



South Campus Neighborhood Project

# Transportation Study

3rd Street & 4th Street One-Way Conversion

CONCEPTS

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**Engineering 586: Advanced Transportation Engineering Design | Spring 2018**

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**Resilient Cities Initiative**

Institute for Sustainable Development  
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# The South Campus Neighborhood Project

The South Campus Neighborhood Project is an award-winning neighborhood improvement planning effort coordinated by the Resilient Cities Initiative at California State University, Chico and the Public Works-Engineering Division at the City of Chico, CA. The project is focused on the public rights-of-way in Chico, California's South Campus Neighborhood, a six by seven square-block area bound by 2nd Street to the North, 9th Street to the South, Orange Street to the West and Salem Street to the East. Immediately adjacent to both downtown Chico and the University, it is Chico's oldest residential neighborhood and was laid out by the town's founder, John Bidwell, in the 1860's.

The neighborhood today is densely populated with university students and is also home to a number of small businesses, restaurants, bars, churches, community organizations, a school, a fire station, a police station, a railway station and transit center. Given its location, population and mixed uses, the neighborhood faces a unique set of circumstances and challenges. This three-year project aims to assess existing conditions and to develop and refine neighborhood improvement concepts to address a range of identified issues. The neighborhood improvement planning process is focused on concepts for complete streets and public works that will enhance public health and safety, quality of life, sense of place and environmental sustainability.

➤ *More information can be found online at <http://scnpchico.com/>*

# City of Chico Public Works-Engineering

The overall Mission, Vision and Goal of the City of Chico Public Works Department is to provide the best possible Quality of Life through our abilities to protect, plan, construct and maintain the physical assets of the City. This is achieved through teamwork, integrity, professionalism, innovation, respectful customer service, value to the citizens of Chico, accountability and stewardship of the City's infrastructure and public resources. We serve the public in a manner that supports the rich heritage of Chico, as well as progressing into future improvements desired by the community in a sustainable manner. We continue to look for new technology that assists in meeting these goals so that we can operate at the most efficient level and continue to be at the leading edge of modern standards.

Our Mission, Vision and Goals include ensuring public safety through detail oriented and strategic improvements to mitigate unsafe operation and use of our Public property; Providing safe, sustainable, integrated and efficient transportation systems to enhance the City of Chico's economy and livability for all modes of transportation; Efficiently and effectively providing a reliable, sustainable and cost effective sanitary sewer and storm water collection system for our residents and businesses in-line with our overall Mission and Vision. We are stewards of the natural environment and through responsible practices, we construct and maintain our natural environment to the highest of standards. We will continue to make the City of Chico a leader in sustainable and clean practices so that our residents can experience the quality of life that is desired for an infinite length of time.

# The Resilient Cities Initiative

The Resilient Cities Initiative (RCI) is an interdisciplinary university-community partnership program established by the Institute for Sustainable Development at California State University, Chico in 2016. The RCI connects real-world community sustainability projects – identified and funded by partner agencies – with faculty expertise and student innovation from departments and disciplines across the University’s academic colleges. The RCI recruits partner agencies through a competitive selection process and matches projects with existing courses across the university’s curricula. Partner agencies are able to harness incredible momentum for their projects in large part because the partnership is realized on a bigger scale than more typical one-off university-community projects. Faculty are able to opt-in and augment their existing curriculum with real-world projects that have been identified, funded and supported by the leadership and staff of the partner agency – ultimately delivering their students’ work for consideration and implementation.

The RCI is a member of the Educational Partnerships for Innovation in Communities (EPIC) Network, a nationwide network of over 25 universities that have replicated the highly successful Sustainable City Year Model that was established at the University of Oregon in 2009. The model is based on university-community partnerships with a defined geographic and temporal scope, focused on advancing sustainability and the social good, leveraging the multidisciplinary knowledge and capacity of the university to ‘move the needle’ on pressing community issues. The RCI directly engages hundreds of CSU, Chico students each academic year, providing impactful opportunities for them to put theory to practice in their own community and region, connecting them with decision-makers in practitioners in their fields of study, and helping develop the next generation of workforce professionals and leaders.



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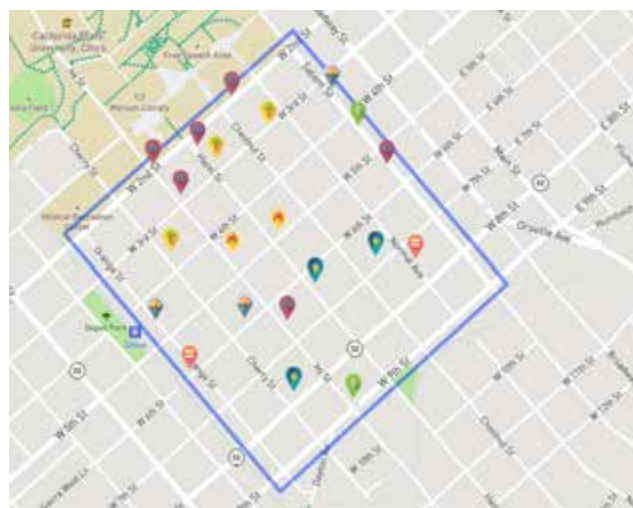


# Introduction

## Background

The South Campus Neighborhood Project is located in Chico, California, south of the California State University, Chico. The area of the project consists of six by seven square blocks from Orange Street to Salem Street, in addition from 2<sup>nd</sup> Street to 9<sup>th</sup> Street. The improvement objectives for the City of Chico are to increase safety for pedestrians, create smoother traffic flow, and add aesthetics to the neighborhood. The city will accomplish these objectives by changing and improving the roads within the South Campus Neighborhood.

East of the South Campus Neighborhood lies downtown Chico. The downtown area is composed of many businesses, city hall, city plaza, and often hosts events that draw in vehicle, bicyclist, and pedestrian traffic. Many of the roads in the downtown business area have been converted to one-way traffic flow. This has allowed for safer, more complete street dynamics to be incorporated into the available area without decreasing the level of service provided to vehicular means of travel. The report will be focusing on the improvement of 3<sup>rd</sup> Street and 4<sup>th</sup> Street within the South Campus Neighborhood by converting them into one-way roads. Figure 1 shows a map of the South Campus Neighborhood in the City of Chico.



**Figure 1. Location of the South Campus Neighborhood**

# Objective

Most of the roads in the neighborhood excluding 8<sup>th</sup> Street and 9<sup>th</sup> Street allow two-way traffic flow. With the exemption of a few stop signs, there are yield only signs for traffic traveling northbound or southbound throughout the neighborhood. Additionally, from observation of the neighborhood, many roads show asphalt damage such as alligator cracking, block cracking, weathering, and distortions. The city would like to start improving the area by converting 3<sup>rd</sup> Street and 4<sup>th</sup> Street into a pair of one-ways that merge with the already in place downtown one-ways. The underlying concerns on the street segments include:

- a) The yield signs that do not provide adequate safety for the two-way traffic flow.
- b) Parking along the street sides is not as efficient as the area could provide.
- c) The street lighting for pedestrian sidewalks is insufficient.
- d) There are no dedicated lanes provided for active means of travel such as bicycling.

The project aims to address these concerns to further improve the 3<sup>rd</sup> Street and 4<sup>th</sup> Street segments to meet the same philosophy that much of the downtown Chico area has already implemented successfully. Figure 2 shows the current location and directions of traffic flow on 3<sup>rd</sup> Street and 4<sup>th</sup> Street. Figure 3 displays the two-lane roads with directional traffic flow arrows.



**Figure 2. Current traffic flow layout on 3<sup>rd</sup> Street and 4<sup>th</sup> Street**



**Figure 3. Current Street Layout of 3<sup>rd</sup> Street and 4<sup>th</sup> Street**

Based on the background and objective of the study, the following three tasks were identified and performed:

Task 1: Determine Improvement Needs

Task 2. Evaluate Alternatives

Task 3: Recommend Alternatives

# Determine Improvement Needs

To complete task one, the City of Chico provided traffic counts, along with accident reports from the South Campus Neighborhood. The data provided was good but inadequate in determining the level of service (LOS) for the roads of interest. Therefore, the teams from the CIVL-586C class performed two traffic studies. The first traffic study conducted was using Metro-Count equipment to collect additional traffic information on both 3<sup>rd</sup> Street and 4<sup>th</sup> Street. The Metro-Count is a device attached with two rubber tubes that extend across the road allowing traffic to travel over them. This equipment can count, record the date and time, and distinguish between vehicle, bicyclist, and transit traffic. The Metro-Count equipment is also able to determine the traveling speeds of traffic. With the data collected the peak hour volume was determined.

The Metro-Count equipment was set up twice on each road for a total of four traffic study locations. The first set up was on 3<sup>rd</sup> Street, west of the Normal Street intersection. This was a good location to place the Metro-Count because it was close to downtown, the transit center, and a fair distance from any stop sign making it possible to observe regular traveling speeds. Following the 3<sup>rd</sup> Street set up, the next location was on 4<sup>th</sup> Street, east of the Normal Street intersection. This location was chosen because it was infeasible to set up west of the Normal Street intersection due to the road side parking. The 4<sup>th</sup> Street set up location was still a prime spot for a Metro-Count traffic study. After leaving the Metro-Counts at each location to collect data for a week they were relocated to two new spots.

The next location on 3<sup>rd</sup> Street was west of the Ivy Street intersection. The reason for this location was because Ivy Street is a busy street and intersection that lies close to the campus. On 4<sup>th</sup> Street the second location was also west of the Ivy Street intersection at about midblock. All four locations gathered sufficient data and allowed the CIVL-586C class to observe the traffic conditions on both ends of 3<sup>rd</sup> Street and 4<sup>th</sup> Street. The Metro-Count data collected can be found in Appendix A— Speed Data.







