

Monday, July 6, 2020

College Place Economic Development, Tourism, and Events Commission - Electronic Meeting
5:00 PM

Meeting may be viewed at: Live Stream on City of College Place, Washington YouTube at https://www.youtube.com/channel/UCbx3qrqzLDL_05NusReSI-g/featured

Or you may call this number to listen: 1-669-900-9128 ID#915 1616 8882

1. Opening Items

Subject :	1.01 Call To Order
Meeting :	Jul 6, 2020 - College Place Economic Development, Tourism, and Events Commission - Electronic Meeting
Category :	1. Opening Items
Type :	Procedural

Public Content

	Bill Clemens,
	Kelli Leen,
EDTEC Appointed Members	Jeff Lambert,
	Doug Case
	Jenny Fuchs
EDTEC Ex Officio Members	WW Chamber, Kyle Tarbett
EDTEC Advisory Members	City Administrator, Mike Rizzitiello
	Finance Director, Brian Carleton

2. Consent Agenda

Subject :	2.01 Approve Agenda for 7/6/2020
Meeting :	Jul 6, 2020 - College Place Economic Development, Tourism, and Events Commission - Electronic Meeting
Category :	2. Consent Agenda
Type :	Action (Consent)

Consent

Our adopted rules of Parliamentary Procedure, The Standard Code of Parliamentary Procedure by Alice Sturgis, 4th Edition, provide for a consent agenda listing several items for approval of the Board by a single motion. Most of the items listed under the consent agenda have gone through Board subcommittee review and recommendation. Documentation concerning these items has been provided to all board

members and the public in advance to assure an extensive and thorough review. Items may be removed from the consent agenda at the request of any board member.

Subject : 2.02 Approve Minutes from February 3rd, 2020

Meeting : Jul 6, 2020 - College Place Economic Development, Tourism, and Events Commission - Electronic Meeting

Category : 2. Consent Agenda

Type : Action (Consent), Minutes

Recommended Action : Motion to approve the minutes from the February 3rd, 2020 meeting of the College Place Economic Development, Tourism, and Events Commission meeting.

File Attachments

[Minutes_232020.pdf \(93 KB\)](#)

Consent

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Subject : 2.03 Approve Consent Agenda - Our adopted rules of Parliamentary Procedure, The Standard Code of Parliamentary Procedure, provide for a consent agenda listing items for approval of the Commission by a single motion. Typically the items listed under the consent agenda are the minutes from previous meetings and the agenda for the current meeting. Documentation concerning these items has been provided to all Commission Members and the public in advance to assure an extensive and thorough review. Items may be removed from the consent agenda at the request of any Commission Member.

Meeting : Jul 6, 2020 - College Place Economic Development, Tourism, and Events Commission - Electronic Meeting

Category : 2. Consent Agenda

Type : Action (Consent)

Recommended Action : Motion to approve the consent agenda

Consent

Our adopted rules of Parliamentary Procedure, The Standard Code of Parliamentary Procedure by Alice Sturgis, 4th Edition, provide for a consent agenda listing several items for approval of the Board by a single motion. Most of the items listed under the consent agenda have gone through Board subcommittee review and recommendation. Documentation concerning these items has been provided to all board members and the public in advance to assure an extensive and thorough review. Items may be removed from the consent agenda at the request of any board member.

3. Reports

Subject :	3.01 Discussion Protocol for Virtual Meetings
Meeting :	Jul 6, 2020 - College Place Economic Development, Tourism, and Events Commission - Electronic Meeting
Category :	3. Reports
Type :	Information

Public Content

Virtual Meeting Discussion Protocol:

- After staff presentation of an item, the Chair will request comments from each Member
- After each member has had an opportunity, the Chair will then speak if so desired and Members will use the raise hand feature to notify the Chair of their desire to speak again. However, they will not enter the conversation without first being recognized by the Chair. This should allow for a thorough discussion with everyone having opportunity to express their views while maintaining order.

File Attachments

[Virtual_Meeting_Raise_Your_Hand.pdf \(50 KB\)](#)

Subject :	3.02 Safe Start Reopening
Meeting :	Jul 6, 2020 - College Place Economic Development, Tourism, and Events Commission - Electronic Meeting
Category :	3. Reports
Type :	Discussion, Information

File Attachments

[SafeStartPhasedReopeningPlan.pdf \(1,105 KB\)](#)

[CollegePlace_EmergencyDeclaration_Extention_Final.pdf \(85 KB\)](#)

[COVID19Phase2LibrariesMemo.pdf \(111 KB\)](#)

[WWCEM Report to State 29JUN20.pdf \(147 KB\)](#)

Subject :	3.03 Business Aide - COVID-19
Meeting :	Jul 6, 2020 - College Place Economic Development, Tourism, and Events Commission - Electronic Meeting
Category :	3. Reports
Type :	Discussion, Information

File Attachments

[WWSmallBusinessReliefFund_SupplementalList.pdf \(746 KB\)](#)

[20200623 MCNW COVID Contract Amendment No. 1.0.pdf \(71 KB\)](#)

[SafeStartPhasedReopeningPlan.pdf \(1,105 KB\)](#)

[Small Business Relief Program news release 200529.pdf \(160 KB\)](#)

[WWSBEG_Award Notification_Walla Walla County 05.15.2020-Copy.pdf \(207 KB\)](#)

Subject :	3.04 Economic Impact
Meeting :	Jul 6, 2020 - College Place Economic Development,

Category :

3. Reports

Type :

Discussion, Information

File Attachments

[2020-06.18 Leg Priorities Mtg Slide Deck.pdf \(402 KB\)](#)

[AWC Statement of Policy 060420.pdf \(96 KB\)](#)

[economicimpactsppt.pdf \(508 KB\)](#)

[Walla Walla Metro- May 2020 LAS-AjsaS.pdf \(603 KB\)](#)

Subject :

3.05 Farmers Market Stats / Update

Meeting :

Jul 6, 2020 - College Place Economic Development,
Tourism, and Events Commission - Electronic Meeting

Category :

3. Reports

Type :

Discussion, Information

Public Content

COVID-19 has had a major impact on the College Place Farmers & Artisan Market.

- The market began in phase 1 with "essential" vendors only, additional vendors allowed when county reached phase 2.
- The Health Department required creation of a safety plan and revision of the market layout to accommodate social distancing requirements.
 - Implemented COVID-19 Handbook addendum.
 - Modified layout for 10' spacing between booths
 - Staff & Vendors required to have health assessment prior to setting up or working at the market.
 - Required to have one entrance and one exit with no circular traffic flow.
 - Extra staff are required to assist with health assessment and monitoring of social distance requirements.
- Lots of additional signage was required to inform shoppers and vendors of new rules.
- Hand washing stations and sanitization stations required throughout the market.
- Even produce vendors are required to have food permit from the health department.
- NOTE: Received notice on 6/30/2020 that out of county vendors may be banned if their case counts don't start going down.

After five market days, our vendors have sold over \$22,000 of goods. We have averaged 16 vendors per market and between 350 and 400 customers.

This is the first year the market is SNAP/EBT eligible and is also offering Market Match program dollars. Unfortunately, those dollars are only good for use on vegetables and staples. We are having difficulty recruiting vendors of those products.

One of the greatest current challenges is encouraging farmers; who are now having success selling direct from their farm stand, or a group farm stand and online ordering; to still attend the weekly farmers market.

File Attachments

[Gross_As_Of_2020-06-30.PNG \(18 KB\)](#)

[2020_CPFM_COVID-19_Handbook_Addendum.pdf \(4,674 KB\)](#)

[CPFM_COVID-19_Signage_Examples.pdf \(3,391 KB\)](#)

[Welcome_SNAP_Poster.PNG \(215 KB\)](#)
[SNAPmarketmatch.jpg \(5,926 KB\)](#)
[961-275-FarmersMarketBrochure.pdf \(1,404 KB\)](#)
[11x17-Market-Vendor-Booth-Rules-1.png \(886 KB\)](#)
[Zig-Zag_Forward.pdf \(9,735 KB\)](#)
[COVID-19 Cover your face.pdf \(126 KB\)](#)
[Exit_Choices.pdf \(9,200 KB\)](#)

Subject : 3.06 College Avenue Study
Meeting : Jul 6, 2020 - College Place Economic Development, Tourism, and Events Commission - Electronic Meeting
Category : 3. Reports
Type : Discussion, Information

File Attachments

[Recommendations.pdf \(148 KB\)](#)
[20200427.College_Avenue_Traffic_Assessment_Addendum.pdf \(454 KB\)](#)
[20200501.City of College Place - College Avenue Traffic Assessment April 2020-Editable Version \(1\).pdf \(12,666 KB\)](#)
[20200506.AltAnalysisMemof.pdf \(410 KB\)](#)

Subject : 3.07 Eservices - Community Development
Meeting : Jul 6, 2020 - College Place Economic Development, Tourism, and Events Commission - Electronic Meeting
Category : 3. Reports
Type : Discussion, Information

File Attachments

[Epermitting_Proposal.pdf \(7,745 KB\)](#)

Subject : 3.08 Development Tracker
Meeting : Jul 6, 2020 - College Place Economic Development, Tourism, and Events Commission - Electronic Meeting
Category : 3. Reports
Type : Discussion, Information

File Attachments

[DevelopmentTrackSheet_072020.pdf \(456 KB\)](#)

4. Action Agenda

Subject : 4.01 Lions Park Renovation Letter of Support - Mr. Rizzitiello
Meeting : Jul 6, 2020 - College Place Economic Development, Tourism, and Events Commission - Electronic Meeting
Category : 4. Action Agenda
Type : Action
Recommended Action : Motion to approve issuing letter of support for the various

submittals to the State Recreation Conservation Office (RCO) for grants to renovate Lions Park.

Public Content

The City is trying to assemble funds to do a complete renovation of Lions Park in 2021. The City plans to submit three grant applications to the State Recreation Conservation Office in 2021. One application to the Washington Wildlife Recreation Program to fund construction of the splash pad, picnic shelter, and restrooms. Another application to the Land Water Conservation Fund to separate the pond from Garrison Creek, construct a fishing dock, and a trail/exercise equipment around the perimeter of the cemetery. A final application to the Youth Athletic Facility program to renovate the softball/baseball field. Letters of support are key to the success of the grant applications. The programs are very competitive. The City has a match of \$400,000 toward the project. The full renovation is over \$2 million dollars.

File Attachments

[EDTEC_LionsPark_SupportLetter.pdf \(426 KB\)](#)

[Grants_CommunityDevelopment_RCO_2018_LionsParkMockUps.pdf \(3,283 KB\)](#)

[YAC_2020_2262020_LionsPark_GeneralSupportLetter.docx \(12 KB\)](#)

[YAC_2020_2262020_LionsPark_SupportLetter.docx \(38 KB\)](#)

5. Closing Items

Subject :	5.01 Adjourn
Meeting :	Jul 6, 2020 - College Place Economic Development, Tourism, and Events Commission - Electronic Meeting
Category :	5. Closing Items
Type :	Procedural

College Place Economic Development, Tourism, and Events Commission (Monday, February 3, 2020)

Generated by Lisa Neissl on Monday, February 3, 2020

1. Opening Items

Procedural: 1.01 Welcome to new Commission Member Jenny Fuchs

Procedural: 1.02 Call To Order -

Chair Jeff Lambert called the meeting to order at 5:01 PM.

Jeff Lambert, Chair

Bill Clemens,

Present:

EDTEC Appointed Members

Kelli Leen,

Doug Case

Jenny Fuchs

EDTEC Ex Officio Members

WW Chamber, Kyle Tarbet

EDTEC Advisory Members

City Administrator, Mike Rizzitiello

City Clerk, Lisa Neissl

Absent:

Finance Director, Brian Carleton

2. Consent Agenda

Action (Consent): 2.01 Approve Agenda for February 3rd, 2020

Action (Consent), Minutes: 2.02 Approve Minutes from January 6th 2020

Action (Consent): 2.03 Approve Consent Agenda - Our adopted rules of Parliamentary Procedure, The Standard Code of Parliamentary Procedure, provide for a consent agenda listing items for approval of the Commission by a single motion. Typically the items listed under the consent agenda are the minutes from previous meetings and the agenda for the current meeting. Documentation concerning these items has been provided to all Commission Members and the public in advance to assure an extensive and thorough review. Items may be removed from the consent agenda at the request of any Commission Member.

Member Clemens made a motion to approve the consent agenda. Second by Member Leen and the motion passed 6-0.

3. Reports

Discussion, Information: 3.01 Legislative Session Report -

Mr. Rizzitiello gave an update on his trip to Olympia and the current legislative session. He noted transportation resources may be effected by the passing of I-976. He encouraged members to reach out to representatives and lobbyists regarding the need to move forward with phase 7 of the Hwy 12 project. He noted several bills to watch regarding programs that could positively impact development incentives.

Discussion ensued.

Discussion, Information: 3.02 Downtown Catalyst Incentive Program -

Mr. Rizzitiello gave an overview of the Downtown Catalyst Incentive Program as passed by the City Council. He asked that they make potential developers aware of the program if they know anyone who may be interested.

Discussion ensued.

Discussion, Information: 3.03 Micro Business Assistance (MBA) Program -

Mr. Rizzitiello spoke about the Micro Business Assistance Program. He noted the success of the program and the participation of people from College Place. He noted the City has doubled its contribution for 2020.

Discussion ensued.

Discussion, Information: 3.04 Development Tracking Update -

Mr. Rizzitiello gave an overview of the status of current and potential development projects.

Discussion ensued.

4. Action Agenda

Action: 4.01 Proposed Marketing Flyers -

Mr. Rizzitiello reviewed some marketing flyers he developed to promote College Place to retail developers and requested approval for their use.
Discussion ensued.

Member Clemens made a motion to approve usage of proposed flyers for marketing purposes. Second by Member Leen and the motion passed 6-0.

5. Closing Items

Procedural: 5.01 Adjourn

With no further business, Chair Lambert adjourned the meeting at 5:43 PM.

Approved:

Commission Chair

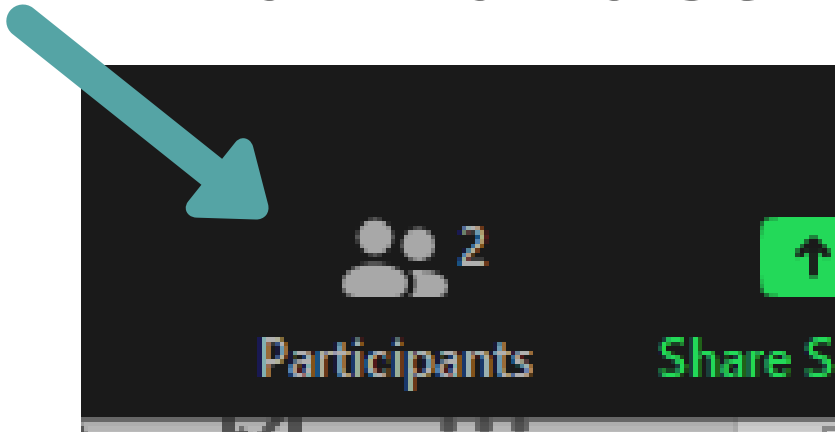
Attest:

City Administrator

The foregoing minutes are the official record of the Economic Development, Tourism, and Events Commission meeting that occurred February 03, 2020. Further detail may be obtained by reviewing the actual audio recording made during this session.

Zoom Tutorial:

How To Raise Your Hand!



To use the "Raise Hand" function of the meeting software:

Locate
"Participants" at
the bottom of the
meeting window.
Click on it.

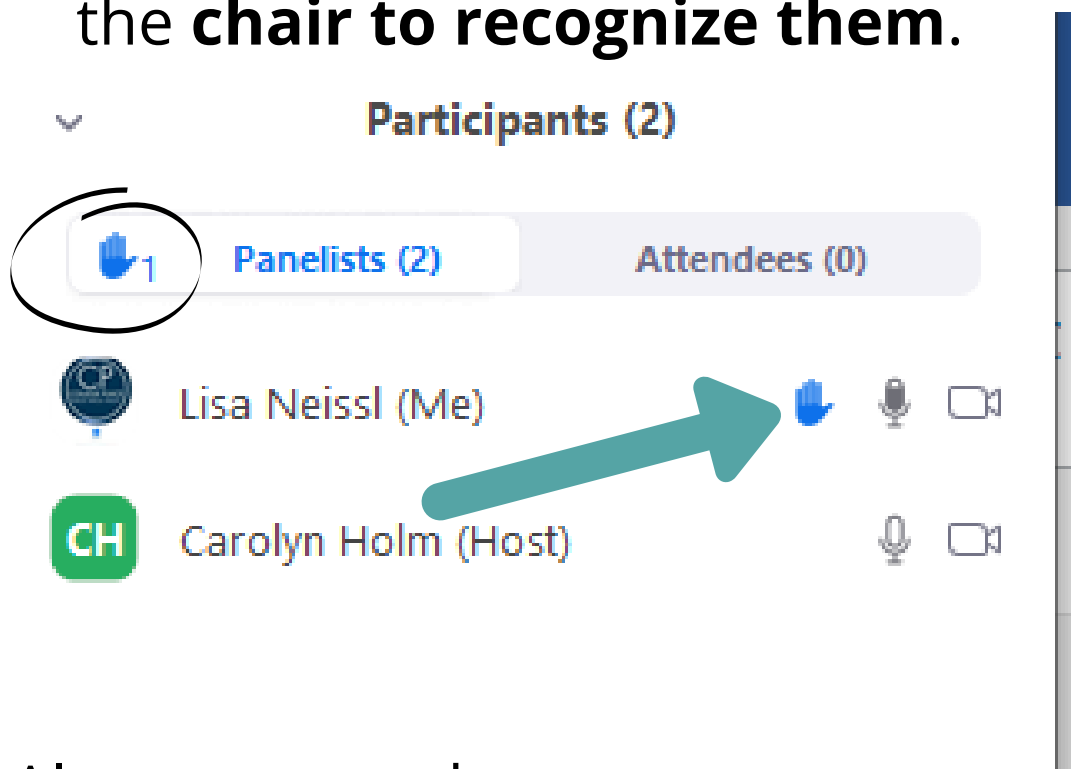
This will bring up a list of the participants. One tab for panelists and another for attendees.

On the bottom right is a button to **Raise Hand**



Zoom Tutorial: How To Raise Your Hand! (Cont.)

The participants tabs will show who and how many are raising their hands to allow the **chair to recognize them**.



Also note, you have easy access to mute/unmute and video settings here.





Safe Start Washington

Phased Reopening County-By-County

ISSUED BY THE OFFICE OF THE GOVERNOR | MAY 31, 2020



Safe Start Washington – Phased Reopening County-by-County

Governor Jay Inslee

Governor Jay Inslee, in collaboration with the Washington State Department of Health, has established a data-driven approach to reopen Washington and modify physical distancing measures while minimizing the health impacts of COVID-19. Washington will move through the phased reopening county-by-county allowing for flexibility and local control to address COVID-19 activity geographically.

This approach reduces the risk of COVID-19 to Washington's most vulnerable populations and preserves capacity in our health care system, while safely opening up businesses and resuming gatherings, travel, shopping and recreation.

The plan involves assessing COVID-19 activity along with health care system readiness, testing capacity and availability, case and contact investigations, and ability to protect high-risk populations. The plan allows counties and the secretary of Health to holistically review COVID-19 activity and the ability for the county to respond when determining if a county is ready to move into a new phase.

County Application Process

On June 1, each county begins in their current phase. Any county can apply to the secretary of Health to move to the next phase. The application process will require the county to report on key metrics set by the secretary of Health along with other quantitative and qualitative data. The application must be submitted by the county executive, in accordance with the instructions provided by the secretary of Health. If the county does not have a county executive, it must be submitted with the approval of the county council/commission.

The secretary of Health will evaluate county applications based on how their data for the key metrics compare to the targets and their ability to respond to situations that may arise in their county, including outbreaks, increased hospitalizations or deaths, health system capacity and other factors. The metrics are intended to be applied as targets, not hardline measures. The targets each contribute to reducing risk of disease transmission, and are to be considered in whole. Where one target is not fully achieved, actions taken with a different target may offset the overall risk. A final decision on whether a county is ready to move to the next phase rests with the secretary of Health. The secretary may approve a county moving in whole to the next phase, or may only approve certain activities in the next phase depending on a specific county's situation.



A county that remains in Phase 1 has the ability to apply for a modified Phase 1 (as described below) to allow additional activity. That application would be submitted to the secretary of Health. The secretary of Health has discretion to modify or change any part of the modified Phase 1 to address the needs of a specific county. All activities must follow the health and safety requirements for those activities.

COVID-19 DISEASE ACTIVITY

COVID-19 disease burden is measured by the following key metrics:

COVID-19 Disease Activity	
Metric	Target
1. Incidence of new cases reported during prior two weeks	<25 cases / 100,000 / 14 days
2. Trends in hospitalizations for lab-confirmed COVID-19	Flat or decreasing
3. Reproductive rate (if available)	$R_e < 1$

READINESS AND CAPABILITIES NEEDED

The Department of Health and local public health officials will monitor data to assess a county's readiness for safely reopening and modifying physical distancing measures. In addition to disease burden, readiness will be evaluated in four key areas. The four key areas include health care system readiness, testing capacity and availability, case and contact investigations, and ability to protect high-risk populations. Key metrics and their targets for each area, along with other pertinent data that will be considered, are detailed below.



1. Health Care System Readiness

Adequate bed capacity, staffing and supplies in the healthcare system to handle a surge in COVID-19 cases, measured by the following key metrics:

Health Care System Readiness

Metric	Target
1. % licensed beds occupied by patients (i.e., hospital census relative to licensed beds)	- Green: <80% - Yellow: 81-90% - Red: >90%
2. % licensed beds occupied by suspected and confirmed COVID-19 cases	- Green: <10% - Yellow: 11-20% - Red: >20%

Other data that will be considered include availability of PPE in hospitals, long term care facilities and other healthcare settings and availability of ventilators in hospitals.

2. Testing Capacity and Availability

Ability for everyone with COVID-19 symptoms and those with high-risk exposures to be tested immediately using a polymerase chain reaction (PCR) test and rapidly receive test results as measured by the following key metrics:

Testing

Metric	Target
1. Average number of tests performed per day during the past week (or average % tests positive for COVID-19 during the past week)	50 times the number of cases (or 2%)
2. Median time from symptom onset to specimen collection during the past week	Median <2 days

Other data that will be considered include the geographic distribution of testing sites in counties, the ability to test the entire population, and the availability of sufficient swabs, viral transport media, lab reagents and other materials required for COVID-19 testing.



3. Case and Contact Investigations

Ability to rapidly isolate those with COVID-19, identify and quarantine their contacts, and provide case management services as measured by the following key metrics:

Case & Contact Investigations

Metric	Target
1. Percent of cases reached by phone or in person within 24 hours of receipt of + lab test report	90%
2. Percent of contacts reached by phone or in person within 48 hours of receipt of + lab test report on a case	80%
3. Percent of cases being contacted daily (by phone or electronically) during their isolation period	80%
4. Percent of contacts being contacted daily (by phone or electronically) during their quarantine period	80%

Other data that will be considered include the number of investigators trained and working, the availability of isolation and quarantine facilities, and plans for case management.

4. Ability to Protect High-Risk Populations

Ability to immediately respond to outbreaks in congregate settings, such as long-term care facilities, behavioral health facilities, agricultural worker housing, homeless shelters and correctional facilities, and address the needs of other high-risk populations, including the elderly and the medically frail, measured by the following key metric:

Protect High-Risk Populations

Metric	Target
1. Number of outbreaks reported by week (defined as 2 or more non-household cases epidemiologically linked within 14 days in a workplace, congregate living or institutional setting)	0 - small counties (<75,000) 1 - medium counties (75,000-300,000) 2 - large counties (>300,000) 3 - very large counties (>1 million)

Other data that will be considered include a county's ability to rapidly respond to an outbreak and address health disparities in their communities.



ALL INDIVIDUALS AND BUSINESSES

Until there is an effective vaccine, effective treatment or herd immunity, it is crucial to maintain some level of community interventions to suppress the spread of COVID-19 throughout all phases of recovery. This includes heightened protections for the health and safety of workers in essential sectors, people living and working in high-risk facilities (e.g., senior care facilities) and all other workers.

All Washingtonians have a responsibility to protect themselves and others. Each phase, while allowing for additional services to open and return to full capacity, is grounded in the following required basic practices:

Guidance for Individuals

All phases – Individuals should continue to:

- Engage in physical distancing, staying at least six feet away from other people
- Wear cloth face coverings in public places when not eating or drinking (cloth face coverings should not be placed on children younger than 2 years of age, anyone who has trouble breathing, or is unconscious, incapacitated or otherwise unable to remove the cover without assistance)
- Stay home if sick
- Avoid others who are sick
- Wash hands frequently with soap and water (use hand sanitizer if soap and water are not available)
- Cover coughs and sneezes
- Avoid touching eyes, nose and mouth with unwashed hands
- Disinfect surfaces and objects regularly

Requirements for All Employers

All phases – Employers are required to:

- Beginning June 8, all employees will be required to wear a cloth facial covering, with the following exceptions: when working alone in an office, vehicle, or at a job site; if the individual is deaf or hard of hearing, or is communicating with someone who relies on language cues such as facial markers and expression and mouth movements as a part of communication; if the individual has a medical condition or disability that makes wearing a facial covering inappropriate; or when the job has no in-person interaction. Employers must provide cloth facial coverings to employees, unless their exposure dictates a higher level of protection under the Department of Labor and Industries' safety and health rules and guidance. Refer to [Coronavirus Facial Covering and Mask Requirements](#) for additional details. Employees may choose to wear their own facial



coverings at work, provided it meets the minimum requirements.

- Keep a safe and healthy facility in accordance with state and federal law, and comply with COVID-19 worksite-specific safety practices, as outlined in Governor Inslee's Proclamation 20-25, and all amendments and extensions thereto, and in accordance with the Washington State Department of Labor & Industries' [General Coronavirus Prevention](#) under the "Stay Home, Stay Healthy" order and the Washington State Department of Health's [Workplace and Employer Resources and Recommendations](#).
- Educate workers in the language they understand best about coronavirus and how to prevent transmission, and the employer's COVID-19 policies.
- Maintain minimum six-foot separation between all employees (and customers) in all interactions at all times. When strict physical distancing is not feasible for a specific task, other prevention measures are required, such as use of barriers, minimizing staff or customers in narrow or enclosed areas, and staggering breaks and work shift starts.
- Provide (at no cost to employees) and require the wearing of personal protective equipment (PPE), such as gloves, goggles, face shields and face masks as appropriate or required for the work activity being performed. Cloth face coverings must be worn by every employee not working alone on the job site unless their exposure dictates a higher level of protection under L&I safety and health rules and guidance. Refer to Washington Coronavirus Hazard Considerations for Employers (except COVID-19 care in hospitals and clinics) [Face Coverings, Masks, and Respirator Choices](#) for additional details. Cloth face coverings are described in the [Department of Health guidance](#).
- Ensure frequent and adequate hand washing with adequate maintenance of supplies. Use disposable gloves where safe and applicable to prevent virus transmission on tools or other items that are shared.
- Establish a housekeeping schedule that includes frequent cleaning and sanitizing with a particular emphasis on commonly touched surfaces
- Screen employees for signs/symptoms of COVID-19 at the start of their shift. Make sure sick employees stay home or immediately go home if they feel or appear sick. Cordon off any areas where an employee with probable or confirmed COVID-19 illness worked, touched surfaces, etc. until the area and equipment is cleaned and sanitized. Follow the [cleaning guidelines](#) set by the Centers for Disease Control to deep clean and sanitize.
- [Post a sign](#) strongly encouraging customers to wear cloth facial coverings, and prominently display it at the entrance to the business so that it is immediately noticeable to all customers entering the store. Employers are encouraged to require customers to wear cloth facial coverings, in order to protect their employees.
- Follow requirements in Governor Inslee's [Proclamation 20-46 High-Risk Employees – Workers' Rights](#).



Businesses are also required to implement any health and safety requirements developed specifically for their industry.

Challenge Seattle and the Washington Roundtable have developed a [business checklist](#) which is a great starting point for businesses as they prepare for “Safe Start Washington”. Our shared goal is to establish clear requirements that everyone can understand and apply – employers, workers and customers.

PHASED APPROACH TO REOPENING WASHINGTON COUNTY-BY-COUNTY AND MODIFYING PHYSICAL DISTANCING MEASURES

A county will stay in every phase for a **minimum of three weeks**. During that time, the Department of Health, County Elected Leadership, Local Health Jurisdictions, and the governor will re-evaluate the above targets. No phase will last less than three weeks before moving to the next phase, unless moving to a previous phase, in order to allow one complete disease incubation period plus an additional week to compile complete data and confirm trends. After three weeks, a county may apply to move to the next phase through the application provided by the secretary of Health.

If a county experiences an increase in COVID-19 disease activity and they need to return to an earlier phase, they must notify the secretary of Health and include their rationale but they do not need prior approval. Alternatively, the secretary has the authority to return a county to an earlier phase if the county chooses not to do so on its own, and the secretary has identified a need to do so. The secretary must notify a county in writing and provide a rationale for it being moved to an earlier phase.

The following table shows the phased approach for reopening businesses and resuming activities. **This phased approach may be adjusted as the pandemic evolves.** The industries listed are not an exclusive or exhaustive list of industries. Businesses listed in each phase of the plan will have industry-specific guidance and safety criteria developed to ensure workplace safety and public health are maintained. Those business activities are not authorized to open until the industry-specific guidance and safety criteria are issued.

If a county is not ready to move from Phase 1 to Phase 2, they have the ability apply for a modified Phase 1. The secretary of Health has discretion to modify or change any part of the modified Phase 1 to address the needs of a specific county. All activities must follow the health and safety requirements for those activities. The modified Phase 1 could include the following Phase 2 activities with the specific modifications to the previously issued health and safety requirements listed below.



- **High-risk populations**
 - Strongly encouraged, but not required, to stay home unless engaging in modified Phase I permissible activities.
- **Recreation and fitness**
 - Only allowed outdoor with five (not including the instructor) or fewer people outside of household.
- **Gatherings**
 - Only allowed outdoor of five or fewer people outside the household.
- **Additional construction**
 - As outlined in Phase 2 guidance.
- **Manufacturing operations**
 - As outlined in Phase 2 guidance.
- **Real estate**
 - 25% of building occupancy.
 - Indoor services limited to 30 minutes.
- **In-store retail**
 - 15% of building occupancy. (This does not apply to currently operating essential retail such as grocery stores. Currently operating essential retail should continue to follow the Phase 2 requirements.)
 - Indoor services limited to 30 minutes.
- **Personal services**
 - 25% of building occupancy.
- **Professional services**
 - 25% of building occupancy.
 - Indoor services limited to 30 minutes for customers.
- **Photography**
 - As outlined in Phase 2 guidance.
- **In-home/domestic services**
 - As outlined in Phase 2 guidance.
- **Pet grooming**
 - 25% of building occupancy.
- **Restaurants**
 - No indoor dining allowed.
 - Outdoor dining is permitted but seating at 50% of existing outdoor capacity.



Additional plans for a phased approach to restarting health care, spiritual gatherings, professional sports, and educational activities are under development and will be released separately.

Families are adjusting to a new way of life, and we understand the impacts this is having on them. The connection between education, child care, youth sports, summer programs and extracurricular activities is critical and must be viewed from a holistic lens to ensure equity and high quality of life. As we prepare for what the reopening of school looks like, we will be working closely with the Department of Health, Office of the Superintendent for Public Instruction, Department of Children, Youth and Families, and parents to release plans in the future.

While child care is currently an essential business activity and a key component to the reopening plan, we know there is more to do. The state will continue efforts to ensure adequate access and affordability for families.



WASHINGTON'S PHASED APPROACH

Modifying Physical Distancing Measures

INDIVIDUALS AND BUSINESSES SHOULD FOLLOW ALL REQUIREMENTS LISTED ABOVE DURING ALL PHASES

	 Phase 1	 Phase 2	 Phase 3	 Phase 4
High-Risk Populations*	Stay home unless engaging in Phase 1 permissible activities.	Strongly encouraged, but not required, to stay home unless engaging in Phase 1 or Phase 2 permissible activities.	Strongly encouraged, but not required, to stay home unless engaging in Phase 1, 2, or 3 permissible activities.	Resume public interactions, with physical distancing
Recreation	Some outdoor recreation (hunting, fishing, golf, boating, hiking)	Outdoor recreation involving 5 or fewer people outside your household (camping, beaches, etc.)	- Outdoor group rec. sports activities (50 or fewer people) - Recreational facilities at <50% capacity (gyms, public pools, etc.)	Resume all recreational activity
Gatherings (non religious)	No gatherings	Gather with no more than 5 people outside your household per week	Allow gatherings with no more than 50 people	Allow gatherings with >50 people
Travel	Essential travel and limited non-essential travel for Phase I permissible activities	Essential travel and limited non-essential travel for Phase I & II permissible activities	Resume non-essential travel	Continue non-essential travel
Business/ Employers (All businesses will be required to follow safety plans written by the state)	- Essential businesses open - Existing construction that meets agreed upon criteria - Landscaping - Auto/RV/boat/ORV sales - Retail (curb-side pick-up orders only) - Car washes - Pet walkers	- Remaining manufacturing - Additional construction phases - In-home/domestic services (nannies, housecleaning, etc.) - Retail (in-store purchases allowed with restrictions) - Real estate - Professional services/office-based businesses (telework remains strongly encouraged) - Personal services (hair and nail salons/barbers, tattoo, etc.) - Pet grooming - Restaurants/taverns <50% capacity, table size no larger than 5 (no bar-area seating) - Limited small group fitness - Drive-in Movie Theaters - Library (curbside pick-up)	- Restaurants/taverns <75% capacity/ table size no larger than 10 - Bar areas in restaurant/taverns at <25% capacity - Theaters at <50% capacity - Customer-facing government services (telework remains strongly encouraged) - Libraries - Museums - All other business activities not yet listed except for nightclubs and events with greater than 50 people	- Nightclubs - Concert venues - Large sporting events - Resume unrestricted staffing of worksites, but continue to practice physical distancing and good hygiene

* High-risk populations are currently defined by CDC as: persons 65 years of age and older; people of all ages with underlying medical conditions (particularly not well controlled), including people with chronic lung disease or moderate to severe asthma, people who have serious heart conditions, people who are immunocompromised, people with severe obesity, people with diabetes, people with chronic kidney disease undergoing dialysis, and people with liver disease; people who live in a nursing home or long-term care facility.



Office of the Mayor
Norma L. Hernández

CITY OF COLLEGE PLACE
625 South College Avenue
College Place, WA 99324

**CITY OF COLLEGE PLACE
CONTINUATION OF EMERGENCY DISASTER DECLARATION: COVID-19
OUTBREAK
RESOLUTION No. 20-009.1**

June 9th, 2020

A DECLARATION of an emergency,

WHEREAS, a disaster has been declared in City of College Place at 6 p.m. on March 17th, 2020 and, assistance is needed; and

WHEREAS, on January 31st, 2020, the United States Department of Public Health and Human Services Secretary Alex Azar declared a public emergency for the novel coronavirus (COVID-19) beginning on January 27th, 2020; and

WHEREAS, on February 29th, 2020 a patient was transported by ambulance from Umatilla County into Walla Walla County and hospitalized with a presumptive positive case of Novel Corona Virus 2019 (COVID-19), and Walla Walla County Department of Community Health, after further testing, was able to confirm the COVID-19 diagnosis in coordination with the Washington State Department of Health and the United States Centers for Disease Control and Prevention (CDC); and

WHEREAS, on March 13th, 2020 the Walla Walla County Board of Commissioners declared a disaster pertaining to the COVID-19 outbreak; and

WHEREAS, COVID-19, a respiratory disease that can result in serious illness or death, is caused by the SARS-COV-2 virus, which is a new strain of coronavirus that had not been previously identified in humans and can easily spread from person to person; and

WHEREAS, the CDC identifies the potential health threat by COVID-19 both globally and in the United States as “high”, and has advised that person-to-person spread of COVID-19 will continue to occur globally, including within the United States; and

WHEREAS, under the above referenced conditions there is substantial likelihood of risk of health of the citizens of College Place; and

WHEREAS, in the judgement of the undersigned, extraordinary measures are required to protect the public health, safety, and welfare of College Place's residents and may go beyond the capability of local resources; and

WHEREAS, the conditions stated above constitute an emergency for the City of College Place, necessitating activation of the City of College Place Continuity of Operations Plan (COOP) and the utilization of emergency powers granted pursuant to RCW 38.52.070 and CPMC 2.64 (Ordinance No. 18-017).

WHEREAS, Governor Jay Inslee issued "Stay Home, Stay Healthy" proclamations in response to the COVID-19 situation via Proclamation No. 20-25 on March 23rd, 2020, followed by addendums on April 2nd, 2020, April 27th, 2020, and May 4th, 2020; and

WHEREAS, Governor Jay Inslee issued a "Safe Start, Stay Healthy" County-by-County Phased Reopening on May 31st, 2020

WHEREAS, Resolution #20-009 was set to expire on June 15th, 2020;

NOW THEREFORE, I, Norma L. Hernández, Mayor, declares as follows:

Section 1. There is a Declared Emergency in and to the City due to the incident. The City will follow directives and guidance given within Governor Jay Inslee's proclamation 20-25.4 "Safe Start, Stay Healthy" County-by-County Phased Reopening.

Section 2. Pursuant to the emergency declared at Section 1, all emergency powers and authority set forth in RCW 38.52.070, COOP, and CPMC 2.64 are hereby invoked, (including without limitation to the right to enter into contract, employ temporary workers and incur obligations without regard to time-consuming procedures and formalities prescribed by law, except mandatory constitutional requirements).

Section 3. City Departments are authorized to enter into contracts and incur obligations with City Council approval necessary to combat this emergency, protect the health and safety of persons and property, and provide emergency assistance to the victims of this disaster.

Section 4. The City will closely adhere to Walla Walla County Department of Community Health/State of Washington Department of Health rulings and guidance pertaining to this disaster.

Section 5. The City will suspend late fees and utility shutoffs for individuals that are sick and cannot work due to being ordered by a doctor or health official in quarantine with the COVID-19 virus. The City will require affected account holders to provide proof of ordered quarantine in the form of a medical provider note or other as directed by the City.

Section 6. That the City Administrator, upon the recommendation of the Human Resources Manager, is hereby authorized to adjust any personnel policies related to leave time, other benefits or terms and conditions of employment as are reasonably related to provide sufficient staffing during the term of the emergency.

Section 7. That the City Administrator will reopen City Buildings and active recreation areas of parks (basketball courts, playground equipment) to the public the next business day after Governor Inslee/Secretary Wiseman approve Walla Walla County, Washington as a Phase III jurisdiction under the Safe Start Program.

Section 8. City Council and Advisory Commission meetings will be held in adherence to Governor Inslee Proclamation No. 20-25.4 "Safe Start-Stay Healthy" County-By-County Phased Reopening and Proclamation No. 20-28.4 "Open Public Meetings and Public Records Act" and subsequent future proclamations

Section 9. The Mayor and City Administrator are authorized to request all available state and federal assistance necessary to respond to this emergency.

Section 10. Authorizes the City Administrator and/or designee to participate in the Unified Command meetings of Walla Walla County Community Health & Emergency Management Departments.

Section 11. The Mayor, upon consultation with the Police Chief, Fire Chief, and Walla Walla County Community Health Director as conditions arise, can issue an Executive Order to further regulate practices of our local business community and associates thereof to prevent acts or inactions which endanger public's health and safety, (e.g. anti-hoarding, price gouging prohibitions)

Section 12. This Declaration and Order shall terminate whenever Walla Walla County reaches the end of Phase 4 of the "Safe Start-Stay Healthy" plans and guidance issued in Governor Inslee's Proclamation No. 20-25.4

PASSED by the Mayor and City Council of the City of College Place, Washington, this 9th day of June, 2020.

Attest:

Norma L. Hernández, Mayor

Lisa R. Neissl, CMC
City Clerk



STATE OF WASHINGTON
Office of the Governor

TO: Interested Stakeholders

FROM: Governor Jay Inslee

DATE: June 2, 2020

SUBJECT: Resuming Certain Library Services under Proclamation 20-25.

This memorandum serves as the criteria for resuming limited distribution services at public libraries, public library systems, institutional and governmental libraries, and libraries of higher education in Washington State in Phase 2 and is effective June 1, 2020.

After consulting with stakeholders, we have developed the following Phase 2 – “Curbside Library Services COVID-19 Requirements.” These requirements apply as long as Gubernatorial Proclamation 20-25, or any extension thereof, is in effect or if adopted as rules by a federal, state or local regulatory agency.

For purposes of this memorandum, library distribution services are limited to mail orders and curbside pick-up. In-person services other than limited curbside pick-up are not permitted, and libraries should remain closed to the public under Phase 2.

This memorandum supersedes any conflicting provision in the Appendix to Proclamation 20-25, “Essential Critical Infrastructure Workers” and stands in the place of any other omission from the document.

Library services may resume immediately with limited service operations if a specific library:

- Can meet and maintain all requirements, including providing plans, supplies, and equipment needed to comply;
- Conduct only those activities that are allowed under their county’s phase status;
- Quarantine each returned item for a minimum of 24 hours before re-distributing;
- Provide all staff with facemask and gloves and require all staff to wear facemasks and gloves when preparing orders; and
- Require all staff to maintain at least six feet of space between workstations and maintain a distance of at least six from each other at all times.

General questions about how to comply with safety practices can be submitted to the state’s Business Response Center at: <https://coronavirus.wa.gov/how-you-can-help/covid-19-business-and-worker-inquiries>.

All other violations related to Proclamation 20-25 can be submitted at: <https://bit.ly/covid-compliance.com>.

Walla Walla County Emergency Management – Walla Walla County Department of Community Health
Unified Command/Emergency Operations Center Daily Report to Unified Area Command State
Emergency Operations Center (UAC SEOC)

Monday, June 29, 2020

1. Effective Strategies and Successes

- Walla Walla County Department of Community Health (DCH) met with LTC/ALF/SNF community to stay connected and updated with open dialogue on COVID-19 status in WW Valley.
- Local Health Officer, Prosecuting Attorney and Local Emergency Response Coordinator completing Voluntary and Involuntary Isolation Orders specific to COVID-19.
- Maintain contact with media to keep the public informed.
- Unified Command calls providing regular communication and collaboration.
- Frequent messaging on Facebook, including Spanish-language posts.
- Providence St Mary Medical Center (PSMMC) Population Health team monitoring PUIs and cases, their awareness of community happenings.
- Blue Mountain Action Council (BMAC) food bank distribution in collaboration with Washington National Guard (WNG).
- Southgate Campus Acute Care wing setup.
- Addressing homeless needs for isolation and quarantine during pandemic.
- DCH Environmental Health team consults for prevention planning for essential businesses.
- Controlled access to WalMart, Home Depot, Albertson's and Safeway.
- Procurement of PPE from Washington State Department of Corrections.
- Continued partnership with WNG.
- DCH virtual meetings with LTC/ALF/SNF community to stay connected and updated with open dialogue on COVID-19 status in WW Valley.
- Proactive work on PSA's and infographics with digital marketing company.
- Solid protocol established between Coroner's Office and PSMMC.
- Tyson compliance with DCH/L&I Essential Business Guidelines and testing of employees.
- Delivery of PPE supplies and test kits from UAC SEOC has enabled us to provide much needed protection to our whole community.
- Experience with annual flu immunization clinics and long history of working together gave us the ability to quickly put together a team for testing at the Tyson Plan. 1,290 Tyson employees tested with staff from PSMMC & DCH.
- Aggressive testing at long-term care facilities.
- Spanish-language PSA's on local Spanish-language radio stations.
- Approval of additional DCH positions and increased hours by the Board of County Commissioners.
- Media specific email and phone number established, the centralized PIO email/phone number is working well and is helping with coordination of interviews.
- Protocols developed by PSMMC to do surgeries for most compelling cases that were delayed.
- Volunteer staffing at DCH.
- DCH/PSMMC/Coroner/Consulate's Office worked together to support a local family with international funeral arrangements.

Walla Walla County Emergency Management – Walla Walla County Department of Community Health
Unified Command/Emergency Operations Center Daily Report to Unified Area Command State
Emergency Operations Center (UAC SEOC)

- PSMMC has done a great job of allocating resources, workers, and supplies for the patients under investigation awaiting results.
- DCH conversations with school districts on distance learning strategies and graduation planning.
- PSMMC tabletop exercise for activation of PSMMC's auxiliary hospital; well attended by community partners.
- Formation of business/economy reopening workgroup. Workgroup team meetings including townhall Q&A with local businesses; webinars to help educate businesses. Continued frequent meetings of the workgroup. Use of Chamber of Commerce website for posting documentation/guidance.
- Washington National Guard deployment extended for support of food bank operations to end of July/mid-August.
- Tour of PSMMC Alternate Care site, DCH isolation and quarantine sites, and Park Manor by DOH Med Surge Branch.
- DCYF, Whitman, and DCH debrief on activation of isolation and quarantine for Master's Ranch – West juveniles; successful collaboration.
- Approval of WWEM part-time temp position for logistics by the Board of County Commissioners.
- 1 nurse and 1 disease investigator on staff over the weekend as cases come in over the weekend.
- All of our cases to date are from a known exposure; we're not seeing community spread.
- Arrival of 36,000 masks for low-income population in time for Governor's face mask mandate. Rapid distribution by Blue Mountain Action Council (BMAC).
- With the assistance of DCH, PSMMC received Remdesivir.
- Concerns for availability of childcare for essential workers.

2. Risks and challenges

- COVID-19 Case Counts –
 - o Total Confirmed Cases: 164
 - o Active: 41
 - ❖ Home Isolation: 39
 - ❖ Hospitalized: 2
 - o Recovered: 120
 - o Deaths: 3
- Concern for rapid spread at congregated facilities.
- Cross-jurisdictional coordination with Umatilla County, OR, Benton/Franklin County, WA.
- Significant reduction in Alaska Airlines flight availability out of Walla Walla Regional Airport. Update: Alaska Airlines is aiming for August to possibly restore a flight to the airport. <https://bit.ly/3eLvQLZ>
- Increase in crisis calls and behavioral health/substance abuse patients presenting at hospital; all have been higher acuity of care.
- Ongoing thoughtful, timely communications.
- Multiple testing platforms needed to overcome COVID19 testing challenges.
- Shortages in the supply chain for disinfecting supplies.
- Gap in planning for pediatrics with kids returning to school in the Fall.

Walla Walla County Emergency Management – Walla Walla County Department of Community Health
Unified Command/Emergency Operations Center Daily Report to Unified Area Command State
Emergency Operations Center (UAC SEOC)

- **Proximity to hotspots (other counties)**; Yakima, Benton, Franklin and Spokane Counties are seeing a significant surge in cases from community transmission (comparable to Seattle in March). **Continued concerns** about nonessential travel to/from these counties causing an increase in our case count.
- We are still at Phase 2 and need to continue to follow Phase 2 guidance.
- Recent DSHS guidance (ALISA: NH #2020-041) that allows long-term care residents to go out into the community and return to the facility without requirement of isolation. Restoration of resident rights must be done in a well-planned manner to protect this vulnerable populations and the safety of the community as a whole.
- Lots of inquiries about Governor Inslee's mask requirement mandate.
- Challenges with Washington State Penitentiary (WSP); communication about positive inmate, transfer of incarcerated to/from Coyote Ridge where there has been an outbreak. **WSP Covid19 cases are attributed to the county where they receive their mail, but they have an impact on Walla Walla County healthcare systems.**
- Increase in number of cases in the community.

3. Future operational plans (24, 48, and 72 hours out)

- Emergency Management is activated at **Level 2 – Limited Operations** (virtual, with no face-to-face contact).
- WWEM acting as liaison to Washington National Guard (WNG).
- WWEM coordination with WSDA and Blue Mountain Action Council (BMAC) for Food Assistance Program. WWEM to coordinate with BMAC for completion of State staffing needs survey in anticipation of WNG standing down at the end of July.
- WWEM continued collection of donations from the community.
- Coordination and communication with Unified Area Command State Emergency Operations Center (UAC SEOC).
- Monitor WebEOC Resource Tracker for delivery of supplies from Washington State to Walla Walla County.
- Submission of new resource requests on WebEOC.
- WWEM distribution of resources.
- DCH weekend staffing.
- DCH is working to develop a Spanish-language outreach program to improve message to Spanish speaking community.
- Unified Command EOC conference calls, Monday-Wednesday-Friday.
- Weekly ESF6 Human Services weekly conference calls.
- PSMMC maintaining daily sit reports.
- EMS providers tracking PPE use with CDC PPE Burn Rate Calculator.
- Continue work with the media.
- DCH case investigation/contact tracing of positive cases.
- Continued LTC/SNF/ALF isolation/surge planning/coordination.
- Ongoing communications of the State's 'Smart Start' information down to the local level to ensure local businesses understand the requirements for Phase 2 operations.
- DCH working on communications for moving into Phase 3; prevention strategies and accessing care information for public dissemination.
- Reopening Business Workgroup will continue its weekly Business Resource Town Hall, The Governor's template for businesses in Phase 3 has been added to website.

Walla Walla County Emergency Management – Walla Walla County Department of Community Health
Unified Command/Emergency Operations Center Daily Report to Unified Area Command State
Emergency Operations Center (UAC SEOC)

<https://www.wwwchamber.com/business-resources> Visit Walla Walla has joined the workgroup. Developing messaging for people coming to Walla Walla about being safe. Visit Walla Walla kiosk will have masks to give out to visitors who arrive without one. Working with hotels for potential mask distribution. 'Shop Local' messaging going out.

- Awaiting decision for Walla Walla County's request for Phase 3 with variance.
- DCH revisiting isolation and quarantine and reviewing MOUs for potential non-congregate housing locations.
- June 30th Cepheid testing machine delivery at PSMMC anticipated; validation to follow.
- BMAC staff will distribute fabric masks to low-income individuals and families on June 30th from 9 am to 11 am at:
 - o Corner of Cherry & Colville (near BMAC office parking lot, 8 E, Cherry)
 - o Lincoln High School: 421 S. 4th (front entrance parking lot)
 - o Washington Park 700 W. Cherry St. (near the splash platform)
 - o Jefferson Park 750 Sprague St. (near downtown parking lot for older
- PSMMC has been doing surge planning all along but is 'stepping up' planning with current increase in case counts.
- Notable increase in younger demographic for positive cases.
- REDi Healthcare Coalition (HCC) Patient Placement Coordination Meeting on June 30 to support potential activation of REDi HCC Patient Placement (DMCC) annex.
- Due to the increase in number of cases of COVID-19 in pockets of eastern Washington, REDi HCC staff are facilitating a weekly regional virtual meeting where leads from local health jurisdictions (public health), Emergency Management, EMS, and healthcare gather virtually to provide updates regarding COVID cases in their county, data trends, response gaps/needs, and successes.

Michael Rizzitiello

From: Jennifer Beckmeyer <jbeckmeyer@wallawallawa.gov>
Sent: Thursday, June 18, 2020 10:51 AM
To: Michael Rizzitiello; Edwin Rios
Subject: Round 2 CP business grant funding

Importance: High

STOP and VERIFY - This message came from **outside** of the City of College Place.

Hi there,

I just wanted to send a recap of our conversation yesterday out to everyone so that we all have the same information on file.

College Place businesses awarded funding in Round 2 are:

BUSINESS	AMOUNT
Brown's Salon	\$4,425.00 (pending confirmation from MCNW)
Juan Segovia Plumbing LLC	\$7,500.00
Nina Angel Nails	\$4,425.00 (pending confirmation from MCNW)
Spinoza Enterprises LLC	\$7,500.00

I sent an email to Lynn, the ED of MCNW yesterday, and I should hear back from her this afternoon so that we are ready to notify businesses by tomorrow sometime. Mercy Corps will be in charge of notifying the businesses, but I want to make sure this information looks correct.

Mike, once I get the budget breakdown from Mercy Corps for the \$30,000, I will share that with you to look over so that we can make any adjustments to business funding levels if need be.

Thanks and stay tuned.

Jennifer Beckmeyer

Community Development Block Grant Coordinator

SUPPORT SERVICES

509.524.4496

wallawallawa.gov



A WONDERFUL PLACE TO
LIVE WORK PLAY

* * * * * SPECIAL PUBLIC DISCLOSURE NOTICE TO RECIPIENT(S): Information contained in any communication to or from the City of Walla Walla, including attachments, may be subject to the disclosure requirements of Washington's Public Records Act, Ch. 42.56 RCW.

CITY OF WALLA WALLA
STANDARD SERVICES CONTRACT
AMENDMENT NO. 1

THIS SERVICES CONTRACT AMENDMENT NO. 1 (Amendment) is made this _____ day of _____ 20____, by and between the City of Walla Walla, Washington, a municipal corporation, hereinafter referred to as "CITY", and Mercy Corps, hereinafter referred to as "SERVICE PROVIDER":

WHEREAS the CITY and the SERVICE PROVIDER entered into a Services Contract on May 8, 2020 to provide emergency grant financing for small businesses impacted by COVID-19 to retain or create jobs for low- and moderate-income (LMI) business owners and employees in the City of Walla Walla and Walla Walla County.

WHEREAS, pursuant to Section AMENDMENTS of that contract, the CITY and the SERVICE PROVIDER mutually agree to modify the contract.

WHEREAS there were additional funds awarded to the CITY on June 9, 2020 by City of College Place in the amount of \$30,000 to support College Place businesses through the Emergency Grant Program.

THEREFORE, CITY and SERVICE PROVIDER hereby amend the contract Scope of Services as follows:

Paragraph 1 of the COMPENSATION AND BUDGET Section is amended, with changes in ***bold and italics*** and language to be removed struck through, as follows:

COMPENSATION:

1. CITY shall pay SERVICE PROVIDER an amount not to exceed ~~\$152,000.33~~ ***\$182,000.33*** contingent upon appropriation and receipt of funds from the federal government, to administer the program and for all other work performed under this Contract identified in the Scope of Services and in accordance with the Budget shown in Appendix D of this Contract.

Appendix A is replaced as follows. All changes are in ***bold and italics*** and the language to be removed is struck through.

APPENDIX A – SERVICE PROVIDER WORK PLAN

MICRO-BUSINESS ASSISTANCE PROGRAM **SMALL BUSINESS EMERGENCY GRANT PROGRAM**

Project Description	Provide grants and technical assistance to small businesses
Budget Sources	CDBG CDBG-CV Walla Walla County <i>City of College Place</i>
Activity	Small Business Emergency Grant Program
National Objective	24 CFR 570.208(a)(4) Low-Moderate Income
Eligible Activity	24 CFR 570.201(o)(1) Microenterprise Assistance – Matrix Code 18C And 24 CFR 570.203(b)
Environmental Review	Exempt (see ERR file)

The City of Walla Walla has designated \$30,054.56 federal Community Development Block Grant (CDBG) funds from the 2020 Grant Year and \$100,000 from CDBG Coronavirus (CDBG-CV) funds to support businesses within the city limits of Walla Walla only. The CDBG funds are contingent upon appropriation and receipt from the federal government. An additional ~~\$21,945.77~~ ***\$51,945.77*** from the following sources shall provide additional funding to the program and shall be used and available as described:

- Walla Walla County - \$21,945.77 – To be used for business grants for businesses located outside of City of Walla Walla city limits within Walla Walla County.
- ***City of College Place - \$30,000.00 – To be used for business grants for businesses located in the City of College Place.***

The funds, unless otherwise noted, will provide small business emergency grants and technical assistance to small businesses (fewer than 10 employees including the owner) in the Walla Walla Valley. The City selected the Service Provider as the designated entity to provide ~~\$152,000.33~~ ***\$182,000.33*** in small business emergency grants and technical assistance to small businesses.

The Service Provider will provide direct financial assistance and technical assistance to microenterprises and small businesses with a maximum of 10 employees, prioritizing outreach in low-moderate income neighborhoods and Latino-owned businesses. Financing will be provided in the form of Small Business Emergency Grants.

- o Businesses will need to qualify either as a CDBG microenterprise (business owner(s) with low-mod household income and business with five or fewer FTEs) or as a small business with less than 10 employees that will be creating or retaining jobs that will be made available to low- to moderate-income individuals
- o Small Business Emergency Grants will be a good fit for microenterprises and small businesses that have difficulty obtaining financial assistance for COVID-19 related expenses from other federal and state programs.
- o The total program budget of ~~\$152,000.33~~ **\$182,000.33** will result in a total assistance of ~~22~~ **26** microenterprises and small businesses.

Businesses receiving CDBG funds will be required to:

- A. Ensure that 51% of jobs created or retained go to low-moderate income people; and
- B. Create or retain as many full-time jobs as possible,
- C. Create or retain jobs at a reasonable cost per job ration, or
- D. Otherwise comply with CDBG eligibility criteria.
- E. Sign a subrogation agreement to ensure CITY that there will be no duplication of benefits.

The City will be responsible to:

- A. Provide advertising and outreach to target groups and communities.
- B. Assist in the initial review of applicants, to the extent feasible.

The Service Provider will be responsible to:

- A. Take Small Business Emergency Grant applications, assist businesses in the application process, review and evaluate the applications submitted, and make decisions about whether and how to offer grants to businesses.
- B. Collect information that documents businesses' eligibility to receive CDBG funds, transmit that documentation to the City, and not disburse funds until the City approves eligibility.
- C. Report on the status and accomplishments of each project as described in Attachment C.

The Service Provider estimates that it will assist a minimum of ~~22~~ **26** businesses from a total of ~~\$152,000.33~~ **\$182,000.33** in Small Business Emergency Grant program support.

Appendix D is replaced as follows. All changes are in ***bold and italics*** and the language to be removed is struck through.

APPENDIX D – PROGRAM BUDGET

Service Provider: Mercy Corps
 Program Title: Small Business Emergency Grants
 Contract Period: May 1, 2020 – December 31, 2020

BUDGET - OVERALL	
Categories	Amount
Personnel	\$4,329.13
Fringe Benefits (42.3%)	\$1,831.22
Travel	\$0.00
Supplies	\$0.00
Contractual	\$3,000.00
Scholarships	\$0.00
Other - Small Business Emergency Grants	\$116,981.00 \$140,831.00
Direct Costs	\$126,141.35 \$149,991.35
Indirect Costs (20.5%)	\$25,858.98 \$32,008.98
TOTAL	\$152,000.33 \$182,000.33

*****Discretion to transfer Project Funds between individual cost categories is authorized, provided the cumulative result of all such transfers in a given budget period does not exceed 5 percent, or \$7,600, of the total approved budget.***

BUDGET PER FUNDING SOURCE					
Source/Item	\$ amt. of funding	% of funding	<u>Estimated</u> # of grants	Direct Costs	Indirect Costs
City of WW Contribution	\$130,054.56	85.60%	19 grants	\$107,929.62	\$22,124.94
County Contribution	\$21,945.77	14.40%	3 grants	\$18,211.73	\$3,734.04
City of College Place Contribution	\$30,000.00	N/A	4 grants	\$23,850.00	\$6,150.00
Totals	\$152,000.33 \$182,000.33	100%	22 26 grants	\$126,141.35	\$25,858.98

This amendment does not extend the termination date of the contract which remains December 31, 2020.

Except as set forth in this Amendment, the original contract is unaffected and shall continue in full force and effect in accordance with its terms. If there is conflict between this amendment and the original contract or any earlier amendment, the terms of this amendment will prevail.

APPROVALS

CITY

SERVICE PROVIDER

Approved as to Form:

City Attorney

By: _____

By: _____

Type Name: Nabiel Shawa

Type Name: _____

Title: City Manager

Title: _____

Attest:

Kammy D. Hill, MMC, City Clerk



Safe Start Washington

Phased Reopening County-By-County

ISSUED BY THE OFFICE OF THE GOVERNOR | MAY 31, 2020



Safe Start Washington – Phased Reopening County-by-County

Governor Jay Inslee

Governor Jay Inslee, in collaboration with the Washington State Department of Health, has established a data-driven approach to reopen Washington and modify physical distancing measures while minimizing the health impacts of COVID-19. Washington will move through the phased reopening county-by-county allowing for flexibility and local control to address COVID-19 activity geographically.

This approach reduces the risk of COVID-19 to Washington's most vulnerable populations and preserves capacity in our health care system, while safely opening up businesses and resuming gatherings, travel, shopping and recreation.

The plan involves assessing COVID-19 activity along with health care system readiness, testing capacity and availability, case and contact investigations, and ability to protect high-risk populations. The plan allows counties and the secretary of Health to holistically review COVID-19 activity and the ability for the county to respond when determining if a county is ready to move into a new phase.

County Application Process

On June 1, each county begins in their current phase. Any county can apply to the secretary of Health to move to the next phase. The application process will require the county to report on key metrics set by the secretary of Health along with other quantitative and qualitative data. The application must be submitted by the county executive, in accordance with the instructions provided by the secretary of Health. If the county does not have a county executive, it must be submitted with the approval of the county council/commission.

The secretary of Health will evaluate county applications based on how their data for the key metrics compare to the targets and their ability to respond to situations that may arise in their county, including outbreaks, increased hospitalizations or deaths, health system capacity and other factors. The metrics are intended to be applied as targets, not hardline measures. The targets each contribute to reducing risk of disease transmission, and are to be considered in whole. Where one target is not fully achieved, actions taken with a different target may offset the overall risk. A final decision on whether a county is ready to move to the next phase rests with the secretary of Health. The secretary may approve a county moving in whole to the next phase, or may only approve certain activities in the next phase depending on a specific county's situation.



A county that remains in Phase 1 has the ability to apply for a modified Phase 1 (as described below) to allow additional activity. That application would be submitted to the secretary of Health. The secretary of Health has discretion to modify or change any part of the modified Phase 1 to address the needs of a specific county. All activities must follow the health and safety requirements for those activities.

COVID-19 DISEASE ACTIVITY

COVID-19 disease burden is measured by the following key metrics:

COVID-19 Disease Activity	
Metric	Target
1. Incidence of new cases reported during prior two weeks	<25 cases / 100,000 / 14 days
2. Trends in hospitalizations for lab-confirmed COVID-19	Flat or decreasing
3. Reproductive rate (if available)	$R_e < 1$

READINESS AND CAPABILITIES NEEDED

The Department of Health and local public health officials will monitor data to assess a county's readiness for safely reopening and modifying physical distancing measures. In addition to disease burden, readiness will be evaluated in four key areas. The four key areas include health care system readiness, testing capacity and availability, case and contact investigations, and ability to protect high-risk populations. Key metrics and their targets for each area, along with other pertinent data that will be considered, are detailed below.



1. Health Care System Readiness

Adequate bed capacity, staffing and supplies in the healthcare system to handle a surge in COVID-19 cases, measured by the following key metrics:

Health Care System Readiness	
Metric	Target
1. % licensed beds occupied by patients (i.e., hospital census relative to licensed beds)	- Green: <80% - Yellow: 81-90% - Red: >90%
2. % licensed beds occupied by suspected and confirmed COVID-19 cases	- Green: <10% - Yellow: 11-20% - Red: >20%

Other data that will be considered include availability of PPE in hospitals, long term care facilities and other healthcare settings and availability of ventilators in hospitals.

2. Testing Capacity and Availability

Ability for everyone with COVID-19 symptoms and those with high-risk exposures to be tested immediately using a polymerase chain reaction (PCR) test and rapidly receive test results as measured by the following key metrics:

Testing	
Metric	Target
1. Average number of tests performed per day during the past week (or average % tests positive for COVID-19 during the past week)	50 times the number of cases (or 2%)
2. Median time from symptom onset to specimen collection during the past week	Median <2 days

Other data that will be considered include the geographic distribution of testing sites in counties, the ability to test the entire population, and the availability of sufficient swabs, viral transport media, lab reagents and other materials required for COVID-19 testing.



3. Case and Contact Investigations

Ability to rapidly isolate those with COVID-19, identify and quarantine their contacts, and provide case management services as measured by the following key metrics:

Case & Contact Investigations

Metric	Target
1. Percent of cases reached by phone or in person within 24 hours of receipt of + lab test report	90%
2. Percent of contacts reached by phone or in person within 48 hours of receipt of + lab test report on a case	80%
3. Percent of cases being contacted daily (by phone or electronically) during their isolation period	80%
4. Percent of contacts being contacted daily (by phone or electronically) during their quarantine period	80%

Other data that will be considered include the number of investigators trained and working, the availability of isolation and quarantine facilities, and plans for case management.

4. Ability to Protect High-Risk Populations

Ability to immediately respond to outbreaks in congregate settings, such as long-term care facilities, behavioral health facilities, agricultural worker housing, homeless shelters and correctional facilities, and address the needs of other high-risk populations, including the elderly and the medically frail, measured by the following key metric:

Protect High-Risk Populations

Metric	Target
1. Number of outbreaks reported by week (defined as 2 or more non-household cases epidemiologically linked within 14 days in a workplace, congregate living or institutional setting)	0 - small counties (<75,000) 1 - medium counties (75,000-300,000) 2 - large counties (>300,000) 3 - very large counties (>1 million)

Other data that will be considered include a county's ability to rapidly respond to an outbreak and address health disparities in their communities.



ALL INDIVIDUALS AND BUSINESSES

Until there is an effective vaccine, effective treatment or herd immunity, it is crucial to maintain some level of community interventions to suppress the spread of COVID-19 throughout all phases of recovery. This includes heightened protections for the health and safety of workers in essential sectors, people living and working in high-risk facilities (e.g., senior care facilities) and all other workers.

All Washingtonians have a responsibility to protect themselves and others. Each phase, while allowing for additional services to open and return to full capacity, is grounded in the following required basic practices:

Guidance for Individuals

All phases – Individuals should continue to:

- Engage in physical distancing, staying at least six feet away from other people
- Wear cloth face coverings in public places when not eating or drinking (cloth face coverings should not be placed on children younger than 2 years of age, anyone who has trouble breathing, or is unconscious, incapacitated or otherwise unable to remove the cover without assistance)
- Stay home if sick
- Avoid others who are sick
- Wash hands frequently with soap and water (use hand sanitizer if soap and water are not available)
- Cover coughs and sneezes
- Avoid touching eyes, nose and mouth with unwashed hands
- Disinfect surfaces and objects regularly

Requirements for All Employers

All phases – Employers are required to:

- Beginning June 8, all employees will be required to wear a cloth facial covering, with the following exceptions: when working alone in an office, vehicle, or at a job site; if the individual is deaf or hard of hearing, or is communicating with someone who relies on language cues such as facial markers and expression and mouth movements as a part of communication; if the individual has a medical condition or disability that makes wearing a facial covering inappropriate; or when the job has no in-person interaction. Employers must provide cloth facial coverings to employees, unless their exposure dictates a higher level of protection under the Department of Labor and Industries' safety and health rules and guidance. Refer to [Coronavirus Facial Covering and Mask Requirements](#) for additional details. Employees may choose to wear their own facial



coverings at work, provided it meets the minimum requirements.

