM	1
7:25 AM	0
7:30 AM	0
7:35 AM	0
7:40 AM	0
7:45 AM	0
7:50 AM	0
7:55 AM	0
8:00 AM	0
8:05 AM	0
8:10 AM	0
8:15 AM	0
8:20 AM	0
8:25 AM	0
8:30 AM	2
8:35 AM	0
8:40 AM	0
8:45 AM	0
8:50 AM	0
8:55 AM	0
9:00 AM	0
9:05 AM	0
9:10 AM	0
9:15 AM	0
9:20 AM	1
9:25 AM	2
9:30 AM	1
9:35 AM	0
9:40 AM	0
9:45 AM	0
9:50 AM	0
9:55 AM	0
10:00 AM	0
10:05 AM	0
10:10 AM	0
10:15 AM	0
10:20 AM	0
10:25 AM	1
10:30 AM	0
10:35 AM	4

10:40 AM	0
10:45 AM	0
10:50 AM	0
10:55 AM	0
11:00 AM	0
11:05 AM	0
11:10 AM	0
11:15 AM	0
11:20 AM	0
11:25 AM	0
11:30 AM	0
11:35 AM	0
11:40 AM	0
11:45 AM	0
11:50 AM	0
11:55 AM	0
12:00 PM	0
12:05 PM	0
12:10 PM	0
12:15 PM	0
12:20 PM	0
12:25 PM	1
12:30 PM	0
12:35 PM	0
12:40 PM	0
12:45 PM	0
12:50 PM	0
12:55 PM	0
1:00 PM	0
1:05 PM	0
1:10 PM	4
1:15 PM	0
1:20 PM	2
1:25 PM	2
1:30 PM	0
1:35 PM	0
1:40 PM	0
1:45 PM	0
1:50 PM	0
1:55 PM	6
2:00 PM	0
2:05 PM	0
2:10 PM	0
2:15 PM	0
2:20 PM	0
2:25 PM	2
2:30 PM	2
2:35 PM	0
2:40 PM	0
2:45 PM	0
2:50 PM	0
2:55 PM	0
3:00 PM	0
3:05 PM	0
3:10 PM	2
3:15 PM	2
3:20 PM	0
3:25 PM	0
	5

3:30 PM	0
3:35 PM	0
3:40 PM	0
3:45 PM	0
3:50 PM	0
3:55 PM	0
4:00 PM	0
4:05 PM	0
4:10 PM	0
4:15 PM	0
4:20 PM	0
4:25 PM	0
4:30 PM	1
4:35 PM	1
4:40 PM	0
4:45 PM	0
4:50 PM	0
4:55 PM	0
5:00 PM	0
5:05 PM	0
5:10 PM	0
5:15 PM	0
5:20 PM	0
5:25 PM	0
5:30 PM	0
5:35 PM	2
5:40 PM	0
5:45 PM	0
5:50 PM	1
5:55 PM	0
6:00 PM	1
6:05 PM	0
6:10 PM	0
6:15 PM	0
6:20 PM	0
6:25 PM	1
6:30 PM	0
6:35 PM	0
6:40 PM	0
6:45 PM	0
6:50 PM	0
6:55 PM	0
Total:	42

Attachment G NCHRP 562 Worksheets: Existing Conditions

This spreadsheet combines Worksheet 1 and Worksheet 2 (Appendix A, pages 69-70) of TCRP Report 112/NCHRP Report 562 (*Improving Pedestrian Safety at Unsignalized Intersections*) into an electronic format. This spreadsheet should be used in conjunction with, and not independent of. Appendix A documentation. This spreadsheet is still under development, please inform TTI if errors are identified. Blue fields contain descriptive information.

Key

Green fields are required and must be completed.

Tan fields are adjustments that are filled out only under certain conditions (follow instructions to the left of the cell).

Gray fields are				•				
nalyst and Site Infor	mation							
Analyst K	IAI			Major Street 3rd	Avenue			
Analysis Date	/arch 16, 2018		Minor Street or Location N/A					
Data Collection Date	ebruary 7, 2018			Peak Hour 7:45	5 AM (Veh Peak)			
tep 1: Select worksh	neet:							
Posted or statutory speed li	mit (or 85th percentile	speed) on the n	najor street (	(mph)		1a	35	
Is the population of the sur	rounding area <10,000	)? (enter <b>YES</b> or	r <b>NO</b> )			1b	NO	
tep 2: Does the cros	sing meet minim	num pedestr	ian volur	nes to be consi	dered for a traffic	control devic	æ?	
Peak-hour pedestrian volum	ne (ped/h), V <sub>p</sub>					2a	2	
Result: Consider rais	sed median islands,	curb extensio	ns, traffic c	alming, etc. as fea	sible.			
tep 3: Does the cros	sing meet the pe	edestrian wa	arrant for	a traffic signal	?			
Major road volume, total of	both approaches durin	ng peak hour (ve	h/h), V <sub>maj-s</sub>			За	989	
[Calculated automatically] P	Preliminary (before min	. threshold) pea	k hour pedes	strian volume to mee	et warrant	3b	276	
[Calculated automatically] N	Ainimum required peak	hour pedestriar	n volume to i	meet traffic signal wa	arrant	Зс	276	
Is 15th percentile crossing s	speed of pedestrians le	ess than 3.5 ft/s	(1.1 m/s)? (	(enter YES or NO)		3d	Yes	
If 15th percentile crossing s	speed of pedestrians is	less than 3.5 ft/	S	% rate of reduction	on for <i>3c</i> (up to 50%)	Зе	50%	
(1.1 m/s), then reduce $3c$	by up to 50%.			Reduced value or	- <i>3c</i>	3f	138	
Result:	, ,							
tep 4: Estimate pede	estrian delay.							
Pedestrian crossing distance	e, curb to curb (ft), L					4a	50	
Pedestrian walking speed (f	t/s), S <sub>p</sub> (suggested sp	eed = 3.5 ft/s)				4b	3.5	
Pedestrian start-up time and	d end clearance time (s	s), t <sub>s</sub> (suggeste	d start-up tir	ne = 3 sec)		4c	3	
[Calculated automatically] (	Critical gap required for	crossing pedest	rian (s), t <sub>c</sub>			4d	17	
Major road volume, total bo	th approaches OR app	roach being cros	ssed if raised	l median island		40	080	
is present, during peak ho	our (veh/h), V <sub>maj-d</sub>					ic .	505	
Major road flow rate (veh/s	), v					4f	0.27	
Average pedestrian delay (s	s/person), d <sub>p</sub>					4g	373	
Total pedestrian delay (h), I	D <sub>p</sub> The value in 4h i	s the calculated	estimated de	elay for all pedestriar	ns crossing the	4h	0.2	
has been measured at the	crossing treatment (as e site, that value can b	sumes 0% com e entered in 4i t	o replace the	e actual total pedes calculated value in	4h.	<i>4i</i>		
tep 5: Select treatm	ent based up on	total pedes	trian dela	v and expected	d motorist compli	ance.		
Expected motorist complian	ce at pedestrian crossi	nas in region: er	nter <b>HIGH f</b>	for High Compliand	ce or LOW for Low	_		
Compliance		5		5		5a	Low	
Treatment	Category	Conside	r raised n	nedian islands,	curb extensions,	traffic calmin	g, etc. a	
neatment	category.				feasible.			
700								
600 - 500 - 400 - 300 - 200 - 100 -								
0	300	600	900	1200	1500	1800	21(	

This spreadsheet combines Worksheet 1 and Worksheet 2 (Appendix A, pages 69-70) of TCRP Report 112/NCHRP Report 562 (*Improving Pedestrian Safety at Unsignalized Intersections*) into an electronic format. This spreadsheet should be used in conjunction with, and not independent of. Appendix A documentation. This spreadsheet is still under development, please inform TTI if errors are identified. Blue fields contain descriptive information.

Key

Green fields are required and must be completed.

Tan fields are adjustments that are filled out only under certain conditions (follow instructions to the left of the cell).

nalyst and Site In	formation							
Apply	ct KAI		N	aior Street 3rd A	venue			
Analysis Dat	te March 16, 2019		Minor Street or Leastion N/A					
Alidiysis Da	te February 7, 2010		MINOI SUPEL	Deals Llaure 0.20	AM (Ded Deels)			
ten 1: Select wor				Peak nour [6.50	AM (PEU PEak)			
Postod or statutory spo	nod limit (or 95th porconti	la speed) on the m	agior street (mp	b)		12	25	
Posteu or statutory spe				1)		1d	35	
to a 2. Doos the	e surrounding area <10,0	our (enter <b>res</b> or	NO)	to he concid	ared for a traffic			
Deek heur nedestrien u		mum pedestri	lan volumes	to be consid	ered for a traffic			
Peak-nour pedestrian v	raised median island	curb oxtoncion	c traffic calm	ing oto ac foad	iblo	28	2	
result: Consider	rossing most the	odostrian wa	rrant for a	traffic signal	ibie.			
Major road volume tot	al of both approaches du	ring pook hour (vol		and signal:		22	012	
Calculated automatical		ing peak nour (ver	/////// wmaj-s			34 25	211	
	IIY] Preliminary (before m	in. threshold) peak	t nour pedestria	n volume to meet	warrant	3D	311	
Calculated automatical	Ily] Minimum required pe	ak hour pedestrian	volume to mee	t traffic signal war	rant	3C	311	
Is 15th percentile cross	sing speed of pedestrians	less than 3.5 ft/s (	1.1 m/s)? (ent	er <b>YES</b> or <b>NO</b> )		3d	Yes	
If 15th percentile cross	ing speed of pedestrians	is less than 3.5 ft/s	5	% rate of reduction	n for <i>3c</i> (up to 50%)	Зе	50%	
(1.1 m/s), then reduce	e <i>3c</i> by up to 50%.		F	Reduced value or .	Зс	3f	155	
Result:								
ep 4: Estimate p	edestrian delay.							
Pedestrian crossing dis	tance, curb to curb (ft), L					<i>4a</i>	50	
Pedestrian walking spe	ed (ft/s), S <sub>p</sub> (suggested	speed = 3.5 ft/s)				4b	3.5	
Pedestrian start-up time	e and end clearance time	(s), t <sub>s</sub> (suggested	I start-up time =	= 3 sec)		4c	3	
[Calculated automatical	lly] Critical gap required f	or crossing pedest	rian (s), t <sub>c</sub>			4d	17	
Major road volume, tot	al both approaches OR a	oproach being cros	sed if raised me	dian island		<i>4e</i>	913	
is present, during pea	ak nour (ven/n), v <sub>maj-d</sub>							
Major road flow rate (v	eh/s), v					4f	0.25	
Average pedestrian del	ay (s/person), d <sub>p</sub>					4g	280	
Total pedestrian delay	(h), D <sub>p</sub> The value in 4	n is the calculated o	estimated delay	for all pedestrians	crossing the	4h	0.4	
major roadway witho	out a crossing treatment (	assumes 0% comp	liance). If the a	ctual total pedestr	ian delay	<i>4i</i>		
en 5. Select trea	atment based up o	n total nedest	rian delay :	and expected	motorist compli	iance		
Expected motorist com	pliance at pedestrian cros	sinas in region. en	ter HIGH for	High Compliance	or IOW for Low			
Compliance	plance at peacothan cro.	sings in region. en		ngn compnance		5a	Low	
Tuesta	ant Cotomora	Consider	raised med	lian islands, c	curb extensions,	traffic calm	ing, etc.	
Ireatme	ent Category:			fe	easible.		<b>.</b> .	
700								
600 -								
Ê								
ତି 400 -								
ă 📃								
<del>7</del> 300								
a succession and a succ								
ž								
- 200 -								
100 -								
0								
1	300	600	900	1200	1500	1800	21	
		Majo	r Road Vo	ume (veh/h)	)			
	■No Treatment			/Enhanced	■Red ■Signa	I (proposed)	)	

This spreadsheet combines Worksheet 1 and Worksheet 2 (Appendix A, pages 69-70) of TCRP Report 112/NCHRP Report 562 (*Improving Pedestrian Safety at Unsignalized Intersections*) into an electronic format. This spreadsheet should be used in conjunction with, and not independent of. Appendix A documentation. This spreadsheet is still under development, please inform TTI if errors are identified. Blue fields contain descriptive information.

Key

Green fields are required and must be completed.

Tan fields are adjustments that are filled out only under certain conditions (follow instructions to the left of the cell).