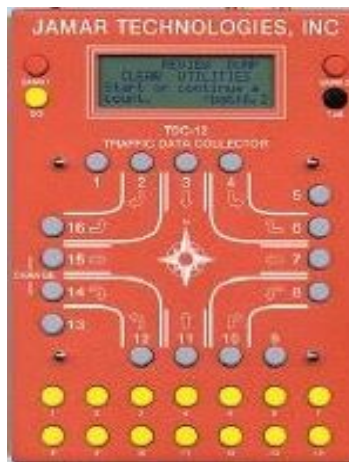
**Figure 4. A Metro-Count device used for the traffic study**



**Figure 5. Metro-Count attached with pneumatic tubes being set up**

The second traffic study was conducted with the Jamar Time-to-Digital Converter (TDC) Ultra Counter board, a hand-held device specifically designed to study the traffic movements at intersections. The turning movement counts were first taken at the predetermined critical intersections of 3<sup>rd</sup> Street and 4<sup>th</sup> Street on Ivy Street during the peak hour for a complete hour of time. These critical intersections were

used to determine the peak hour factor for the 3<sup>rd</sup> Street and 4<sup>th</sup> Street networks. The remaining intersections between Salem Street and Orange Street of the network also had turning movement counts performed but for 15-minute intervals during peak hours. Figure 6 shows the Jamar TDC Counter Board used for the intersection traffic studies.



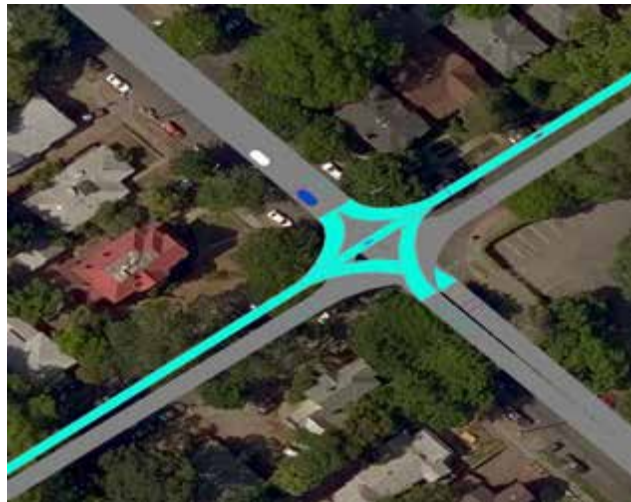
**Figure 6. Jamar TDC Ultra Counter Board**

Data obtained from the Jamar TDC Counter Board study during peak hours was modified and analyzed in a visual projection model using PTV-Vissim. Vissim is a computer program used to create detailed traffic simulations. Within the program, roads and intersections can be created over a 3D city map. A user is able to customize municipal road and traffic parameters in order to match an existing road network or create a theoretical road network. These parameters include but are not limited to the number of lanes, type of lanes, vehicle classifications, direction of traffic flow, pedestrians, right of ways, etc. Once satisfied with the road network a simulation can be ran and information obtained from it. Using the PTV-Vissim program the CIVL-586C class was able to obtain the average network through speed and compare it to the level of service analysis chart in the Highway Capacity Manual to classify a level of service. Utilizing the output from the Vissim model simulations, the level of service was calculated for direct comparison of the proposed design to that of the existing base network to determine areas of improvement and deficits.

Figure 7 shows an image of the simulation before the one-way conversion without a bike lane. Figure 8 shows an image of the simulation after converting into a one-way and incorporating a bike lane.



**Figure 7. The Vissim simulation before one-way Conversion**



**Figure 8. The Vissim simulation after the one-way conversion**

The urban streets method of the Highway Capacity Manual (HCM) was utilized to classify level of service of a city street for motor vehicle travel. The average speed of vehicles through movements can be determined either by theoretical projection modeling, such as Vissim traffic modeling software or by empirically evaluating each segment's travel time. The overall length of the facility is measured, and then the corresponding travel speed for a vehicle to travel over the roadway is determined. The delays that exist within each segment of the facility can be identified as critical points that affect vehicle free flow, this

mostly occurs at boundary intersections. The average speed shows the degree of mobility the facility provides. By referencing the exhibit 16-3 of HCM Chapter 16, the level of service can be determined.

Furthermore, with roughly 17,000 students attending Chico State and an active downtown area, the city of Chico had a concern with the parking capacity on 3<sup>rd</sup> Street and 4<sup>th</sup> Street. This led to an analysis to determine the quantity of vehicles currently using the parking spaces and if parking can be properly delineated or changed to a different type of parking, such as angled parking. Ideally, if parking can be increased, it should be; however, maintaining the same capacity is acceptable.

## Evaluate Alternatives

The project goal is to transform 3<sup>rd</sup> Street and 4<sup>th</sup> Street into more efficient and complete streets that meet the Active Transportation Program guidelines. To accomplish this, design codes were utilized to determine various alternatives for the layouts of 3<sup>rd</sup> Street and 4<sup>th</sup> Street. A few of the design codes used include the City of Chico Municipal Code, Butte County Code, Highway Capacity Manual (HCM), and Highway Design Manual (HDM) of Caltrans, all of which aided the determination of the required spacing for bike lanes, intersections, diagonal parking, and parallel parking. The use of the codes allowed for a logical street layout design that fit within the existing street space allotted.

## Design Alternatives

### EXISTING DESIGN FEATURES

3<sup>rd</sup> Street and 4<sup>th</sup> Street comprise two lanes of two-way traffic flow with parallel parking on both sides of the streets. Both streets allow parking close to the corners of the intersections producing sight distance conflicts between pedestrians and vehicles. In addition, neither street accommodates for bicyclists, as there are no bike lanes present. Cross-streets between Salem Street and Orange Street either possess stop signs or yield signs. Both streets have some noncompliant street corners that are not up to the standard of

Title II of the Accessible Disability Act (ADA). This requires curbs to be sloped and act as ramps so that those with disabilities can access the street corners more easily.

## TWO-WAY VERSUS ONE-WAY STREETS TRAFFIC SIMULATION

Data obtained from multiple Vissim simulation runs are summarized into tables. Table 1 summarizes the Vissim simulation results of the Base Network, which represents the current traffic conditions of the South Campus Neighborhood. Table 2 shows the calculated Level Of Service (LOS) of the base network. The detailed description of LOS can be found in Appendix B. The traffic counts used in simulation runs are in Appendix C. The traffic volumes for vehicle and bicycle only are summarized in Appendix D. Table 3 summarizes the Vissim simulation results of the One-way Conversion, which represents the proposed traffic condition after the conversion of 3<sup>rd</sup> and 4<sup>th</sup> streets. Table 4 shows the LOS results of the One-way Conversion. As seen in these tables the results of the one-way road network does not vary too much from the two-way road network. While the one-way does have a slightly longer delay and stop time, the differences in numbers are negligible. The LOS does not change between the two road networks. The one-way is still a better suited design for the South Campus Neighborhood because it incorporates a more complete street design and takes into consideration that not just motor vehicles will be utilizing the roads. By analyzing the data collected on 3<sup>rd</sup> Street, 4<sup>th</sup> Street, and intersections within, one-way design alternatives were constructed for each street. The following section is a descriptive list of suitable one-way designs that can be incorporated into the neighborhood.

**Table 1. Vissim Simulation of Base Network**

Simulation (n)	Delay Average (sec)	Stops Average (n)	Speed Average (mph)
1	8.7	1.0	18.8
2	8.7	1.0	19.1
3	9.1	1.1	18.9
4	8.8	1.0	19.2
Average	8.8	1.0	19.0
Standard deviation ( $\sigma$ )	0.2	0.0	0.1
Minimum	8.7	1.0	18.8
Maximum	9.1	1.1	19.2

**Table 2. Level of Service (LOS) of Base Network**

Existing Base Network Level Of Service (LOS)			
Third Street	mph	Fourth Street	mph
Base FFS	25	Base FFS	25
Average Through Speed	19.0	Average FFS	19.0
Level of Service LOS	B	Level of Service LOS	B

**Table 3. Vissim Simulation of One-way Conversion**

Simulation (n)	Delay Average (sec)	Stops Average (n)	Speed Average (mph)
1	9.15	1.12	18.70
2	9.39	1.15	18.83
3	9.29	1.13	18.93
Average	9.28	1.13	18.82
Standard deviation ( $\sigma$ )	0.12	0.02	0.11
Minimum	9.15	1.12	18.70
Maximum	9.39	1.15	18.93



**Table 4. Vissim LOS of One-way Conversion**

<b>One Lane One Way Network Level Of Service (LOS)</b>			
<b>Base FFS</b>	<b>25</b>	<b>Base FFS</b>	<b>25</b>
<b>Average Through Speed</b>	<b>18.8</b>	<b>Average Through Speed</b>	<b>18.8</b>
<b>Level of Service LOS</b>	<b>B</b>	<b>Level of Service LOS</b>	<b>B</b>

### DESIGN ALTERNATIVE #1

This design incorporates 3<sup>rd</sup> Street and 4<sup>th</sup> Street to be converted from the two-lane two-way traffic flow to a single one-way 12-foot lane, while incorporating 9-foot parallel parking on both sides of the street. A 5-foot bike lane with a 2.5-foot buffer to ensure multimodal means of travel would be incorporated in addition to a 1/2-foot of road marking between the parallel parking and bike lane. Figure 9 shows an aerial layout of the alternative.



**Figure 9. Design Alternative #1 of one-way conversion**

## DESIGN ALTERNATIVE #2

This design incorporates 3<sup>rd</sup> Street and 4<sup>th</sup> Street to be converted from two-lane two-way traffic flow to dual 11-foot one-way lanes. While incorporating 9-foot parallel parking on one side of the road. Opposite of the parking will be a 5-foot bike lane with a 2-foot buffer ensuring multimodal means of travel. Figure 10 shows the two-way conversion to one-way lanes for this design alternative.



**Figure 10. Design Alternative #2 of one-way conversion with two lanes**

## DESIGN ALTERNATIVE #3

This design is similar to Design Alternative #1 with a few variations, such as 3<sup>rd</sup> Street and 4<sup>th</sup> Street will be converted into single 12-foot one-way roads with 9-foot parallel parking on both sides. In addition, a 6-foot bike lane with a 2-foot buffer for maximum safety of bicyclist will be added. Bulb-outs will be included in this design to further decrease the speed of traffic in the area and increase safety. Bulb-outs are extensions of the sidewalk into the intersection which will provide a shorter crossing distances for pedestrians, creating a safer environment for both vehicles and pedestrians. In addition, bulb-outs create a clearer line of sight between the pedestrian and motorist at intersections. In Figure 11, the yellow circles represent the bulb-outs, red lines represent parking, green lines represent the bike lane, white lines represent the buffer and the neon blue line represents the centerline of the 12-foot lane.