- Keep a safe and healthy facility in accordance with state and federal law, and comply with COVID-19 worksite-specific safety practices, as outlined in Governor Inslee's Proclamation 20-25, and all amendments and extensions thereto, and in accordance with the Washington State Department of Labor & Industries' [General Coronavirus Prevention](#) under the "Stay Home, Stay Healthy" order and the Washington State Department of Health's [Workplace and Employer Resources and Recommendations](#).
- Educate workers in the language they understand best about coronavirus and how to prevent transmission, and the employer's COVID-19 policies.
- Maintain minimum six-foot separation between all employees (and customers) in all interactions at all times. When strict physical distancing is not feasible for a specific task, other prevention measures are required, such as use of barriers, minimizing staff or customers in narrow or enclosed areas, and staggering breaks and work shift starts.
- Provide (at no cost to employees) and require the wearing of personal protective equipment (PPE), such as gloves, goggles, face shields and face masks as appropriate or required for the work activity being performed. Cloth face coverings must be worn by every employee not working alone on the job site unless their exposure dictates a higher level of protection under L&I safety and health rules and guidance. Refer to Washington Coronavirus Hazard Considerations for Employers (except COVID-19 care in hospitals and clinics) [Face Coverings, Masks, and Respirator Choices](#) for additional details. Cloth face coverings are described in the [Department of Health guidance](#).
- Ensure frequent and adequate hand washing with adequate maintenance of supplies. Use disposable gloves where safe and applicable to prevent virus transmission on tools or other items that are shared.
- Establish a housekeeping schedule that includes frequent cleaning and sanitizing with a particular emphasis on commonly touched surfaces
- Screen employees for signs/symptoms of COVID-19 at the start of their shift. Make sure sick employees stay home or immediately go home if they feel or appear sick. Cordon off any areas where an employee with probable or confirmed COVID-19 illness worked, touched surfaces, etc. until the area and equipment is cleaned and sanitized. Follow the [cleaning guidelines](#) set by the Centers for Disease Control to deep clean and sanitize.
- [Post a sign](#) strongly encouraging customers to wear cloth facial coverings, and prominently display it at the entrance to the business so that it is immediately noticeable to all customers entering the store. Employers are encouraged to require customers to wear cloth facial coverings, in order to protect their employees.
- Follow requirements in Governor Inslee's [Proclamation 20-46 High-Risk Employees – Workers' Rights](#).



Businesses are also required to implement any health and safety requirements developed specifically for their industry.

Challenge Seattle and the Washington Roundtable have developed a [business checklist](#) which is a great starting point for businesses as they prepare for “Safe Start Washington”. Our shared goal is to establish clear requirements that everyone can understand and apply – employers, workers and customers.

PHASED APPROACH TO REOPENING WASHINGTON COUNTY-BY-COUNTY AND MODIFYING PHYSICAL DISTANCING MEASURES

A county will stay in every phase for a **minimum of three weeks**. During that time, the Department of Health, County Elected Leadership, Local Health Jurisdictions, and the governor will re-evaluate the above targets. No phase will last less than three weeks before moving to the next phase, unless moving to a previous phase, in order to allow one complete disease incubation period plus an additional week to compile complete data and confirm trends. After three weeks, a county may apply to move to the next phase through the application provided by the secretary of Health.

If a county experiences an increase in COVID-19 disease activity and they need to return to an earlier phase, they must notify the secretary of Health and include their rationale but they do not need prior approval. Alternatively, the secretary has the authority to return a county to an earlier phase if the county chooses not to do so on its own, and the secretary has identified a need to do so. The secretary must notify a county in writing and provide a rationale for it being moved to an earlier phase.

The following table shows the phased approach for reopening businesses and resuming activities. **This phased approach may be adjusted as the pandemic evolves.** The industries listed are not an exclusive or exhaustive list of industries. Businesses listed in each phase of the plan will have industry-specific guidance and safety criteria developed to ensure workplace safety and public health are maintained. Those business activities are not authorized to open until the industry-specific guidance and safety criteria are issued.

If a county is not ready to move from Phase 1 to Phase 2, they have the ability apply for a modified Phase 1. The secretary of Health has discretion to modify or change any part of the modified Phase 1 to address the needs of a specific county. All activities must follow the health and safety requirements for those activities. The modified Phase 1 could include the following Phase 2 activities with the specific modifications to the previously issued health and safety requirements listed below.



- **High-risk populations**
 - Strongly encouraged, but not required, to stay home unless engaging in modified Phase I permissible activities.
- **Recreation and fitness**
 - Only allowed outdoor with five (not including the instructor) or fewer people outside of household.
- **Gatherings**
 - Only allowed outdoor of five or fewer people outside the household.
- **Additional construction**
 - As outlined in Phase 2 guidance.
- **Manufacturing operations**
 - As outlined in Phase 2 guidance.
- **Real estate**
 - 25% of building occupancy.
 - Indoor services limited to 30 minutes.
- **In-store retail**
 - 15% of building occupancy. (This does not apply to currently operating essential retail such as grocery stores. Currently operating essential retail should continue to follow the Phase 2 requirements.)
 - Indoor services limited to 30 minutes.
- **Personal services**
 - 25% of building occupancy.
- **Professional services**
 - 25% of building occupancy.
 - Indoor services limited to 30 minutes for customers.
- **Photography**
 - As outlined in Phase 2 guidance.
- **In-home/domestic services**
 - As outlined in Phase 2 guidance.
- **Pet grooming**
 - 25% of building occupancy.
- **Restaurants**
 - No indoor dining allowed.
 - Outdoor dining is permitted but seating at 50% of existing outdoor capacity.



Additional plans for a phased approach to restarting health care, spiritual gatherings, professional sports, and educational activities are under development and will be released separately.

Families are adjusting to a new way of life, and we understand the impacts this is having on them. The connection between education, child care, youth sports, summer programs and extracurricular activities is critical and must be viewed from a holistic lens to ensure equity and high quality of life. As we prepare for what the reopening of school looks like, we will be working closely with the Department of Health, Office of the Superintendent for Public Instruction, Department of Children, Youth and Families, and parents to release plans in the future.

While child care is currently an essential business activity and a key component to the reopening plan, we know there is more to do. The state will continue efforts to ensure adequate access and affordability for families.



WASHINGTON'S PHASED APPROACH

Modifying Physical Distancing Measures

INDIVIDUALS AND BUSINESSES SHOULD FOLLOW ALL REQUIREMENTS LISTED ABOVE DURING ALL PHASES

	 Phase 1	 Phase 2	 Phase 3	 Phase 4
High-Risk Populations*	Stay home unless engaging in Phase 1 permissible activities.	Strongly encouraged, but not required, to stay home unless engaging in Phase 1 or Phase 2 permissible activities.	Strongly encouraged, but not required, to stay home unless engaging in Phase 1, 2, or 3 permissible activities.	Resume public interactions, with physical distancing
Recreation	Some outdoor recreation (hunting, fishing, golf, boating, hiking)	Outdoor recreation involving 5 or fewer people outside your household (camping, beaches, etc.)	- Outdoor group rec. sports activities (50 or fewer people) - Recreational facilities at <50% capacity (gyms, public pools, etc.)	Resume all recreational activity
Gatherings (non religious)	No gatherings	Gather with no more than 5 people outside your household per week	Allow gatherings with no more than 50 people	Allow gatherings with >50 people
Travel	Essential travel and limited non-essential travel for Phase I permissible activities	Essential travel and limited non-essential travel for Phase I & II permissible activities	Resume non-essential travel	Continue non-essential travel
Business/ Employers (All businesses will be required to follow safety plans written by the state)	- Essential businesses open - Existing construction that meets agreed upon criteria - Landscaping - Auto/RV/boat/ORV sales - Retail (curb-side pick-up orders only) - Car washes - Pet walkers	- Remaining manufacturing - Additional construction phases - In-home/domestic services (nannies, housecleaning, etc.) - Retail (in-store purchases allowed with restrictions) - Real estate - Professional services/office-based businesses (telework remains strongly encouraged) - Personal services (hair and nail salons/barbers, tattoo, etc.) - Pet grooming - Restaurants/taverns <50% capacity, table size no larger than 5 (no bar-area seating) - Limited small group fitness - Drive-in Movie Theaters - Library (curbside pick-up)	- Restaurants/taverns <75% capacity/ table size no larger than 10 - Bar areas in restaurant/taverns at <25% capacity - Theaters at <50% capacity - Customer-facing government services (telework remains strongly encouraged) - Libraries - Museums - All other business activities not yet listed except for nightclubs and events with greater than 50 people	- Nightclubs - Concert venues - Large sporting events - Resume unrestricted staffing of worksites, but continue to practice physical distancing and good hygiene

* High-risk populations are currently defined by CDC as: persons 65 years of age and older; people of all ages with underlying medical conditions (particularly not well controlled), including people with chronic lung disease or moderate to severe asthma, people who have serious heart conditions, people who are immunocompromised, people with severe obesity, people with diabetes, people with chronic kidney disease undergoing dialysis, and people with liver disease; people who live in a nursing home or long-term care facility.



For immediate release: May 29, 2020

Contact:

Jennifer Beckmeyer

CDBG Coordinator

509-524-4496

jbeckmeyer@wallawallawa.gov

Local small businesses receive financial assistance through City of Walla Walla program

A second round of grant and loan funding through the Small Business Relief Program is now underway.

WALLA WALLA, Wash. — Twenty-nine businesses have now received Small Business Emergency Grants through the Walla Walla Small Business Relief Program. Grants, which total \$114,311, are being administered by [Mercy Corps Northwest](#). A list of recipients is provided at the end of this release.

Additionally, a second application round has opened for Walla Walla Valley businesses that are interested in Small Business Resilience Loans up to \$50,000. Loan proceeds can be used to help businesses manage costs related to reopening. The loan program is administered by [Craft3](#).

Screening applications for the loans are available now in English and Spanish on the City website: wallawallawa.gov/SBRP/. Businesses are eligible for a loan if they have been open for at least two years, reported a profit in 2019, and have a credit score of at least 640. Businesses that have received PPP or EIDL loans are eligible to apply.

The Small Business Relief Program was organized by the City of Walla Walla and funded by a grant from the City's Community Development Block Grant program, with additional funding coming from the City of College Place and Walla Walla County. Businesses in Walla Walla County that have been impacted by COVID-19 were able to apply for the program from May 11-13, 2020.

A total of 181 businesses applied for grants and three applied for loans. Each application was reviewed and assigned a score. A review committee consisting of local economic-development leaders determined the criteria the scores were based on. These criteria include operational costs, location, access to resources, susceptibility to being adversely affected by COVID-19 restrictions, previous funding received, minority status, family situation, language challenges, and more.

Additional Grant Funding

The Walla Walla Small Business Relief Program plans to offer another round of grant funding for businesses located in Walla Walla and College Place. New grant applications will not be accepted. The

local review committee will re-review applications that were previously submitted. It is not necessary for these business owners to express interest in being considered for the second round of funding.

Criteria for the second round of grants will be different than that of the first round, and due to funding limitations, not every business that applied will receive assistance.

For more information on who is eligible to apply for loans, please visit wallawallawa.gov/SBRP.

Application questions should be sent to Jennifer Beckmeyer at jbeckmeyer@wallawallawa.gov.

Small Business Emergency Grant & Business Resilience Loan Recipients

7 IMPACT Salon	\$4,830
A Ride With J LLC	\$2,450
Abzuya LLC	\$2,416
ACO	\$2,416
Alma's Creative House	\$2,416
BB's Cleanning Service	\$1,045
BBQ Man Southern Cuisine LLC	\$9,670
Black Tie Wine Tours	\$4,942
Bowen Byrd LLP DBA Uniquely Walla Walla	\$9,670
Dacy Marie LLC	\$1,450
Dani's Cleaner	\$2,416
Eli's House Cleaning	\$2,150
Innovation Drywall LLC	\$2,805
InquisiTours, LLC	\$4,830
Jimmi Kaye Hinger	\$2,416
Jesus Ruiz / Antonio's Barber Shop	\$7,250
K&J Cleaning Services	\$4,830
NG Quality Space	\$2,416
Prophyno Computer Forensics	\$22,500
Purl 2 Walla Walla, LLC	\$4,830
Revolve Lash	\$1,000
Shell's Got to Have it	\$2,450
SMAK LLC dba SMAK Wines	\$7,250
Stardust Lanes	\$5,050
TramiNet	\$2,416
Un Dulce Antojo	\$2,450
Walla Walla China Buffet Inc	\$9,670
Walla Walla Food Tours, LLC	\$4,830
Western Paladin Games	\$1,497
Ziegele and Company, Inc.	\$2,450

TOTAL **\$136,811**

###



STATE OF WASHINGTON
DEPARTMENT OF COMMERCE

2001 Sixth Avenue Suite 2600 • Seattle, Washington 98121-2895 • (206) 256-6100 • Fax (206) 256-6158
www.commerce.wa.gov

May 15, 2020

Port of Walla Walla
310 A. Street
Walla Walla, WA 99362
ATT: Patrick H. Reay

Re: Working Washington Small Business Emergency Grants Award

Dear Patrick:

I am pleased to let you know that Governor Inslee has approved \$167,200 of the Working Washington Small Business Emergency Grant (WWSBEG) to support 18 companies facing imminent failure due to the COVID-19 pandemic and associated economic emergency. These businesses were selected out of total pool of 35 applicants submitted by the Port of Walla Walla.

The selected pool of grantees includes 5 healthcare businesses, 4 restaurants, 4 wineries, 2 construction/contractor companies, 2 retail establishments, and 1 manufacturing business. The selected pool of grantees represents 5 women owned businesses, 1 minority owned business, and 1 veteran owned business. The grantees are located in 2 cities across Walla Walla County.

These WWSBEG recipients employ a total of 144 individuals and it is estimated that this grant will prevent the loss of 112 jobs. In approving this WWSBEG, Washington State and Walla Walla County will be able to support the potential preservation of these businesses and the economic security of both the company's employees and local community.

Please do not hesitate to contact me or the Business Development team with any questions about this award.

Chris Green
Assistant Director
Office of Economic Development and Competitiveness

WALLA WALLA COUNTY WWSBEG GRANT RECIPIENTS

	BUSINESS NAME	CITY	INDUSTRY SECTOR	GRANT AMOUNT
1.	Grape Visions LLC	Walla Walla	Winery	\$10,000
2.	Southpoint Dental Center	Walla Walla	Healthcare	\$10,000
3.	Cougar Crest Estate Winery	Walla Walla	Winery	\$10,000
4.	Stacey Kutsch DDS MS Walla Walla Pediatric	Walla Walla	Healthcare	\$10,000
5.	Jonathan W Gantz DDS PLLC DBA Enhanced Dental Care	Walla Walla	Healthcare	\$10,000
6.	Core Restoration LLC	Walla Walla	Construction	\$10,000
7.	Rogers Bakery and Cafe	College Place	Restaurant	\$10,000
8.	Opal West Wines LLC DBA Walla Walla Vintners	Walla Walla	Winery	\$10,000
9.	Randolph Pearson DDS PS	Walla Walla	Healthcare	\$10,000
10.	Nielson Eye Care	Walla Walla	Healthcare	\$10,000
11.	TR Wines Inc	Walla Walla	Winery	\$10,000
12.	Saffron Mediterranean Kitchen	Walla Walla	Restaurant	\$10,000
13.	Sweet Basil Pizzeria	Walla Walla	Restaurant	\$10,000
14.	Revelry Vintners LLC	Walla Walla	Winery	\$10,000
15.	Blue Mountain Clothing Co.	Walla Walla	Retail	\$6,800*
16.	Brookins LLC DBA Overhead Door Co Of Walla Walla	Walla Walla	Retail	\$6,800*
17.	Tommy's Dutch Lunch LLC	Walla Walla	Restaurant	\$6,800*
18.	Dax Moreno Construction Co	Walla Walla	Construction	\$6,800*
				Total: \$167,200

* Businesses #15-18 received the same reviewer scores.

Legislative Priorities Committee

June 18, 2020

Web Meeting



Agenda

- Welcome
- Committee Process Overview
- 2021 Legislative and Budget Preview
- AWC Priorities Update - possible special legislative session
- COVID-19 City Conditions Survey Results
- 2021 Legislative Session
 - Legislative Priorities Member Survey results
 - Discussion of possible priority issues
- Wrap-Up and Next Steps

Committee Process Overview

- Identify AWC's 2021 legislative priorities
 - Vet array of issues
- Meetings on 6/18, 7/8, 7/30, 9/3
- Final meeting in Sept. to vote on recommendations for AWC BOD (Oct. 2 mtg.)
- Committee members encouraged to collect potential agenda items from cities/colleagues
- AWC Agenda Categories
 - Priority issues
 - Other significant issues
 - Endorse/Support
 - Monitor
 - Strongly defend against

2021 Legislative and Budget Preview



Senator Christine Rolfes (D-Bainbridge
Island), 23rd Legislative District
Chair, Ways & Means Committee

Special Legislative Session – AWC Priorities

Financial support

Maintain critical state-shared revenues that provide funding for essential public services.
Provide fiscal relief to cities hard-hit with costs for emergency response and loss of tax revenue.

Fiscal flexibility

Provide flexibility within existing restricted revenues to allow cities to use funds where they are most needed right now.

Regulatory relief

Continue the emergency action taken by the Governor to provide flexibility on regulatory requirements and statutory deadlines. Cities hard-hit by this emergency may still be experiencing staffing shortages and backlogs that will impact their ability to comply with typical statutory deadlines and meet regulatory requirements.

City-owned utility support

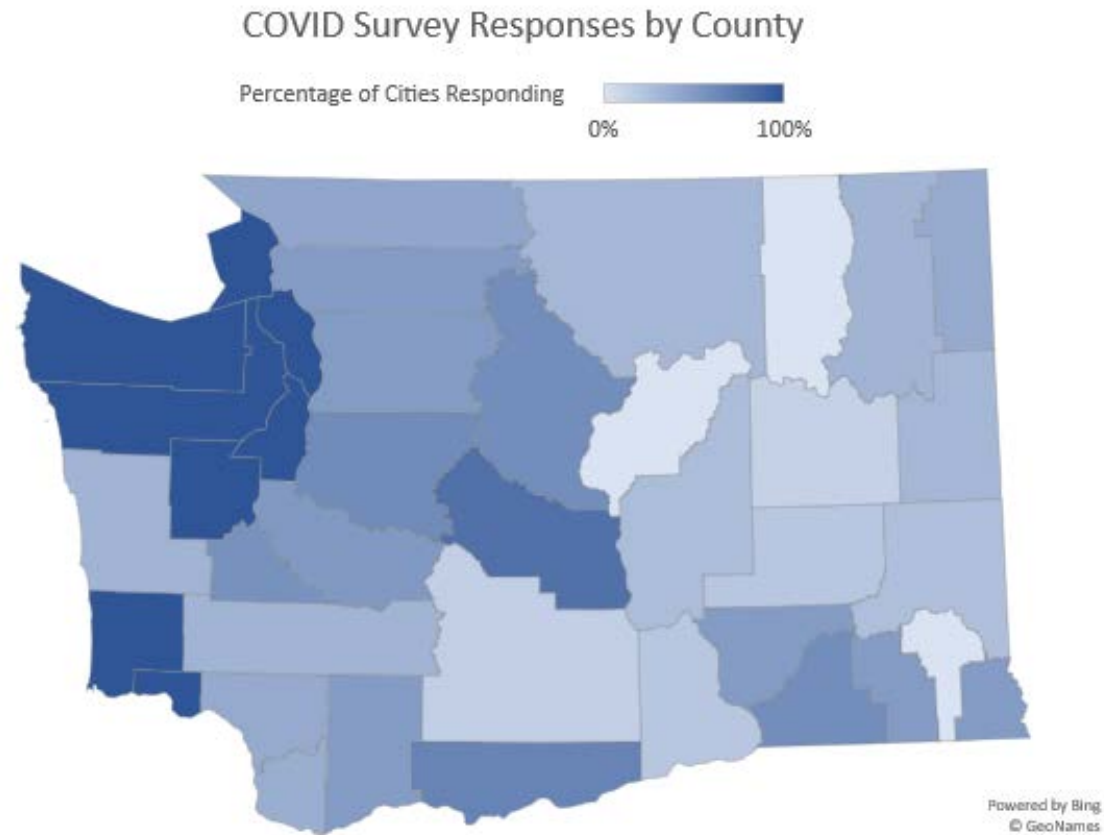
Allow city-owned utilities that have waived late fees and shut-offs to extend their ability to collect outstanding debt so that they can work with ratepayers on payment plans without impacting the financial viability of the utility or raising rates on other customers.
Provide funding to help offset losses related to forgiving late fees and delinquent accounts for those customers hard-hit by the emergency.

Economic stimulus

Investing in public infrastructure projects is one of the best ways to support economic stimulus as infrastructure projects have a positive economic multiplier with the creation of family-wage jobs and supporting increased economic activity

COVID-19 City Conditions Survey

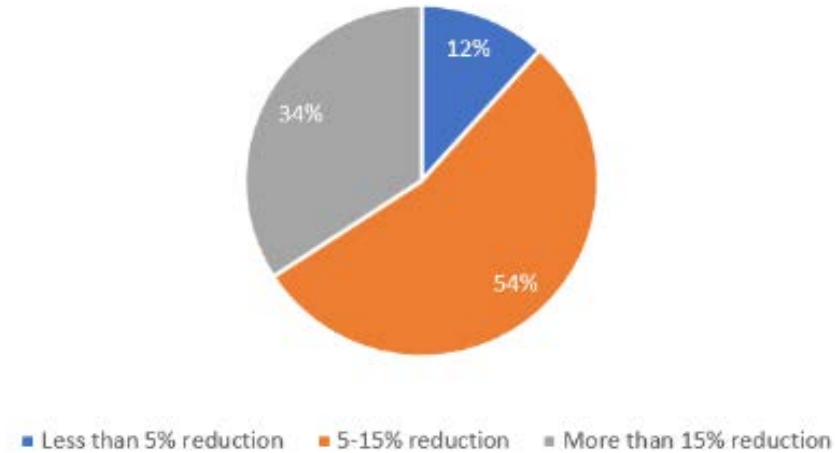
- 128 cities responded
 - Accounts for 70% of the state's population living within a city
- 97% of cities have declared an emergency
- 83% of cities have implemented COVID-specific policies



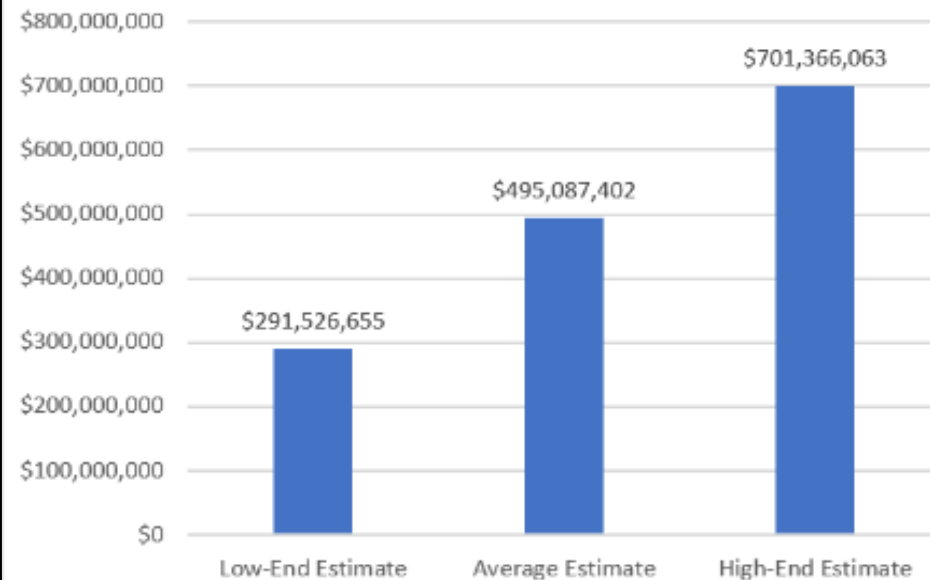
COVID-19 Impacts on City Budgets

- Over 80% of cities predict more than 5% loss in total revenue
- Cities anticipate these trends carrying into 2021

FY 2020 Revenue Loss Projections by Category

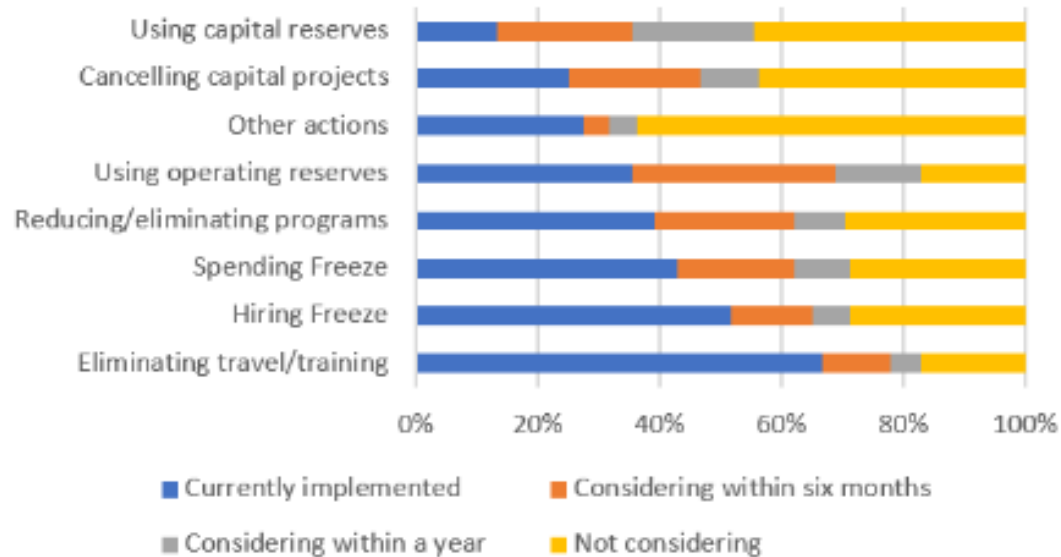


FY 2020 Total Revenue Loss Estimates

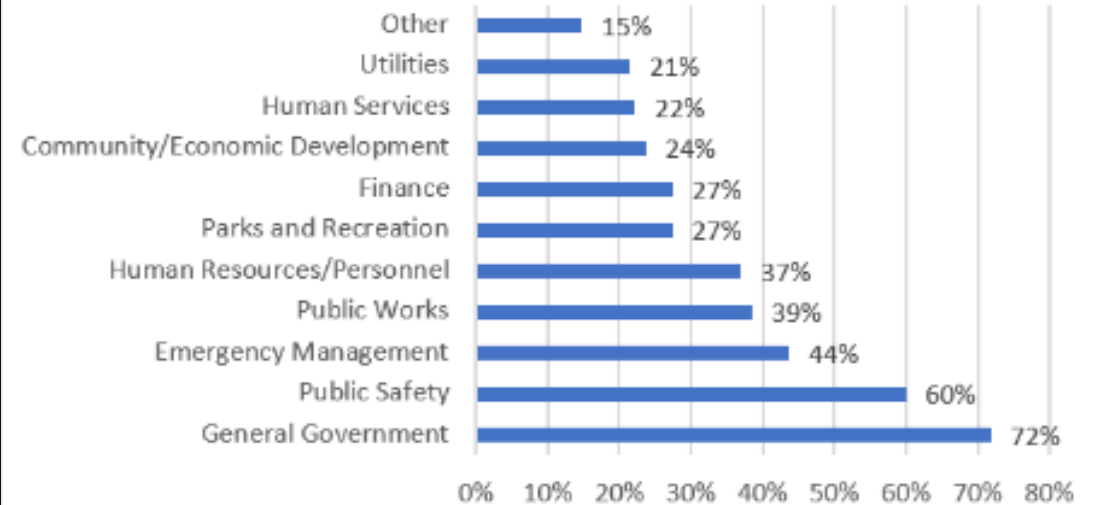


Cities are forced to make decisions between using operating/capital reserves, reducing programs, and implementing spending and hiring freezes. These actions will likely affect cities and their residents for many years.

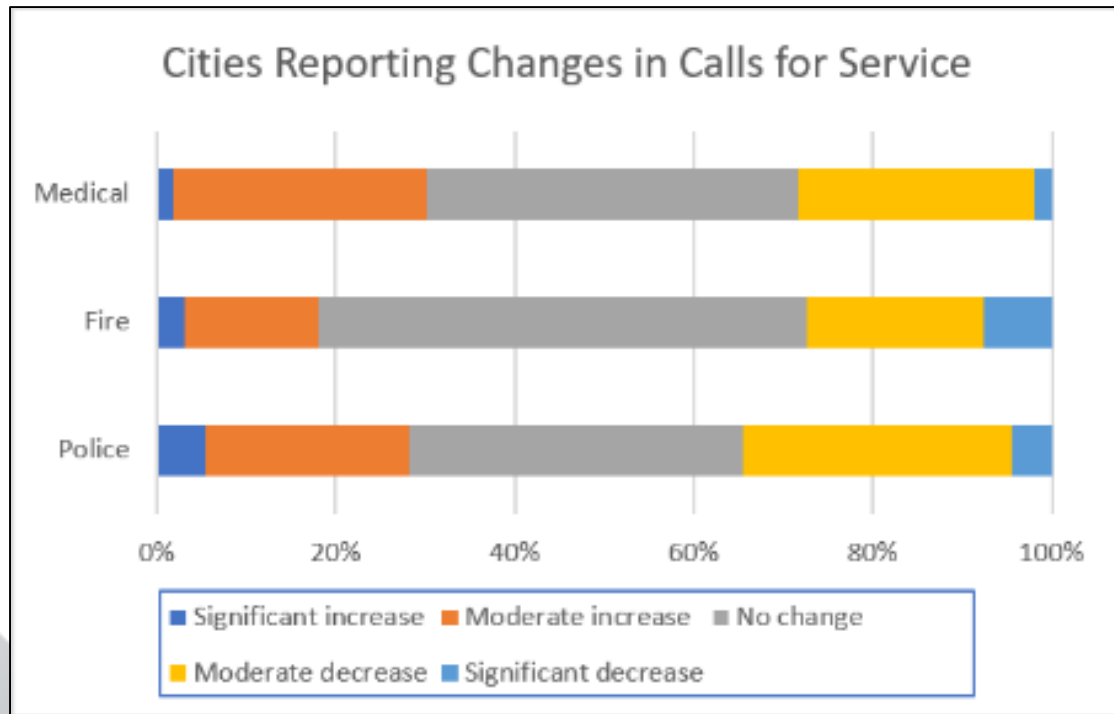
Budgetary Response Policies & Timelines



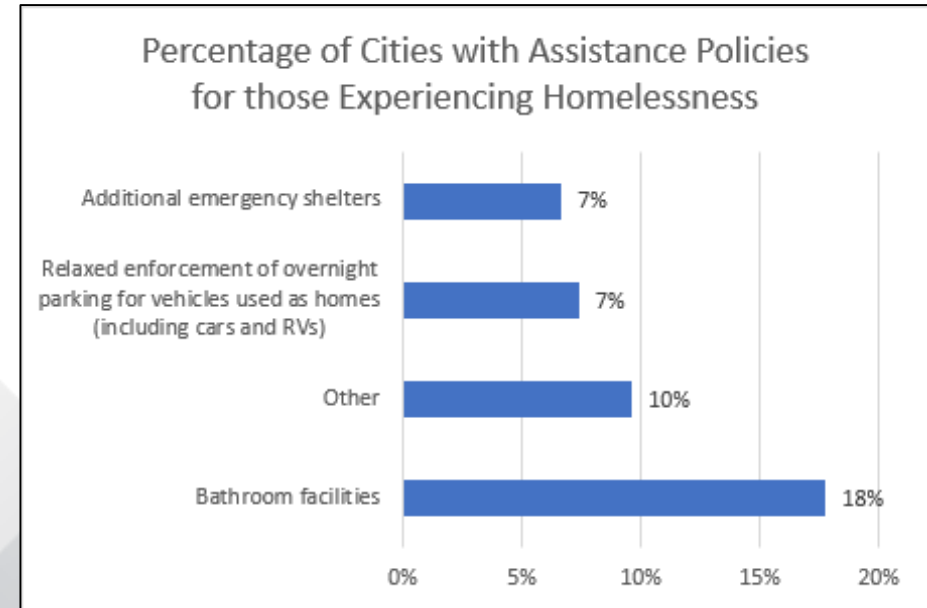
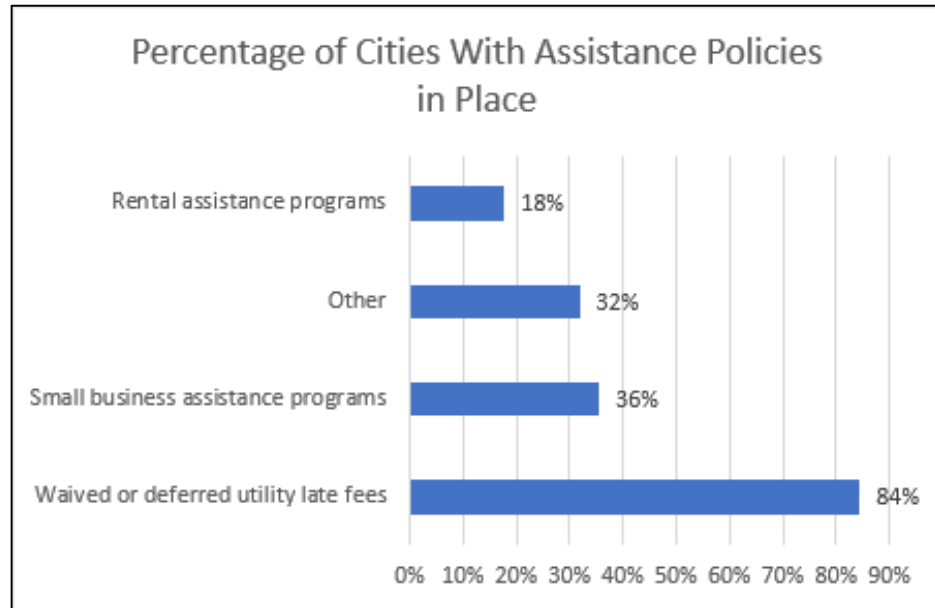
Cities Incurring Additional Expenses by Category



Although there are undiscernible changes in calls for service, cities are experiencing greater costs to maintain public safety.



Cities are constantly working to meet the needs of the most vulnerable during this public health crisis.



Discussion of Issues for 2021

Legislative Context

- 120 session
- Biennial budget 2021-2023
- COVID-19 health emergency
- Economic Crisis
- Homelessness & Affordable Housing Crisis
- Policing reforms
- Transportation funding
- Post-2020 election – new legislators

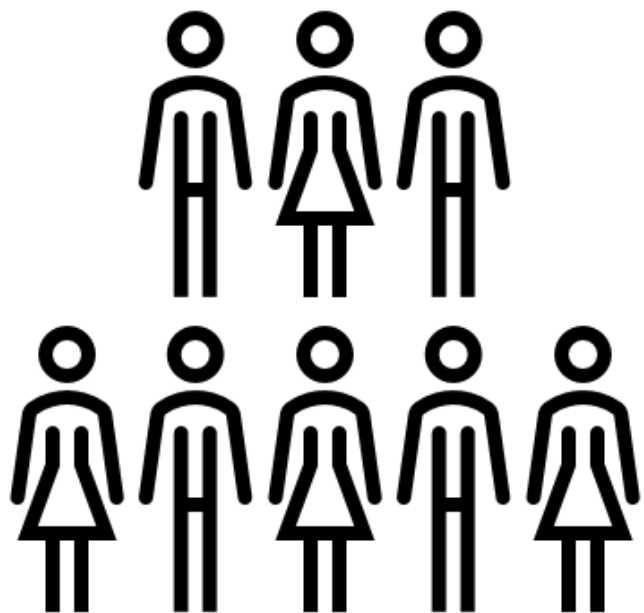
AWC Statement of Policy

- Updated 2020 Statement of Policy
- Core Principles:
 - Local decision-making authority
 - Equal standing for cities
 - Strong state partnerships
 - Fiscal flexibility and sustainability
 - Diversity, equity, and inclusion
 - Nonpartisan analysis and decision-making

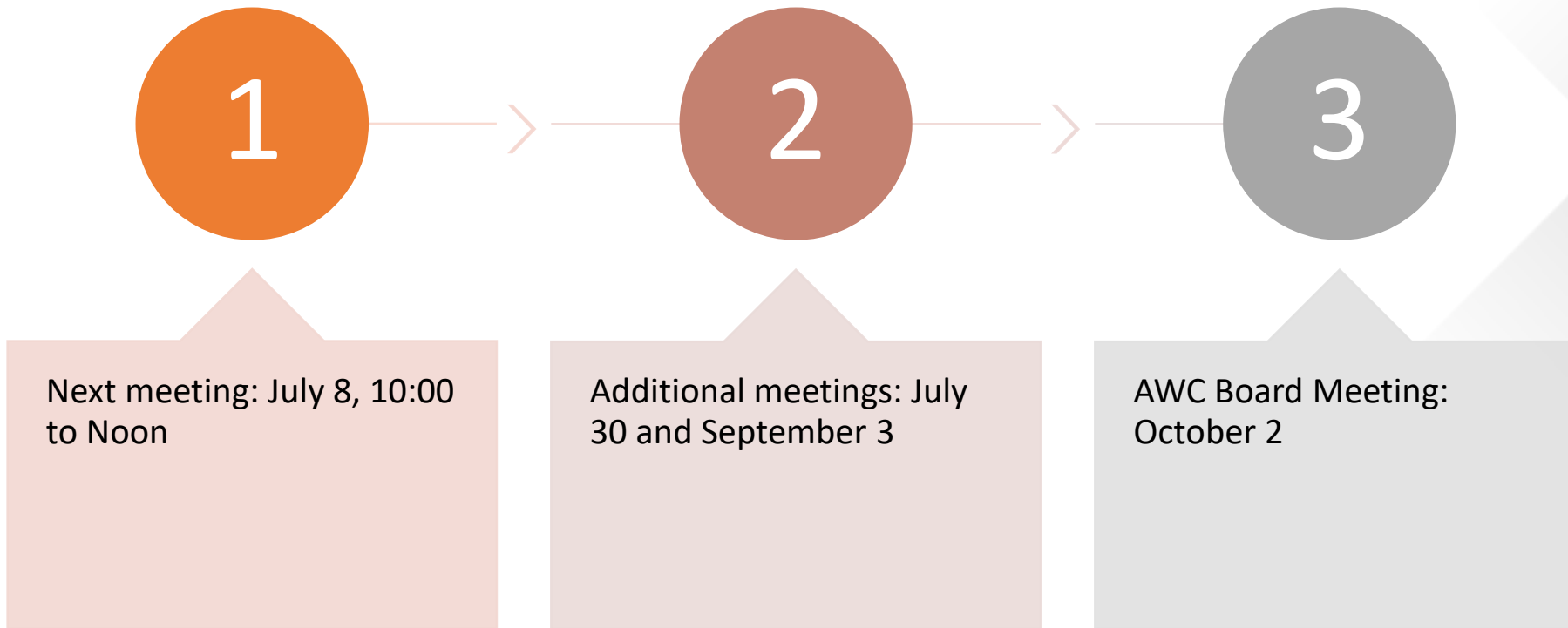
2021 Legislative Priorities Member Input

- AWC sought input from members via a survey in *CityVoice* and *Legislative Bulletin*
- Received 19 responses
- Top issues:
 - Finance, revenue and taxes: 17
 - Public works, utilities and infrastructure: 11
 - Housing & homelessness: 11
 - Human services & behavioral health: 11
 - Economic development: 10
 - Public safety & criminal justice: 9

Committee Discussion



Wrap-Up and Next Steps



Association of Washington Cities

Statement of Policy

Preliminary, June 2020

2020



Introduction

Washington's 281 cities and towns are home to a wide range of growing, changing, and diversifying populations. While no cities or towns are exactly alike, their leaders hold in common an unwavering commitment to delivering high-quality and reliable services that improve their residents' quality of life, and reflect their communities' priorities, values, and standards.

It is only by protecting and preserving local authority and decision-making that city leaders can govern their communities in the best interest of their residents. This core principle, along with several others, form the foundation for AWC's advocacy work across all of its policy areas.

This *Statement of Policy* document serves as a touchstone and framework for developing AWC's annual legislative priorities and positions. It articulates our core principles, the positions AWC and its members hold on fundamental municipal issues, and offers representative examples of policies that are consistent with the policy statements in each topical issue area.

AWC's *Statement of Policy* is reviewed and updated at least every six years by the State and Federal Policy Committee, which consists of city officials, appointed by AWC's President, who represent all AWC board districts. The *Statement of Policy* is adopted by the AWC membership, and affirmed annually with an opportunity for members to make floor amendments during the Business Meeting.

About AWC

AWC's mission is to serve our members through advocacy, education, and services.

AWC is a highly respected voice of cities and towns before the Legislature, Congress, government agencies and others. We are the leader in providing valuable services and continuing education for our membership. We are the catalyst for promoting communication between cities and towns and for developing a broad public understanding of the important roles of cities and towns across the state.

AWC stands out among our peers nationwide for its innovation, robust array of member programs, and long-standing ability to retain 100% membership.

The Statement of Policy is presented to the membership of the Association of Washington Cities for adoption at the annual Business Meeting on June 25, 2020.

Core principles

AWC's advocacy is guided by the following core principles:

Local decision-making authority:

The most effective, responsible, and responsive government is the one closest to the people. AWC works to protect "home rule" by preserving the autonomy of cities and their authority to govern their communities in the best interest of their residents. We strongly oppose policies and actions that undermine or preempt cities' authority.

Equal standing for cities:

In Washington's system of shared governance, cities, counties and the state all play essential roles. AWC is committed to ensuring that the interests and responsibilities of cities are clearly recognized, valued, and respected at all levels of government. Effectively meeting cities' needs often requires the coordination and cooperation of multiple government entities such as counties, special purpose districts, and the state. AWC advocates for the vital role cities play in local and regional alliances and supports their ability to initiate, proactively lead, and participate in strategic collaborations.

Strong Washington state partnerships:

AWC is invested in building and maintaining productive working relationships among cities, counties, and state government. We work to ensure that cities are treated as equal partners with the Legislature and state agencies in formulating policy and funding decisions. AWC recognizes that statewide approaches are sometimes necessary as long as local decision-makers have the ability to tailor them appropriately.

Fiscal flexibility and sustainability:

Cities are on the frontlines of protecting communities, meeting their core needs, and ensuring quality of life. AWC works to safeguard the full authority of cities to use fiscal policy and budgetary measures to ensure sustainability and prosperity. AWC strongly supports expanding cities' revenue-generation tools as well as state investment in cities. We stand in opposition to unfunded or underfunded mandates, or legislative actions that reduce revenues or create financial burdens.

Diversity, equity, and inclusion:

Our state's strength is derived from the rich diversity of residents that live and thrive in our cities. AWC celebrates this diversity and actively promotes full, equitable representation and inclusion of all of Washington's residents and cities in determining how they are governed and served. We resist "one size fits all" policies, and support solutions that are calibrated to the unique needs of each community.

Nonpartisan analysis and decision-making:

To advance and protect Washington's cities, we must be guided by objective and informed analysis, and thoughtful, balanced decision-making. AWC seeks to fully discover and understand relevant facts and data, consider all points of view, and act in ways that are free from political agendas and influences.

AWC will seek to embody these core principles through our work on the specific issue areas. When this Statement of Policy is silent on a public policy issue affecting municipal government, AWC will support the provision of authority, autonomy, and resources to cities.

Issue area policy statements

Municipal finance, transparency, and governance

AWC supports transparent, accountable government and the ability for cities to have the authority, flexibility, and capacity to meet their residents' needs, with balanced and diversified funding. Cities value open government that encourages and thrives on engagement by all residents. City officials need local decision-making authority and flexibility to work with their residents on appropriate policies and solutions that fit their specific community. Cities must not be burdened by state and federal mandates that are unfunded or underfunded. AWC supports cities' ability to maintain existing funding sources as well as the ability and authority to use new funding sources that fit the needs of their communities.

Examples of policies consistent with this approach include:

Revenue preservation and diversification

- Providing greater councilmanic authority and flexibility for local revenue decisions.
- Preserving state-shared revenue streams and sequestering revenue streams to protect local taxing authority.
- Streamlining requirements that impact revenue sources including some election requirements, sunset provisions, and restrictions such as non-supplant provisions.
- Reviewing and reforming the state's tax structure with a focus on equitable, balanced, and diverse revenue options that provide adequate funding for state and local governments.

Open government

- Updating the Public Records Act so that it is efficient for cities and is accessible and timely for residents, while protecting against costly, abusive, or fraudulent requests and litigation.
- Adopting efficient, cost-effective, and innovative solutions that ensure open and accessible government, while reducing the administrative burden.

Governance

- Reviewing election requirements and the impact of ballot measures and initiatives on city government to provide greater input and information that enables efficient governance and full recognition of any impacts.
- Providing relief from undue and excessive liability exposure that creates inefficient governance and unnecessarily uses scarce resources.

Issue area policy statements

Infrastructure

AWC supports cities' ability to construct, manage, operate, maintain, and provide access to essential infrastructure that delivers a high quality of life to all residents, builds community resilience, and provides economic opportunity. AWC supports adequate and predictable state and federal investment to meet essential infrastructure needs, and the authority of cities to maintain control over public infrastructure and manage it in the most efficient way possible.

Examples of policies consistent with this approach include:

Broadband

- Recognizing and prioritizing broadband as an "essential service" and ensuring universal, reliable, high-speed access in every municipality for all residents.
- Expanding options for ownership to municipalities, nonprofits, and public-private partnerships, including pricing mechanisms (e.g., govt-to-govt 'e-rates').
- Providing Open Access Networks that provide choice to residents.

Utilities

- Minimizing regulatory and mandated costs on city-owned utilities that directly impact ratepayers and continuing efforts to ensure that rates remain affordable for local communities.
- Continuing to advance the use of technology in managing city utilities, including the use of Smart Grid technologies.
- Expanding access to solar energy for residential and commercial usage.

Transportation

- Ensuring adequate resources for a well-maintained local transportation system as well as a robust statewide transportation system.
- Identifying and securing additional revenue sources for local, regional, and statewide transportation needs.
- Protecting cities from discriminatory cost-sharing for state-owned routes that run through local jurisdictions.
- Supporting mass transit, regional corridor, and connector projects that enhance community mobility and quality of life.

Public works

- Developing policies and resources to help maintain and modernize water, sewer, and other public works.
- Ensuring that requirements and regulations are technically feasible and affordable.
- Enabling cities to manage public works needs in the most efficient manner possible, including flexible and reasonable contracting and procurement requirements.

Municipal buildings

- Expanding funding to maintain and upgrade municipal buildings such as libraries, fire and police stations, and community centers.

Issue area policy statements

Technology

AWC recognizes that technology is rapidly evolving, and that the role it plays within government, education, business, and residents' lives is continually expanding. AWC supports the use of technology to help cities increase efficiency, effectively and securely deliver services, manage resources, enhance community engagement, and enable open government. Access to and use of technology must recognize and respect the needs and circumstances of diverse people and communities. Sufficient state funding must be provided to ensure full access by all cities.

Examples of policies consistent with this approach include:

Innovation

- Providing support and resources to allow all cities to access innovative technology to enhance government services.

Cybersecurity

- Securing funding to provide data, training, and standards to help municipalities protect against cyber attacks and proactively implement guidelines and policies

Issue area policy statements

Economic development

AWC supports the ability of cities to have the economic development tools they need to build and sustain robust and diverse local economies, encourage global competitiveness for our state, and provide economic opportunity for city residents. These tools must include appropriate state infrastructure investment programs and flexible local options, and each city needs equal access to such tools.

Examples of policies consistent with this approach include:

Funding

- Preserving equity of access to infrastructure funding, including the Public Works Assistance Account (PWAA) and Community Economic Revitalization Board (CERB), and increasing the availability of low-cost loans and grants to fund infrastructure that support economic activity.
- Authorizing tax increment financing to fund public infrastructure that supports economic development.
- Encouraging state investment in economic development projects for which the increased revenue generation and return to the state is significant.
- Supporting and encouraging opportunities and funding for workforce development.

Public/private partnerships

- Establishing more public and private sector collaboration, partnerships, and joint ventures to help regions innovate and realize their unique potential.
- Creating more programs to help small businesses start, grow, and thrive.

Tourism

- Increasing marketing and other efforts to bolster tourism throughout the state.
- Preserving local authority to impose and use funds to promote tourism.
- Continuing to support policies that recognize that tourism of all kinds benefits our communities, and avoiding restrictions that limit the types of tourism that are encouraged.

Issue area policy statements

Health & human services

AWC supports meeting the public, mental, and behavioral health needs of every city's residents through strong federal, state, and county partnerships. We recognize and support the local entities that help to enable and advance these partnerships. As the state and counties work to build a community-based behavioral health system, necessitating city actions and services, they must confer with cities and provide adequate funding and support that is tailored to local needs.

AWC supports cities having the authority and resources to build community capacity and provide additional services that are tailored to address local circumstances. To address increasing demands on the human services and behavioral health systems, cities must have flexibility to pursue additional local and private resources, as well as state and federal funding.

Examples of policies consistent with this approach include:

Behavioral health

- Increasing funding and training for additional mental health professionals across the spectrum of human services.
- Expanding education, prevention, and treatment programs and services to ensure access for all communities.
- Supporting programs to reduce opioid and substance misuse and abuse.
- Expanding funding and securing dedicated revenue streams to offset the costs of providing mental health, medical, and other services for vulnerable populations (e.g., children, youth, homeless, incarcerated individuals).

Human services

- Expanding funding and securing dedicated revenue streams to support human service programs that are directly provided by cities, or have significant city input and oversight.
- Enhancing the role of cities in the policymaking and funding decisions processes.

Issue area policy statements

Public safety and criminal justice

AWC supports cities' authority and ability to respond to current and changing societal demands to protect public safety, and ensure that sufficient emergency preparedness and criminal justice resources are available for their communities. AWC recognizes the critical role cities play as first responders and the need for continued state, county, and local coordination. City officials need local decision-making authority and flexibility to work with their residents on appropriate policies and solutions that meet the needs of their communities. We support cities' ability to affect statewide public safety (including law enforcement, fire, and emergency medical services) and criminal justice policy decisions that impact their communities.

AWC recognizes that individuals suffering from mental or behavioral health challenges create unique challenges for the public safety and criminal justice systems because they are not best served in a criminal justice environment. AWC supports creating greater capacity in the behavioral health care system as the best way to serve individuals in crisis. AWC supports decriminalization of mental and behavioral health challenges and providing robust behavioral health collaboration to prevent criminalization of individuals with mental illness or substance addictions.

Examples of policies consistent with this approach include:

Public safety

- Providing full funding for the Basic Law Enforcement Academy and all state-mandated law enforcement training.
- Securing funding to increase number of non-sworn officer employees to assist with community services and outreach, including support for co-responder programs that bring law enforcement and behavioral health providers together.
- Encouraging programs that build positive community relationships with police, particularly in diverse communities.
- Providing funding for necessary upgrades and replacements for inadequate essential public safety infrastructure, including 911 and interoperability.
- Exploring options to efficiently and cost-effectively provide fire and emergency medical services to communities, including through the use of technology and interlocal cooperation.
- Investing in prevention and intervention programs to reduce criminal activity.
- Pursuing expansion of mental health outreach services outside of the criminal justice system.

Criminal justice

- Increasing local rehabilitation program capacity, funding diversion programs, and alternative court models.
- Providing support to ensure access to justice and indigent defense services.
- Establishing programs that support pre- and post-arrest diversion opportunities for individuals experiencing behavioral health challenges as well as misuse and abuse of substances.

Emergency management

- Providing resources and technical support to build local emergency preparedness and response capacity.
- Streamlining the flow of funding and resources during emergencies.
- Supporting cities' ability to continue broad-based planning and training for response to emergencies of all types.

Issue area policy statements

Human resources

AWC recognizes the vital role of public sector employees in serving our communities. AWC supports cities' efforts to be responsible employers that provide a quality work environment, and that can attract and maintain a robust, highly-qualified, and fairly-compensated workforce throughout all economic cycles. Given that human resource-related expenses account for a substantial portion of municipal budgets, AWC supports cities having broad discretion to manage their workforces and establish sustainable approaches to managing related costs.

Examples of policies consistent with this approach include:

Workforce

- Ensuring pay and benefit equity for public sector employees, while balancing city fiscal conditions.
- Ensuring that cities have the flexibility to make staffing decisions to respond to fiscal realities and the needs of their communities.
- Providing meaningful participation for cities in decisions regarding human resources policies that impact city budgets and workforces.

Pensions

- Maintaining reasonable and predictable pension contribution rates and costs.
- Minimizing financial impacts of pension benefit and pension system changes.
- Providing cities with meaningful input in the decision-making process for the pension system.

Labor relations

- Ensuring that fiscal sustainability and city priorities are considered as part of funding and policy decisions regarding labor relations and collective bargaining requirements.
- Ensuring cities are provided broad authority to manage their personnel and personnel-related costs, including health care and other benefits.

Issue area policy statements

Land use & housing

Management of land use within a city is a core function of community self-governance. AWC recognizes the benefit of clearly defined state goals that guide local land use, economic development, transportation, and public facility planning, as long as they are implemented through locally determined processes and regulations and allow for local decision-making. AWC supports policies that encourage the growth of cities in ways that more efficiently provide and maintain necessary infrastructure and services, and that are achieved through state growth and annexation policies, and financing. AWC supports the authority of cities to manage local and regional growth, to conduct local land use planning and zoning, and to establish and update local development regulations and housing policies. AWC supports a shared and equitable responsibility for all cities to accept and accommodate a growing population and supports the authority of cities to determine how best to manage that growth as appropriate for the growth rate, size, and character of each community. AWC will work to provide tools to support growth and densification that are appropriate for various sizes of communities.

AWC supports housing policies that give cities the authority and tools required to promote the development of housing that meets their unique needs, including emergency shelters, transitional and permanent supportive housing, affordable housing, and workforce housing. AWC opposes policies that do not recognize that housing development in any community involves a complex mix of factors, including the unique role that city governments play in facilitating housing development, and the roles of other parties. AWC opposes policies that attempt to address housing challenges through micromanagement of city decision-making.

Examples of policies consistent with this approach include:

Growth Management Act (GMA)

- Supporting approaches that preserve local control and plan for balanced growth as determined by each region.
- Increasing regional collaboration on growth management issues while maintaining city decision-making.
- Maintaining and increasing state and local resources that are directed towards providing necessary infrastructure to support population growth, while supplying and retaining adequate affordable housing.

Affordable housing

- Supporting policies and resources that create sufficient, quality, and affordable housing for diverse constituents (e.g., workforce, low income, seniors, disabled, homeless) and removing barriers to creating an adequate and diverse housing supply.
- Maintaining and increasing resources to address unmet housing needs, including funds for shelters, transitional and permanent housing for moderate- and low-income, homeless, farm worker, and special needs populations.
- Increasing funding for programs that support the development of affordable housing.

Issue area policy statements

Environment

AWC supports a commitment to environmental stewardship, which includes the regulation and protection of our air, water quality, water quantity, climate, ecosystems, stormwater, and solid waste systems. We recognize that a balanced approach is essential if we are to simultaneously protect the environment, allow for expanding populations, and provide necessary economic and social opportunities.

AWC supports reasonable reforms to the state environmental regulatory system that adhere to the principles of effectiveness, simplicity, fairness, equity, and balance. All reforms and policies must also recognize the financial needs and capacity of cities and their residents, and not infringe upon cities' ability to reflect local priorities and economies. Federal, state, and county agencies that rely on new and existing city actions to protect the environment must adequately support cities with funding and technical assistance that is tailored to fit local needs and circumstances.

Examples of policies consistent with this approach include:

Climate change

- Supporting statewide carbon reduction efforts that meet the principles described above.
- Encouraging and providing resources for community sustainability and resilience planning.
- Enabling and supporting locally based carbon emission reduction efforts.
- Investing in efforts to build a "Green Economy."

Solid and hazardous waste

- Increasing recycling/reuse programs.
- Supporting product stewardship programs.

Regulatory reform

- Streamlining outdated regulatory systems (e.g., SEPA and permitting) to reduce administrative costs and barriers while maintaining environmental protection.

Water and air quality

- Enhancing water and air quality programs, which must include cost and technical support considerations for implementation by individual communities and be tailored to meet local needs.
- Supporting water conservation and management tools that enhance flexibility and enable cities to continue to grow while making the best use of limited resources, including developing long-term regional water supply plans.
- Developing and funding a comprehensive approach to fish habitat restoration.



Association of Washington Cities
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Washington State Economic Outlook



Presented to
Association of Washington Cities

Steve Lerch
Executive Director

June 10, 2020



WASHINGTON STATE
ECONOMIC AND REVENUE FORECAST COUNCIL

0



The COVID pandemic has generated substantial uncertainty

- Ian Shepherdson of the forecasting firm Pantheon Macroeconomics was recently quoted as saying "the timing of a full recovery is unknowable."
- The vice-chair of the Federal Reserve Board, Richard Clarida, said it may be until autumn before we have more clarity on where the economy is headed.
- The White House is not updating their economic projections this summer because of uncertainty caused by the COVID pandemic.

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June 2, 2020

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WASHINGTON STATE ECONOMIC AND REVENUE FORECAST COUNCIL

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Summary

- The preliminary economic forecast for both the U.S. and WA incorporates COVID-19 impacts on employment through April and on 2020 Q1 GDP
- The forecast reflects Boeing plans to reduce jobs in the commercial aircraft division by 15%
- The forecast reflects Federal Reserve actions to reduce the Federal Funds interest rate and support credit market functioning as well as Congressional actions to assist small businesses and the unemployed
- Revenue collections since the February forecast are \$429 million (8.7%) below expectations; approximately \$200 million are deferred payments

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WASHINGTON STATE ECONOMIC AND REVENUE FORECAST COUNCIL

2



Forecast risks

Upside

- As states start to re-open, COVID infections remain low leading to greater consumer confidence and spending, increased employment

Downside

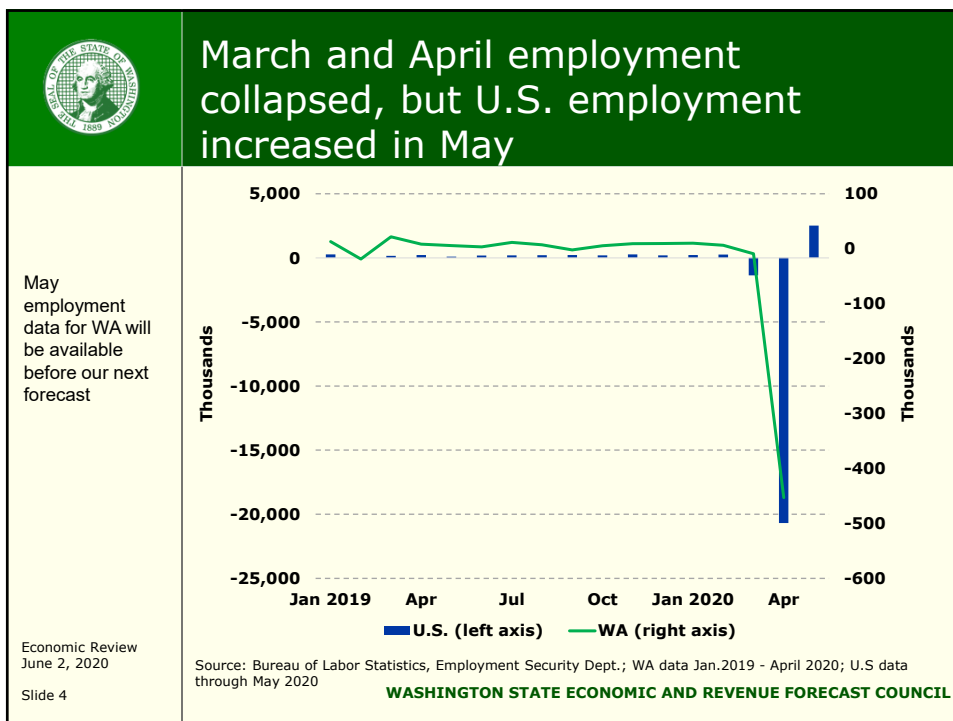
- As states start to re-open, a second spike in COVID infections leads to renewal of business closures
- Consumers remain concerned about COVID, response to business re-openings is muted

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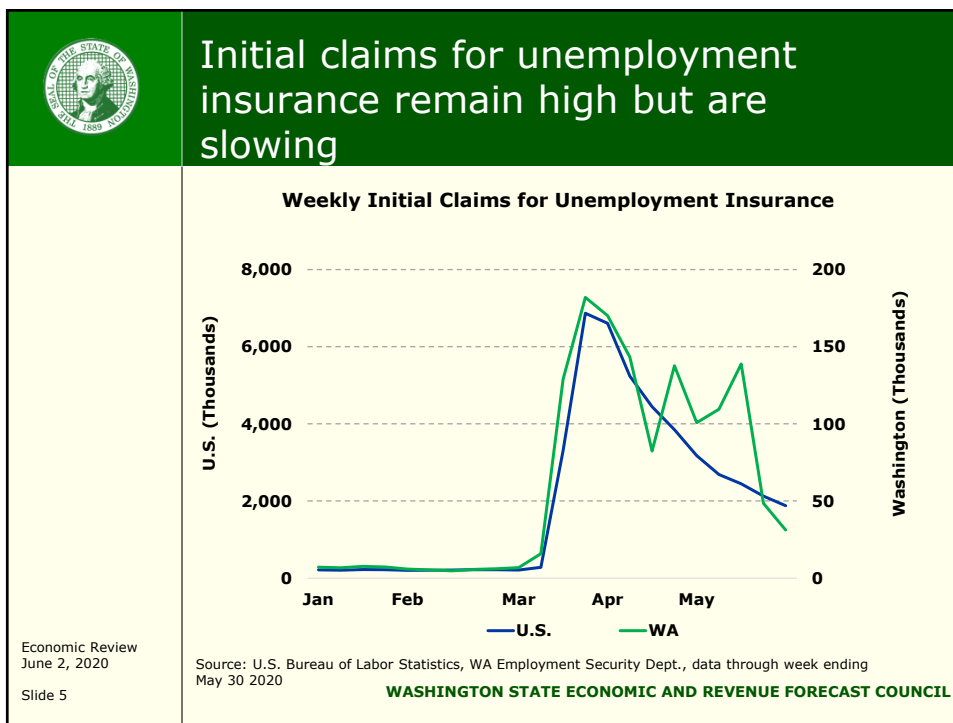
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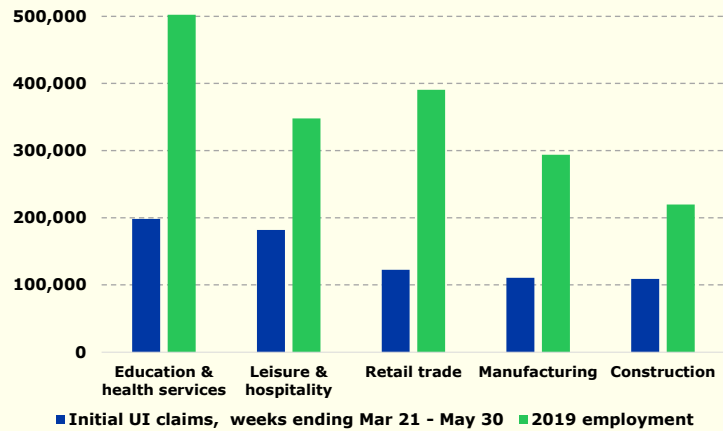
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WA sectors with highest number of total initial unemployment insurance claims in last eleven weeks



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Source: ERFC, WA Employment Security Dept.

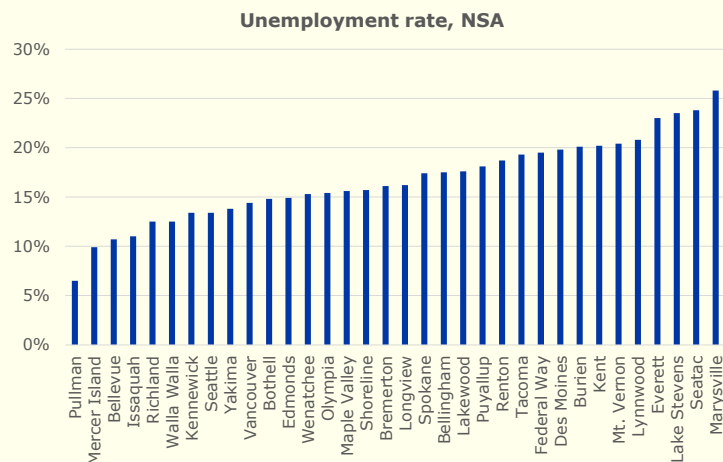
WASHINGTON STATE ECONOMIC AND REVENUE FORECAST COUNCIL

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April 2020 unemployment rates, selected cities

The NSA unemployment rate for the state was 15.8% in April



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Source: WA Employment Security Dept.