nalyst and Site	Information			· · ·			
Ar	nalyst KAI			Major Street 3rd	Avenue		
Analysis	Date March 16, 2018		Minor Str	reet or Location N/A			
Data Collection	Date February 7, 2018			Peak Hour 12:	45 PM (Veh Peak)		
ep 1: Select v	vorksheet:						
Posted or statutory	speed limit (or 85th per	centile speed) on the	e major street	(mph)		1a	35
Is the population of	the surrounding area <	10,000? (enter YES	or <b>NO</b> )			1b	NO
ep 2: Does th	e crossing meet n	ninimum pedes	trian volu	mes to be consi	dered for a traffic	c control de	vice?
Peak-hour pedestria	n volume (ped/h), V <sub>p</sub>					2a	8
Result: Consi	der raised median isla	ands, curb extensi	ons, traffic o	calming, etc. as fea	sible.		
ep 3: Does th	e crossing meet t	he pedestrian v	varrant fo	r a traffic signa	?		
Major road volume,	total of both approache	s during peak hour (	veh/h), V <sub>maj-s</sub>			За	1177
[Calculated automa	tically] Preliminary (befo	re min. threshold) pe	eak hour pede	strian volume to me	et warrant	3b	204
- [Calculated automa	tically] Minimum require	d peak hour pedestri	an volume to	meet traffic signal w	arrant	Зс	204
- Is 15th percentile c	rossing speed of pedestr	ians less than 3.5 ft/	's (1.1 m/s)?	(enter YES or NO)		3d	Yes
If 15th percentile c	ossing speed of pedestr	ians is less than 3.5 f	ft/s	% rate of reduct	on for <i>3c</i> (up to 50%)	Зе	50%
(1.1 m/s), then rec	luce <i>3c</i> by up to 50%.			Reduced value o	· 3c	3f	102
Result:	<i>,</i> ,					• •	
ep 4: Estimat	e pedestrian dela	۷.					
Pedestrian crossing	distance, curb to curb (	ft), L				<i>4a</i>	50
Pedestrian walking	speed (ft/s), S <sub>p</sub> (sugges	ted speed = 3.5 ft/s	)			4b	3.5
Pedestrian start-up	time and end clearance	time (s), t (suggest	, ted start-up ti	me = 3 sec)		4c	3
Calculated automa	tically] Critical gap requi	red for crossing pede	estrian (s), t	,		4d	17
[Calculated automatically] Critical gap required for crossing pedestrian (s), t <sub>c</sub>							1177
Major road volume,	total both approaches c	ik approach being ci	d median island		40		
is present, during	peak hour (veh/h), V <sub>maj-</sub>			a median Island		<i>4e</i>	11//
Major road volume, is present, during Major road flow rate	peak hour (veh/h), V <sub>maj</sub>		USSEU II TAISE	a median island		4e 4f	0.33
Major road volume, is present, during Major road flow rate Average pedestrian	e (veh/s), v delay (s/person), d <sub>p</sub>			d median island		4e 4f 4g	0.33
Major road volume, is present, during Major road flow rat Average pedestrian Total pedestrian de	total both approaches $v_{c}$ peak hour (veh/h), $V_{maj}$ e (veh/s), $v$ delay (s/person), $d_p$ ay (h), $D_p$ The value	in 4h is the calculate	ed estimated d	lelay for all pedestria	ns crossing the	4e 4f 4g 4h	0.33 889 2.0
Major road volume, is present, during Major road flow rat Average pedestrian Total pedestrian de major roadway w has been measur	total both approaches c peak hour (veh/h), V <sub>maj-</sub> e (veh/s), v delay (s/person), d <sub>p</sub> ay (h), D <sub>p</sub> The value ithout a crossing treatmi et at the site that value	in 4h is the calculate	ed estimated d mpliance). If t	lelay for all pedestria the actual total pede e calculated value in	ns crossing the strian delay 4h	4e 4f 4g 4h 4h 4i	0.33 889 2.0
Major road volume, is present, during Major road flow rat Average pedestrian Total pedestrian de major roadway w has been measur	peak hour (veh/h), $V_{maj-}$ (veh/s), $vdelay (s/person), d_pay (h), D_p The valueithout a crossing treatmu-ed at the site, that value$	in 4h is the calculate ent (assumes 0% col can be entered in 4 <b>n</b> on total pede	ed estimated d mpliance). If t i to replace th	lelay for all pedestria the actual total pede e calculated value in	ns crossing the strian delay 4h.	4e 4f 4g 4h 4i	0.33 889 2.0
Major road volume, is present, during Major road flow rat Average pedestrian de major roadway w has been measur <b>:ep 5: Select t</b> Exoected motorist c	peak hour (veh/h), $V_{maj-}$ $\underline{e}$ (veh/s), v delay (s/person), d <sub>p</sub> ay (h), D <sub>p</sub> The value ithout a crossing treatmu- reatment based u ompliance at pedestrian	in 4h is the calculate ent (assumes 0% cor- can be entered in 4i <b>p on total pede</b> crossings in region:	ed estimated d mpliance). If t is to replace th estrian delia enter <i>HIGH</i>	lelay for all pedestria the actual total pede e calculated value in <b>ay and expecte</b> for Hiah Complian	ns crossing the strian delay 4h. <b>d motorist compli</b> <b>de or <i>LOW for Low</i></b>	4e 4f 4g 4h 4i ance.	0.33 889 2.0
Major road volume, is present, during Major road flow rat Average pedestrian de major roadway w has been measur <b>:ep 5: Select t</b> Expected motorist of <i>Compliance</i>	total both approaches c peak hour (veh/h), $V_{maj}$ - e (veh/s), v delay (s/person), d <sub>p</sub> ay (h), D <sub>p</sub> The value ithout a crossing treatment at the site, that value reatment based u ompliance at pedestrian	in 4h is the calculate ent (assumes 0% core can be entered in 4 <b>p on total pede</b> crossings in region:	ed estimated d mpliance). If t i to replace th estrian dela enter <i>HIGH</i> i	lelay for all pedestria the actual total pede e calculated value in <b>ay and expecte</b> for High Complian	ns crossing the trian delay 4h. <b>d motorist compli</b> ce or <i>LOW for Low</i>	4e 4f 4g 4h 4i ance. 5a	0.33 889 2.0
Major road volume, is present, during Major road flow rat Average pedestrian de major roadway w has been measur rep 5: Select t Expected motorist of Compliance	e (veh/s), v delay (s/person), d <sub>p</sub> ay (h), D <sub>p</sub> The value ithout a crossing treatme ed at the site, that value <b>reatment based u</b> ompliance at pedestrian	in 4h is the calculate ent (assumes 0% cor can be entered in 4 <b>p on total pede</b> crossings in region: <b>Consid</b>	ed estimated d mpliance). If t i to replace th estrian dela enter <i>HIGH</i> : er raised r	lelay for all pedestria the actual total pede e calculated value in <b>ay and expecte</b> for High Complian <b>nedian islands</b> ,	ns crossing the trian delay 4h. <b>d motorist compli</b> ce or <i>LOW for Low</i> <b>curb extensions,</b>	4e 4f 4g 4h 4i iance. 5a traffic caln	0.33 889 2.0 Low
Major road volume, is present, during Major road flow rat Average pedestrian de major roadway w has been measur tep 5: Select t Expected motorist of <i>Compliance</i> Treat	total both approaches c peak hour (veh/h), $V_{maj}$ - e (veh/s), v delay (s/person), d <sub>p</sub> ay (h), D <sub>p</sub> The value ithout a crossing treatment ed at the site, that value reatment based u ompliance at pedestrian ment Category:	in 4h is the calculate ent (assumes 0% cor can be entered in 4 <b>p on total pede</b> crossings in region: <b>Consid</b>	ed estimated d mpliance). If t i to replace th estrian dela enter <i>HIGH</i> i er raised r	lelay for all pedestria the actual total pede e calculated value in ay and expecte for High Complian median islands,	ns crossing the strian delay 4h. <b>d motorist compli</b> ce or <i>LOW for Low</i> <b>curb extensions,</b> feasible.	4e 4f 4g 4h 4i ance. 5a traffic caln	0.33 889 2.0 Low
Major road volume, is present, during Major road flow rat Average pedestrian Total pedestrian de major roadway w has been measur <b>:ep 5: Select t</b> Expected motorist of <i>Compliance</i> Treat	e (veh/s), v delay (s/person), d <sub>p</sub> ay (h), D <sub>p</sub> The value ithout a crossing treatment ed at the site, that value reatment based u ompliance at pedestrian ment Category:	in 4h is the calculate ent (assumes 0% cor can be entered in 4 <b>p on total pede</b> crossings in region: <b>Consid</b>	ed estimated d mpliance). If t i to replace th estrian dela enter <i>HIGH</i>	lelay for all pedestria the actual total pede e calculated value in ay and expecte for High Complian median islands,	ns crossing the strian delay 4h. d motorist compli ce or <i>LOW for Low</i> curb extensions, feasible.	4e 4f 4g 4h 4i ance. 5a traffic calm	0.33 889 2.0 Low
Major road volume, is present, during Major road flow rat Average pedestrian Total pedestrian de major roadway w has been measur <b>:ep 5: Select t</b> Expected motorist of <i>Compliance</i> Treat	total both approaches c peak hour (veh/h), $V_{maj}$ - delay (s/person), $d_p$ ay (h), $D_p$ The value ithout a crossing treatment at the site, that value reatment based u ompliance at pedestrian ment Category:	in 4h is the calculate ent (assumes 0% con can be entered in 4 <b>p on total pede</b> crossings in region: <b>Consid</b>	ed estimated d mpliance). If t i to replace th estrian dela enter <i>HIGH</i> er raised r	lelay for all pedestria the actual total pede e calculated value in <b>ay and expecte</b> for High Complian <b>median islands</b> ,	ns crossing the strian delay 4h. d motorist compli ce or <i>LOW for Low</i> curb extensions, feasible.	4e 4f 4g 4h 4i ance. 5a traffic caln	0.33 889 2.0 Low
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This spreadsheet combines Worksheet 1 and Worksheet 2 (Appendix A, pages 69-70) of TCRP Report 112/NCHRP Report 562 (*Improving Pedestrian Safety at Unsignalized Intersections*) into an electronic format. This spreadsheet should be used in conjunction with, and not independent of. Appendix A documentation.
This spreadsheet is still under development, please inform TTI if errors are identified.
Blue fields contain descriptive information.

Key

Green fields are required and must be completed.

Tan fields are adjustments that are filled out only under certain conditions (follow instructions to the left of the cell).

		Gray fields	are automatically	calculated and should	not be edited.					
Ana	lyst ar	nd Site Inf	ormation							
		Analyst	KAI			Maior Street	3rd Avenue			
		Analysis Date	March 16, 2018		Minor Stree	et or Location	N/A			
	Data C	ollection Date	February 7, 2018	2		Peak Hour	1.00 PM (Ped P	eak)		
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Tot	the nem	lation of the c	surrounding area a	10 0002 (optor VES of		ipir)			16	
Stor				ninimum nodost	rian volum	os to bo co	ncidorod fo	r a traffic	control day	
Dog		podostrian vol		inininani pedest			nisidered to	ratianic	22	14
rea	Rocult	Consider r	aised median is	ands curb extensio	ns traffic ca	ming etc a	s feasible		28	14
Stor		oes the cr	ossing meet t	he pedestrian w	arrant for	a traffic si	anal2			
Ma	ior road	volumo total	of both approach	ane pedestrian w			gilal:		22	1120
		volume, total		es uuring peak nour (v	eli/li), v <sub>maj-s</sub>	uian ualumaa ta	meast warmant		36 36	210
[Ca	alculated	automatically	Preliminary (ber	pre min. threshold) pea	ak nour pedest	rian volume to	meet warrant		<u>3D</u>	218
[Ca	alculated	automatically	Minimum require	ed peak nour pedestria	n volume to m	eet traffic sigr	al warrant		30	218
IS I	15th per	centile crossin	g speed of pedest	rians less than 3.5 ft/s	(1.1 m/s)? (e	nter YES or I	<b>VO</b> )		30	Yes
If 1	15th per	centile crossin	g speed of pedest	rians is less than 3.5 ft	/s	% rate of re	duction for <i>3c</i> (u	up to 50%)	Зе	50%
(1.	.1 m/s),	then reduce .	<i>sc</i> by up to 50%.			Reduced val	ue or <i>3c</i>		<i>3f</i>	109
Cha	Result	: The signal	warrant is not r	net. Go to step 4.						
Step	04: E	stimate pe	aestrian dela	<b>y</b> .						
Peo	destrian	crossing dista	nce, curb to curb (	(tt), L					<u>4a</u>	50
Pec	destrian	walking speed	I (ft/s), S <sub>p</sub> (sugge	sted speed = $3.5 \text{ ft/s}$ )					4b	3.5
Pec	destrian	start-up time	and end clearance	time (s), t <sub>s</sub> (suggeste	ed start-up time	e = 3  sec)			4c	3
[Ca	alculated	automatically	] Critical gap requ	ired for crossing pedes	strian (s), t <sub>c</sub>				4d	17
Maj is	jor road present	volume, total	hour (veh/h). Vm	OR approach being cro	issed it raised i	nedian Island			4e	1138
Ma	ior road	flow rate (ver		-u					Дf	0.32
Ave	erade ne	destrian delay	<u>(s/nerson)</u> d						40	769
Tot	tal nodo	strian delay (h	$(3/pc/301)/(a_p)$	in 4h is the calculated	l octimatod dol	av for all node	etriane crossing	the	4h	3.0
n	naior roa	adwav without	t a crossing treatm	ient (assumes 0% com	pliance). If the	e actual total r	edestrian delav	uic		3.0
h	nas been	measured at	the site, that value	e can be entered in 4i	to replace the	calculated value	ue in 4h.		41	
Step	5: S	elect treat	ment based u	ip on total pedes	strian delay	and expe	cted motoris	st complia	ance.	
Exp	pected m	notorist compl	iance at pedestriar	n crossings in region: e	enter <b>HIGH fo</b>	r High Comp	liance or LOW	for Low	5a	Low
Co	mplian	се		Conside						2011
		Treatmen	t Category:	Conside	r raised m	edian islar	ias, curb ext	ensions,	traffic calmi	ng, etc. as
							feasible.			
L	700		1							
<u>ē</u>										
la la	600									
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ŝ										
S.	500	-								
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-	0	1	200	600	000	4004	n 4	:00	1000	2400
		I	300	000	900	120	J 15	000	1000	2100
				Majo	or Road V	olume (v	eh/h)			
			■No Treatme	ent Crosswal	k Activ	e/Enhance	ed <b>E</b> Red	Signal	(proposed)	

This spreadsheet combines Worksheet 1 and Worksheet 2 (Appendix A, pages 69-70) of TCRP Report 112/NCHRP Report 562 (*Improving Pedestrian Safety at Unsignalized Intersections*) into an electronic format. This spreadsheet should be used in conjunction with, and not independent of. Appendix A documentation. This spreadsheet is still under development, please inform TTI if errors are identified. Blue fields contain descriptive information.

Key

Green fields are required and must be completed.

Tan fields are adjustments that are filled out only under certain conditions (follow instructions to the left of the cell).