**Figure 11. Design Alternative #3 of one-way conversion**

#### DESIGN ALTERNATIVE #4

This design changes the parking on the roads from parallel parking to 60-degree angled parking. The parking spots are 8.5-feet wide and extend 18-feet into the road and they will be placed on one side of the road. Opposite of the parking spots will be a 6-foot bike lane with a 2-foot buffer. The lane of travel will be 12-feet wide. This design does not incorporate bulb-outs unless modified for the bike lane. Figure 12 shows an aerial layout of this design alternative.



**Figure 12. Design Alternative #4 of One-way Conversion with Angled Parking**

## DESIGN ALTERNATIVE #5

This design is similar to Design Alternative #2 with a few variations, such as 3<sup>rd</sup> Street and 4<sup>th</sup> Street will be converted into two lane one-ways. The two traveling lanes will have a width of 11-feet and 10-feet. Nine-foot parallel parking will be limited to one side and opposite of the parking will be a 6-foot bike lane with a 2-foot buffer. The 11-foot travel lane will be adjacent to the bike lane and the 10-foot travel lane will be adjacent to the parallel parking. The presence of two lanes will ease the flow of traffic and allow vehicles to make turns without impeding any other vehicles from traveling through. This will give an added feeling of safety between drivers, bikers, and pedestrians alike. Figure 13 shows an aerial layout of this design alternative.



**Figure 13. Design Alternative #5 of one-way conversion with two lanes**

## ADDITIONAL RECOMMENDATIONS AND CONSIDERATIONS

Additional safety improvements include replacing all yield signs along 3<sup>rd</sup> Street and 4<sup>th</sup> Street with stop signs, as well as eliminating parking near street corners to provide better visibility for pedestrians, bicyclists, and motor vehicles. Ideally, the current pavement material can be recycled and reused to repave the roads along 3<sup>rd</sup> Street and 4<sup>th</sup> Street to improve the condition of the worn-out existing streets.

Sidewalks with deformations larger than 1-inch shall be replaced to make them ADA compliant, providing a safe, pleasant surface for pedestrians.

While not shown in the alternative designs, it was evident by the resulting vehicle, bicyclists, and pedestrian data that some safety measures needed to be incorporated into the designs of the project. Data showed that on 3<sup>rd</sup> Street a vehicle was traveling at a speed of 88 mph. Data also showed that on 4<sup>th</sup> Street a vehicle was traveling at 93 mph. Raised intersections and/or crosswalks are recommended to be used at a few intersections to act as a traffic calming and speed management measure and add ADA compliant platforms for pedestrians. Figure 14 and Figure 15 display raised intersections for this ADA compliance.



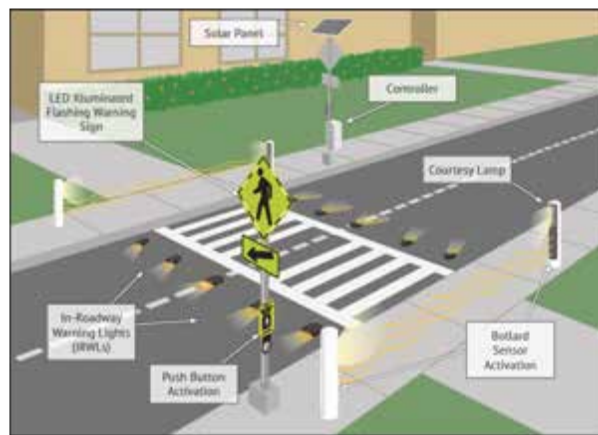
**Figure 14. A raised intersection with a single travel lane, bike lane, and bulb-outs**



**Figure 15. A raised intersection with a brick slope**

In-roadway warning lights for cross walks are also a recommendation because they alert motorists to the presence of a pedestrian crossing or preparing to cross the street. This type of crosswalk will be well suited

for 4<sup>th</sup> Street and Chestnut Street, in addition to 4<sup>th</sup> Street and Hazel Street. This is due to the vehicle congestion and pedestrian traffic created by parents dropping off and picking up children at the catholic school. The in-roadway warning lights can easily be added and powered by an A/C power source or solar energy, depending on the sun exposure. Activation of in-roadway warning lights vary in style and types, from a simple manual push button to an automatic activation bollard that senses a pedestrian. Incorporating the in-roadway warning lights creates a safer environment for pedestrians and helps drivers notice pedestrians during the day and night. Brands to consider are Tapco, LightGuard Systems, or Silicon Constellations. Figure 16 and Figure 17 show examples of in-roadway warning lights.



**Figure 16. Schematics of In-roadway warning lights**



**Figure 17. In-roadway warning lights during day time**

# Recommended Designs

The alternative designs were reviewed and discussed amongst those involved. The optimum design alternatives were determined to be Design Alternative #1 and Design Alternative #3. [The following are the details of the recommended alternatives.](#)

## Design Alternative #1

**Travel Lane:** This residential street section between Salem Street and Orange Street will span 12 feet in width; (City of Chico Municipal Code - Chapter 18R.12.030 - Standard plans - TND zoning district - [TN-8]).

**Class III Bike Lane:** The Caltrans Highway Design Manual refers to the Manual on Uniform Traffic Controls (MUTCD) for the design of the specified bike lane. The final design incorporates a 5-foot bike lane with a 2.5-foot buffer along the travel lane and a 6-inch buffer line along the parking lane. Minimum standards have been met (MUTCD - Chapter 9C - Markings - Traffic Controls for Bicycle Facilities).

**Parking Lanes:** The parallel parking lanes span 22 feet in length and 9 feet in width (City of Chico Municipal Code - Chapter 19.70.060 - Design and development standards for off-street parking), parking will be on both sides of the street, and the parking lanes will be offset 45 feet from intersections along the route to provide adequate sight distance.

**Curb and Gutter:** The curb spans 12 inches in depth from the roadway base and 6 inches in width, and the gutter measures 24 inches from the face of the curb (Chico Municipal Code - Chapter 18R.12.020 - Standard plans - [S-2]).

**Parkway and Sidewalk:** The minimum standards of a 7-foot parkway and a 5-foot sidewalk have been incorporated into the design (City of Chico Municipal Code - Chapter 18R.12.030 - Standard plans - TND zoning district - [TN-8]).





**Sidewalk Access Ramps:** Access ramp design complies with the American Disabilities Act and the City of Chico (Chico Municipal Code - Chapter 18R.12.020 Standard plans - [S-27]) (Curb Ramps and Pedestrian Crossings Under Title II of the ADA).

**Intersection Radius:** The face of curbs at all intersections throughout the network require a 15-foot radius which has been met (City of Chico Municipal Code - Chapter 18R.12.030 Standard plans - TND zoning district - [TN-19]).

**Pavement Markings:** All pavement markings for traffic controls, parking, and bike lanes comply with Chapter 9C of the Manual on Uniform Traffic Control Devices (MUTCD).

**Traffic Controls:** The calculated level of service included the replacement of yield signs with stop signs at the cross-streets between Salem Street and Orange Streets along the route to facilitate continuous traffic flow, and minimize conflict for motorists, cyclists, and pedestrians.



**Figure 18.**

**Recommended road layout Design Alternative #1**



**Figure 19.**

**Profile view of recommended Design #1**

## Design Alternative #2

**Travel Lane:** This residential street section between Salem Street and Orange Street will span 12 feet in width (City of Chico Municipal Code - Chapter 18R.12.030 - Standard plans - TND zoning district - [TN-8]).

**Class II Bike Lane:** The Caltrans Highway Design Manual refers to the Manual on Uniform Traffic Control Devices (MUTCD) for the design of the specified bike lane. The final design incorporates a 6-foot bike lane with a 2-foot buffer along the travel lane. Minimum standards have been met (Manual on Uniform Traffic Control Devices (MUTCD) - Chapter 9C - Markings - Traffic Controls for Bicycle Facilities).

**Parking Lanes:** The parallel parking lanes span 22 feet in length and 9 feet in width (City of Chico Municipal Code - Chapter 19.70.060 - Design and development standards for off-street parking), parking will be on both sides of the street, and the parking lanes will be offset 45 feet from intersections along the route to provide adequate sight distance.

**Curb and Gutter:** The curb spans 12 inches in depth from the roadway base and 6 inches in width, and the gutter measures 24 inches from the face of the curb (Chico Municipal Code - Chapter 18R.12.020 - Standard plans - [S-2]).

**Bulb-outs:** A bulb-out is an extension of the sidewalk into the roadway when there is marked on-street parking and will help with pedestrian, motorist, and bicyclist interaction (Highway Design Manual (HDM) – Chapter 303 –Section 303.4)

**Parkway and Sidewalk:** The minimum standards of a 7-foot parkway and a 5-foot sidewalk have been incorporated into the design (City of Chico Municipal Code - Chapter 18R.12.030 - Standard plans - TND zoning district - [TN-8]).

**Sidewalk Access Ramps:** Access ramp design complies with the American Disabilities Act and the City of Chico (Chico Municipal Code - Chapter 18R.12.020 Standard plans - [S-27]) (Curb Ramps and Pedestrian Crossings Under Title II of the ADA).



**Intersection Radius:** The face of curbs at all intersections throughout the network require a 15-foot radius which has been met (City of Chico Municipal Code - Chapter 18R.12.030 Standard plans - TND zoning district - [TN-19]).

**Pavement Markings:** All pavement markings for traffic controls, parking, and bike lanes comply with Chapter 9C of the Manual on Uniform Traffic Control Devices (MUTCD).



**Figure 20. Recommended road layout Design Alternative #3**



**Figure 21. Profile view of recommended Design Alternative #3**



# Cost Analysis

The South Campus Neighborhood project includes two roads, 3<sup>rd</sup> Street and 4<sup>th</sup> Street, both roads will be converted into a pair of one-ways. 3<sup>rd</sup> Street will be converted into a west bound one-way from Salem Street to Orange Street. 4<sup>th</sup> Street will be turned into an eastbound one-way from Salem Street to Orange Street. The pavement on both 3<sup>rd</sup> Street and 4<sup>th</sup> Street show severe alligator cracking, block cracking, weathering and distortions. For this reason, it is not recommended to overlay the roads with a new asphalt layer. The existing asphalt will have to be stripped and replaced. The cost estimations for the project were obtained by consulting with a local asphalt paving company (Franklin Construction Inc.).