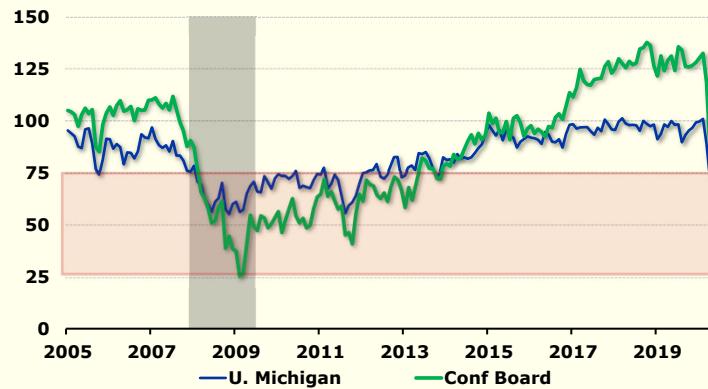
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After big drops in March and April, consumer confidence showed slight improvement in May

Index
Mich: 1966Q1 = 100, SA
Conf Board: 1985 = 100, SA



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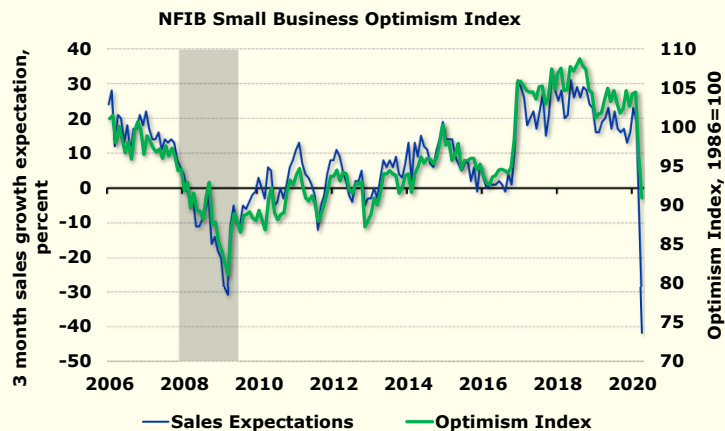
Sources: University of Michigan, Conference Board data through May 2020

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Small business optimism declines as sales expectations go negative



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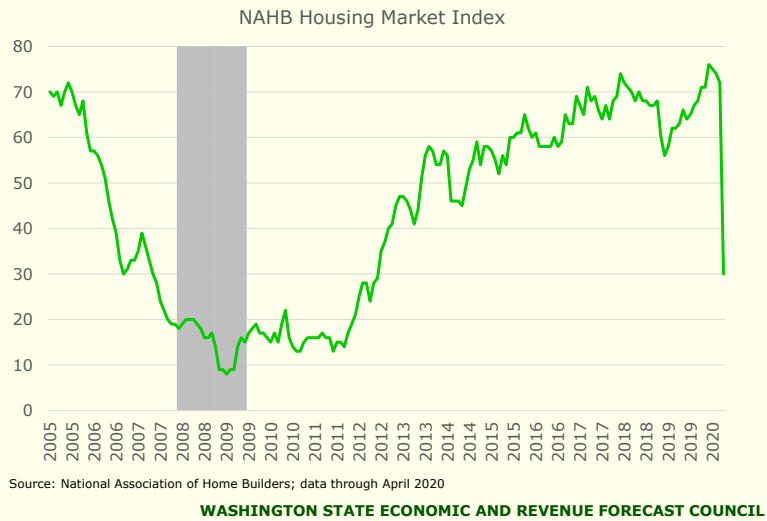
Source: National Federation of Independent Business; data through April 2020

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The outlook for the single family housing market collapsed in April

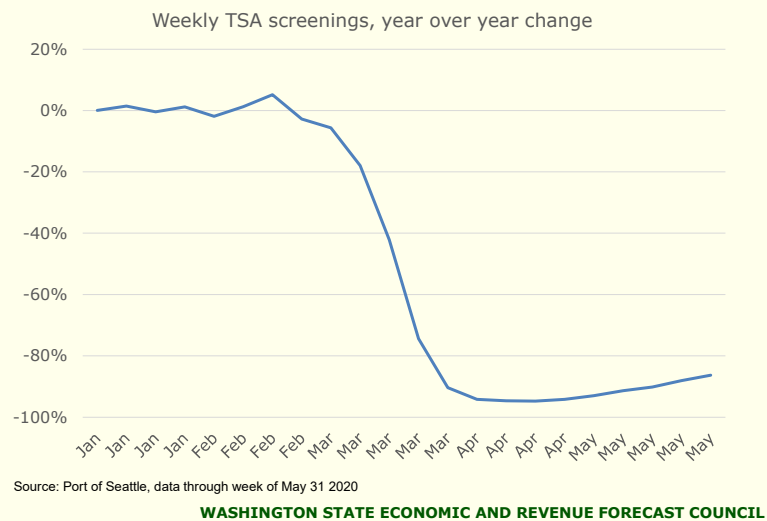


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SeaTac passenger traffic has collapsed, showing slight improvement in May

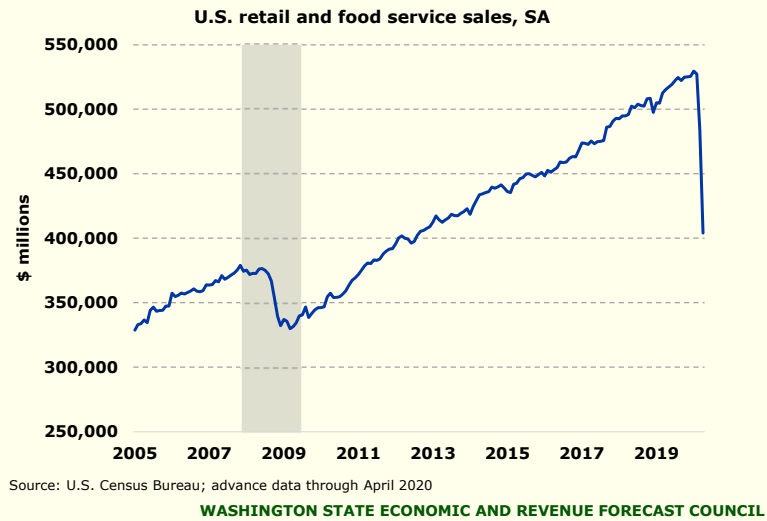


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U.S. retail sales in April fell 16.5% compared to March

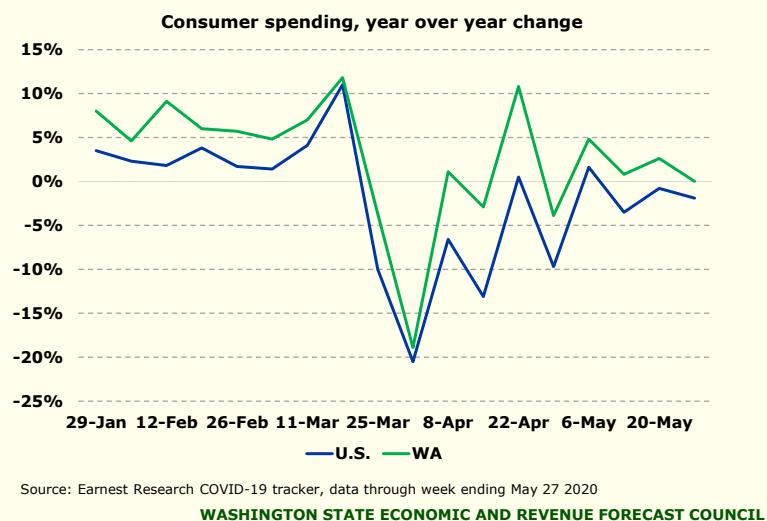


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Compared to the same week last year, consumer spending declined starting the week of March 25th



Earnest Research tracks a subset of credit and debit card transactions for large national chain stores and businesses, including online transactions

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Selected categories: Change in spending for week of May 27th

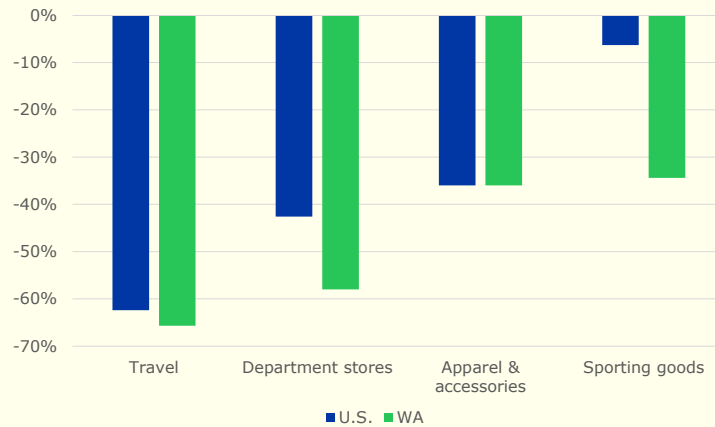
Travel category:

Airlines, cruises, lodging, online travel agencies, rental cars

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Consumer spending, year over year change, week of May 27



Source: Earnest Research COVID-19 tracker

WASHINGTON STATE ECONOMIC AND REVENUE FORECAST COUNCIL

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Selected categories: Change in spending for week of May 27th

Home:

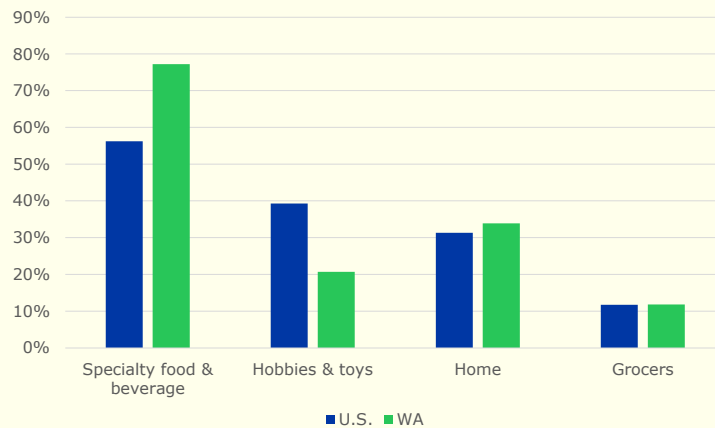
Furnishings, hardware and home improvement, home security and storage

Specialty food & beverage: liquor, wine, tea, coffee, snacks

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Consumer spending, year over year change, week of May 27



Source: Earnest Research COVID-19 tracker

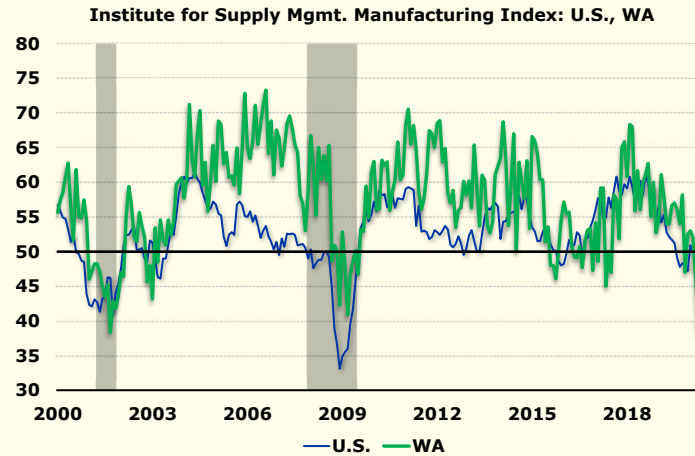
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The ISM manufacturing index for the U.S. and WA indicates slowing activity in March and April

Values above 50 indicate expansion, below 50 indicate contraction.



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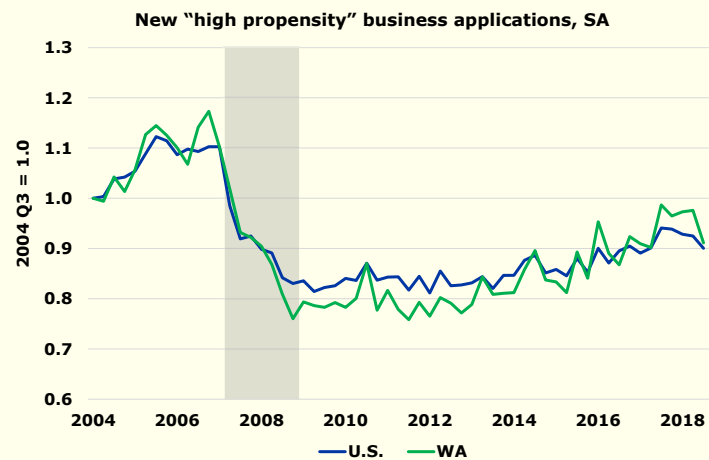
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New business applications dipped in 2020 Q1

"High propensity" applications are those with characteristics associated with a high rate of business formation such as an indication of hiring employees or providing a first wages-paid date.



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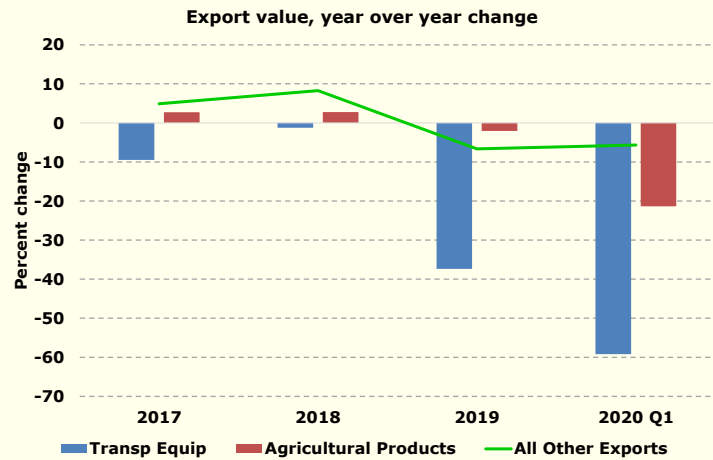
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WA exports have now decreased for six consecutive quarters



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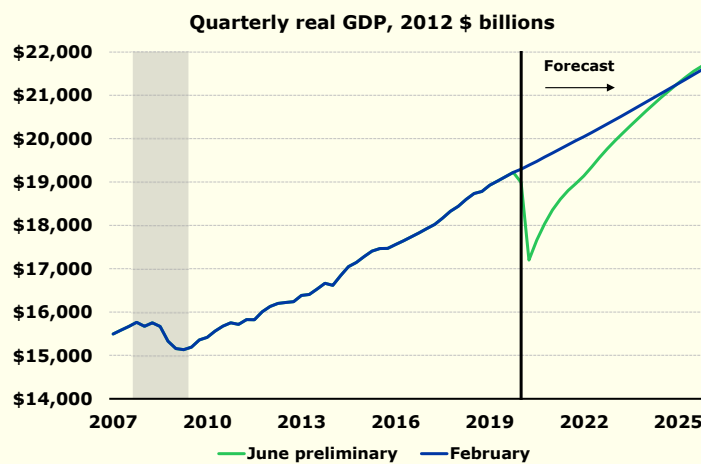
Source: WISERTrade, data through 2020 Q1

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GDP is expected to decline 5.8% in 2020 before gradually increasing



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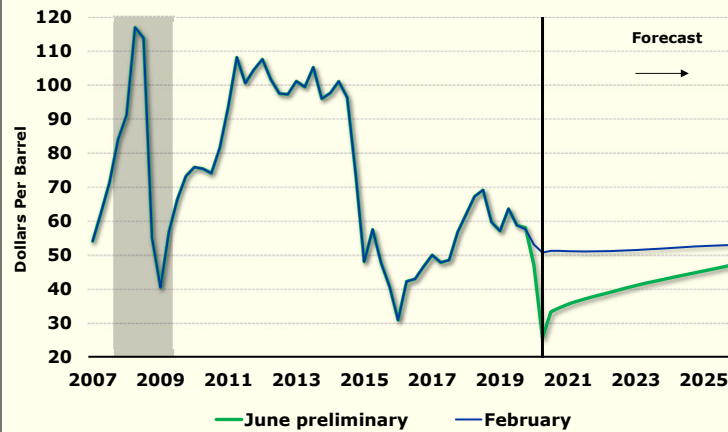
Source: IHS Markit, ERF June 2020 preliminary forecast; data through 2020 Q1

WASHINGTON STATE ECONOMIC AND REVENUE FORECAST COUNCIL

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After sharp decline, oil prices are expected to gradually increase but remain below the February forecast



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Source: Energy Information Administration, IHS Markit, ERF; data through Q1 2020
Note: Vertical black line indicates last actual

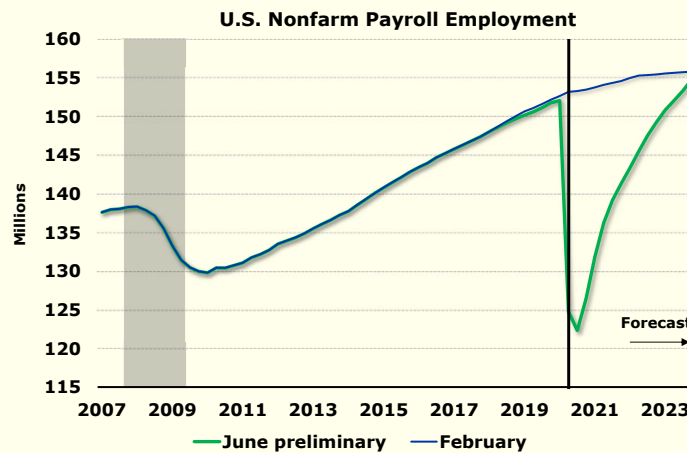
WASHINGTON STATE ECONOMIC AND REVENUE FORECAST COUNCIL

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U.S. nonfarm employment is expected to fall by 27.3 million jobs in 2020 Q2

The U.S. unemployment rate is expected to peak at 18.9% in 2020 Q3.



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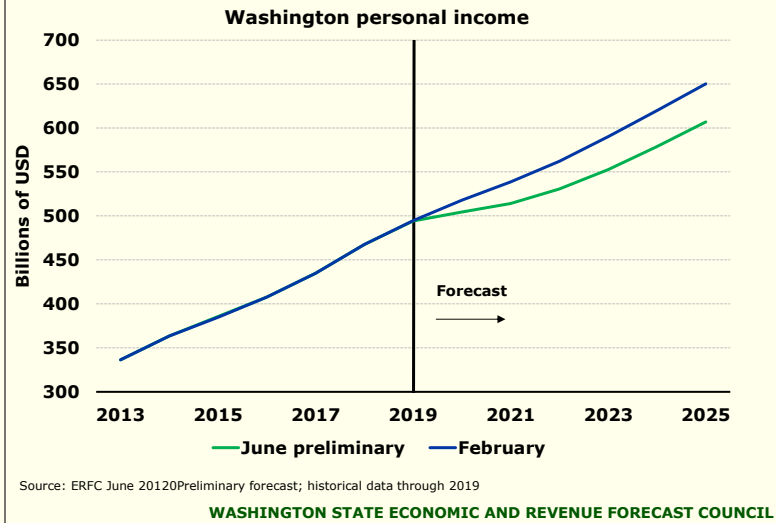
Source: IHS Markit, ERF June 2020 preliminary forecast; data through 2020 Q1

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WA personal income in 2020 is expected to be \$13 billion lower than in the February forecast

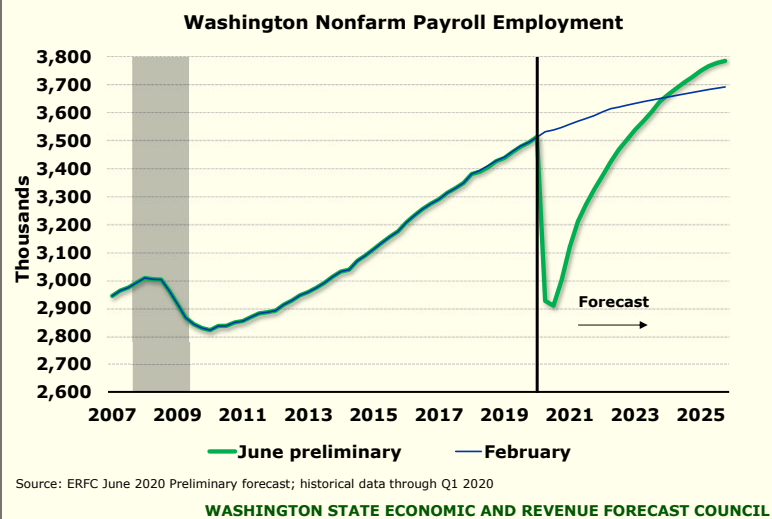


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Washington employment for 2020 is expected to be 446,000 lower than the February forecast

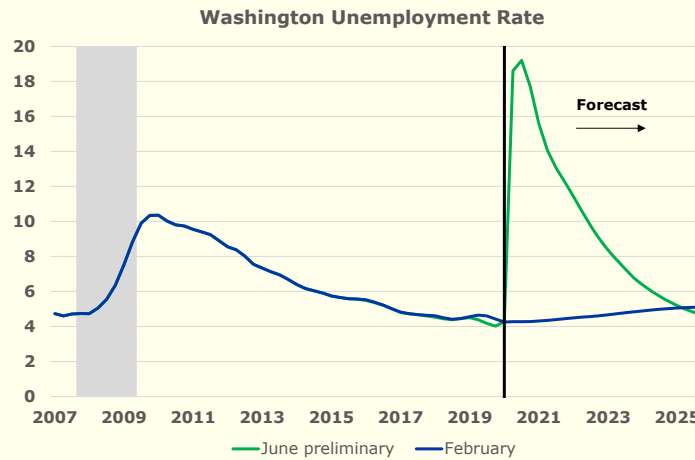


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The Washington unemployment rate is expected to peak at 19.2% in the third quarter of 2020



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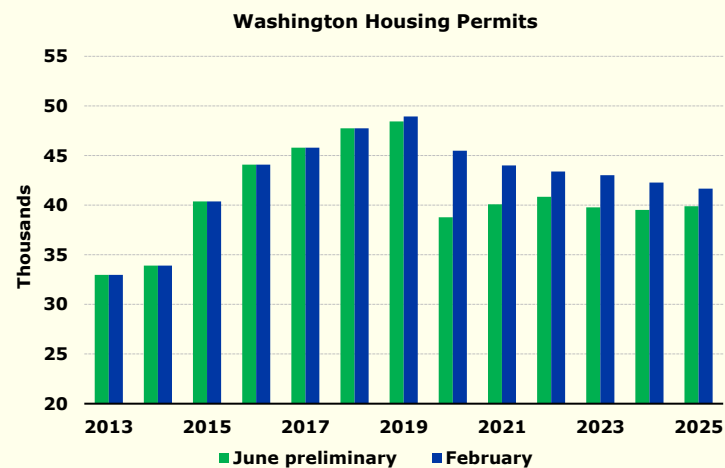
Source: ERFC June 2020 Preliminary forecast; historical data through Q1 2020

WASHINGTON STATE ECONOMIC AND REVENUE FORECAST COUNCIL

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Washington housing permits forecast for 2020 is 6,700 units lower than February



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Source: ERFC June 2020 Preliminary forecast; historical data through 2019

WASHINGTON STATE ECONOMIC AND REVENUE FORECAST COUNCIL

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Quarterly Rev Act collections no longer growing faster than personal income

Adjusted Rev Act growth
YOY:

19Q2: 8.1%
19Q3: 6.6%
19Q4: 5.5%
20Q1: 1.6%

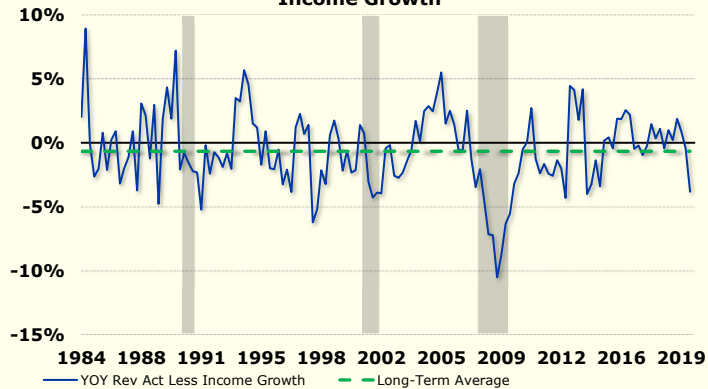
February
personal
income YOY
growth
estimates:

19Q2: 6.2%
19Q3: 5.7%
19Q4: 6.0%
20Q1: 5.4%

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Year-Over-Year Rev Act* Growth Less State Personal
Income Growth



*Adjusted for large one-time payments and refunds, payments under the amnesty program and deferred April 2020 payments

Source: ERFC; Quarterly revenue data through Q1 2020, February 2020 income estimates

WASHINGTON STATE ECONOMIC AND REVENUE FORECAST COUNCIL

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April REET activity dropped to level last seen in January 2015

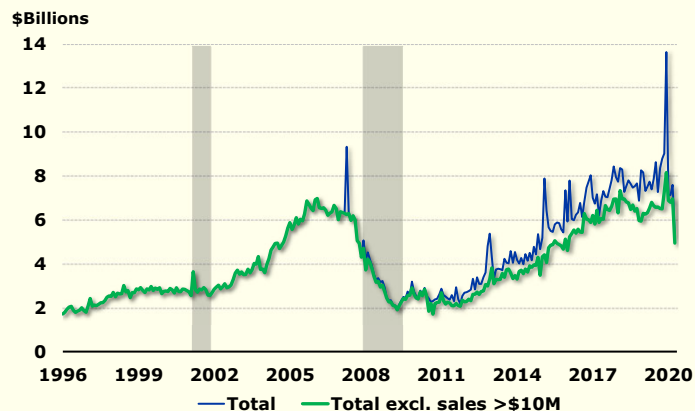
Seasonally adjusted taxable activity in April was \$5.2 billion, down from \$7.6 billion in March.

Large commercial sales (>\$10 million) fell to \$299 million in April after March sales of \$633 million.

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Seasonally Adjusted Taxable Real Estate Excise Activity



Source: ERFC; Monthly data through April 2020 preliminary

WASHINGTON STATE ECONOMIC AND REVENUE FORECAST COUNCIL

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Revenue collections to date

About \$200 million of the collections shortfall is due to deferred tax payments that were approved by DOR. The deferred payments are due before June 30.

Collections Variance Since February Forecast (February 11 – May 10, 2020) dollars in thousands

	<u>Estimate</u>	<u>Actual</u>	<u>Difference</u>	<u>Pct.</u>
Dept. of Revenue	\$4,894,594	\$4,466,581	(\$428,013)	-8.7%
All other agencies	\$15,999	\$15,489	(\$511)	-3.2%
Total GF-S	\$4,910,593	\$4,482,070	(\$428,523)	-8.7%

Economic Review
June 2, 2020

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WASHINGTON STATE ECONOMIC AND REVENUE FORECAST COUNCIL

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Conclusion

- As a result of impacts related to the COVID-19 pandemic, the U.S. and Washington economic forecasts reflect lower personal income and employment compared to February
- Uncertainty regarding COVID-19 impacts to the economy is high
- Social unrest, international trade and geopolitical issues are also risks to the forecast
- The next monthly revenue collection report will be available on June 15th and the revenue forecast will be presented on June 17th

Economic Review
June 2, 2020

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WASHINGTON STATE ECONOMIC AND REVENUE FORECAST COUNCIL

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Questions

Economic Review
June 2, 2020
Slide 30



Economic & Revenue Forecast Council
PO BOX 40912
Olympia WA 98504-0912
www.erfc.wa.gov
360-534-1560

NOTE: The impacts of COVID-19 may not be fully captured in this May 2020 report and are more likely to be evident in the June 2020 report as we review our numbers with all new incoming data.

Washington State Employment Security Department

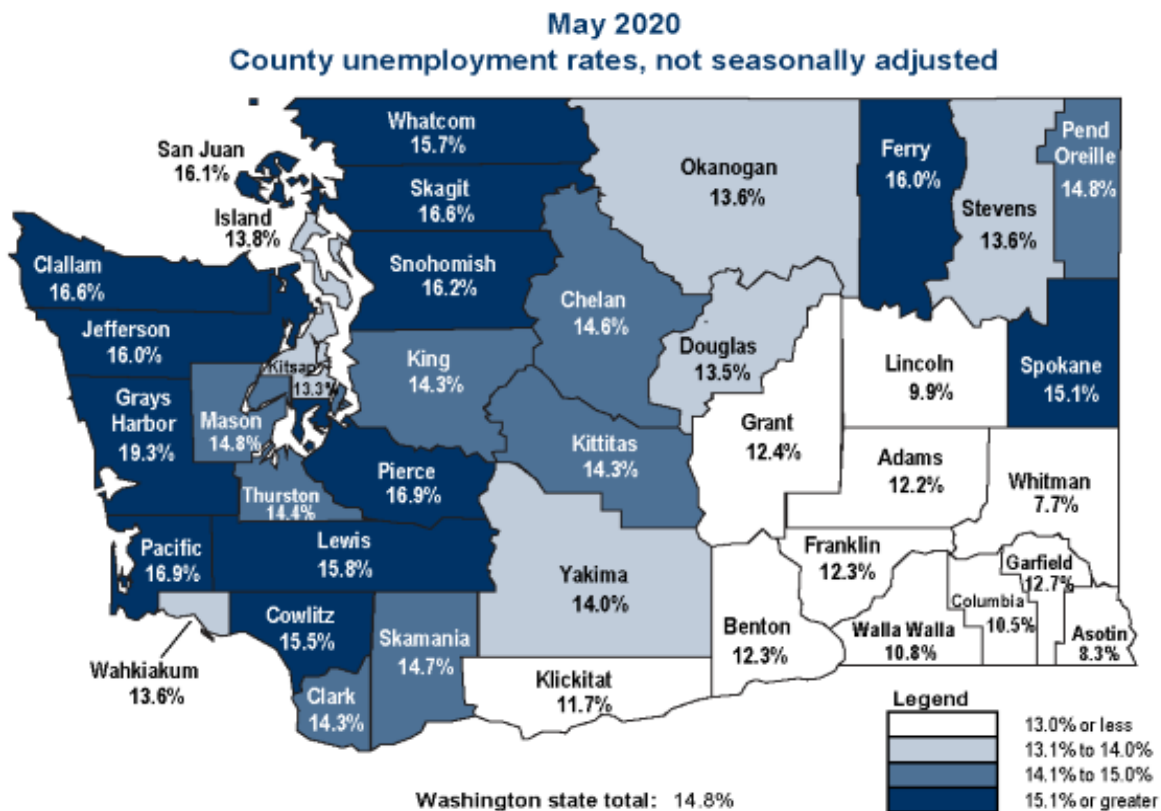
Ajsa Suljic, Regional Labor Economist Tel: 509-734-5928 or Email: asuljic@esd.wa.gov

Labor Area Summary

Walla Walla (Walla Walla and Columbia Counties), Metropolitan Statistical Area (MSA)

May 2020 edition of LAS current seasonally and not seasonally adjusted nonfarm employment and civilian labor force figures, focusing on year-over-year (between May 2019 and May 2020), month-over-month (between April 2020 and May 2020). Current leading indicators shows mixed economic picture for the local economy.

Forward: According to the National Bureau of Economic Research, national economy officially entered recession in February 2020 as a peak in monthly economic activity occurred. The peak marks the end of the expansion that began in June 2009 and the beginning of a recession. This last expansion lasted 128 months.



Labor Force Data (Not seasonally adjusted) by place of residence

	Preliminary	Revised		Changes		% Changes	
	May-20	Apr-20	May-19	OTM	OTY	%OTM	%OTY
Unemployment Rate	10.8%	12.2%	4.5%			-1.4%	6.3%
Labor Force	32,151	32,223	31,661	-72	490	-0.2%	1.5%
Employment	28,694	28,295	30,224	-62	-1,530	1.4%	-5.1%
Unemployment	3,457	3,928	1,437	-10	2,020	-12.0%	140.6%

Source: Employment Security Department/LMEA; U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS)

NOTE: The impacts of COVID-19 may not be fully captured in this May 2020 report and are more likely to be evident in the June 2020 report as we review our numbers with all new incoming data.

Walla Walla, Metropolitan Statistical Area (MSA) not seasonally adjusted unemployment rate for May 2020 was at 10.8 percent, which is 1.4 percent lower than in April 2020, with increase of 6.3 percent from May 2019, according to the estimates by the federal Bureau of Labor Statistics (BLS).

The Walla Walla unemployment rate was 10.8 percent, and Columbia County unemployment rate was 10.5 percent in May 2020, and the state's not seasonally adjusted unemployment rate was at 14.8 percent.

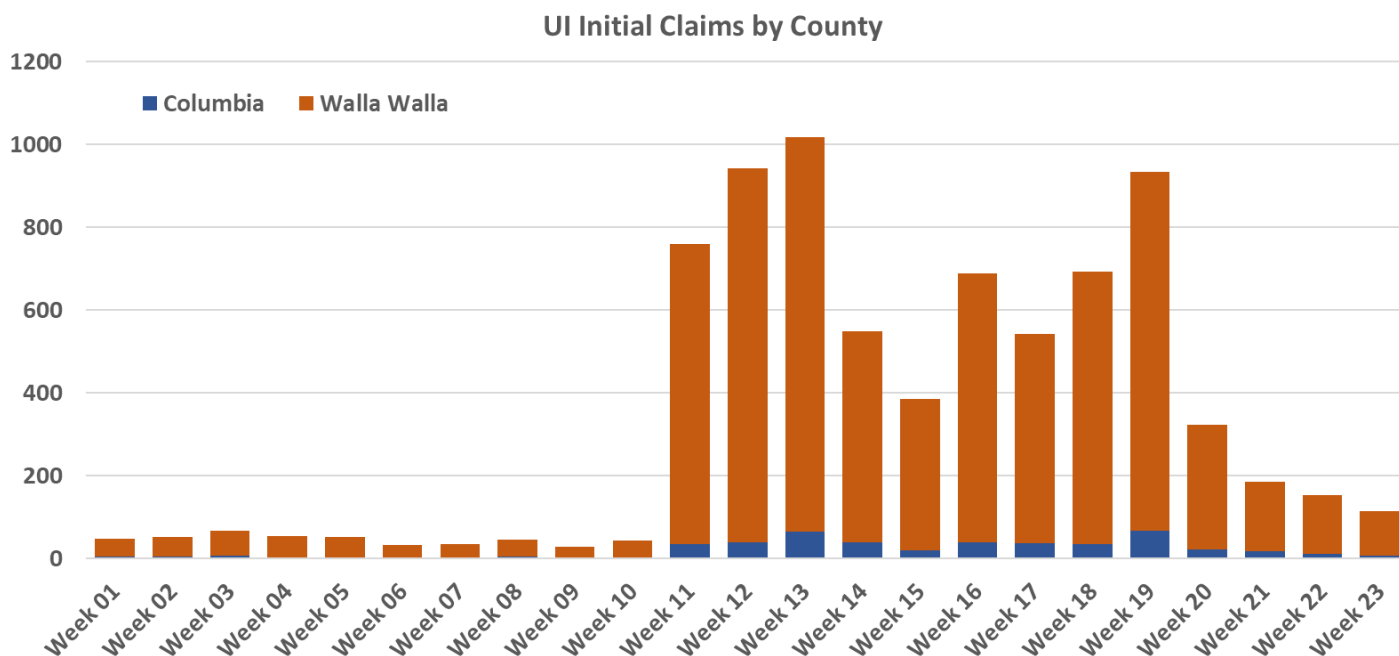
The state's seasonally adjusted unemployment rate was at 15.1 percent and nationwide unemployment rate was 13.3 percent in May 2020.

The labor force decreased for Walla Walla Metro, while across Washington state area had a very mixed results with over all state decrease in labor force over the month. Local resident labor force decreased from 32,223 people in April 2020 to 32,151 in May 2020, which is a 0.2 percent decrease. Looking over-the-year change area recorded an increase of 1.5 percent or 490 people.

The labor force is the total number of people, both employed and unemployed, over the age of 16. Labor force continues to expand, which is along with the seasonal downturn in certain industries contributing to the higher unemployment rate. However, labor force expansion is good sign of improving labor force confidence in the local job market.

Walla Walla MSA's unemployed workforce was at 3,457 in May 2020, this was a decrease from April to May of 10 or 12.0 percent, while number of unemployed and looking for work increased by 2,020 or 140.6 percent over-the-year.

The number of initial claims in week 23 ending June 13th, was at 114, which decreased by 25.5 percent from week 22. Number of initial claims for the area peaked in week 13 at 1,017. Washington state initial claims decreased by 2.0 percent over the week 22, standing at 27,153 in week 23.



In Week 23, regular unemployment initial claims decreased by 25.5 percent from 153 to 114 claims. Pandemic unemployment assistance initial claims decreased by 39.7 percent over the week, followed by 16.2 percent increase in initial pandemic emergency unemployment compensation.

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Regular continued claims decreased by 13.9 percent in week 23 over the week 22, showing increased movement of unemployed individuals towards reemployment and work engagement. Since week 9, hardest hit industries are educational services at 11.6 percent, healthcare and social assistance at 10.6 percent, accommodation and food services at 8.8 percent and manufacturing was at 8.0 percent.

Since the peak in initial claims, week 13, industries with largest decreases in claims include healthcare and social assistance by 92.8% percent (142 claims decrease), accommodation and food services by 91.2 percent (124 claims decrease), retail trade with 90.7 percent (98 claims decrease), construction 93.1 percent decrease (95 claims decrease).

Source: Washington Employment Security Department/LMEA Weekly Initial Unemployment Claims by 2-Digit NAICS Industries Updated June 15, 2020											
NAICS	Industry	Week 12, ending March 28, 2020	Week 13, ending April 4, 2020	Week 22, ending June 6, 2020	Week 23, ending June 13, 2020	Total from Week 9 to Week 23	Industry Percent % of Total	Change from Week 22	Percent change from Week 22	Change from Week 13	Percent change from Week 13
	Total, All Industries	946	1,017	153	114	5,585	100.0%	-39	-25.5%	-903	-88.8%
11	Agriculture, forestry, fishing and hunting	14	22	4	5	116	2.1%	1	25.0%	-17	-77.3%
21	Mining	0	0	0	0	0	0.0%	0	0.0%	0	0.0%
22	Utilities	0	0	0	0	0	0.0%	0	0.0%	0	0.0%
23	Construction	102	102	9	7	297	5.3%	-2	-22.2%	-95	-93.1%
31-33	Manufacturing	100	91	25	16	446	8.0%	-9	-36.0%	-75	-82.4%
42	Wholesale trade	11	21	4	6	131	2.3%	2	50.0%	-15	-71.4%
44-45	Retail trade	147	108	7	10	423	7.6%	3	42.9%	-98	-90.7%
48-49	Transportation and warehousing	11	20	0	0	88	1.6%	0	0.0%	-20	-100.0%
51	Information	4	0	0	0	20	0.4%	0	0.0%	0	0.0%
52	Finance and insurance	5	8	0	0	69	1.2%	0	0.0%	-8	-100.0%
53	Real estate and rental and leasing	11	8	0	0	40	0.7%	0	0.0%	-8	-100.0%
54	Professional and technical services	16	18	0	0	109	2.0%	0	0.0%	-18	-100.0%
55	Management of companies and enterprises	0	0	0	0	0	0.0%	0	0.0%	0	0.0%
56	Administrative and waste services	34	36	5	10	262	4.7%	5	100.0%	-26	-72.2%
61	Educational services	29	36	8	6	646	11.6%	-2	-25.0%	-30	-83.3%
62	Health care and social assistance	104	153	17	11	594	10.6%	-6	-35.3%	-142	-92.8%
71	Arts, entertainment, and recreation	36	41	0	0	129	2.3%	0	0.0%	-41	-100.0%
72	Accommodation and food services	150	136	14	12	490	8.8%	-2	-14.3%	-124	-91.2%
81	Other services, except public administration	34	39	4	0	120	2.1%	-4	-100.0%	-39	-100.0%
	Government	6	9	6	0	205		-6	-100.0%	-9	-100.0%
	Unknown	0	0	0	0	72	1.3%	0	0.0%	0	0.0%
	Not disclosed	132	169	50	31	1,328	23.8%	-19	-38.0%	-138	-81.7%

During the month of May, data shows that Employment Security Department paid unemployment insurance benefits to 7,913 unemployed residents claims through six different unemployment benefits programs, in amount of \$15.67 million. These numbers are reported from May 1st to May 31st and they reflect the influx of COVID-19 impacted unemployment insurance recipients. The number of claimants receiving benefits increased by 29.4 percent over-the-month or 1,797 with 65.9 percent (increase of over \$6.2 million) increase in benefits payout. Largest increase in benefit type has been in PEUC and PUA.

Walla Walla-Columbia County Region UI Benefits Report												
Month of April 2020					Month of May 2020			Number Change			Percent Change	
County	Type of Claim	Total Claimants	Number of Payments Made	Total Benefits by Type	Total Claimants	Number of Payments Made	Total Benefits by Type	Total Claimants	Number of Payments Made	Total Benefits by Type	Total Claimants	Number of Payments Made
BF Region Total	FPUC	2,940	9,726	\$ 5,834,941	3,827	15,511	\$ 9,300,660	887	5,785	\$ 3,465,719	30.2%	59.5%
BF Region Total	PEUC	58	123	\$ 50,928	120	388	\$ 153,938	62	265	\$ 103,010	106.9%	215.4%
BF Region Total	PUA	650	2,524	\$ 589,195	993	5,863	\$ 1,185,654	343	3,339	\$ 596,459	52.8%	132.3%
BF Region Total	TB	14	48	\$ 8,333	8	37	\$ 7,262	-6	-11	\$ (1,071)	-42.9%	-22.9%
BF Region Total	TRAAAdd	0	0	\$ -	0	0	\$ -	0	0	\$ -	0.0%	0.0%
BF Region Total	UI	2,454	8,541	\$ 2,935,459	2,965	11,870	\$ 4,981,281	511	3,329	\$ 2,045,822	20.8%	39.0%
BF Regional	Total All	6,116	20,962	\$ 9,418,856	7,913	33,669	\$ 15,628,795	1,797	12,707	\$ 6,209,939	29.4%	60.6%

NOTE: The impacts of COVID-19 may not be fully captured in this May 2020 report and are more likely to be evident in the June 2020 report as we review our numbers with all new incoming data.

Non-Farm Employment (Seasonally adjusted) by place of work

	Preliminary	Revised		Changes		% Changes	
	20-May	20-Apr	19-May	OTM	OTY	%OTM	%OTY
Total Nonfarm	26,300	25,800	29,100	500	-2,800	1.9%	-9.6%
Total Private	20,200	19,400	22,700	800	-2,500	4.1%	-11.0%
Good Producing	5,400	4,900	5,300	500	100	10.2%	1.9%
Service Providing	20,900	20,900	23,800	0	-2,900	0.0%	-12.2%
Total Government	6,100	6,400	6,400	-300	-300	-4.7%	-4.7%

Source: Employment Security Department/LMEA/ Bureau of Labor Statistics

As of May 2020, Employment Security Department has five months of new Washington nonfarm employment data. The 468,800 decline in Washington employment in April was unprecedented in its depth and speed. Even with a slight rebound in May of 52,500 nonfarm jobs, total nonfarm payroll employment fell 417,600 (seasonally adjusted) in the five-month period. Private services providing sectors lost 322,900 jobs in the five-month period. Construction employment declined by 39,500 jobs and manufacturing declined by 32,000 jobs including the loss of 6,700 aerospace jobs. Government payrolls declined by 22,500 jobs in January, February, March, April, and May.

National employment increased by 2.5 million net jobs in May, reflecting the limited resumption of economic activity that had been curtailed due to the COVID-19 pandemic. Employment data for March and April were revised down by 642,000 jobs

Walla Walla Metropolitan Statistical Area (MSA) not seasonally adjusted estimates indicate an increase of 500 jobs in nonfarm employment in May 2020. This is an increase of 1.9 percent in jobs over-the-month for the metro area. Looking at over-the-year changes, from May 2019 to May 2020 area recorded a loss of 2,800 nonfarm jobs.

Over-the-month, regional industries that were hardest hit by COVID-19 closures are rebounding the fastest. Construction led the growth with 18.2 percent increase or 200 jobs, followed by leisure and hospitality increase of 12.5 percent of 200 jobs. Manufacturing added 300 new jobs or 7.9 percent, while professional and business services added 100 jobs or 11.1 percent.

Over-the-year, regional economy lost over 2,800 jobs. The areas private sector employers lost 2,500 while total government employment loss was around 300 jobs over-the-year.

Nonfarm employment is made up of industries that make up super sectors of good-producing which increased by 100 jobs over-the-year or 1.9 percent and service-providing which decreased by 2,900 jobs or 12.2 percent. Over-the-month good producing industry increased by 500 jobs and service providing industry by remained unchanged.

The Walla Walla MSA's construction industry has registered year-over-year job gain of 18.2 percent, or over 200 jobs. While over-the-month, construction added the most jobs to the local economy as the residential and commercial construction gears up into the season and completes the projects that are allowed for industry through reopening process. This industry provided over 1,300 jobs across Walla Walla-Columbia counties covered under unemployment insurance.

NOTE: The impacts of COVID-19 may not be fully captured in this May 2020 report and are more likely to be evident in the June 2020 report as we review our numbers with all new incoming data.

Manufacturing industry recorded loss of 100 jobs over-the-year. While, over-the-month manufacturing industry recorded increase of 300 jobs. Total employment in manufacturing industry was around 4,100 in May 2020. Most of the jobs in manufacturing are in non-durable goods manufacturing. This specific segment has been changing and adding jobs in the local communities.

In the service providing super sector, industries lost 2,900 jobs over-the-year. The private segment that has lost the most jobs is leisure and hospitality. Industry job loss was at 33.3 percent or 900 jobs. From April to May, industry regained 200 jobs, bringing a total leisure and hospitality job level at 1,800 in May.

Second largest loss in jobs for private services industry was in private education and health services. Current estimates show that the two industries lost 800 or 10.4 percent over-the-year, while over-the-month industry remained unchanged. This is one of the industries that has mixed impacts from COVID-19 closures, with many operations reopening with careful adjustments to industry reopening guidelines.

Trade, transportation and warehousing lost 500 or 12.8 percent jobs over-the-year, bringing a total employment in this cluster to 3,400 in May 2020, it was estimate that about 400 of lost jobs were in retail trade. Trade, transportation and warehousing remained unchanged from April totals.

Professional and business services lost 100 jobs over-the-year, while his cluster added 100 jobs over the month. Total employment in professional and business services as at 1,000 in May 2020. Financial activities cluster lost 100 jobs over-the-year, bringing in total employment in this industry to 900, with no changes over-the-month. Another industry to mention is “other services” industry which employs about 500 people as of May 2020. This industry decreased in employment by 28.6 percent over-the-year or 200 jobs and remained unchanged over-the-month. This specific industry includes repair and maintenance services, personal and laundry services, religious, civic, professional and similar organizations, along with private households, of which all have been impacted by COVID-19 industry guidelines and measures.

Total government contracted by 300 jobs over-the-year, bring in a total employment to 6,100 in May 2020. Most of the job loses come from local and state government of 200 jobs each while federal government added 100 jobs to the area over-the-year.

NOTE: The impacts of COVID-19 may not be fully captured in this May 2020 report and are more likely to be evident in the June 2020 report as we review our numbers with all new incoming data.

Data Series	Dec 2019	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020
Nonfarm Wage and Salary Employment-Walla Walla MSA						
Total Nonfarm(4)	28.8	28.1	28.9	28.7	25.8	26.3
12-month % change	1.4	1.4	3.6	2.5	-9.8	-9.6
Mining, Logging and Construction(4)	1.2	1.1	1.1	1.1	1.1	1.3
12-month % change	20	10	22.2	22.2	10	18.2
Manufacturing(4)	4.2	4.1	4.2	4.2	3.8	4.1
12-month % change	2.4	2.5	5	2.4	-7.3	-2.4
Trade, Transportation, and Utilities(4)	3.8	3.8	3.7	3.7	3.4	3.4
12-month % change	0	0	0	0	-10.5	-12.8
Information(4)	0.3	0.3	0.3	0.3	0.3	0.3
12-month % change	0	0	0	0	0	0
Financial Activities(4)	0.9	0.9	1	1	0.9	0.9
12-month % change	0	0	11.1	11.1	-10	-10
Professional and Business Services(4)	1	1	1	1	0.9	1
12-month % change	0	0	0	0	-10	-9.1
Education and Health Services(4)	7.8	7.3	7.7	7.7	6.9	6.9
12-month % change	4	4.3	2.7	2.7	-9.2	-10.4
Leisure and Hospitality(4)	2.6	2.5	2.6	2.5	1.6	1.8
12-month % change	-3.7	-3.8	4	-3.8	-40.7	-33.3
Other Services(4)	0.6	0.6	0.7	0.6	0.5	0.5
12-month % change	-14.3	-14.3	0	-14.3	-28.6	-28.6
Government(4)	6.4	6.5	6.6	6.6	6.4	6.1
12-month % change	0	1.6	3.1	4.8	0	-4.7
Footnotes						
(1) Number of persons, in thousands, not seasonally adjusted.						
(2) Data were subject to revision on April 17, 2020.						
(3) In percent, not seasonally adjusted.						
(4) Number of jobs, in thousands, not seasonally adjusted. See About the data.						
(P) Preliminary						

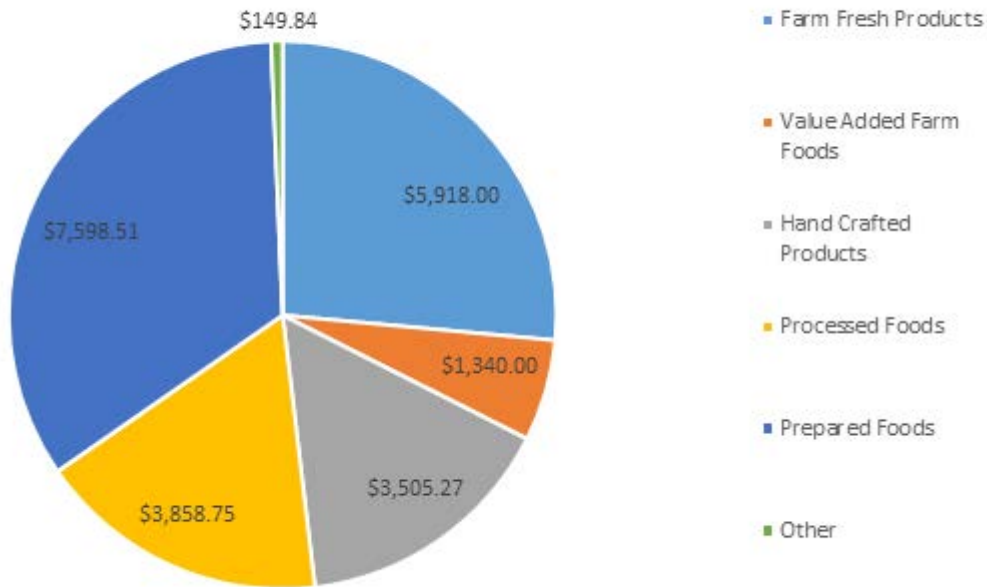
For more data and information please visit [Labor Area Summaries](#) page on our [ESD.WA.GOV/labormarketinfo](https://esd.wa.gov/labormarketinfo)

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Gross Revenue for Market Season Percentage



2020 VENDOR HANDBOOK COVID-19 ADDENDUM

COLLEGE PLACE FARMERS & ARTISAN MARKET



COVID - 19

Market Mitigation Plan
Based upon guidance from
the WA St. Department of
Health, Guidelines for
Farmers Markets (April 21,
2020 Update)

Subject to change as
guidelines are updated.

Focus on
the
foods

Keep
the lines
moving

2020 MARKET DATES THURSDAY AFTERNOONS

MAY 28TH - OPENING DAY

JUNE 4TH

JUNE 11TH

JUNE 18TH

JUNE 25TH

JULY 2ND

JULY 9TH

JULY 16TH

JULY 23RD

JULY 30TH

AUGUST 6TH

AUGUST 13TH

AUGUST 20TH

AUGUST 27TH

SEPTEMBER 10TH

SEPTEMBER 17TH

SEPTEMBER 24TH

LIONS PARK,
801 SE LARCH AVENUE, 4:00 PM TO 7:00 PM



College Place Artisan & Farmers Market 2020

COVID 19 Plan – Table of Contents

COVID-19 Plan Overview	Pg. 2
Allowable Vendors	Pg. 4
Vendor Agreement	Pg. 6
Vendor Safety Plan	Pg. 8
Booth Layout Plan	Pg. 9
Health Status Assessment Tool	Pg. 10



College Place Artisan & Farmers Market 2020

COVID 19 Plan

CPFM Plan

CPFM goal is to create a safe environment for customers to shop for farm fresh produce and allow area farmers businesses to succeed by selling produce grown for Farmers Market's.

Market Access

CPFM will be located at 801 SE Larch (Lions Park). CPFM will change to limit the amount of vendors at the market during the Governor's restriction period and will revise to allow additional vendors once the restriction has been lifted. The number of vendor booths will be determined on space and hand washing station limitations (see map). The access for the market will be on the south side of the Lions Club building, 8th Street will be barricade closed.. In addition, a barrier fence to ensure control of customer counts will be installed. Separate entrance/exit areas will be designated and CPFM staff will operate the entrance/exit.

Vendors

Vendors allowed to participate during the Governor's restriction period (Phase 1) will be deemed essential as defined by Governor's order and the Walla Walla County Health Department guidance. Once Phase 2 is achieved, all vendors will be allowed to participate. Vendors will be encouraged to wear gloves. Vendors are required to wear masks and asked to complete a safety plan for their booth. Two vendor workers shall be encouraged; one to collect and bag products chosen by customer and one to take payments at the front of the booth. Vendors handling money, tokens or vouchers should not handle food products until they have washed/sanitized their hands. Vendors shall have access to a handwashing/sanitize station at various locations throughout the market.

Vendors will demonstrate a good booth layout strategy. A good booth layout strategy is to put an empty table at the front of the booth, with the table with products behind it, then the vendors behind that table., enforcing social distance and putting [products out of reach of customers.](#) Vendors who are required to have handwashing stations available shall do so.

Customer

Customers will be allowed to enter through designated entrance point. Customers will be encouraged to wear masks and gloves, if available. Customers will be reminded regarding social distancing, handwashing, and asked to refrain from touching products for sale until the vendor has placed the items chosen on the separate table for purchase. Customers in line to

enter market will maintain social distancing. Customers shall purchase items and leave the premises, there will be no dining on premises, or loitering.

Market Staff

All Market Staff will be required to wear masks and encouraged to wear gloves. Market Manager will be moving about the market to ensure precautions, guidelines, cleanliness/sanitation, and oversight is completed. Market Staff (1-2) will attend booth at beginning of line to provide line flow direction, handouts, transact SNAP/EBT token distribution, and answer questions. Market Staff (1-5 depending on how many needed) will post station throughout market to ensure no customer traffic are entering at areas other than designated entrance and exit, and proper hygiene and handwashing stations are replenished.

Market staff will be screened according to Recommended Guidance for Daily COVID-19 Screening of Employees and Visitors guidelines.

Precautions

Vendors and staff will **wipe down high touch areas**, such as tables, screens and cash boxes, frequently.

Handwashing stations will be positioned at interval areas in the market. 25 ft. from each vendor. Each station will have towels, soap, running, potable warm water and trash container. Antiseptic hand rubs will be available at stations.

Barricades will be placed at entrance and exits to help direct flow of customers.

CDC/WHO recommended signs related to COVID-19 will be placed at many places in the market.

Social distancing guidelines will be followed and chalkmarks or tape will be placed on the ground to guide customers at each booth. Social distancing signs will be placed throughout the market.

Vendor vehicles will be located by vendor booths outside of roped off area, if it is necessary for stocking for specific vendors.

During Governor's restriction period there will be no non-essential activities such as kid events, live music/entertainment, or non-essential vendors.

As in past years, CPPD will have an active presence at the market.



ALLOWABLE VENDORS

In order to make CPFM a successful market, allowed to continue operating during this time, the precautions outlined should be taken very seriously and followed at all times.

The CPFM Market Staff have the right to remove any vendor who does not comply with COVID-19 market mitigation strategies.

Only vendors that provide **essential services** (food and supplies needed to maintain health, safety, and sanitation) as indicated in the **Washington Essential Business List** will be allowed to vend until such time that the WA St Department of Health eases restrictions.

Here are applicable excerpts from the Washington Essential Business List:

FOOD AND AGRICULTURE

Sector Profile

The Food and Agricultural (FA) Sector is composed of complex production, processing, and delivery systems and has the capacity to feed people and animals both within and beyond the boundaries of the United States. Beyond domestic food production, the FA Sector also imports many ingredients and finished products, leading to a complex web of growers, processors, suppliers, transporters, distributors, and consumers. This sector is critical to maintaining and securing our food supply.

Essential Workforce

- Workers supporting groceries, pharmacies, and other retail that sells food and beverage products, including but not limited to Grocery stores, Corner stores and convenience stores, including liquor stores that sell food, **Farmers' markets**, Food banks, **Farm and produce stands**,

Supermarkets, Similar food retail establishments, Big box stores that sell groceries and essentials.

- Restaurant **carry-out and quick-serve food operations** – including food preparation, carry-out and delivery food employees.
- **Food manufacturer** employees and their supplier employees—to include those employed in food processing (packers, meat processing, **cheese plants**, milk plants, produce, etc.) facilities; livestock, poultry, seafood slaughter facilities; pet and animal feed processing facilities; human food facilities producing by-products for animal food; beverage production facilities; shellfish facilities including hatcheries and nurseries and growing areas; workers supporting commercial geoduck facilities; workers supporting commercial fishing; brewery and wine-making facilities; coffee production facilities; **artisan food production**; and the production of food packaging.

HEALTHCARE / PUBLIC HEALTH

Sector Profile

The Healthcare and Public Health (HPH) Sector is large, diverse, and open, spanning both the public and private sectors. It includes publicly accessible healthcare facilities, research centers, suppliers, manufacturers, and other physical assets and vast, complex public-private information technology systems required for care delivery and to support the rapid, secure transmission and storage of large amounts of HPH data.

Essential Workforce

- Workers providing COVID-19 testing and workers that perform critical clinical research and development needed for COVID-19 response.
- Health care providers and caregivers (e.g., physicians, dentists, psychologists, mid-level practitioners, nurses and assistants, infection control and quality assurance personnel, pharmacists, physical and occupational therapists and assistants, midwives and doulas attending facility-based or home-based births, alternative healthcare providers, social workers, speech pathologists and diagnostic and therapeutic technicians and technologists).
- Hospital and laboratory personnel (including accounting, administrative, admitting and discharge, engineering, epidemiological, source plasma and blood donation, food service, housekeeping, medical records, information technology and operational technology, nutritionists, sanitarians, respiratory therapists, etc.).
- Workers in other medical facilities (including Ambulatory Health and Surgical, Blood Banks, Clinics, Community Mental Health, Comprehensive Outpatient rehabilitation, End-Stage Renal Disease, Health Departments, Home Health care, Hospices, Hospitals, Long Term Care, Organ Pharmacies, Procurement Organizations, Psychiatric, Residential, Rural Health Clinics and Federally Qualified Health Centers, biotechnology therapies, consumer health products, cannabis retailers).
- Manufacturers, technicians, logistics and warehouse operators, and distributors of medical equipment, medical devices, diagnostics, **personal protective equipment (PPE)**, medical gases, pharmaceuticals, blood and blood products, vaccines, testing materials, laboratory supplies, **cleaning, sanitizing, disinfecting or sterilization supplies**, and tissue and paper towel products.



VENDORS

The following items are required in order to vend at the CPFM. It is important you read, understand, and acknowledge the requirements.

- Vendors will be required to identify their Safety Plan. See attached Vendor Safety Plan sheet and use a separate sheet of paper to answer the questions on the form.
- Vendors will arrive at Lions Park and immediately go to the information booth to check in PRIOR to unloading. The Market Manager will screen vendors and approve of daily vending as per Health Assessment outcomes-attached. If the Health Assessment outcome is unsatisfactory, the vendor will not be allowed to vend.
- Two Vendor workers per booth are required; one vendor will handle products for sale and one vendor will handle payment transactions. See attached example layout.
- To maintain social distancing, an extra table will be placed in front of the table with products for sale. Tablecloths are NOT allowed at this time. Vendors will frequently wipe down tables with cleaner/disinfectant to ensure proper hygiene.

- Social distancing reminders/guides will be placed throughout the market. CPFM Staff asks that Vendors also help to monitor and maintain social distancing with customers. Encourage quick transactions.
- Customers may bring their own bags; however, vendors should not touch customer's bags. Customers will bag the items selected for purchase from the spacing table after the vendor has placed product selection on the spacing table.
- Vendors should help to encourage customer to purchase and move on. There will be no dining on the premises.
- Vendors should allow, when possible, mobile, credit card, or other cash-free payment options. Encourage customers to pre-order/pre-pay whenever possible.
- Whenever possible, pre-package/pre-bag/pre-weigh products.
- No sampling or self-service areas are allowed at the market at this time.
- Service animals will be allowed.

In order to make CPFM a successful market, allowed to continue operating during this time, the precautions outlined should be taken very seriously and followed at all times. The CPFM Market Staff have the right to remove any vendor who does not comply with COVID-19 market mitigation strategies.

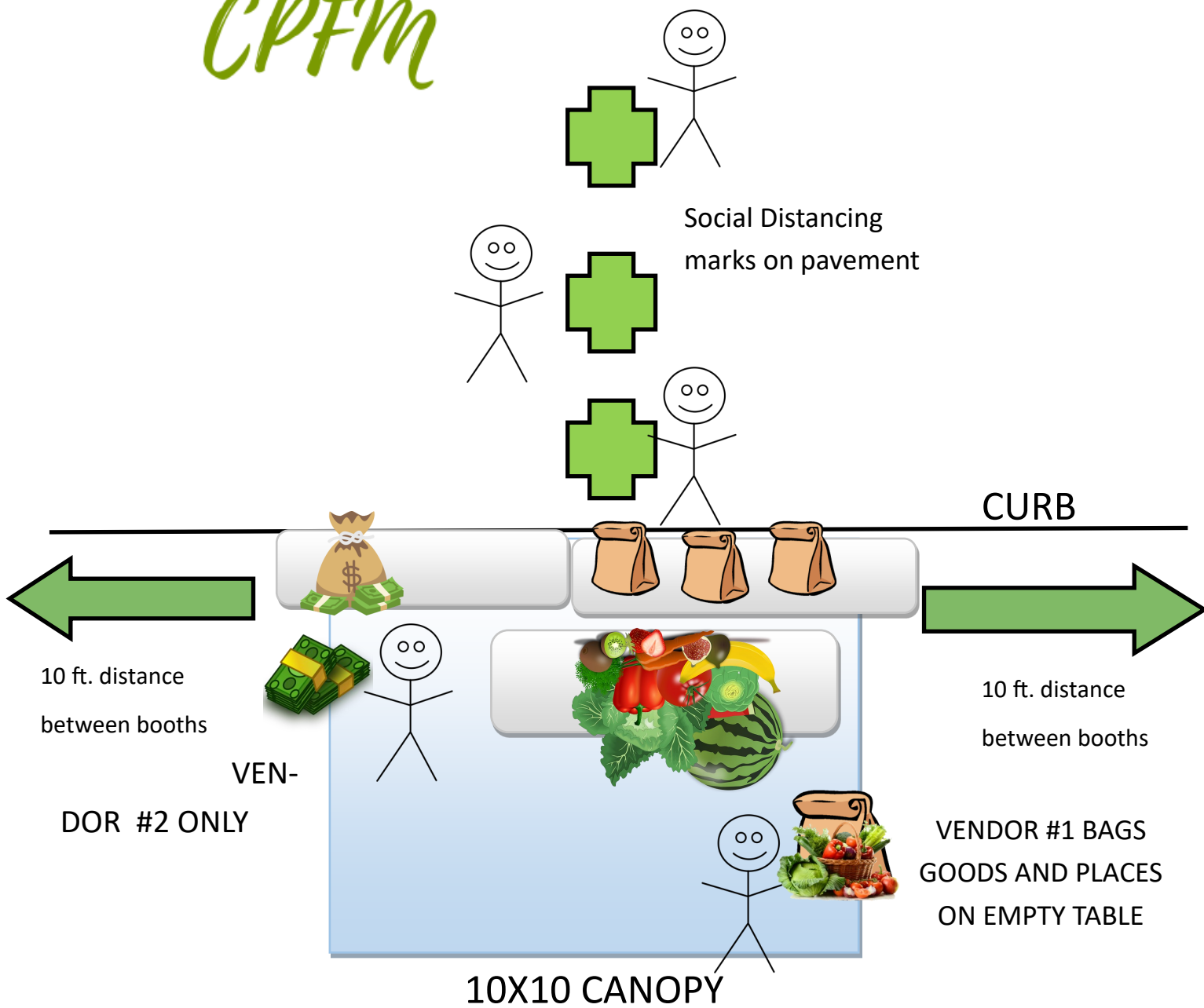
Thankfully yours,

CPFM Market Manager

Vendor and Date

CPFM Market Manager and Date

CPFM



**COLLEGE PLACE FARMERS & ARTISAN MARKET
VENDOR SAFETY PLAN**



Name: _____

Business: _____

1. What essential service are you are providing?

- ☐ Food
- ☐ Supplies needed to maintain health, safety, and sanitation

2. How do you plan to protect your own health and that of your employees?

- ☐ hand hygiene, hand washing station in booth
- ☐ barriers such as sneeze guards
- ☐ signs
- ☐ Remember to and remind employees to wash their hands or use hand gel often, and to avoid touching eyes, nose, and mouth.

3. How do you plan to protect customers from exposure while at your booth?

Reduce touchpoints in the booth:

- ☐ Keeping designated “Display Only” items for customers to view.
- ☐ Pre-bagging/pre-packaging/pre-weighing food when possible.
- ☐ Discontinuing all product sampling and self-serve areas.

Signed: _____

Date: _____ Time: _____

Payment Handling Guidelines from the Wa Department of Health (April 21, 2020)

After handling payment, a person should not touch their eyes, nose, or mouth until they have washed their hands.

When possible, allow mobile, credit card, or other cash-free payment options. Encourage customers to pre-order/pre-pay when possible.

When handling cash, tokens, checks, or change:

- o Designate a money handler separate from the worker handling products.
- o Ask for exact change to help limit additional handling.
- o Collect payment in a container rather than directly into hands.

To disinfect wooden tokens, consider the following:

- o “Quarantine” tokens by holding in a container until the next week. Tokens held should not need additional disinfection for COVID-19.
- o Use a cloth wetted with disinfectant to clean wooden tokens or laminated paper, then air dry. Wash hands after disinfecting objects.



CPFM HEALTH STATUS ASSESSMENT

To stop the spread of COVID-19, it is critical that anyone experiencing any of the symptoms should stay home or return home immediately. This includes farmers market staff, volunteers, vendors, shoppers, or other visitors.

DATE: _____

NAME: _____

1. Do you have a fever (100.4F or higher) or a sense of having a fever?	Yes	No
2. Do you have a new cough not caused by another health condition?	Yes	No
3. Do you have any new shortness of breath not caused by another health condition?	Yes	No
4. Do you have a new muscle ache not caused by another health condition or physical activity?	Yes	No

[] Self assessment. I attest that I have responded honestly to the above to the best of my knowledge:

Signed: _____

Date: _____ Time: _____

[] Market assessment conducted by: _____

Signed: _____

Date: _____ Time: _____

Please contact the Market Manager at 509-386-4394 if you have any questions.

WADOH "Recommended Guidance for Daily COVID-19 Screening of Employees and Visitors" (3/21/2020)
<https://www.doh.wa.gov/Portals/1/Documents/1600/coronavirus/Employervisitorscreeningguidance.pdf>



Recommended Guidance for Daily COVID-19 Screening of Employees and Visitors

The Washington State Department of Health recommends that all employers put COVID-19 screening protocols in place.

You can help prevent the spread of COVID-19 in your facility by screening employees and visitors on a daily basis. The screening protocol outlined below is based on the following:

- A review of screening protocols from multiple agencies
- Recommendations by the CDC
- A literature review of the most common signs and symptoms of COVID-19

COVID-19 screening protocol: What to do

Screen **everyone** who enters your facility, including:

- All employees before the start of each work shift
- All visitors

Ask the following questions when you screen employees and visitors:

“YES or NO, since your last day of work, or since your last visit to this facility, have you had any of the following:”

- A new fever (100.4°F or higher), or a sense of having a fever?*
- A new cough that you cannot attribute to another health condition?*
- New shortness of breath that you cannot attribute to another health condition?*
- A new sore throat that you cannot attribute to another health condition?*
- New muscle aches (myalgias) that you cannot attribute to another health condition, or that may have been caused by a specific activity (such as physical exercise)?*

To request this document in another format, call 1-800-525-0127. Deaf or hard of hearing customers, please call 711 ([Washington Relay](#)) or email civil.rights@doh.wa.gov.