naryse and ore				Majar Church	2rd August			
A			Min en Ci	Major Street	Sra Avenue			
Analysis	s Date March 16, 2018	0	Minor Str	eet or Location	N/A	12		
Data Collection	Date February /, 201	8		Peak Hour	3:45 PM (Veh Pe	ак)		
tep 1: Select	worksneet:			( 1)				25
Posted or statutory	v speed limit (or 85th pe	ercentile speed) on the	he major street	(mph)			la	35
Is the population o	f the surrounding area	<10,000? (enter <b>YE</b> .	<b>S</b> or <b>NO</b> )				10	NO
tep 2: Does tr	ne crossing meet	minimum peae	estrian volui	nes to be co	onsidered for	a traffic o	control de	vice?
Peak-hour pedestri	ian volume (ped/n), V <sub>p</sub>	lande eurh ovton	ciono troffic c	alming ato a	e fonciblo		Za	2
Result: Colls	ider raised median is	lanus, curb exten	Sions, traine c	anning, etc. a	s reasible.			
Maiar read values tr	tetal of both approach	the pedestrian		a traffic sig	ynal?		20	1200
Major road volume		es during peak nour	(ven/n), v <sub>maj-s</sub>				3d	1308
	atically] Preliminary (bet	ore min. threshold)	peak hour pede	strian volume to	meet warrant		3D	166
[Calculated automa	atically] Minimum requir	ed peak hour pedes	trian volume to	meet traffic sigr	al warrant		3с	166
Is 15th percentile of	crossing speed of pedes	trians less than 3.5 f	ft/s (1.1 m/s)?	(enter <b>YES</b> or <b>I</b>	<b>VO</b> )		3d	Yes
If 15th percentile c	rossing speed of pedes	trians is less than 3.	5 ft/s	% rate of re	duction for <i>3c</i> (up	o to 50%)	Зе	50%
(1.1 m/s), then re	duce <i>3c</i> by up to 50%.			Reduced val	ue or <i>3c</i>		3f	83
Result:	he we de chuic y de la							
Lep 4: Estimat	le pedestrian dela	<b>dy.</b>					4-	50
Pedestrian crossing	g distance, curb to curb	(ft), L					4a	50
Pedestrian walking	speed (ft/s), Sp (sugge	estea speea = $3.5 \text{ ft}$	/S)	2			4b	3.5
Pedestrian start-up	time and end clearance	e time (s), t <sub>s</sub> (sugge	ested start-up tir	me = 3 sec)			<i>4c</i>	3
[Calculated automa	atically] Critical gap requ	uired for crossing pe	destrian (s), t <sub>c</sub>	l modian island			4d	17
is present, during	, total both approaches i peak hour (veh/h), Vm		crossed il raised	i meulan islanu			4e	1308
Major road flow rat	te (veh/s), v						4f	0.36
Thajer read new rat								0.50
Average pedestriar	1 delay (S/Derson), d.						4a	1380
Average pedestriar Total pedestrian de	elay (h), D <sub>2</sub> The value	e in 4h is the calcula	ited estimated d	elav for all nede	strians crossing fl	ne	4g 4h	1380 
Average pedestriar Total pedestrian de major roadway v	elay (h), D <sub>p</sub> The value vithout a crossing treatr	e in 4h is the calcula nent (assumes 0% c	ated estimated d compliance). If t	elay for all pede he actual total p	strians crossing t bedestrian delay	ne	4g 4h 4i	1380 0.8
Average pedestriar Total pedestrian de major roadway v has been measu	elay (h), D <sub>p</sub> The value vithout a crossing treatr red at the site, that value	e in 4h is the calcula nent (assumes 0% c ie can be entered in	ated estimated d compliance). If t 4i to replace th	elay for all pede he actual total p e calculated valu	strians crossing t bedestrian delay ue in 4h.	ne	4g 4h 4i	1380 0.8
Average pedestriar Total pedestrian de major roadway v has been measur tep 5: Select t	elay (b) D <sub>p</sub> The value vithout a crossing treatr red at the site, that value treatment based	e in 4h is the calcula nent (assumes 0% c le can be entered in <b>up on total ped</b>	ated estimated d compliance). If t 4i to replace the <b>lestrian dela</b>	elay for all pede he actual total p e calculated valu ay and expe	estrians crossing the dedestrian delay use in 4h.	t complia	4g 4h 4i <b>nce.</b>	1380 0.8
Average pedestriar Total pedestrian de major roadway v has been measur tep 5: Select t Expected motorist	elay (b) person), d <sub>p</sub> elay (h), D <sub>p</sub> The value vithout a crossing treatr red at the site, that value treatment based compliance at pedestria	e in 4h is the calcula nent (assumes 0% c le can be entered in <b>up on total ped</b> n crossings in regior	ated estimated d compliance). If t 4i to replace the <b>lestrian dela</b> n: enter <b><i>HIGH</i> (</b>	elay for all pede he actual total p e calculated value ay and expe for High Comp	estrians crossing the bedestrian delay ue in 4h. Sected motoris Mance or LOW 1	t complian	4g 4h 4i nce. 5a	1380 0.8
Average pedestriar Total pedestrian de major roadway v has been measu tep 5: Select t Expected motorist Compliance	ladiay (s/person), d <sub>p</sub> elay (h), D <sub>p</sub> The value vithout a crossing treatr red at the site, that value treatment based compliance at pedestria	e in 4h is the calcula nent (assumes 0% c le can be entered in <b>up on total ped</b> n crossings in regior	ated estimated d compliance). If t 4i to replace the <b>lestrian dela</b> n: enter <i>HIGH</i> i	elay for all pede he actual total p e calculated valu ay and expe for High Comp median islar	estrians crossing the bedestrian delay us in 4h. Ected motoris diance or LOW f	t complian	4g 4h 4i 5a raffic calm	1380 0.8 Low
Average pedestriar Total pedestrian de major roadway v has been measu tep 5: Select t Expected motorist Compliance Treat	elay (h), D <sub>p</sub> The value elay (h), D <sub>p</sub> The value vithout a crossing treatr red at the site, that value treatment based compliance at pedestria	e in 4h is the calcula nent (assumes 0% o le can be entered in <b>up on total ped</b> n crossings in regior <b>Consi</b>	tted estimated d compliance). If t 4i to replace the <b>destrian dela</b> n: enter <i>HIGH</i> i der raised n	elay for all pede he actual total p e calculated valu ay and expe for High Comp nedian islar	strians crossing th bedestrian delay ue in 4h. <b>Cted motoris</b> <i>liance</i> or <i>LOW</i> ( hds, curb exter feasible	t complian or Low	4g 4h 4i 5a raffic calm	1380 0.8 Low
Average pedestriar Total pedestrian de major roadway v has been measu tep 5: Select t Expected motorist Compliance Treat	thetay (s/person), d <sub>p</sub> elay (h), D <sub>p</sub> The value vithout a crossing freatr red at the site, that value treatment based compliance at pedestria	e in 4h is the calcula ment (assumes 0% o le can be entered in <b>up on total ped</b> n crossings in regior <b>Consi</b>	tted estimated d compliance). If t 4i to replace the <b>lestrian dela</b> n: enter <b>HIGH</b> <b>ider raised n</b>	elay for all pede he actual total p e calculated valu ay and expe for High Comp nedian islar	estrians crossing th bedestrian delay ue in 4h. <b>International Contentions</b> <b>International Contentions</b> <b>Internati</b>	t complian	4g 4h 4i 5a raffic calm	1380 0.8 Low
Average pedestriar Total pedestrian de major roadway v has been measu tep 5: Select to Expected motorist Compliance Treat	alay (b), D <sub>p</sub> The value elay (h), D <sub>p</sub> The value vithout a crossing treatr red at the site, that value treatment based compliance at pedestria	e in 4h is the calcula nent (assumes 0% o le can be entered in <b>up on total ped</b> n crossings in regior <b>Consi</b>	ted estimated d compliance). If t 4 to replace th <b>lestrian dela</b> n: enter <b>HIGH</b> <b>ider raised n</b>	elay for all pede he actual total p e calculated valu ay and expe for High Comp nedian islar	strians crossing th bedestrian delay us in 4h. ccted motoris liance or LOW i hds, curb exte feasible.	t complian for Low	4g 4h 4i 5a raffic calm	1380 0.8 Low hing, etc. a
Average pedestriar Total pedestrian de major roadway v has been measu tep 5: Select f Expected motorist Compliance Treat	a delay (s/person), d <sub>p</sub> elay (h), D <sub>p</sub> The value vithout a crossing freatr red at the site, that value treatment based compliance at pedestria	e in 4h is the calcula nent (assumes 0% c le can be entered in <b>up on total ped</b> n crossings in regior <b>Consi</b>	ited estimated d compliance). If t 4 it or replace the <b>lestrian dela</b> n: enter <b>HIGH</b> i <b>ider raised n</b>	elay for all pede he actual total p e calculated valu <b>ay and expe</b> for High Comp nedian islar	strians crossing the pedestrian delay ue in 4h. <b>ccted motoris</b> <i>lilance</i> or <i>LOW</i> in <b>nds, curb exte</b> <b>feasible.</b>	t complian for Low	<u>4g</u> 4h 4i nce. 5a raffic calm	1380 0.8 Low
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Average pedestriar Total pedestrian de major roadway v has been measu tep 5: Select t Expected motorist Compliance Treat 700 600 -	taday (s/person), d <sub>p</sub> elay (h), D <sub>p</sub> The value vithout a crossing treatr red at the site, that value treatment based compliance at pedestria	e in 4h is the calcula ment (assumes 0% oc le can be entered in <b>up on total ped</b> n crossings in regior <b>Consi</b>	ited estimated d compliance). If t 4i to replace the <b>lestrian dela</b> n: enter <b>HIGH</b> i <b>ider raised n</b>	elay for all pede he actual total p e calculated valu <b>ay and expe</b> for High Comp nedian islar	strians crossing the edestrian delay ue in 4h. scted motoris <i>liance</i> or <i>LOW i</i> ads, curb externation feasible.	t compliant for Low	<u>4g</u> <u>4h</u> 4i nce. 5a raffic calm	1380 0.8 Low
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Average pedestriar Average pedestriar Total pedestrian de major roadway v has been measu tep 5: Select f Expected motorist Compliance 700 - 600 - 500 - 500 - 9 400 - 200 - 100	taday (s/person), d <sub>p</sub> elay (h), D <sub>p</sub> The valuu vithout a crossing treatr red at the site, that value treatment based of compliance at pedestria	e in 4h is the calcula nent (assumes 0% of le can be entered in <b>up on total ped</b> n crossings in regior Consi	ited estimated d compliance). If t 4i to replace the <b>lestrian dela</b> n: enter <b>HIGH</b> der raised n	elay for all pede he actual total p e calculated valu ay and experience for High Comp nedian islar	strians crossing th pedestrian delay ue in 4h. scted motoriss liance or LOW i nds, curb externation feasible.	t complian for Low	<u>4g</u> <u>4h</u> <u>4i</u> <u>5a</u> raffic calm	1380 0.8 Low hing, etc. :
Average pedestriar Average pedestriar Total pedestrian de major roadway v has been measu tep 5: Select f Expected motorist Compliance 700 - 600 - 500 - 500 - 90 - 200 - 100 -	taday (s/person), d <sub>p</sub> elay (h), D <sub>p</sub> The value vithout a crossing treatr red at the site, that value treatment based compliance at pedestria	e in 4h is the calcula nent (assumes 0% c le can be entered in up on total ped n crossings in regior Consi	ted estimated d compliance). If t 4i to replace the <b>lestrian dela</b> n: enter <b>HIGH</b> <b>ider raised n</b>	elay for all pede he actual total p e calculated valu ay and expe for High Comp nedian islar	strians crossing th pedestrian delay ue in 4h. scted motoris liance or LOW i nds, curb externation feasible.	t complian for Low	<u>4g</u> <u>4h</u> <u>4i</u> <u>5a</u> raffic caln	1380 0.8 Low ning, etc. :
Average pedestriar Total pedestrian de major roadway v has been measu tep 5: Select 1 Expected motorist Compliance 700 600 - 500 - 500 - 200 - 100 - 100 -	taday (s/person), d <sub>p</sub> elay (h), D <sub>p</sub> The value virthout a crossing treatr red at the site, that value treatment based compliance at pedestria timent Category:	e in 4h is the calcula ment (assumes 0% color le can be entered in up on total ped n crossings in region Consi	ted estimated d compliance). If t 4i to replace the <b>lestrian dela</b> n: enter <b>HIGH</b> i <b>ider raised n</b>	elay for all pede he actual total p e calculated valu ay and expe for High Comp nedian islar	strians crossing the pedestrian delay ue in 4h. scted motoris liance or LOW / nds, curb externation feasible.	t complian for Low	<u>4g</u> <u>4h</u> 4i 5a raffic calm	1380 0.8 Low hing, etc. :
Average pedestriar Total pedestrian de major roadway v has been measu tep 5: Select 1 Expected motorist Compliance 700 500 400 - 500 - 500 - 100 - 100 - 0	thetay (s) person), d <sub>p</sub> elay (h), D <sub>p</sub> The value red at the site, tractor value treatment based in compliance at pedestria trment Category:	e in 4h is the calcula nent (assumes 0% of the can be entered in <b>up on total ped</b> n crossings in region Consi	ted estimated d compliance). If t 4i to replace the <b>iestrian dela</b> n: enter <b>HIGH</b> i ider raised n	elay for all pede he actual total p e calculated valu ay and experience for High Comp nedian islar	strians crossing the edestrian delay us in 4h. scted motoris liance or LOW I ads, curb externation feasible.	t compliant for Low	4g 4h 4i 5a raffic calm	1380 0.8 Low ning, etc. a
Average pedestriar Total pedestriar de major roadway v has been measu tep 5: Select 1 Expected motorist Compliance 700 600 500 400 200 100 1	and the second s	e in 4h is the calcula nent (assumes 0% of the can be entered in up on total ped n crossings in region Consi	ited estimated d compliance). If t 4i to replace the <b>iestrian dela</b> in: enter <b>HIGH</b> ider raised n	elay for all pede he actual total p e calculated valu ay and experience for High Comp nedian islar	strians crossing the edestrian delay us in 4h. scted motoris liance or LOW i ads, curb externation feasible.	t compliant for Low	4g 4h 4i 5a raffic calm	1380 0.8 Low hing, etc. :

This spreadsheet combines Worksheet 1 and Worksheet 2 (Appendix A, pages 69-70) of TCRP Report 112/NCHRP Report 562 (*Improving Pedestrian Safety at Unsignalized Intersections*) into an electronic format. This spreadsheet should be used in conjunction with, and not independent of. Appendix A documentation. This spreadsheet is still under development, please inform TTI if errors are identified. Blue fields contain descriptive information.

Key

Green fields are required and must be completed.

Tan fields are adjustments that are filled out only under certain conditions (follow instructions to the left of the cell).

Gray fields			not be cuited.					
Analyst and Site In	formation							
Analys	t KAI			Major Street 3rd	Avenue			
Analysis Date	e March 16, 2018		Minor Street or Location N/A					
Data Collection Date	e February 7, 2018			Peak Hour 5:30	) PM (Ped Peak)			
Step 1: Select wor	ksheet:							
Posted or statutory spee	ed limit (or 85th percent	tile speed) on the r	major street (	mph)		1a	35	
Is the population of the	surrounding area <10,0	000? (enter <b>YES</b> o	or <b>NO</b> )			1b	NO	
Step 2: Does the c	rossing meet min	imum pedestı	rian volun	nes to be consi	dered for a traffic	control devi	ce?	
Peak-hour pedestrian vo	olume (ped/h), V <sub>p</sub>					2a	5	
Result: Consider	raised median island	s, curb extensio	ns, traffic ca	lming, etc. as fea	sible.			
tep 3: Does the c	rossing meet the	pedestrian wa	arrant for	a traffic signa	?			
Major road volume, tota	I of both approaches du	uring peak hour (ve	eh/h), V <sub>maj-s</sub>			3a	919	
[Calculated automaticall	y] Preliminary (before n	nin. threshold) pea	ik hour pedes	trian volume to mee	et warrant	3b	308	
[Calculated automaticall	y] Minimum required pe	eak hour pedestriar	n volume to n	neet traffic signal w	arrant	Зс	308	
Is 15th percentile crossi	ng speed of pedestrians	s less than 3.5 ft/s	(1.1 m/s)? (	enter <b>YES</b> or <b>NO</b> )		3d	Yes	
If 15th percentile crossi	ng speed of pedestrians	is less than 3.5 ft	/s	% rate of reducti	on for <i>3c</i> (up to 50%)	Зе	50%	
(1.1 m/s), then reduce	<i>3c</i> by up to 50%.			Reduced value or	· 3c	3f	154	
Result:	, , ,							
tep 4: Estimate p	edestrian delay.							
Pedestrian crossing dist	ance, curb to curb (ft),	L				4a	50	
Pedestrian walking spee	ed (ft/s), Sp (suggested	speed = $3.5 \text{ ft/s}$ )				4b	3.5	
Pedestrian start-up time	and end clearance time	e (s), t <sub>s</sub> (suggeste	d start-up tim	ie = 3 sec)		4c	3	
[Calculated automaticall	y] Critical gap required	for crossing pedes	trian (s), t <sub>c</sub>	,		4d	17	
Major road volume, tota	I both approaches OR a	pproach being cro	ssed if raised	median island		40	010	
is present, during peak	< hour (veh/h), V <sub>maj-d</sub>					<i>/</i> C	515	
Major road flow rate (ve	eh/s), v					4f	0.26	
Average pedestrian dela	ıy (s/person), d <sub>p</sub>					4g	323	
Total pedestrian delay (	h), D <sub>p</sub> The value in 4	h is the calculated	estimated de	lay for all pedestria	ns crossing the	4h	0.4	
major roadway withou	It a crossing treatment	(assumes 0% com	pliance). If the	e actual total pedes	trian delay 4b	<i>4i</i>		
Sten 5: Select trea	tment based up c	n total nedes	trian dela	v and expected	d motorist compli	ance		
Expected motorist comp	liance at pedestrian crc	ssinas in region: e	nter <b>HIGH f</b>	or High Complian	ce or LOW for Low			
Compliance						5a	Low	
Troatmo	nt Catagony	Conside	r raised m	edian islands,	curb extensions,	traffic calmir	ig, etc. a	
ITEdulie	in Calegory:			1	feasible.			
700								
600 - 500 - (4) 9 400 - 300 - 200 - 100 -								
. 0	300	600	000	1200	1500	1000		
I	300		900	1200	1000	1000	0	
-		Majo	or Road \	/olume (veh/l	n)		-	
	■No Treatment	Crosswal	k 🖬 Acti	ve/Enhanced	Red Signal	(proposed)		

Attachment H NCHRP 562 Worksheets: Sensitivity Analysis

This spreadsheet combines Worksheet 1 and Worksheet 2 (Appendix A, pages 69-70) of TCRP Report 112/NCHRP Report 562 (*Improving Pedestrian Safety at Unsignalized Intersections*) into an electronic format. This spreadsheet should be used in conjunction with, and not independent of, Appendix A documentation. This spreadsheet is still under development, please inform TTL if errors are identified. Blue fields contain descriptive information.