The unit prices for work and additional considerations are listed in



**Table 5.** Specifics to the road dimensions used can be found in

**Table 6.** The cost estimation for the project, which includes the removal of the existing asphalt using a large milling machine, traffic control, subgrade preparation, paving a 5-inch thick asphalt layer with a tack coat in between the lifts, stop signs, ADA compliant bulb-outs, and road markings, can be found in

**Table 7.**

Walking and observing both 3<sup>rd</sup> Street and 4<sup>th</sup> Street it was apparent that the sidewalks need improvement due to age, cracking, and uprooting from trees. For this reason, a simple sidewalk estimate was calculated. The estimate calculation took into consideration the excavating of the existing sidewalk, preparing, pouring, and broom finishing a 48-inch wide by 3-inch thick slab with rebar, wire mesh, and aggregate/sand base. The length of a neighborhood block along 3<sup>rd</sup> Street and 4<sup>th</sup> Street is 294-feet, there are a total of 6 blocks between Orange Street and Salem Street, and two sides for each road. The total sidewalk length and cost for the sidewalk can be found in

Table 8. The cost information contained in this report should be used only for estimating purposes and not necessarily for determining actual bidding prices for a specific infrastructure project.



**Table 5. Unit Costs for Road Work**

Prices		
Excavation	\$ 37.00	cubic yard
Subgrade Preperation	\$ 0.37	sq ft
Paving Asphalt Cost	\$ 110.00	Ton
Stop Sign Markings	\$ 500.00	each
Cross Walk Markings	\$ 15.00	sq ft
Bulbout & ADA compliant	\$10,000.00	each intersection
Bike lane with Buffer (using Methacrylate)	\$ 8.00	sq ft
Raised crosswalk	\$ 1,200.00	each
Stop signs	\$ 50.00	each
Rapid flashing beacon	\$ 5,000.00	each
Concrete Sidewalk	\$ 30.00	per foot

**Table 6. Dimensions and Asphalt Quantity of Single Road**

Dimensions & Asphalt Demand		
Length of Road	2040	ft
Width of Road	38	ft
Area of Single Road	77520	sq ft
5 inch thick asphalt demand	2500	tons



**Table 7. Cost Estimation for the Project**

Project Cost	Single Road
Excavating 3 inch Asphalt	\$ 318,693.30
Subgrade Preperation	\$ 28,682.40
Asphalt Paving	\$ 275,000.00
10 Stop Signs	\$ 5,500.00
Cross Walk Markings	\$ 33,120.00
Bulbout & ADA Compliant	\$ 70,000.00
Bike Lane with Buffer	\$ 79,776.00
Single Road	\$ 810,771.70
Total Both Roads	\$ 1,621,543.40

**Table 8. Sidewalk Cost Estimation**

Total Sidewalk Cost		
1 block	294	ft
sidewalk length	7056	ft
Cost	\$ 211,680.00	



# Summary

In spring of 2018, the CIVL-586C Advanced Transportation Design class was presented with the South Campus Neighborhood project along with the cities interest of converting 3<sup>rd</sup> Street and 4<sup>th</sup> Street into a pair of one-way roads. Provided with information from the South Campus Neighborhood by the city of Chico, the teams set out to inspect the roads of interest. Further information was required in order to observe the dynamics of the roads and properly construct a design that would meet the needs of the area. Traffic studies were performed to obtain the required information. These studies included the use of Metro-Count equipment, Jamar TDC Counter Board, and the PTV-Vissim program. From the inspections and traffic studies of the two roads it was clear that changes needed to be made. Both 3<sup>rd</sup> Street and 4<sup>th</sup> Street shared many issues from asphalt damage, speeding, to lack of intersection safety. The teams involved acknowledged the needs of motor vehicles, bicyclists, and pedestrians. This led to the “complete street” concept to be employed with additional recommendations that added safety and aesthetics to the neighborhood. Many designs were thought of with details but only the most practical designs were chosen for this report. In the end, Design Alternative #1 and Design Alternative #3 were believed to be the best choices for the neighborhood because of the safety improvements and complete street functionality they provided. It is in the best interest for the city of Chico to approve and move forward with this project. The South Campus Neighborhood will become a more pleasant, safe, and welcoming place for everyone with the one-way conversions.

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# Appendix A— Speed Data

## MetroCount Traffic Executive Speed Statistics

SPEEDSTAT-7 -- ENGLISH (ENU)

### Datasets:

**Site:** 3<sup>rd</sup> Street between Normal Street and Chestnut Street  
**Attribute:** 200  
**Direction:** 8 - East bound A>B, West bound B>A. **Lane:** 0  
**Survey Duration:** 18:41 Monday, April 2, 2018 => 17:21 Monday, April 9, 2018,  
**Zone:**  
**File:** 3rd - 4th Street 0 2018-04-09 1721.ECo (Plus )  
**Identifier:** AD387S7Z MC56-L5 [MC55] (c)Microcom 19Octo4  
**Algorithm:** Factory default axle (v5.02)  
**Data type:** Axle sensors - Paired (Class/Speed/Count)

### Profile:

**Filter time:** 18:42 Monday, April 2, 2018 => 17:21 Monday, April 9, 2018 (6.94383)  
**Included classes:** 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13  
**Speed range:** 6 - 99 mph.  
**Direction:** North, East, South, West (bound), P = East, Lane = 0-16  
**Separation:** Headway > 0 sec, Span 0 - 328.084 ft  
**Name:** Default Profile  
**Scheme:** Vehicle classification (Scheme F3)  
**Units:** Non-metric (ft, mi, ft/s, mph, lb, ton)  
**In profile:** Vehicles = 15412 / 15503 (99.41%)



# Speed Statistics

SPEEDSTAT-7

**Site:** 3<sup>rd</sup> Street between Normal Street and Chestnut Street  
**Description:** 3rd st Unit 1  
**Filter time:** 18:42 Monday, April 2, 2018 => 17:21 Monday, April 9, 2018  
**Scheme:** Vehicle classification (Scheme F3)  
**Filter:** Cls(1-13) Dir(NESW) Sp(6,99) Headway(>0) Span(0 - 328.084) Lane(0-16)

**Vehicles** = 15412

**Posted speed limit** = 37 mph, Exceeding = 37 (0.240%), Mean Exceeding = 51.49 mph

**Maximum** = 88.6 mph, **Minimum** = 6.2 mph, **Mean** = 19.8 mph

**85% Speed** = 23.88 mph, **95% Speed** = 26.68 mph, **Median** = 19.85 mph

**12 mph Pace** = 14 - 26, **Number in Pace** = 13297 (86.28%)

**Variance** = 20.26, **Standard Deviation** = 4.50 mph

## SPEED BINS (PARTIAL DAYS)

Speed	Bin	Below	Above	Energy	vMult	n * vMult
0 - 6	0 0.000%	0 0.000%	15412 100.0%	0.00	0.00	0.00
6 - 12	671 4.354%	671 4.354%	14741 95.65%	0.00	0.00	0.00
12 - 19	5154 33.44%	5825 37.80%	9587 62.20%	0.00	0.00	0.00
19 - 25	7998 51.89%	13823 89.69%	1589 10.31%	0.00	0.00	0.00
25 - 31	1483 9.622%	15306 99.31%	106 0.688%	0.00	0.00	0.00
31 - 37	70 0.454%	15376 99.77%	36 0.234%	0.00	0.00	0.00
37 - 43	19 0.123%	15395 99.89%	17 0.110%	0.00	0.00	0.00
43 - 50	2 0.013%	15397 99.90%	15 0.097%	0.00	0.00	0.00
50 - 56	4 0.026%	15401 99.93%	11 0.071%	0.00	0.00	0.00
56 - 62	0 0.000%	15401 99.93%	11 0.071%	0.00	0.00	0.00
62 - 68	5 0.032%	15406 99.96%	6 0.039%	0.00	0.00	0.00
68 - 75	2 0.013%	15408 99.97%	4 0.026%	0.00	0.00	0.00
75 - 81	2 0.013%	15410 99.99%	2 0.013%	0.00	0.00	0.00
81 - 87	1 0.006%	15411 99.99%	1 0.006%	0.00	0.00	0.00
87 - 93	1 0.006%	15412 100.0%	0 0.000%	0.00	0.00	0.00
93 - 99	0 0.000%	15412 100.0%	0 0.000%	0.00	0.00	0.00
99 - 106	0 0.000%	15412 100.0%	0 0.000%	0.00	0.00	0.00
106 - 112	0 0.000%	15412 100.0%	0 0.000%	0.00	0.00	0.00
112 - 118	0 0.000%	15412 100.0%	0 0.000%	0.00	0.00	0.00
118 - 124	0 0.000%	15412 100.0%	0 0.000%	0.00	0.00	0.00

**Total Speed Rating** = 0.00

**Total Moving Energy (Estimated)** = 0.00

### Speed limit fields (Partial days)

Limit	Below	Above
0   37 (PSL)	15375 99.8%	37 0.2%



# MetroCount Traffic Executive Speed Statistics

SPEEDSTAT-8 -- ENGLISH (ENU)