*If an employee or visitor answers **YES** to any of the screening questions, immediately activate your agency’s emergency protocol for COVID-19. The designated screener should consider:

- A review of the screening results
- Recommendations for possible exclusion of the employee or visitor from the facility
- Recommendations for medical follow-up

Additional COVID-19 Resources

- [DOH Coronavirus \(COVID-19\) webpage](#) – updated information and resources daily

CHECKLIST FOR FARMERS MARKETS



IT'S MARKET SEASON! SAFETY AND SANITATION WILL BE THE NUMBER ONE PRIORITY, SO HERE'S HOW TO HAVE A SUCCESSFUL FARMERS MARKET WHILE KEEPING OUR COMMUNITIES HEALTHY.

FOCUS ON THE FOODS

- Only vendors with food and essential services allowed.
- Pre-package foods as much as possible.
- No samples or eating of products onsite.
- No tables or chairs for the public.
- No pets allowed at the market.

PROMOTE GOOD HAND HYGIENE

- Handwashing stations for each vendor, including:
 - 5 gallon insulated container with a free flow spigot,
 - pump soap,
 - paper towels,
 - catch bucket, and
 - trash can.
- Do not allow customers to handle products prior to purchase.
- Vendors are encouraged to have hand sanitizer for customers.

ENSURE SOCIAL DISTANCING THROUGHOUT

- Have one staffed entry point for crowd control.
- Booths must be at least 10 feet apart.
- Customers should not enter vendor booths.
- Use markings to designate 6 foot spacing between customers.
- Vendors should wear cloth face coverings.

KEEP LINES MOVING

- Have two people at your booth at all times – one to bag purchases and one to take payments.
- Shoppers should be asked to make their purchases quickly and efficiently.
- Use large menu-type signage so customers can decide what to buy while waiting.
- Encourage vendors to use digital payment options.
- Price products at even amounts to reduce the need to make change.

THINK OUTSIDE THE BOX

- Consider a "seniors-only" hour.
- Think about offering pre-payment options so that customers can "grab and go".
- Look for ways to offer drive-up, curbside or parking lot delivery areas.
- Talk with vendors about ways to donate leftover products to local food banks.

KEEP CUSTOMERS INFORMED

- Have signage at the entrance promoting rules and discouraging sick shoppers.
- Post new guidelines on social media so that shoppers know what to expect ahead of time.
- If you have SNAP or EBT, let your shoppers know about these programs.
- Encourage customers to follow on social media or sign up for market updates.



Stop Germs, Stop Flu!

Do you have the flu? Ask yourself two quick questions:

1. Do you have a fever?
2. Do you have other symptoms? A cough, sore throat, body aches, headache, chills, diarrhea or vomiting?

If your answer is **YES** to both, you might have the flu.

If you have the flu, what should you do?

- Stay home, drink plenty of liquids and get rest.
- Protect the health of others by staying away from crowds, covering your cough, and washing your hands often.

If you aren't getting better, please call a health care provider.

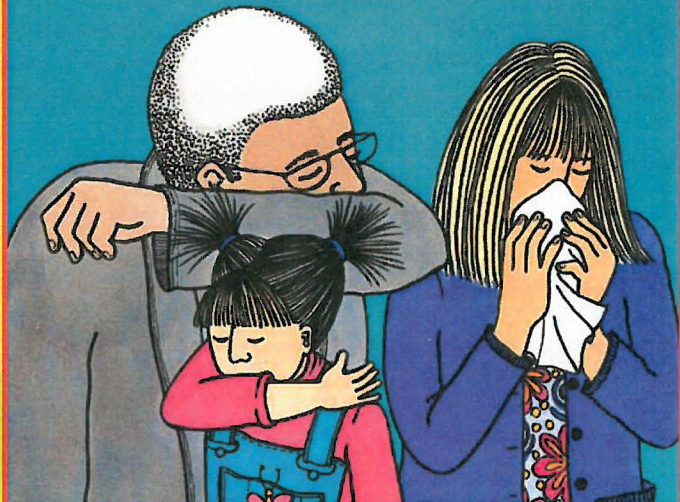
If you need medical care and don't have a medical provider or health insurance, call the **Community Health Access Program at 800-756-5437.**

You will not be asked for proof of immigration status.

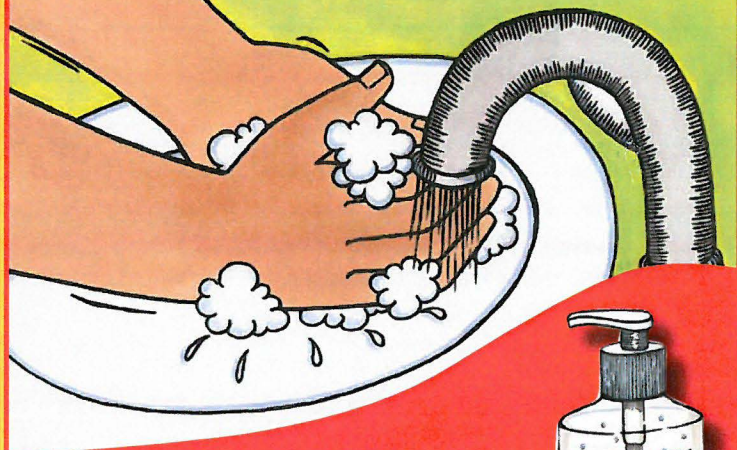
When sick, stay home



Cover coughs and sneezes



**Wash hands often
for 20 seconds**



**Can't wash?
Use alcohol-based
hand sanitizer**



For more information visit:

www.cpwa.us

Alternate formats available upon request

**DO NOT
ENTER**

**ONE WAY FOOT TRAFFIC!
#KEEPITMOVING**

*College Place
Farmers Market*



ONE WAY FOOT TRAFFIC

#KEEPITMOVING

*College Place
Farmers Market*





**VENDORS WILL BE
FURTHER APART TO
IMPROVE CIRCULATION**



**PAY ATTENTION, BE AWARE!
NEW FOOT TRAFFIC PATTERNS
AND RULES ARE IN PLACE**



**ONLY VENDORS + STAFF
MAY HANDLE PRODUCE
AND PRODUCTS**



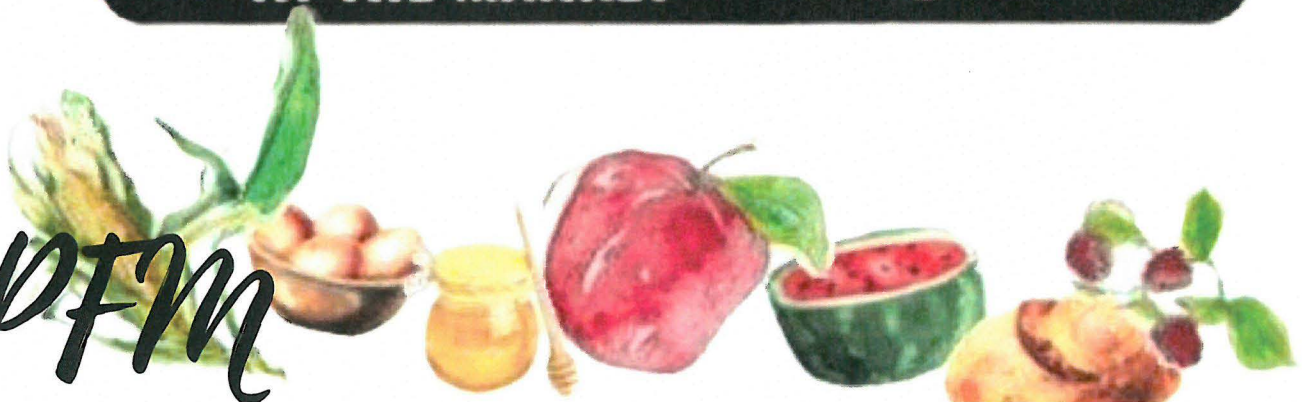
**SOCIAL DISTANCING
OF AT LEAST
6 FEET**



**TAKE ALL FOOD TO GO
DO NOT CONGREGATE
AT THE MARKET**

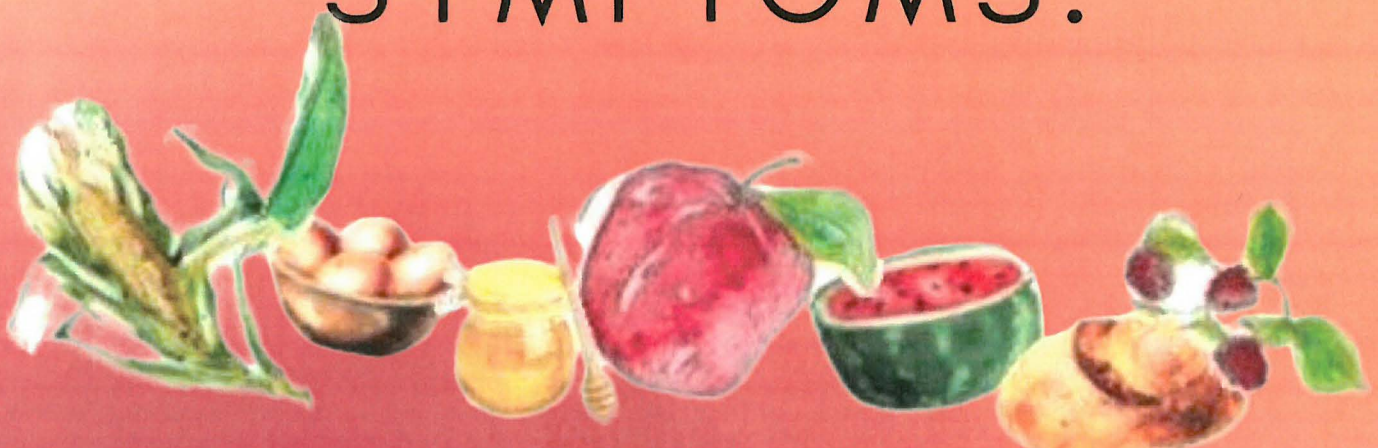


CPTM



CPTM

RESERVES THE RIGHT
TO ASK CUSTOMER,
STAFF, AND VENDORS
TO LEAVE THE
MARKET IF THEY ARE
EXPERIENCING
SYMPTOMS.



We Welcome SNAP EBT Customers



**For information on applying
for SNAP benefits, call 1-800-221-5689**

In accordance with Federal law and U.S. Department of Agriculture policy, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, age, religion, political beliefs, disability, or retaliation for prior activity.

**To file a complaint of
discrimination, write or call:**

To file a complaint of discrimination, write to USDA, Director, Office of Adjudication, 1400 Independence Avenue, S.W., Washington, DC 20250-9410, or call toll-free at (866) 632-9992 (English) or (800) 877-8339 (TDD) or (866) 377-8642 (English Federal-relay) or (800) 845-6136 (Spanish Federal-relay), (866) 632-9992 (toll free) or (202) 260-1026 (voice) or (202) 401-0216 (TDD)



USDA is an equal opportunity provider and employer.

United States Department of Agriculture • Food and Nutrition Service
FNS-132 • Slightly Revised January 2019



SNAP Market Match Makes Getting Fresh and Local Produce a SNAP!



Markets match \$10 or more per day.
Check with your local market for their daily match amount.
Find a list of participating farmers markets at:
doh.wa.gov/SNAPMarketMatch

Here's how it works:



Go to the farmers market information tent.



Swipe your EBT card for the amount you want to spend at the market.

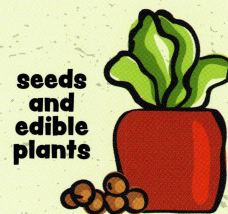


Match your EBT dollars with SNAP Market Match.



Shop for fresh produce, seeds, and plant starts.

Redeem SNAP Market Match dollars for:



FRESH. HEALTHY. DELICIOUS.

Amazing reasons to eat more fruits and veggies:



- Get that healthy glow!**
Your skin benefits when you eat more veggies.
- Your kids take the lead from you!**
When you eat fruits and veggies, they will, too.
- Improve your health at all ages!**
Powerful nutrients are found in produce that help boost your energy and manage your weight. Fiber helps with better digestion.

Families share how they add more veggies and fruits:

- “I make a smoothie every morning with milk, berries, and kale or spinach. I add some peanut butter for extra protein.”
- “When I get home from the farmers market, I wash the fruit and veggies we’ll eat right away. I also cut up some of the veggies for quick snacks during the week.”
- “My kids love anything on the grill, so we grill vegetables and even fruits, like peaches.”



ABOUT WIC FMNP AND SENIOR FMNP

WIC Farmers Market Nutrition Program (FMNP) is part of the Special Supplemental Nutrition Program for lower income Women, Infants, and Children (WIC). The WIC Program provides healthy foods, nutrition education, and referrals to health and other social services.

Senior Farmers Market Nutrition Program (SFMNP) is part of the DSHS Aging and Long-Term Support Administration (ALTSa). The Senior FMNP improves nutrition for lower income adults over age 60 with nutritious meals in group settings and home delivered meals.

The U.S. Department of Agriculture, the Washington State Department of Health – Office of Nutrition Services, and the Washington State Department of Social and Health Services – Aging and Long-Term Supports Administration sponsor WIC and SFMNP.

CONTACT INFORMATION

WIC FMNP



- WEBSITE:** www.doh.wa.gov/YouandYourFamily/WIC/FarmersMarket.aspx
- PHONE:** 1-800-841-1410
- EMAIL:** FMNPteam@doh.wa.gov

Have a complaint about FMNP? Mail, Email, or Fax using a Complaint form found at: <https://www.doh.wa.gov/YouandYourFamily/WIC/FarmersMarket>.

SENIOR FMNP



ALTSa Aging and Long-Term Support Administration

- WEBSITE:** www.dshs.wa.gov/altsa/home-and-community-services/senior-farmers-market-nutrition-program
- PHONE:** 1-800-422-3263



DOH 961-275 May 2020
DSHS 22-1064 ENG May 2020

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Washington State Senior FMNP and WIC FMNP do not discriminate.
To request this document in another format, call 1-800-841-1410. Deaf or hard of hearing customers, please call 711 (Washington Relay) or email WIC@doh.wa.gov.



WIC & SENIOR
Farmers Market Nutrition Program

EAT FRESH! BUY LOCAL!
SUPPORT FARMERS!

USING YOUR FARMERS MARKET CHECKS

- WIC and Senior FMNP participants can use their checks to buy only fresh fruits, fresh vegetables, and fresh cut herbs.
- Use only Farmers Market checks at the farmers market. WIC Cards can't be used at farmers markets or farm stores.
- Senior FMNP participants only can also use their checks to buy honey.
- No change or tokens will be given with your checks.
- Report lost or stolen checks to the agency that gave you the checks. These checks won't be replaced.
- You must use your checks between June 1 and October 31.
- Use your checks only with growers who have these signs:



Arrive
at the
market
early for
the best
selection!



Try something
new at the
farmers
market!

Ask the
farmer for a
sample and
a recipe.

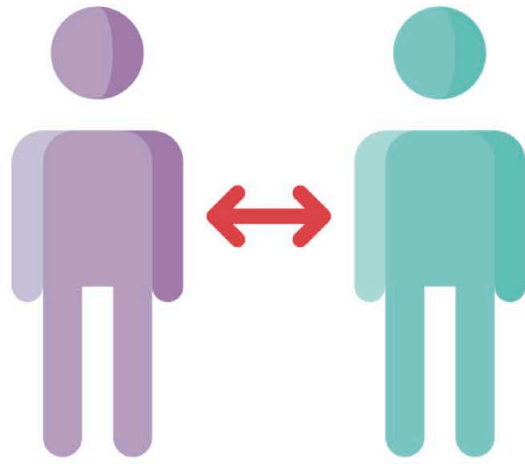
TIPS FOR ADDING VEGGIES AND FRUITS TO MEALS AND SNACKS

- ✓ Make it easy to reach for a veggie. Keep cut up raw veggies, like carrots, broccoli, snap peas, or cauliflower on hand.
- ✓ At mealtime put out a dish of cut up raw veggies or fruits on the table.
- ✓ Berries and peaches make cereal and yogurt more fun and delicious!
- ✓ At lunchtime add a salad to your meal!
- ✓ Keep a fruit bowl. Add fresh fruit to any bowl. Keep it out on your counter!
- ✓ Have a Make Your Own Salad Night! Offer chopped veggies, cooked chicken or beans, shredded cheese, and add something new, like chopped apples.
- ✓ Looking for something quick as a side dish? Make a fruit salad. Stir in a spoonful of frozen orange juice concentrate for extra flavor.
- ✓ Summer fruits getting ripe all at the same time? Make a smoothie, or slice and cook in a little water and serve as a topping for pancakes, or make jam! Look for easy jam recipes on your favorite recipe web site.

HOW DO I STORE MY FRUITS AND VEGGIES?

- **Store most veggies in your fridge!**
Put fresh produce like leafy greens and berries in the crisper unwashed. Wash all produce with running water just before using. Greens can also be washed in a sink of cold water changed a couple of times.
- Keep vegetables like onions and potatoes in a cool, dark cupboard or pantry. Not in the fridge!
- Keep tomatoes and unripe fruits at room temperature, usually on a counter or table.
- For longer storage, consider freezing or canning produce. To learn more, search: Seasonal Tips for Food Storage.

FARMERS + EATERS ARE IN IT TOGETHER



STAND 6 FEET APART



PLEASE DON'T TOUCH. WE WILL SERVE YOU!



PLEASE SHOP ONE HOUSEHOLD AT A TIME

Zig-Zag Forward



**ONE WAY FOOT TRAFFIC!
#KEEPITMOVING**



**ONE WAY FOOT TRAFFIC!
#KEEPITMOVING**



**ONE WAY FOOT TRAFFIC!
#KEEPITMOVING**



*College Place
Farmers Market*

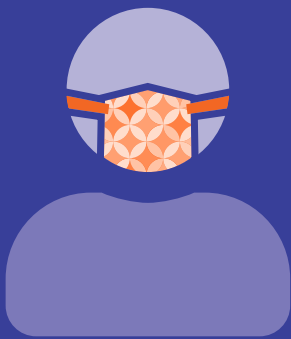


COVID-19 (Coronavirus)

**Any of us can catch it.
Any of us can spread it.**

**Keep others safe.
Cover your face.**

Face coverings include:



**Cloth face
masks**



Bandanas



Scarves

Spread the Facts

coronavirus.wa.gov

Thank You for Coming!

**EXIT
HERE**

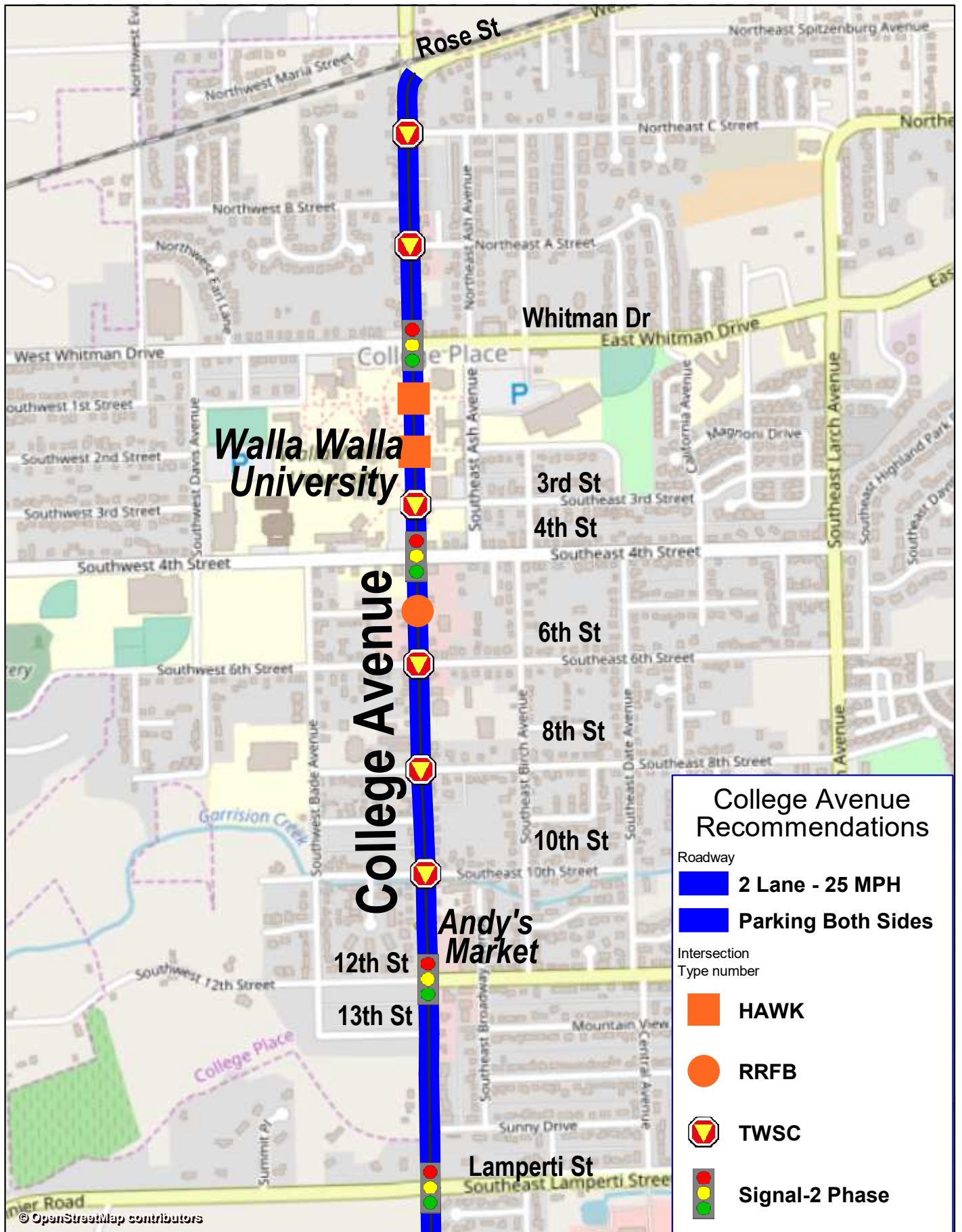


**BACK
TO
ENTRANCE**



*College Place
Farmers Market*







City of College Place

College Avenue Traffic Assessment

A D D E N D U M

April 27, 2020

The following addendum was prepared to address specific questions generated by City of College Place staff in response to the Final Report for the College Avenue Traffic Assessment Report dated March 13, 2020. The questions were submitted by email on March 24, 2020. It was agreed the March 13, 2020 report would remain intact and the response to the questions would be included in this addendum.

It was determined the findings of the report could be interpreted in different ways based on the City goals for the College Avenue corridor. As a point of beginning, the City offered the following statement on how to interpret the study results:

"Traffic recommendations are, to some degree, dependent upon the community's final vision for the corridor. As a Federally classified principal arterial doubling as the City of College Place's main commercial corridor, College Avenue provides a continuum of opportunities between serving as an efficient transportation corridor and a slower-paced, complete-streets commercial corridor. In attempting to balance the competing demands of pedestrian, bicycle and vehicle facilities, it is important that policy makers are aware there are pros and cons related to recommendations that favor one end of the continuum over the other or that favor one transportation mode (pedestrian, bicycle, vehicles) over the other. As a part of addressing a staff request for clarifications to the College Avenue Traffic Assessment, the balance of the following responses is intended to provide additional insight and background to assist in adjusting the recommendations, if desired, to reflect the community's balance of priorities."

Comment #1: Table 3 – Add a column for CARS counts, as available.

A column was added to Table 3 to include the findings of the 2012 CARS 24-hour traffic volume study. It should be noted that the 2012 study does not offer a corresponding count to the 2019 study. Specific differences are noted in Table 3.

Table 3. 24-hour Vehicle Volume Summary

#	Location	Section	2019 24 Hour Traffic Volume			2012 CARS Traffic Volumes ¹		
			Northbound	Southbound	Total	Northbound	Southbound	Total
1	College Avenue	n/o 4 th Street	2488	2657	5145	4246	4010	8256 ²
2	College Avenue	n/o Whitman Drive	2846	3039	5885	2958	2917	5875
3	College Avenue	n/o C Street	2734	2692	5426	2593	2263	4856 ³
4	College Avenue	n/o B Street	2925	3044	5969			
5	College Avenue	n/o A Street	2816	3006	5822			
6	College Avenue	n/o SR 125	1880	1918	3798			
7	College Avenue	s/o Lamperti Street	2205	2241	4446			
8	College Avenue	s/o 10 th Street	4274	3926	8200			
9	College Avenue	n/o 8 th Street	4103	3988	8091	4044	4369	8413 ⁴
10	College Avenue	n/o Lamperti Street	4144	3838	7983	3603	3499	7102 ⁵

1) 2012 CARS 24 Hour Traffic Volumes were conducted in February/March 2012

2) CARS Count – Volume recorded as south of 4th Street

3) CARS Count – Volume recorded as south of Rose Street

4) CARS Count – Volume recorded as south of 8th Street

5) CARS Count – Volume recorded as south of 13th Street

Response #1. As shown in Table 3, a comparison of the 2012 CARS data and the 2019 data indicates the volumes are relatively consistent between the two time frames with the exception of the section recorded in the vicinity of 4th Street where the 2012 data (8256) is approximately 3000 vehicles per day higher than the 2019 volume (5145). Some of the difference could be attributed to the count location where the 2012 count was south of 4th Street and the 2019 count was north of 4th Street.

Comment #2. It appears most of the benefits in LOS related to Alternative Two (Remove Left Turn Channelization) are related to the signal phasing recommendations, not necessarily to the removal of the left turn pockets. Would most of the benefits in LOS be retained if signal phasing recommendation were

adopted but the left turn pockets were retained at A) the unsignalized intersections? B) at the signalized intersections?

Response #2. Although the analysis suggests the benefits are the result of signal phasing recommendation, a review of standard practice in regards to provision of protected left turn phasing at signalized intersection and the need for designated left turn pockets suggest in most cases, neither conditions are necessary for the College Avenue corridor. Regarding designated left turn lanes, the Highway Capacity Manual¹ (HCM), states the need for a left-turn lane is suggested if the left-turn volume is greater than 100 vehicles in a peak hour. Left turns on College Avenue for the AM and PM peak hour is presented in the following Table.

Intersection	Traffic Control	AM Peak Hour				PM Peak Hour			
		NB	SB	EB	WB	NB	SB	EB	WB
Whitman Drive	Signal	28	30	79	36	74	28	30	19
4 th Street	Signal	109	8	15	88	72	14	34	61
6 th Street	TWSC	10	0	6	5	12	15	12	5
8 th Street	TWSC	11	0	6	5	12	15	12	5
10 th Street	TWSC	6	1	8	0	19	11	13	1
12 th Street	Signal	16	44	4	41	16	69	11	64
13 th Street	Stop Control	5	n/a	3	n/a	5	n/a	0	n/a
Lamperti Street	Signal	10	74	35	51	9	140	27	12

As shown in the Table above², there are only two intersections: 4th Street during the AM peak and Lamperti Street during the PM peak. which have a peak hour left turn volume which meets the HCM suggest criteria of 100 left turn during the peak hour. It should be noted that each of these intersections meet the 100-left turn per hour criteria during only one peak hour. Although the two intersections satisfy the HCM requirement, the level of service and queuing analysis do not suggest a designated left turn lane is required to satisfy the capacity requirements of either intersection.

The other factor to consider is the need for protected left turn signal phasing. To address this issue, the HCM³ suggests the following criteria be applied:

“Left-turn phasing (protected-permissive, permissive-protected, or protected-only) should be considered if any one of the following criteria is satisfied:

Table 118. Guidelines for use of left-turn phasing. ^(186,187)

1. A minimum of 2 left-turning vehicles per cycle and the product of opposing and left-turn hourly volumes exceeds the appropriate following value:
 - a. Random arrivals (no other traffic signals within 0.8 km (0.5 mi))
 - One opposing lane: 45,000 Two opposing lanes: 90,000

¹ Highway Capacity Manual (HCM) Signalized Intersections; Chapter 12 Individual Movement Treatments; August 2004.

² Source: Figure 1; Technical Memorandum – Data Collection.

³ Ibid. HCM Chapter 12.

-
- b. *Platoon arrivals (other traffic signals within 0.8 km (0.5 mi))
One opposing lane: 50,000 Two opposing lanes: 100,000"*

Based on this requirement, there are no intersections on College Avenue that warrant left turn phasing. A summary of the calculations is presented as an attachment to this addendum.

In conclusion, the answer to the basic question, "are most of the benefits in LOS retained if signal phasing recommendation was adopted but the left turn pockets were retained," the answer is yes. At the signalized intersections, the benefit in LOS is realized by eliminating the left turn phase and the associated lost time of the traffic signal timing plan. For the unsignalized intersections, the north/south bound left turns are "free flowing" and therefore not subject to level of service analysis. Left turn pockets are not provided on the side streets at the unsignalized intersections. As discussed above, left turn pockets and protected left turn signal phasing are not required for safe and efficient movement at the signalized intersections.

Comment #3. *The City's currently codified default sight visibility max height criteria is 36" as measured from the gutter. We need a recommendation regarding whether this should be changed, and if so, to what height.*

Response #3. Stopping Sight Distance (SSD) is the sum of two distances: the distance traveled during perception and reaction time and the distance required to stop the vehicle. The perception and reaction time used in design is 2.5 seconds. The stopping sight distance is calculated using a constant deceleration rate of 11.2 feet/second². Available stopping sight distance is calculated for a passenger car using an eye height of 3.50 feet and an object height of **2.00 feet**.

As a result, it is recommended that a height of **24 inches** above the gutter be used as the default value.

Comment #4. *Table 4 (p.8) in the Sight Distance Memorandum would benefit from an additional column listing "remaining parking inventory" at current and proposed speed limits.*

Response #4. The Comment suggests the proposed action, reduction in parking supply to accommodate sight distance requirements, would have an adverse impact on parking. As shown in Table 4 (after Table 7 below), *Potential Parking Stall Reduction*, suggests a total of 28 stalls would be eliminated under the existing posted speed limits and 21 stalls would be eliminated if the posted speed limits on the corridor were reduced to 25 mph.

As discussed in the *Data Collection Memorandum*, the available parking supply on the College Avenue corridor is significantly higher than the current parking demand. The *Data Collection* memorandum summarized parking demand on the corridor during two different time periods. A summary of the study findings is presented in Table 7 below.

Table 7. CARS – Available Parking Supply

		Hourly Summary								
		Peak Demand								
		6/12/2019			2/27/20			Available Supply		
Corridor	Section	E	W	Total	E	W	Total	E	W	Total
College Avenue	4 th St to 6 th St	0	6	6	5	1	6	3	6	9
College Avenue	6 th St to 8 th St	2	0	2	3	0	3	0	5	5
College Avenue	8 th St to 10 th St	0	1	1	2	0	2	3	4	7
College Avenue	10 th St to 12 th St	1	3	4	0	4	4	15	12	27
College Avenue	12 th St to 13 th St	0	1	1	3	0	3	3	6	9
College Avenue	13 th St to Lamperti	8	1	9	8	0	8	22	17	39
Corridor Total		11	12	23	21	5	26	46	50	96

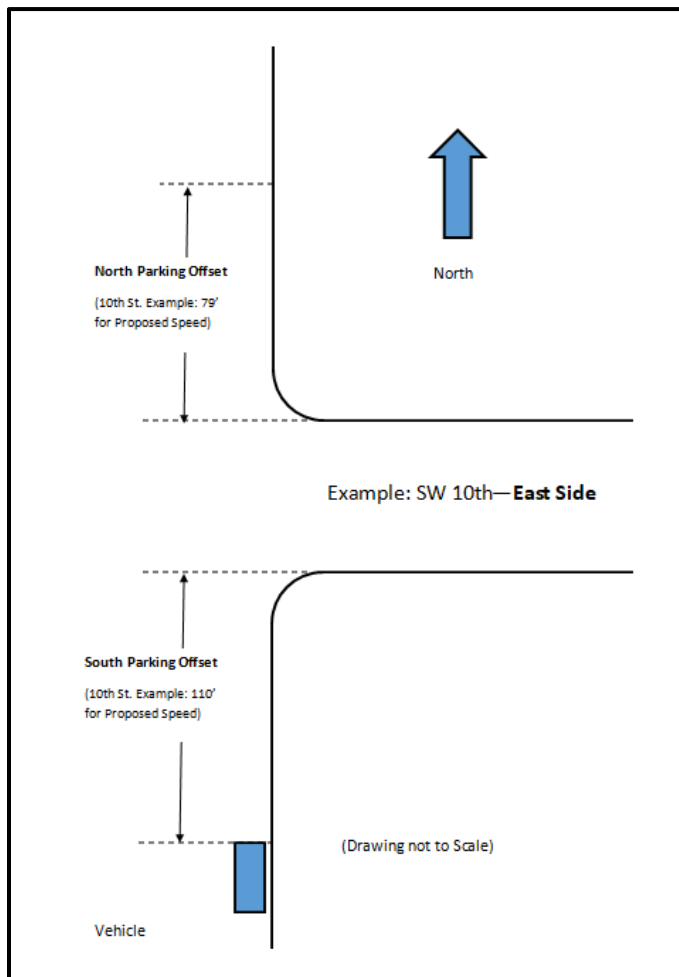
As shown in Table 7, the peak hourly parking demand for the corridor, 23 stalls in June 2019 and 26 stalls in February 2020, is significantly less than the available parking supply which is 96 stalls in the sections between 4th Street and Lamperti Street. The only section where the demand is equivalent to the available supply is the section between SW/SE 4th Street to SW/SE 6th Street where the parking demand, six (6) stalls, is equivalent to the available supply. This section is adjacent to the United States Post Office. Peak hourly parking demand occurs in the section between SW/SE 13th Street and Lamperti Street where the peak demand is nine (9) stalls and the available supply is 39 stalls.

Table 4. Potential Parking Stalls Reduction

Intersection	Speed Limit			Parking Offset				Parking Reduction	
	Posted North	Posted South	Proposed	Posted Speed North	Posted Speed South	Proposed Speed North	Proposed Speed South	Posted Speed	Proposed Speed
Sunny Drive	30	30	25	74'	136'	55'	101'	2	1
SW 13th	30	30	25	140'	76'	104'	57'	7	4
SW 10th (west side)	30	30	25	143'	102'	107'	76'	3	2
SE 10th (east side)	30	30	25	105'	146'	79'	110'	0	0
SW 9th	30	30	25	134'	88'	100'	66'	4	2
SW 8th (west side)	25	30	25	105'	101'	105'	75'	0	0
SE 8 th (east side)	25	25	25	75'	105'	75'	105'	0	0
SW 6th (west side)	25	25	25	105'	75'	105'	75'	0	0
SE 6 th (east side)	25	25	25	75'	105'	75'	105'	0	0

Intersection	Speed Limit			Parking Offset				Parking Reduction	
	Posted North	Posted South	Proposed	Posted Speed North	Posted Speed South	Proposed Speed North	Proposed Speed South	Posted Speed	Proposed Speed
SE 3rd	25	25	25	69'	99'	69'	99'	0	0
NE A	25	25	25	75'	104'	75'	104'	4	4
NW B	25	25	25	75'	104'	75'	104'	5	5
NE C	25	25	25	67'	104'	67'	104'	3	3
				Total Stalls Removed				28	21

Note: An illustration of the parking offset is shown in the figure below.



As shown in Table 4, the proposed parking reduction due to the sight distance offset is limited to the section north of Whitman Drive and south of 9th Street. Between 10th Street (eastside), except for 9th Street, there is no parking reduction required to meet the sight distance requirements.

As shown in Table 7, there is a peak demand of 26 stalls and a total supply of 96 stalls. If the parking reduction for the various speeds is added to the peak parking demand, the result would be a demand for 54 stalls under the existing posted speed limit (25 – 30 mph) and 47 stalls under the proposed posted speed limit (25 mph). These numbers compare to an available supply of 96 stalls so that there is still a surplus of 42 stalls under the existing speed limits and 49 stalls under the proposed speed limit.

The highest parking demand, including the proposed reduction, occurs in the section between 13th Street and Lamperti Street where there is a demand for 18 stalls under the existing speed and 14 stalls under the proposed speed. In this section, 13th Street to Lamperti Street the available supply is 39

suggesting there is a surplus of 21 stalls under the existing speed and 25 stalls under the proposed speed.

The conclusion of this analysis is that there is ample parking supply on the corridor to accommodate the proposed parking reduction under the existing posted speed as well as the proposed speed parking reduction and still accommodate existing parking demand.

Comment #5. *Provide a list of the specific factors contributing to the speed limit recommendation (p. 5 of Appropriate Speed Limit Memorandum) or, if recommendation is not compelled by the data, state so and note the speed limit reduction as an option for City consideration in light ofand list the considerations. Some of the considerations, such as increasing bicycle safety may not as directly apply if bicycles are allowed to travel on sidewalks by code. The Memorandum on Bicycle Traffic should then be revised as necessary for consistency.*

Response #5. The comment suggests the basis for the posted speed is the commonly accepted 85 percentile speed. The speed data collected on the corridor is shown in Table 4 below.

Table 4. Daily Speed Summary

#	Location	Section	Posted	Daily Speed					
				Northbound		Southbound		Total	
				Average	85 th Percentile	Average	85 th Percentile	Average	85 th Percentile
1	College Avenue	n/o 4 th Street	25	22	26	22	26	22	26
2	College Avenue	n/o Whitman Drive	30	24	28	24	27	24	28
3	College Avenue	n/o C Street	30	26	30	25	29	26	29
4	College Avenue	n/o B Street	30	25	29	25	29	25	29
5	College Avenue	n/o A Street	30	25	29	25	28	25	29
6	College Avenue	n/o SR 125	35	27	33	31	36	29	35
7	College Avenue	s/o Lamperti Street	35	26	32	26	34	26	33
8	College Avenue	s/o 10 th Street	30	27	31	28	31	27	31
9	College Avenue	n/o 8 th Street	25	25	29	26	29	26	29
10	College Avenue	n/o Lamperti Street	30	27	31	28	32	27	31

As shown in Table 4, the posted speed on the College Avenue corridor ranges between 25 mph and 35 mph. The posted speed is 35 mph south of Lamperti Street; 30 mph between Lamperti Street and 8th Street; 25 mph between 8th Street and Whitman Drive; and 30 mph north of Whitman Drive.

The result of the speed study indicates that motorists on College Avenue comply with the posted speeds. The observed speeds indicate the posted speed reflects actual speeds on the corridor. There is no significant difference between speeds in the northbound and speeds in the southbound direction.

If the recommended posted speeds were based on the 85th percentile speeds observed on the corridor, then the recommendation would be to leave the posted speed limits as they currently exist. However, the Consultant is working under the premise that the City desires to provide a “Complete Streets” construct on College Avenue. The goal of “Complete Streets” is to make the street safe and efficient for “all users” i.e. bicycles, pedestrians, and motor vehicles as opposed to focusing on the speed, capacity, and efficiency of the automobile. Improve. If the City desires to promote the automobile, then the existing posted speeds should remain. If the City desires to promote “Complete Streets” then an alternative posted speed should be considered.

The lower speed, although increasing travel time on the corridor for the car, it significantly beneficial to the safety of bicycles and pedestrians. In a crash at 20 mph, the likelihood of a pedestrian sustaining a serious or fatal injury is 18 percent whereas a crash at 30 mph, the likelihood of a pedestrian sustaining a serious or fatal injury is 50 percent.

Comment #6. *There should be some discussion on the pros and cons of allowing bicycle use on College Avenue sidewalk in the Bicycle Traffic Memorandum. Does this increase danger to pedestrians? Is there any data on this? What limitations on bicycle use of sidewalks should be in place if allowed? Is there a max speed limit? Recommended signage?*

Response #6. In a meeting with City staff, the various options of providing bicycle provisions on College Avenue were discussed. Staff expressed concern about the ability to provide a continuous bicycle path for the full length of the College Avenue corridor from Lamperti Street to Rose Street. The predominant concern was the lack of cross-sectional width to accommodate a bicycle lane plus parking on both sides. The decision was whatever was provided should be continuous. At that point, it was decided that bicycle traffic should be allowed to use the sidewalk. This proposal is contrary to existing city ordinance and would require modification to that ordinance.

A review of the existing cross-sectional width of College Avenue confirmed that, except for College Avenue south of 10th Street, the cross-sectional width is inadequate to accommodate a standard bike lane along with parking.

To address the questions:

- **Does this increase the danger to pedestrians?** The intuitive response to this question is yes. Bicycles are moving at a faster speed than the pedestrians and hence the reaction time to objects in their path is reduced. A research of the literature however did not indicate a major problem. A recent report from Cornell University stated⁴:

“Sidewalks, by definition, are designed for pedestrians. According to the law, a sidewalk is defined as “That portion of a street between the curb lines, or the lateral lines of a roadway, and the adjacent property lines, intended for the use of pedestrians.” Sidewalk riding has the potential of bringing the cyclist into conflict with pedestrians. Although the crashes are not typically life threatening to either

⁴ http://www.bike.cornell.edu/pdfs/Sidewalk_biking_FAQ.pdf

party, certainly the comfort level of the pedestrian is compromised. Many communities ban cycling from downtown sidewalks to avoid this conflict.”

Most of the data available suggested that cycling on a sidewalk was significantly more hazardous to the biker. Again, the Cornell University Report stated⁵:

“Bicycling on the sidewalk eliminates the relatively small danger to cyclists of crashes with overtaking motorists but increases the potential for more common intersection collisions. To follow is an excerpt from the Pedestrian and Bicycling Information Center’s web site about sidewalk bicyclists and crashes:

Rather like the situation with riding the wrong way against traffic, there is no specific crash type reserved for bicyclists riding on the sidewalk. However, the fact that the bicyclist was on the sidewalk is a contributing factor in a great many crashes at intersections.

- *Motorist turns left in front of cyclist: 42% of bicyclists are on the sidewalk*
- *Motorist turns left into oncoming cyclist: 15% of bicyclists are on the sidewalk*
- *Motorist turns right into bicyclist: 31% of bicyclists are on the sidewalk*
- *Motorist drives out of alley/driveway: 48% of bicyclists are on the sidewalk*
- *Motorist drives through intersection: 15% of bicyclists are on the sidewalk*
- *Bicyclist rode out intersection with signal: 24% of bicyclists are on the sidewalk*

*Once again, the perception is that someone is safer riding on the sidewalk than on the road—and many motorists and even law enforcement officers repeat that message. **The problem is that, as the numbers above suggest, bicyclists are not safer on the sidewalk because they become almost invisible to the motorist.** When a driver turns, either left or right, or into a driveway or alley, they are simply not looking for, or expecting to encounter, a bicyclist. And even if they do look and see a bicyclist, they may still underestimate the speed a rider is traveling on the sidewalk - because it will likely be much faster than a pedestrian.*

- ***What limitations on bicycle use of sidewalks should be in place if allowed?*** As discussed above, it is not “safer” for bicycles to travel on the sidewalk. Therefore, the question should be who should be allowed to travel on the sidewalk.

The WSDOT Design Manual⁶ identifies three types of cyclists as follows:

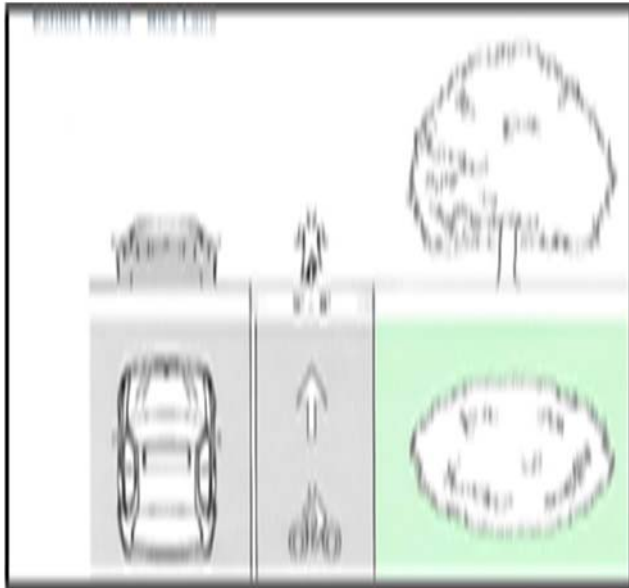
- ***Strong and Fearless*** – This cyclist type is confident not only in their abilities as a cyclist but also with their ability to operate intermixed with other modal users.
- ***Enthusied and Confident*** – These cyclists prefer utilizing separated facilities, but are comfortable riding intermixed within other modes in some transportation contexts. •
- ***Interested, but Concerned*** – Cyclists who primarily have safety concerns and who are less skilled or less familiar with the rules of the road but would like to ride more. These cyclists are frequently dissuaded from cycling, even if bike facilities are present, because of the degree of

⁵ Ibid.

⁶ WSDOT Design Manual; Section 1520.03(1); November 3, 2015.

separation between themselves and other traffic. This category includes children and others new to bicycling.

Bike Lane



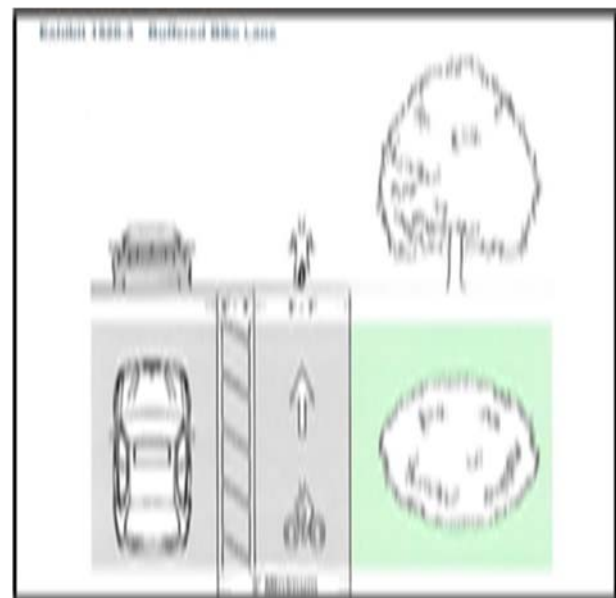
It is assumed that all three cyclist type exist on the College Avenue corridor. According to the WSDOT Design Manual⁷, *“The Interested, but Concerned cyclist constitutes the largest segment of cyclist types within suburban, urban and small-town populations. Bike facility selection on state routes is based on designing for the “Interested but Concerned” user type as a starting point.”* According to Exhibit 1520-6a⁸, a “Bike Lane” would be recommended for the segments of College Avenue with speeds in the range of 25 mph.

In the sections where the posted speed is 30 mph, a “Buffered Bike Lane” would be recommended.

The Design Manual shows ranges of applications for the different types of bicycle facilities related to generally accepted safety and mobility performance. Other performance needs may increase or decrease the viability of certain types of bike facilities, such as shared-use paths through aesthetic areas or those planned for a mixture of commute and recreational purposes.

The Design Manual goes on to state: *“Further considerations for cyclist perception of comfort are another factor that can affect use of the facility. Designing for a higher level of separation may be more important at locations that serve community activity centers, schools or popular destinations (such as a retail oriented segment of a route) where additional accommodations are appropriate for either the functional uses or less skilled cyclists (including children). In these situations, separated facilities or wider dimensions may provide the level of comfort needed to satisfy user needs and context considerations. Additionally, some suburban, urban, and small-town contexts will have more specific bicycle performance*

Buffered Bike Lane



⁷ Ibid. Section 1520.03(1)(a).

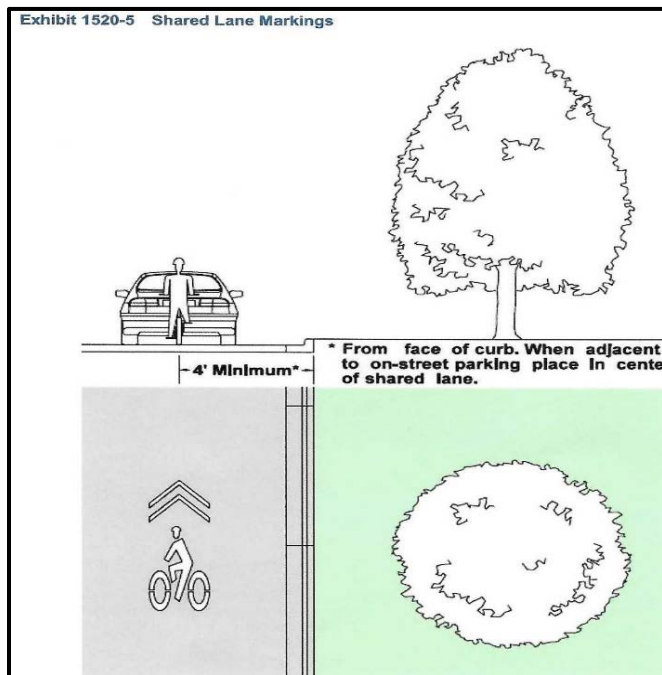
⁸ Ibid.

needs that will help identify either spot improvements or alteration of the type of existing facility to enhance a specific performance area. Bike facility selection in 1520.03(1)(b) are provided for these reasons.”

“In some contexts, it is appropriate to design for the Strong and Fearless, and Enthused and Confident user types. In cases, where right of way is very constrained or where bicycles are not considered the modal priority (see Chapter 1103), it is appropriate to use Exhibit 1520- 6b for determining facility selection after input from community engagement efforts. However, understand that the application of Exhibit 1520-6b may result in less mode shift or use of the capacity provided.”

In light of the foregoing, it is suggested the City consider alternative facilities for two classes of biker. The “Strong and Fearless” and the “interested but Concerned”.

Shared Lane



For the “Strong and Fearless”, the City should allow these users to ride in the street under the “Shared Lane” concept. The data presented above suggests bicycle speed is contributing to bike crashes on sidewalks. It is expected that higher speeds are attributed to the Strong and Fearless riders. Limiting their use of the sidewalk appears to offer benefit for the biker as well as the pedestrian. The application of the “Shared Lane” would require marking the existing lanes with “sharrows”

For the “Interested, but Concerned”, it is suggested they should be allowed to ride on the sidewalk because of their inexperience and apprehension about riding with traffic.

Therefore, the following limitations are

suggested:

- Sidewalk riding be limited to inexperienced riders.
- On the sidewalk, bicycles are required to YIELD to pedestrians.
- Bike speeds should be limited to 10 mph on sidewalks.

Signing supporting these constraints should be posted along the sidewalk.

Comment #7. *The Bicycle Traffic Memorandum lists incidence of bicycles at intersections during the peak AM and PM hours. Please provide an estimate of the number of unique bicycles using the full extent of the corridor. In other words, theoretically, if the same bicycle were to have ridden the full*

length of the route, there could have been as little as 7 bicycles during the AM peak hour and 6 during the PM peak hour. It would be helpful to have an estimate of how many bicyclists we are serving during the peak hours.

Response #7. Unfortunately, there is no data available to determine the volume of bicycle traffic that travels the length of the corridor. Would require significant data collection. Otherwise it would be simply conjecture.

Comment #8. *Table 2 (p. 2) of the Bicycle Traffic Memorandum references state crash rate comparisons in crashes per 100M VMT. Add a “crashes per 100M VMT” column to Table 5 so that a direct comparison to state and county averages can be made.*

Response #8. The WSDOT report was limited to data on roadway segments without identification of intersection rates. Therefore, we have no basis for comparison.

Comment #9. *Errata: P. 15, Table 8 reference should be Table 9.*

Response #9. Noted. The correction is on page 15 of the *Data Collection Memoranda* in the paragraph (first sentence) following **Table 9. 2019 vs 2040 Land Use**. The correction was incorporated into the final report to be forwarded to the City.

Comment #10. *Provide comments on location of bus stops with respect to traffic flow in context of Complete Streets vs. vehicle-only priority efficiency.*

Response #10. During the study, it was observed that transit patrons disembarking from the bus would exit the bus and proceed to cross College Avenue illegally at the location where the bus stopped. The result of this action creates three points of conflict without any protection for the bus or the pedestrian. The three points of conflict with potential for serious injury crashes include the bus stopping in the traffic stream, the pedestrian crossing the street after departing from the bus, and the bus reentering the traffic stream. In the “complete streets” scenario all modes of travel are provided protection and efficiency for all movements. By moving the bus stop to the far side of the signalized intersection, the pedestrian is provided with a marked crosswalk and traffic signal control and the bus is provided signal protection while reentering the traffic stream thereby providing necessary protection and efficiency.

2020

CITY OF COLLEGE PLACE

**COLLEGE AVENUE
TRAFFIC ASSESSMENT**



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CITY OF COLLEGE PLACE

FOR

COLLEGE AVENUE TRAFFIC ASSESSMENT

Summary Report

Prepared By

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March 13, 2020

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TECHNICAL MEMORANDA

- TASK 2. - DATA COLLECTION
- TASK 3. - IS CURRENT TRAFFIC PATTERN OPTIMAL
- TASK 4. - SIGHT DISTANCE TRIANGLE ANALYSIS
- TASK 5. - SPEED LIMIT ANALYSIS
- TASK 6. - BICYCLE ROUTING EVALUATION

TECHNICAL APPENDIX

- 24 Hour ADT/Speed/Classification Counts
- AM and PM Peak Period Traffic Counts
- AM and PM Peak Hour Level of Service Analysis Worksheets
- Percent of Traffic Entering and Exiting the Corridor
- Bike Survey Form
- HAWK Proposal

INTRODUCTION

The City of College Place desires “a traffic assessment of the College Avenue corridor from Rose Street to Lamperti Street with emphasis on the section from SW/SE 4th Street to SW/SE 13th Streets”. This corridor was reconstructed in 2016 to address the City’s desire to implement a Complete Streets Policy as stated in the College Place Municipal Code (CPMC 12.14). The project resulted in a design which included one traffic lane in each direction with turn lanes at key intersections and public parking mid-block. The project also included 10-foot sidewalks and the designation as a bicycle route to promote active transportation along the corridor. A vicinity map is presented in Figure 1.

In addition, the City installed traffic signals at the following intersections:

- College Avenue/E. Whitman Drive
- College Avenue/SW/SE 12th Street
- College Avenue/Lamperti Street

Note: The College Avenue/SW/SE 4th intersection was under signal control prior to the “Complete Streets” project.

Subsequently, the City expressed concern the resulting traffic circulation pattern was confusing for some and the removal of parking in the Downtown area has created problems for downtown business. After completion of the project, the City received a few complaints, but in the words of City staff “not many”.

PROJECT DESCRIPTION

The City of College Place requested the College Avenue Traffic Assessment answer the following questions:

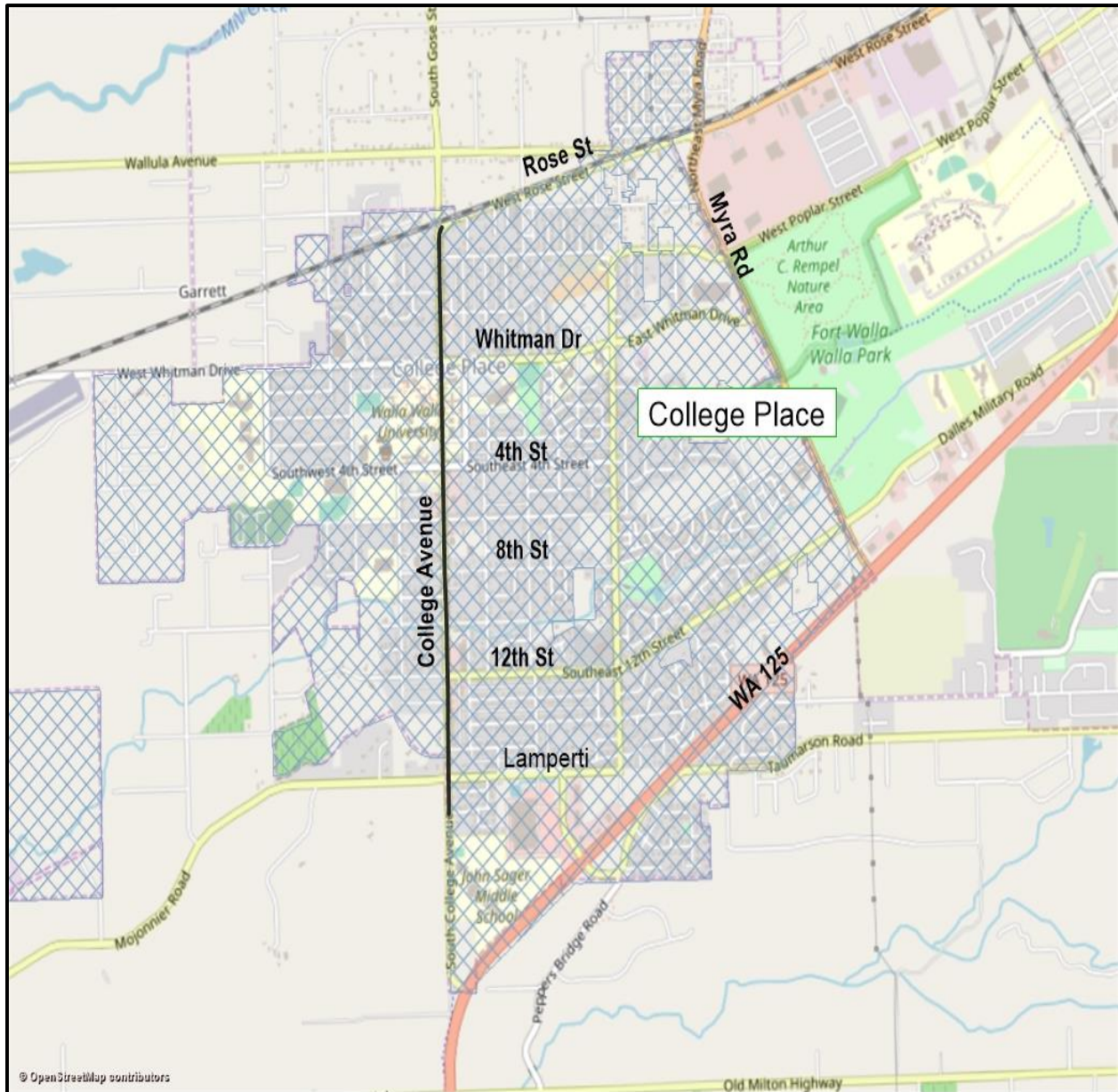
1. Is the current traffic pattern optimal? Should parking be reintroduced at the expense of the left turn lanes at the intersections? What is the best performing traffic pattern for the corridor?
2. The existing city code currently mandates a sight-triangle be enforced at intersections; however, this corridor also has ten-foot-wide sidewalks which most other streets in the City lack. The College Avenue Design Standards encourages development to the back of sidewalk. Based on the wider sidewalks in the corridor, to what extent would it be safe and effective to reduce sight triangle requirements in the College Avenue corridor?
3. What is the appropriate speed limit along College Avenue from Rose Street to Lamperti Street?
4. How should bicycle traffic along College Avenue be best accommodated (signage, sharrows, use of sidewalks, reassignment of bicycle route, etc.)?

Response to these questions is the fundamental focus of the Assessment. The response requires a documented understanding of each of the issues suggested by the question. Based on the Consultants understanding of the issues, findings from the data collection, results of the associated analysis, and input from City staff a solution will be developed.

STUDY AREA

The City defined the study area as the College Avenue corridor from Rose Street on the north to Lamperti Street on the south with the emphasis on the following intersections:

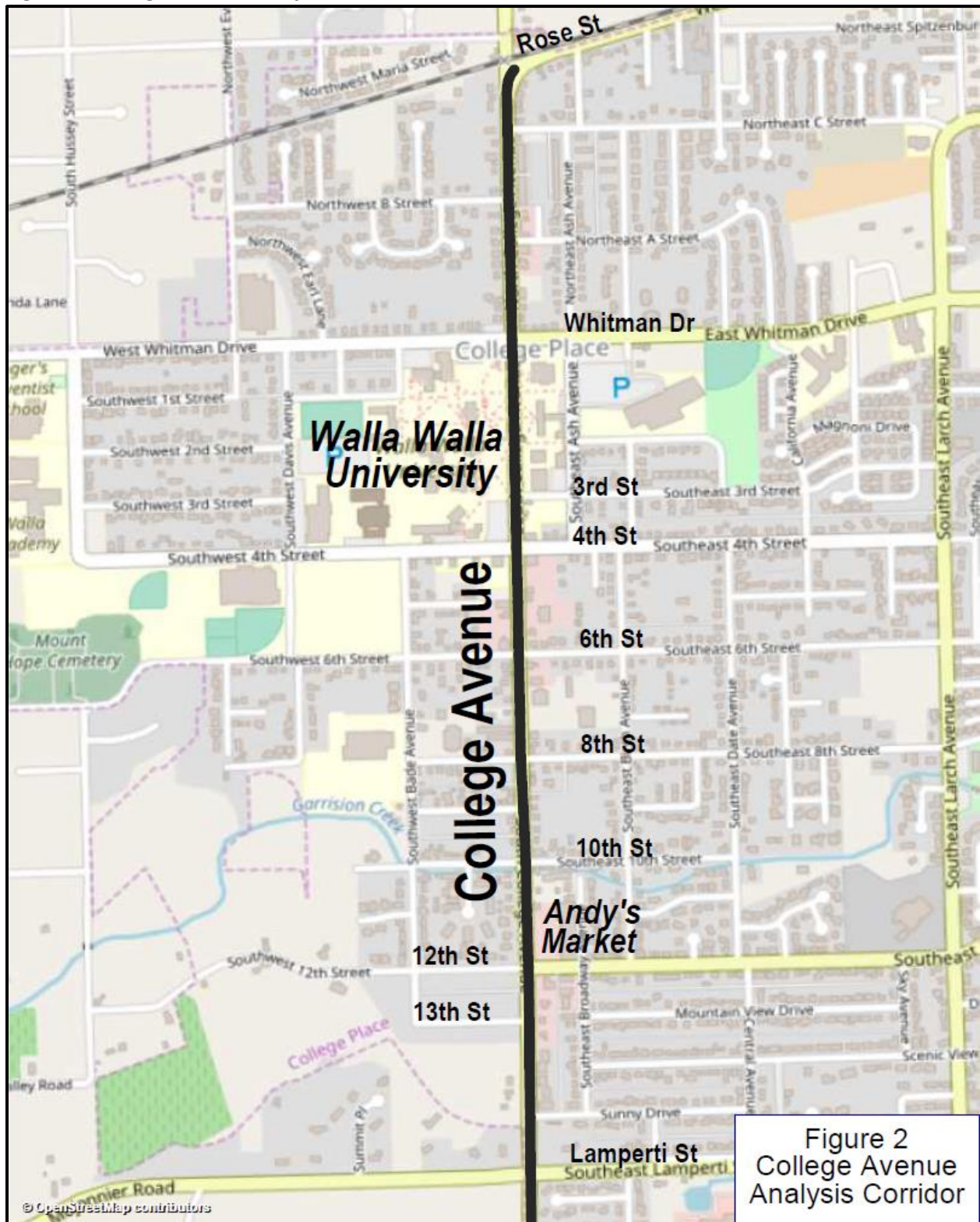
Figure 1. Vicinity Map



- Lamperti Street.
- SW 13th Street.
- SW/SE 12th Street.
- SW/SE 10th Street.
- SW/SE 8th Street.
- SW/SE 6th Street.
- SW/SE 4th Street.
- Whitman Drive

A graphic illustrating the College Avenue corridor is presented in Figure 2.

Figure 2. College Avenue Analysis Corridor



APPROACH TO THE PROJECT

Our approach to the project is based on the following:

- Engage the City of College Place staff in a collaborative effort to develop traffic operations plans and policies which serves the various users of the transportation system today and in the future.
- Collect enough data to provide an accurate assessment of current multimodal traffic operations on the corridor to include intersection level of service, speed, parking demand, and safe roadway geometrics.
- Seek creative solutions to address community concerns for all roadway users.
- In addition to National Standards such as AASHTO¹ and MUTCD², the Consultant will use existing City policies³ to guide our work including:

TRANSPORTATION POLICY 1: The City adopts a LOS standard of “D” for all roadway segments, a LOS of “D” for all signalized intersections, and a LOS “D” for the critical movement of all non-signalized intersections.

TRANSPORTATION POLICY 2c: Implement complete streets practices as guided by the City’s Complete Streets Policy (CPMC 12.14).

TRANSPORTATION POLICY 10: Establish and maintain truck routes that are clearly signed to serve designated commercial and industrial areas.

TRANSPORTATION POLICY 13: Recognize SW 4th Street and SW Davis Avenue as key elements to the utility and transportation infrastructure on the west side of the City.

TRANSPORTATION POLICY 14: Identify and implement north-south transportation corridors as part of development requirements for westernmost portions of the city to connect to Highway 125.

TRANSPORTATION POLICY 15: As the City continues to grow and develop, identify, evaluate and as needed implement alternative north-south transportation routes to relieve reliance on College Avenue.

TRANSPORTATION POLICY 18: Develop and implement a parking strategy for the College Avenue corridor.

TRANSPORTATION POLICY 20: Establish and maintain a system of bicycle and pedestrian trails, and routes that link neighborhoods and public facilities, and that enhance the walking and bicycling experience.

TRANSPORTATION POLICY 20j: Continue to evaluate where bicycle and pedestrian routes should be designated and encourage their construction.

¹ AASHTO – American Association of Highway and Transportation Officials

² MUTCD – Manual on Uniform Traffic Control Devices, Current Edition, 2009.

³ City of College Place, Transportation Plan September 2018

RESPONSE TO QUESTIONS

The consultant prepared a technical memorandum to address each of the questions identified by the City to include:

Question #1 – Is the current traffic pattern optimal? (See Task #3 Memo).

The answer to the question is “No”! As discussed in Tech Memo #3, the existing left turn channelization is not required to support an acceptable level of service. Therefore, it is recommended, the left turn channelization be eliminated, and the roadway be converted to a two-lane section; one lane in each direction. The additional space can be evaluated for the provision of additional parking. It was determined there isn’t sufficient width for the length of the College Avenue corridor to provide a five (5) foot bike lane on each side.

The provision of signal coordination between the four (4) signalized intersections was determined to be detrimental to traffic signal operations, on the College Avenue corridor and the intersecting side streets, under current traffic patterns. The basis for this conclusion is the distance between the signalized intersections is so long that the platoon disperses before arrival at the next intersection.

Signal operations were found to be significantly better under the proposed two (2) lane, two (2) phase signal operations. Queuing analysis was conducted for the AM and PM peak periods and all queues computed were shorter than the available storage lengths.

Question #2 – To what extent would it be safe and acceptable to reduce sight triangles in the College Avenue corridor? (See Task #4 Memo)

The existing ordinance does not provide sufficient sight distance triangles to support safe stopping sight distance on approach to the intersections. The ordinance should be revised to identify establishment of sight distance triangles using the AASHTO⁴ triangle to determine safe stopping sight distance. An example of the sight distance triangle is provided in the Task #4 Memo. With imposition of this technique, sight distance issues on private property will be virtually eliminated. The revised ordinance will however impact the extent of parking in the vicinity of a stop sign controlled intersection.