Кеу

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Analyst and Site Info	ormation							
Analyst	KAI		M	lajor Street	3rd Avenue			
Analysis Date	March 16, 2018		Minor Street	or Location	on N/A			
Data Collection Date	February 7, 2018			Peak Hour	ur 3:45 PM (Veh Peak - Sensitivity 2)			
Step 1: Select works	sheet:		-		· · · ·			
Posted or statutory speed	limit (or 85th percentile sp	eed) on the r	major street (mp	h)		1a	35	
Is the population of the s	urrounding area <10,000?	(enter YES o	or <b>NO</b> )			1b	NO	
Step 2: Does the cro	ssing meet minimu	m pedestr	rian volumes	s to be co	onsidered for a traffic	c control de	evice?	
Peak-hour pedestrian volu	ume (ped/h), V <sub>n</sub>					2a	20	
Result: Go to step	3.							
Step 3: Does the cro	ossing meet the ped	estrian wa	arrant for a	traffic sig	gnal?			
Major road volume, total	of both approaches during	peak hour (ve	eh/h), V <sub>mai-s</sub>			За	1308	
[Calculated automatically]	Preliminary (before min. t	hreshold) pea	ak hour pedestria	n volume to	meet warrant	3b	166	
[Calculated automatically]	Minimum required peak h	our pedestriar	n volume to mee	t traffic sign	al warrant	Зс	166	
Is 15th percentile crossing	g speed of pedestrians less	than 3.5 ft/s	(1.1 m/s)? (ent	er <b>YES</b> or I	<b>VO</b> )	3d	Yes	
If 15th percentile crossing	speed of pedestrians is le	s than 3.5 ft/	/s	% rate of re	duction for <i>3c</i> (up to 50%)	Зе	50%	
(1.1 m/s), then reduce $3$	<i>c</i> by up to 50%.		F	Reduced val	ue or <i>3c</i>	3f	83	
Result: The signal	warrant is not met. Go	to step 4.						
Step 4: Estimate pe	destrian delay.							
Pedestrian crossing distar	nce, curb to curb (ft), L					<i>4a</i>	50	
Pedestrian walking speed	(ft/s), Sp (suggested spee	d = 3.5 ft/s)				4b	3.5	
Pedestrian start-up time a	and end clearance time (s),	t <sub>s</sub> (suggeste	d start-up time =	= 3 sec)		4c	3	
[Calculated automatically]	Critical gap required for c	ossing pedest	trian (s), t <sub>c</sub>			4d	17	
Major road volume, total is present, during peak h	both approaches OR approa hour (veh/h), V <sub>maj-d</sub>	ach being cro	ssed if raised me	edian island		<i>4e</i>	1308	
Major road flow rate (veh	/s), v					4f	0.36	
Average pedestrian delay	(s/person), d <sub>p</sub>					<i>4g</i>	1380	
Total pedestrian delay (h)	), D <sub>p</sub> The value in 4h is t	he calculated	estimated delay	for all pede	strians crossing the	4h	7.7	
major roadway without has been measured at t	a crossing treatment (assu the site, that value can be a	mes 0% com entered in 4i t	pliance). If the a to replace the ca	ictual total p Iculated valu	edestrian delay ue in 4h.	4i		
Step 5: Select treat	ment based up on to	otal pedes	trian delay a	and expe	cted motorist compli	ance.		
Expected motorist complia	ance at pedestrian crossing	s in region: e	enter <b>HIGH for I</b>	High Comp	<i>liance</i> or <i>LOW for Low</i>	5a	Low	
Treatment	t Category:				RED			



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	,,							
Analyst and Site Info	ormation							
Analyst	KAI		Maj	jor Street	3rd Avenue			
Analysis Date	March 16, 2018		Minor Street or	r Street or Location N/A				
Data Collection Date	February 7, 2018		Peak Hour 3:45 PM (Veh Peak - Sensitivity 3)					
Step 1: Select works	sheet:							
Posted or statutory speed	limit (or 85th percentile sp	peed) on the m	najor street (mph)			1a	35	
Is the population of the su	urrounding area <10,000?	(enter <b>YES</b> or	• <b>NO</b> )			1b	NO	
Step 2: Does the cro	ssing meet minimu	m pedestri	ian volumes t	to be co	onsidered for a traffic	c control de	evice?	
Peak-hour pedestrian volu	ıme (ped/h), V <sub>p</sub>					2a	20	
Result: Go to step	3.							
Step 3: Does the cro	ossing meet the ped	lestrian wa	irrant for a tr	affic sig	jnal?			
Major road volume, total of	of both approaches during	peak hour (vel	h/h), V <sub>maj-s</sub>			За	1569.6	
[Calculated automatically]	Preliminary (before min. t	hreshold) peak	k hour pedestrian	volume to	meet warrant	3b	133	
[Calculated automatically]	Minimum required peak h	our pedestrian	volume to meet t	raffic sign	al warrant	Зс	133	
Is 15th percentile crossing	g speed of pedestrians less	than 3.5 ft/s (	(1.1 m/s)? (enter	YES or I	<b>VO</b> )	3d	Yes	
If 15th percentile crossing	speed of pedestrians is le	ss than 3.5 ft/s	s %	rate of re	duction for <i>3c</i> (up to 50%)	Зе	50%	
(1.1 m/s), then reduce 3	<i>c</i> by up to 50%.		Re	duced val	ue or <i>3c</i>	3f	67	
Result: The signal	warrant is not met. Go	to step 4.						
Step 4: Estimate per	destrian delay.					P		
Pedestrian crossing distan	ice, curb to curb (ft), L					<i>4a</i>	50	
Pedestrian walking speed	(ft/s), S <sub>p</sub> (suggested spee	ed = 3.5 ft/s)				4b	3.5	
Pedestrian start-up time a	and end clearance time (s),	t <sub>s</sub> (suggested	l start-up time = 3	3 sec)		4c	3	
[Calculated automatically]	Critical gap required for c	rossing pedestr	rian (s), t <sub>c</sub>			4d	17	
Major road volume, total i is present, during peak h	both approaches OR appro nour (veh/h), V <sub>maj-d</sub>	ach being cros	sed if raised medi	an Island		4e	1569.6	
Major road flow rate (veh,	/s), v					4f	0.44	
Average pedestrian delay	(s/person), d <sub>p</sub>					4g	4548	
Total pedestrian delay (h)	, D <sub>p</sub> The value in 4h is t	the calculated e	estimated delay fo	or all pede	strians crossing the	4h	25.3	
major roadway without has been measured at t	a crossing treatment (assu the site, that value can be	imes 0% comp entered in 4i to	pliance). If the act preplace the calcu	ual total p Ilated valu	edestrian delay Ie in 4h.	<i>4i</i>		
Step 5: Select treat	ment based up on to	otal pedest	trian delay an	nd expe	cted motorist compli	ance.		
Expected motorist complia Compliance	ance at pedestrian crossing	is in region: en	nter <b>HIGH for Hi</b>	gh Comp	liance or LOW for Low	5a	Low	
Treatment	t Category:				RED			



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Analyst and Site Info	ormation								
Analyst	KAI		1	lajor Street	3rd Avenue				
Analysis Date	March 16, 2018		Minor Street	or Location	N/A				
Data Collection Date	February 7, 2018	uary 7, 2018 Peak Hour 3:45 PM (Veh Peak)							
Step 1: Select works	sheet:								
Posted or statutory speed	limit (or 85th percentile sp	peed) on the m	major street (mp	h)		1a	35		
Is the population of the su	urrounding area <10,000?	(enter YES or	r <b>NO</b> )			1b	NO		
Step 2: Does the cro	ossing meet minimu	m pedestr	rian volume	s to be co	onsidered for a traffi	c control de	evice?		
Peak-hour pedestrian volu	ume (ped/h), V <sub>p</sub>					2a	66		
Result: Go to step	3.								
Step 3: Does the cro	ossing meet the ped	lestrian wa	arrant for a	traffic sig	gnal?				
Major road volume, total of	of both approaches during	peak hour (ve	eh/h), V <sub>maj-s</sub>			За	1569.6		
[Calculated automatically]	Preliminary (before min. t	hreshold) peal	k hour pedestria	an volume to	o meet warrant	3b	133		
[Calculated automatically]	Minimum required peak h	our pedestrian	n volume to mee	et traffic sigr	nal warrant	Зс	133		
Is 15th percentile crossing	g speed of pedestrians less	than 3.5 ft/s	(1.1 m/s)? (ent	er <b>YES</b> or <b>I</b>	<b>NO</b> )	3d	Yes		
If 15th percentile crossing	speed of pedestrians is le	ss than 3.5 ft/	s	% rate of re	duction for <i>3c</i> (up to 50%)	Зе	50%		
(1.1 m/s), then reduce 3	<i>c</i> by up to 50%.			Reduced val	lue or <i>3c</i>	3f	67		
Result: The signal	warrant is not met. Go	to step 4.							
Step 4: Estimate per	destrian delay.								
Pedestrian crossing distan	nce, curb to curb (ft), L					4a	50		
Pedestrian walking speed	(ft/s), S <sub>p</sub> (suggested spee	ed = 3.5 ft/s)				4b	3.5		
Pedestrian start-up time a	and end clearance time (s),	t <sub>s</sub> (suggested	d start-up time	= 3 sec)		4c	3		
[Calculated automatically]	Critical gap required for c	rossing pedest	trian (s), t <sub>c</sub>			4d	17		
Major road volume, total l is present, during peak h	both approaches OR appro hour (veh/h), V <sub>maj-d</sub>	ach being cros	ssed if raised me	edian island		<i>4e</i>	1569.6		
Major road flow rate (veh,	/s), v					4f	0.44		
Average pedestrian delay	(s/person), d <sub>p</sub>					4g	4548		
Total pedestrian delay (h), D <sub>p</sub> The value in 4h is the calculated estimated delay for all pedestrians crossing the						4h	83.4		
major roadway without has been measured at t	a crossing treatment (assu the site, that value can be	imes 0% comp entered in 4i to	pliance). If the a to replace the ca	actual total p Iculated valu	oedestrian delay ue in 4h.	<i>4i</i>			
Step 5: Select treat	Step 5: Select treatment based up on total pedestrian delay and expected motorist compliance.								
Expected motorist complia Compliance	ance at pedestrian crossing	is in region: er	nter <b>HIGH for</b> .	High Comp	<b>bliance</b> or <b>LOW for Low</b>	5a	Low		
Treatment	t Category				RED				