## Datasets:

**Site:** 4<sup>th</sup> Street between Normal Street and Salem Street

**Attribute:**

**Direction:** 8 - East bound A>B, West bound B>A. **Lane:** 0

**Survey Duration:** 19:07 Monday, April 2, 2018 => 17:30 Monday, April 9, 2018,

**Zone:**

**File:** 3rd - 4th street 0 2018-04-09 1730.ECo (Plus )

**Identifier:** AD694M72 MC56-L5 [MC55] (c) Microcom 19Octo4

**Algorithm:** Factory default axle (v5.02)

**Data type:** Axle sensors - Paired (Class/Speed/Count)

## Profile:

**Filter time:** 19:08 Monday, April 2, 2018 => 17:30 Monday, April 9, 2018 (6.93237)

**Included classes:** 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13

**Speed range:** 6 - 99 mph.

**Direction:** North, East, South, West (bound), P = East, Lane = 0-16

**Separation:** Headway > 0 sec, Span 0 - 328.084 ft

**Name:** Default Profile

**Scheme:** Vehicle classification (Scheme F3)

**Units:** Non-metric (ft, mi, ft/s, mph, lb, ton)

**In profile:** Vehicles = 6942 / 7021 (98.87%)

# Speed Statistics

## SPEEDSTAT-8

**Site:** 4<sup>th</sup> Street between Normal Street and Salem Street  
**Description:** 4th st Unit 2  
**Filter time:** 19:08 Monday, April 2, 2018 => 17:30 Monday, April 9, 2018  
**Scheme:** Vehicle classification (Scheme F3)  
**Filter:** Cls(1-13) Dir(NESW) Sp(6,99) Headway(>0) Span(0 - 328.084) Lane(0-16)

**Vehicles** = 6942

**Posted speed limit** = 37 mph, **Exceeding** = 32 (0.461%), **Mean Exceeding** = 55.63 mph

**Maximum** = 93.6 mph, **Minimum** = 6.3 mph, **Mean** = 19.7 mph

**85% Speed** = 24.05 mph, **95% Speed** = 26.96 mph, **Median** = 19.52 mph

**12 mph Pace** = 13 - 26, **Number in Pace** = 5921 (85.29%)

**Variance** = 25.12, **Standard Deviation** = 5.01 mph

## SPEED BINS (PARTIAL DAYS)

Speed	Bin	Below	Above	Energy	vMult	n * vMult
0 - 6	0 0.000%	0 0.000%	6942 100.0%	0.00	0.00	0.00
6 - 12	314 4.523%	314 4.523%	6628 95.48%	0.00	0.00	0.00
12 - 19	2543 36.63%	2857 41.16%	4085 58.84%	0.00	0.00	0.00
19 - 25	3314 47.74%	6171 88.89%	771 11.11%	0.00	0.00	0.00
25 - 31	704 10.14%	6875 99.03%	67 0.965%	0.00	0.00	0.00
31 - 37	36 0.519%	6911 99.55%	31 0.447%	0.00	0.00	0.00
37 - 43	7 0.101%	6918 99.65%	24 0.346%	0.00	0.00	0.00
43 - 50	7 0.101%	6925 99.76%	17 0.245%	0.00	0.00	0.00
50 - 56	5 0.072%	6930 99.83%	12 0.173%	0.00	0.00	0.00
56 - 62	2 0.029%	6932 99.86%	10 0.144%	0.00	0.00	0.00
62 - 68	5 0.072%	6937 99.93%	5 0.072%	0.00	0.00	0.00



68 - 75	1 0.014%	6938 99.94%	4 0.058%	0.00	0.00	0.00
75 - 81	1 0.014%	6939 99.96%	3 0.043%	0.00	0.00	0.00
81 - 87	0 0.000%	6939 99.96%	3 0.043%	0.00	0.00	0.00
87 - 93	2 0.029%	6941 99.99%	1 0.014%	0.00	0.00	0.00
93 - 99	1 0.014%	6942 100.0%	0 0.000%	0.00	0.00	0.00
99 - 106	0 0.000%	6942 100.0%	0 0.000%	0.00	0.00	0.00
106 - 112	0 0.000%	6942 100.0%	0 0.000%	0.00	0.00	0.00
112 - 118	0 0.000%	6942 100.0%	0 0.000%	0.00	0.00	0.00
118 - 124	0 0.000%	6942 100.0%	0 0.000%	0.00	0.00	0.00

**Total Speed Rating** = 0.00

**Total Moving Energy (Estimated)** = 0.00

**Speed limit fields (Partial days)**

Limit	Below	Above
0   37 (PSL)	6910 99.5%	32 0.5%

# Appendix B— Level of Service (LOS) Criteria

This subsection describes the LOS criteria for the motorized vehicle, pedestrian, bicycle, and transit modes. The criteria for the motorized vehicle mode are different from the criteria used for the other modes. Specifically, the criteria for the motorized vehicle mode are based on performance measures that are field-measurable and perceivable by travelers. With one exception, the criteria for the pedestrian and bicycle modes are based on scores reported by travelers indicating their perception of service quality. The exception is the pedestrian space measure (used with the pedestrian mode), which is field measurable and perceivable by pedestrians. The criteria for the transit mode are based on measured changes in transit patronage due to changes in service quality.

## Motorized Vehicle Mode

Through-vehicle travel speed is used to characterize vehicular LOS for a given direction of travel along an urban street facility. This speed reflects the factors that influence running time along each link and the delay incurred by through vehicles at each boundary intersection. This performance measure indicates the degree of mobility provided by the facility. The following paragraphs characterize each service level.

**Table 9. Level of Service (LOS) Types and Parameters**

LOS	Travel Speed Threshold by Base Free-Flow Speed (mi/h)							Volume-to-Capacity Ratio <sup>a</sup>
	55	50	45	40	35	30	25	
A	>44	>40	>36	>32	>28	>24	>20	≤ 1.0
B	>37	>34	>30	>27	>23	>20	>17	
C	>28	>25	>23	>20	>18	>15	>13	
D	>22	>20	>18	>16	>14	>12	>10	
E	>17	>15	>14	>12	>11	>9	>8	
F	≤17	≤15	≤14	≤12	≤11	≤9	≤8	
F	Any							> 1.0

Note: <sup>a</sup> The critical volume-to-capacity ratio is based on consideration of the through movement volume-to-capacity ratio at each boundary intersection in the subject direction of travel. The critical volume-to-capacity ratio is the largest ratio of those considered.



**LOS A** describes primarily free-flow operation. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control delay at the boundary intersections is minimal. The travel speed exceeds 80% of the base free-flow speed, and the volume-to-capacity ratio is no greater than 1.0.

**LOS B** describes reasonably unimpeded operation. The ability to maneuver within the traffic stream is only slightly restricted, and control delay at the boundary intersections is not significant. The travel speed is between 67% and 80% of the base free-flow speed, and the volume-to-capacity ratio is no greater than 1.0.

**LOS C** describes stable operation. The ability to maneuver and change lanes at midsegment locations may be more restricted than at LOS B. Longer queues at the boundary intersections may contribute to lower travel speeds. The travel speed is between 50% and 67% of the base free-flow speed, and the volume-to-capacity ratio is no greater than 1.0.

**LOS D** indicates a less stable condition in which small increases in flow may cause substantial increases in delay and decreases in travel speed. This operation may be due to adverse signal progression, high volume, or inappropriate signal timing at the boundary intersections. The travel speed is between 40% and 50% of the base free-flow speed, and the volume-to-capacity ratio is no greater than 1.0.

**LOS E** is characterized by unstable operation and significant delay. Such operations may be due to some combination of adverse progression, high volume, and inappropriate signal timing at the boundary intersections. The travel speed is between 30% and 40% of the base free-flow speed, and the volume-to-capacity ratio is no greater than 1.0.

**LOS F** is characterized by flow at extremely low speed. Congestion is likely occurring at the boundary intersections, as indicated by high delay and extensive queuing. The travel speed is 30% or less of the base free-flow speed, or the volume-to-capacity ratio is greater than 1.0.



# Appendix C – Traffic Counts for Simulations

## 3<sup>rd</sup> Street and Salem Street Traffic Counts

**Passenger Cars and Peds - Class 1**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	26	5	18	12	19	13	12	3	22	0	5	12	0	30	8	
5:15	0	26	5	18	12	19	13	12	3	22	0	5	12	0	30	8	
5:30	0	26	5	18	12	19	13	12	3	22	0	5	12	0	30	8	
5:45	0	26	5	18	12	19	13	12	3	22	0	5	12	0	30	8	
<b>Hourly Count</b>	0	104	20	72	48	76	52	48	12	88	0	20	48	0	120	32	568

**Buses and Light Trucks - Class 2**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	1	1	0	1	8	0	0	0	3	0	0	0	0	1	0	
5:15	0	1	1	0	1	8	0	0	0	3	0	0	0	0	1	0	
5:30	0	1	1	0	1	8	0	0	0	3	0	0	0	0	1	0	
5:45	0	1	1	0	1	8	0	0	0	3	0	0	0	0	1	0	
<b>Hourly Count</b>	0	4	4	0	4	32	0	0	0	12	0	0	0	0	4	0	60

**Heavy Trucks - Class 3**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Hourly Count</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**Bikes - Class 4**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	6	0	0	0	0	2	0	0	1	0	0	0	0	0	0	
5:15	0	6	0	0	0	0	2	0	0	1	0	0	0	0	0	0	
5:30	0	6	0	0	0	0	2	0	0	1	0	0	0	0	0	0	
5:45	0	6	0	0	0	0	2	0	0	1	0	0	0	0	0	0	
<b>Hourly Count</b>	0	24	0	0	0	0	8	0	0	4	0	0	0	0	0	0	36

**Combined Traffic**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	33	6	18	13	27	15	12	3	26	0	5	12	0	31	8	166
5:15	0	33	6	18	13	27	15	12	3	26	0	5	12	0	31	8	166
5:30	0	33	6	18	13	27	15	12	3	26	0	5	12	0	31	8	166
5:45	0	33	6	18	13	27	15	12	3	26	0	5	12	0	31	8	166
<b>Hourly Count</b>	0	132	24	72	52	108	60	48	12	104	0	20	48	0	124	32	664

Total Pedestrians 172

PHF: 0.80

Peak Hour Volume

Hourly Volume

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
<b>Hourly Volume</b>	0	165	30	90	65	135	75	60	15	130	0	25	60	0	155	40	830



# 3<sup>rd</sup> Street and Normal Street Traffic Counts

## Passenger Cars and Peds - Class 1

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	2	3	1	5	2	13	7	5	1	3	0	9	2	15	0	1	
5:15	2	3	1	5	2	13	7	5	1	3	0	9	2	15	0	1	
5:30	2	3	1	5	2	13	7	5	1	3	0	9	2	15	0	1	
5:45	2	3	1	5	2	13	7	5	1	3	0	9	2	15	0	1	
<b>Hourly Count</b>	8	12	4	20	8	52	28	20	4	12	0	36	8	60	0	4	196