Question #3 – What is the appropriate speed limit on College Avenue? (See Task #5 Memo)

For the most part, the existing speed limits on the corridor are acceptable and are accepted by the travelling public. However, to address the “Complete Streets” character stated by City Policy (CPMC 12.14) and Transportation Policy 2c, speed limits south of SW/SE 8th Street should be reduced to 25 mph. This will reduce the potential for serious injury and fatal crashes as motor vehicles interact with bicycles and pedestrians in the corridor. It is also important to note the College Place High School and Middle School are located on the south end of the corridor where the higher speed limits of 30 mph (8th Street to Lamperti Street) and 35 mph (Lamperti Street to SR 125) exist. However, the posted speed limit in this section is reduced to 20 mph between the hours of 7:30 AM and 4:30 PM. Reducing the posted speed limit to 25 mph would provide a safer environment for all roadway users. The reduce speed limit would also reduce the required sight distance for intersecting side streets.

⁴ A Policy of Geometric Design of Highways and Streets; AASHTO Green Book – American Association of State Highway and Transportation Officials; 7th Edition; 2018.

Question #4 – How should bicycle traffic be accommodated? (See Task #6 Memo)

The City staff requested provisions for bicycles be consistent across the length of the College Avenue Corridor. Because the roadway width isn't adequate to accommodate a five (5) foot bicycle lane on both sides, it was decided that bike lanes should not be provided. During the collection of traffic volumes on the corridor, it was documented the typical bicycle rider tended to use the sidewalk. Riding on a sidewalk in the business district is contrary to City Ordinance.⁵ If the City determines to allow bicycle riding on sidewalks in the business district, the ordinance should be revised.

OTHER ISSUES

Post Office Pedestrian Crossing and Parking

There are existing parking and pedestrian crossing issues at the United States Post Office, 500 South College Avenue. Field observations indicate a difficulty in seeing pedestrians crossing College Avenue in the marked crosswalk in front of the Post Office. The sight distance issue results from vehicles parking in close proximity to the cross walk.



It is recommended the crosswalk be enhanced with the addition of pedestrian activated Rapid Rectangular Flashing Beacons (RRFB) and appropriate pedestrian crossing signs. The signs are typically the Pedestrian Crosswalk (Symbol) Sign, W11-2 with the supporting arrow delineating the crosswalk location mounted to the post above the flasher unit. The typical RRFB beacon system installation costs approximately \$22,250⁶. In addition, ADA compliant curb bulb outs should be provided on both sides of College Avenue to promote pedestrian visibility.

In addition, it is recommended parking alignment be revised to provide adequate stopping sight distance for College Avenue traffic to see pedestrians as they enter the crosswalk.

HAWK Beacon

There are two High Intensity Activated crossWalk (HAWK) beacons in the College Avenue corridor. Each of these beacons are located between SE 3rd Street and Whitman Drive in front of Walla Walla University. Field observations indicate that during times of intense pedestrian activity, the HAWK beacons are overwhelmed, and the timing plan is terminated prior to all pedestrians crossing the corridor. The students fail to reactivate the beacon and are often crossing when the beacon is not operational. Drivers following the direction of the beacon are not necessarily watching for students when the beacon is dark.

⁵ City of College Place Municipal Code; Chapter 10.16.160 Riding on Sidewalks.

⁶ Rectangular Rapid-Flashing Beacon (RRFB); Safe Transportation for Every Pedestrian; Countermeasure Tech Sheet; Federal Highway Administration; June 2018.

Possible solutions, to this issue discussed with staff, include the construction of a tunnel under College Avenue to provide unrestricted pedestrian crossing between major campus activity centers. Of course, this would be a major disruption on College Avenue with an associated high price.

As an alternative, it is recommended the City pursue the installation of equipment to detect pedestrian crossing activity so that crossing times can be adjusted to accommodate pedestrian demand. The estimated cost of this equipment is approximately \$8,000. The technical specifications are included in the Technical Appendix.

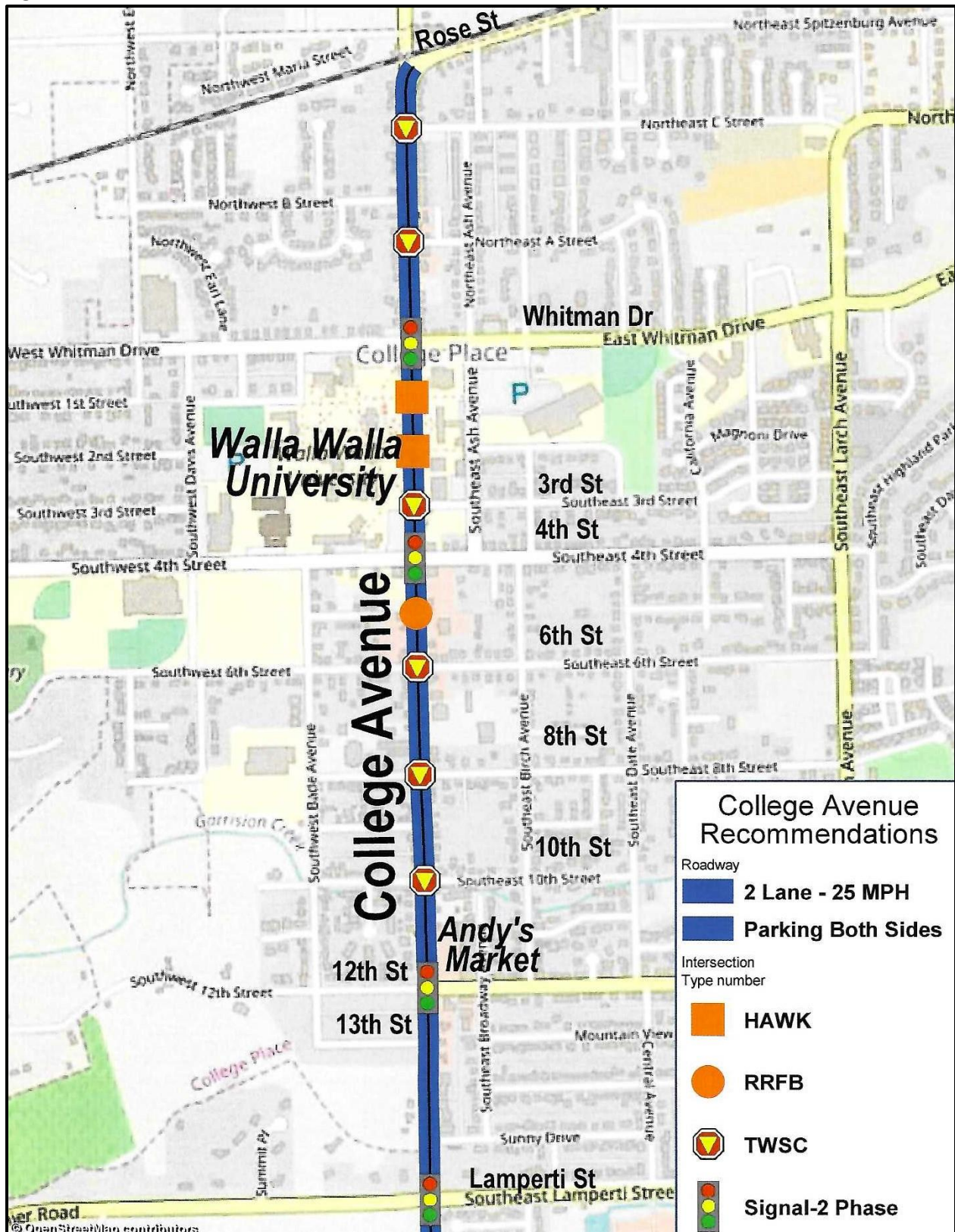
RECOMMENDED ACTIONS

In summary, the Consultant Team conducted the foregoing analysis under the assumption the City of College Place desired to implement a “Complete Streets” design on the College Avenue corridor from Lamperti Street to Rose Street. The purpose of the “complete streets” concept is to facilitate travel for “all modes” of transportation in a safe and efficient manner. The following actions are recommended to accomplish this objective:

- Revise existing channelization to eliminate left turn pockets at the intersections and the two-way left turn lane in selected corridor sections. Rechanelize the corridor to provide a two (2) lane cross section with parking on both sides. This action will require modifications to the traffic signal head alignment at the signalized intersections and modifications to the existing signal timings to improve the efficiency of the signal operation. In addition, it is suggested that all red flash operation be considered for the signalized intersections during the hours of 7 PM to 5 AM.
- It is recommended that a consistent posted speed limit of 25 MPH be implemented on the corridor from SR125 to Rose Street.
- Sight Distance ordinance should be rewritten to provide adequate stopping sight distance for stop controlled intersection approaches. Parking shall be adjusted to accommodate the revised sight distance triangles.
- After discussion with City staff, it is recommended no on-street provision be provided for bicycles along the College Avenue corridor. It is recommended the current ordinance which restricts bicycles on the sidewalk be changed to allow bicycle traffic.
- A RRFB shall be installed at the Post Office crosswalk, 500 S College Avenue. Parking on approach to the crosswalk should be modified to ensure adequate stopping sight distance is provided on approach to the crosswalk. In addition, ADA compliant curb bulb outs shall be installed on either end of the crosswalk to promote pedestrian visibility.
- It is recommended that pedestrian detection be provided at each HAWK location. The estimated cost of this equipment is \$8,000 plus installation.
- It is recommended that the bus stops on the corridor be located at a two-block spacing between stops. The stops shall be located on the “near side” of the intersection to allow pedestrians to exit the bus and cross College Avenue at a marked crosswalk. This action should be coordinated with Valley Transit. It is estimated that each bus stop should be provided 50 feet of curb length to facilitate access to the sidewalk.

A graphic illustrating the Recommended Actions is presented in Figure 3.

Figure 3. Recommended Actions.





City of College Place

College Avenue Traffic Assessment

A D D E N D U M

April 27, 2020

The following addendum was prepared to address specific questions generated by City of College Place staff in response to the Final Report for the College Avenue Traffic Assessment Report dated March 13, 2020. The questions were submitted by email on March 24, 2020. It was agreed the March 13, 2020 report would remain intact and the response to the questions would be included in this addendum.

It was determined the findings of the report could be interpreted in different ways based on the City goals for the College Avenue corridor. As a point of beginning, the City offered the following statement on how to interpret the study results:

"Traffic recommendations are, to some degree, dependent upon the community's final vision for the corridor. As a Federally classified principal arterial doubling as the City of College Place's main commercial corridor, College Avenue provides a continuum of opportunities between serving as an efficient transportation corridor and a slower-paced, complete-streets commercial corridor. In attempting to balance the competing demands of pedestrian, bicycle and vehicle facilities, it is important that policy makers are aware there are pros and cons related to recommendations that favor one end of the continuum over the other or that favor one transportation mode (pedestrian, bicycle, vehicles) over the other. As a part of addressing a staff request for clarifications to the College Avenue Traffic Assessment, the balance of the following responses is intended to provide additional insight and background to assist in adjusting the recommendations, if desired, to reflect the community's balance of priorities."

Comment #1: Table 3 – Add a column for CARS counts, as available.

A column was added to Table 3 to include the findings of the 2012 CARS 24-hour traffic volume study. It should be noted that the 2012 study does not offer a corresponding count to the 2019 study. Specific differences are noted in Table 3.

Table 3. 24-hour Vehicle Volume Summary

#	Location	Section	2019 24 Hour Traffic Volume			2012 CARS Traffic Volumes ¹		
			Northbound	Southbound	Total	Northbound	Southbound	Total
1	College Avenue	n/o 4 th Street	2488	2657	5145	4246	4010	8256 ²
2	College Avenue	n/o Whitman Drive	2846	3039	5885	2958	2917	5875
3	College Avenue	n/o C Street	2734	2692	5426	2593	2263	4856 ³
4	College Avenue	n/o B Street	2925	3044	5969			
5	College Avenue	n/o A Street	2816	3006	5822			
6	College Avenue	n/o SR 125	1880	1918	3798			
7	College Avenue	s/o Lamperti Street	2205	2241	4446			
8	College Avenue	s/o 10 th Street	4274	3926	8200			
9	College Avenue	n/o 8 th Street	4103	3988	8091	4044	4369	8413 ⁴
10	College Avenue	n/o Lamperti Street	4144	3838	7983	3603	3499	7102 ⁵

1) 2012 CARS 24 Hour Traffic Volumes were conducted in February/March 2012

2) CARS Count – Volume recorded as south of 4th Street

3) CARS Count – Volume recorded as south of Rose Street

4) CARS Count – Volume recorded as south of 8th Street

5) CARS Count – Volume recorded as south of 13th Street

Response #1. As shown in Table 3, a comparison of the 2012 CARS data and the 2019 data indicates the volumes are relatively consistent between the two time frames with the exception of the section recorded in the vicinity of 4th Street where the 2012 data (8256) is approximately 3000 vehicles per day higher than the 2019 volume (5145). Some of the difference could be attributed to the count location where the 2012 count was south of 4th Street and the 2019 count was north of 4th Street.

Comment #2. It appears most of the benefits in LOS related to Alternative Two (Remove Left Turn Channelization) are related to the signal phasing recommendations, not necessarily to the removal of the left turn pockets. Would most of the benefits in LOS be retained if signal phasing recommendation were

adopted but the left turn pockets were retained at A) the unsignalized intersections? B) at the signalized intersections?

Response #2. Although the analysis suggests the benefits are the result of signal phasing recommendation, a review of standard practice in regards to provision of protected left turn phasing at signalized intersection and the need for designated left turn pockets suggest in most cases, neither conditions are necessary for the College Avenue corridor. Regarding designated left turn lanes, the Highway Capacity Manual¹ (HCM), states the need for a left-turn lane is suggested if the left-turn volume is greater than 100 vehicles in a peak hour. Left turns on College Avenue for the AM and PM peak hour is presented in the following Table.

Intersection	Traffic Control	AM Peak Hour				PM Peak Hour			
		NB	SB	EB	WB	NB	SB	EB	WB
Whitman Drive	Signal	28	30	79	36	74	28	30	19
4 th Street	Signal	109	8	15	88	72	14	34	61
6 th Street	TWSC	10	0	6	5	12	15	12	5
8 th Street	TWSC	11	0	6	5	12	15	12	5
10 th Street	TWSC	6	1	8	0	19	11	13	1
12 th Street	Signal	16	44	4	41	16	69	11	64
13 th Street	Stop Control	5	n/a	3	n/a	5	n/a	0	n/a
Lamperti Street	Signal	10	74	35	51	9	140	27	12

As shown in the Table above², there are only two intersections: 4th Street during the AM peak and Lamperti Street during the PM peak. which have a peak hour left turn volume which meets the HCM suggest criteria of 100 left turn during the peak hour. It should be noted that each of these intersections meet the 100-left turn per hour criteria during only one peak hour. Although the two intersections satisfy the HCM requirement, the level of service and queuing analysis do not suggest a designated left turn lane is required to satisfy the capacity requirements of either intersection.

The other factor to consider is the need for protected left turn signal phasing. To address this issue, the HCM³ suggests the following criteria be applied:

“Left-turn phasing (protected-permissive, permissive-protected, or protected-only) should be considered if any one of the following criteria is satisfied:

Table 118. Guidelines for use of left-turn phasing. ^(186,187)

1. A minimum of 2 left-turning vehicles per cycle and the product of opposing and left-turn hourly volumes exceeds the appropriate following value:
 - a. Random arrivals (no other traffic signals within 0.8 km (0.5 mi))
 - One opposing lane: 45,000 Two opposing lanes: 90,000

¹ Highway Capacity Manual (HCM) Signalized Intersections; Chapter 12 Individual Movement Treatments; August 2004.

² Source: Figure 1; Technical Memorandum – Data Collection.

³ Ibid. HCM Chapter 12.

-
- b. *Platoon arrivals (other traffic signals within 0.8 km (0.5 mi))*
One opposing lane: 50,000 Two opposing lanes: 100,000"

Based on this requirement, there are no intersections on College Avenue that warrant left turn phasing. A summary of the calculations is presented as an attachment to this addendum.

In conclusion, the answer to the basic question, "are most of the benefits in LOS retained if signal phasing recommendation was adopted but the left turn pockets were retained," the answer is yes. At the signalized intersections, the benefit in LOS is realized by eliminating the left turn phase and the associated lost time of the traffic signal timing plan. For the unsignalized intersections, the north/south bound left turns are "free flowing" and therefore not subject to level of service analysis. Left turn pockets are not provided on the side streets at the unsignalized intersections. As discussed above, left turn pockets and protected left turn signal phasing are not required for safe and efficient movement at the signalized intersections.

Comment #3. *The City's currently codified default sight visibility max height criteria is 36" as measured from the gutter. We need a recommendation regarding whether this should be changed, and if so, to what height.*

Response #3. Stopping Sight Distance (SSD) is the sum of two distances: the distance traveled during perception and reaction time and the distance required to stop the vehicle. The perception and reaction time used in design is 2.5 seconds. The stopping sight distance is calculated using a constant deceleration rate of 11.2 feet/second². Available stopping sight distance is calculated for a passenger car using an eye height of 3.50 feet and an object height of **2.00 feet**.

As a result, it is recommended that a height of **24 inches** above the gutter be used as the default value.

Comment #4. *Table 4 (p.8) in the Sight Distance Memorandum would benefit from an additional column listing "remaining parking inventory" at current and proposed speed limits.*

Response #4. The Comment suggests the proposed action, reduction in parking supply to accommodate sight distance requirements, would have an adverse impact on parking. As shown in Table 4 (after Table 7 below), *Potential Parking Stall Reduction*, suggests a total of 28 stalls would be eliminated under the existing posted speed limits and 21 stalls would be eliminated if the posted speed limits on the corridor were reduced to 25 mph.

As discussed in the *Data Collection Memorandum*, the available parking supply on the College Avenue corridor is significantly higher than the current parking demand. The *Data Collection* memorandum summarized parking demand on the corridor during two different time periods. A summary of the study findings is presented in Table 7 below.

Table 7. CARS – Available Parking Supply

		Hourly Summary								
		Peak Demand								
		6/12/2019			2/27/20			Available Supply		
Corridor	Section	E	W	Total	E	W	Total	E	W	Total
College Avenue	4 th St to 6 th St	0	6	6	5	1	6	3	6	9
College Avenue	6 th St to 8 th St	2	0	2	3	0	3	0	5	5
College Avenue	8 th St to 10 th St	0	1	1	2	0	2	3	4	7
College Avenue	10 th St to 12 th St	1	3	4	0	4	4	15	12	27
College Avenue	12 th St to 13 th St	0	1	1	3	0	3	3	6	9
College Avenue	13 th St to Lamperti	8	1	9	8	0	8	22	17	39
Corridor Total		11	12	23	21	5	26	46	50	96

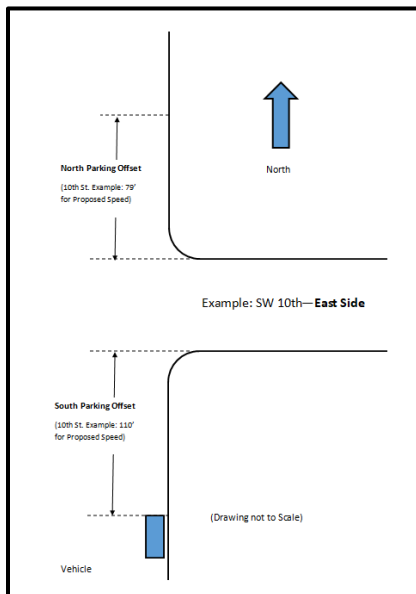
As shown in Table 7, the peak hourly parking demand for the corridor, 23 stalls in June 2019 and 26 stalls in February 2020, is significantly less than the available parking supply which is 96 stalls in the sections between 4th Street and Lamperti Street. The only section where the demand is equivalent to the available supply is the section between SW/SE 4th Street to SW/SE 6th Street where the parking demand, six (6) stalls, is equivalent to the available supply. This section is adjacent to the United States Post Office. Peak hourly parking demand occurs in the section between SW/SE 13th Street and Lamperti Street where the peak demand is nine (9) stalls and the available supply is 39 stalls.

Table 4. Potential Parking Stalls Reduction

Intersection	Speed Limit			Parking Offset				Parking Reduction	
	Posted		Proposed	Posted Speed		Proposed Speed		Posted Speed	Proposed Speed
	North	South		North	South	North	South		
Sunny Drive	30	30	25	74'	136'	55'	101'	2	1
SW 13th	30	30	25	140'	76'	104'	57'	7	4
SW 10th (west side)	30	30	25	143'	102'	107'	76'	3	2
SE 10th (east side)	30	30	25	105'	146'	79'	110'	0	0
SW 9th	30	30	25	134'	88'	100'	66'	4	2
SW 8th (west side)	25	30	25	105'	101'	105'	75'	0	0
SE 8 th (east side)	25	25	25	75'	105'	75'	105'	0	0
SW 6th (west side)	25	25	25	105'	75'	105'	75'	0	0
SE 6 th (east side)	25	25	25	75'	105'	75'	105'	0	0

Intersection	Speed Limit			Parking Offset				Parking Reduction	
	Posted		Proposed	Posted Speed		Proposed Speed		Posted Speed	Proposed Speed
	North	South		North	South	North	South		
SE 3rd	25	25	25	69'	99'	69'	99'	0	0
NE A	25	25	25	75'	104'	75'	104'	4	4
NW B	25	25	25	75'	104'	75'	104'	5	5
NE C	25	25	25	67'	104'	67'	104'	3	3
				Total Stalls Removed				28	21

Note: An illustration of the parking offset is shown in the figure below.



As shown in Table 4, the proposed parking reduction due to the sight distance offset is limited to the section north of Whitman Drive and south of 9th Street. Between 10th Street (eastside), except for 9th Street, there is no parking reduction required to meet the sight distance requirements.

As shown in Table 7, there is a peak demand of 26 stalls and a total supply of 96 stalls. If the parking reduction for the various speeds is added to the peak parking demand, the result would be a demand for 54 stalls under the existing posted speed limit (25 – 30 mph) and 47 stalls under the proposed posted speed limit (25 mph). These numbers compare to an available supply of 96 stalls so that there is still a surplus of 42 stalls under the existing speed limits and 49 stalls under the proposed speed limit.

The highest parking demand, including the proposed reduction, occurs in the section between 13th Street and Lamperti Street where there is a demand for 18 stalls under the existing speed and

14 stalls under the proposed speed. In this section, 13th Street to Lamperti Street the available supply is 39 suggesting there is a surplus of 21 stalls under the existing speed and 25 stalls under the proposed speed.

The conclusion of this analysis is that there is ample parking supply on the corridor to accommodate the proposed parking reduction under the existing posted speed as well as the proposed speed parking reduction and still accommodate existing parking demand.

Comment #5. Provide a list of the specific factors contributing to the speed limit recommendation (p. 5 of *Appropriate Speed Limit Memorandum*) or, if recommendation is not compelled by the data, state so and note the speed limit reduction as an option for City consideration in light ofand list the

considerations. Some of the considerations, such as increasing bicycle safety may not as directly apply if bicycles are allowed to travel on sidewalks by code. The Memorandum on Bicycle Traffic should then be revised as necessary for consistency.

Response #5. The comment suggests the basis for the posted speed is the commonly accepted 85 percentile speed. The speed data collected on the corridor is shown in Table 4 below.

Table 4. Daily Speed Summary

#	Location	Section	Posted	Daily Speed					
				Northbound		Southbound		Total	
				Average	85 th Percentile	Average	85 th Percentile	Average	85 th Percentile
1	College Avenue	n/o 4 th Street	25	22	26	22	26	22	26
2	College Avenue	n/o Whitman Drive	30	24	28	24	27	24	28
3	College Avenue	n/o C Street	30	26	30	25	29	26	29
4	College Avenue	n/o B Street	30	25	29	25	29	25	29
5	College Avenue	n/o A Street	30	25	29	25	28	25	29
6	College Avenue	n/o SR 125	35	27	33	31	36	29	35
7	College Avenue	s/o Lamperti Street	35	26	32	26	34	26	33
8	College Avenue	s/o 10 th Street	30	27	31	28	31	27	31
9	College Avenue	n/o 8 th Street	25	25	29	26	29	26	29
10	College Avenue	n/o Lamperti Street	30	27	31	28	32	27	31

As shown in Table 4, the posted speed on the College Avenue corridor ranges between 25 mph and 35 mph. The posted speed is 35 mph south of Lamperti Street; 30 mph between Lamperti Street and 8th Street; 25 mph between 8th Street and Whitman Drive; and 30 mph north of Whitman Drive.

The result of the speed study indicates that motorists on College Avenue comply with the posted speeds. The observed speeds indicate the posted speed reflects actual speeds on the corridor. There is no significant difference between speeds in the northbound and speeds in the southbound direction.

If the recommended posted speeds were based on the 85th percentile speeds observed on the corridor, then the recommendation would be to leave the posted speed limits as they currently exist. However, the Consultant is working under the premise that the City desires to provide a “Complete Streets” construct on College Avenue. The goal of “Complete Streets” is to make the street safe and efficient for “all users” i.e. bicycles, pedestrians, and motor vehicles as opposed to focusing on the speed, capacity, and efficiency of the automobile. Improve. If the City desires to promote the automobile, then the existing posted speeds should remain. If the City desires to promote “Complete Streets” then an alternative posted speed should be considered.

The lower speed, although increasing travel time on the corridor for the car, it significantly beneficial to the safety of bicycles and pedestrians. In a crash at 20 mph, the likelihood of a pedestrian sustaining a serious or fatal injury is 18 percent whereas a crash at 30 mph, the likelihood of a pedestrian sustaining a serious or fatal injury is 50 percent.

Comment #6. *There should be some discussion on the pros and cons of allowing bicycle use on College Avenue sidewalk in the Bicycle Traffic Memorandum. Does this increase danger to pedestrians? Is there any data on this? What limitations on bicycle use of sidewalks should be in place if allowed? Is there a max speed limit? Recommended signage?*

Response #6. In a meeting with City staff, the various options of providing bicycle provisions on College Avenue were discussed. Staff expressed concern about the ability to provide a continuous bicycle path for the full length of the College Avenue corridor from Lamperti Street to Rose Street. The predominant concern was the lack of cross-sectional width to accommodate a bicycle lane plus parking on both sides. The decision was whatever was provided should be continuous. At that point, it was decided that bicycle traffic should be allowed to use the sidewalk. This proposal is contrary to existing city ordinance and would require modification to that ordinance.

A review of the existing cross-sectional width of College Avenue confirmed that, except for College Avenue south of 10th Street, the cross-sectional width is inadequate to accommodate a standard bike lane along with parking.

To address the questions:

- **Does this increase the danger to pedestrians?** The intuitive response to this question is yes. Bicycles are moving at a faster speed than the pedestrians and hence the reaction time to objects in their path is reduced. A research of the literature however did not indicate a major problem. A recent report from Cornell University stated⁴:

“Sidewalks, by definition, are designed for pedestrians. According to the law, a sidewalk is defined as “That portion of a street between the curb lines, or the lateral lines of a roadway, and the adjacent property lines, intended for the use of pedestrians.” Sidewalk riding has the potential of bringing the cyclist into conflict with pedestrians. Although the crashes are not typically life threatening to either party, certainly the comfort level of the pedestrian is compromised. Many communities ban cycling from downtown sidewalks to avoid this conflict.”

Most of the data available suggested that cycling on a sidewalk was significantly more hazardous to the biker. Again, the Cornell University Report stated⁵:

“Bicycling on the sidewalk eliminates the relatively small danger to cyclists of crashes with overtaking motorists but increases the potential for more common intersection collisions. To follow is

⁴ http://www.bike.cornell.edu/pdfs/Sidewalk_biking_FAQ.pdf

⁵ Ibid.

an excerpt from the Pedestrian and Bicycling Information Center's web site about sidewalk bicyclists and crashes:

Rather like the situation with riding the wrong way against traffic, there is no specific crash type reserved for bicyclists riding on the sidewalk. However, the fact that the bicyclist was on the sidewalk is a contributing factor in a great many crashes at intersections.

- *Motorist turns left in front of cyclist: 42% of bicyclists are on the sidewalk*
- *Motorist turns left into oncoming cyclist: 15% of bicyclists are on the sidewalk*
- *Motorist turns right into bicyclist: 31% of bicyclists are on the sidewalk*
- *Motorist drives out of alley/driveway: 48% of bicyclists are on the sidewalk*
- *Motorist drives through intersection: 15% of bicyclists are on the sidewalk*
- *Bicyclist rode out intersection with signal: 24% of bicyclists are on the sidewalk*

*Once again, the perception is that someone is safer riding on the sidewalk than on the road—and many motorists and even law enforcement officers repeat that message. **The problem is that, as the numbers above suggest, bicyclists are not safer on the sidewalk because they become almost invisible to the motorist.** When a driver turns, either left or right, or into a driveway or alley, they are simply not looking for, or expecting to encounter, a bicyclist. And even if they do look and see a bicyclist, they may still underestimate the speed a rider is traveling on the sidewalk - because it will likely be much faster than a pedestrian.*

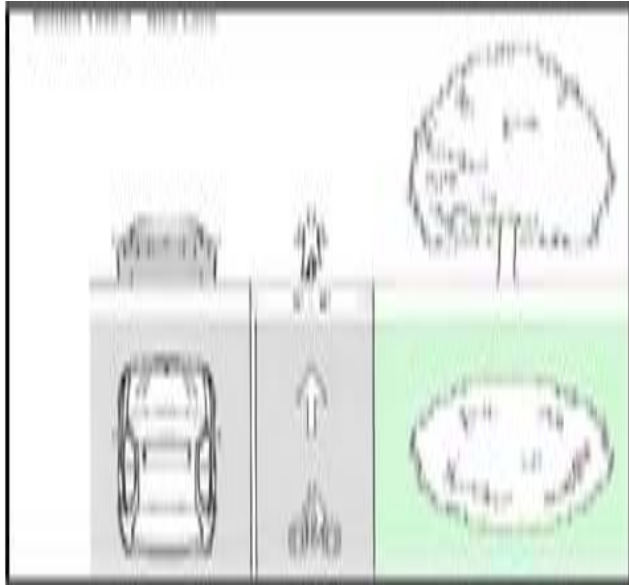
- ***What limitations on bicycle use of sidewalks should be in place if allowed?*** As discussed above, it is not “safer” for bicycles to travel on the sidewalk. Therefore, the question should be who should be allowed to travel on the sidewalk.

The WSDOT Design Manual⁶ identifies three types of cyclists as follows:

- ***Strong and Fearless*** – This cyclist type is confident not only in their abilities as a cyclist but also with their ability to operate intermixed with other modal users.
- ***Enthusied and Confident*** – These cyclists prefer utilizing separated facilities, but are comfortable riding intermixed within other modes in some transportation contexts. •
- ***Interested, but Concerned*** – Cyclists who primarily have safety concerns and who are less skilled or less familiar with the rules of the road but would like to ride more. These cyclists are frequently dissuaded from cycling, even if bike facilities are present, because of the degree of separation between themselves and other traffic. This category includes children and others new to bicycling.

⁶ WSDOT Design Manual; Section 1520.03(1); November 3, 2015.

Bike Lane



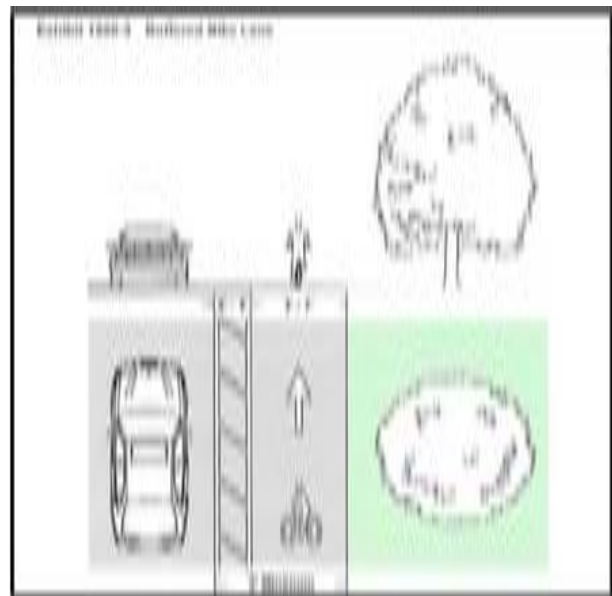
It is assumed that all three cyclist type exist on the College Avenue corridor. According to the WSDOT Design Manual⁷, *“The Interested, but Concerned cyclist constitutes the largest segment of cyclist types within suburban, urban and small-town populations. Bike facility selection on state routes is based on designing for the “Interested but Concerned” user type as a starting point.”* According to Exhibit 1520-6a⁸, a “Bike Lane” would be recommended for the segments of College Avenue with speeds in the range of 25 mph.

In the sections where the posted speed is 30 mph, a “Buffered Bike Lane” would be recommended.

The Design Manual shows ranges of applications for the different types of bicycle facilities related to generally accepted safety and mobility performance. Other performance needs may increase or decrease the viability of certain types of bike facilities, such as shared-use paths through aesthetic areas or those planned for a mixture of commute and recreational purposes.

The Design Manual goes on to state: *“Further considerations for cyclist perception of comfort are another factor that can affect use of the facility. Designing for a higher level of separation may be more important at locations that serve community activity centers, schools or popular destinations (such as a retail oriented segment of a route) where additional accommodations are appropriate for either the functional uses or less skilled cyclists (including children). In these situations, separated facilities or wider dimensions may provide the level of comfort needed to satisfy user needs and context considerations. Additionally, some suburban, urban, and small-town contexts will have more specific bicycle performance needs that will help identify either spot improvements or alteration of the type of existing facility to enhance a specific performance area. Bike facility selection in 1520.03(1)(b) are provided for these reasons.”*

Buffered Bike Lane



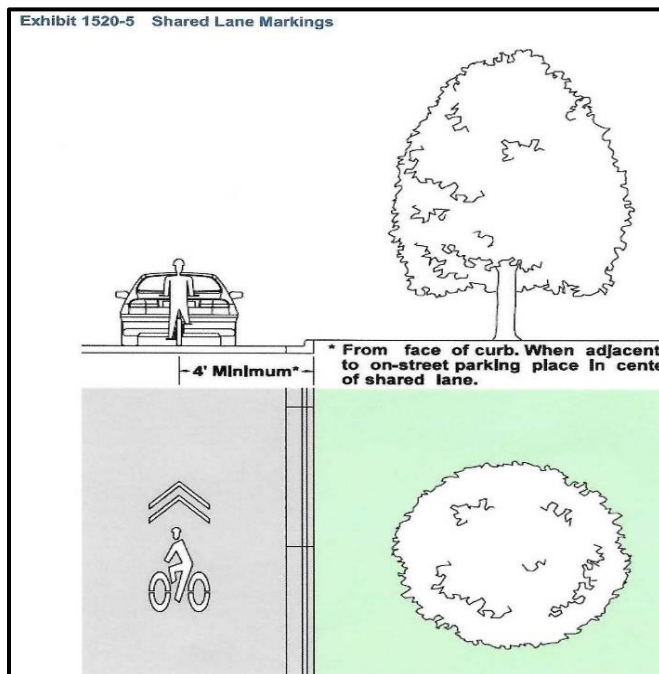
⁷ Ibid. Section 1520.03(1)(a).

⁸ Ibid.

"In some contexts, it is appropriate to design for the Strong and Fearless, and Enthused and Confident user types. In cases, where right of way is very constrained or where bicycles are not considered the modal priority (see Chapter 1103), it is appropriate to use Exhibit 1520- 6b for determining facility selection after input from community engagement efforts. However, understand that the application of Exhibit 1520-6b may result in less mode shift or use of the capacity provided."

In light of the foregoing, it is suggested the City consider alternative facilities for two classes of biker. The "Strong and Fearless" and the "interested but Concerned".

Shared Lane



For the "Strong and Fearless", the City should allow these users to ride in the street under the "Shared Lane" concept. The data presented above suggests bicycle speed is contributing to bike crashes on sidewalks. It is expected that higher speeds are attributed to the Strong and Fearless riders. Limiting their use of the sidewalk appears to offer benefit for the biker as well as the pedestrian. The application of the "Shared Lane" would require marking the existing lanes with "sharrows"

For the "Interested, but Concerned", it is suggested they should be allowed to ride on the sidewalk because of their inexperience and apprehension about riding with traffic.

Therefore, the following limitations are suggested:

- Sidewalk riding be limited to inexperienced riders.
- On the sidewalk, bicycles are required to YIELD to pedestrians.
- Bike speeds should be limited to 10 mph on sidewalks.

Signing supporting these constraints should be posted along the sidewalk.

Comment #7. *The Bicycle Traffic Memorandum lists incidence of bicycles at intersections during the peak AM and PM hours. Please provide an estimate of the number of unique bicycles using the full extent of the corridor. In other words, theoretically, if the same bicycle were to have ridden the full length of the route, there could have been as little as 7 bicycles during the AM peak hour and 6 during the PM peak hour. It would be helpful to have an estimate of how many bicyclists we are serving during the peak hours.*

Response #7. Unfortunately, there is no data available to determine the volume of bicycle traffic that travels the length of the corridor. Would require significant data collection. Otherwise it would be simply conjecture.

Comment #8. Table 2 (p. 2) of the *Bicycle Traffic Memorandum* references state crash rate comparisons in crashes per 100M VMT. Add a “crashes per 100M VMT” column to Table 5 so that a direct comparison to state and county averages can be made.

Response #8. The WSDOT report was limited to data on roadway segments without identification of intersection rates. Therefore, we have no basis for comparison.

Comment #9. Errata: P. 15, Table 8 reference should be Table 9.

Response #9. Noted. The correction is on page 15 of the *Data Collection Memoranda* in the paragraph (first sentence) following **Table 9. 2019 vs 2040 Land Use**. The correction was incorporated into the final report to be forwarded to the City.

Comment #10. *Provide comments on location of bus stops with respect to traffic flow in context of Complete Streets vs. vehicle-only priority efficiency.*

Response #10. During the study, it was observed that transit patrons disembarking from the bus would exit the bus and proceed to cross College Avenue illegally at the location where the bus stopped. The result of this action creates three points of conflict without any protection for the bus or the pedestrian. The three points of conflict with potential for serious injury crashes include the bus stopping in the traffic stream, the pedestrian crossing the street after departing from the bus, and the bus reentering the traffic stream. In the “complete streets” scenario all modes of travel are provided protection and efficiency for all movements. By moving the bus stop to the far side of the signalized intersection, the pedestrian is provided with a marked crosswalk and traffic signal control and the bus is provided signal protection while reentering the traffic stream thereby providing necessary protection and efficiency.

TECHNICAL MEMORANDA

Memorandum – Data Collection

The purpose of this memorandum is to provide a summary of the process and findings relating to Task 2 – Data Collection. The intent of Task 2 was to collect sufficient and accurate data to understand current traffic patterns on the College Avenue corridor and respond to the questions and issues identified by the City in the College Avenue Traffic Assessment Scope of Work. Task 2 included the following:

- Traffic Counts
- Existing Traffic Control
- Prevailing Vehicular Speed
- Five (5) Year Crash Data
- Traffic Signal Timing Plans
- Existing Parking Demand
- Land Use Data
- Sight Distance Triangles

Traffic Counts

For the purposes of this project, traffic counts included AM and PM peak period turning movement counts and 24-hour ADT counts.

Turning Movement Counts

AM and PM peak period counts were collected during the month of May 2019 on an average weekday, Tuesday through Thursday, during the AM peak period: 6:30 AM – 8:30 AM and the PM peak period: 4:00 PM – 6:00 PM. Counts were collected at each of the analysis intersections including:

- College Avenue/East Whitman Drive
- College Avenue/SW-SE 4th Street
- College Avenue/SW-SE 6th Street
- College Avenue/SW-SE 8th Street
- College Avenue/SW-SE 10th Street
- College Avenue/SW-SE 12th Street
- College Avenue/SW-SE 13th Street
- College Avenue/SW-SE Lamperti Street

A copy of the AM and PM peak period turning movement counts is presented in the Appendix. The result of the turning movement count is presented in Figure 1.

24 Hour ADT Counts

Average Daily Traffic (ADT) volumes on College Avenue were provided by the City. The ADT counts were collected for an average three (3) day period, Tuesday – Thursday, during the weeks of May 14th to May 16th and June 4th to June 6th. To ensure the counts covered the full 24-hour period for each day, the counts were set on Monday and collected on Friday.

City staff identified ten (10) locations along College Avenue where traffic counts were desired. The counts are based on average weekday conditions as that is the traditional period for traffic analysis and design. The locations included are shown in Table 1.

Table 1. 24 Hour Volume, Classification, and Speed Data

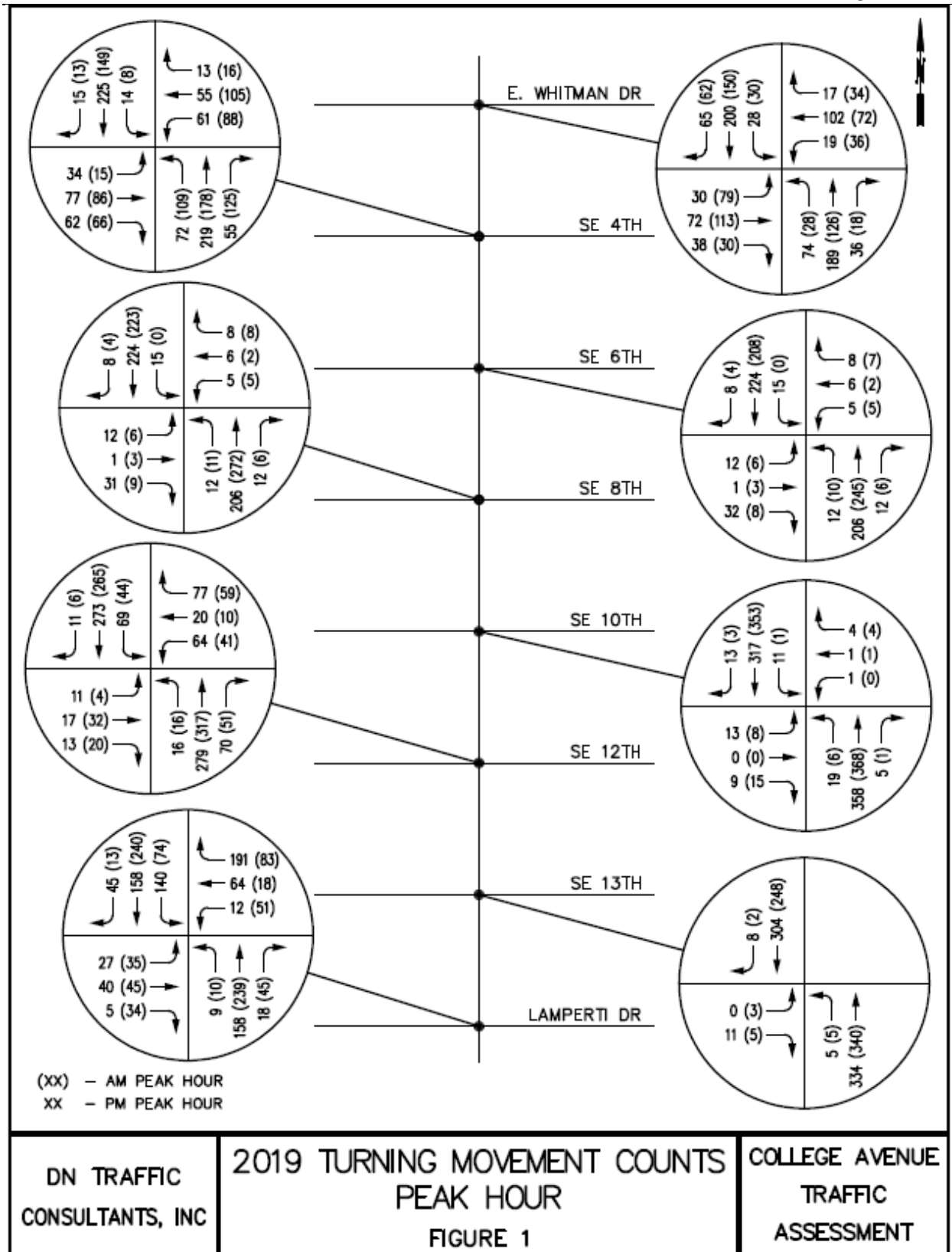
#	Location	Address	Date	Data Collected		
				Classification	Volume	Speed
1	College Avenue	313 South College Avenue	May 14 – May 16	X	X	X
2	College Avenue	26 North College Avenue	May 14 - May 16	X	X	X
3	College Avenue	309 North College Avenue	May 14 – May 16	X	X	X
4	College Avenue	205 North College Avenue	May 14 – May 16	X	X	X
5	College Avenue	105 North College Avenue	May 14 – May 16	X	X	X
6	College Avenue	1875 South College Avenue	June 4 – June 6	X	X	X
7	College Avenue	SE Cedar Bend Road	June 4 – June 6	X	X	X
8	College Avenue	1028 South College Avenue	June 4 – June 6	X	X	X
9	College Avenue	625 South College Avenue	June 4 – June 6	X	X	X
10	College Avenue	1425 South College Avenue	June 4 – June 6	X	X	X

A summary of the data obtained from these counts is discussed below.

Classification Data

Vehicle classification data was collected for the College Avenue corridor using the tube counters at the ten (10) locations identified above. The purpose of the data is to understand the percentage of trucks and buses that use the College Avenue corridor on an average day. Conversely, the percentage of automobiles on the corridor is also defined.

The vehicle classification data was determined through the 24-hour tube counts counting the number of axles per vehicle. The data was collected for three average days, Tuesday through Thursday, and summarized as an average for that location. For the purposes of this analysis the following stratification was identified for classifying vehicles:



- Cars – includes Class 2, Class 3, and Class 5 vehicles in accordance with the FHWA Vehicle Category Classification:¹
- Buses – includes Class 4 vehicles²;
- Trucks – includes the remaining classes except for Class 1 - motorcycles.³

The data presented in Table 2 indicates the percentage of cars and trucks/buses northbound and southbound on College Avenue at the ten (10) locations where the 24-hour counts were collected.

Table 2. Vehicle Classification Summary

#	Location	Section	Classification					
			Northbound		Southbound		Total	
			Cars ¹	Trucks/Buses ¹	Cars ¹	Trucks/Buses ¹	Cars ¹	Trucks/Buses ¹
1	College Avenue	n/o 4 th Street	92	8	97	3	95	5
2	College Avenue	n/o Whitman Drive	93	7	98	2	96	4
3	College Avenue	n/o C Street	95	5	97	3	96	4
4	College Avenue	n/o B Street	97	3	97	3	97	3
5	College Avenue	n/o A Street	97	3	97	3	97	3
6	College Avenue	n/o SR 125	96	4	98	2	97	3
7	College Avenue	s/o Lamperti Street	95	5	95	5	95	5
8	College Avenue	s/o 10 th Street	96	4	97	3	96	4
9	College Avenue	n/o 8 th Street	96	4	97	3	96	4
10	College Avenue	n/o Lamperti Street	95	5	96	4	96	4

As shown in Table 2, the vehicle classification percentages along the corridor is relatively consistent. The percentage of cars range from 92 percent to 98 percent with trucks and buses ranging from two (2) percent to eight (8) percent; the converse percent to the auto percentage.

In general, the highest percentage of trucks and buses, and lowest percentage of cars, is in the extreme ends of the College Avenue study area; south of Lamperti Street and north of 4th Street. On the south end, it is expected there would be a higher percentage of trucks/buses because of the proximity of College Place High School which generates significant bus traffic and intense retail which includes the Wal-Mart Supercenter and other retail outlets which generate significant truck traffic. The highest percentage of automobiles occurs on the north end of the corridor where College Avenue passes through the residential neighborhoods, A Street to C Street.

A summary of the classification data is presented in the Technical Appendix.

¹ Source: Figure C-1 vehicle category classifications used by FHWA; April 1, 2019.

² Ibid.

³ Ibid.

Volume

Daily (24 hour) traffic volumes were collected on the College Avenue corridor at the ten (10) locations identified above. Traffic counts were collected at each location for three days considered to be average weekdays: Tuesday through Thursday. The three days were averaged to identify an average daily traffic volume (ADT) on the College Avenue corridor.

Table 3. 24 Hour Traffic Volume Summary

#	Location	Section	2019 Volume Summary			2012 Volume Summary		
			Northbound	Southbound	Total	Northbound	Southbound	Total
1	College Avenue	n/o 4 th Street	2488	2657	5145	4246	4010	8256 ⁴
2	College Avenue	n/o Whitman Drive	2846	3039	5885	2958	2917	5875 ⁵
3	College Avenue	n/o C Street	2734	2692	5426	2593	2263	4856 ⁶
4	College Avenue	n/o B Street	2925	3044	5969			
5	College Avenue	n/o A Street	2816	3006	5822			
6	College Avenue	n/o SR 125	1880	1918	3798			
7	College Avenue	s/o Lamperti Street	2205	2241	4446			
8	College Avenue	s/o 10 th Street	4274	3926	8200			
9	College Avenue	n/o 8 th Street	4103	3988	8091	4044	4369	8413 ⁷
10	College Avenue	n/o Lamperti Street	4144	3838	7983	3603	3499	7102 ⁸

As shown in Table 3, the total two-way vehicle volume along the corridor is relatively low for an arterial street. The two-way volumes range between 3798 vehicles per day north of SR125 to 8200 vehicles per day south of SW/SE 10th Street. The highest volumes on the corridor occur between 8th Street and Lamperti Street where volumes are in the range of 8000 vehicles per day. The northbound volumes tend to be slightly lower at the count stations between 4th Street and B Street. The northbound volumes are higher from 8th Street to Lamperti Street.

Table 3 also includes the 2012 ADT volumes at selected locations collected as part of the CARS⁹ Study. As shown in Table 3, the 2012 ADT volumes are relatively consistent with the 2019 volumes with the

⁴ CARS count identified as College South of 4th Street

⁵ CARS count identified as College North of Whitman Drive

⁶ CARS count identified as College South of Rose Street

⁷ CARS count identified as College South of 8th Street

⁸ CARS count identified as College South of 13th Street

⁹ CARS – College Avenue Rose Street Reconstruction Project. Counts were collected February/March 2012

exception of College Avenue north of 4th Street where the 2012 ADT is significantly higher, approximately 38 percent, in 2012 than 2019.

When comparing these recent traffic volume counts with those used for the previous WWVMPO model calibration, it was observed that with some variation, the daily volumes had generally stayed about the same as the 24-hour volume counts taken before the CARS construction. The AM and PM peak hour volumes had increased slightly south of 8th and decreased slightly north of 8th.

The traffic volume summary report is presented in the Technical Appendix.

Speed

Prevailing travel speeds on the corridor were collected at the same ten (10) locations identified above, where the traffic volume counts were collected. Speeds were categorized in 5 mph increments from 0 mph to greater than 70 mph. Speeds were summarized each hour for three consecutive days. The three-day results were averaged and presented in Table 4. Table 4 identifies the average speed and the 85th percentile speed. The 85th percentile is the speed which is generally used as the basis for the posted speed limit. The 85th percentile speed is the speed where 85 percent of the traffic is traveling equal to or less than and 15 percent exceed the speed.

Figure 2 illustrates the existing speed limits on the College Avenue Corridor.

Figure 2. Existing Speed Limit

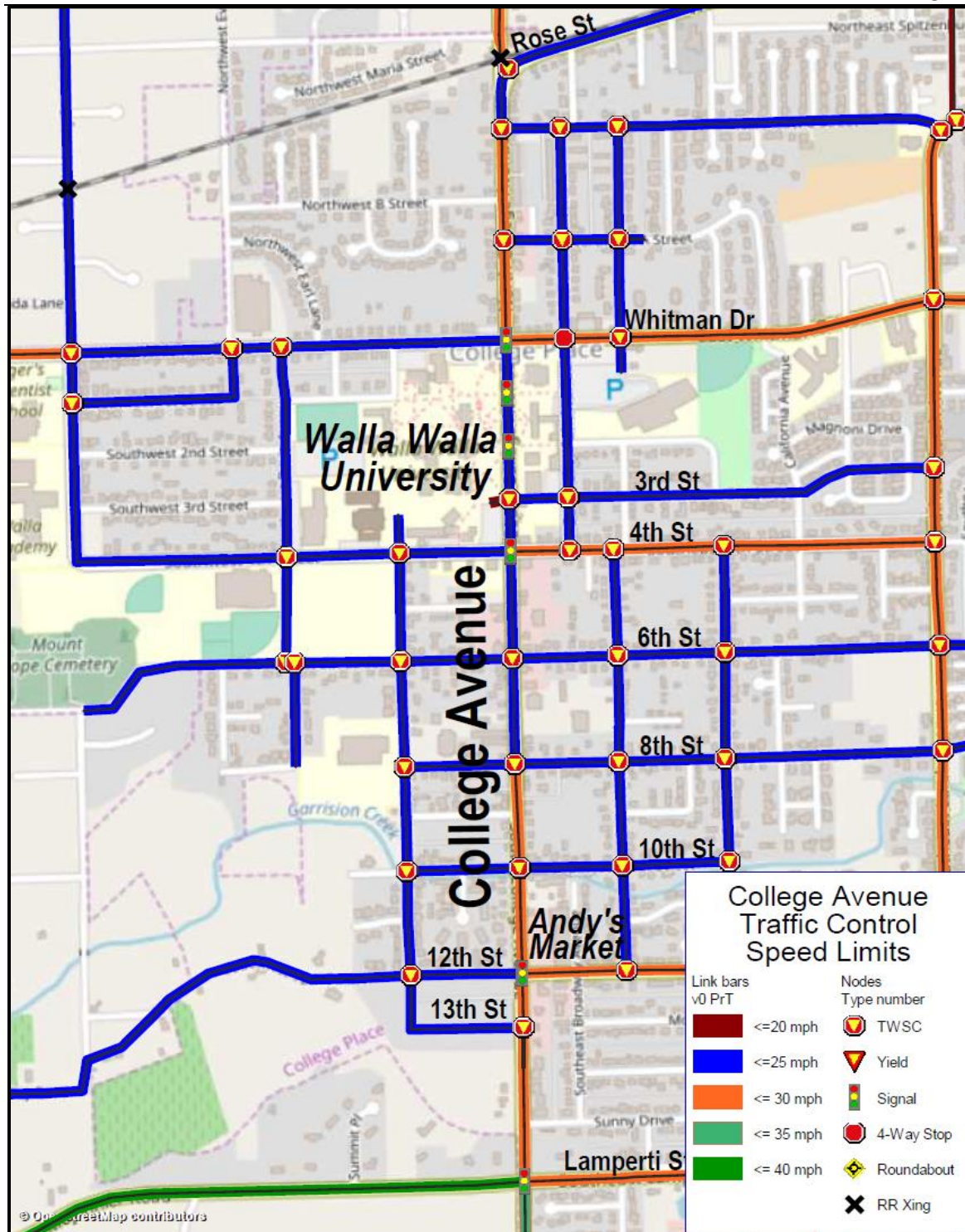


Table 4. Daily Speed Summary

			Daily Speed						
			Poste d	Northbound		Southbound		Total	
#	Location	Section		Average	85 th Percentile	Average	85 th Percentile	Average	85 th Percentile
1	College Avenue	n/o 4 th Street	25	22	26	22	26	22	26
2	College Avenue	n/o Whitman Drive	30	24	28	24	27	24	28
3	College Avenue	n/o C Street	30	26	30	25	29	26	29
4	College Avenue	n/o B Street	30	25	29	25	29	25	29
5	College Avenue	n/o A Street	30	25	29	25	28	25	29
6	College Avenue	n/o SR 125	35	27	33	31	36	29	35
7	College Avenue	s/o Lamperti Street	35	26	32	26	34	26	33
8	College Avenue	s/o 10 th Street	30	27	31	28	31	27	31
9	College Avenue	n/o 8 th Street	25	25	29	26	29	26	29
10	College Avenue	n/o Lamperti Street	30	27	31	28	32	27	31

As shown in Table 4, the posted speed on the College Avenue corridor ranges between 25 mph and 35 mph. The posted speed is 35 mph south of Lamperti Street; 30 mph between Lamperti Street and 8th Street; 25 mph between 8th Street and Whitman Drive; and 30 mph north of Whitman Drive.

The result of the speed study indicates that motorists on College Avenue comply with the posted speeds. The observed speeds indicate the posted speed reflects actual speeds on the corridor. There is no significant difference between speeds in the northbound and speeds in the southbound direction.

Existing Traffic Control

In general, traffic control along the College Avenue corridor is dominated by two way stop control (TWSC). Of the nine (9) intersections in the study area, five (5) are controlled by side street stop (TWSC). Traffic signals are provided at the major intersections including:

- Lamperti Street
- 12th Street
- 4th Street
- Whitman Drive.

In addition to the four (4) traffic signals, there are also two (2) High-Intensity Activated crossWalk “HAWK” beacons located between 4th Street and Whitman Drive on the Walla Walla University (WWU) campus, to provide crosswalk protection for WWU students.

Figure 2 also illustrates the existing traffic control.

Traffic Signal Timing Plans

Existing traffic signal timing plans were provided for each of the four (4) signalized intersections within the study area. The traffic signal timing plans are included in the Appendix.

Five Year Crash Data

Crash data was requested through WSDOT's public records request process for the five years starting in 2014. The public record request included all recorded crashes on College Avenue between SR 125 and NE Rose Street. There was a total of 72 total crashes on this portion of the corridor over the 5-year period, 2014 to 2019. Of the 72 crashes, 14 involved "serious injury" and two (2) were fatalities. There was also one (1) bicycle crash. There was a total of 53 crashes within the College Avenue study area.

A summary of the five-year crash history by intersection is shown in Table 5 below. The five-year crash rate for each of the intersections that were analyzed and counted was calculated to provide an evaluation of the number of crashes relative to the total entering volume. The crash rate was calculated using a standardized formula, from the Federal Highway Administration. The crash rate was not calculated for intersections for which peak hour counts were not collected.

Table 5. Five Year Crash Data 2014 -2018.

Corridor	Intersection	5-year Crash History	Crash Rate ¹
College Avenue	NE Rose Street	1	NA
College Avenue	C Street	2	N/A
College Avenue	NW B Street	2	N/A
College Avenue	NE A Street	6	N/A
College Avenue	Whitman Drive	7	0.60
College Avenue	SE 4 th Street	7	0.82
College Avenue	SE 6 th Street	3	0.33
College Avenue	SE 8 th Street	1	0.11
College Avenue	SE 9 th Street	3	N/A
College Avenue	SE 10 th Street	2	0.15
College Avenue	SE 12 th Street	15	0.98
College Avenue	SW 13 th Street	1	0.09
College Avenue	SE Sunny Drive	5	N/A
College Avenue	SE Lamperti Street	9	0.62
College Avenue	SR 125	8	N/A
Total		72	

1) $\text{Crash Rate} = \frac{C \text{ for } n \text{ years}}{\text{MEV for } n \text{ years}}$; where C = # of crashes, n = number of years, and MEV = million entering vehicles; Source: Federal Highway Administration

2) N/A – Intersections not included in the study area for which traffic counts were not available to determine the crash rate.

As shown in Table 5, the highest number of crashes (15) occurs at the SW/SE 12th Street intersection which also has the highest crash rate (0.98). Other high crash locations in the study area, Lamperti Street to Whitman Drive, include Lamperti Street (9 crashes), Whitman Drive and 4th Street (8 crashes). These intersections also have a relatively high crash rate within the study ranging from 0.82 at 4th Street to 0.60 at Whitman Drive.

Of the 72 crashes on the corridor, 17 (24%) were right angle, 25 (35%) were rear end; 26 (36%) were fixed object and 3 (4%) were head on. One collision involved a bicycle. There were no pedestrian crashes recorded during the five-year period on the College Avenue corridor.

Injury and Fatality Crashes

As shown in Table 5, there was a total of 72 crashes reported during the 5-year period on the College Avenue corridor from NE Rose Street to SR 125. Of the total crashes there were 17 serious injuries and two (2) fatalities. Both fatality crashes occurred at the College Avenue/SR 125 intersection. Of the 15 injury crashes, seven (7), or 41%, occurred at College Avenue/Whitman Drive; two (2) occurred at the SW/SE 12th Street intersection and two (2) at the SR 125 intersection; one (1) crash each at C Street, SE/SW 4th Street, SW/SE 13th Street intersection and one (1) at the SE Lamperti Street intersection. There were no crashes involving pedestrians on the corridor during the 5-year period. One (1) crash occurred involving a bicycle on the corridor in the last five years; it occurred at College Avenue/SW/SE 12th Street intersection.

Crash Rate

Those intersections with a crash rate approaching 1.0 should be considered for further evaluation and safety improvements. These intersections are:

- SE 4th Street
- SE 12th Street

Figure 3 presents a summary of the crashes within the College Avenue study area.

Parking

Parking Demand

The Consultant conducted a parking accumulation study on the College Avenue between Lamperti Street on the south and Rose Street on the north. The study was conducted on Wednesday June 12, 2019 between 8:00 AM and 6:00 PM and again on Thursday February 27, 2020 during the same hours. The June study was limited to the section between Lamperti Street and Whitman Drive. The study was conducted via a drive by observation on each block face of College Avenue. The study did not observe if the vehicles were parked in delineated stalls. A summary of the study observations is presented in Table 5 and Table 6 below.

Figure 3. Five Year Crash History

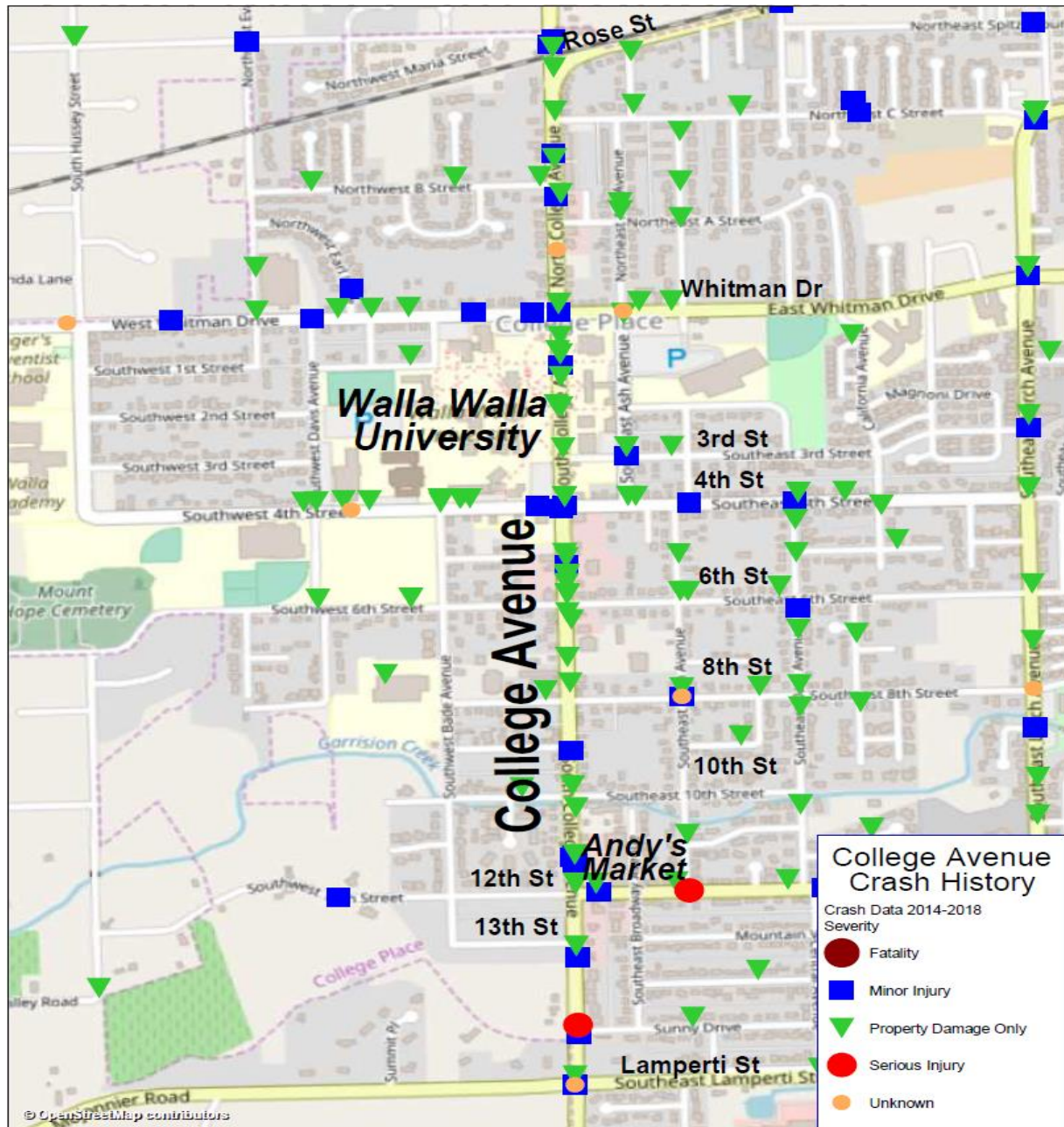


Table 5. Summary of College Avenue Parking Demand – 6/12/2019

Corridor	Section	8 AM		9 AM		10 AM		11 AM		12 PM		1 PM		2 PM		3 PM		4 PM		5 PM		Daily Total
		E	W	E	W	E	W	E	W	E	W	E	W	E	W	E	W	E	W	E	W	
College Avenue	Whitman Dr to 4 th St	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
College Avenue	4 th St to 6 th St	1	0	0	0	1	3	1	3	0	6	1	2	1	3	2	0	0	2	1	2	29
College Avenue	6 th St to 8 th St	0	2	0	0	0	1	0	1	0	1	0	1	0	0	0	1	1	1	0	0	9
College Avenue	8 th St to 10 th St	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	0	4
College Avenue	10 th St to 12 th St	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	3	0	3	9
College Avenue	12 th St to 13 th St	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2
College Avenue	13 th St to Lamperti	2	5	2	4	4	3	5	2	2	6	5	2	1	5	4	1	6	1	8	1	69
Corridor Total		3	7	2	4	5	8	6	7	2	13	6	5	2	8	6	3	9	9	10	7	122

E = East side of College Avenue

W = West side of College Avenue

Table 5 summarizes parking utilization on College Avenue between Lamperti Street and Whitman Drive on June 12, 2019. As shown in Table 5, hourly parking accumulation ranges between six (6) cars during the 9 AM hour to 18 during the 4 PM hour. Peak parking accumulation (18) occurs during the 4 PM reporting period. Peak parking varies between the east side and west side of the corridor depending on the time of day. There is no on-street parking provided between Whitman Drive and SW/SE 4th Street and consequently there is no parking utilization in this section during the day. Total parking accumulation on this day, during this time period, was shown to be 122 vehicles.