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alvet ar							
ialyst al	nd Site Info	prmation					
	Analyst	KAI		Major Stre	et 3rd Avenue		
	Analysis Date	March 16, 2018		Minor Street or Locati	on N/A		
Data C	Collection Date	February 7, 2018		Peak Ho	ur 7:45 AM (Veh Peak - Sens	itivity 1)	
ep 1: S	elect work	sheet:					
Posted or s	statutory speed	limit (or 85th per	centile speed) on the	e major street (mph)		1a	35
is the popu	ulation of the s	urrounding area <	10,000? (enter <b>YES</b>	or <b>NO</b> )		1b	NO
ep 2: D	oes the cro	ssing meet n	ninimum pedes	strian volumes to be	considered for a traff	ic control de	vice?
Peak-hour	pedestrian volu	ıme (ped/h), V <sub>p</sub>				2a	2
Result:	Consider ra	ised median isla	ands, curb extensi	ions, traffic calming, etc	. as feasible.		
ep 3: D	oes the cro	ssing meet t	ne pedestrian v	warrant for a traffic	signal?		
1ajor road	volume, total	of both approache	s during peak hour (	(veh/h), V <sub>maj-s</sub>		За	1186.8
Calculated	automatically]	Preliminary (befo	re min. threshold) p	eak hour pedestrian volume	e to meet warrant	3b	201
Calculated	automatically]	Minimum require	d peak hour pedestr	ian volume to meet traffic s	ignal warrant	Зс	201
s 15th per	centile crossing	speed of pedestr	ians less than 3.5 ft/	/s (1.1 m/s)? (enter YES of	or <b>NO</b> )	3d	Yes
f 15th pero	centile crossing	speed of pedestr	ans is less than 3.5	ft/s % rate of	reduction for 3c (up to 50%)	Зе	50%
(1.1 m/s),	then reduce $3$	<i>c</i> by up to 50%.		Reduced	value or 3c	3f	101
Result	t:						
ep 4: Es	stimate pe	destrian dela	<b>/</b> .				
edestrian	crossing distar	ce, curb to curb (	t), L			<i>4a</i>	50
edestrian	walking speed	(ft/s), S <sub>p</sub> (sugges	ted speed = $3.5 \text{ ft/s}$	5)		4b	3.5
Pedestrian	start-up time a	nd end clearance	time (s), t <sub>s</sub> (sugges	sted start-up time = 3 sec)		4с	3
Calculated	l automatically]	Critical gap requi	red for crossing pede	estrian (s), t <sub>c</sub>		4d	17
lajor road	volume, total l	ooth approaches C	R approach being c	rossed if raised median isla	nd	<i>4e</i>	1186.8
Vajor road	, during peak i	(c) v	d			ЛĘ	0.22
Aajor road	flow rate (veh	(s/person) d	d			4f 4g	0.33
Major road Average pe	flow rate (veh) destrian delay	(s), v (s/person), d <sub>p</sub>	in 4h is the calculate	ed estimated delay for all n	destrians crossing the	4f 4g 4b	0.33 889
Major road Average pe Fotal pedes major roa	flow rate (veh edestrian delay strian delay (h) adway without	(s), v (s/person), $d_p$ , $D_p$ The value a crossing treatme	in 4h is the calculate	ed estimated delay for all p mpliance). If the actual tot	edestrians crossing the	4f 4g 4h	0.33 889 0.5
Major road Average pe Total pedes major roa has been	flow rate (veh edestrian delay strian delay (h) adway without n measured at t	(s), v (s/person), $d_p$ , $D_p$ The value a crossing treatment he site, that value	in 4h is the calculate ent (assumes 0% co can be entered in 4	ed estimated delay for all p mpliance). If the actual tot li to replace the calculated	edestrians crossing the al pedestrian delay value in 4h.	4f 4g 4h 4i	0.33 889 0.5
Major road Average per Total pedes major roa has been ep 5: So	flow rate (veh edestrian delay strian delay (h) adway without measured at t elect treat	(s), v (s/person), $d_p$ , $D_p$ The value a crossing treatment he site, that value ment based u	in 4h is the calculate ent (assumes 0% co can be entered in 4 <b>p on total pede</b>	ed estimated delay for all p mpliance). If the actual tot hi to replace the calculated estrian delay and ex	edestrians crossing the al pedestrian delay value in 4h. pected motorist comp	4f 4g 4h 4i liance.	0.33 889 0.5
Major road Average per Fotal pedes major roa has been ep 5: So Expected n	flow rate (veh flow rate (veh edestrian delay strian delay (h) adway without neasured at t elect treat notorist complia	(s), v (s/person), $d_p$ , $D_p$ The value a crossing treatm the site, that value <b>ment based u</b> ance at pedestrian	in 4h is the calculate ent (assumes 0% co can be entered in 4 <b>p on total pede</b> crossings in region:	ed estimated delay for all pr mpliance). If the actual tot li to replace the calculated estrian delay and ex enter <i>HIGH for High Co</i>	edestrians crossing the al pedestrian delay value in 4h. pected motorist comp mpliance or LOW for Low	4f 4g 4h 4i liance. 5a	0.33 889 0.5
Major road Average per Total pedes major roa has been ep 5: Se Expected m Compliant	flow rate (veh flow rate (veh destrian delay strian delay (h) adway without measured at t elect treatu notorist complia ce	(s), v (s/person), $d_p$ , $D_p$ The value a crossing treatm he site, that value <b>nent based u</b> ance at pedestrian	in 4h is the calculate ent (assumes 0% co can be entered in 4 <b>p on total pede</b> crossings in region:	ed estimated delay for all pr mpliance). If the actual tot it to replace the calculated estrian delay and ex enter <i>HIGH for High Co</i>	edestrians crossing the al pedestrian delay value in 4h. pected motorist comp mpliance or LOW for Low	4f 4g 4h 4i liance. 5a	0.33 889 0.5 Low
Major road Average pe Total pedes major roa has been ep 5: So Expected m <i>Complian</i>	flow rate (veh flow rate (veh edestrian delay strian delay (h) adway without measured at t elect treatu motorist complia ce Treatment	(s), v (s), v (s), p <sub>p</sub> The value a crossing treatm he site, that value <b>nent based u</b> ance at pedestrian	in 4h is the calculate ent (assumes 0% co can be entered in 4 p on total pede crossings in region: Consid	ed estimated delay for all pr mpliance). If the actual tot it to replace the calculated estrian delay and ex enter <i>HIGH for High Co</i> ler raised median isl	edestrians crossing the al pedestrian delay value in 4h. pected motorist comp mpliance or LOW for Low ands, curb extensions	4f       4g       4h       4i       liance.       5a       traffic calm	0.33 889 0.5 Low
Major road Average pe Fotal pedes major roa has been <b>ep 5: Se</b> Expected m <i>Compliant</i>	, during peak i flow rate (veh edestrian delay strian delay (h) strian delay (h) adway without measured at t elect treatment notorist complia ce Treatment	(s), v (s/person), $d_p$ , $D_p$ The value a crossing treatm he site, that value <b>nent based u</b> ance at pedestrian	in 4h is the calculate ent (assumes 0% co can be entered in 4 p on total pede crossings in region: Consid	ed estimated delay for all p mpliance). If the actual tot ii to replace the calculated o estrian delay and ex enter <i>HIGH for High Co</i> ler raised median isl	edestrians crossing the al pedestrian delay ralue in 4h. pected motorist comp mpliance or LOW for Low ands, curb extensions feasible.	4f 4g 4h 4i liance. 5a , traffic calm	0.33 889 0.5 Low
Major road Average per Total pedes major road has been <b>ep 5: Se</b> Expected m <i>Compliant</i>	, during peak i flow rate (veh edestrian delay strian delay (h) ad way without measured at t elect treatu notorist complia ce Treatment	(s/person), $d_p$ (s/person), $d_p$ , $D_p$ The value a crossing treatm the site, that value <b>nent based u</b> ance at pedestrian	in 4h is the calculate ent (assumes 0% co can be entered in 4 p on total pede crossings in region: Consid	ed estimated delay for all p mpliance). If the actual tot ii to replace the calculated o <b>estrian delay and ex</b> e enter <i>HIGH for High Co</i> ler raised median isl	edestrians crossing the al pedestrian delay ralue in 4h. pected motorist comp mpliance or LOW for Low ands, curb extensions feasible.	4f 4g 4h 4i liance. 5a , traffic calm	0.33 889 0.5 Low
Major road Average pe Fotal pedes major roa has been ep 5: Se Expected m Compliant	, during peak i flow rate (veh edestrian delay strian delay (h) adway without measured at t elect treatu notorist complia ce Treatmen	(s/person), $d_p$ (s/person), $d_p$ , $D_p$ The value a crossing treatm the site, that value <b>nent based u</b> ance at pedestrian	in 4h is the calculate ent (assumes 0% co can be entered in 4 p on total pede crossings in region: Consid	ed estimated delay for all p mpliance). If the actual tot it to replace the calculated ' estrian delay and ex e enter <i>HIGH for High Co</i> ler raised median isl	edestrians crossing the al pedestrian delay ralue in 4h. pected motorist comp mpliance or LOW for Low ands, curb extensions feasible.	4f       4g       4h       4i       5a       , traffic calm	0.33 889 0.5 Low
Alajor road Verage pe Fotal pedes major rox has been ep 5: So Expected m Compliant 700 600	, during peak i flow rate (veh edestrian delay strian delay (h) adway without measured at t elect treatu motorist complia ce Treatmen	(s/person), $d_p$ (s/person), $d_p$ , $D_p$ The value a crossing treatm the site, that value <b>ment based u</b> ance at pedestrian	in 4h is the calculate ent (assumes 0% co can be entered in 4 p on total pede crossings in region: Consid	ed estimated delay for all p mpliance). If the actual tot it to replace the calculated ' estrian delay and ex e enter <i>HIGH for High Col</i> ler raised median isl	edestrians crossing the al pedestrian delay ralue in 4h. pected motorist comp mpliance or LOW for Low ands, curb extensions feasible.	4f       4g       4h       4i       5a       , traffic calm	0.33 889 0.5 Low
Aajor road Werage pe Total peder major roa has been ep 5: Sc Expected in Compliant 700 600	, during peak i flow rate (veh edestrian delay) strian delay (h) adway without measured at t elect treatin notorist complia ce Treatment	(s/person), $d_p$ (s/person), $d_p$ , $D_p$ The value a crossing treatm the site, that value <b>ment based u</b> ance at pedestrian t <b>Category:</b>	in 4h is the calculate ent (assumes 0% co can be entered in 4 <b>p on total pede</b> crossings in region: <b>Consid</b>	ed estimated delay for all p mpliance). If the actual tot it to replace the calculated ' estrian delay and ex e enter <i>HIGH for High Co</i> ler raised median isl	edestrians crossing the al pedestrian delay value in 4h. <b>pected motorist comp</b> <i>mpliance</i> or <i>LOW for Low</i> <b>ands, curb extensions</b> <b>feasible.</b>	4f       4g       4h       4i       5a       , traffic calm	0.33 889 0.5 Low
Aajor road wwerage pe otal pedee major roa has been ep 5: Si xpected n Complian 700 600	, during peak i flow rate (veh edestrian delay strian delay (h) adway without measured at t elect treat notorist complia ce Treatment	(s), v (s), v (s), v $(s_{p})$ , D <sub>p</sub> The value a crossing treatm the site, that value <b>ment based u</b> ance at pedestrian t <b>Category</b> :	in 4h is the calculate ent (assumes 0% co can be entered in 4 <b>p on total pede</b> crossings in region: <b>Consid</b>	ed estimated delay for all pr mpliance). If the actual tot it to replace the calculated v estrian delay and ex enter <i>HIGH for High Con</i> ler raised median isl	edestrians crossing the al pedestrian delay ralue in 4h. <b>pected motorist comp</b> <i>mpliance</i> or <i>LOW for Low</i> <b>ands, curb extensions</b> <b>feasible.</b>	4f       4g       4h       4i       liance.       5a       , traffic calm	0.33 889 0.5 Low
lajor road verage pe total pedes major roa has been ep 5: Si xpected m 700 600 500	, during peak i flow rate (veh edestrian delay strian delay (h) adway without measured at t elect treat notorist complia ce Treatmen	(s), v (s), v (s), p , D <sub>p</sub> The value a crossing treatm the site, that value <b>ment based u</b> ance at pedestrian t <b>Category:</b>	in 4h is the calculate ent (assumes 0% co can be entered in 4 <b>p on total pede</b> crossings in region: <b>Consid</b>	ed estimated delay for all pr mpliance). If the actual tot it to replace the calculated v estrian delay and ex enter <i>HIGH for High Con</i> ler raised median isl	adestrians crossing the al pedestrian delay ralue in 4h. <b>pected motorist comp</b> <i>mpliance</i> or <i>LOW for Low</i> ands, curb extensions feasible.	4f       4g       4h       4i       liance.       5a       , traffic calm	0.33 889 0.5 Low
Aajor road wwrage pee otal peder major roa has been ep 5: Si expected in Compliant 700 600 500	, during peak i flow rate (veh edestrian delay strian delay (h) adway without measured at t elect treat notorist complia ce Treatmen	(s), v (s), v (s), p , D <sub>p</sub> The value a crossing treatm the site, that value <b>ment based u</b> ance at pedestrian t <b>Category:</b>	in 4h is the calculate ent (assumes 0% co can be entered in 4 <b>p on total pede</b> crossings in region: <b>Consid</b>	ed estimated delay for all pr mpliance). If the actual tot it to replace the calculated v estrian delay and ex enter <i>HIGH for High Con</i> ler raised median isl	adestrians crossing the al pedestrian delay value in 4h. pected motorist comp mpliance or LOW for Low ands, curb extensions feasible.	4f       4g       4h       4i       liance.       5a       , traffic calm	0.33 889 0.5 Low
Aajor road wwerage pe Total pedes major roa has been ep 5: Si Expected in Compliant 700 600 500 500	flow rate (veh edestrian delay (h) adway without measured at t elect treat notorist complia ce Treatment	(s), v (s), v (s), p , D <sub>p</sub> The value a crossing treatm he site, that value <b>ment based u</b> ance at pedestrian t <b>Category:</b>	in 4h is the calculate ent (assumes 0% co can be entered in 4 <b>p on total pede</b> crossings in region: <b>Consid</b>	ed estimated delay for all pr mpliance). If the actual tot ii to replace the calculated v estrian delay and ex enter <i>HIGH for High Con</i> ler raised median isl	adestrians crossing the al pedestrian delay value in 4h. pected motorist comp mpliance or LOW for Low ands, curb extensions feasible.	4f       4g       4h       4i       liance.       5a       , traffic calm	0.33 889 0.5 Low
tajor road werage pe fotal pedes major roo has been <b>ep 5: S</b> xpected n <b>Complian</b> 700 600 500 400	flow rate (veh edestrian delay (h) adway without measured at t elect treat: notorist complia ce Treatment	(s), v (s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm he site, that value <b>ment based u</b> ance at pedestrian t Category:	in 4h is the calculate ent (assumes 0% co can be entered in 4 <b>p on total pede</b> crossings in region: <b>Consid</b>	ed estimated delay for all pr mpliance). If the actual tot it to replace the calculated v estrian delay and ex enter HIGH for High Cou ler raised median isl	edestrians crossing the al pedestrian delay value in 4h. pected motorist comp mpliance or LOW for Low ands, curb extensions feasible.	4f       4g       4h       4i       liance.       5a       , traffic calm	0.33 889 0.5 Low
ajor road verage pe otal pedes major roc has been <b>p 5: S</b> xpected n <b>700</b> 600 500 400 300	flow rate (veh edestrian delay (h) adway without measured at t elect treatinotrist complia ce Treatment	(s), v (s(person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm he site, that value <b>ment based u</b> ance at pedestrian t Category:	in 4h is the calculate ent (assumes 0% co can be entered in 4 <b>p on total pede</b> crossings in region: <b>Consid</b>	ed estimated delay for all pr mpliance). If the actual tot it to replace the calculated of estrian delay and ex enter HIGH for High Col ler raised median isl	edestrians crossing the al pedestrian delay value in 4h. pected motorist comp mpliance or LOW for Low ands, curb extensions feasible.	4f 4g 4h 4i liance. 5a , traffic caln	0.33 889 0.5 Low
Algor road werage pe major roa has been ep 5: Si xpected n Complian 700 600 500 400 500 00 500	flow rate (veh edestrian delay edestrian delay (h) adway without measured at t elect treatu notorist complia ce Treatment	(s), v (s(person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm he site, that value <b>ment based u</b> ance at pedestrian t <b>Category:</b>	in 4h is the calculate ent (assumes 0% co can be entered in 4 <b>p on total pede</b> crossings in region: <b>Consid</b>	ed estimated delay for all pr mpliance). If the actual tot it to replace the calculated of estrian delay and ex e enter <i>HIGH for High Col</i> ler raised median isl	edestrians crossing the al pedestrian delay value in 4h. pected motorist comp mpliance or LOW for Low ands, curb extensions feasible.	4f 4g 4h 4i liance. 5a , traffic caln	0.33 889 0.5 Low
Algor road werage pe fotal pedes major roa has been ep 5: Se xpected n 700 600 500 (100 600 500 (100 600 200 200	, during peak i flow rate (veh edestrian delay thrian delay (h) adway without measured at t elect treatm notorist complia ce Treatment	(s), v (s), v , D <sub>p</sub> The value a crossing treatm he site, that value <b>ment based u</b> ance at pedestrian t <b>Category:</b>	a in 4h is the calculate ent (assumes 0% co can be entered in 4 p on total pede crossings in region: Consid	ed estimated delay for all pr mpliance). If the actual tot it to replace the calculated of estrian delay and ex a enter <i>HIGH for High Col</i> ler raised median isl	edestrians crossing the al pedestrian delay value in 4h. pected motorist comp mpliance or LOW for Low ands, curb extensions feasible.	4f 4g 4h 4i <b>liance.</b> 5a , traffic calm	0.33 889 0.5 Low
Algor road Verage per Total peders major road has been ep 5: Sc Expected in Compliant 700 600 500 400 800 200	, during peak i flow rate (veh edestrian delay thian delay (h) adway without measured at t elect treatment ce Treatment	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm he site, that value <b>ment based u</b> ance at pedestrian t Category:	d in 4h is the calculate ent (assumes 0% co can be entered in 4 p on total pede crossings in region: Consid	ed estimated delay for all p mpliance). If the actual tot it to replace the calculated of estrian delay and ex e enter <i>HIGH for High Col</i> ler raised median isl	edestrians crossing the al pedestrian delay value in 4h. pected motorist comp mpliance or LOW for Low ands, curb extensions feasible.	4f 4g 4h 4i 5a , traffic caln	0.33 889 0.5 Low
Aajor road Werage pe Total peder major road has been ep 5: Si Expected in Complian 700 600 500 400 300 200	, during peak i flow rate (veh edestrian delay) strian delay (h) adway without measured at t elect treation motorist complia ce Treatment	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm he site, that value <b>ment based u</b> ance at pedestrian t Category:	in 4h is the calculate ent (assumes 0% co can be entered in 4 <b>p on total pede</b> crossings in region: Consid	ed estimated delay for all pr mpliance). If the actual tot ki to replace the calculated v estrian delay and ex e enter <i>HIGH for High Co</i> .	edestrians crossing the al pedestrian delay value in 4h. pected motorist comp mpliance or LOW for Low ands, curb extensions feasible.	4f 4g 4h 4i 5a , traffic caln	0.33 889 0.5 Low
Aajor road Werage per ordal pederse major road has been ep 5: Si Expected in Compliant 700 600 500 400 300 200 100	, during peak i flow rate (veh edestrian delay) adway without measured at t elect treat notorist complia ce Treatment	(s), v (s), v (s), p , D <sub>p</sub> The value a crossing treatm the site, that value ment based u ance at pedestrian t Category:	in 4h is the calculate ent (assumes 0% co can be entered in 4 <b>p on total pede</b> crossings in region: Consid	ed estimated delay for all pr mpliance). If the actual tot it to replace the calculated v estrian delay and ex enter HIGH for High Cou ler raised median isl	edestrians crossing the al pedestrian delay ralue in 4h. pected motorist comp mpliance or LOW for Low ands, curb extensions feasible.	4f       4g       4h       4i       5a       , traffic calm	0.33 889 0.5 Low
Aajor road Werage pee major road has been ep 5: Si Expected in Compliant 700 600 500 (100 300 200 100	, during peak i flow rate (veh edestrian delay strian delay (h) adway without measured at t elect treats notorist complia ce Treatment	(s), v (s), v (s), p , D <sub>p</sub> The value a crossing treatm the site, that value <b>ment based u</b> ance at pedestrian t Category:	a in 4h is the calculate ent (assumes 0% co can be entered in 4 <b>p on total pede</b> crossings in region: Consid	ed estimated delay for all pr mpliance). If the actual tot it to replace the calculated v estrian delay and ex enter HIGH for High Cou ler raised median isl	adestrians crossing the al pedestrian delay value in 4h. pected motorist comp mpliance or LOW for Low ands, curb extensions feasible.	4f       4g       4h       4i       liance.       5a       , traffic calm	0.33 889 0.5 Low ning, etc.
Aajor road Werage pee major road has been ep 5: Si Expected in Compliant 700 600 500 400 500 100 100	, during peak i flow rate (veh edestrian delay thrian delay (h) adway without measured at t elect treats notorist complia ce Treatment	(s), v (s), v (s), p , D <sub>p</sub> The value a crossing treatm the site, that value <b>ment based u</b> ance at pedestrian t Category:	in 4h is the calculate ent (assumes 0% co can be entered in 4 <b>p on total pede</b> crossings in region: Consid	ed estimated delay for all pr mpliance). If the actual tot it to replace the calculated v estrian delay and ex enter HIGH for High Con- ler raised median isl	adestrians crossing the al pedestrian delay ralue in 4h. pected motorist comp mpliance or LOW for Low ands, curb extensions feasible.	4f 4g 4h 4i liance. 5a , traffic caln	0.33 889 0.5 Low ning, etc.