## Buses and Light Trucks - Class 2

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	0	
5:15	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	0	
5:30	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	0	
5:45	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	0	
<b>Hourly Count</b>	0	0	8	0	0	8	0	0	0	0	0	0	4	0	0	0	20

## Heavy Trucks - Class 3

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Hourly Count</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

## Bikes - Class 4

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	
5:15	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	
5:30	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	
5:45	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	
<b>Hourly Count</b>	0	0	0	0	0	8	0	0	0	0	0	0	0	4	0	0	12

## Combined Traffic

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	2	3	3	5	2	17	7	5	1	3	0	9	3	16	0	1	57
5:15	2	3	3	5	2	17	7	5	1	3	0	9	3	16	0	1	57
5:30	2	3	3	5	2	17	7	5	1	3	0	9	3	16	0	1	57
5:45	2	3	3	5	2	17	7	5	1	3	0	9	3	16	0	1	57
<b>Hourly Count</b>	8	12	12	20	8	68	28	20	4	12	0	36	12	64	0	4	228

Total Pedestrians 80

PHF: 0.80

Peak Hour Volume

Hourly Volume	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
<b>Hourly Volume</b>	10	15	15	25	10	85	35	25	5	15	0	45	15	80	0	5	285



# 3<sup>rd</sup> Street and Chestnut Street Traffic Counts

## Passenger Cars and Peds - Class 1

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	7	11	11	31	1	18	4	7	4	7	2	33	2	15	5	9	
5:15	7	11	11	31	1	18	4	7	4	7	2	33	2	15	5	9	
5:30	7	11	11	31	1	18	4	7	4	7	2	33	2	15	5	9	
5:45	7	11	11	31	1	18	4	7	4	7	2	33	2	15	5	9	
<b>Hourly Count</b>	28	44	44	124	4	72	16	28	16	28	8	132	8	60	20	36	348

## Buses and Light Trucks - Class 2

	Southbound				Westbound				Northbound				Eastbound				Total	
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds		
5:00	3	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	
5:15	3	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	
5:30	3	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	
5:45	3	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	
<b>Hourly Count</b>	12	0	0	0	0	8	0	0	0	4	0	0	0	0	0	0	0	24

## Heavy Trucks - Class 3

	Southbound				Westbound				Northbound				Eastbound				Total	
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds		
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Hourly Count</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

## Bikes - Class 4

	Southbound				Westbound				Northbound				Eastbound				Total	
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds		
5:00	0	0	0	0	0	2	1	0	0	1	0	0	0	0	0	0	0	
5:15	0	0	0	0	0	2	1	0	0	1	0	0	0	0	0	0	0	
5:30	0	0	0	0	0	2	1	0	0	1	0	0	0	0	0	0	0	
5:45	0	0	0	0	0	2	1	0	0	1	0	0	0	0	0	0	0	
<b>Hourly Count</b>	0	0	0	0	0	8	4	0	0	4	0	0	0	0	0	0	0	16

## Combined Traffic

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	10	11	11	31	1	22	5	7	4	9	2	33	2	15	5	9	97
5:15	10	11	11	31	1	22	5	7	4	9	2	33	2	15	5	9	97
5:30	10	11	11	31	1	22	5	7	4	9	2	33	2	15	5	9	97
5:45	10	11	11	31	1	22	5	7	4	9	2	33	2	15	5	9	97
<b>Hourly Count</b>	40	44	44	124	4	88	20	28	16	36	8	132	8	60	20	36	388

Total pedestrians 320

PHF: 0.80

Peak Hour Volume

Hourly Volume

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
<b>Hourly Volume</b>	50	55	55	155	5	110	25	35	20	45	10	165	10	75	25	45	485



# 3<sup>rd</sup> Street and Hazel Street Traffic Counts

## Passenger Cars and Peds - Class 1

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	3	3	2	5	1	12	0	0	1	5	1	2	1	6	1	1	
5:15	3	3	2	5	1	12	0	0	1	5	1	2	1	6	1	1	
5:30	3	3	2	5	1	12	0	0	1	5	1	2	1	6	1	1	
5:45	3	3	2	5	1	12	0	0	1	5	1	2	1	6	1	1	
<b>Hourly Count</b>	12	12	8	20	4	48	0	0	4	20	4	8	4	24	4	4	144

## Buses and Light Trucks - Class 2

	Southbound				Westbound				Northbound				Eastbound				Total	
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds		
5:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
5:15	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
5:30	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
5:45	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
<b>Hourly Count</b>	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	4

## Heavy Trucks - Class 3

	Southbound				Westbound				Northbound				Eastbound				Total	
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds		
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Hourly Count</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

## Bikes - Class 4

	Southbound				Westbound				Northbound				Eastbound				Total	
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds		
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
<b>Hourly Count</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4

## Combined Traffic

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	3	3	2	5	1	13	0	0	1	5	1	2	1	7	1	1	38
5:15	3	3	2	5	1	13	0	0	1	5	1	2	1	7	1	1	38
5:30	3	3	2	5	1	13	0	0	1	5	1	2	1	7	1	1	38
5:45	3	3	2	5	1	13	0	0	1	5	1	2	1	7	1	1	38
<b>Hourly Count</b>	12	12	8	20	4	52	0	0	4	20	4	8	4	28	4	4	152

Total pedestrians 32

PHF: 0.80

Peak Hour Volume

Hourly Volume	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
<b>Hourly Volume</b>	15	15	10	25	5	65	0	0	5	25	5	10	5	35	5	5	190



# 3<sup>rd</sup> Street and Ivy Street Traffic Counts

## Passenger Cars and Peds - Class 1

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	5	65	1	23	4	14	5	14	5	40	3	6	2	9	6	9	
5:15	2	46	3	8	2	10	8	9	1	47	4	1	2	4	3	2	
5:30	0	43	1	25	2	5	8	11	3	40	4	1	2	3	4	1	
5:45	4	32	2	11	2	4	4	10	0	33	2	3	4	9	3	1	
<b>Hourly Count</b>	<b>11</b>	<b>186</b>	<b>7</b>	<b>67</b>	<b>10</b>	<b>33</b>	<b>25</b>	<b>44</b>	<b>9</b>	<b>160</b>	<b>13</b>	<b>11</b>	<b>10</b>	<b>25</b>	<b>16</b>	<b>13</b>	<b>505</b>

## Buses and Light Trucks - Class 2

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	0	1	0	1	0	0	0	0	1	0	0	1	0	0	0	
5:15	0	1	1	0	0	1	1	0	0	3	0	0	0	0	0	0	
5:30	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
5:45	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	
<b>Hourly Count</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14</b>

## Heavy Trucks - Class 3

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Hourly Count</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Bikes - Class 4

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	10	0	0	1	0	2	0	0	4	0	0	0	0	0	0	
5:15	0	8	0	0	0	1	0	0	0	3	0	0	0	1	0	0	
5:30	0	5	0	0	0	0	0	0	1	3	0	0	0	0	1	0	
5:45	0	9	0	0	0	0	1	0	2	1	0	0	0	1	0	0	
<b>Hourly Count</b>	<b>0</b>	<b>32</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>54</b>

## Combined Traffic

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	5	75	2	23	6	14	7	14	5	45	3	6	3	9	6	9	180
5:15	2	55	4	8	2	12	9	9	1	53	4	1	2	5	3	2	152
5:30	0	48	1	25	3	5	8	11	4	43	4	1	2	3	5	1	126
5:45	4	41	2	11	2	4	6	10	2	35	2	3	4	10	3	1	115
<b>Hourly Count</b>	<b>11</b>	<b>219</b>	<b>9</b>	<b>67</b>	<b>13</b>	<b>35</b>	<b>30</b>	<b>44</b>	<b>12</b>	<b>176</b>	<b>13</b>	<b>11</b>	<b>11</b>	<b>27</b>	<b>17</b>	<b>13</b>	<b>573</b>

Total pedestrians **135**

PHF: **0.80**

Peak Hour Volume

Hourly Volume

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
<b>Hourly Volume</b>	<b>14</b>	<b>275</b>	<b>11</b>	<b>84</b>	<b>16</b>	<b>44</b>	<b>38</b>	<b>55</b>	<b>15</b>	<b>221</b>	<b>16</b>	<b>14</b>	<b>14</b>	<b>34</b>	<b>21</b>	<b>16</b>	<b>720</b>

300



# 3<sup>rd</sup> Street and Cherry Street Traffic Counts

## Passenger Cars and Peds - Class 1

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	3	11	0	9	1	14	2	9	1	4	3	13	3	12	3	4	
5:15	3	11	0	9	1	14	2	9	1	4	3	13	3	12	3	4	
5:30	3	11	0	9	1	14	2	9	1	4	3	13	3	12	3	4	
5:45	3	11	0	9	1	14	2	9	1	4	3	13	3	12	3	4	
<b>Hourly Count</b>	12	44	0	36	4	56	8	36	4	16	12	52	12	48	12	16	228

## Buses and Light Trucks - Class 2

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0
5:15	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0
5:30	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0
5:45	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0
<b>Hourly Count</b>	0	0	0	0	0	8	4	0	0	0	0	0	0	0	0	0	12

## Heavy Trucks - Class 3

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Hourly Count</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

## Bikes - Class 4

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	2	0	0	0	1	1	0	0	2	0	0	0	0	2	0	0
5:15	0	2	0	0	0	1	1	0	0	2	0	0	0	0	2	0	0
5:30	0	2	0	0	0	1	1	0	0	2	0	0	0	0	2	0	0
5:45	0	2	0	0	0	1	1	0	0	2	0	0	0	0	2	0	0
<b>Hourly Count</b>	0	8	0	0	0	4	4	0	0	8	0	0	0	0	8	0	32

## Combined Traffic

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	3	13	0	9	1	17	4	9	1	6	3	13	3	12	5	4	68
5:15	3	13	0	9	1	17	4	9	1	6	3	13	3	12	5	4	68
5:30	3	13	0	9	1	17	4	9	1	6	3	13	3	12	5	4	68
5:45	3	13	0	9	1	17	4	9	1	6	3	13	3	12	5	4	68
<b>Hourly Count</b>	12	52	0	36	4	68	16	36	4	24	12	52	12	48	20	16	272