The section between SW/SE 4th Street and SW/SE 6th Street, the section adjacent to the United States Post Office, had 29 parked vehicles between 8 AM and 5 PM. The parking demand peaks during the noon hour on the westside, the side of the Post Office with six (6) parked vehicles.

The section between SW/SE 6th Street and SW/SE 8th Street, nine (9) vehicles were parked between 8 AM and 5 PM. Parking accumulation is spread throughout the day. Parking is limited to the west side where eight (8) of the nine parked vehicles were parked on the west side. One car was observed parking illegally on the east side.

The section between SW/SE 8th Street and SW/SE 10th Street had four (4) vehicles parked during the day. Parking accumulation is spread throughout the day.

The section between SW/SE 10th Street and SW/SE 12th Street had nine (9) vehicles parked during the day. Parking accumulation is focused on the 4PM to 5PM period. Eight (8) of the nine parked vehicles were on the west side of College Avenue.

The section between SW/SE 13th Street and Lamperti Street had 69 vehicles parked during the day. The study observed parked vehicles during every hour of the day. Peak accumulation nine (9) occurred during the 5 PM period. It is assumed the parking demand in this section, is the result of the residential land use along the corridor.

Table 6. Summary of College Avenue Parking Demand – 2/27/2020

Corridor	Section	8 AM		9 AM		10 AM		11 AM		12 PM		1 PM		2 PM		3 PM		4 PM		5 PM		Daily Total
		E	W	E	W	E	W	E	W	E	W	E	W	E	W	E	W	E	W	E	W	
College Avenue	Rose St to C St	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
College Avenue	C St to B St	2	0	1	0	2	1	1	0	1	1	1	0	1	0	0	0	3	0	2	2	18
College Avenue	B St to A St	1	3	2	2	2	2	3	2	3	4	1	0	1	0	0	2	2	0	1	1	32
College Avenue	A St to Whitman Dr	2	3	2	4	0	2	2	2	1	2	0	2	0	2	1	2	0	1	1	1	30
College Avenue	Whitman Dr to 4 th St	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
College Avenue	4 th St to 6 th St	0	2	1	0	5	1	1	1	3	2	0	3	2	0	1	0	2	0	0	2	26
College Avenue	6 th St to 8 th St	0	0	0	0	1	0	1	0	0	0	3	0	1	0	0	1	0	0	0	0	7
College Avenue	8 th St to 9 ^h St	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
College Avenue	9 th St to 10 th St	0	2	0	2	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	1	8
College Avenue	10 th St to 12 th St	0	2	0	1	1	1	2	1	0	2	2	0	0	2	1	0	1	1	0	4	21
College Avenue	12 th St to 13 th St	3	0	3	0	2	0	0	0	3	0	2	0	2	0	0	2	2	0	0	2	21
College Avenue	13 th St to Lamperti	2	4	1	4	3	3	2	5	2	5	4	2	1	4	5	2	5	0	8	0	62
Corridor Total		10	16	10	13	16	12	12	13	13	17	13	7	8	8	8	9	15	2	12	13	227

E = East side of College Avenue

W = West side of College Avenue

Table 6 summarizes parking utilization on College Avenue between Lamperti Street and Rose Street on February 27, 2020. As shown in Table 6, parking utilization on the College Avenue corridor fluctuates throughout the day. Overall, 227 vehicles were observed parking on College Avenue between 8 AM and 5 PM between Lamperti Street and Rose Street. Deducting the addition of parked vehicles between Whitman Drive and Rose Street, 81 parked vehicles, the total parked vehicles between Lamperti Street and Whitman Drive was 146 parked vehicles. This is significantly higher, 146 parked cars versus 122 parked cars, than was observed during the same time period in the month of June 2019. This may be the result of Walla Walla University approaching summer break during the June observation period.

Hourly parking accumulation ranges between 17 cars during the 4 PM hour to 30 vehicles during the 12 PM hour. Peak parking varies between the east side and west side of the corridor depending on the time of day. Peak parking on the east side, 16 parked cars, occurs during the 10 AM period whereas peak parking on the west side, 17 parked vehicles, occurs during the 12 PM hour.

There is no on-street parking provided between Whitman Drive and SW/SE 4th Street through the Walla Walla University campus and consequently there is no parking utilization in this section during the day.

The highest contiguous parking utilization, during the day, occurs in the section between 10th Street and Lamperti Street. In this section, there is a total of 104 parked vehicles. The section between Whitman Drive and Rose Street also has significant parking utilization during the day, with 80 vehicles during the day. The section through the heart of the downtown, 4th Street to 10th Street, has a daily utilization of 42 parked vehicles. In the section adjacent to the United States Post Office, SW/SE 4th Street to SW/SE 6th Street, the parking demand during the day is 26 vehicles. Parking utilization adjacent to the Post Office peaks during the 10 AM hour on the eastside, opposite the Post Office with 5 parked vehicles.

Parking Supply

The City provided a summary of available parking stalls along the corridor as part of the CARS¹⁰ analysis. A summary of the parking supply is presented in Table 7.

Table 7. CARS – Available Parking Supply

		Hourly Summary								
		Peak Demand								
		6/12/2019			2/27/20			Available Supply		
Corridor	Section	E	W	Total	E	W	Total	E	W	Total
College Avenue	4 th St to 6 th St	0	6	6	5	1	6	3	6	9
College Avenue	6 th St to 8 th St	2	0	2	3	0	3	0	5	5
College Avenue	8 th St to 10 th St	0	1	1	2	0	2	3	4	7
College Avenue	10 th St to 12 th St	1	3	4	0	4	4	15	12	27
College Avenue	12 th St to 13 th St	0	1	1	3	0	3	3	6	9
College Avenue	13 th St to Lamperti	8	1	9	8	0	8	22	17	39
Corridor Total		11	12	23	21	5	26	46	50	96

As shown in Table 7, the peak hourly parking demand for the corridor, 23 stalls in June 2019 and 26 stalls in February 2020, is significantly less than the available parking supply which is 96 stalls in the sections between 4th Street and Lamperti Street. The only section where the demand is equivalent to the available supply is the section between SW/SE 4th Street to SW/SE 6th Street where the parking demand, six (6) stalls, is equivalent to the available supply. This section is adjacent to the United States Post Office. Peak hourly parking demand occurs in the section between SW/SE 13th Street and Lamperti Street where the peak demand is nine (9) stalls and the available supply is 39 stalls.

¹⁰ CARS – Available parking stalls identified by City survey after the complete streets project, March 28, 2016.

Transit

The College Avenue corridor is served by four different bus routes including the “Walla Walla Whistler” and Valley Transit Routes 1 - Mainline Eastbound, Route 2 – College Place and Route 310 – West Loop. Bus stops are located on both sides of the corridor for opposite directions of travel. The stops are spaced at approximate two block intervals. A summary of the bus stops on the College Avenue corridor between Lamperti Street and Rose Street is presented in Table 8.

Table 8. Transit Stop Locations

Corridor	Section	Route	Direction	
			North Bound	South Bound
College Avenue	Lamperti St to 12 th St	1, 2, and 310	100 ft north of Sunny Dr	110 ft south of Silverstar Lane
College Avenue	12 th St to 10 th St	Walla Walla Whistler	360 ft north of 12 th St	
College Avenue	12 th St to 10 th St	1, 310	450 ft north of 12 th St	200 ft north of 12 th St
College Avenue	9 th St to 8 th St	1, 310	75 ft north of 9 th St	90 ft south of 9 th St
College Avenue	9 th St to 8 th St	1, 310	430 ft north of 8 th St	
College Avenue	6 th St to 4 th St			200 ft south of 4 th St
College Avenue	4 th St to Whitman Dr			
College Avenue	Whitman Dr to A St	1, 310	300 north of Whitman Dr	175 ft north of Whitman
College Avenue	A St to C St	1, 310	300 ft north of B St	50 feet north of B St



As shown in Table 8, there are seven (7) bus stops on the east side of College Avenue in the north bound direction and six (6) bus stops on the west side in the south bound direction. There are no bus stops on College Avenue passing through the Walla Walla University campus; 4th Street to Whitman Drive. The bus stops are generally located at mid-block locations. In observing riders disembarking from

the bus, they tended to cross College Avenue at the stop rather than proceeding to the nearest intersection with a crosswalk. In addition, the bus stops are typically signed “No Parking” and yet the pavement markings delineate a parking stall. This confusion should be remedied.

Land Use Data

The College Avenue Traffic Assessment employed the Walla Walla Valley Metropolitan Planning Organization (WVVMPO) transportation demand model to analyze traffic flow and circulation on the College Avenue corridor. The analysis evaluated the traffic flow conditions in 2019 and 2040 during the PM peak hour. The purpose of the two-phase analysis is to determine if the proposed solutions in 2019

are viable in 2040 or will additional improvements be necessary in 2040 to accommodate the projected growth in the corridor.

The future land use was provided by the WWVMPO during development of the WWVMPO model used for this study. A summary of the 2019 existing and 2040 proposed land use is summarized for key traffic analysis along the College Avenue corridor. During the WWVMPO model development, all the jurisdictions, including the City of College Place, had supplied current and 2040 forecast land use data for the model. The summary is presented in Table 9.

Table 9. 2019 vs 2040 Land Use

Traffic Analysis Zone	Total Employment			Dwelling Units			Total Students		
	2019	2040	Growth	2019	2040	Growth	2019	2040	Growth
A	31	53	22	142	302	160	0	0	0
B	879	909	30	289	289	0	500	500	0
C	194	194	0	378	434	56	0	0	0
D	44	44	0	391	434	43	0	0	0
E	339	339	0	1269	1416	147	1568	1568	0
F	112	112	0	541	610	69	880	880	0
Total	1599	1651	52	3010	3485	475	2948	2948	0

As shown in Table 8, the six (6) traffic analysis zones (TAZ's) include existing and 2040 estimates of dwelling units, employment and students. As shown in Table 7, the total employment is expected to grow approximately 52 jobs, or approximately three (3) percent; dwelling units are estimated to grow by 475 jobs, or approximately 16 percent; and students which aren't expected to grow between the 2019 and 2040 time horizon.

Figure 5 illustrates the existing traffic analysis zones (TAZ) in the College Avenue study area. These traffic analysis zones were established by the WWVMPO and member jurisdictions, including the City of College Place. The TAZ structure was developed for the purpose of developing traffic forecasts in College Place and throughout the WWVMPO area. There are a total of 137 internal and external zones in the WWVMPO model.

Sight Distance

The City requested an evaluation of the sight visibility triangles at critical intersections along the corridor. Sight visibility triangle requirements are stated in Section 17.42.050 Sight Visibility Triangle¹¹:

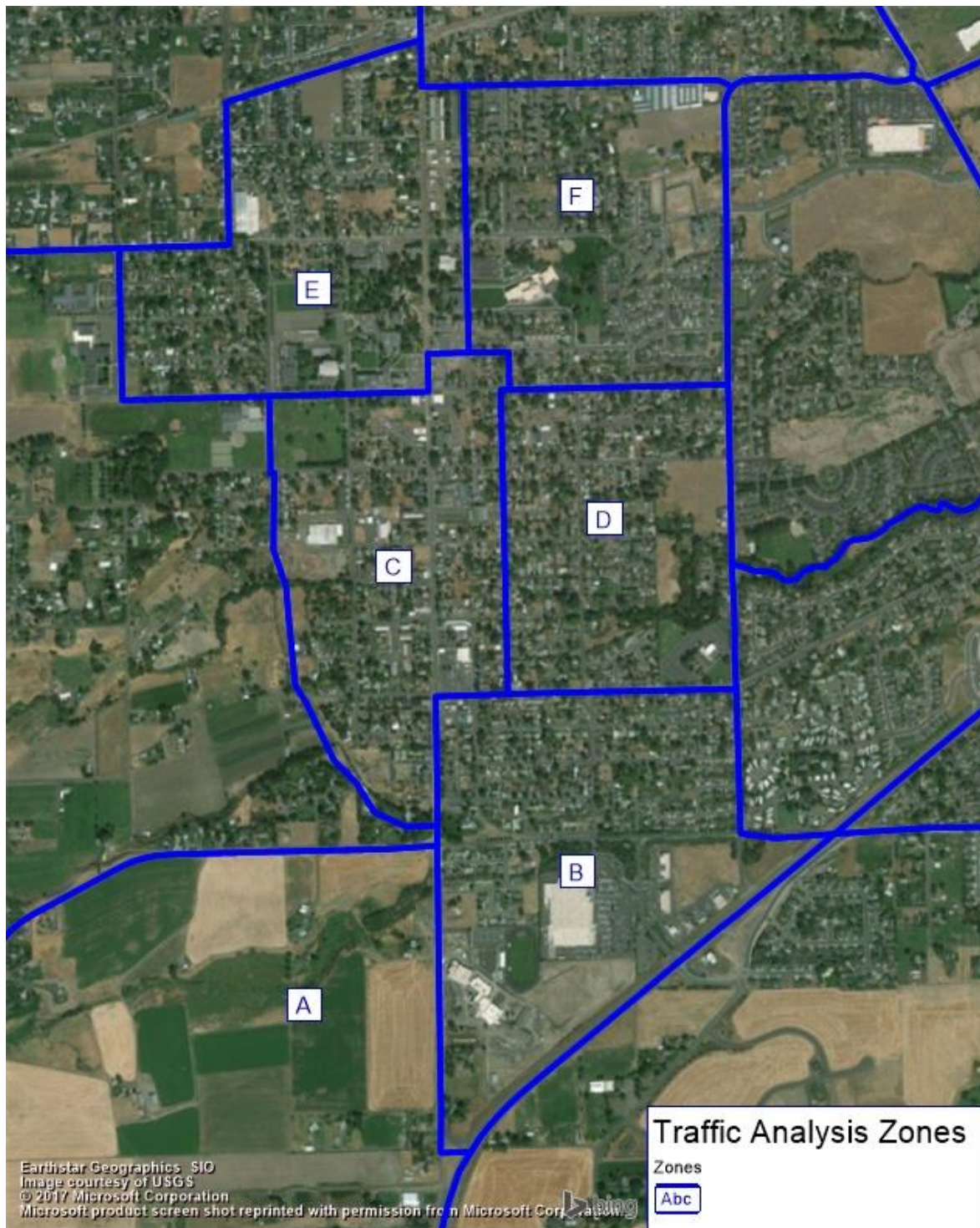
"A. At uncontrolled intersections, the sight visibility triangle shall be formed by measuring back from the point where street corner property lines meet, a distance of 30 feet along the property line, with the third side of the triangle being the straight-line connection between the above-mentioned sidelines. (Refer to Figure 17.42.050A.)"

¹¹ City of College Place Municipal Code; Section 17.42.050.

B. At controlled intersections the side street side of the sight visibility triangle shall be a distance of ten feet measured back from the point where street corner property lines meet; the through street side of the triangle shall be a distance of 30 feet for speed limits up to 25 miles per hour and 55 feet for speed limits up to 35 miles per hour; the third side of the triangle being the straight line connection between the above-mentioned side lines. (Refer to Figure 17.42.050B.)

Uncontrolled intersections are defined as intersections where there are no specific traffic control devices and drivers are required to follow the “rules of the road” when determining right of way. “Controlled intersections” are intersections where “stop signs” are installed on the minor leg without control on the through street or major leg of the intersection. Signalized intersections are typically not subject to these requirements as the traffic signal assigns “right of way” to the approaches to the intersection.

Figure 5. College Place Traffic Analysis Zones.



Four (4) of the intersections along the corridor are under signal control¹². The remaining intersections provide stop sign control on the intersecting side street

A summary of the intersections with sight distance constraints is presented in Table 10.

Table 10. Intersections with Sight Distance Constraints

Intersection	West Side		East Side	
	Looking North	Looking South	Looking North	Looking South
SE Sunny Drive	N/A	N/A	Landscape/Parking	No Constraints
SW 13 th Street	Landscape/Berm	Landscape/Berm	N/A	N/A
SW/SE 10 th Street	Equipment/Fence	No Constraints	No Constraints	Landscape/Fence
SW/SE 8 th Street	Street Furniture	No Constraints	Landscape/Fence	Building
SW/SE 6 th Street	Landscape	Landscape	Fence	No Constraints
SW/SE 3 rd Street	N/A	N/A	Landscape	Building

N/A – Not applicable. There is no approach on the leg.

As shown in Table 10, six (6) of the ten (9) intersections in the study area have sight distance constraints on the side street approach. Most of the intersections are impacted by landscaping on the adjacent property. Three (3) intersections are constrained by existing buildings along the property line, including SW 10th Street, SE 8th Street, and SE 3rd Street. At SW 10th Street, equipment storage along the property line for “The Empire” retail outlet impedes intersection sight distance at this location.

¹² College Avenue signalized intersections include Lamperti Street; 12th Street; 4th Street; and Whitman Drive.

Memorandum – Is Current Traffic Pattern Optimal?

The purpose of this memorandum is to provide a summary of the process and findings relating to Task 3 – *Is the current traffic pattern optimal?* The objective of the task is to conduct a thorough analysis of existing and future traffic patterns to determine if the cross section and channelization provides the most optimal circulation along the College Avenue corridor. The scope for Task 3 is to evaluate the level of service at each of the nine intersections along the College Avenue corridor from Lamperti Drive to Whitman Drive for the 2019 AM and PM peak hours for three different alternative operational configurations to include:

- Alternative one – Do Nothing – existing left turn channelization configuration at the corridor intersections.
- Alternative Two – Remove Left Turn Channelization.
- Alternative Three – Evaluate the impact of signal coordination on Alternatives One and Two.

In addition to the 2019 analysis, an evaluation of the level of service in the 2040-time frame was also provided to determine the effect of anticipated public works infrastructure improvements and land use development on traffic operations in the corridor.

Process

To address this issue, the Consultant employed the 2015 Walla Walla Valley Metropolitan and Sub-Regional Organization Travel Demand Model. The base year of the model is 2014 with a forecast year of 2040. The model was designed to forecast travel demand for the AM and PM peak hours as well as weekday daily traffic. The model was also used to evaluate the Highway Capacity Manual Level of Service (LOS) for the AM and PM peak hours at designated intersection for comparison and evaluation of alternative.

Model Update

The existing WWVMPO model includes College Avenue intersections with Rose, C Street, Whitman Drive, 4th Street, 12th Street, and Lamperti Avenue in this corridor. The model was enhanced to add intersections for 6th, 8th, 10th, and 13th Streets with street connections to ensure the volumes are properly modeled. This included adding additional links, nodes, and zone connectors. Traffic analysis zones were not subdivided so that the current land use forecasts could be used. New traffic count data, including bicycle and pedestrian volumes for the project area and the analysis intersections of Whitman Drive, 4th, 6th, 8th, 10th, 12th, 13th, and Lamperti was entered into the WWVMPO model. Geometrics, traffic control, and signal timing as appropriate was updated in the model.

The WWVMPO model also has the ability to optimize and test signal coordination with offsets based upon complete traffic assignment paths, and optional signal coordination was added to the model for testing in this corridor.

Model network surrounding the study area was evaluated and updated with new construction and changes based upon Google Streetview and the field review. Land use was adjusted to 2019 by interpolation to better reflect existing conditions.

The model calibration was updated and checked in the study area to replicate the new count data and to improve the forecasts. HCM intersection LOS was reported for the AM and PM peak hours for 2019 conditions with testing of different left turn configurations and with and without signal coordination. For budget purposes three different base year forecast scenarios were run.

Forecasts

WWVMPO projected 2040 land use data and planned network changes for the study area were provided to the City of College Place for review in case expectations have changed since the model was completed in 2016. The Davis Avenue and 12th Street Extension projects along with others assumed in the WWVMPO 2040 plan were assumed to be included in the forecast scenarios. The forecast analysis conditions including land use and assumed future year network will be confirmed with the City before the model runs and analysis are completed. Volumes and intersection LOS will be provided for the AM and PM Peak hours, as well as AWDT.

Findings

The following section presents the findings of the level of service analysis for each of the scenarios identified above. For each alternative, an evaluation of the existing 2019 condition is presented. The evaluation is supplemented with a level of service analysis for the 2040 forecast scenario. The purpose of the 2040 forecast is to document that any proposed changes suggested by the 2019 evaluation will work in the 2040-time frame. This is to ensure that if recommendations include significant infrastructure modifications, they will be viable in 2040.

Alternative One – Do Nothing

Existing Condition

Alternative One “Do Nothing” focuses on an evaluation of the existing channelization and traffic signal operations under the 2019 AM and PM peak volume scenarios. Level of service (LOS) was calculated for each intersection during each time period, AM and PM peak hour. The City has adopted LOS D as the level of service standard for the College Avenue corridor¹. A summary of the LOS results is presented in Table 1.

Table 1. 2019 Peak Hour Level of Service

Intersection	Traffic Control	Peak Hour Level of Service		LOS Standard
		AM Peak	PM Peak	
College Avenue/Whitman Drive	Signal	C (27.3)	C (20.2)	D
College Avenue/SE 3 rd Street	TWSC	B (12.3)	B (11.7)	D
College Avenue/SE/SW 4 th Street	Signal	D (44.4)	C (26.8)	D
College Avenue/SE/SW 6 th Street	TWSC	C (17.3)	B (14.2)	D
College Avenue/SE/SW 8 th Street	TWSC	C (18.9)	B (14.2)	D
College Avenue/SE/SW 10 th Street	TWSC	D (27.5)	C (20.0)	D
College Avenue/SE/SW 12 th Street	Signal	C (25.5)	C (22.5)	D
College Avenue/SE/SW 13 th Street	TWSC	C (17.4)	B (14.4)	D
College Avenue/SE/SW Lamperti Lane	Signal	C (24.2)	C (25.9)	D

(xx.x) = seconds of delay

TWSC – Two Way Stop Control

As shown in Table 1, each of the intersections operate at or above the City of College Place level of service standard, LOS D. During the AM period, two (2) of the intersections, 4th Street and 10th Street, were estimated to operate at LOS D during the AM peak period. Six (6) of the intersections operate at LOS C and one (1) intersection operates at LOS B; SE 3rd Street. During the PM peak, five (5) intersections operate at LOS C and four (4) intersections operate at LOS B.

Signal timing for 2019 and for the 2040 computations, shown in Table 2, was entered directly from the signal timing sheets provided by WSDOT. The signal timing has separate phases for the through movements and the left turns when there are left turn lanes. After each green phase, there is an amber phase and an all-red phase. Depending upon operation, each signal can have four or six phases, each with amber and all-red times. The more phases the more “lost” time at the intersection, when no traffic is moving.

It should be noted that LOS for signals is shown for the average of the intersection. LOS for TWSC (Two-Way Stop Control) intersection is reported for the worst movement. For example, at the intersection of

¹ City of College Place Transportation Plan; Appendix E; Policy 1; September 2018.

College Avenue with SW 6th St, the LOS C in the AM Peak is for the stop controlled west leg left turn. All LOS calculation worksheets are supplied in the Technical Appendix.

Future Condition

An evaluation of the existing College Avenue channelization was conducted to determine if the current design is acceptable in the future. A summary of the level of service in the 2040 AM and PM peak hour is presented in Table 2 below.

As shown in Table 2, each of the nine analysis intersections continue to operate at an acceptable level of service in accordance with the City's LOS D standard. During the 2040 AM Peak, two (2) intersections, Whitman Drive and 4th Street operate at LOS D and seven (7) intersections operate at LOS C. The level of service at five (5) intersections improved between the 2019 peak hours and the 2040 peak hours as a result of the extension of Davis Avenue to connect with College Avenue at Sunny Drive which changed the traffic patterns along the College Avenue corridor. During the 2040 PM peak, all intersections were estimated to operate at a level of service above the city standard. Four (4) of the nine (9) intersections were estimated to operate at LOS B and five (5) were estimated to operate at LOS C. The level of service improved at five (5) intersections between 2019 and 2040. Again, the level of service improvement resulted from roadway improvements expected in College Place.

Table 2. 2040 Peak Hour Level of Service

		Peak Hour Level of Service				
		AM Peak		PM Peak		
Intersection	Traffic Control	2019	2040	2019	2040	LOS Standard
College Avenue/Whitman Drive	Signal	C (27.3)	D (35.2)	C (20.2)	C (21.2)	D
College Avenue/SE/SW 3 rd Street	TWSC	B (12.3)	C (15.6)	B (11.7)	B (13.2)	D
College Avenue/SE/SW 4 th Street	Signal	D (44.4)	D (50.3)	C (26.8)	C (25.3)	D
College Avenue/SE/SW 6 th Street	TWSC	C (17.3)	C (17.2)	B (14.2)	B (13.6)	D
College Avenue/SE/SW 8 th Street	TWSC	C (18.9)	C (17.2)	B (14.2)	B (13.7)	D
College Avenue/SE/SW 10 th Street	TWSC	D (27.5)	C (24.1)	C (20.0)	C (18.8)	D
College Avenue/SE/SW 12 th Street	Signal	C (25.5)	C (25.4)	C (22.5)	C (21.9)	D
College Avenue/SE/SW 13 th Street	TWSC	C (17.4)	C (15.3)	B (14.4)	B (13.6)	D
College Avenue/SE/SW Lamperti Lane	Signal	C (24.2)	C (25.8)	C (25.9)	C (28.7)	D

(xx.x) = seconds of delay

TWSC – Two Way Stop Control

The 2019 level of service at each intersection for both the AM and PM peak hour is shown for comparison with the 2040 level of service.

Alternative Two – Remove Left Turn Channelization

The City requested an evaluation of the impact of eliminating the existing left turn channelization at the nine (9) analysis intersections. The basis of this request was to determine if the left turn lanes can be eliminated and the space used for parking and bicycle lanes. Currently, vehicular traffic serpentine through the intersection approach crossing left turn channelization. The City expressed concern regarding driver discomfort with this condition.

Existing Condition

The “existing condition” analysis considered the level of service at each of the nine (9) intersections without the existing left turn channelization. In other words, the College Avenue approach to each intersection for northbound and southbound traffic would be limited one (1) lane in each direction. This channelization would allow the extension of existing parking and eliminate the current serpentine traffic flow.

With the changes in channelization, the signal timing plans were changed to two-phase operation from the current multi-phase operation. What this means is that, because there are no longer left turn lanes, there are also no left-turn arrows, with accompanying amber and all-red times. Instead, the North-South movement gets a green phase, with an accompanying amber and all-red time, and the East-West movement gets a green phase, with an accompanying amber and all-red time. The result is there is roughly half as much “lost time” as with multi-phase signal timing. There is the potential for more time when traffic is moving, which can result in improved Level of Service, because of the reduced “lost” time.

The existing condition level of service is also provided for comparison purposes during the AM and PM peak hour.

Table 3. 2019 Peak Hour Level of Service w/o Left Turn Channelization

		Peak Hour Level of Service				
		AM Peak		PM Peak		
Intersection	Traffic Control	Existing	w/o LT	Existing	w/o LT	LOS Standard
College Avenue/Whitman Drive	Signal	C (27.3)	B (13.3)	C (20.2)	B (10.7)	D
College Avenue/SE/SW 3 rd Street	TWSC	B (12.3)	C (12.6)	B (11.7)	B (11.9)	D
College Avenue/SE/SW 4 th Street	Signal	D (44.4)	B (17.9)	C (26.8)	B (11.8)	D
College Avenue/SE/SW 6 th Street	TWSC	C (17.3)	C (17.3)	B (14.2)	B (14.3)	D
College Avenue/SE/SW 8 th Street	TWSC	C (18.9)	C (18.9)	B (14.2)	B (14.6)	D
College Avenue/SE/SW 10 th Street	TWSC	D (27.5)	D (27.0)	C (20.0)	C (20.0)	D
College Avenue/SE/SW 12 th Street	Signal	C (25.5)	A (9.3)	C (22.5)	A (9.2)	D
College Avenue/SE/SW 13 th Street	TWSC	C (17.4)	C (17.0)	B (14.4)	B (14.3)	D
College Avenue/SE/SW Lamperti Lane	Signal	C (24.1)	B (12.1)	C (25.9)	B (13.0)	D

(xx.x) = seconds of delay

TWSC – Two Way Stop Control

As shown in Table 3, each of the nine (9) intersections operate above the City level of service standard during the AM and PM peak hours. During the AM peak, one (1) intersection operates at LOS A; three (3) intersections operate at LOS B; four (4) intersections operate at LOS C; and one (1) intersection operates at LOS D. This is a significant improvement over the existing channelization where two (2) intersections operate at LOS D; six (6) at LOS C; and one (1) at LOS B.

During the PM peak hour, one (1) intersection operates at LOS A; seven (7) intersections operate at LOS B; and one (1) intersection operates at LOS C. Again, with the elimination of the left turn channelization, there is a significant improvement over the existing channelization where five (5) intersections operate at LOS C and four (4) at LOS B.

These improvements to the level of service are due to the decrease in lost time due to implementation of two-phase signal operation. Eliminating the left turn channelization permits the two-phase signal operation to decrease the delay at the signals without a significant impact to the TWSC controlled intersections.

Future Condition

An evaluation of the existing College Avenue channelization was conducted to determine if the current design is acceptable in the future. A summary of the level of service in the 2040 AM and PM peak hour is presented in Table 4 below. The 2040 AM and PM peak hour level of service for the existing channelization is included in the table for comparison with the 2040 existing channelization scenario.

As shown in Table 4, all nine (9) intersections were determined to operate above the City level of service standard of LOS D, during the 2040 AM and PM peak hours, without the existing left turn channelization. During the 2040 AM peak, four (4) intersections were estimated to operate at LOS B, whereas five (5) intersections were estimated to operate at LOS C. Elimination of the left turn pockets provides a significant benefit in level of service over the existing channelization configuration. Under the existing left turn channelization, two (2) intersections were estimated to operate at LOS D during 2040 AM peak; and seven (7) intersections were estimated to operate at LOS C.

During the PM peak, without the left turn channelization, one (1) of the intersections were estimated to operate at LOS C and eight (8) intersections were estimated to LOS B. Under the existing left turn channelization, five (5) intersections operate at LOS C and four (4) intersections operate at LOS B. This results in an improvement over the existing conditions.

Table 4. 2040 Peak Hour Level of Service w/o Left Turn Channelization

		Peak Hour Level of Service				
		AM Peak		PM Peak		
Intersection	Traffic Control	Existing	w/o LT	Existing	w/o LT	LOS Standard
College Avenue/Whitman Drive	Signal	D (35.2)	B (14.6)	C (21.2)	B (11.5)	D
College Avenue/SE/SW 3 rd Street	TWSC	C (15.6)	C (15.5)	B (13.2)	B (13.8)	D
College Avenue/SE/SW 4 th Street	Signal	D (50.3)	B (15.5)	C (25.3)	B (10.3)	D
College Avenue/SE/SW 6 th Street	TWSC	C (17.2)	C (17.7)	B (13.6)	B (13.4)	D
College Avenue/SE/SW 8 th Street	TWSC	C (17.2)	C (16.6)	B (13.7)	B (14.0)	D
College Avenue/SE/SW 10 th Street	TWSC	C (24.1)	C (23.4)	C (18.8)	C (18.7)	D
College Avenue/SE/SW 12 th Street	Signal	C (25.4)	B (10.9)	C (21.9)	B (11.1)	D
College Avenue/SE/SW 13 th Street	TWSC	C (15.3)	C (15.1)	B (13.6)	B (13.2)	D
College Avenue/SE/SW Lamperti Lane	Signal	C (25.8)	B (13.5)	C (28.7)	B (13.5)	D

(xx.x) = seconds of delay

TWSC – Two Way Stop Control

Alternative Three - Evaluate the impact of signal coordination on Alternatives One and Two

The final question in the evaluation of existing traffic patterns was to determine if coordination of the four (4) existing signalized intersections would improve traffic operations on the College Avenue corridor. Currently, the intersections are not coordinated and effectively operating in a “Free” mode. In the “Free” mode the traffic signal responds to the actuation created by arriving vehicles. The City requested the analysis include an evaluation of both the existing channelization (with left turn) and without left turn channelization, if the traffic signals were coordinated.

Signal Coordination

Signal coordination was evaluated along the College Avenue Corridor between Whitman Drive on the north and Lamperti Lane/Mojonnier Road on the south. This section includes four (4) signalized intersections including Whitman Drive, 4th Street, 12th Street, and Lamperti Lane.

Coordination is useful when the platoons traveling between the signals can be timed so that the drivers can maintain a steady speed between the signals and arrive at the next signal when it is green. This analysis considers both traffic traveling along College Avenue from Whitman to Lamperti as well as traffic exiting and entering the corridor at each intersection through traffic that turns on and off the corridor.

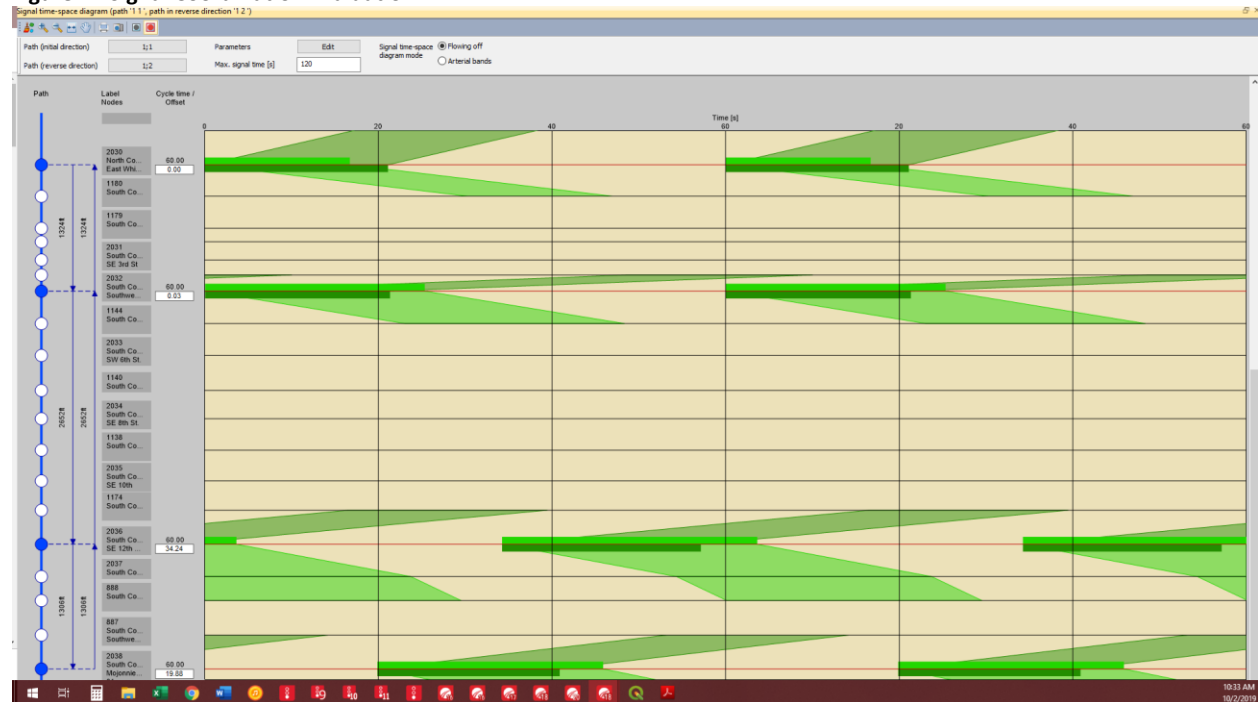
The Highway Capacity Manual presents a method of coding signal arrival types to evaluate the effectiveness of signal coordination. The method assigns a number of one (1) through six (6) for each arrival type. These numbers are defined as:

- #1 - 80% of vehicles arrives at start of Red.
- #2 - 40-80% of vehicles arrive during the Red interval.
- #3 – Random arrivals
- #4 – 40-80% arrives in Green
- #5 - 80% arrives at start of Green
- #6 - Exceptional Progression

VISUM, the model used in this analysis, tracks the paths of all traffic and can therefore quantify the arrivals of traffic both going through the corridor and turning on and off the corridor. Analysis of current operation shows random arrivals corresponding to an arrival type of #3 as described above. Improvement could be realized if signal coordination results in traffic arrivals at the signalized intersections are improved with arrival numbers 4, 5, and 6.

To test this, a coordination group was established with the four (4) signals and tested both with computed optimized signal timing coordination offsets and with manually adjusted signal coordination offsets. Then, using the model, the traffic arrivals were again evaluated to see if an improvement could be realized. The flow of traffic platoons from each signal both southbound (lighter green) and northbound (darker green) is shown in Figure 1. The intersections are shown on the vertical axis of the graphic and time is shown on the horizontal axis. The green bands show the flow of the traffic platoons

Figure 1 - Signal Coordination Evaluation

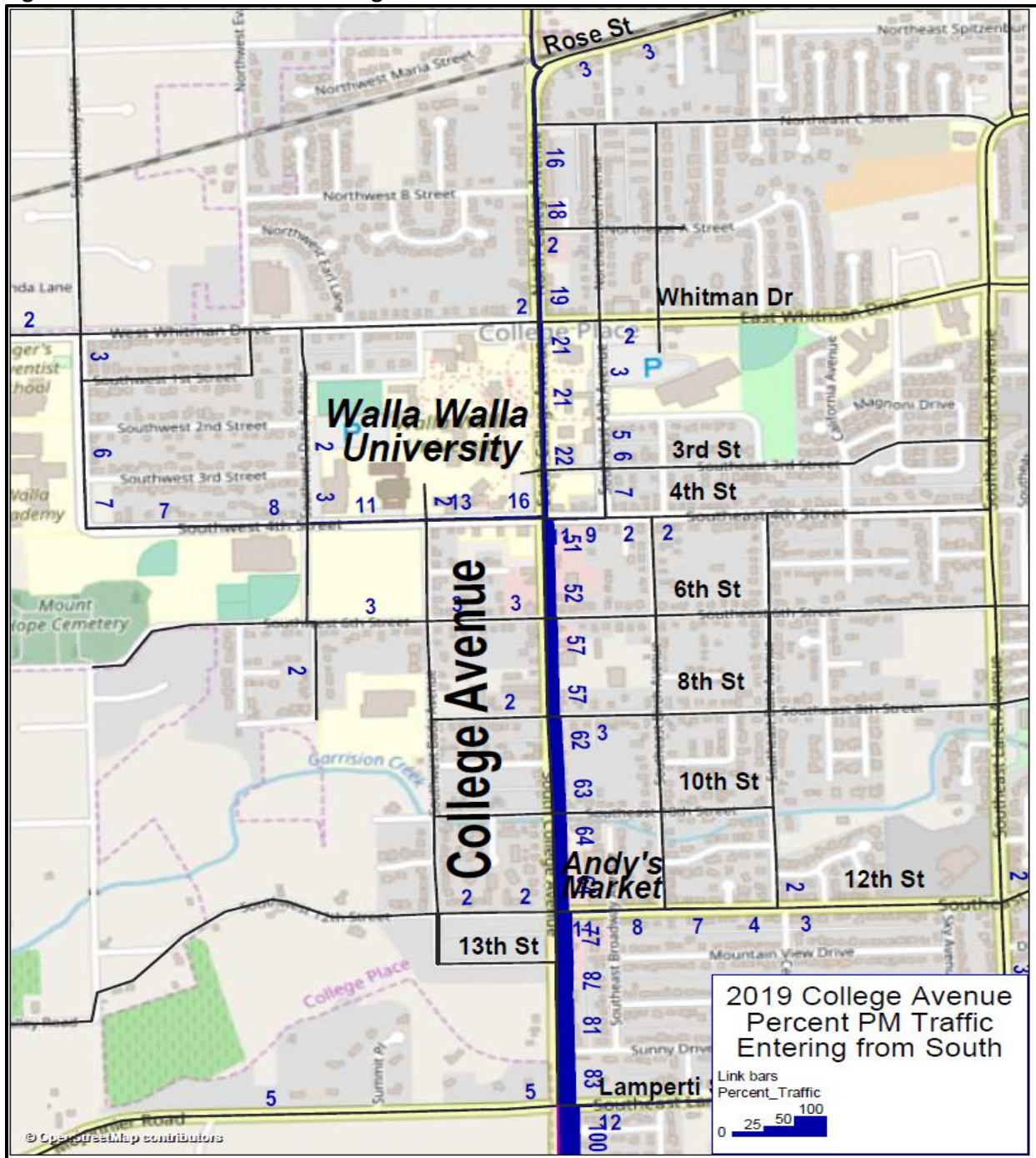


In both cases, the best arrival type computed was #3 – Random arrivals. As shown in the graphic above, the platoons are shown in the green bands and then “dissolve” or spread out in the space between the bands. So, the spacing (1/4 to 1/2 mile) is too great between the signals and there are too many other turning movements on and off the corridor to benefit from signal coordination.

To further understand operation of the College Avenue corridor and possible operational improvement from signal coordination, the paths of trips traversing the corridor were analyzed. Using the model, paths of trips were plotted to show the percentages of trips entering and exiting the corridor on the north and south ends. One example is shown here as Figure 2 which depicts the northbound trips that enter the corridor from the south of Lamperti. The link where the path starts shows 100% of the trips. As can be seen, the percentage drops as travel continues northbound along the corridor, with only 19% of the trips that start south of Lamperti continuing on to the north of Whitman and only 3% continuing onto Rose.

Similar plots are for the AM and PM and for entering and exiting both at the North and South are included in the appendix. None of these show over 20% of the traffic that enters or exits the corridor at over 20%. This means that over 80% of the traffic is destined for other locations along the corridor instead of being through traffic.

Figure 2 - Percent PM Traffic Entering from South



The analysis methods show that the current signal operation isn't improved upon by coordinating the signals. No significant improvement will be made by interconnecting and coordinating the activated signals.

Existing Signal Timing

It was noted during the analysis that there is significant lost time in the existing signal timing plans due to long amber, walk and pedestrian clearance intervals, as well as "all-red" times in combination with

the left turn phasing. During the tests of removing the left turn lanes, the signal timing was converted to a simple two-phase signal with amber times of three (3) seconds and all-red times of (one) second which resulted in a significant improvement in operation was obtained.

It is recommended that detailed analysis be conducted on the existing signal timing parameters to ensure they are effective and provide efficient signal operation.

Other Possibilities

All Way Stop Control (AWSC)

As part of the evaluation, the Consultant also considered converting the traffic signal operation to an “All Way Stop Control”. At the signalized intersections, this would be accomplished by converting the signal operation to an all-way red flash. A summary of the analysis for this condition is presented below.

Existing Conditions

Level of service on the College Avenue corridor was evaluated for each of the nine (9) analysis intersection with all way stop control (AWSC) provided at each of the four (4) signalized intersection. The signalized intersections include Whitman Drive, SW/SE 12th Street, SW/SE 4th Street, and Whitman Drive. The result of the 2019 level of service analysis is presented in Table 5 below. The level of service for the existing 2019 AM and PM peak hours is shown for comparison with the AWSC condition.

Table 5. 2019 Peak Hour Level of Service - All Way Stop w/o Left Turn Channelization

		Peak Hour Level of Service				
		AM Peak		PM Peak		
Intersection	Traffic Control	Existing	AWSC w/o LT	Existing	AWSC w/o LT	LOS Standard
College Avenue/Whitman Drive	Signal	C (27.3)	C (20.2)	C (20.2)	B (12.8)	D
College Avenue/SE/SW 3 rd Street	TWSC	B (12.3)	B (12.3)	B (11.7)	B (11.8.3)	D
College Avenue/SE/SW 4 th Street	Signal	D (44.4)	F (246)	C (26.4)	B (13.8)	D
College Avenue/SE/SW 6 th Street	TWSC	C (17.3)	C (18.3)	B (14.2)	B (14.6)	D
College Avenue/SE/SW 8 th Street	TWSC	C (18.9)	C (19.8)	B (14.2)	B (14.4)	D
College Avenue/SE/SW 10 th Street	TWSC	D (27.5)	D (27.9)	C (20.0)	C (20.1)	D
College Avenue/SE/SW 12 th Street	Signal	C (25.5)	F (59.5)	C (22.5)	B (14.5)	D
College Avenue/SE/SW 13 th Street	TWSC	C (17.4)	C (18.1)	B (14.4)	C (15.3)	D
College Avenue/SE/SW Lamperti Lane	Signal	C (24.1)	F (52.9)	C (25.9)	B (13.1)	D

(xx.x) = seconds of delay

TWSC – Two Way Stop Control

As shown in Table 5, three (3) of the intersections are estimated to operate below the City of College Place level of service standard. In fact, the three (3) intersections would experience LOS F during the AM peak period, if the AWSC operation were implemented. During the AM peak, three (3)

intersections, SW/SE 4th Street, SW/SE 12th Street, and Lamperti Lane are estimated to operate at LOS F; one (1) intersection, Whitman Drive, is estimated to operate at LOS C; and the remaining five (5) intersections are estimated to operate at LOS similar to the existing conditions. The comparison between the existing condition and the proposed AWSC operation LOS indicates the AWSC operation is worse than the 2019 existing condition LOS during the AM peak hour. Under the existing 2019 AM peak, without the AWSC operation, two (2) intersections are estimated to operate at LOS D; six (6) of the intersections are estimated to operate at LOS C; and one (1) intersection is estimated to operate at LOS B.

During the PM peak period, with AWSC operation and without left turn channelization, seven (7) of the intersections are estimated to operate at LOS B; and two (2) of the intersections are estimated to operate at LOS C. In comparison, the level of service under the existing 2019 condition, indicates five (5) of the intersections are estimated to operate at LOS C and four (4) are estimated to operate at LOS B. As shown, during the PM peak, the AWSC control without left turn channelization has a better overall LOS than the 2019 existing condition.

Future Condition

The LOS evaluation for the 2019 indicates the AM peak level of service would be significantly lower than the City's adopted LOS standard at three (3) locations. As a result, the AWSC condition was dropped from further consideration.

During review, the question was asked whether all the intersections except 4th, 12th, and Lamperti were converted to AWSC. This was not explicitly tested but given that the LOS the TWSC at these intersections operates acceptably, the AWSC will not have an adverse LOS. However, this will add delay to the movement along College Avenue. It will also result in increased emissions and noise with the accelerations and decelerations at each intersection and may lead to increased driver frustration.

Queueing

Remove Left Turn Channelization

The analysis shows that removing the left turn channelization allows for two-phase signal operation which reduces delay. The left turn channelization does allow for through vehicles to bypass vehicles waiting for a gap to turn left and there is the possibility of longer queues that may negatively impact operation. Therefore, the 95% queues were analyzed with 2040 traffic for all of the nine (9) analysis intersections. A 95% queue means that 95% of the time the queue will be equal to or less than the computed value. In addition, the available queue storage length was measured from the intersection to the next major driveway or intersection. For example, on the east leg of 12th St, the distance was measure to the driveway of Andy's Market.

Table 6 compares the AM queues with available storage lengths by intersection leg. As can be seen, all of the queue lengths are less than the available storage. The queues are measured in numbers of vehicles, with the average length of a vehicle estimated at 20 feet including space between vehicles. The Ford F-150 ranges in length from 17.4' to 20.8' and the Ford Mustang is 15.7'. Table 7 compares the PM queues with available storage lengths by intersection leg. As can be seen, all of the queue lengths are less than the available storage.

Table 6 - 2040 AM Peak Intersection Queues

	95% Queue by Approach Leg (Veh) AM Peak							
Intersection	North		East		South		West	
	Queue	Storage	Queue	Storage	Queue	Storage	Queue	Storage
College & Whitman	6.6	26.0	3.6	12.5	7.8	13.5	7.6	13.0
N College & 3rd St.	0.0	8.2	0.2	5.0	0.0	12.9	0.2	13.0
S College Ave & 4th St	3.4	12.4	7.3	13.0	9.9	15.0	4.5	31.0
S College Ave & 6th St	0.0	13.0	0.2	17.0	0.0	13.0	0.6	31.0
S College Ave & 8th St	0.0	8.5	0.3	10.5	0.0	8.8	0.3	22.0
S College Ave & 10th St	0.0	13.0	0.3	27.0	0.0	20.0	0.5	13.8
S College Ave & 12th St	3.3	6.0	4.2	5.0	5.3	12.5	3.9	30.0
S College and 13th St.	-	-	-	-	0.0	10.0	0.1	16.0
S College Ave & Lamperti	6.7	14.0	5.5	25.0	5.2	17.0	5.8	19.0
* Queue Lengths in number of vehicles using 20 ft/veh								

Table 7 - PM Peak Intersection Queues

	95% Queue by Approach Leg (Veh) PM Peak							
Intersection	North		East		South		West	
	Queue	Storage	Queue	Storage	Queue	Storage	Queue	Storage
College & Whitman	4.4	26.0	4.4	12.5	4.7	13.5	3.5	13.0
N College & 3rd St.	0.0	8.2	0.1	5.0	0.0	12.9	0.1	13.0
S College Ave & 4th St	4.1	12.4	2.1	13.0	3.7	15.0	3.5	31.0
S College Ave & 6th St	0.0	13.0	0.1	17.0	0.0	13.0	0.3	31.0
S College Ave & 8th St	0.0	8.5	0.2	10.5	0.1	8.8	0.3	22.0
S College Ave & 10th St	0.0	13.0	0.2	27.0	0.1	20.0	0.3	13.8
S College Ave & 12th St	3.1	6.0	5.6	5.0	2.9	12.5	1.7	30.0
S College and 13th St.	-	-	-	-	0.0	10.0	0.1	16.0
S College Ave & Lamperti	6.4	14.0	6.6	25.0	3.3	17.0	1.7	19.0
* Queue Lengths in number of vehicles using 20 ft/veh								

Andy's Market

City staff had requested special analysis of the potential queue on College Avenue with the Andy's Market driveway. Counts were conducted on Thursday, February 27, 2020 for both the mid-day peak (11:45-12:45) and the PM Peak. Intersection LOS was computed with the 95% queues.

Left turns into Andy's Market were higher during the PM Peak with 53 in an hour, or slightly less than one per minute. The left turn into the driveway operates at LOS A with an average delay of less than 8 seconds and a 95% queue of 0.05 vehicles. The overall delay for the southbound movement, including the left turn, is approximately 0.5 second. The exit from this driveway operates at LOS B with an average delay of 11.4 seconds. As shown in Table 7, the 95% queue from 12th St does not obstruct this driveway.

Left turns into Andy's Market during the Mid-Day (lunch time) were counted at 17 during the hour, or roughly one left-turn each 3 to 4 minutes. The left turn into the driveway again operates at LOS A with an average delay of less than 8 seconds and a 95% queue of 0.04 vehicles. The overall delay for the southbound movement, including the left turn, is approximately 0.5 seconds. The exit from this driveway operates at LOS B with an average delay of 11.1 seconds. Although the model was not run with queues from 12th Street for the Mid-Day period, the volume counts are lower than in the AM and PM peaks so the 95% queue from 12th St should not obstruct this driveway.

Conclusions

The conclusion of the foregoing analysis is the College Avenue corridor under the existing channelization and traffic control is not operating under an optimal condition. The analysis indicated College Avenue traffic operations could be improved through the elimination of left turn channelization and conversion to two-phase signal operation. The level of service, in general, is improved during the AM and PM peak hours for both the 2019 existing and 2040 future condition.

Signal coordination and elimination of the traffic signal control were considered in this analysis. The conclusion of the signal coordination evaluation indicated the spacing of the signals on the corridor was too long to provide efficient traffic signal timing. In effect, the platoon of vehicles is dispersed before arriving at the next signal. In addition, coordination is not considered viable because of the low percentage of traffic traveling the length of the corridor.

Memorandum – Sight Distance

The purpose of this memorandum is to provide a summary of the process and findings relating to Task 4 – *To what extent would it be safe and acceptable to reduce sight triangles in the College Avenue Corridor?*

Background

The City requested an evaluation of the sight visibility triangles at critical intersections along the corridor. Sight visibility triangle requirements are stated in Section 17.42.050 Sight Visibility Triangle¹:

“A. At uncontrolled intersections, the sight visibility triangle shall be formed by measuring back from the point where street corner property lines meet, 30 feet along the property line, with the third side of the triangle being the straight-line connection between the above-mentioned sidelines. (Refer to Figure 17.42.050A.)”

B. At controlled intersections the side street side of the sight visibility triangle shall be a distance of ten feet measured back from the point where street corner property lines meet; the through street side of the triangle shall be a distance of 30 feet for speed limits up to 25 miles per hour and 55 feet for speed limits up to 35 miles per hour; the third side of the triangle being the straight line connection between the above-mentioned side lines. (Refer to Figure 17.42.050B.)

Uncontrolled intersections are defined as intersections where there are no specific traffic control devices and drivers are required to follow the “rules of the road” when determining right of way. “Controlled intersections” are intersections where “stop signs” are installed on the minor leg without control on the through street or major leg of the intersection. Signalized and All Way Stop (AWSC) intersections are typically not subject to these requirements as the traffic signal assigns “right of way” to the approaches to the intersection.

Four (4) of the intersections along the corridor are under signal control² and therefore are not considered in this evaluation. The remaining seven (7) intersections provide stop sign control on the intersecting side street.

A summary of the intersections with obstructed sight distance constraints is presented in Table 1.

¹ City of College Place Municipal Code; Section 17.42.050.

² College Avenue signalized intersections include Lamperti Lane; 12th Street; 4th Street; and Whitman Drive.

Table 1. Intersections with Sight Distance Constraints

Intersection	West Side		East Side	
	Looking North	Looking South	Looking North	Looking South
SE Sunny Drive	N/A	N/A	Landscape/Parking	No Constraints
SW 13 th Street	Landscape/Berm	Landscape/Berm	N/A	N/A
SW/SE 10 th Street	Equipment/Fence	No Constraints	No Constraints	Landscape/Fence
SW/SE 8 th Street	Street Furniture	No Constraints	Landscape/Fence	Building
SW/SE 6 th Street	Landscape	Landscape	Fence	No Constraints
SW/SE 3 rd Street	N/A	N/A	Landscape	Building

N/A – Not applicable. There is no approach on the leg.

As shown in Table 1, six (6) of the ten (10) College Avenue intersections, in the study area, have sight distance constraints on the side street approach. Most of the intersections are impacted by landscaping on the adjacent property. Two (2) intersections are constrained by existing buildings along the property line, including SE 8th Street and SE 3rd Street. At SW 10th Street, equipment storage along the property line for “The Empire” retail outlet impedes intersection sight distance at this location.

The following photos document the existing sight distance obstructions at the intersecting streets of SE Sunny Drive, SW 13th Street, SW/SE 10th Street, SW/SE 8th Street, SW/SE 6th Street and SW/SE 3rd Street on the corridor.

Sunny Drive Looking North



SE 10th Street Looking South



SE 8th Street Looking South



SE 6th Looking North



SE 3rd Street Looking North



SE 3rd Street Looking South



SW 6th Street Looking North



SW 8th Street Looking North



SW 8th Street Looking South



SW 10th Street Looking North



SW 13th Street Looking South



SW 13th Street Looking North



Stopping Sight Distance

The purpose of the sight distance triangle is to provide enough distance on College Avenue to allow vehicles to stop before hitting a vehicle entering the intersection from the side street. In addition, the triangle distance provided allows each entering vehicle on the side street to see approaching vehicles, with enough distance to stop in time to avoid hitting the entering vehicle. To appropriately evaluate the existing sight triangle requirements, a review of required stopping sight distance (SSD) values is necessary. SSD values for the intersecting streets on the corridor are provided in Table 2.

Table 2. Required Stopping Sight Distance

Intersection	Posted Speed	Required SSD ³		Sight Triangle		Meets Requirement
		North ⁴	South ⁵	North ⁶	South ⁷	
SE Sunny Drive	30	200	200	350	220	Yes
SW 13 th Street	30	200	200	190	265	Looking to South
SW 10 th Street	30	200	200	110	415	Looking to South
SE 10 th Street	30	200	200	295	190	Looking to North
SW 8 th Street	25	155	200	125	275	Looking to South
SE 8 th Street	25	155	200	150	190	No
SW 6 th Street	25	155	155	100	160	Looking to South
SE 6 th Street	25	155	155	150	120	No
SE 3 rd Street	25	155	155	150	115	No

As shown in Table 2, acceptable stopping sight distance (SSD) is provided with the application of the sight distance triangle at the following intersections:

- SE Sunny Drive
- SW 13th – Looking to the South
- SW 10th Street – Looking to the South
- SE 10th Street – Looking to the North
- SW 8th Street – Looking to the South
- SW 6th Street – Looking to the South

The sight distance provided through the application of the Sight Distance Triangle requirements does not provide adequate stopping sight distance (SSD) at the following intersections:

- SW 13th Street – Looking to the North
- SW 10th Street – Looking to the North
- SE 10th Street – Looking to the South
- SW 8th Street – Looking to the North
- SE 8th Street – Both Directions
- SW 6th Street – Looking to the North
- SE 6th Street – Both Directions
- SE 3rd Street – Both Direction

³ AASHTO “A Policy on Geometric Design of Highways and Streets”, 7th Edition; 2018.

⁴ North – From the North measured in feet

⁵ South – From the South measured in feet

⁶ North – Looking to the North measured in feet

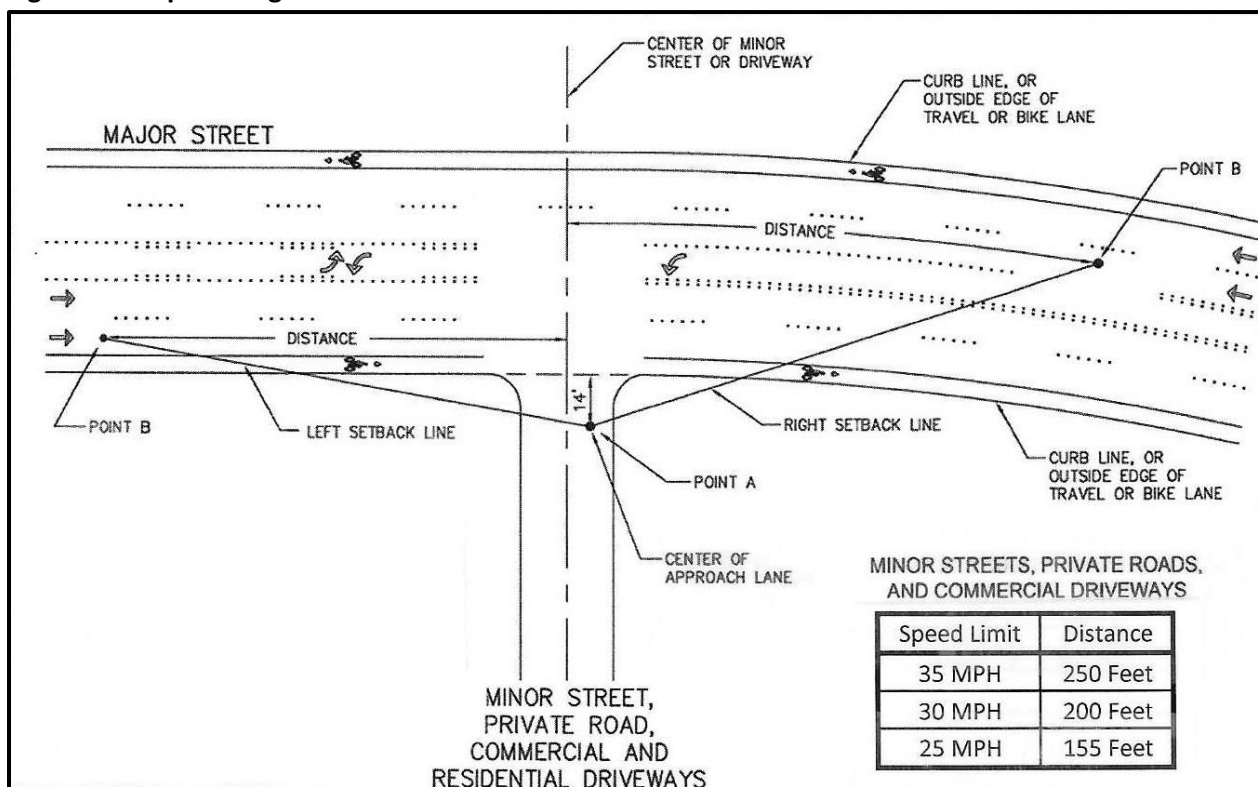
⁶ South - Looking to the South measured in feet

Conclusions

A review of the foregoing indicates the sight visibility triangle requirements, as stated in Section 17.42.050 of the City of College Place Municipal Code, does not comply with adopted national standards⁸. The effectiveness of the City requirements is totally dependent on the existing property lines at the intersecting streets. Since there is no consistency in the property lines between intersecting streets, the available sight distance varies between the various College Avenue intersections.

Rather than basing the sight visibility triangle on existing property lines, a more consistent approach would be to base the sight visibility triangle on the edge of the travel way, or when there is a curb and gutter on the curb line. The triangle is formed by a point on the intersecting street located 14 feet back from the face of curb and the stopping distance measured along the main travel way in each direction from the intersection. An example of this approach is presented in Figure 1.

Figure 1. Proposed Sight Distance Setback Lines⁹



Suggested triangle distances for various speeds is also shown in Figure 1.

⁸ American Association of State Highway Transportation Officials; A Policy on Geometric Design of Highways and Streets; Stopping Sight Distance; 7th Edition, 2018.

⁹ Source - City of Bellevue Current Design Standards; 2017; Bellevue, Washington.

It is recommended the City of College Place replace the existing sight distance triangle ordinance with one that reflects the existing geometry and speeds on the College Avenue corridor. The recommended revision is related to controlled intersections only, as there are no uncontrolled intersections in the College Avenue Corridor study area. The recommended changes are as follows:

B. At controlled intersections, the side street side of the sight visibility triangle shall be a distance of fourteen (14) feet measured back from the edge of the travel way on the major roadway. The major through street side of the triangle, looking left and right, shall be 155 feet for a posted speed limit of 25 miles per hour and 200 feet for posted speed limit of 30 miles per hour as measured in the center of the outside approach lane. See Figure 1 above.

Application of the proposed ordinance to the stop sign controlled intersections in the College Avenue corridor would yield the Stopping Sight Distances (SSD) identified in Table 3 below.

Table 3. Stopping Sight Distance at Stop Controlled Intersections

Intersection	Center of Travel Lane (Measured from Face of Curb)		Speed Limit			Stopping Sight Distance		Parking Offset			
			Posted		Proposed	30 MPH	25 MPH	Posted Speed		Proposed Speed	
	North	South	North	South				North	South	North	South
Sunny Drive	32	8	30	30	25	200	155	74'	136'	55'	101'
SW 13th	10	32	30	30	25	200	155	140'	76'	104'	57'
SW 10th (west side)	10	36	30	30	25	200	155	143'	102'	107'	76'
SE 10th (east side)	24	12	30	30	25	200	155	105'	146'	79'	110'
SW 9th	10	24	30	30	25	200	155	134'	88'	100'	66'
SW 8th (west side)	14	28	25	30	25	200	155	105'	101'	105'	75'
SE 8 th (east side)	20	8	25	25	25	200	155	75'	105'	75'	105'
SW 6th (west side)	10	27	25	25	25	200	155	105'	75'	105'	75'
SE 6 th (east side)	27	10	25	25	25	200	155	75'	105'	75'	105'
SE 3rd	28	8	25	25	25	200	155	69'	99'	69'	99'
NE A	28	12	25	25	25	200	155	75'	104'	75'	104'
NW B	12	25	25	25	25	200	155	75'	104'	75'	104'
NE C	20	10	25	25	25	200	155	67'	104'	67'	104'

Table 3 presents the stopping sight distance required for the various speeds on the College Avenue corridor; 25 MPH and 30 MPH. In addition, the table represents the parking offset required to provide the recommended stopping sight distance at the two alternative posted speeds.

This study recommends the adoption of a 25 MPH posted speed along the College Avenue corridor from Lamperti Street to Rose Street. Table 4 indicates the potential parking stalls eliminated through the application of the proposed stopping sight distance ordinance.

Table 4. Potential Parking Stalls Reduction

Intersection	Speed Limit			Parking Offset				Parking Reduction	
	Posted		Proposed	Posted Speed		Proposed Speed		Posted Speed	Proposed Speed
	North	South		North	South	North	South		
Sunny Drive	30	30	25	74'	136'	55'	101'	2	1
SW 13th	30	30	25	140'	76'	104'	57'	7	4
SW 10th (west side)	30	30	25	143'	102'	107'	76'	3	2
SE 10th (east side)	30	30	25	105'	146'	79'	110'	0	0
SW 9th	30	30	25	134'	88'	100'	66'	4	2
SW 8th (west side)	25	30	25	105'	101'	105'	75'	0	0
SE 8 th (east side)	25	25	25	75'	105'	75'	105'	0	0
SW 6th (west side)	25	25	25	105'	75'	105'	75'	0	0
SE 6 th (east side)	25	25	25	75'	105'	75'	105'	0	0
SE 3rd	25	25	25	69'	99'	69'	99'	0	0
NE A	25	25	25	75'	104'	75'	104'	4	4
NW B	25	25	25	75'	104'	75'	104'	5	5
NE C	25	25	25	67'	104'	67'	104'	3	3
				Total Stalls Removed				28	21

As shown in Table 4, with the implementation of the proposed sight distance ordinance, it is expected that 28 stalls would be removed from the College Avenue between Lamperti Street and Rose Street under the existing posted speeds. If the posted speed is reduced to 25 MPH, for the entire corridor, 21 parking stalls will be eliminated. In the section between 3rd Street and 8th Street, and SE 10th (east side), there is no parking provided and hence no parking impact.

Memorandum – Appropriate Speed Limit

The purpose of this memorandum is to provide a discussion regarding the appropriate speed limit on the College Avenue corridor within the study area. This memorandum addresses the contract requirement of Task 5 - *What is the Appropriate Speed Limit on College Avenue?* The intent of Task 5 is to determine if the current posted speed limit at various locations is appropriate for the desired “Complete Streets” character of College Avenue between East Whitman Drive and SW Lamperti Street.

Current Conditions

Prevailing travel speeds on the corridor were collected, using tube counters, at ten (10) locations on College Avenue including:

- College Avenue n/o 4th Street
- College Avenue n/o Whitman Drive
- College Avenue n/o C Street
- College Avenue n/o B Street
- College Avenue n/o A Street
- College Avenue n/o SR 125
- College Avenue s/o Lamperti Street
- College Avenue s/o 10th Street
- College Avenue n/o 8th Street
- College Avenue n/o Lamperti Street

The speed data was collected by the City during the month of May 2019¹. The prevailing speeds at each location were recorded for each hour for three consecutive days, a total of 72 hours. The resultant speed data was summarized in 5 mph increments from 0 mph to greater than 70 mph. The hourly data was averaged for the three days to provide a single recorded speed. The results are presented in Table 4.

Table 4 identifies the average speed and the 85th percentile speed² for each location. The 85th percentile speed is the basis of the posted speed as it is assumed a responsible driver will consider roadway and roadside conditions in when driving.³

¹

² 85th percentile speed – the speed at which 85 percent of the vehicles are at or below and 15 percent are above. The 85th percentile speed is generally used to determine the posted speed limit.