■No Treatment ■Crosswalk ■Active/Enhanced ■Red ■Signal (proposed)

This spreadsheet combines Worksheet 1 and Worksheet 2 (Appendix A, pages 69-70) of TCRP Report 112/NCHRP Report 562 (*Improving Pedestrian Safety at Unsignalized Intersections*) into an electronic format. This spreadsheet should be used in conjunction with, and not independent of. Appendix A documentation.

This spreadsheet is still under development, please inform TTI if errors are identified.
Blue fields contain descriptive information.

Key

Green fields are required and must be completed.

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<b>Analyst and Site Info</b>	ormation							
Analyst	KAI			Major Street	3rd Avenue			
Analysis Date	March 16, 2018		Minor Street	or Location	N/A			
Data Collection Date February 7, 2018 Peak Hour 7:45 AM (Veh Peak - Sensitivity 2)								
Step 1: Select worksheet:								
Posted or statutory speed	limit (or 85th percentile sp	peed) on the m	ajor street (m	ph)		1a	35	
Is the population of the su	urrounding area <10,000?	(enter YES or	<b>NO</b> )			1b	NO	
Step 2: Does the cro	ssing meet minimu	m pedestri	ian volume	es to be co	onsidered for a traffic	control de	evice?	
Peak-hour pedestrian volu	ıme (ped/h), V <sub>p</sub>					2a	20	
Result: Go to step 3	3.							
Step 3: Does the cro	ssing meet the ped	lestrian wa	rrant for a	traffic sig	gnal?			
Major road volume, total of	of both approaches during	peak hour (vel	n/h), V <sub>maj-s</sub>			За	989	
[Calculated automatically]	Preliminary (before min. t	hreshold) peak	hour pedestri	an volume to	meet warrant	3b	276	
[Calculated automatically]	Minimum required peak h	our pedestrian	volume to me	et traffic sigr	al warrant	Зс	276	
Is 15th percentile crossing	speed of pedestrians less	than 3.5 ft/s (	1.1 m/s)? (er	ter <b>YES</b> or <b>I</b>	<b>VO</b> )	3d	Yes	
If 15th percentile crossing speed of pedestrians is less than 3.5 ft/s % rate of reduction for <i>3c</i> (up to 50%)						Зе	50%	
(1.1 m/s), then reduce 3	c by up to 50%.			Reduced val	ue or 3c	3f	138	
Result: The signal	warrant is not met. Go	to step 4.						
Step 4: Estimate per	destrian delay.							
Pedestrian crossing distan	ice, curb to curb (ft), L					4a	50	
Pedestrian walking speed	(ft/s), S <sub>p</sub> (suggested spee	ed = 3.5 ft/s)				4b	3.5	
Pedestrian start-up time a	and end clearance time (s),	t <sub>s</sub> (suggested	start-up time	= 3 sec)		4c	3	
[Calculated automatically]	Critical gap required for c	rossing pedestr	rian (s), t <sub>c</sub>			4d	17	
Major road volume, total t is present, during peak h	Major road volume, total both approaches OR approach being crossed if raised median island is present, during peak hour (veh/h), V <sub>mai-d</sub>						989	
Major road flow rate (veh	/s), v					4f	0.27	
Average pedestrian delay	(s/person), d <sub>p</sub>					4g	373	
Total pedestrian delay (h), D <sub>p</sub> The value in 4h is the calculated estimated delay for all pedestrians crossing the						4h	2.1	
major roadway without a crossing treatment (assumes 0% compliance). If the actual total pedestrian delay has been measured at the site, that value can be entered in 4i to replace the calculated value in 4h.								
Step 5: Select treatr	ment based up on to	otal pedest	rian delay	and expe	cted motorist compli	ance.		
Expected motorist complia Compliance	ance at pedestrian crossing	is in region: en	ter <b>HIGH for</b>	High Comp	liance or LOW for Low	5a	Low	
Treatment	t Category:			ACT	IVE OR ENHANCED			



This spreadsheet combines Worksheet 1 and Worksheet 2 (Appendix A, pages 69-70) of TCRP Report 112/NCHRP Report 562 (*Improving Pedestrian Safety at Unsignalized Intersections*) into an electronic format. This spreadsheet should be used in conjunction with, and not independent of, Appendix A documentation. This spreadsheet is still under development, please inform TTL if errors are identified. Blue fields contain descriptive information.

Кеу

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Analyst and Site Information								
Analyst KAI		Major	r Street	3rd Avenue				
Analysis Date March 16, 2018 Minor Street or Location N/A								
Data Collection Date February 7, 2	.018	Pea	ak Hour	7:45 AM (Veh Peak - Sensit	ivity 3)			
Step 1: Select worksheet:								
Posted or statutory speed limit (or 85th	percentile speed) on the	major street (mph)			1a	35		
Is the population of the surrounding are	a <10,000? (enter YES	or <b>NO</b> )			1b	NO		
Step 2: Does the crossing mee	t minimum pedest	rian volumes to	o be co	nsidered for a traffic	control de	evice?		
Peak-hour pedestrian volume (ped/h), V	/ <sub>p</sub>				2a	20		
Result: Go to step 3.	í.							
Step 3: Does the crossing mee	t the pedestrian w	arrant for a trai	ffic sig	inal?				
Major road volume, total of both approa	ches during peak hour (v	/eh/h), V <sub>mai-s</sub>			За	1186.8		
[Calculated automatically] Preliminary (I	pefore min. threshold) pe	ak hour pedestrian vo	olume to	meet warrant	3b	201		
[Calculated automatically] Minimum req	uired peak hour pedestria	an volume to meet tra	affic sign	al warrant	Зс	201		
Is 15th percentile crossing speed of ped	lestrians less than 3.5 ft/s	s (1.1 m/s)? (enter Y	<b>YES</b> or <b>N</b>	<b>10</b> )	3d	Yes		
If 15th percentile crossing speed of pedestrians is less than 3.5 ft/s % rate of reduction for <i>3c</i> (up to 50%)						50%		
(1.1  m/s), then reduce $3c$ by up to 50%. Reduced value or $3c$						101		
Result: The signal warrant is no	ot met. Go to step 4.							
Step 4: Estimate pedestrian de	elay.							
Pedestrian crossing distance, curb to cu	rb (ft), L				<i>4a</i>	50		
Pedestrian walking speed (ft/s), $S_p$ (sug	gested speed = 3.5 ft/s)				4b	3.5		
Pedestrian start-up time and end cleara	nce time (s), t <sub>s</sub> (suggeste	ed start-up time = 3 s	sec)		4c	3		
[Calculated automatically] Critical gap re	equired for crossing pede	strian (s), t <sub>c</sub>			4d	17		
Major road volume, total both approach is present, during peak hour (veh/h),	es OR approach being cro V <sub>maj-d</sub>	ossed if raised median	n island		<i>4e</i>	1186.8		
Major road flow rate (veh/s), v					4f	0.33		
Average pedestrian delay (s/person), d	J				4g	889		
Total pedestrian delay (h), D <sub>p</sub> The value in 4h is the calculated estimated delay for all pedestrians crossing the						4.9		
major roadway without a crossing trea has been measured at the site, that v	<i>4i</i>							
Step 5: Select treatment base	Step 5: Select treatment based up on total pedestrian delay and expected motorist compliance.							
Expected motorist compliance at pedest Compliance	rian crossings in region: e	enter <b>HIGH for High</b>	h Compl	liance or LOW for Low	5a	Low		
Treatment Category	:		ACT	IVE OR ENHANCED				



This spreadsheet combines Worksheet 1 and Worksheet 2 (Appendix A, pages 69-70) of TCRP Report 112/NCHRP Report 562 (*Improving Pedestrian Safety at Unsignalized Intersections*) into an electronic format. This spreadsheet should be used in conjunction with, and not independent of. Appendix A documentation.

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Green fields are required and must be completed.

Tan fields are adjustments that are filled out only under certain conditions (follow instructions to the left of the cell).

Analyst and Site Inf	ormation						
Maryst and Site Int				Anior Chart	2rd Avenue		
Analyst	NAL		Min ou Church	viajor Street			
Analysis Date	March 16, 2018		Minor Street	or Location	N/A		
Data Collection Date	February 7, 2018			Peak Hour	12:45 PM (Veh Peak - Sens	sitivity 1)	
Step 1: Select works	sheet:					1	
Posted or statutory speed	limit (or 85th percentile	e speed) on the	major street (mp	oh)		1a	35
Is the population of the s	urrounding area <10,000	0? (enter <b>YES</b> o	or <b>NO</b> )			1b	NO
Step 2: Does the cro	ossing meet minin	num pedest	rian volume	s to be co	onsidered for a traffic	c control de	vice?
Peak-hour pedestrian volu	ume (ped/h), V <sub>p</sub>					2a	8
Result: Consider ra	aised median islands,	curb extensio	ons, traffic caln	ning, etc. as	s feasible.		
Step 3: Does the cro	ossing meet the p	edestrian w	arrant for a	traffic sig	jnal?		
Major road volume, total	of both approaches duri	ng peak hour (v	eh/h), V <sub>maj-s</sub>			За	1412.4
[Calculated automatically]	Preliminary (before mir	n. threshold) pea	ak hour pedestria	an volume to	meet warrant	3b	142
[Calculated automatically]	Minimum required peal	< hour pedestria	n volume to me	et traffic sign	al warrant	Зс	142
Is 15th percentile crossing	g speed of pedestrians le	ess than 3.5 ft/s	(1.1 m/s)? (en	ter <b>YES</b> or <b>I</b>	<b>VO</b> )	3d	Yes
If 15th percentile crossing	speed of pedestrians is	less than 3.5 ft	:/s	% rate of re	duction for <i>3c</i> (up to 50%)	Зе	50%
(1.1  m/s), then reduce 3	<i>c</i> by up to 50%.		, -	Reduced value	ue or <i>3c</i>	3f	71
Result:	· ·						
tep 4: Estimate pe	destrian delav.						
Pedestrian crossing distar	ice, curb to curb (ft).					<i>4a</i>	50
Pedestrian walking speed	(ft/s), S <sub>o</sub> (suggested st	peed = $3.5 \text{ ft/s}$				4b	3.5
Pedestrian start-up time a	and end clearance time (	s), t. (suggeste	ed start-up time	= 3 sec)		40	3
[Calculated automatically]	Critical gap required for	r crossing nedes	strian (s) t.	0 000)		4d	17
Major road volume, total	both approaches OR app	proach being cro	ossed if raised m	edian island		-10	1/12.4
is present, during peak h	hour (veh/h), V <sub>maj-d</sub>	<b>j</b> .				<i>4e</i>	1412.4
Major road flow rate (veh	/s), v					4f	0.39
Average pedestrian delay	(s/person), dp					4g	2151
Total pedestrian delay (h)	), D <sub>n</sub> The value in 4h	is the calculated	d estimated delay	/ for all pede	strians crossing the	4h	4.8
major roadway without	a crossing treatment (a	ssumes 0% com	pliance). If the	actual total p	edestrian delay	∆i	
has been measured at t	the site, that value can b	be entered in 4i	to replace the ca	lculated valu	ie in 4h.	"	
tep 5: Select treat	ment based up on	total pedes	strian delay	and expe	cted motorist compli	iance.	
Expected motorist complia	ance at pedestrian cross	ings in region: e	enter <b>HIGH for</b>	High Comp	<i>liance</i> or <i>LOW for Low</i>	5a	Low
Compliance		Conside	r raised mo	dian iclan	de curh avtancione	traffic calm	ing oto a
Treatmen	t Category:	Conside	a raiseu me		foo sible	u anic can	iniy, etc. a
					reasible.		
600 - 500 - (4)ped) - 300 - 200 - 100 -							
0							

■No Treatment ■Crosswalk ■Active/Enhanced ■Red ■Signal (proposed)

This spreadsheet combines Worksheet 1 and Worksheet 2 (Appendix A, pages 69-70) of TCRP Report 112/NCHRP Report 562 (*Improving Pedestrian Safety at Unsignalized Intersections*) into an electronic format. This spreadsheet should be used in conjunction with, and not independent of, Appendix A documentation. This spreadsheet is still under development, please inform TTL if errors are identified. Blue fields contain descriptive information.

Key

Green fields are required and must be completed.

Tan fields are adjustments that are filled out only under certain conditions (follow instructions to the left of the cell). Gray fields are automatically calculated and should not be edited.