Total pedestrians 140

PHF: 0.80

Peak Hour Volume

Hourly Volume

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
<b>Hourly Volume</b>	15	65	0	45	5	85	20	45	5	30	15	65	15	60	25	20	340

# 3<sup>rd</sup> Street and Orange Street Traffic Counts

**Passenger Cars and Peds - Class 1**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	1	5	3	6	1	12	1	3	0	7	0	1	4	9	0	5	
5:15	1	5	3	6	1	12	1	3	0	7	0	1	4	9	0	5	
5:30	1	5	3	6	1	12	1	3	0	7	0	1	4	9	0	5	
5:45	1	5	3	6	1	12	1	3	0	7	0	1	4	9	0	5	
<b>Hourly Count</b>	4	20	12	24	4	48	4	12	0	28	0	4	16	36	0	172	

**Buses and Light Trucks - Class 2**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	
5:15	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	
5:30	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	
5:45	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	
<b>Hourly Count</b>	0	0	0	0	0	8	0	0	0	0	0	0	0	4	0	0	

**Heavy Trucks - Class 3**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Hourly Count</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

**Bikes - Class 4**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	0	1	1	0	0	0	2	0	0	0	1	0	0	0	4	
5:15	0	0	1	1	0	0	0	2	0	0	0	1	0	0	0	4	
5:30	0	0	1	1	0	0	0	2	0	0	0	1	0	0	0	4	
5:45	0	0	1	1	0	0	0	2	0	0	0	1	0	0	0	4	
<b>Hourly Count</b>	0	0	4	4	0	0	0	8	0	0	0	4	0	0	0	16	

**Combined Traffic**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	1	5	4	7	1	14	1	5	0	7	0	2	4	10	0	9	
5:15	1	5	4	7	1	14	1	5	0	7	0	2	4	10	0	9	
5:30	1	5	4	7	1	14	1	5	0	7	0	2	4	10	0	9	
5:45	1	5	4	7	1	14	1	5	0	7	0	2	4	10	0	9	
<b>Hourly Count</b>	4	20	16	28	4	56	4	20	0	28	0	8	16	40	0	36	

Total Pedestrians 92

PHF: 0.80

Peak Hour Volume

Hourly Volume

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
<b>Hourly Volume</b>	5	25	20	35	5	70	5	25	0	35	0	10	20	50	0	45	



# 4<sup>th</sup> Street and Salem Street Traffic Counts

Passenger Cars and Peds - Class 1

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	13	20	5	19	0	0	0	7	2	17	9	15	0	5	1	7	
5:15	13	20	5	19	0	0	0	7	2	17	9	15	0	5	1	7	
5:30	13	20	5	19	0	0	0	7	2	17	9	15	0	5	1	7	
5:45	13	20	5	19	0	0	0	7	2	17	9	15	0	5	1	7	
<b>Hourly Count</b>	52	80	20	76	0	0	0	28	8	68	36	60	0	20	4	28	288

Buses and Light Trucks - Class 2

	Southbound				Westbound				Northbound				Eastbound				Total	
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds		
5:00	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:30	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Hourly Count</b>	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12

Heavy Trucks - Class 3

	Southbound				Westbound				Northbound				Eastbound				Total	
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds		
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Hourly Count</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Bikes - Class 4

	Southbound				Westbound				Northbound				Eastbound				Total	
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds		
5:00	0	5	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	
5:15	0	5	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	
5:30	0	5	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	
5:45	0	5	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	
<b>Hourly Count</b>	0	20	0	0	0	0	0	0	0	12	4	0	0	0	0	0	0	36

Combined Traffic

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	16	25	5	19	0	0	0	7	2	20	10	15	0	5	1	7	84
5:15	16	25	5	19	0	0	0	7	2	20	10	15	0	5	1	7	84
5:30	16	25	5	19	0	0	0	7	2	20	10	15	0	5	1	7	84
5:45	16	25	5	19	0	0	0	7	2	20	10	15	0	5	1	7	84
<b>Hourly Count</b>	64	100	20	76	0	0	0	28	8	80	40	60	0	20	4	28	336

**Total Pedestrians 192**

PHF: **0.80**

Peak Hour Volume

Combined Hourly Volum

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
<b>Hourly Volume</b>	80	125	25	95	0	0	0	35	10	100	50	75	0	25	5	35	420



# 4<sup>th</sup> Street and Normal Street Traffic Counts

## Passenger Cars and Peds - Class 1

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	5	9	2	8	1	5	2	7	1	3	1	11	1	7	0	3	
5:15	5	9	2	8	1	5	2	7	1	3	1	11	1	7	0	3	
5:30	5	9	2	8	1	5	2	7	1	3	1	11	1	7	0	3	
5:45	5	9	2	8	1	5	2	7	1	3	1	11	1	7	0	3	
<b>Hourly Count</b>	20	36	8	32	4	20	8	28	4	12	4	44	4	28	0	12	148

## Buses and Light Trucks - Class 2

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Hourly Count</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

## Heavy Trucks - Class 3

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Hourly Count</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

## Bikes - Class 4

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Hourly Count</b>	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4

## Combined Traffic

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	6	9	2	8	1	5	2	7	1	3	1	11	1	7	0	3	38
5:15	6	9	2	8	1	5	2	7	1	3	1	11	1	7	0	3	38
5:30	6	9	2	8	1	5	2	7	1	3	1	11	1	7	0	3	38
5:45	6	9	2	8	1	5	2	7	1	3	1	11	1	7	0	3	38
<b>Hourly Count</b>	24	36	8	32	4	20	8	28	4	12	4	44	4	28	0	12	152

**Total Pedestrians 116**

PHF: 0.80

Peak Hour Volume

Hourly Volume

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
<b>Hourly Volume</b>	30	45	10	40	5	25	10	35	5	15	5	55	5	35	0	15	190



# 4<sup>th</sup> Street and Chestnut Street Traffic Counts

## Passenger Cars and Peds - Class 1

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	5	12	2	8	23	1	0	5	0	7	2	12	1	7	16	2	
5:15	5	12	2	8	23	1	0	5	0	7	2	12	1	7	16	2	
5:30	5	12	2	8	23	1	0	5	0	7	2	12	1	7	16	2	
5:45	5	12	2	8	23	1	0	5	0	7	2	12	1	7	16	2	
<b>Hourly Count</b>	20	48	8	32	92	4	0	20	0	28	8	48	4	28	64	8	304

## Buses and Light Trucks - Class 2

	Southbound				Westbound				Northbound				Eastbound				Total	
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds		
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Hourly Count</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

## Heavy Trucks - Class 3

	Southbound				Westbound				Northbound				Eastbound				Total	
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds		
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Hourly Count</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

## Bikes - Class 4

	Southbound				Westbound				Northbound				Eastbound				Total	
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds		
5:00	0	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
5:15	0	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
5:30	0	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
5:45	0	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
<b>Hourly Count</b>	0	4	12	0	0	0	0	0	0	4	0	0	0	0	0	0	0	20

## Combined Traffic

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	5	13	5	8	23	1	0	5	0	8	2	12	1	7	16	2	81
5:15	5	13	5	8	23	1	0	5	0	8	2	12	1	7	16	2	81
5:30	5	13	5	8	23	1	0	5	0	8	2	12	1	7	16	2	81
5:45	5	13	5	8	23	1	0	5	0	8	2	12	1	7	16	2	81
<b>Hourly Count</b>	20	52	20	32	92	4	0	20	0	32	8	48	4	28	64	8	324

Total Pedestrians 108

PHF: 0.80

Peak Hour Volume

Hourly Volume

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
<b>Hourly Volume</b>	25	65	25	40	115	5	0	25	0	40	10	60	5	35	80	10	405

# 4<sup>th</sup> Street and Hazel Street Traffic Counts

## Passenger Cars and Peds - Class 1

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	1	3	1	2	2	2	1	0	0	2	2	3	0	6	0	1	
5:15	1	3	1	2	2	2	1	0	0	2	2	3	0	6	0	1	
5:30	1	3	1	2	2	2	1	0	0	2	2	3	0	6	0	1	
5:45	1	3	1	2	2	2	1	0	0	2	2	3	0	6	0	1	
<b>Hourly Count</b>	4	12	4	8	8	8	4	0	0	8	8	12	0	24	0	4	80

## Buses and Light Trucks - Class 2

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Hourly Count</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

## Heavy Trucks - Class 3

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Hourly Count</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

## Bikes - Class 4

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
5:15	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
5:30	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
5:45	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
<b>Hourly Count</b>	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4

## Combined Traffic

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	1	3	1	2	2	3	1	0	0	2	2	3	0	6	0	1	21
5:15	1	3	1	2	2	3	1	0	0	2	2	3	0	6	0	1	21
5:30	1	3	1	2	2	3	1	0	0	2	2	3	0	6	0	1	21
5:45	1	3	1	2	2	3	1	0	0	2	2	3	0	6	0	1	21
<b>Hourly Count</b>	4	12	4	8	8	12	4	0	0	8	8	12	0	24	0	4	84

Total Pedestrians 24

PHF: 0.80

Peak Hour Volume

Hourly Volume

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
<b>Hourly Volume</b>	5	15	5	10	10	15	5	0	0	10	10	15	0	30	0	5	105



# 4<sup>th</sup> Street and Ivy Street Traffic Counts

## Passenger Cars and Peds - Class 1

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	5	49	1	11	4	3	5	2	0	37	5	5	1	2	3	1	
5:15	4	39	2	18	2	0	5	5	1	46	3	5	0	3	3	3	
5:30	4	42	1	11	0	1	2	1	2	49	3	8	1	5	3	4	
5:45	4	26	3	23	5	2	7	3	1	42	2	17	0	0	4	0	
Hourly Count	17	156	7	63	11	6	19	11	4	174	13	35	2	10	13	8	432

## Buses and Light Trucks - Class 2

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
5:30	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
Hourly Count	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	4

## Heavy Trucks - Class 3

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Hourly Count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