³ <https://www.wsdot.wa.gov/Operations/Traffic/speedlimits.htm>

Table 4. Daily Speed Summary

#	Location	Section	Posted	Daily Speed					
				Northbound		Southbound		Total	
				Average	85 th Percentile	Average	85 th Percentile	Average	85 th Percentile
1	College Avenue	n/o 4 th Street	25	22	26	22	26	22	26
2	College Avenue	n/o Whitman Drive	30	24	28	24	27	24	28
3	College Avenue	n/o C Street	30	26	30	25	29	26	29
4	College Avenue	n/o B Street	30	25	29	25	29	25	29
5	College Avenue	n/o A Street	30	25	29	25	28	25	29
6	College Avenue	n/o SR 125	35	27	33	31	36	29	35
7	College Avenue	s/o Lamperti Street	35	26	32	26	34	26	33
8	College Avenue	s/o 10 th Street	30	27	31	28	31	27	31
9	College Avenue	n/o 8 th Street	25	25	29	26	29	26	29
10	College Avenue	n/o Lamperti Street	30	27	31	28	32	27	31

As shown in Table 4, the posted speed on the College Avenue corridor ranges between 25 mph and 35 mph. The posted speed is 35 mph south of Lamperti Street; 30 mph between Lamperti Street and 8th Street; 25 mph between 8th Street and Whitman Drive; and 30 mph north of Whitman Drive. The existing posted speeds on the College Avenue corridor within the study area are presented in Figure 1.

The result of the speed study indicates that motorists on College Avenue are exceptionally compliant with posted speeds on the corridor with the average and 85th percentile speeds well within the range of the posted speed limit. This fact suggests motorists are comfortable with the posted speeds on the corridor.

Under consideration is the removal of the two-way left turn lane (TWLTL) along the College Avenue corridor and the dedicated left turn pockets at the signalized intersections. City staff expressed concern that removal of the channelization would encourage higher speeds on the corridor. It is not expected an increase in speed would be realized as the motorist appear to be compliant with the posted speed limit on the corridor. If in fact speeds increased, the City could stripe an edge line to restrict the width of the travel lane and thereby discourage higher speeds.

Development of Speed Limits

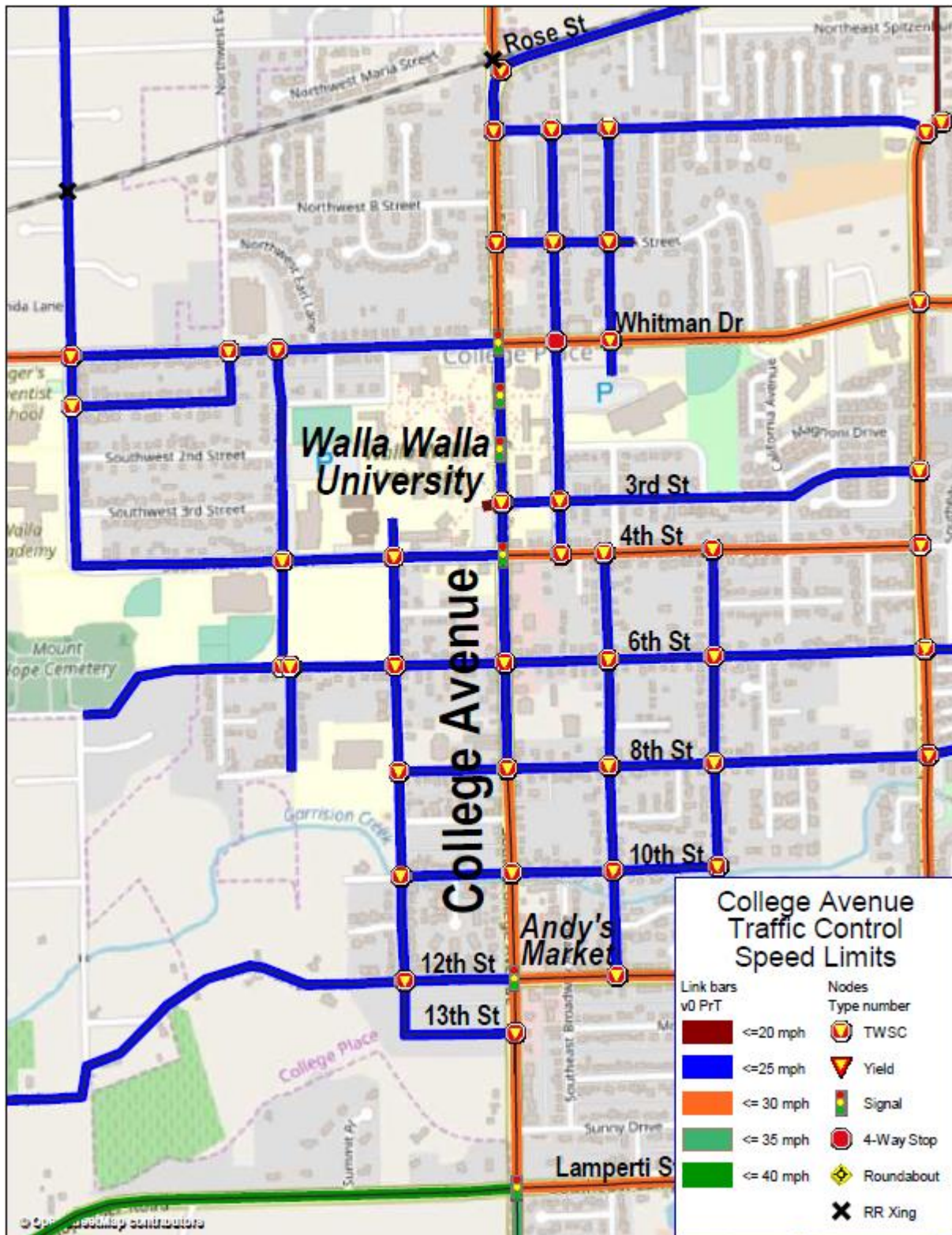
Washington State Law dictates the formulation of speed limits on state and local roadways. The maximum speed limit for city and town streets is 25 mph, 50 mph for county roadways, and 60 mph for state highways⁴. Local authorities may establish or alter maximum speeds under the following conditions⁵:

- Cities and towns may establish a maximum speed of 20 mph on nonarterial routes without an engineering and traffic investigation.

⁴ RCW 46.61.400

⁵ RCW 46.61.415.

Figure 1. Existing Speed Limits



-
- Cities and towns may raise speed limits above the state maximum (25 mph) with an engineering and traffic investigation.

Factors to consider when conducting a speed related engineering and traffic investigation include⁶:

- Shoulder condition
- Roadway Grade
- Alignment
- Sight Distance
- Roadside Development and Lighting
- Parking practices
- Pedestrian and bicycle activity
- Collision rates

In addition, the location of schools should be identified and considered to determine the speed limit for the school zone.

Significant factors to consider when establishing speed limits is the range of travel speeds is reduced when speed limits are based on 85th percentile speed and survivability of a vehicular/pedestrian crash is significantly higher the lower the vehicular speed. For example, nine (9) out of ten (10) pedestrians survive at 20 mph; seven (7) out of ten (10) at 25 mph; five (5) out of ten (10) at 30 mph and one (1) out of ten (10) at 40 mph.⁷

Several major cities around the nation and in Washington State have adopted ordinances to reduce residential speeds to 20 mph. These cities include Seattle, Portland, Renton, New York. The intent is to reduce the potential for pedestrian injuries and fatalities.

Implications for College Avenue

College Avenue is an arterial street in the city of College Place. The City staff has indicated a desire to offer a corridor which provides multi-modal circulation along College Avenue. This is supported by the recent CARS project which offered a "Complete Streets" design. In addition, City Policies support these concepts.

- Goal 4 on pg. 17 - *Develop a commercial district reminiscent of a small town "main street" with a mix of uses including commercial, offices, banking, public facilities, and other specialty retail uses, with residences above, consistent with a pleasant pedestrian environment.*
- Goal 25 on pg. 19 - *Support the development and redevelopment of a walkable College Avenue from Rose Street to 13th Street as a Mixed-Use Downtown District that serves as an attractive location for diverse small businesses, tourism, arts and culture, entertainment, community events, and residents.*

⁶ <https://www.wsdot.wa.gov/Operations/Traffic/speedlimits.htm>

⁷ Source – Seattle Vision Zero Plan

Conclusion

After review of the foregoing, and consideration of all the factors, it is recommended the posted limit for the corridor be established at 25 mph. The proposed 25 mph speed limit, although not consistent with the observed 85 percentile speed in all sections of the corridor, is consistent with the City's desire to provide a "complete streets" concept on College Avenue.

Memorandum – Bicycle Traffic

The purpose of this memorandum is to evaluate different options for accommodating bicycle traffic on College Avenue between Lamperti Lane and Whitman Drive. This memorandum addresses the contract requirement of Task 6 – *How should bicycle traffic be accommodated?* The scope included an evaluation of the following:

- Bicycle volumes on College Avenue
- Crash Data related to bicycles
- Speed Limits on College Avenue
- Survey of bicycle stakeholders

Bicycle Volumes

Bicycle volumes on College Avenue were collected as part of the peak period turning movement counts collected during May 2019. A summary of the pedestrian volumes at each of the nine (9) analysis intersection. A summary of the bicycle volumes is presented in Table 1.

Table 1. Bicycle Volumes

	AM Peak Hour					PM Peak Hour				
	Approach From					Approach From				
Intersection	North	East	South	West	Total	North	East	South	West	Total
Whitman Drive	1	2	4	1	8	9	0	0	1	1
SW/SE 4 th Street	0	0	1	1	2	1	0	3	1	5
SW/SE 6 th Street	1	1	0	1	3	1	3	0	1	5
SW/SE 8 th Street	1	1	0	1	3	2	3	0	1	6
SW/SE 10 th Street	1	4	2	1	8	1	1	1	1	4
SW/SE 12 th Street	6	5	1	1	13	5	1	4	1	11
SW/SE 13 th Street	1	0	4	1	6	1	0	2	1	4
Lamperti Lane	2	4	0	1	7	2	1	1	1	5
					50					41

As shown in Table 1, there were a total of 50 bicycles recorded at the eight (8) analysis intersection during the AM peak hour and 41 during the PM peak hour. The highest AM peak bicycle volume (13) was recorded at the SW/SE 12th Street intersection whereas the highest PM peak bicycle volume (11) also occurred at the SW/SE 12th Street intersection. The lowest bicycle volume (2) occurred at the SW/SE 4th Street intersection during the AM period and at Whitman Drive (1) during the PM peak hour.

Crash Data

A summary of the five-year crash history by intersection is shown in Table 5 below. The five-year crash rate for each of the intersections that were analyzed and counted was calculated to provide an evaluation of the number of crashes relative to the total entering volume. The crash rate was calculated using a standardized formula, from the Federal Highway Administration. The crash rate was not calculated for intersections for which peak hour counts were not collected.

Table 5. Five Year Crash Data 2014 -2018.

Corridor	Intersection	5-year Crash History	Crash Rate ¹
College Avenue	NE Rose Street	1	NA
College Avenue	C Street	2	N/A
College Avenue	NW B Street	2	N/A
College Avenue	NE A Street	6	N/A
College Avenue	Whitman Drive	7	0.60
College Avenue	SE 4 th Street	7	0.82
College Avenue	SE 6 th Street	3	0.33
College Avenue	SE 8 th Street	1	0.11
College Avenue	SE 9 th Street	3	N/A
College Avenue	SE 10 th Street	2	0.15
College Avenue	SE 12 th Street	15	0.98
College Avenue	SW 13 th Street	1	0.09
College Avenue	SE Sunny Drive	5	N/A
College Avenue	SE Lamperti Street	9	0.62
College Avenue	SR 125	8	N/A
Total		72	

1) Crash Rate = $\frac{C \text{ for } n \text{ years}}{MEV \text{ for } n \text{ years}}$; Source: Federal Highway Administration

2) N/A – Intersections not included in the study area for which traffic counts were not available to determine the crash rate.

As shown in Table 5, the highest number of crashes (15) occurs at the SW/SE 12th Street intersection which also has the highest crash rate (0.98). Other high crash locations in the study area, Lamperti Lane to Whitman Drive, include Lamperti Lane (9 crashes), Whitman Drive and 4th Street (8 crashes). These intersections also have a relatively high crash rate within the study ranging from 0.82 at 4th Street to 0.60 at Whitman Drive.

These crash rates were compared to data available from the 2015 Washington State Annual Collision Summary which compares rates by county. The rates in this document are for segments not intersections. Converting the crash rate to segment rates, the crash rate is 322.13 crashes per 100M VMT (100 Million Vehicle Miles Traveled). The average for Walla Walla County in the 2015 report is 184.7 crashes per 100M VMT and the average rate for all State of Washington roads is 196.2. The crash rate for this section of College Avenue is above the county and statewide averages.

Of the 72 crashes on the corridor, 17 (24%) were right angle, 25 (35%) were rear end; 26 (36%) were fixed object and 3 (4%) were head on. One collision involved a bicycle. There were no pedestrian crashes recorded during the five-year period on the College Avenue corridor.

Speed Limits

Existing Speeds

Prevailing travel speeds on the corridor were collected at the ten (10) locations identified above. Speeds were summarized in general on 5 mph increments from 0 mph to greater than 70 mph. Speeds were summarized each hour for three consecutive days. The three-day results were averaged and presented in Table 2. Table 2 identifies the average speed and the 85th percentile speed. The 85th percentile is the speed which is usually the basis for the posted speed limit. The 85th percentile speed is the speed where 85 percent of the traffic is going less than and 15 percent exceed.

Table 2. Daily Speed Summary

#	Location	Section	Posted	Daily Speed					
				Northbound		Southbound		Total	
				Average	85 th Percentile	Average	85 th Percentile	Average	85 th Percentile
1	College Avenue	n/o 4 th Street	25	22	26	22	26	22	26
2	College Avenue	n/o Whitman Drive	30	24	28	24	27	24	28
3	College Avenue	n/o C Street	30	26	30	25	29	26	29
4	College Avenue	n/o B Street	30	25	29	25	29	25	29
5	College Avenue	n/o A Street	30	25	29	25	28	25	29
6	College Avenue	n/o SR 125	35	27	33	31	36	29	35
7	College Avenue	s/o Lamperti Lane	35	26	32	26	34	26	33
8	College Avenue	s/o 10 th Street	30	27	31	28	31	27	31
9	College Avenue	n/o 8 th Street	25	25	29	26	29	26	29
10	College Avenue	n/o Lamperti Lane	30	27	31	28	32	27	31

As shown in Table 2, the posted speed on the College Avenue corridor ranges between 25 mph and 35 mph. The posted speed is 35 mph south of Lamperti Lane; 30 mph between Lamperti Lane and 8th Street; 25 mph between 8th Street and Whitman Drive; and 30 mph south of Whitman Drive.

The result of the speed study indicates that motorists on College Avenue comply with the posted speeds. The observed speeds indicate the posted speed reflects actual speeds on the corridor. There is no significant difference between speeds in the northbound and speeds in the southbound direction.

Impact of Speed

The following information was obtained from National Highway Traffic Safety Administration (NHTSA) "Traffic Safety Facts"¹

Combined Studies have estimated the survivability of crashes for non-motorists, based on the motor vehicle speed upon impact. For example, in a 2011 study, Brian Tefft of the Automobile Association of America (AAA) Foundation for Traffic Safety determined that:

- In a crash at 20 mph, the likelihood of a pedestrian sustaining a serious or fatal injury is 18 percent;
- In a crash at 30 mph, the likelihood of a pedestrian sustaining a serious or fatal injury is 50 percent;
- In a crash at 40 mph, the likelihood of a pedestrian sustaining a serious or fatal injury is 77 percent.²

This Research Note considers the survivability of pedestrian and bicyclist crashes, using posted speed limit as a surrogate for travel speed. The analysis examines data regarding fatally injured non-motorists from FARS and non-motorists who were injured (but not fatally) from NHTSA's National Automotive Sampling System General Estimate System. Fatal pedestrian crashes were more likely to occur on roads with higher posted speed limits, compared with non-fatal injury pedestrian crashes. While the most common posted speed limits for pedestrian fatalities were 45 mph (18.3%), 35 mph (17.4%), and 55 mph (13.9%), the most common posted speed limits for pedestrian non-fatal injuries were 25 mph (31.9%), 35 mph (24.3%), and 30 mph (14.1%).

In summary, the prevailing speed has a significant impact on the extent of injury realized if pedestrian-bicycle/crashes occur. Approximately 32 percent of the crashes at 25 mph result in non-fatal injuries.

Survey

A survey of bicycle users in the College Avenue corridor was conducted. The purpose of the survey was to determine how bicycle traffic should be accommodated on the College Avenue corridor. The survey asked five specific questions as follows:

Question 1: *What is your preferred transportation mode when riding a bicycle?*

Response: Of the six (6) responses, four (66%) requested a "Designated Bicycle Lane". Two (33%) stated "In the roadway".

¹Pedestrian and Bicyclist Data Analysis; March 2018;

https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/812502_pedestrian-and-bicyclist-data-analysis-tsfr-research-note.pdf

² Tefft, B. C. (2011). Impact speed and a pedestrian's risk of severe injury or death. Retrieved from the AAA Foundation website: www.aaafoundation.org/pdf/2011PedestrianRiskVsSpeed.pdf.

Question 2: *Where do you ride your bicycle on College Avenue – the sidewalk or the roadway, and why?*

Response: Of the six (6) responses, four (66%) indicated they ride in the roadway and two (33%) indicated they ride on the sidewalk. The reasons for riding in the roadway include: conflict with pedestrian traffic; bicycles don't belong on the sidewalk; and too many driveway cuts and potential for pedestrian/bicycle conflicts on the sidewalk. Reasons for riding on the sidewalk include: sidewalk is safety; and traffic is scary, and I am not going to get killed to satisfy a city ordinance.

Question 3: *Would you be comfortable riding your bicycle between parked cars and the curb?*

Response: Of the six (6) responses; five (83%) said "no" they would not be comfortable riding between parked cars and the curb; one (17%) said they would be comfortable between parked cars and the travel lane.

Question 4: *What preferred north-south route; if any, would like to see designated as an alternative to College Avenue for bicycle traffic?*

Response: Of the six (6) responses, four (66%) didn't believe there were any other acceptable routes; one (17%) identified 6th Street; and one (17%) identified SW Bade Avenue.

Question 5: *Please list your three most frequent destinations when riding a bicycle?*

Response: Of the six (6) responses, there were thirteen (13) destinations as noted in the survey identified. The survey destinations selected include: two (2) indicated Andy's Market and two (2) indicated Kiwanis Park; one (1) identified Roger's Bakery, the Post Office, Lion's Park and Walmart; and four (4) identified locations other than those identified in the survey to include 1) going either north or south to longer rides outside town; 2) often just passing through; 3) ride for workout; and 4) recreational ride through the city.

Question 6: *How many times a week do you ride your bicycle?*

Response: Of the six (6) responses, two (33%) ride their bicycle three (3) times a week and two (33%) ride five (5) times a week; and one (1) each (17%) ride there bike either twice a week or once a week.

Question 7: *What improvements or activities would encourage you to ride your bicycle more frequently? For Example: better connections, more bike lanes, more separation from traffic, better street lighting?*

Response: Of the six (6) responses, four (4) requested "more bike lanes"; one (1) response indicated more sharrows and lower speed limit on College Avenue with painted green bike boxes at intersections with signals; and one (1) indicated "all of the above. One comment indicated more bike lanes should be provided although not configured like the bike lanes are along 4th and Academy Way. One request also asked that bike lanes be on the street but separated from traffic.

Question 8: *If there is anything else that you would like to note in completing this survey, please include below:*

Response: Of the five (5) responses, two (2) responses thanked the City for seeking input from those who bike; one (1) comment stated the configuration with the poles along the path on 4th Street and Academy are a real eye sore and make bike riding through there catastrophic; one (1) comment stated College Avenue from 10th Street to Whitman Drive is narrow and dangerous for bicyclists; and one (1) comment said there was nothing else they would like to note.

Conclusions

A review of the foregoing discussion suggests that provision of bicycles lanes on College Avenue would be a benefit to users and enhance multi-modal circulation on the College Avenue corridor. Currently, there are significant bicycle volumes on the corridor as noted in the AM and PM peak hour traffic counts. During the AM peak, there were 50 bicycles recorded at the eight (8) analysis intersections. During the PM peak hour, there were 41 bicycles noted at the intersections.

Although there was a significant number of crashes along the corridor, there was only one (1) bicycle crash which occurred at the SW/SE 12th Street intersection. It appears that bicycling on the corridor is relatively safe as indicated by the bicycle crash history.

Speeds on the corridor are consistent with the observed 85th percentile speed. The speeds between 8th Street and Whitman Drive are consistent with the posted speed of 25 mph. The speeds south of 8th Street are consistent with the posted speed of 30 mph. Even so, the chance for injury or death is significantly reduced if the speed limit between 8th and Lamperti is reduced to 25 mph.

The result of the survey indicated the stakeholders would like to see more bike lanes on the corridor and preferably separated from traffic.

Recommended Action

Based on input from City staff, it was determined that whatever action was decided for serving bicycles in the College Avenue corridor should be consistent for the length of the corridor. Because the roadway cross sectional width varies significantly through the corridor, in some locations not providing sufficient width for a bicycle lane, it was determined that no bike lane provisions should be provided in the corridor.

Under this action, the staff agreed the City ordinance *Chapter 10.16.160 Riding on Sidewalks* should be revised to allow bicycles to ride on the sidewalk.

TECHNICAL APPENDIX

12' SPACING

6-2-19

COUNTERS

check

#1 1875 S. COLLEGE A = S. BOUND B = N. BOUND

#2 CEDAR BEND ¹/₂ COLLEGE A = S. BOUND B = N. BOUND

#6 1425 S. COLLEGE B = S. BOUND A = N. BOUND

#3 1028 S. COLLEGE A = S. BOUND B = N. BOUND

#5 625 S. COLLEGE A = S. BOUND B = N. BOUND

College Avenue Traffic Assessment

July 5, 2019

24 Hour Data Summary

Tues 5/14															
Speed								Classification							
NB				SB				NB				SB			
Counter	Avg	85%ile	Avg	85%ile	Avg	85%ile	Total	Cars	Trucks/Buses	Cars	Trucks/Buses	Cars	Trucks/Buses	Cars	Total
1	21.9	26.1	21.7	25.9	22	26	26	90.8	9.2	96.9	3.1	94	6	2498	5122
2	23.6	27.8	24.2	27.5	24	28	28	92.5	7.5	98.1	1.9	95	5	2890	5926
4	26.4	30.2	25.1	28.7	26	29	29	96.5	3.5	96.3	3.7	96	4	2722	5405
5	25.5	29.4	25.4	29.4	25	29	29	97.4	2.6	97	3	97	3	2974	6017
6	24.7	28.6	24.7	28.3	25	28	28	97.4	2.6	97.4	2.6	97	3	2845	5831

Wed 5/15															
Speed								Classification							
NB				SB				NB				SB			
Counter	Avg	85%ile	Avg	85%ile	Avg	85%ile	Total	Cars	Trucks/Buses	Cars	Trucks/Buses	Cars	Trucks/Buses	Cars	Total
1	21.6	25.5	22.1	26.3	22	26	26	92.6	7.4	97.1	2.9	95	5	2398	5012
2	24.1	28.4	24.2	27.5	24	28	28	94	6	98	2	96	4	2738	5723
4	25.9	29.8	24.9	28.7	25	29	29	95	5	96.8	3.2	96	4	2670	5290
5	25.1	29	25.2	29.4	25	29	29	97.1	2.9	97	3	97	3	2848	5839
6	24.4	28.5	24.4	28.5	24	29	29	97.3	2.7	97.2	2.8	97	3	2735	5717

College Avenue Traffic Assessment

July 5, 2019

24 Hour Data Summary

Time: June 4 - June 6

Tues 6/4																											
Speed										Classification																	
NB					SB					Total				NB				SB				Total				Volume	
Counter	Avg	85%ile	Avg	85%ile	Avg	85%ile	Total	Avg	85%ile	Cars	Trucks/Buses	Cars	Trucks/Buses	Cars	Trucks/Buses	Cars	Trucks/Buses	Cars	Trucks/Buses	Cars	Trucks/Buses	NB	5B	Total			
1	27.7	33.5	31.4	36.4	30	35		30	35	97.3	2.7	98.2	1.8	98	2	1888	1944	3832									
2	26.1	32.1	26.1	34	26	33		26	33	96.8	3.2	95.8	4.2	96	4	2255	2271	4526									
4	27.2	31	27.8	31	28	31		28	31	96.3	3.7	97.2	2.8	97	3	4350	3955	8305									
5	25.6	28.6	25.7	29	26	29		26	29	97	3	97	3	97	3	4085	3965	8050									
6	26.8	30.7	28.3	32	28	31		28	31	95.9	4.1	96.5	3.5	96	4	4036	3830	7866									

Wed 6/5																								
Speed										Classification														
NB					SB					Total			NB				SB			Total		Volume		
Counter	Avg	85%ile	Avg	85%ile	Avg	85%ile	Total	Avg	85%ile	Cars	Trucks/Buses	Cars	Trucks/Buses	Cars	Trucks/Buses	Cars	Trucks/Buses	NB	SB	Total	NB	SB	Total	
1	26.8	32.8	31.5	36.4	29	35	35	29	35	93.7	6.3	96.8	3.2	95	5	1846	1957	3803						
2	25.8	31.8	26	33.8	26	33	33	26	33	93.5	6.5	94.9	5.1	94	6	2205	2269	4474						
4	27.1	31	27.8	31	27	31	31	27	31	95.2	4.8	96.8	3.2	96	4	4207	3919	8126						
5	25.5	28.6	25.6	29	26	29	29	26	29	95.6	4.4	96.5	3.5	96	4	4133	4061	8194						
6	26.4	30.3	28.1	31.7	27	31	31	27	31	94.2	5.8	96.2	3.8	95	5	4152	3692	7844						

College Avenue Traffic Assessment

July 5, 2019

24 Hour Data Summary

Thur6/6														
Speed					Classification									
NB					SB					Total				
Counter	Avg	85%ile	Avg	85%ile	Cars	Trucks/Buses	Cars	Trucks/Buses	Cars	Cars	Trucks/Buses	Cars	NB	Total
1	26.2	32.7	30.5	35.8	95.5	4.5	98.2	1.8	97	97	3	1478	1576	3054
2	25.7	31.3	25.1	33.4	94.9	5.1	95.1	4.9	95	95	5	1693	1709	3402
4	26.6	30.6	27.5	31	95.4	4.6	97.1	2.9	96	96	4	3350	3141	6491
5	25.2	28.3	25.3	28.6	96.1	3.9	96.7	3.3	96	96	4	1774	1769	3543
6	26.5	30.6	28.1	31.4	95.1	4.9	96.6	3.4	96	96	4	3513	3165	6678

Summary														
Speed					Classification									
NB					SB					Total				
Counter	Avg	85%ile	Avg	85%ile	Cars	Trucks/Buses	Cars	Trucks/Buses	Cars	Cars	Trucks/Buses	Cars	NB	Total
1	27	33	31	36	96	4.5	97.73	2.27	97	97	3	1737.3	1825.7	3563
2	26	32	26	34	95	4.93	95.27	4.73	95	95	5	2051	2083	4134
4	27	31	28	31	96	4.37	97.03	2.97	96	96	4	3969	3671.7	7640.7
5	25	29	26	29	96	3.77	96.73	3.27	96	96	4	3330.7	3265	6595.7
6	27	31	28	32	95	4.93	96.43	3.57	96	96	4	3900.3	3562.3	7462.7

Location: S College Avenue/SW 13th Street

City/Town College Place

Checker: DLN

Weather: Sunny

Job: College Avenue

Date: 5/14/19

Thur

Start Time: 6:30 AM

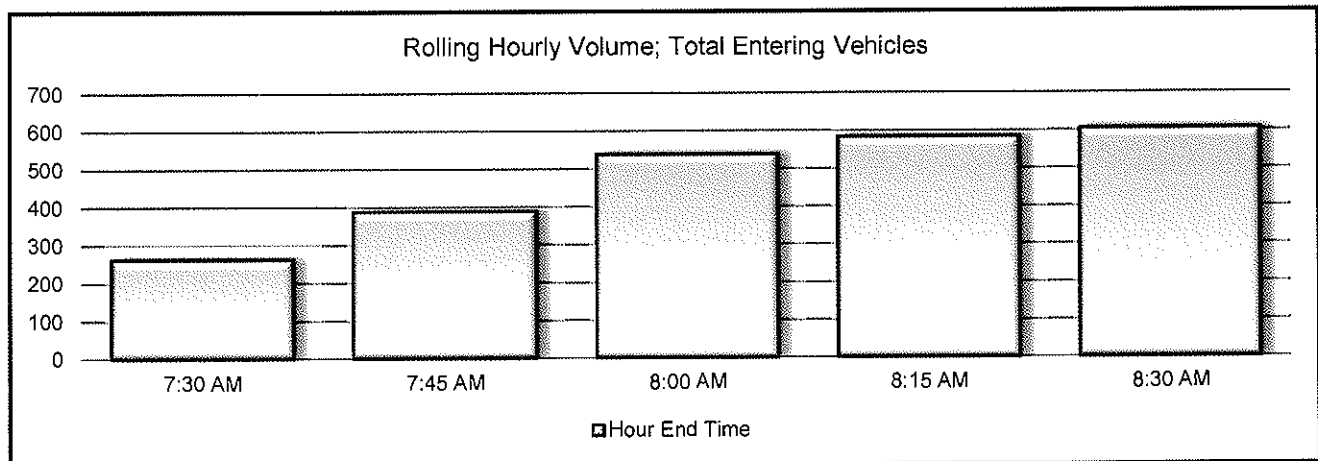
Pk Hr: 7:30 AM 8:30 AM

of minutes counted per interval: 14.0 minutes

END TIME	From the NORTH (SOUTHBOUND)						N Leg Peds	From the EAST (WESTBOUND)						E Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
6:45 AM	0	12	0	12	0	0	1	0	0	0	0	0	0	0
7:00 AM	1	32	0	33	2	0	1	0	0	0	0	0	0	0
7:15 AM	0	39	0	39	2	1	1	0	0	0	0	0	0	0
7:30 AM	0	39	0	39	3	1	2	0	0	0	0	0	0	0
7:45 AM	0	72	0	72	4	1	1	0	0	0	0	0	0	0
8:00 AM	1	55	0	56	10	0	1	0	0	0	0	0	0	0
8:15 AM	0	64	0	64	2	0	1	0	0	0	0	0	0	0
8:30 AM	1	40	0	41	3	0	1	0	0	0	0	0	0	0
PK HR	2	231	0	233	19	1	4	0	0	0	0	0	0	0
Adj HR	2	248	0	250	20	1	4	0	0	0	0	0	0	0

END TIME	From the SOUTH (NORTHBOUND)						S Leg Peds	From the WEST (EASTBOUND)						W Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
6:45 AM	0	16	0	16	2	0	0	0	0	0	0	0	2	1
7:00 AM	0	31	1	32	4	0	1	0	0	0	0	0	1	1
7:15 AM	0	38	1	39	4	1	1	0	0	0	0	0	0	0
7:30 AM	0	30	2	32	7	1	2	1	0	1	2	0	0	0
7:45 AM	0	73	1	74	3	1	1	0	0	0	0	0	0	0
8:00 AM	0	145	2	147	6	0	0	1	0	1	2	0	0	0
8:15 AM	0	53	2	55	2	0	0	2	0	0	2	1	0	0
8:30 AM	0	46	0	46	5	3	5	2	0	2	4	0	0	0
PK HR	0	317	5	322	16	4	6	5	0	3	8	1	1	0
Adj HR	0	340	5	345	17	4	6	5	0	3	8	1	1	0

END TIME	15 Min Totals (adj)							
	Veh	HV	Peds	Bikes	Time Start - End	Rolling Hr Vol	Pk Hr?	
6:45	30	2	2	2	6:30 AM - 7:30 AM	262	no	
7:00	70	6	1	3	6:45 AM - 7:45 AM	388	no	
7:15	84	6	2	2	7:00 AM - 8:00 AM	538	no	
7:30	78	11	2	4	7:15 AM - 8:15 AM	584	no	
7:45	156	8	2	2	7:30 AM - 8:30 AM	604	YES	
8:00	220	17	0	1				
8:15	130	5	0	1				
8:30	98	9	3	6				



INTERSECTION: S College Avenue/SW 13th Street
 PEAK HOUR: 7:30 AM 8:30 AM
 DATE: 14-May-19

DIRECTIONAL LEG VOLUMES -- PEAK HOUR

		N	
		250	343
W	7		0
	8		0
		253	345
		S	

APPROACH VOLUME TURN MOVEMENTS -- PEAK HOUR

		250			
		2	248	0	
		RIGHT	THRU	LEFT	
		NORTH			
		WEST		EAST	
		SOUTH			
		LEFT	THRU	RIGHT	
		5	340	0	
			345		
				0	
				0	
				0	
				0	
				0	
				0	

		3		LEFT	
8	0			THRU	
	5			RIGHT	

		0		RIGHT	
		0		THRU	
		0		LEFT	

		0			
		0		0	
		0			

Pedestrians (Peak Hour)	
Crossing Leg	# of
North	4
South	6
East	0
West	0
Total	10

Bikes (Peak Hour)	
Approach	# of
From North:	1
From South:	4
From East:	0
From West:	1
Total	6

ADJUSTMENT FACTORS DERIVED FROM COUNT

Peak Hour Factors:	From North:	0.81	SB
	From South:	0.55	NB
	From East:	n/a	WB
	From West:	0.47	EB
	Total	0.69	All

Heavy Vehicles:	From North:	20	8.0%	SB
	From South:	17	4.9%	NB
	From East:	0	#DIV/0!	WB
	From West:	1	12.5%	EB

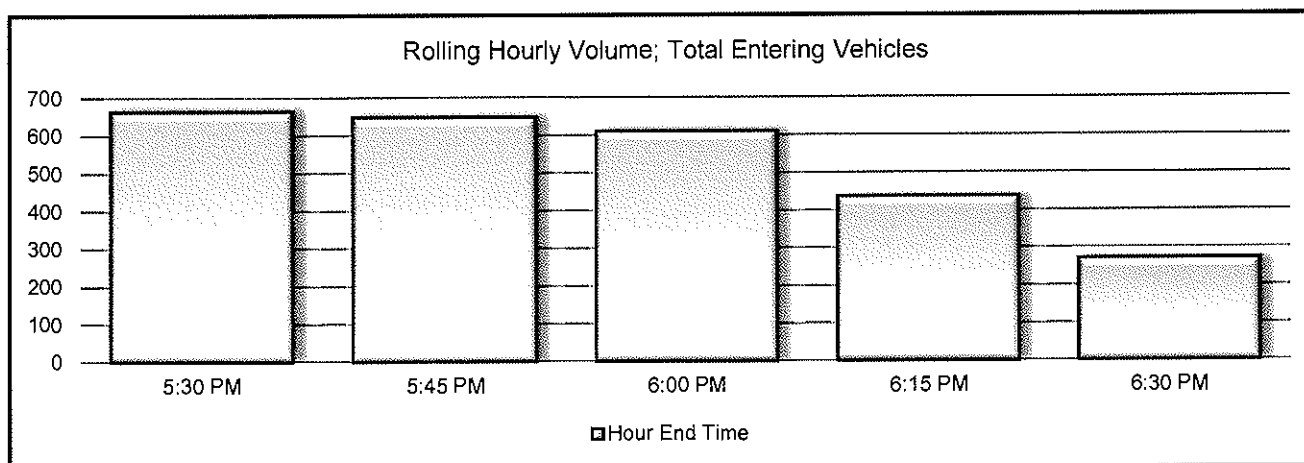
Location: S College Avenue/SW 13th Street	City/Town: College Place	
Checker: DLN	Weather: Sunny	Job: Avenue Traffic Asse
Date: 5/13/19	Thur	Start Time: 4:30 PM
# of minutes counted per interval: 14.0 minutes		Pk Hr: 4:30 PM 5:30 PM

END TIME	From the NORTH (SOUTHBOUND)						N Leg Peds	From the EAST (WESTBOUND)						E Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
4:45 PM	2	68	0	70	3	0	2	0	0	0	0	0	0	0
5:00 PM	1	74	0	75	2	0	1	0	0	0	0	0	0	0
5:15 PM	3	72	0	75	1	0	1	0	0	0	0	0	0	0
5:30 PM	1	70	0	71	2	1	1	0	0	0	0	0	0	0
5:45 PM	0	65	0	65	3	0	1	0	0	0	0	0	0	0
6:00 PM	1	61	0	62	1	0	1	0	0	0	0	0	0	0
6:15 PM				0							0			
6:30 PM				0							0			
PK HR	7	284	0	291	8	1	5	0	0	0	0	0	0	0
Adj HR	8	304	0	312	9	1	5	0	0	0	0	0	0	0

END TIME	From the SOUTH (NORTHBOUND)						S Leg Peds	From the WEST (EASTBOUND)						W Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
4:45 PM	1	67	1	69	5	0	1	2	0	0	2	0	0	1
5:00 PM	0	82	1	83	3	1	1	3	0	0	3	1	0	1
5:15 PM	0	82	3	85	3	1	1	2	0	0	2	0	0	1
5:30 PM	0	81	0	81	1	0	0	3	0	0	3	0	0	1
5:45 PM	0	56	2	58	4	0	0	2	0	1	3	0	0	1
6:00 PM	0	59	2	61	0	0	0	1	0	2	3	0	0	0
6:15 PM				0							0			
6:30 PM				0							0			
PK HR	1	312	5	318	12	2	3	10	0	0	10	1	1	4
Adj HR	1	334	5	340	13	2	3	11	0	0	11	1	1	4

END TIME	15 Min Totals (adj)							
	Veh	HV	Peds	Bikes				
16:45	151	9	0	4				
17:00	173	6	1	3				
17:15	174	4	1	3				
17:30	166	3	1	2				
17:45	135	8	0	2				
18:00	135	1	0	1				
18:15	0	0	0	0				
18:30	0	0	0	0				

Time	Rolling	
Start - End	Hr Vol	Pk Hr?
4:30 PM 5:30 PM	664	YES
4:45 PM 5:45 PM	648	no
5:00 PM 6:00 PM	610	no
5:15 PM 6:15 PM	436	no
5:30 PM 6:30 PM	270	no



INTERSECTION: S College Avenue/SW 13th Street
 PEAK HOUR: 4:30 PM 5:30 PM
 DATE: 13-May-19

DIRECTIONAL LEG VOLUMES -- PEAK HOUR

		N	
		312	334
W	13		0
	11		1
		315	340
		S	

APPROACH VOLUME TURN MOVEMENTS -- PEAK HOUR

		312			
		8	304	0	
		RIGHT	THRU	LEFT	
		NORTH			
		WEST		EAST	
		SOUTH			
		LEFT	THRU	RIGHT	
		5	334	1	
		340			

0	LEFT
0	THRU
11	RIGHT

0	RIGHT
0	THRU
0	LEFT

Pedestrians (Peak Hour)	
Crossing Leg	# of
North	5
South	3
East	0
West	4
Total	12

Bikes (Peak Hour)	
Approach	# of
From North:	1
From South:	2
From East:	0
From West:	1
Total	4

ADJUSTMENT FACTORS DERIVED FROM COUNT

Peak Hour Factors:	From North:	0.97	SB
	From South:	0.93	NB
	From East:	n/a	WB
	From West:	0.86	EB
	Total	0.95	All

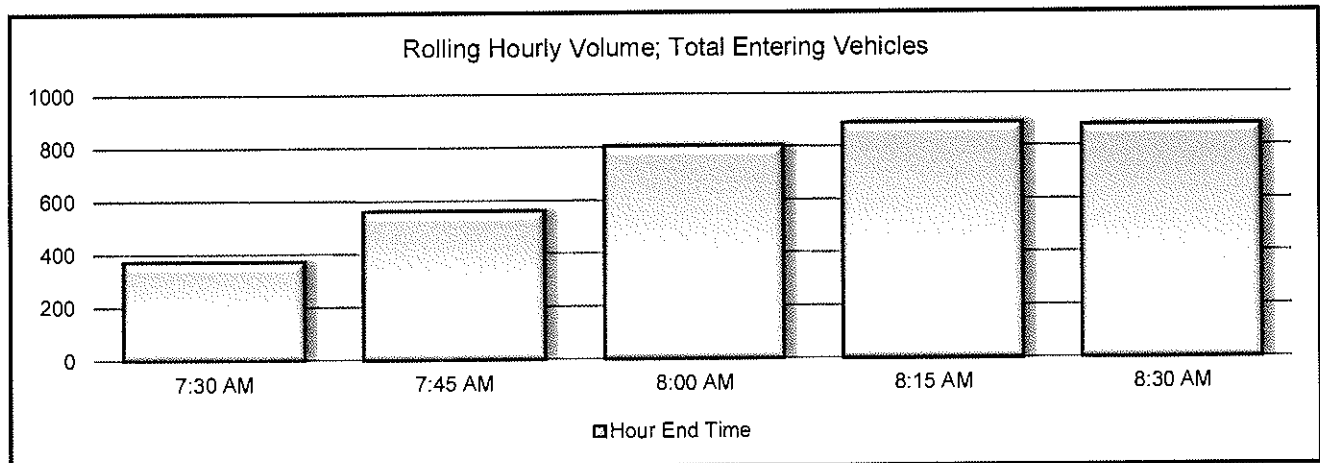
Heavy Vehicles:	From North:	9	2.9%	SB
	From South:	13	3.8%	NB
	From East:	0	#DIV/0!	WB
	From West:	1	9.1%	EB

Location:	S College Avenue/Lamperti Lane	City/Town	College Place
Checker:	GAN	Weather:	Sunny
Date:	5/7/19	Thur	Start Time: 6:30 AM
# of minutes counted per interval:		14.0 minutes	Pk Hr: 7:15 AM 8:15 AM

END TIME	From the NORTH (SOUTHBOUND)						N Leg Peds	From the EAST (WESTBOUND)						E Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
6:45 AM	9	22	4	35	1	1	0	8	2	0	10	1	0	0
7:00 AM	2	21	13	36	1	0	1	9	4	1	14	1	0	5
7:15 AM	3	26	12	41	2	1	0	14	6	5	25	2	1	10
7:30 AM	3	29	5	37	2	2	1	11	8	5	24	2	2	3
7:45 AM	2	71	15	88	9	0	0	21	1	12	34	1	2	1
8:00 AM	4	84	17	105	3	0	0	28	2	26	56	0	0	1
8:15 AM	3	40	32	75	5	0	0	17	6	5	28	2	0	0
8:30 AM	3	20	11	34	1	0	1	16	0	3	19	0	0	0
PK HR	12	224	69	305	19	2	1	77	17	48	142	5	4	5
Adj HR	13	240	74	327	20	2	1	83	18	51	152	5	4	5

END TIME	From the SOUTH (NORTHBOUND)						S Leg Peds	From the WEST (EASTBOUND)						W Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
6:45 AM	0	8	1	9	3	0	0	0	7	1	8	0	0	0
7:00 AM	2	20	2	24	5	1	0	1	12	2	15	0	1	0
7:15 AM	2	20	1	23	2	0	0	2	9	2	13	1	0	0
7:30 AM	0	20	1	21	3	0	1	5	7	1	13	2	0	0
7:45 AM	5	72	3	80	6	0	0	8	12	16	36	1	0	0
8:00 AM	26	92	4	122	2	0	0	17	5	10	32	1	0	0
8:15 AM	11	39	1	51	5	0	0	2	18	6	26	2	0	0
8:30 AM	2	17	1	20	2	0	0	0	9	5	14	0	0	0
PK HR	42	223	9	274	16	0	1	32	42	33	107	6	1	0
Adj HR	45	239	10	294	17	0	1	34	45	35	114	6	1	0

END TIME	15 Min Totals (adj)							
	Veh	HV	Peds	Bikes	Time Start - End	Rolling Hr Vol	Pk Hr?	
6:45	66	5	1	0	6:30 AM 7:30 AM	372	no	
7:00	95	8	2	6	6:45 AM 7:45 AM	561	no	
7:15	109	8	2	11	7:00 AM 8:00 AM	804	no	
7:30	102	10	4	5	7:15 AM 8:15 AM	888	YES	
7:45	255	18	2	1	7:30 AM 8:30 AM	879	no	
8:00	338	6	0	1				
8:15	193	15	0	0				
8:30	93	3	0	1				



INTERSECTION:	S College Avenue/Lamperti Lane
PEAK HOUR:	7:15 AM 8:15 AM
DATE:	7-May-19

DIRECTIONAL LEG VOLUMES -- PEAK HOUR

	W	E	
N	41 114	152 164	327 357
S	325 294		

APPROACH VOLUME TURN MOVEMENTS -- PEAK HOUR

[illegible]

Crossing Leg	# of
North	1
South	1
East	5
West	0
Total	7

Approach	# of
From North:	2
From South:	0
From East:	4
From West:	1
Total	7

ADJUSTMENT FACTORS DERIVED FROM COUNT

Peak Hour Factors:	From North:	0.73	SB
	From South:	0.56	NB
	From East:	0.63	WB
	From West:	0.74	EB
	Total	0.66	All

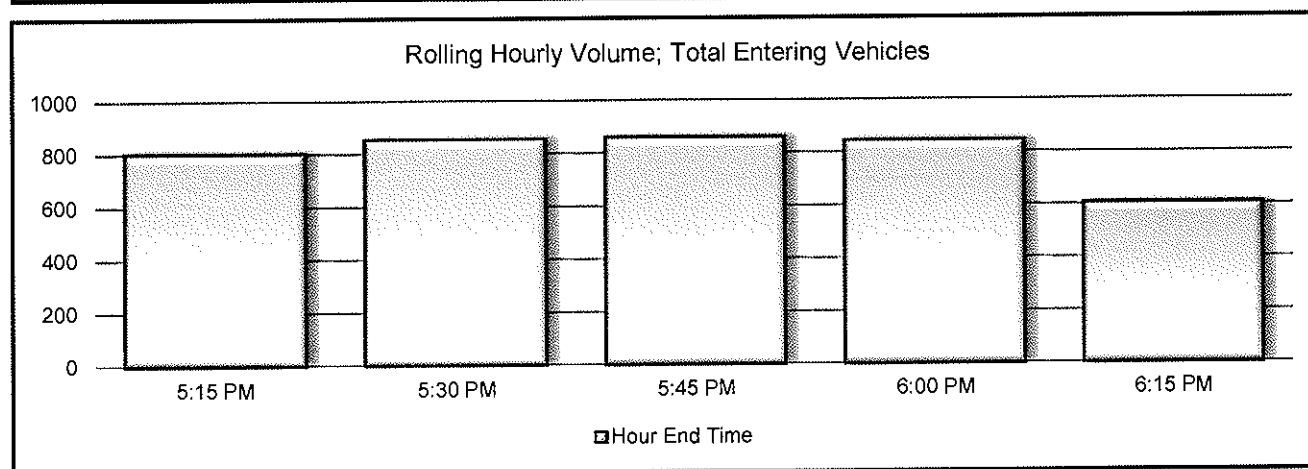
Heavy Vehicles:	From North:	20	6.1%	SB
	From South:	17	5.8%	NB
	From East:	5	3.3%	WB
	From West:	6	5.3%	EB

Location: S College Avenue/Lamperti Lane	City/Town: College Place	
Checker: GAN	Weather: Sunny	Job: Avenue Traffic Asse
Date: 5/6/19	Thur	Start Time: 4:15 PM
# of minutes counted per interval: 14.0 minutes		Pk Hr: 4:45 PM 5:45 PM

END TIME	From the NORTH (SOUTHBOUND)						N Leg Peds	From the EAST (WESTBOUND)						E Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
4:30 PM	8	31	30	69	5	0	0	22	14	4	40	1	0	1
4:45 PM	8	33	27	68	3	0	0	36	8	3	47	1	0	10
5:00 PM	8	38	28	74	1	1	0	41	13	4	58	0	0	0
5:15 PM	10	41	36	87	3	0	0	48	16	4	68	4	0	0
5:30 PM	17	35	39	91	3	1	0	48	13	1	62	2	1	4
5:45 PM	7	33	28	68	4	0	0	41	18	2	61	1	0	1
6:00 PM	8	23	28	59	0	0	0	39	14	2	55	0	1	0
6:15 PM				0							0			
PK HR	42	147	131	320	11	2	0	178	60	11	249	7	1	5
Adj HR	45	158	140	343	12	2	0	191	64	12	267	8	1	5

END TIME	From the SOUTH (NORTHBOUND)						S Leg Peds	From the WEST (EASTBOUND)						W Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
4:30 PM	1	38	1	40	2	0	0	2	9	7	18	0	0	0
4:45 PM	2	33	3	38	3	1	1	3	16	4	23	1	1	2
5:00 PM	1	30	3	34	2	0	0	0	11	7	18	0	1	1
5:15 PM	7	40	2	49	1	1	0	3	8	7	18	1	0	0
5:30 PM	3	42	3	48	1	0	0	0	6	8	14	1	1	0
5:45 PM	0	35	0	35	0	0	0	2	12	3	17	0	0	0
6:00 PM	2	32	5	39	1	0	0	2	7	8	17	2	0	0
6:15 PM				0							0			
PK HR	11	147	8	166	4	1	0	5	37	25	67	2	1	1
Adj HR	12	158	9	179	4	1	0	5	40	27	72	2	1	1

END TIME	15 Min Totals (adj)				Time	Rolling	Pk Hr?
	Veh	HV	Peds	Bikes			
16:30	179	9	0	1	Start - End	Hr Vol	
16:45	189	9	2	14	4:15 PM 5:15 PM	803	no
17:00	197	3	2	1	4:30 PM 5:30 PM	854	no
17:15	238	10	1	0	4:45 PM 5:45 PM	859	YES
17:30	230	8	3	4	5:00 PM 6:00 PM	844	no
17:45	194	5	0	1	5:15 PM 6:15 PM	606	no
18:00	182	3	1	0			
18:15	0	0	0	0			



INTERSECTION:	S College Avenue/Lamperti Lane
PEAK HOUR:	4:45 PM 5:45 PM
DATE:	6-May-19

DIRECTIONAL LEG VOLUMES -- PEAK HOUR

	A1	A2	
M	343	376	
F	118	267	
	72	192	
	175	179	
			chi square = 1.02

APPROACH VOLUME TURN MOVEMENTS -- PEAK HOUR

[illegible]

Crossing Leg	# of
North	0
South	0
East	5
West	1
Total	6

Bikes (Peak Hour)	
Approach	# of
From North:	2
From South:	1
From East:	1
From West:	1
Total	5

ADJUSTMENT FACTORS DERIVED FROM COUNT

Peak Hour Factors:	From North:	0.88	SB
	From South:	0.85	NB
	From East:	0.92	WB
	From West:	0.93	EB
	Total	0.90	All

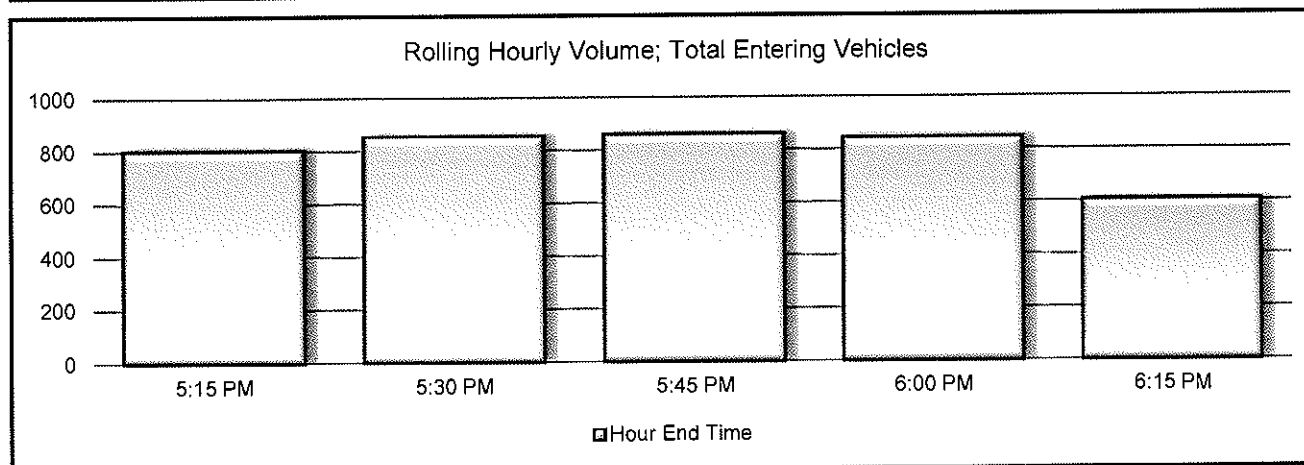
Heavy Vehicles:	From North:	12	3.5%	SB
	From South:	4	2.2%	NB
	From East:	8	3.0%	WB
	From West:	2	2.8%	EB

Location:	S College Avenue/Lamperti Lane	City/Town	College Place
Checker:	GAN	Weather:	Sunny
Date:	5/6/19	Thur	Start Time: 4:15 PM
# of minutes counted per interval:	14.0 minutes	Job:	3 Avenue Traffic Asse
		Pk Hr:	4:45 PM 5:45 PM

END TIME	From the NORTH (SOUTHBOUND)							From the EAST (WESTBOUND)							E Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes	N Leg Peds	RT	TH	LT	TOTAL	HV	Bikes		
4:30 PM	8	31	30	69	5	0	0	22	14	4	40	1	0		1
4:45 PM	8	33	27	68	3	0	0	36	8	3	47	1	0		10
5:00 PM	8	38	28	74	1	1	0	41	13	4	58	0	0		0
5:15 PM	10	41	36	87	3	0	0	48	16	4	68	4	0		0
5:30 PM	17	35	39	91	3	1	0	48	13	1	62	2	1		4
5:45 PM	7	33	28	68	4	0	0	41	18	2	61	1	0		1
6:00 PM	8	23	28	59	0	0	0	39	14	2	55	0	1		0
6:15 PM				0							0				
PK HR	42	147	131	320	11	2	0	178	60	11	249	7	1		5
Adj HR	45	158	140	343	12	2	0	191	64	12	267	8	1		5

END TIME	From the SOUTH (NORTHBOUND)							From the WEST (EASTBOUND)							W Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes	S Leg Peds	RT	TH	LT	TOTAL	HV	Bikes		
4:30 PM	1	38	1	40	2	0	0	2	9	7	18	0	0		0
4:45 PM	2	33	3	38	3	1	1	3	16	4	23	1	1		2
5:00 PM	1	30	3	34	2	0	0	0	11	7	18	0	1		1
5:15 PM	7	40	2	49	1	1	0	3	8	7	18	1	0		0
5:30 PM	3	42	3	48	1	0	0	0	6	8	14	1	1		0
5:45 PM	0	35	0	35	0	0	0	2	12	3	17	0	0		0
6:00 PM	2	32	5	39	1	0	0	2	7	8	17	2	0		0
6:15 PM				0							0				
PK HR	11	147	8	166	4	1	0	5	37	25	67	2	1		1
Adj HR	12	158	9	179	4	1	0	5	40	27	72	2	1		1

END TIME	15 Min Totals (adj)						
	Veh	HV	Peds	Bikes			
16:30	179	9	0	1	Time Start - End		
16:45	189	9	2	14			
17:00	197	3	2	1	4:15 PM	5:15 PM	803 no
17:15	238	10	1	0	4:30 PM	5:30 PM	854 no
17:30	230	8	3	4	4:45 PM	5:45 PM	859 YES
17:45	194	5	0	1	5:00 PM	6:00 PM	844 no
18:00	182	3	1	0	5:15 PM	6:15 PM	606 no
18:15	0	0	0	0			



INTERSECTION: S College Avenue/Lamperti Lane
 PEAK HOUR: 4:45 PM 5:45 PM
 DATE: 6-May-19

DIRECTIONAL LEG VOLUMES -- PEAK HOUR

		N	
		343	376
W	118		267
	72		192
		175	179
		S	

APPROACH VOLUME TURN MOVEMENTS -- PEAK HOUR

		343			
		45	158	140	
		RIGHT	THRU	LEFT	
		NORTH			
72	27	LEFT			RIGHT
	40	THRU	WEST	EAST	THRU
	5	RIGHT			LEFT
		SOUTH			
		LEFT	THRU	RIGHT	
		9	158	12	
		179			

Pedestrians (Peak Hour)	
Crossing Leg	# of
North	0
South	0
East	5
West	1
Total	6

Bikes (Peak Hour)	
Approach	# of
From North:	2
From South:	1
From East:	1
From West:	1
Total	5

ADJUSTMENT FACTORS DERIVED FROM COUNT

Peak Hour Factors:	From North:	0.88	SB
	From South:	0.85	NB
	From East:	0.92	WB
	From West:	0.93	EB
	Total	0.90	All

Heavy Vehicles:	From North:	12	3.5%	SB
	From South:	4	2.2%	NB
	From East:	8	3.0%	WB
	From West:	2	2.8%	EB

Location: S College Avenue/SW 10th Street

City/Town College Place

Checker: GAN

Weather:

Sunny

Job: Avenue Traffic Asse

Date: 5/14/19

Thur

Start Time:

6:30 AM

Pk Hr:

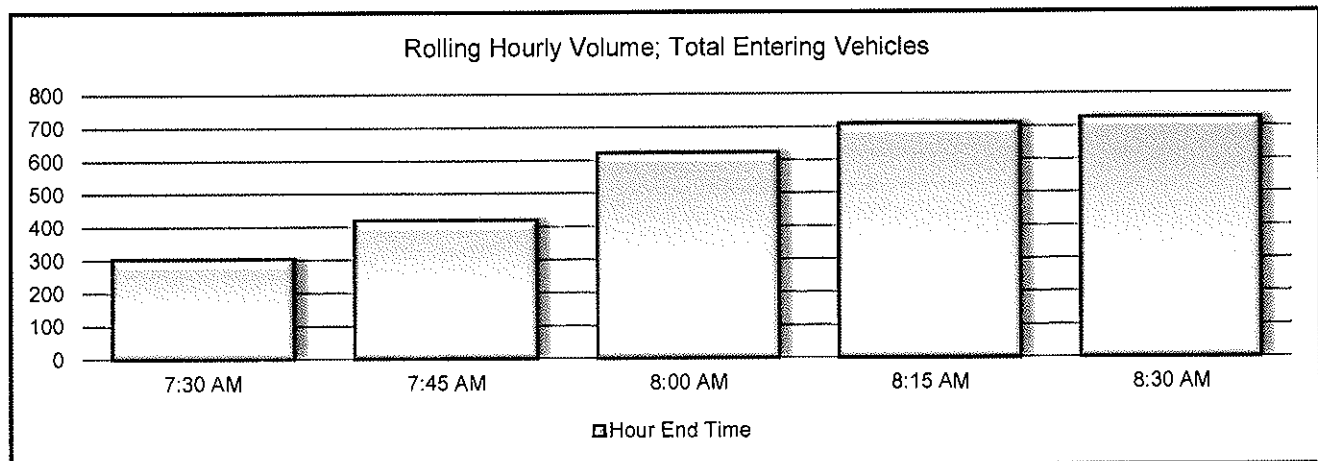
7:30 AM 8:30 AM

of minutes counted per interval: 14.0 minutes

END TIME	From the NORTH (SOUTHBOUND)						N Leg Peds	From the EAST (WESTBOUND)						E Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
6:45 AM	1	23	0	24	1	0	0	1	0	0	1	0	0	1
7:00 AM	0	33	0	33	1	0	1	0	0	2	2	0	0	1
7:15 AM	1	32	1	34	1	0	1	2	0	1	3	0	0	4
7:30 AM	0	37	2	39	3	0	0	3	0	0	3	1	0	6
7:45 AM	1	72	0	73	3	1	0	2	1	0	3	1	2	0
8:00 AM	0	106	0	106	7	0	2	1	0	0	1	0	2	1
8:15 AM	2	71	1	74	3	0	1	0	0	0	0	0	0	1
8:30 AM	0	47	0	47	2	0	0	1	0	0	1	0	0	0
PK HR	3	296	1	300	15	1	3	4	1	0	5	1	4	2
Adj HR	3	317	1	321	16	1	3	4	1	0	5	1	4	2

END TIME	From the SOUTH (NORTHBOUND)						S Leg Peds	From the WEST (EASTBOUND)						W Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
6:45 AM	0	26	0	26	2	0	1	0	0	0	0	0	0	2
7:00 AM	1	27	0	28	3	0	0	0	0	1	1	0	0	2
7:15 AM	0	40	0	40	4	0	0	1	0	3	4	1	0	1
7:30 AM	1	39	3	43	5	0	0	1	0	0	1	0	3	1
7:45 AM	0	77	1	78	2	0	0	2	0	4	6	0	0	1
8:00 AM	0	140	2	142	5	2	0	4	0	1	5	1	1	0
8:15 AM	0	78	3	81	2	0	0	5	0	2	7	2	0	0
8:30 AM	1	49	0	50	6	0	0	3	0	1	4	0	1	0
PK HR	1	344	6	351	15	2	0	14	0	8	22	3	1	1
Adj HR	1	369	6	376	16	2	0	15	0	9	24	3	1	1

END TIME	15 Min Totals (adj)							
	Veh	HV	Peds	Bikes				
6:45	55	3	0	4	Time Start - End			
7:00	69	4	0	4				
7:15	87	6	0	6	Rolling Hr Vol Pk Hr?			
7:30	92	10	3	8				
7:45	171	6	3	1	6:30 AM	7:30 AM	303	no
8:00	272	14	5	3	6:45 AM	7:45 AM	419	no
8:15	174	8	0	2	7:00 AM	8:00 AM	622	no
8:30	109	9	1	0	7:15 AM	8:15 AM	709	no
					7:30 AM	8:30 AM	726	YES



INTERSECTION: S College Avenue/SW 10th Street
 PEAK HOUR: 7:30 AM 8:30 AM
 DATE: 14-May-19

DIRECTIONAL LEG VOLUMES -- PEAK HOUR

		N	
		321	382
W	10		5
	24		2
		332	376
		S	

APPROACH VOLUME TURN MOVEMENTS -- PEAK HOUR

		321				
		3	317	1		
		RIGHT	THRU	LEFT		
		NORTH				
		WEST		EAST		
		SOUTH				
		LEFT	THRU	RIGHT		
		6	369	1		
		376				

24	9	LEFT
	0	THRU
	15	RIGHT

4	RIGHT
1	THRU
0	LEFT

5	RIGHT
---	-------

Pedestrians (Peak Hour)	
Crossing Leg	# of
North	3
South	0
East	2
West	1
Total	6

Bikes (Peak Hour)	
Approach	# of
From North:	1
From South:	2
From East:	4
From West:	1
Total	8

ADJUSTMENT FACTORS DERIVED FROM COUNT

Peak Hour Factors:	From North:	0.71	SB
	From South:	0.62	NB
	From East:	0.39	WB
	From West:	0.80	EB
	Total	0.67	All

Heavy Vehicles:	From North:	16	5.0%	SB
	From South:	16	4.3%	NB
	From East:	1	20.0%	WB
	From West:	3	12.5%	EB

INTERSECTION: S College Avenue/SW 12th Street
 PEAK HOUR: 7:30 AM 8:30 AM
 DATE: 8-May-19

DIRECTIONAL LEG VOLUMES -- PEAK HOUR

		N	
W		315	380
	32		112
	56		127
		S	
		328	384

APPROACH VOLUME TURN MOVEMENTS -- PEAK HOUR

		315	
56	4	RIGHT	THRU
	32	THRU	LEFT
	20	RIGHT	LEFT
		NORTH	
		WEST	EAST
		SOUTH	
		LEFT	THRU
		16	317
		384	
		51	
		RIGHT	
		59	
		THRU	
		10	
		LEFT	
		43	
		112	

Pedestrians (Peak Hour)	
Crossing Leg	# of
North	2
South	1
East	8
West	1
Total	12

Bikes (Peak Hour)	
Approach	# of
From North:	6
From South:	1
From East:	5
From West:	1
Total	13

ADJUSTMENT FACTORS DERIVED FROM COUNT

Peak Hour Factors:	From North:	0.76	SB
	From South:	0.61	NB
	From East:	0.57	WB
	From West:	0.65	EB
	Total	0.66	All

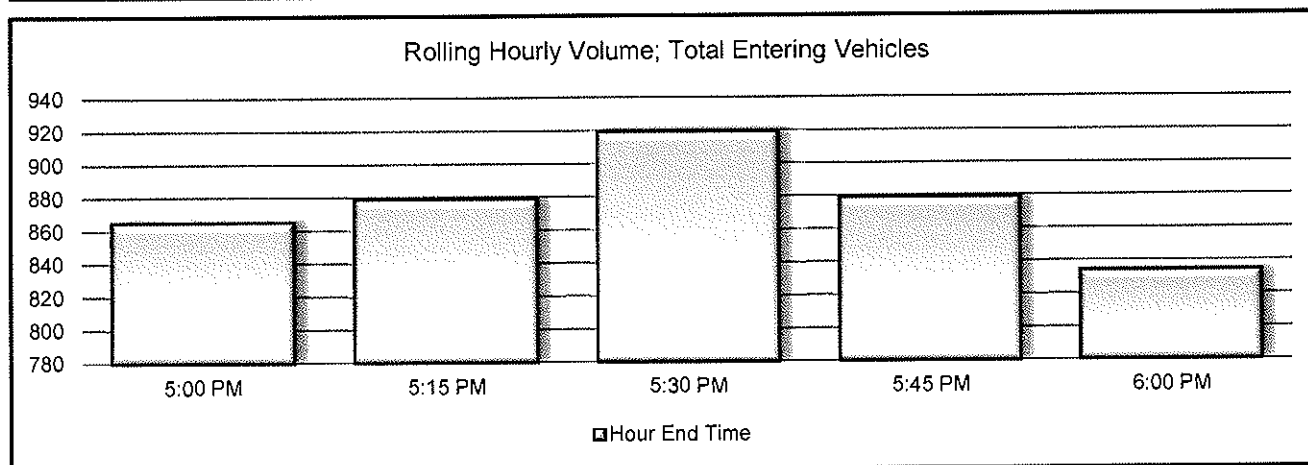
Heavy Vehicles:	From North:	16	5.1%	SB
	From South:	13	3.4%	NB
	From East:	6	5.4%	WB
	From West:	1	1.8%	EB

Location:	S College Avenue/SW 12th Street	City/Town:	College Place
Checker:	GAN	Weather:	Sunny
Date:	5/7/19	Thur	Start Time: 4:00 PM
# of minutes counted per interval:	14.0 minutes	Pk Hr:	4:30 PM 5:30 PM