Analyst and Site Info	ormation				-		
Analyst	KAI			Major Street	3rd Avenue		
Analysis Date	March 16, 2018		Minor Stree	t or Location	N/A		
Data Collection Date	February 7, 2018			Peak Hour	12:45 PM (Veh Peak - Sens	itivity 2)	
Step 1: Select works	sheet:						
Posted or statutory speed	limit (or 85th percentile sp	eed) on the n	najor street (m	ph)		1a	35
Is the population of the su	urrounding area <10,000?	(enter <b>YES</b> or	r <b>NO</b> )			1b	NO
Step 2: Does the cro	ossing meet minimu	m pedestr	ian volume	es to be co	onsidered for a traffic	c control de	evice?
Peak-hour pedestrian volu	ume (ped/h), V <sub>p</sub>					2a	20
Result: Go to step	3.						
Step 3: Does the cro	ossing meet the ped	estrian wa	arrant for a	traffic sig	gnal?		
Major road volume, total of	of both approaches during	peak hour (ve	eh/h), V <sub>maj-s</sub>			За	1177
[Calculated automatically]	Preliminary (before min. t	hreshold) pea	k hour pedestr	ian volume to	meet warrant	3b	204
[Calculated automatically]	Minimum required peak h	our pedestriar	n volume to me	et traffic sign	al warrant	Зс	204
Is 15th percentile crossing	g speed of pedestrians less	than 3.5 ft/s	(1.1 m/s)? (er	nter <b>YES</b> or <b>I</b>	<b>VO</b> )	3d	Yes
If 15th percentile crossing	speed of pedestrians is le	ss than 3.5 ft/	's	% rate of re	duction for <i>3c</i> (up to 50%)	Зе	50%
(1.1 m/s), then reduce 3	<i>c</i> by up to 50%.			Reduced val	ue or <i>3c</i>	3f	102
Result: The signal	warrant is not met. Go	to step 4.					
Step 4: Estimate per	destrian delay.						
Pedestrian crossing distan	nce, curb to curb (ft), L					4a	50
Pedestrian walking speed	(ft/s), S <sub>p</sub> (suggested spee	ed = 3.5 ft/s)				4b	3.5
Pedestrian start-up time a	and end clearance time (s),	t <sub>s</sub> (suggestee	d start-up time	= 3 sec)		4c	3
[Calculated automatically]	Critical gap required for ci	rossing pedest	trian (s), t <sub>c</sub>			4d	17
Major road volume, total l is present, during peak h	both approaches OR approa hour (veh/h), V <sub>maj-d</sub>	ach being cros	ssed if raised n	nedian island		<i>4e</i>	1177
Major road flow rate (veh	/s), v					4f	0.33
Average pedestrian delay	(s/person), d <sub>p</sub>					4g	889
Total pedestrian delay (h)	), D <sub>p</sub> The value in 4h is t	he calculated	estimated dela	y for all pede	strians crossing the	4h	4.9
major roadway without has been measured at t	a crossing treatment (assu the site, that value can be a	imes 0% com entered in 4i t	pliance). If the o replace the c	actual total p alculated valu	edestrian delay Je in 4h.	<i>4i</i>	
Step 5: Select treat	ment based up on to	otal pedes	trian delay	and expe	cted motorist compli	ance.	
Expected motorist complia Compliance	ance at pedestrian crossing	is in region: ei	nter <b>HIGH for</b>	High Comp	<i>liance</i> or <i>LOW for Low</i>	5a	Low
Treatment	t Category:			ACT	IVE OR ENHANCED		



This spreadsheet combines Worksheet 1 and Worksheet 2 (Appendix A, pages 69-70) of TCRP Report 112/NCHRP Report 562 (*Improving Pedestrian Safety at Unsignalized Intersections*) into an electronic format. This spreadsheet should be used in conjunction with, and not independent of, Appendix A documentation. This spreadsheet is still under development, please inform TTL if errors are identified. Blue fields contain descriptive information.

Key

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			lot be called.				
Analyst and Site Info	ormation						
Analyst	KAI		Ma	ajor Street	3rd Avenue		
Analysis Date	March 16, 2018		Minor Street o	or Location	N/A		
Data Collection Date	February 7, 2018			Peak Hour	12:45 PM (Veh Peak - Sens	itivity 3)	
Step 1: Select works	sheet:						
Posted or statutory speed	limit (or 85th percentile sp	peed) on the m	najor street (mph	ı)		1a	35
Is the population of the su	urrounding area <10,000?	(enter <b>YES</b> or	r <b>NO</b> )			1b	NO
Step 2: Does the cro	ossing meet minimu	m pedestr	ian volumes	to be co	onsidered for a traffic	c control de	evice?
Peak-hour pedestrian volu	ume (ped/h), V <sub>p</sub>					2a	20
Result: Go to step	3.						
Step 3: Does the cro	ossing meet the ped	estrian wa	arrant for a t	raffic sig	gnal?		
Major road volume, total of	of both approaches during	peak hour (vel	h/h), V <sub>maj-s</sub>			За	1412.4
[Calculated automatically]	Preliminary (before min. t	hreshold) peak	k hour pedestriar	n volume to	meet warrant	3b	142
[Calculated automatically]	Minimum required peak h	our pedestrian	n volume to meet	traffic sign	al warrant	Зс	142
Is 15th percentile crossing	g speed of pedestrians less	than 3.5 ft/s (	(1.1 m/s)? (ente	er <b>YES</b> or <b>I</b>	<b>VO</b> )	3d	Yes
If 15th percentile crossing	speed of pedestrians is le	ss than 3.5 ft/s	's %	6 rate of re	duction for <i>3c</i> (up to 50%)	Зе	50%
(1.1 m/s), then reduce 3	<i>c</i> by up to 50%.		R	educed val	ue or <i>3c</i>	3f	71
Result: The signal	warrant is not met. Go	to step 4.					
Step 4: Estimate per	destrian delay.						
Pedestrian crossing distan	nce, curb to curb (ft), L					<i>4a</i>	50
Pedestrian walking speed	(ft/s), Sp (suggested spee	ed = 3.5 ft/s)				4b	3.5
Pedestrian start-up time a	and end clearance time (s),	t <sub>s</sub> (suggested	d start-up time =	3 sec)		4c	3
[Calculated automatically]	Critical gap required for c	rossing pedest	trian (s), t <sub>c</sub>			4d	17
Major road volume, total l is present, during peak h	both approaches OR appro hour (veh/h), V <sub>maj-d</sub>	ach being cros	ssed if raised med	dian island		<i>4e</i>	1412.4
Major road flow rate (veh,	/s), v					4f	0.39
Average pedestrian delay	(s/person), d <sub>p</sub>					4g	2151
Total pedestrian delay (h)	), D <sub>p</sub> The value in 4h is t	he calculated	estimated delay	for all pede	strians crossing the	4h	12.0
major roadway without has been measured at t	a crossing treatment (assu the site, that value can be	imes 0% comp entered in 4i to	pliance). If the ac o replace the calc	ctual total p culated valu	edestrian delay Je in 4h.	<i>4i</i>	
Step 5: Select treat	ment based up on to	otal pedest	trian delay a	nd expe	cted motorist compli	ance.	
Expected motorist complia Compliance	ance at pedestrian crossing	is in region: en	nter <b>HIGH for H</b>	ligh Comp	<i>liance</i> or <i>LOW for Low</i>	5a	Low
Treatment	t Category:				RED		



This spreadsheet combines Worksheet 1 and Worksheet 2 (Appendix A, pages 69-70) of TCRP Report 112/NCHRP Report 562 (*Improving Pedestrian Safety at Unsignalized Intersections*) into an electronic format. This spreadsheet should be used in conjunction with, and not independent of. Appendix A documentation.

This spreadsheet is still under development, please inform TTI if errors are identified.
Blue fields contain descriptive information.

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Green fields are required and must be completed.

Tan fields are adjustments that are filled out only under certain conditions (follow instructions to the left of the cell).