## Bikes - Class 4

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	8	0	1	1	0	0	0	0	4	0	0	0	0	0	0	
5:15	2	9	0	0	0	1	0	0	1	0	0	0	0	0	0	0	
5:30	0	8	0	0	0	1	1	0	0	4	0	0	0	0	0	0	
5:45	0	8	0	0	0	0	0	0	0	3	0	0	0	0	0	0	
Hourly Count	2	33	0	1	1	2	1	0	1	11	0	0	0	0	0	0	51

## Combined Traffic

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	5	58	1	12	5	3	5	2	0	41	5	5	1	2	3	1	129
5:15	6	48	2	18	2	1	5	5	2	47	3	5	0	3	3	3	122
5:30	4	51	1	11	0	2	3	1	2	53	3	8	1	5	3	4	128
5:45	4	34	3	23	5	2	7	3	1	46	2	17	0	0	4	0	108
Hourly Count	19	191	7	64	12	8	20	11	5	187	13	35	2	10	13	8	487

Total Pedestrians 118

PHF: 0.80

Peak Hour Volume

Hourly Volume

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
Hourly Volume	24	239	9	80	15	10	25	14	6	234	16	44	3	13	16	10	609

# 4<sup>th</sup> Street and Cherry Street Traffic Counts

**Passenger Cars and Peds - Class 1**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	1	4	2	2	1	2	0	0	1	3	0	1	1	3	1	0	
5:15	1	4	2	2	1	2	0	0	1	3	0	1	1	3	1	0	
5:30	1	4	2	2	1	2	0	0	1	3	0	1	1	3	1	0	
5:45	1	4	2	2	1	2	0	0	1	3	0	1	1	3	1	0	
<b>Hourly Count</b>	4	16	8	8	4	8	0	0	4	12	0	4	4	12	4	0	76

**Buses and Light Trucks - Class 2**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:30	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Hourly Count</b>	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4

**Heavy Trucks - Class 3**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Hourly Count</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**Bikes - Class 4**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	2	0	0	0	0	2	0	0	2	0	0	0	0	0	0	
5:15	0	2	0	0	0	0	2	0	0	2	0	0	0	0	0	0	
5:30	0	2	0	0	0	0	2	0	0	2	0	0	0	0	0	0	
5:45	0	2	0	0	0	0	2	0	0	2	0	0	0	0	0	0	
<b>Hourly Count</b>	0	8	0	0	0	0	8	0	0	8	0	0	0	0	0	0	24

**Combined Traffic**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	1	6	3	2	1	2	2	0	1	5	0	1	1	3	1	0	26
5:15	1	6	3	2	1	2	2	0	1	5	0	1	1	3	1	0	26
5:30	1	6	3	2	1	2	2	0	1	5	0	1	1	3	1	0	26
5:45	1	6	3	2	1	2	2	0	1	5	0	1	1	3	1	0	26
<b>Hourly Count</b>	4	24	12	8	4	8	8	0	4	20	0	4	4	12	4	0	104

Total Pedestrians 12

PHF: 0.80

Peak Hour Volume

Hourly Volume

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
<b>Hourly Volume</b>	5	30	15	10	5	10	10	0	5	25	0	5	5	15	5	0	130



# 4<sup>th</sup> Street and Orange Street Traffic Counts

## Passenger Cars and Peds - Class 1

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	1	8	0	0	1	0	2	1	0	5	0	2	3	0	1	0	
5:15	1	8	0	0	1	0	2	1	0	5	0	2	3	0	1	0	
5:30	1	8	0	0	1	0	2	1	0	5	0	2	3	0	1	0	
5:45	1	8	0	0	1	0	2	1	0	5	0	2	3	0	1	0	
<b>Hourly Count</b>	4	32	0	0	4	0	8	4	0	20	0	8	12	0	4	0	84

## Buses and Light Trucks - Class 2

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:30	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Hourly Count</b>	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4

## Heavy Trucks - Class 3

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Hourly Count</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

## Bikes - Class 4

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
5:15	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
5:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
5:45	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Hourly Count</b>	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0

## Combined Traffic

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
5:00	1	9	0	1	1	0	2	1	0	5	0	2	3	0	1	0	22
5:15	1	9	0	1	1	0	2	1	0	5	0	2	3	0	1	0	22
5:30	1	9	0	1	1	0	2	1	0	5	0	2	3	0	1	0	22
5:45	1	9	0	1	1	0	2	1	0	5	0	2	3	0	1	0	22
<b>Hourly Count</b>	4	36	0	4	4	0	8	4	0	20	0	8	12	0	4	0	88

**Total Pedestrians 16**

PHF: 0.80

Peak Hour Volume

Hourly Volume

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
<b>Hourly Volume</b>	5	45	0	5	5	0	10	5	0	25	0	10	15	0	5	0	110



# Appendix D – Traffic Volumes for Vehicle Only and Bicycle Only

**Table 10. 3<sup>rd</sup> Street Vehicle Only Hourly Volume**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
Salem	0	135	30	-	65	135	65	-	15	125	0	-	60	0	155	-	785
Normal	10	15	15	-	10	75	35	-	5	15	0	-	15	75	0	-	270
Chestnut	50	55	55	-	5	100	20	-	20	40	10	-	10	75	25	-	465
Hazel	15	15	10	-	5	65	0	-	5	25	5	-	5	30	5	-	185
Ivy	14	235	11	-	15	43	34	-	11	207	16	-	14	31	20	-	652
Cherry	15	55	0	-	5	80	15	-	5	20	15	-	15	60	15	-	300
Orange	5	25	15	-	5	70	5	-	0	35	0	-	20	50	0	-	230

**Table 11. 4<sup>th</sup> Street Vehicle Only Hourly Volume**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
Salem	80	100	25	-	0	0	0	-	10	85	45	-	0	25	5	-	375
Normal	25	45	10	-	5	25	10	-	5	15	5	-	5	35	0	-	185
Chestnut	25	60	10	-	115	5	0	-	0	35	10	-	5	35	80	-	380
Hazel	5	15	5	-	10	10	5	-	0	10	10	-	0	30	0	-	100
Ivy	21	198	9	-	14	8	24	-	5	220	16	-	3	13	16	-	545
Cherry	5	20	15	-	5	10	0	-	5	15	0	-	5	15	5	-	100
Orange	5	45	0	-	5	0	10	-	0	25	0	-	15	0	5	-	110

**Table 12. 3<sup>rd</sup> Street Bicycle Only Hourly Volume**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
Salem	0	30	0	0	0	0	10	0	0	5	0	0	0	0	0	0	45
Normal	0	0	0	0	0	10	0	0	0	0	0	0	0	5	0	0	15
Chestnut	0	0	0	0	0	10	5	0	0	5	0	0	0	0	0	0	20
Hazel	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5
Ivy	0	40	0	0	1	1	4	0	4	14	0	0	0	3	1	0	68
Cherry	0	10	0	0	0	5	5	0	0	10	0	0	0	0	10	0	40
Orange	0	0	5	5	0	0	0	10	0	0	0	5	0	0	0	20	45



**Table 13. 4<sup>th</sup> Street Bicycle Only Hourly Volume**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
Salem	0	25	0	0	0	0	0	0	0	15	5	0	0	0	0	0	45
Normal	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Chestnut	0	5	15	0	0	0	0	0	0	5	0	0	0	0	0	0	25
Hazel	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	5
Ivy	3	41	0	1	1	3	1	0	1	14	0	0	0	0	0	0	65
Cherry	0	10	0	0	0	0	10	0	0	10	0	0	0	0	0	0	30
Orange	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5

**Table 14. 3<sup>rd</sup> Street One-Way Vehicle Only Hourly Volume**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
Salem	0	135	55	-	65	135	65	-	25	125	0	-	0	0	0	-	605
Normal	0	15	25	-	15	100	45	-	10	15	0	-	0	0	0	-	225
Chestnut	0	55	65	-	120	105	20	-	20	40	0	-	0	0	0	-	425
Hazel	0	15	15	-	15	75	5	-	5	25	0	-	0	0	0	-	155
Ivy	0	235	20	-	29	50	58	-	16	207	0	-	0	0	0	-	615
Cherry	0	55	15	-	10	90	15	-	10	20	0	-	0	0	0	-	215
Orange	0	25	15	-	10	70	15	-	0	35	0	-	0	0	0	-	170

**Table 15. 4<sup>th</sup> Street One-Way Vehicle Only Hourly Volume**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
Salem	80	100	0	-	0	0	0	-	0	85	45	-	60	25	160	-	555
Normal	35	45	0	-	0	0	0	-	0	15	5	-	20	110	0	-	230
Chestnut	75	60	0	-	0	0	0	-	0	35	20	-	15	110	105	-	420
Hazel	20	15	0	-	0	0	0	-	0	10	15	-	5	60	5	-	130
Ivy	35	198	0	-	0	0	0	-	0	220	33	-	16	44	36	-	582
Cherry	20	20	0	-	0	0	0	-	0	15	15	-	20	75	20	-	185
Orange	10	45	0	-	0	0	0	-	0	25	0	-	35	50	5	-	170





**Table 16. 3<sup>rd</sup> Street One-Way Bicycle Only Hourly Volume**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
Salem	0	30	0	0	0	0	10	0	0	5	0	0	0	0	0	0	45
Normal	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	10
Chestnut	0	0	15	0	0	10	5	0	0	5	0	0	0	0	0	0	35
Hazel	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	5
Ivy	0	40	0	0	3	4	5	0	4	14	0	0	0	0	0	0	69
Cherry	0	10	0	0	0	5	15	0	0	10	0	0	0	0	0	0	40
Orange	0	0	5	5	0	0	0	10	0	0	0	5	0	0	0	20	45

**Table 17. 4<sup>th</sup> Street One-Way Bicycle Only Hourly Volume.**

	Southbound				Westbound				Northbound				Eastbound				Total
	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	Left	Through	Right	Peds	
Salem	0	25	0	0	0	0	0	0	0	15	5	0	0	0	0	0	45
Normal	5	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	10
Chestnut	0	5	0	0	0	0	0	0	0	5	0	0	0	0	0	0	10
Hazel	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5
Ivy	3	41	0	1	0	0	0	0	0	14	0	0	0	3	1	0	63
Cherry	0	10	0	0	0	0	0	0	0	10	0	0	0	0	10	0	30
Orange	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5





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