Analyst ar									
	nd Site Info	ormation							
	Analyst	KAI			Major Street	3rd Avenue			
	Analysis Date	March 16, 2018		Minor Street	or Location	N/A			
Data C	Collection Date	February 7, 2018	3		Peak Hour	3:45 PM (Veh Peak	- Sensitivity 1)		
Step 1: S	elect works	sheet:							
Posted or s	statutory speed	limit (or 85th per	rcentile speed) on th	he major street (m	ph)		-	la	35
Is the popu	ulation of the su	urrounding area <	<10,000? (enter YE	<b>s</b> or <b>NO</b> )				1b	NO
tep 2: D	oes the cro	ssing meet r	ninimum pede	strian volume	s to be co	onsidered for a	traffic con	trol dev	vice?
Peak-hour	pedestrian volu	ime (ped/h), V <sub>n</sub>	•					2a	2
Result	: Consider ra	ised median is	lands, curb exten	sions, traffic calr	ning, etc. a	s feasible.			
tep 3: D	oes the cro	ssing meet t	he pedestrian	warrant for a	traffic sid	anal?			
Maior road	volume, total	of both approache	es during peak hour	(veh/h), V <sub>mai-c</sub>		-		3a	1569.6
[Calculated	automatically]	Preliminary (hef	ore min_threshold)	neak hour nedestri	an volume to	meet warrant		3h	133
	automatically]	Minimum require	ad naak hour nadast	trian volume to me	ot traffic sign	al warrant		30	133
Ic 15th por		rinnindun require	rians loss than 2 E f	$f_{1}(a) = \frac{1}{2} \frac$				2d	Voc
IS I Juli per		speed of pedest	riana ia lasa than 2 l	цз (1.1 ш/з): (еп		dustion for 20 (up to	500()	20	Te3
(1.1  m/c)	then reduce 2	speed of pedesu	rians is less than 3.:	SIUS	% rate of re		50%) -	26	50%
(1.1 III/S),	then reduce 5	c by up to 50%.			Reduced Val	ue or <i>3c</i>	·	3/	6/
top 4: E	stimato no	doctrian dola	W						
	sumate per		( <del>0</del> )					4-	50
Pedestrian	crossing distan	(the) C (august	(TT), L	(0)				48	50
Pedestrian	waiking speed	(IL/S), S <sub>p</sub> (Sugge	sted speed = $3.5 \text{ Hz}$	/5)	2 )			4D	3.5
Pedestrian	start-up time a	ind end clearance	e time (s), t <sub>s</sub> (sugge	ested start-up time	= 3  sec			4C	3
[Calculated	automatically	Critical gap requ	ored for crossing per	destrian (s), t <sub>c</sub>	odian island			4d	17
is present	t, during peak h	our (veh/h). Vm		crossed il raised m	eulan Islanu			4e	1569.6
Major road	flow rate (veh	/s) v	J-0					16	0.44
Triujor Touu	now rate (veri	<b>31</b> , <b>v</b>						41	
Average ne	edestrian delav	(s/nerson) d						41 4a	4548
Average pe	edestrian delay strian delay (b)	(s/person), d <sub>p</sub>	in 4h is the calcula	ted estimated dela	v for all nede	strians crossing the		41 4g 4h	4548
Average per Total pedes major ros	edestrian delay strian delay (h) adway without	(s/person), $d_p$ , $D_p$ The value a crossing treatm	e in 4h is the calcula nent (assumes 0% c	ted estimated dela compliance). If the	y for all pede actual total p	strians crossing the edestrian delay		41 4g 4h	4548 2.5
Average per Total pedes major roa has been	edestrian delay strian delay (h) adway without n measured at t	(s/person), $d_p$ , $D_p$ The value a crossing treatm he site, that value	e in 4h is the calcula nent (assumes 0% c e can be entered in	ted estimated dela compliance). If the 4i to replace the ca	y for all pede actual total p alculated valu	strians crossing the bedestrian delay ue in 4h.		41 Ag Ah 4i	4548 2.5
Average per Total pedes major roa has been	edestrian delay strian delay (h) adway without n measured at t elect treatu	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm he site, that value <b>ment based u</b>	e in 4h is the calcula nent (assumes 0% c e can be entered in <b>1p on total ped</b>	ted estimated dela compliance). If the 4i to replace the ca lestrian delay	y for all pede actual total p alculated valu <b>and expe</b>	strians crossing the bedestrian delay Je in 4h. <b>cted motorist c</b>	ompliance	41 4g 4h 4i	4548 2.5
Average per Total peder major roa has been <b>itep 5: S</b> Expected n	edestrian delay strian delay (h) adway without n measured at t elect treatu notorist complia	(s/person), $d_p$ , $D_p$ The value a crossing treatm he site, that value <b>ment based u</b> ance at pedestriar	in 4h is the calcula ent (assumes 0% c e can be entered in <b>ip on total ped</b> n crossings in regior	ted estimated dela compliance). If the 4i to replace the ca lestrian delay h: enter <i>HIGH for</i>	y for all pede actual total p alculated valu <b>and expe</b> <i>High Comp</i>	strians crossing the bedestrian delay be in 4h. <b>cted motorist c</b> <i>liance</i> or <i>LOW for</i>	ompliance	41 4g 4h 4i •	4548 2.5
Average per Total peder major roc has been tep 5: So Expected n <i>Complian</i>	edestrian delay strian delay (h) adway without n measured at t elect treatu notorist complia ce	(s/person), $d_p$ , $D_p$ The value a crossing treatm he site, that value <b>nent based u</b> ance at pedestriar	e in 4h is the calcula ent (assumes 0% c e can be entered in <b>up on total ped</b> n crossings in regior	ted estimated dela compliance). If the 4i to replace the cr lestrian delay h: enter <i>HIGH for</i>	y for all pede actual total p alculated valu <b>and expe</b> <i>High Comp</i>	strians crossing the bedestrian delay ie in 4h. <b>Cted motorist c</b> <i>liance</i> or <i>LOW for</i>	ompliance	41 4 <u>g</u> 4h 4i 5a	4548 2.5 Low
Average per Total pedes major ro has been <b>itep 5: So</b> Expected n <i>Complian</i>	edestrian delay strian delay (h) adway without neasured at t elect treatu notorist complia ce Treatment	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm he site, that value <b>nent based u</b> ance at pedestriar	e in 4h is the calcula ent (assumes 0% c e can be entered in <b>up on total ped</b> n crossings in regior <b>Consi</b>	ted estimated dela compliance). If the 4i to replace the ca <b>lestrian delay</b> h: enter <i>HIGH for</i> <b>der raised me</b>	y for all pede actual total p alculated valu <b>and expe</b> <i>High Comp</i> dian islan	strians crossing the bedestrian delay ie in 4h. <b>Cted motorist c</b> <i>liance</i> or <i>LOW for</i> <b>ids, curb extens</b>	ompliance Low	4) 4g 4h 4i 5a ic calm	4548 2.5 Low
Average per Total pedes major roo has been <b>itep 5: S</b> Expected n <i>Complian</i>	edestrian delay strian delay (h) adway without neasured at t elect treatu notorist complia ce Treatment	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm he site, that value <b>nent based t</b> ance at pedestriar	e in 4h is the calcula ent (assumes 0% c e can be entered in <b>up on total ped</b> n crossings in regior <b>Consi</b>	ted estimated dela compliance). If the 4i to replace the ca <b>lestrian delay</b> n: enter <i>HIGH for</i> <b>der raised me</b>	y for all pede actual total p alculated valu <b>and expe</b> <i>High Comp</i> dian islan	strians crossing the bedestrian delay ie in 4h. <b>cted motorist c</b> <i>liance</i> or <i>LOW for</i> <b>ids, curb extens</b> <b>feasible.</b>	ompliance	41 41 41 41 5a ic calm	4548 2.5 Low
Average per Total peder major roc has been tep 5: S Expected n Complian	adestrian delay strian delay (h) adway without neasured at t elect treatu notorist complia ce Treatment	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm the site, that value <b>ment based t</b> ance at pedestriar t Category:	e in 4h is the calcula nent (assumes 0% c e can be entered in <b>up on total ped</b> n crossings in regior <b>Consi</b>	ted estimated dela compliance). If the 4 it or replace the ca lestrian delay h: enter <i>HIGH for</i> der raised me	y for all pede actual total p alculated valu <b>and expe</b> <i>High Comp</i> dian islan	strians crossing the bedestrian delay le in 4h. <b>cted motorist c</b> <i>liance</i> or <i>LOW for</i> <b>ids, curb extens</b> <b>feasible.</b>	ompliance Low	41 41 41 41 5a ic calm	4548 2.5 Low
Average per Total peder major roc has been tep 5: S Expected n Complian	edestrian delay strian delay (h) adway without neasured at elect treatmonotorist complia ce Treatment	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm he site, that value <b>ment based t</b> ance at pedestrian t <b>Category:</b>	e in 4h is the calcula ent (assumes 0% c e can be entered in <b>IP on total ped</b> n crossings in regior <b>Consi</b>	ted estimated dela compliance). If the 4i to replace the ca lestrian delay h: enter <i>HIGH</i> for der raised me	y for all pede actual total p alculated valu <b>and expe</b> <i>High Comp</i> dian islan	strians crossing the edestrian delay ie in 4h. <b>cted motorist c</b> <i>liance</i> or <i>LOW for</i> <b>ids, curb extens</b> <b>feasible.</b>	ompliance Low	41 44g 41 41 5 5 a ic calm	4548 2.5 Low
Average per Total peder major rom has been Expected in Compliant	edestrian delay strian delay (h) adway without measured at t elect treatm notorist complia ce Treatment	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm he site, that value <b>ment based u</b> ance at pedestriar t <b>Category:</b>	e in 4h is the calcula ent (assumes 0% c e can be entered in <b>1p on total ped</b> n crossings in regior <b>Consi</b>	ited estimated dela compliance). If the 4i to replace the ca <b>lestrian delay</b> h: enter <i>HIGH for</i> <b>der raised me</b>	y for all pede actual total p alculated valu <b>and expe</b> <i>High Comp</i> dian islan	strians crossing the vedestrian delay ue in 4h. <b>cted motorist c</b> <i>liance</i> or <i>LOW for</i> <b>ids, curb extens</b> <b>feasible.</b>	ompliance Low	44 44g 44i 55a ic calm	4548 2.5 Low
Average per Total peder major rou has been tep 5: S Expected n Complian 700 600	edestrian delay strian delay (h) adway without measured at t elect treatm motorist compliance Treatment	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm he site, that value ment based u ance at pedestriar t Category:	e in 4h is the calcula ent (assumes 0% c e can be entered in <b>ip on total ped</b> n crossings in region Consi	ted estimated dela compliance). If the 4i to replace the co lestrian delay h: enter <i>HIGH for</i> der raised me	y for all pede actual total p alculated valu <b>and expe</b> <i>High Comp</i> dian islan	strians crossing the edestrian delay le in 4h. <b>cted motorist c</b> <i>liance</i> or <i>LOW for</i> <b>ids, curb extens</b> <b>feasible.</b>	ompliance Low	41 42 41 41 41 53 53	4548 2.5 Low
Average per Total peder major roi has been <b>tep 5: S</b> Expected n <i>Complian</i> 700 600	edestrian delay strian delay (h) adway without measured at t elect treatu notorist complia ce Treatment	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm he site, that value <b>ment based u</b> ance at pedestriar t <b>Category:</b>	e in 4h is the calcula ent (assumes 0% c e can be entered in <b>ip on total ped</b> n crossings in region <b>Consi</b>	ted estimated dela compliance). If the 4i to replace the ca <b>lestrian delay</b> h: enter <i>HIGH for</i> <b>der raised me</b>	y for all pede actual total p alculated valu <b>and expe</b> <i>High Comp</i> dian islan	strians crossing the vedestrian delay ie in 4h. <b>cted motorist c</b> <i>liance</i> or <i>LOW for</i> <b>ids, curb extens</b> <b>feasible.</b>	ompliance Low	41 42 41 41 • • • • • • • • •	4548 2.5 Low
Average per Total pedes major roo has been <b>tep 5: S</b> Expected n <i>Complian</i> 700 600 500	adestrian delay strian delay (h) adway without measured at t elect treatm notorist complia ce Treatment	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm he site, that value <b>ment based t</b> ance at pedestriar t <b>Category:</b>	e in 4h is the calcula ent (assumes 0% c e can be entered in <b>ip on total ped</b> n crossings in region <b>Consi</b>	ted estimated dela compliance). If the 4i to replace the ca <b>lestrian delay</b> h: enter <i>HIGH for</i> <b>der raised me</b>	y for all pede actual total p alculated valu <b>and expe</b> <i>High Comp</i> dian islan	strians crossing the bedestrian delay ie in 4h. <b>cted motorist c</b> <i>liance</i> or <i>LOW for</i> <b>ids, curb extens</b> <b>feasible.</b>	ompliance Low	41 42 41 44 55 56 <b>ic calm</b>	4548 2.5 Low
Average per Total pedes major roo has been Expected n Complian 700 600 500	adestrian delay strian delay (h) adway without neasured at t elect treatr notorist complia ce Treatment	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm the site, that value <b>ment based u</b> ance at pedestriar	e in 4h is the calcula nent (assumes 0% c e can be entered in up on total ped n crossings in region Consi	ted estimated dela compliance). If the 4i to replace the cr lestrian delay h: enter <i>HIGH for</i> der raised me	y for all pede actual total p alculated valu <b>and expe</b> <i>High Comp</i> dian islan	strians crossing the bedestrian delay ie in 4h. <b>cted motorist c</b> <i>liance</i> or <i>LOW for</i> <b>ids, curb extens</b> <b>feasible.</b>	ompliance Low	41 41 41 55a	4548 2.5 Low
Average per Total pedes major roc has been Expected in Complian 700 600 500	adestrian delay strian delay (h) adway without n measured at t <b>elect treatu</b> notorist complia ce <b>Treatment</b>	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm the site, that value <b>nent based u</b> ance at pedestriar	e in 4h is the calcula nent (assumes 0% c e can be entered in <b>up on total ped</b> n crossings in region <b>Consi</b>	ted estimated dela compliance). If the 4i to replace the ca <b>lestrian delay</b> h: enter <i>HIGH</i> for <b>der raised me</b>	y for all pede actual total p alculated valu <b>and expe</b> <i>High Comp</i> dian islan	strians crossing the edestrian delay ie in 4h. <b>cted motorist c</b> <i>liance</i> or <i>LOW for</i> <b>ids, curb extens</b> <b>feasible.</b>	ompliance Low	41 41 - 53 ic calm	4548 2.5 Low
Average per Total pedes major roc has been Expected in Complian 700 600 500 500 400	edestrian delay strian delay (h) adway without n measured at t elect treatu notorist complia ce Treatment	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm the site, that value <b>ment based u</b> ance at pedestriar t Category:	e in 4h is the calcula ent (assumes 0% c e can be entered in <b>1p on total ped</b> n crossings in regior <b>Consi</b>	ted estimated dela compliance). If the 4i to replace the ca <b>lestrian delay</b> h: enter <i>HIGH</i> for <b>der raised me</b>	y for all pede actual total p alculated valu <b>and expe</b> <i>High Comp</i> <b>dian islan</b>	strians crossing the edestrian delay ie in 4h. <b>cted motorist c</b> <i>liance</i> or <i>LOW for</i> <b>ids, curb extens</b> <b>feasible.</b>	ompliance Low	41 41 41 55a	Low
Average per Total peder major roo has been Expected in Complian 700 600 500 (Up a)	edestrian delay strian delay (h) adway without measured at t elect treatm motorist complia ce Treatment	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm the site, that value ment based t ance at pedestriar	e in 4h is the calcula ent (assumes 0% c e can be entered in <b>1p on total ped</b> n crossings in regior <b>Consi</b>	ited estimated dela compliance). If the 4i to replace the ca <b>lestrian delay</b> n: enter <i>HIGH</i> for <b>der raised me</b>	y for all pede actual total p alculated valu <b>and expe</b> <i>High Comp</i> dian islan	strians crossing the vedestrian delay ue in 4h. <b>cted motorist c</b> <i>liance</i> or <i>LOW for</i> <b>ids, curb extens</b> <b>feasible.</b>	ompliance Low	41 41 44 55 6 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	4548 2.5 Low
Average per Total peder major roo has been Expected n Complian 700 600 500 (Upad) 9 300	edestrian delay strian delay (h) adway without measured at t elect treatm motorist compliance Treatment	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm the site, that value ment based t ance at pedestriar	e in 4h is the calcula ent (assumes 0% c e can be entered in <b>1p on total ped</b> n crossings in regior <b>Consi</b>	ted estimated dela compliance). If the 4i to replace the ca <b>lestrian delay</b> n: enter <i>HIGH</i> for <b>der raised me</b>	y for all pede actual total p alculated valu <b>and expe</b> <i>High Comp</i> dian islan	strians crossing the vedestrian delay ue in 4h. <b>cted motorist c</b> <i>liance</i> or <i>LOW for</i> <b>ids, curb extens</b> <b>feasible.</b>	ompliance Low	41 41 41 53 ic calm	Low
Average per Total pedes major roi has been Expected n 700 600 500 500 400 300	edestrian delay strian delay (h) adway without measured at t elect treatm notorist compliance Treatment	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm he site, that value <b>ment based t</b> ance at pedestriar t <b>Category:</b>	e in 4h is the calcula ent (assumes 0% c e can be entered in <b>1p on total ped</b> n crossings in region Consi	ted estimated dela compliance). If the 4i to replace the co lestrian delay n: enter <i>HIGH</i> for der raised me	y for all pede actual total p alculated valu <b>and expe</b> <i>High Comp</i> dian islan	strians crossing the vedestrian delay le in 4h. <b>cted motorist c</b> <i>liance</i> or <i>LOW for</i> <b>ids, curb extens</b> <b>feasible.</b>	ompliance Low	41 41 41 55a	4548 2.5 Low
Average per Total pedes major roc has been Expected in Complian 700 600 500 (Up ad 300 200	edestrian delay strian delay (h) adway without measured at t elect treatm notorist compliance Treatment	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm he site, that value <b>ment based t</b> ance at pedestriar t <b>Category:</b>	e in 4h is the calcula ent (assumes 0% c e can be entered in <b>ip on total ped</b> n crossings in region Consi	ted estimated dela compliance). If the 4i to replace the co <b>lestrian delay</b> h: enter <i>HIGH for</i> <b>der raised me</b>	y for all pede actual total p alculated valu <b>and expe</b> <i>High Comp</i> <b>dian islan</b>	strians crossing the vedestrian delay ie in 4h. <b>cted motorist c</b> <i>liance</i> or <i>LOW for</i> <b>ids, curb extens</b> <b>feasible.</b>	ompliance Low	41 41 41 55a	4548 2.5 Low
Average per Total pedes major roc has been <b>tep 5: S</b> Expected n <b>Complian</b> 700 600 500 (Upp 400 300 200	adestrian delay strian delay (h) adway without measured at t elect treatm notorist complia ce Treatment	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm the site, that value <b>ment based t</b> ance at pedestriar t <b>Category:</b>	e in 4h is the calcula nent (assumes 0% c e can be entered in up on total ped n crossings in region Consi	ted estimated dela compliance). If the 4i to replace the ca <b>lestrian delay</b> h: enter <i>HIGH for</i> <b>der raised me</b>	y for all pede actual total p alculated valu <b>and expe</b> <i>High Comp</i> dian islan	strians crossing the bedestrian delay ie in 4h. <b>Cted motorist c</b> <i>liance</i> or <i>LOW for</i> <b>ids, curb extens</b> <b>feasible.</b>	ompliance Low	41 41 - 53 ic calm	4548 2.5 Low ing, etc. a
Average per Total pedes major roc has been Expected n Complian 700 600 500 400 300 200	adestrian delay strian delay (h) adway without measured at t elect treatr notorist complia ce Treatment	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm the site, that value <b>ment based u</b> ance at pedestriar t Category:	e in 4h is the calcula nent (assumes 0% c e can be entered in up on total ped n crossings in region Consi	ted estimated dela compliance). If the 4i to replace the ca lestrian delay n: enter <i>HIGH</i> for der raised me	y for all pede actual total p alculated valu <b>and expe</b> <i>High Comp</i> <b>dian islan</b>	strians crossing the edestrian delay ie in 4h. <b>cted motorist c</b> <i>liance</i> or <i>LOW for</i> <b>ids, curb extens</b> <u>feasible.</u>	ompliance Low	41 41 - 53 ic calm	4548 2.5 Low ing, etc. a
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Average per Total peder major roo has been Expected in Complian 700 600 500 400 200 100	edestrian delay strian delay (h) adway without measured at t elect treatm motorist complia ce Treatment	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm the site, that value <b>nent based u</b> ance at pedestriar t Category:	e in 4h is the calcula ent (assumes 0% c e can be entered in <b>1p on total ped</b> n crossings in regior <b>Consi</b>	ited estimated dela compliance). If the 4i to replace the ca lestrian delay n: enter <i>HIGH</i> for der raised me	y for all pede actual total p alculated valu <b>and expe</b> <i>High Comp</i> <b>dian islan</b>	strians crossing the vedestrian delay ue in 4h. <b>cted motorist c</b> <i>liance</i> or <i>LOW for</i> <b>ods, curb extens</b> <b>feasible.</b>	ompliance Low	41 41 5a ic calm	Low
Average per Total peder major roi has been Expected n Complian 700 600 500 400 200 100 0	edestrian delay strian delay (h) adway without measured at t elect treatm notorist complia ce Treatment	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm he site, that value <b>ment based t</b> ance at pedestriar t <b>Category:</b>	e in 4h is the calcula ent (assumes 0% c e can be entered in <b>1p on total ped</b> n crossings in regior Consi	ted estimated dela compliance). If the 4i to replace the co lestrian delay n: enter <i>HIGH</i> for der raised me	y for all pede actual total p alculated valu <b>and expe</b> <i>High Comp</i> <b>dian islan</b>	strians crossing the vedestrian delay ue in 4h. <b>cted motorist c</b> <i>liance</i> or <i>LOW for</i> <b>ids, curb extens</b> <b>feasible.</b>	ompliance Low	41 41 41 53 ic calm	4548 2.5 Low ing, etc. a
Average per Total peder major roi has been Expected n Complian 700 600 500 400 200 100 0 0	edestrian delay strian delay (h) adway without measured at t elect treatm notorist compliance Treatment	(s/person), d <sub>p</sub> , D <sub>p</sub> The value a crossing treatm he site, that value <b>ment based t</b> ance at pedestriar t Category:	e in 4h is the calcula ent (assumes 0% c e can be entered in <b>1p on total ped</b> n crossings in region Consi	ted estimated dela compliance). If the 4i to replace the co lestrian delay n: enter <i>HIGH</i> for der raised me	y for all pede actual total p alculated valu and expe High Comp dian islan	strians crossing the vedestrian delay ue in 4h. cted motorist c liance or LOW for ids, curb extens feasible.	ompliance Low	44 44 44 44 44 44 44 44 44 44 44 44 44	4548 2.5 Low ing, etc. a

This worksheet provides general recommendations on pedestrian crossing treatments to consider at unsignalized intersections; in all cases, engineering judgment should be used in selecting a specific treatment for installation. This worksheet does not apply to school crossings. In addition to the results provided by this worksheet, users should consider whether a pedestrian treatment could present an increased

Crosswalk Active/Enhanced

Red

Signal (proposed)

■No Treatment