END TIME	From the NORTH (SOUTHBOUND)						N Leg Peds	From the EAST (WESTBOUND)						E Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
4:15 PM	2	52	18	72	3	3	2	17	8	9	34	0	0	2
4:30 PM	2	54	22	78	1	2	1	15	2	11	28	0	1	0
4:45 PM	2	57	18	77	2	3	0	23	5	13	41	1	0	1
5:00 PM	3	64	16	83	1	1	2	13	6	12	31	0	1	0
5:15 PM	3	73	12	88	3	0	0	17	4	12	33	1	0	0
5:30 PM	2	61	18	81	1	1	2	19	4	23	46	1	0	0
5:45 PM	3	48	12	63	1	0	0	19	4	11	34	0	0	2
6:00 PM	4	53	14	71	1	1	0	7	9	7	23	1	0	2
PK HR	10	255	64	329	7	5	4	72	19	60	151	3	1	1
Adj HR	11	273	69	353	8	5	4	77	20	64	161	3	1	1

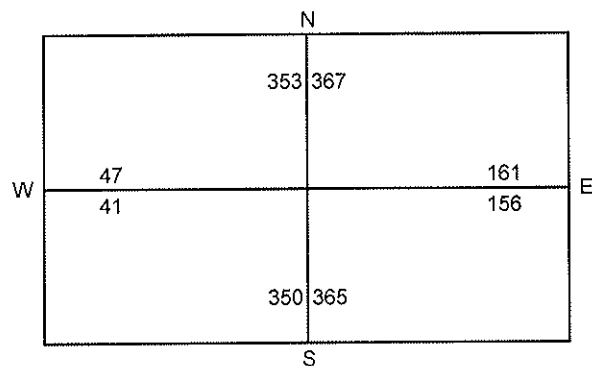
END TIME	From the SOUTH (NORTHBOUND)						S Leg Peds	From the WEST (EASTBOUND)						W Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
4:15 PM	20	58	2	80	5	0	1	2	8	1	11	2	0	5
4:30 PM	13	49	1	63	2	0	1	4	4	0	8	1	1	0
4:45 PM	21	64	3	88	6	1	0	3	5	2	10	0	1	0
5:00 PM	18	73	2	93	1	2	0	2	5	3	10	1	0	0
5:15 PM	14	63	2	79	3	0	0	4	3	3	10	0	0	0
5:30 PM	12	60	8	80	0	1	0	3	3	2	8	0	1	0
5:45 PM	12	62	1	75	1	0	0	2	3	1	6	0	0	2
6:00 PM	7	63	1	71	1	0	0	6	4	0	10	0	0	0
PK HR	65	260	15	340	10	4	0	12	16	10	38	1	1	0
Adj HR	70	279	16	365	11	4	0	13	17	11	41	1	1	0

END TIME	15 Min Totals (adj)							
	Veh	HV	Peds	Bikes	Time Start - End	Rolling Hr Vol	Pk Hr?	
16:15	211	11	3	11	4:00 PM 5:00 PM	865	no	
16:30	190	4	4	2	4:15 PM 5:15 PM	879	no	
16:45	231	10	5	1	4:30 PM 5:30 PM	919	YES	
17:00	233	3	4	2	4:45 PM 5:45 PM	879	no	
17:15	225	8	0	0	5:00 PM 6:00 PM	834	no	
17:30	230	2	3	2				
17:45	191	2	0	4				
18:00	188	3	1	2				

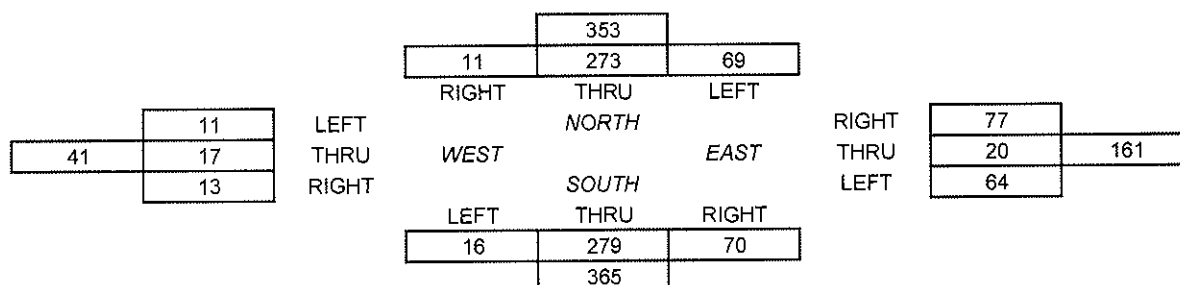


INTERSECTION:	S College Avenue/SW 12th Street
PEAK HOUR:	4:30 PM 5:30 PM
DATE:	7-May-19

DIRECTIONAL LEG VOLUMES -- PEAK HOUR



APPROACH VOLUME TURN MOVEMENTS -- PEAK HOUR



Crossing Leg	# of
North	4
South	0
East	1
West	0
Total	5

Bikes (Peak Hour)	
Approach	# of
From North:	5
From South:	4
From East:	1
From West:	1
Total	11

ADJUSTMENT FACTORS DERIVED FROM COUNT

Peak Hour Factors:	From North:	0.94	SB
	From South:	0.92	NB
	From East:	0.82	WB
	From West:	0.96	EB
	Total	0.99	All

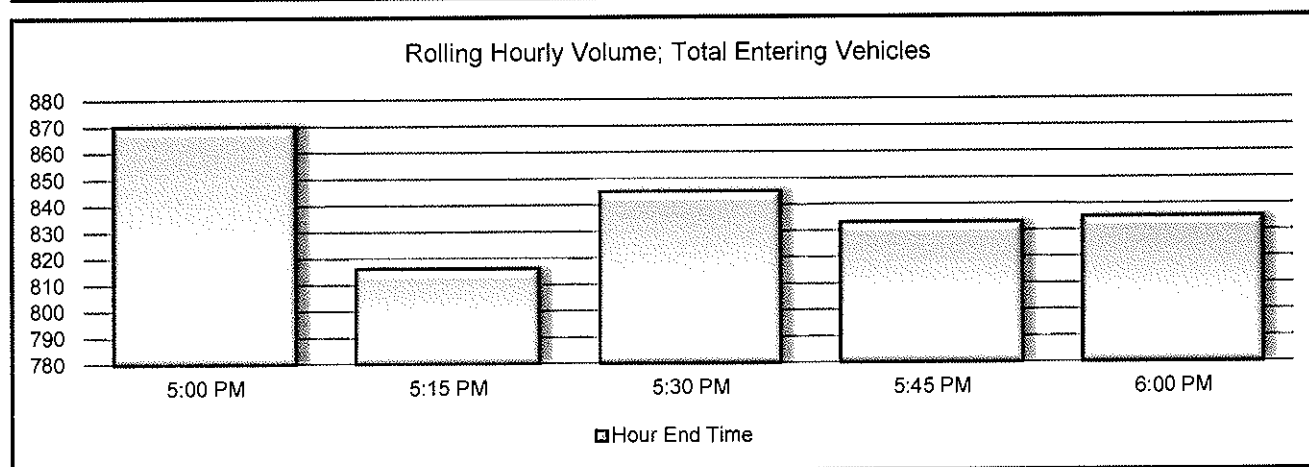
Heavy Vehicles:	From North:	8	2.3%	SB
	From South:	11	3.0%	NB
	From East:	3	1.9%	WB
	From West:	1	2.4%	EB

Location: S College Avenue/Whitman Drive	City/Town: College Place
Checker: DN	Weather: Cloudy
Date: 5/14/19	Job: Avenue Traffic Asse
Thur	Pk Hr: 4:00 PM 5:00 PM
Start Time: 4:00 PM	
# of minutes counted per interval: 14.0 minutes	

END TIME	From the NORTH (SOUTHBOUND)						N Leg Peds	From the EAST (WESTBOUND)						E Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
4:15 PM	17	60	7	84	3	2	5	3	23	7	33	3	0	2
4:30 PM	12	34	6	52	7	2	5	2	22	4	28	0	0	2
4:45 PM	18	44	6	68	5	2	4	5	26	4	35	1	0	2
5:00 PM	14	49	7	70	2	2	4	6	24	3	33	0	0	3
5:15 PM	10	38	4	52	3	2	4	6	22	7	35	2	0	2
5:30 PM	17	57	5	79	2	2	4	3	24	1	28	0	1	2
5:45 PM	13	43	6	62	3	2	5	5	16	7	28	1	0	2
6:00 PM	17	30	6	53	0	1	5	4	26	9	39	0	0	2
PK HR	61	187	26	274	17	8	18	16	95	18	129	4	0	9
Adj HR	65	200	28	293	18	9	19	17	102	19	138	4	0	10

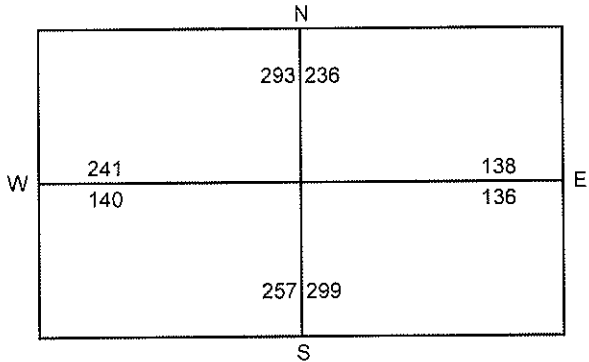
END TIME	From the SOUTH (NORTHBOUND)						S Leg Peds	From the WEST (EASTBOUND)						W Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
4:15 PM	8	57	25	90	6	0	7	13	18	9	40	1	0	1
4:30 PM	12	47	15	74	2	0	7	4	9	7	20	0	0	1
4:45 PM	11	36	16	63	5	0	7	9	25	9	43	0	0	1
5:00 PM	3	36	13	52	2	0	7	9	15	3	27	2	0	1
5:15 PM	4	44	11	59	3	0	7	12	23	16	51	1	0	1
5:30 PM	5	41	9	55	1	0	7	8	23	8	39	1	0	1
5:45 PM	3	43	18	64	2	0	7	11	22	11	44	1	0	1
6:00 PM	5	37	14	56	6	24	8	9	20	7	36	0	8	1
PK HR	34	176	69	279	15	0	28	35	67	28	130	3	1	4
Adj HR	36	189	74	299	16	0	30	38	72	30	140	3	1	4

END TIME	15 Min Totals (adj)							
	Veh	HV	Peds	Bikes	Time	Rolling		
16:15	265	14	2	16	Start - End	Hr Vol	Pk Hr?	
16:30	186	10	2	16	4:00 PM 5:00 PM	870	YES	
16:45	224	12	2	15	4:15 PM 5:15 PM	816	no	
17:00	195	6	2	16	4:30 PM 5:30 PM	845	no	
17:15	211	10	2	15	4:45 PM 5:45 PM	833	no	
17:30	215	4	3	15	5:00 PM 6:00 PM	835	no	
17:45	212	8	2	16				
18:00	197	6	35	17				

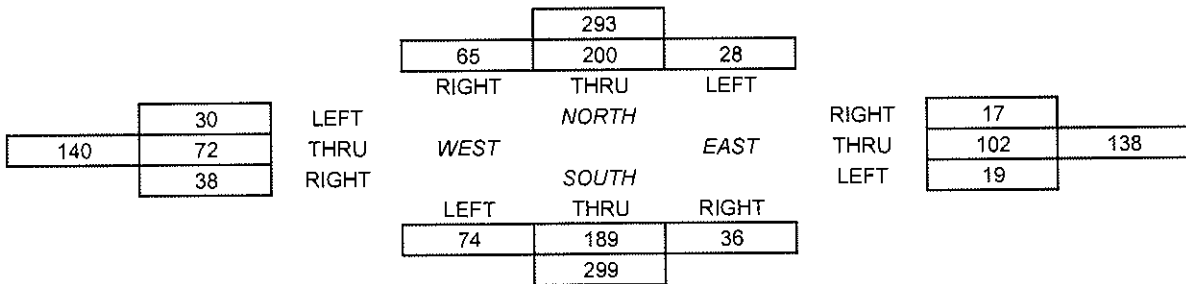


INTERSECTION:	S College Avenue/Whitman Drive
PEAK HOUR:	4:00 PM 5:00 PM
DATE:	14-May-19

DIRECTIONAL LEG VOLUMES -- PEAK HOUR



APPROACH VOLUME TURN MOVEMENTS -- PEAK HOUR



Crossing Leg	# of
North	19
South	30
East	10
West	4
Total	63

Approach	# of
From North:	9
From South:	0
From East:	0
From West:	1
Total	10

ADJUSTMENT FACTORS DERIVED FROM COUNT

Peak Hour Factors:	From North:	0.81	SB
	From South:	0.78	NB
	From East:	0.92	WB
	From West:	0.76	EB
	Total	0.82	All

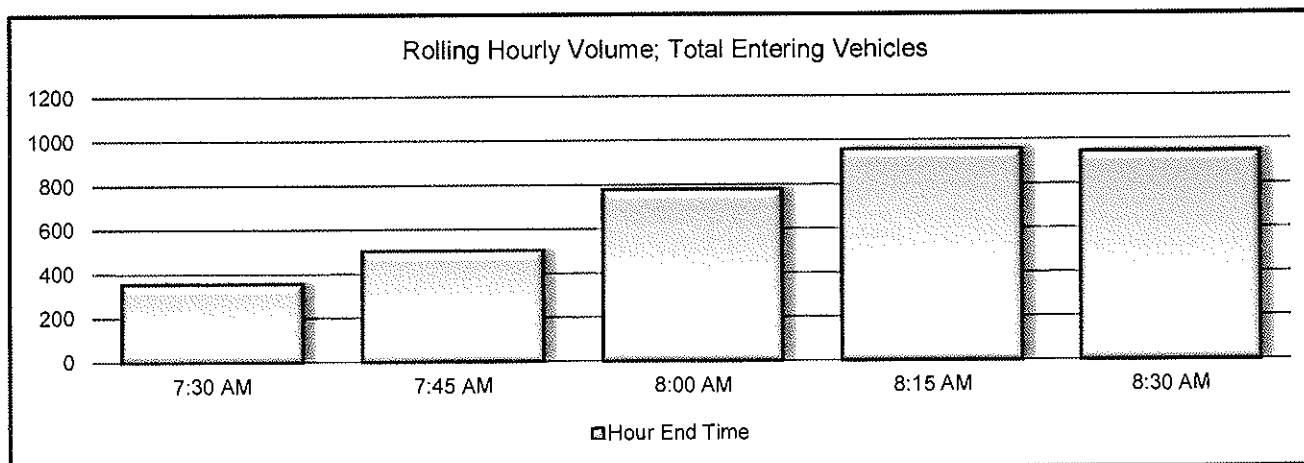
Heavy Vehicles:	From North:	18	6.1%	SB
	From South:	16	5.4%	NB
	From East:	4	2.9%	WB
	From West:	3	2.1%	EB

Location:	S College Way/SW 4th Street	City/Town:	College Place
Checker:	GAN	Weather:	Sunny
Date:	5/9/19	Thur	Start Time: 6:30 AM
# of minutes counted per interval:		14.0 minutes	
		Job:	avenue Traffic Asse
		Pk Hr:	7:15 AM 8:15 AM

END TIME	From the NORTH (SOUTHBOUND)						N Leg Peds	From the EAST (WESTBOUND)						E Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
6:45 AM	0	24	1	25	1	0	0	5	4	4	13	1	1	0
7:00 AM	1	17	1	19	1	0	0	1	4	1	6	1	0	0
7:15 AM	1	13	0	14	1	0	0	0	9	4	13	2	0	1
7:30 AM	2	22	2	26	6	0	0	2	8	5	15	2	0	0
7:45 AM	2	32	0	34	2	0	4	3	24	24	51	4	0	0
8:00 AM	1	52	1	54	4	0	3	3	39	32	74	3	0	0
8:15 AM	7	33	4	44	1	0	1	7	27	21	55	1	0	1
8:30 AM	3	27	0	30	6	0	0	3	5	2	10	2	0	0
PK HR	12	139	7	158	13	0	8	15	98	82	195	10	0	1
Adj HR	13	149	8	170	14	0	9	16	105	88	209	11	0	1

END TIME	From the SOUTH (NORTHBOUND)						S Leg Peds	From the WEST (EASTBOUND)						W Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
6:45 AM	2	18	2	22	2	0	0	5	2	2	9	0	0	0
7:00 AM	7	27	2	36	3	0	1	5	2	3	10	0	0	0
7:15 AM	6	26	5	37	3	1	0	8	3	2	13	0	0	1
7:30 AM	12	33	8	53	3	0	1	8	8	3	19	0	0	1
7:45 AM	28	42	21	91	4	0	1	18	12	1	31	0	0	3
8:00 AM	59	39	52	150	4	1	0	15	32	3	50	2	0	0
8:15 AM	18	52	21	91	5	0	0	21	28	7	56	1	0	0
8:30 AM	12	21	11	44	4	0	2	5	8	3	16	0	0	1
PK HR	117	166	102	385	16	1	2	62	80	14	156	3	1	4
Adj HR	125	178	109	412	17	1	2	66	86	15	167	3	1	4

END TIME	15 Min Totals (adj)				Time Start - End Rolling Hr Vol Pk Hr?			
	Veh	HV	Peds	Bikes				
6:45	74	4	1	0	6:30 AM 7:30 AM	354	no	
7:00	76	5	0	1				
7:15	83	6	1	2	6:45 AM 7:45 AM	502	no	
7:30	121	12	0	2				
7:45	222	11	0	9	7:00 AM 8:00 AM	777	no	
8:00	351	14	1	3				
8:15	264	9	0	2	7:15 AM 8:15 AM	958	YES	
8:30	107	13	0	3				



INTERSECTION:	S College Way/SW 4th Street
PEAK HOUR:	7:15 AM 8:15 AM
DATE:	9-May-19

DIRECTIONAL LEG VOLUMES -- PEAK HOUR

		N	
		170	209
W		227	209
		167	219
	S	303	412

APPROACH VOLUME TURN MOVEMENTS -- PEAK HOUR

[illegible]

Crossing Leg	# of
North	9
South	2
East	1
West	4
Total	16

Approach	# of
From North:	0
From South:	1
From East:	0
From West:	1
Total	2

ADJUSTMENT FACTORS DERIVED FROM COUNT

Peak Hour Factors:	From North:	0.73	SB
	From South:	0.64	NB
	From East:	0.66	WB
	From West:	0.70	EB
	Total	0.68	All

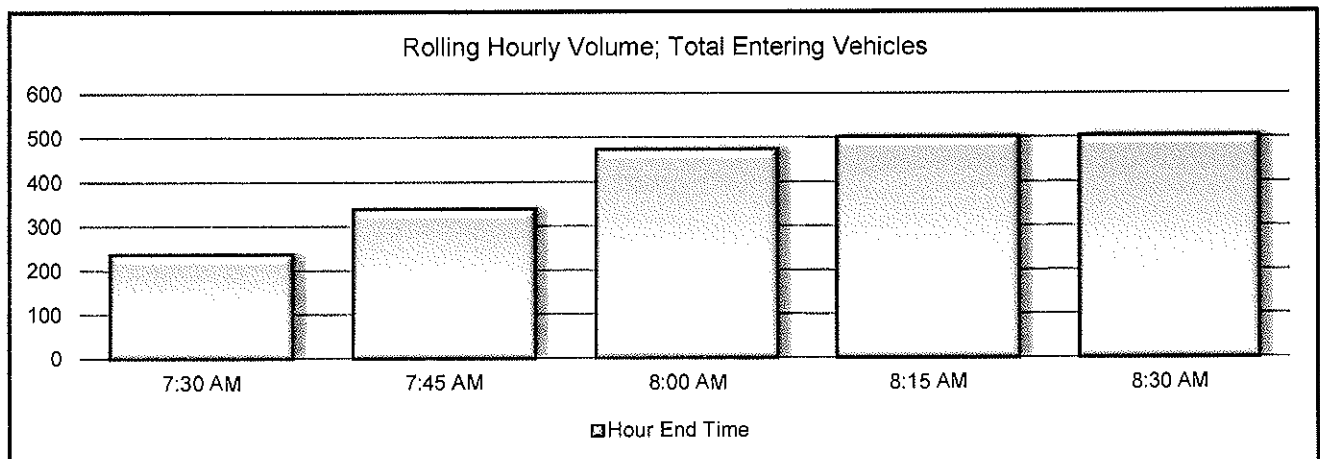
Heavy Vehicles:	From North:	14	8.2%	SB
	From South:	17	4.1%	NB
	From East:	11	5.3%	WB
	From West:	3	1.8%	EB

Location:	S College Avenue/SW 6th Street	City/Town	College Place
Checker:	GAN	Weather:	Cloudy
Date:	5/15/19	Thur	Start Time: 6:30 AM
# of minutes counted per interval:		15.0 minutes	
		Job:	3 Avenue Traffic Asse
		Pk Hr:	7:30 AM 8:30 AM

END TIME	From the NORTH (SOUTHBOUND)						N Leg Peds	From the EAST (WESTBOUND)						E Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
6:45 AM	0	18	0	18	1	0	0	0	2	0	2	0	0	1
7:00 AM	1	21	1	23	2	0	0	0	0	0	0	0	0	1
7:15 AM	0	24	2	26	2	0	2	0	0	1	1	2	0	5
7:30 AM	0	27	1	28	2	0	1	3	0	4	7	0	0	7
7:45 AM	0	63	0	63	4	0	0	2	0	3	5	0	0	0
8:00 AM	1	72	0	73	2	0	0	2	0	0	2	0	0	0
8:15 AM	1	42	0	43	2	1	1	2	0	2	4	0	1	2
8:30 AM	2	31	0	33	3	0	0	1	2	0	3	0	0	0
PK HR	4	208	0	212	11	1	1	7	2	5	14	0	1	2
Adj HR	4	208	0	212	11	1	1	7	2	5	14	0	1	2

END TIME	From the SOUTH (NORTHBOUND)						S Leg Peds	From the WEST (EASTBOUND)						W Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
6:45 AM	1	19	0	20	1	0	0	2	0	1	3	3	0	2
7:00 AM	0	26	0	26	2	0	0	1	0	4	5	0	0	4
7:15 AM	3	29	0	32	2	0	0	0	0	0	0	0	0	1
7:30 AM	0	32	6	38	3	0	0	4	1	2	7	1	1	0
7:45 AM	2	71	0	73	1	0	0	2	0	2	4	0	0	0
8:00 AM	1	102	4	107	2	0	0	5	0	2	7	0	0	0
8:15 AM	2	35	1	38	0	0	1	0	1	1	2	0	0	0
8:30 AM	1	37	5	43	4	0	1	1	2	1	4	0	0	0
PK HR	6	245	10	261	7	0	2	8	3	6	17	0	1	0
Adj HR	6	245	10	261	7	0	2	8	3	6	17	0	1	0

END TIME	15 Min Totals (adj)							
	Veh	HV	Peds	Bikes	Time Start - End	Rolling Hr Vol	Pk Hr?	
6:45	43	5	0	3	6:30 AM - 7:30 AM	236	no	
7:00	54	4	0	5	6:45 AM - 7:45 AM	338	no	
7:15	59	6	0	8	7:00 AM - 8:00 AM	473	no	
7:30	80	6	1	8	7:15 AM - 8:15 AM	501	no	
7:45	145	5	0	0	7:30 AM - 8:30 AM	504	YES	
8:00	189	4	0	0				
8:15	87	2	2	4				
8:30	83	7	0	1				



INTERSECTION: S College Avenue/SW 6th Street
 PEAK HOUR: 7:30 AM 8:30 AM
 DATE: 15-May-19

DIRECTIONAL LEG VOLUMES -- PEAK HOUR

		N	
		212	258
W	16		
	17	14	9
		221	261
		S	

APPROACH VOLUME TURN MOVEMENTS -- PEAK HOUR

		212	
		4	208
		RIGHT	THRU
		NORTH	
		LEFT	0
		WEST	EAST
		SOUTH	
		LEFT	THRU
		10	245
		261	
		RIGHT	THRU
		7	14
		2	
		5	

Pedestrians (Peak Hour)	
Crossing Leg	# of
North	1
South	2
East	2
West	0
Total	5

Bikes (Peak Hour)	
Approach	# of
From North:	1
From South:	0
From East:	1
From West:	1
Total	3

ADJUSTMENT FACTORS DERIVED FROM COUNT

Peak Hour Factors:	From North:	0.73	SB
	From South:	0.61	NB
	From East:	0.70	WB
	From West:	0.61	EB
	Total	0.67	All

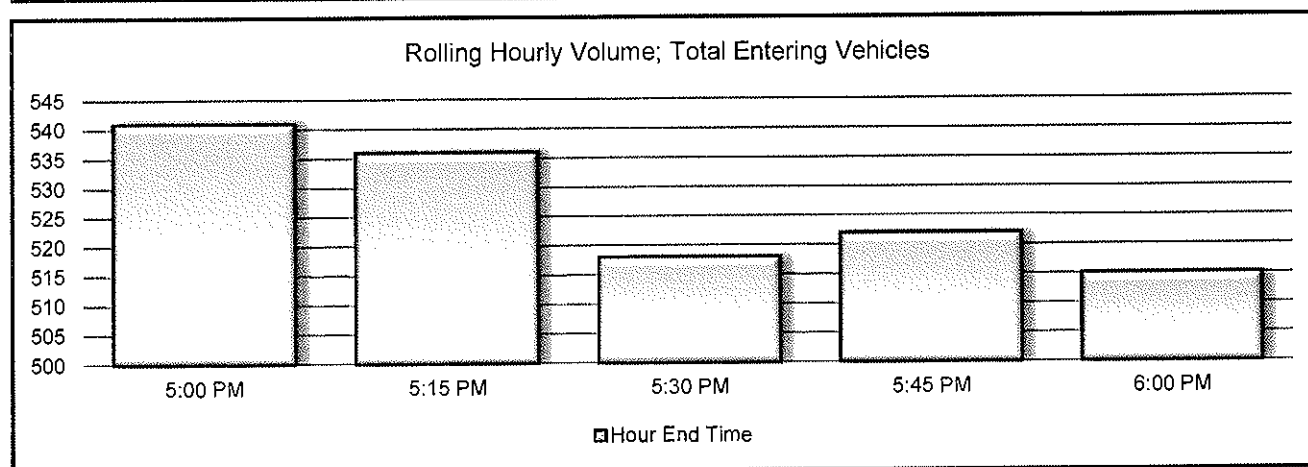
Heavy Vehicles:	From North:	11	5.2%	SB
	From South:	7	2.7%	NB
	From East:	0	0.0%	WB
	From West:	0	0.0%	EB

Location: S College Avenue/SW 6th Street	City/Town: College Place	
Checker: GAN	Weather: Cloudy	Job: Avenue Traffic Asse
Date: 5/14/19 Thur	Start Time: 4:00 PM	Pk Hr: 4:00 PM 5:00 PM
# of minutes counted per interval: 15.0 minutes		

END TIME	From the NORTH (SOUTHBOUND)						N Leg Peds	From the EAST (WESTBOUND)						E Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
4:15 PM	1	59	4	64	2	1	2	2	1	1	4	0	0	1
4:30 PM	3	57	4	64	4	0	0	0	0	1	1	0	2	2
4:45 PM	0	54	1	55	3	0	0	0	3	3	6	1	0	1
5:00 PM	4	54	6	64	2	0	1	6	2	0	8	0	1	0
5:15 PM	4	59	1	64	2	0	0	0	0	4	4	1	0	2
5:30 PM	4	57	1	62	1	0	0	1	0	1	2	0	0	0
5:45 PM	1	46	3	50	2	1	1	4	2	0	6	0	0	0
6:00 PM	6	51	1	58	0	0	0	1	1	2	4	0	1	4
PK HR	8	224	15	247	11	1	3	8	6	5	19	1	3	4
Adj HR	8	224	15	247	11	1	3	8	6	5	19	1	3	4

END TIME	From the SOUTH (NORTHBOUND)						S Leg Peds	From the WEST (EASTBOUND)						W Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
4:15 PM	3	60	1	64	1	0	0	7	1	2	10	0	1	0
4:30 PM	4	60	4	68	3	0	0	8	0	4	12	0	0	1
4:45 PM	3	45	3	51	2	0	0	9	0	1	10	0	2	1
5:00 PM	2	41	4	47	1	0	0	8	0	5	13	0	1	2
5:15 PM	3	56	1	60	2	0	0	7	0	2	9	1	1	1
5:30 PM	3	50	1	54	1	0	0	6	0	3	9	0	0	0
5:45 PM	3	54	4	61	1	0	1	6	2	1	9	0	0	4
6:00 PM	0	51	1	52	1	0	1	7	0	4	11	1	0	0
PK HR	12	206	12	230	7	0	0	32	1	12	45	0	1	4
Adj HR	12	206	12	230	7	0	0	32	1	12	45	0	1	4

END TIME	15 Min Totals (adj)						
	Veh	HV	Peds	Bikes			
16:15	142	3	2	3	Time Start - End Rolling Hr Vol Pk Hr?		
16:30	145	7	2	3			
16:45	122	6	2	2	4:00 PM - 5:00 PM	541	YES
17:00	132	3	2	3	4:15 PM - 5:15 PM	536	no
17:15	137	6	1	3	4:30 PM - 5:30 PM	518	no
17:30	127	2	0	0	4:45 PM - 5:45 PM	522	no
17:45	126	3	1	6	5:00 PM - 6:00 PM	515	no
18:00	125	2	1	5			



INTERSECTION:	S College Avenue/SW 6th Street
PEAK HOUR:	4:00 PM 5:00 PM
DATE:	14-May-19

DIRECTIONAL LEG VOLUMES -- PEAK HOUR

247	226
261	230

N

W

E

S

APPROACH VOLUME TURN MOVEMENTS -- PEAK HOUR

[illegible]

Crossing Leg	# of
North	3
South	0
East	4
West	4
Total	11

Approach	# of
From North:	1
From South:	0
From East:	3
From West:	1
Total	5

ADJUSTMENT FACTORS DERIVED FROM COUNT

Peak Hour Factors:	From North:	0.96	SB
	From South:	0.85	NB
	From East:	0.59	WB
	From West:	0.87	EB
	Total	0.93	All

Heavy Vehicles:	From North:	11	4.5%	SB
	From South:	7	3.0%	NB
	From East:	1	5.3%	WB
	From West:	0	0.0%	EB

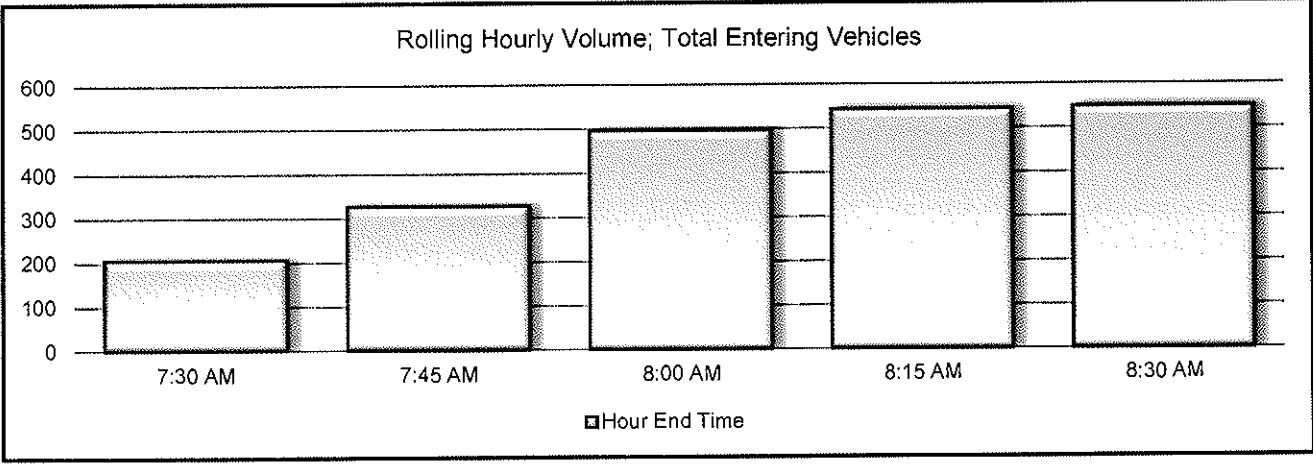
Location: S College Avenue/SW 8th Street	City/Town: College Place
Checker: GAN	Weather: Cloudy
Date: 5/15/19	Job: Avenue Traffic Asse
Thur	Pk Hr: 7:30 AM 8:30 AM
# of minutes counted per interval: 14.0 minutes	

END TIME	From the NORTH (SOUTHBOUND)						N Leg Peds	From the EAST (WESTBOUND)						E Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
6:45 AM	0	15	0	15	1	0	0	0	2	0	2	0	0	1
7:00 AM	1	17	1	19	2	0	0	0	0	0	0	0	0	1
7:15 AM	0	18	2	20	2	0	2	0	0	1	1	2	0	5
7:30 AM	0	24	1	25	2	0	1	3	0	4	7	0	0	7
7:45 AM	0	63	0	63	4	0	0	2	0	3	5	0	0	0
8:00 AM	1	72	0	73	2	0	0	2	0	0	2	0	0	0
8:15 AM	1	42	0	43	2	1	1	2	0	2	4	0	1	2
8:30 AM	2	31	0	33	3	0	0	1	2	0	3	0	0	0
PK HR	4	208	0	212	11	1	1	7	2	5	14	0	1	2
Adj HR	4	223	0	227	12	1	1	8	2	5	15	0	1	2

END TIME	From the SOUTH (NORTHBOUND)						S Leg Peds	From the WEST (EASTBOUND)						W Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
6:45 AM	1	12	0	13	1	0	0	2	0	1	3	3	0	2
7:00 AM	0	15	0	15	2	0	0	1	0	4	5	0	0	4
7:15 AM	3	19	0	22	2	0	0	0	0	0	0	0	0	1
7:30 AM	0	32	6	38	3	0	0	4	1	2	7	1	1	0
7:45 AM	2	71	0	73	1	0	0	2	0	2	4	0	0	0
8:00 AM	1	111	4	116	2	0	0	5	0	2	7	0	0	0
8:15 AM	2	35	1	38	0	0	1	0	1	1	2	0	0	0
8:30 AM	1	37	5	43	4	0	1	1	2	1	4	0	0	0
PK HR	6	254	10	270	7	0	2	8	3	6	17	0	1	0
Adj HR	6	272	11	289	8	0	2	9	3	6	18	0	1	0

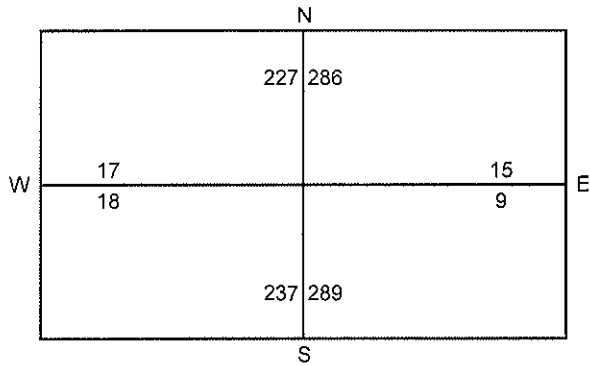
END TIME	15 Min Totals (adj)				Time			
	Veh	HV	Peds	Bikes				
6:45	35	5	0	3				
7:00	42	4	0	5				
7:15	46	6	0	9				
7:30	83	6	1	9				
7:45	155	5	0	0				
8:00	212	4	0	0				
8:15	93	2	2	4				
8:30	89	8	0	1				

Start - End	Rolling Hr Vol	Pk Hr?
6:30 AM 7:30 AM	206	no
6:45 AM 7:45 AM	326	no
7:00 AM 8:00 AM	496	no
7:15 AM 8:15 AM	543	no
7:30 AM 8:30 AM	549	YES

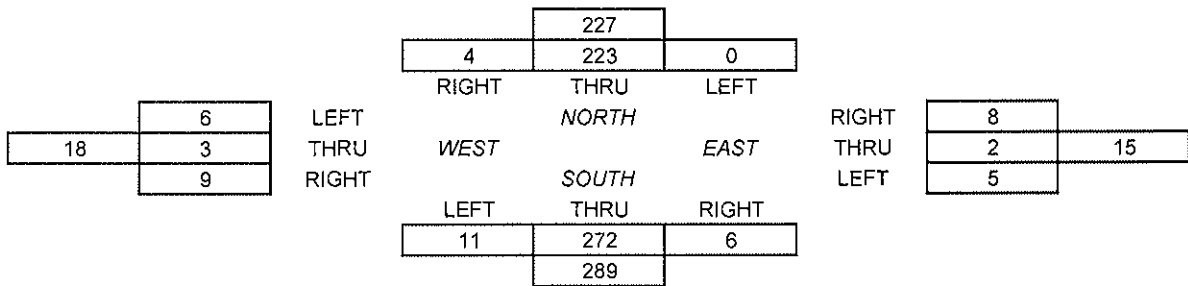


INTERSECTION:	S College Avenue/SW 8th Street
PEAK HOUR:	7:30 AM 8:30 AM
DATE:	15-May-19

DIRECTIONAL LEG VOLUMES -- PEAK HOUR



APPROACH VOLUME TURN MOVEMENTS -- PEAK HOUR



Crossing Leg	# of
North	1
South	2
East	2
West	0
Total	5

Approach	# of
From North:	1
From South:	0
From East:	1
From West:	1
Total	3

ADJUSTMENT FACTORS DERIVED FROM COUNT

Peak Hour Factors:	From North:	0.73	SB
	From South:	0.58	NB
	From East:	0.70	WB
	From West:	0.60	EB
	Total	0.65	All

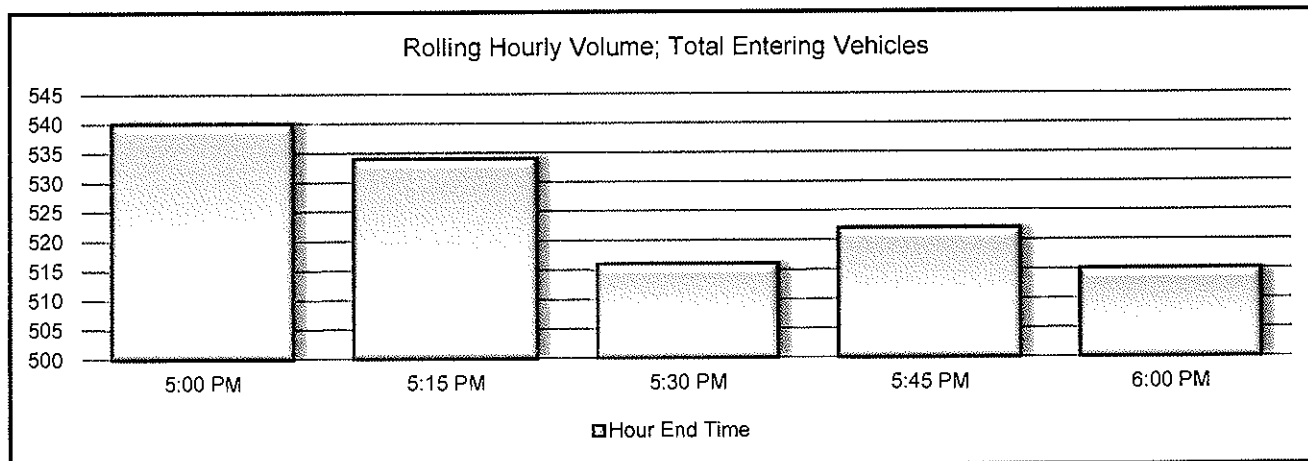
Heavy Vehicles:	From North:	12	5.3%	SB
	From South:	8	2.8%	NB
	From East:	0	0.0%	WB
	From West:	0	0.0%	EB

Location: S College Avenue/SW 8th Street	City/Town: College Place
Checker: GAN	Weather: Cloudy
Date: 5/14/19 Thur	Job: Avenue Traffic Asse
Start Time: 4:00 PM	Pk Hr: 4:00 PM 5:00 PM
# of minutes counted per interval: 15.0 minutes	

END TIME	From the NORTH (SOUTHBOUND)						N Leg Peds	From the EAST (WESTBOUND)						E Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
4:15 PM	1	59	4	64	2	1	2	2	1	1	4	0	0	1
4:30 PM	3	57	4	64	4	1	2	0	0	1	1	0	2	2
4:45 PM	0	54	1	55	3	0	0	0	3	3	6	1	0	1
5:00 PM	4	54	6	64	2	0	1	6	2	0	8	0	1	0
5:15 PM	4	59	1	64	2	0	0	0	0	4	4	1	0	2
5:30 PM	4	57	1	62	1	0	0	1	0	1	2	0	0	0
5:45 PM	1	46	3	50	2	1	1	4	2	0	6	0	0	0
6:00 PM	6	51	1	58	0	0	0	1	1	2	4	0	1	4
PK HR	8	224	15	247	11	2	5	8	6	5	19	1	3	4
Adj HR	8	224	15	247	11	2	5	8	6	5	19	1	3	4

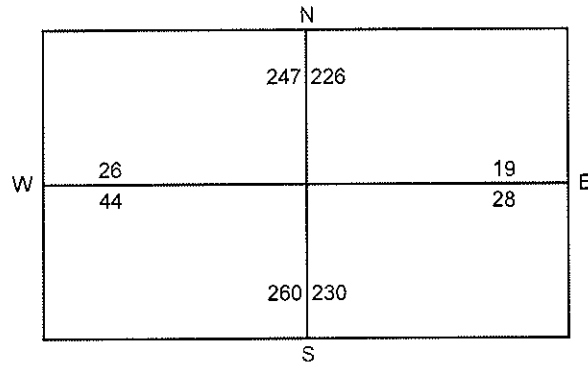
END TIME	From the SOUTH (NORTHBOUND)						S Leg Peds	From the WEST (EASTBOUND)						W Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
4:15 PM	3	60	1	64	1	0	0	8	1	2	11	0	1	0
4:30 PM	4	60	4	68	3	0	0	8	0	4	12	0	0	1
4:45 PM	3	45	3	51	2	0	0	7	0	1	8	0	2	1
5:00 PM	2	41	4	47	1	0	0	8	0	5	13	0	1	2
5:15 PM	3	56	1	60	2	0	0	7	0	2	9	1	1	1
5:30 PM	3	50	1	54	1	0	0	6	0	3	9	0	0	0
5:45 PM	3	54	4	61	1	0	1	6	2	1	9	0	0	4
6:00 PM	0	51	1	52	1	0	0	7	0	4	11	1	0	0
PK HR	12	206	12	230	7	0	0	31	1	12	44	0	1	4
Adj HR	12	206	12	230	7	0	0	31	1	12	44	0	1	4

END TIME	15 Min Totals (adj)				Time			
	Veh	HV	Peds	Bikes	Start	End	Rolling Hr Vol	Pk Hr?
16:15	143	3	2	3	4:00 PM	5:00 PM	540	YES
16:30	145	7	3	5	4:15 PM	5:15 PM	534	no
16:45	120	6	2	2	4:30 PM	5:30 PM	516	no
17:00	132	3	2	3	4:45 PM	5:45 PM	522	no
17:15	137	6	1	3	5:00 PM	6:00 PM	515	no
17:30	127	2	0	0				
17:45	126	3	1	6				
18:00	125	2	1	4				

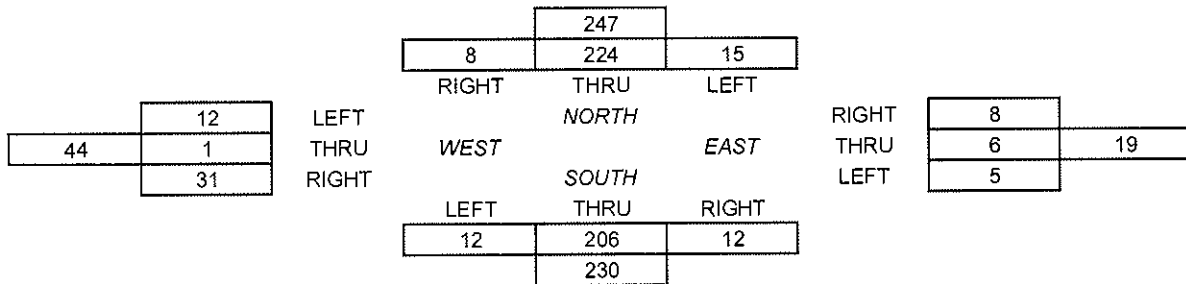


INTERSECTION:	S College Avenue/SW 8th Street
PEAK HOUR:	4:00 PM 5:00 PM
DATE:	14-May-19

DIRECTIONAL LEG VOLUMES -- PEAK HOUR



APPROACH VOLUME TURN MOVEMENTS -- PEAK HOUR



Crossing Leg	# of
North	5
South	0
East	4
West	4
Total	13

Approach	# of
From North:	2
From South:	0
From East:	3
From West:	1
Total	6

ADJUSTMENT FACTORS DERIVED FROM COUNT

Peak Hour Factors:	From North:	0.96	SB
	From South:	0.85	NB
	From East:	0.59	WB
	From West:	0.85	EB
	Total	0.93	All

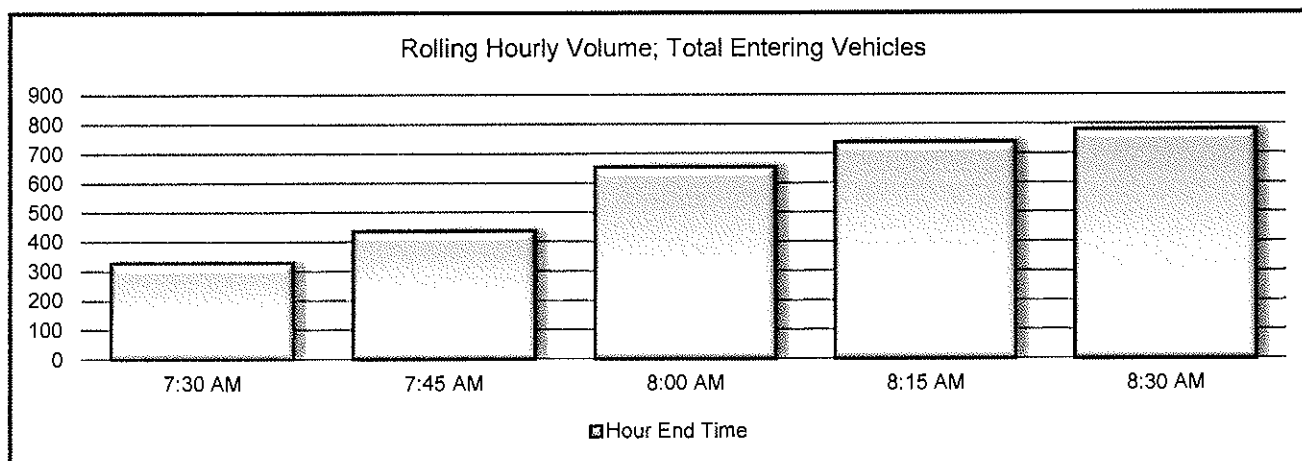
Heavy Vehicles:	From North:	11	4.5%	SB
	From South:	7	3.0%	NB
	From East:	1	5.3%	WB
	From West:	0	0.0%	EB

Location:	S College Avenue/Whitman Drive				City/Town	College Place			
Checker:	DN		Weather:	Cloudy		Job:	Avenue Traffic Asse		
Date:	5/15/19		Thur	Start Time:	6:30 AM		Pk Hr:	7:30 AM 8:30 AM	
# of minutes counted per interval:				14.0 minutes					

END TIME	From the NORTH (SOUTHBOUND)						N Leg Peds	From the EAST (WESTBOUND)						E Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
6:45 AM	2	19	2	23	2	0	3	1	1	3	5	0	0	2
7:00 AM	3	13	2	18	3	0	3	2	2	1	5	1	0	1
7:15 AM	2	14	2	18	1	1	3	2	4	3	9	0	0	1
7:30 AM	4	17	5	26	3	1	3	0	6	0	6	0	0	1
7:45 AM	7	35	11	53	1	1	3	6	10	6	22	0	1	1
8:00 AM	28	44	12	84	2	0	3	13	37	12	62	1	0	1
8:15 AM	14	29	5	48	3	0	3	12	8	11	31	1	0	1
8:30 AM	9	32	0	41	5	0	2	1	12	5	18	1	1	1
PK HR	58	140	28	226	11	1	11	32	67	34	133	3	2	4
Adj HR	62	150	30	242	12	1	12	34	72	36	142	3	2	4

END TIME	From the SOUTH (NORTHBOUND)						S Leg Peds	From the WEST (EASTBOUND)						W Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
6:45 AM	1	17	2	20	1	0	4	4	7	3	14	2	0	2
7:00 AM	2	23	5	30	4	0	4	5	10	8	23	1	0	1
7:15 AM	1	23	5	29	4	1	4	3	19	6	28	4	0	2
7:30 AM	1	22	2	25	2	1	4	6	11	10	27	1	0	1
7:45 AM	2	31	3	36	2	1	4	9	31	12	52	0	0	1
8:00 AM	5	38	6	49	1	0	4	10	35	39	84	0	0	1
8:15 AM	5	18	13	36	1	0	4	6	26	15	47	2	0	1
8:30 AM	5	31	4	40	2	3	1	3	13	8	24	0	1	1
PK HR	17	118	26	161	6	4	13	28	105	74	207	2	1	4
Adj HR	18	126	28	172	6	4	14	30	113	79	222	2	1	4

END TIME	15 Min Totals (adj)							
	Veh	HV	Peds	Bikes	Time Start - End		Rolling Hr Vol	Pk Hr?
6:45	66	5	0	12	6:30 AM 7:30 AM	327	no	
7:00	81	10	0	10				
7:15	90	10	2	11	6:45 AM 7:45 AM	436	no	
7:30	90	6	2	10				
7:45	175	3	3	10	7:00 AM 8:00 AM	654	no	
8:00	299	4	0	10				
8:15	174	8	0	10	7:15 AM 8:15 AM	738	no	
8:30	132	9	5	5				
					7:30 AM 8:30 AM 780 YES			



INTERSECTION:	S College Avenue/Whitman Drive
PEAK HOUR:	7:30 AM 8:30 AM
DATE:	15-May-19

DIRECTIONAL LEG VOLUMES -- PEAK HOUR

	W	E
N	242	239
S	162	142

APPROACH VOLUME TURN MOVEMENTS -- PEAK HOUR

			242					
			62	150	30			
			RIGHT	THRU	LEFT			
			NORTH					
			WEST		EAST			
			SOUTH					
			LEFT	THRU	RIGHT			
			28	126	18			
			172					

		79	LEFT					34		
222		113	THRU					72	142	
		30	RIGHT					36		

Crossing Leg	# of
North	12
South	14
East	4
West	4
Total	34

Approach	# of
From North:	1
From South:	4
From East:	2
From West:	1
Total	8

ADJUSTMENT FACTORS DERIVED FROM COUNT

Peak Hour Factors:	From North:	0.67	SB
	From South:	0.82	NB
	From East:	0.53	WB
	From West:	0.62	EB
	Total	0.65	All

Heavy Vehicles:	From North:	12	5.0%	SB
	From South:	6	3.5%	NB
	From East:	3	2.1%	WB
	From West:	2	0.9%	EB

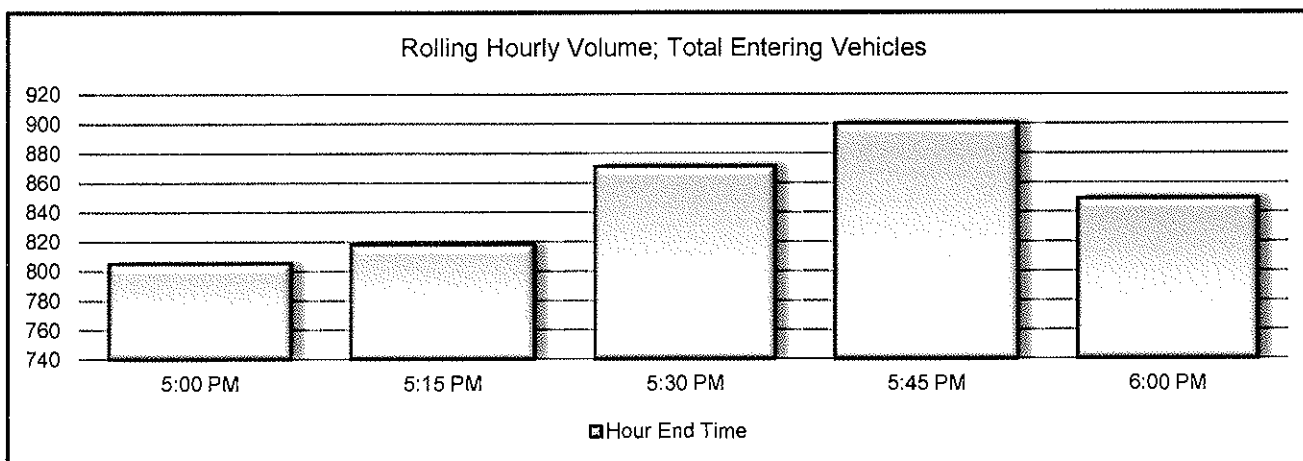
Location: S College Avenue/SW 4th Street	City/Town: College Place	Job: Avenue Traffic Asse
Checker: GAN	Weather: Sunny	Pk Hr: 4:45 PM 5:45 PM
Date: 5/8/19	Thur	Start Time: 4:00 PM
# of minutes counted per interval: 14.0 minutes		

END TIME	From the NORTH (SOUTHBOUND)						N Leg Peds	From the EAST (WESTBOUND)						E Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
4:15 PM	2	47	3	52	1	0	0	3	11	23	37	2	1	3
4:30 PM	6	28	1	35	1	0	1	6	6	14	26	3	0	0
4:45 PM	3	47	1	51	3	0	1	4	9	13	26	1	0	0
5:00 PM	2	60	7	69	7	0	1	2	13	12	27	0	0	1
5:15 PM	2	44	2	48	3	0	1	4	12	15	31	2	0	3
5:30 PM	4	50	3	57	2	0	0	2	10	18	30	1	0	1
5:45 PM	6	56	1	63	2	1	1	4	16	12	32	0	0	1
6:00 PM	3	40	3	46	0	0	4	0	14	16	30	0	0	2
PK HR	14	210	13	237	14	1	3	12	51	57	120	3	0	6
Adj HR	15	225	14	254	15	1	3	13	55	61	129	3	0	6

END TIME	From the SOUTH (NORTHBOUND)						S Leg Peds	From the WEST (EASTBOUND)						W Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes		RT	TH	LT	TOTAL	HV	Bikes	
4:15 PM	15	51	11	77	4	0	0	17	13	7	37	2	0	2
4:30 PM	9	46	10	65	2	3	2	11	7	5	23	3	0	0
4:45 PM	13	35	9	57	6	0	4	14	12	11	37	0	0	0
5:00 PM	13	59	19	91	5	0	2	12	20	9	41	0	0	0
5:15 PM	14	57	21	92	6	0	3	20	16	9	45	1	0	3
5:30 PM	14	46	13	73	2	2	4	10	21	8	39	1	0	1
5:45 PM	10	42	14	66	6	1	1	16	15	6	37	1	0	2
6:00 PM	13	37	17	67	1	0	0	16	18	3	37	0	0	4
PK HR	51	204	67	322	19	3	10	58	72	32	162	3	1	6
Adj HR	55	219	72	346	20	3	11	62	77	34	173	3	1	6

END TIME	15 Min Totals (adj)						
	Veh	HV	Peds	Bikes			
16:15	218	10	1	5			
16:30	160	10	3	3			
16:45	183	11	0	5			
17:00	244	13	0	4			
17:15	231	13	0	11			
17:30	213	6	2	6			
17:45	212	10	2	5			
18:00	193	1	0	11			

Time	Rolling	
Start - End	Hr Vol	Pk Hr?
4:00 PM - 5:00 PM	805	no
4:15 PM - 5:15 PM	818	no
4:30 PM - 5:30 PM	871	no
4:45 PM - 5:45 PM	900	YES
5:00 PM - 6:00 PM	849	no



INTERSECTION: S College Avenue/SW 4th Street
 PEAK HOUR: 4:45 PM 5:45 PM
 DATE: 8-May-19

DIRECTIONAL LEG VOLUMES -- PEAK HOUR

		N	
		254	266
W	142		129
	173		146
		348	346
		S	

APPROACH VOLUME TURN MOVEMENTS -- PEAK HOUR

		254			
		15	225	14	
		RIGHT	THRU	LEFT	
		NORTH			
173	34	LEFT			RIGHT
	77	THRU	WEST	EAST	THRU
	62	RIGHT			LEFT
		SOUTH			
		LEFT	THRU	RIGHT	
		72	219	55	
		346			
				13	
				55	129
				61	

Pedestrians (Peak Hour)	
Crossing Leg	# of
North	3
South	11
East	6
West	6
Total	26

Bikes (Peak Hour)	
Approach	# of
From North:	1
From South:	3
From East:	0
From West:	1
Total	5

ADJUSTMENT FACTORS DERIVED FROM COUNT

Peak Hour Factors:	From North:	0.86	SB
	From South:	0.88	NB
	From East:	0.94	WB
	From West:	0.90	EB
	Total	0.92	All

Heavy Vehicles:	From North:	15	5.9%	SB
	From South:	20	5.8%	NB
	From East:	3	2.3%	WB
	From West:	3	1.7%	EB

Intersection Capacity Analysis Summary Page

Analysis Time: Fri Mar 13 08:40:41 21
 Driving Side: Right
 Analysis Period: 1 Hours

Number	Name	Control Type	V/C	Avg Delay	Avg LOS	Max Delay	Max LOS
2030	College & Whilman	AWSC	0.44	20.22	C	22.80	C
2031	N College & SE 3rd St.	TWSC	0.00	1.31	A	12.75	B
2032	S College Ave & SW 4th St	AWSC	0.45	245.93	F	550.76	F
2033	S College Ave & SE 6th St	TWSC	0.00	1.21	A	18.25	C
2034	S College Ave & SE 8th St	TWSC	0.00	1.15	A	19.82	C
2035	S College Ave & SE 10th St	TWSC	0.00	1.32	A	27.94	D
2036	S College Ave & SE 12th St	AWSC	0.80	59.51	F	100.80	F
2037	S College and 13th 13th St	TWSC	0.00	0.29	A	18.12	C
2038	S College Ave & Lamperti	AWSC	0.69	52.93	F	87.74	F
2039	SE 3rd & Ash Ave	TWSC	0.00	9.51	A	11.27	B

Node 2030: College & Whitman

Control Type
Method
Average Delay
Average LOS

AWSC
HCM 6th Edition
20.22
C

Volume and Adjustments

Approach	N			E			S			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	23.00	156.00	62.00	37.00	72.00	34.00	29.00	134.00	35.00	82.00	108.00	32.00
PHF, Peak-hour factor	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650
Flow Rate	35.38	240.00	95.38	56.92	110.77	52.31	44.62	206.15	53.85	126.15	166.15	49.23
Geometry Group	1			1			1			1		

Saturation Headway

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	370.77	220.00	304.62	341.54				
Left Turn Flow Rate	35.38	56.92	44.62	126.15				
Right Turn Flow Rate	95.38	52.31	53.85	49.23				
PLT, Proportion LT	0.10	0.26	0.15	0.37				
PRT, Proportion RT	0.26	0.24	0.18	0.14				
PHV, Proportion HV	0.00	0.00	0.00	0.00				
hLT,adj, Headway adjustment for left turns	0.20	0.20	0.20	0.20				
hRT,adj, Headway adjustment for right turns	-0.60	-0.60	-0.60	-0.60				
hHV,adj, Headway adjustment for heavy vehicles	1.70	1.70	1.70	1.70				
hadj, Headway adjustment	-0.14	-0.09	-0.08	-0.01				

Departure Headway

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	370.77	220.00	304.62	341.54				
hd initial	3.20	3.20	3.20	3.20				
x initial	0.33	0.20	0.27	0.30				
hd, iteration 1	4.99	5.27	5.12	5.22				
Difference, iteration 1	1.79	2.07	1.92	2.02				
hd, iteration 2	5.83	6.22	6.00	6.05				
Difference, iteration 2	0.83	0.95	0.88	0.83				
hd, iteration 3	6.21	6.68	6.41	6.45				
Difference, iteration 3	0.39	0.46	0.41	0.40				
hd, iteration 4	6.40	6.91	6.61	6.64				
Difference, iteration 4	0.19	0.22	0.20	0.19				
hd, iteration 5	6.50	7.02	6.71	6.74				
Difference, iteration 5	0.09	0.11	0.10	0.10				
hd, iteration 6	6.55	7.08	6.77	6.79				
Difference, iteration 6	0.05	0.06	0.05	0.05				
Convergence	Y	Y	Y	Y				
hd final, Departure Headway	6.55	7.08	6.77	6.79				
x final, Degree of Utilization	0.67	0.43	0.57	0.64				

Capacity and Level of Service

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	370.77	220.00	304.62	341.54				
hd, Departure Headway	6.55	7.08	6.77	6.79				
x, Degree of Utilization	0.67	0.43	0.57	0.64				
m, Move Up Time	2.00	2.00	2.00	2.00				
ts, Service Time	4.55	5.08	4.77	4.79				
Capacity	549.64	508.11	531.89	530.32				
Delay	22.80	15.44	18.72	21.84				
LOS	C	C	C	C				
Q95, 95% Queue Length	5.83	2.25	3.88	5.15				
Approach Delay	22.80	15.44	18.72	21.84				
Approach LOS	C	C	C	C				
Intersection Delay	20.22							
Intersection LOS	C							

Node 2031: N Collage & SE 3rd St

Control Type TWSC
 Method HCM 6th Edition
 dl, Average Delay 1.31
 Worst Case Delay 12.75
 Worst Case LOS B

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	5.00	136.00	5.00	5.00	5.00	5.00	6.00	139.00	12.00	5.00	5.00	5.00
PHF, Peak-hour factor	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650
V, Adjusted Volume	7.69	209.23	7.69	7.69	7.69	7.69	9.23	213.85	18.46	7.69	7.69	7.69

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	7.69			7.69	7.69	7.69	9.23			7.69	7.69	7.69
Conflicting Volume (Veh)	232.31			477.69	473.85	223.08	216.92			477.69	479.23	213.08
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	232.31			477.69	473.85	223.08	216.92			477.69	479.23	213.08
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
opx, Potential Capacity	1347.23			501.22	492.04	821.46	1364.76			501.22	488.61	832.03
Capacity	1347.23			485.23	485.04	821.46	1364.76			485.21	481.66	832.03

Critical Headway and Follow Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc,base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,base,I, Base Critical Headway (Stage I)												
tc,base,II, Base Critical Headway (Stage II)												
tc,HV, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc,G, Grade Adjustment Factor	0.00			0.20	0.20	0.10	0.00			0.20	0.20	0.10
G, % Grade		0.00			0.00			0.00			0.00	
T3,II, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,I, Critical Headway (Stage I)												
tc,II, Critical Headway (Stage II)												
lf,base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
lf,hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
lf, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	7.69	209.23	7.69	7.69	7.69	7.69	9.23	213.85	18.46	7.69	7.69	7.69
cmx, Capacity	1347.23			485.23	485.04	821.46	1364.76			485.21	481.66	832.03
V / C	0.01			0.02	0.02	0.01	0.01			0.02	0.02	0.01
d, Delay	7.69			12.69	12.70	9.66	7.68			12.69	12.75	9.60
LOS	A			B	B	A	A			B	B	A
dA, Approach Delay		0.26			11.68			0.29			11.68	
Approach LOS					B						B	
dRank1, Rank 1 Delay		0.05						0.06				

Delay and Level of Service by Lane

Approach	N (Major)		E	S (Major)	W
Lane	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	224.62	23.08	241.54	23.08	
Flared Storage Size					
cmx, Capacity	1347.23	561.80	1364.76	561.90	
V / C	0.17	0.04	0.18	0.04	
Q95, 95% Queue Length	0.02	0.13	0.02	0.13	
d, Delay	7.69	11.68	7.66	11.68	
LOS		B		B	
dA, Approach Delay	0.26	11.68	0.29	11.68	
Approach LOS		B		B	

Node 2032: S College Ave & SW 4th St

Control Type AWSC
 Method HCM 6th Edition
 Average Delay 245.93
 Average LOS F

Volume and Adjustments

Approach	N			E			S			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	18.00	146.00	14.00	104.00	100.00	16.00	110.00	191.00	119.00	25.00	82.00	78.00
PHF, Peak-hour factor	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650
Flow Rate	27.69	224.62	21.54	160.00	153.85	24.62	169.23	293.85	183.08	38.46	126.15	116.92
Geometry Group	1			1			1			1		

Saturation Headway

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	273.85	338.46	646.15	281.54				
Left Turn Flow Rate	27.69	160.00	169.23	38.46				
Right Turn Flow Rate	21.54	24.62	183.08	116.92				
PLT, Proportion LT	0.10	0.47	0.26	0.14				
PRT, Proportion RT	0.08	0.07	0.28	0.42				
PHV, Proportion HV	0.00	0.00	0.00	0.00				
hLT,adj, Headway adjustment for left turns	0.20	0.20	0.20	0.20				
hRT,adj, Headway adjustment for right turns	-0.60	-0.60	-0.60	-0.60				
hHV,adj, Headway adjustment for heavy vehicles	1.70	1.70	1.70	1.70				
hadj, Headway adjustment	-0.03	0.05	-0.12	-0.22				

Departure Headway

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	273.85	338.46	646.15	281.54				
hd initial	3.20	3.20	3.20	3.20				
x initial	0.24	0.30	0.57	0.25				
hd, iteration 1	5.55	5.78	5.08	5.57				
Difference, iteration 1	2.35	2.58	1.88	2.37				
hd, iteration 2	6.98	7.07	6.15	6.98				
Difference, iteration 2	1.43	1.29	1.07	1.41				
hd, iteration 3	7.57	7.53	6.80	7.49				
Difference, iteration 3	0.59	0.46	0.65	0.51				
hd, iteration 4	7.78	7.70	7.06	7.67				
Difference, iteration 4	0.21	0.17	0.25	0.18				
hd, iteration 5	7.85	7.76	7.15	7.74				
Difference, iteration 5	0.08	0.06	0.09	0.07				
Convergence	Y	Y	Y	Y				
hd final, Departure Headway	7.85	7.76	7.15	7.74				
x final, Degree of Utilization	0.60	0.73	1.28	0.61				

Capacity and Level of Service

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	273.85	338.46	646.15	281.54				
hd, Departure Headway	7.85	7.76	7.15	7.74				
x, Degree of Utilization	0.60	0.73	1.28	0.61				
m, Move Up Time	2.00	2.00	2.00	2.00				
ts, Service Time	5.85	5.76	5.16	5.74				
Capacity	457.84	463.40	646.15	485.20				
Delay	22.32	30.85	550.76	22.41				
LOS	C	D	F	C				
Q95, 95% Queue Length	4.25	7.25	83.01	4.39				
Approach Delay	22.32	30.85	550.76	22.41				
Approach LOS	C	D	F	C				
Intersection Delay	245.93							
Intersection LOS	F							

Node 2033: S College Ave & SE 8th St

Control Type TWSC
 Method HCM 6th Edition
 dI, Average Delay 1.21
 Worst Case Delay 18.25
 Worst Case LOS C

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	5.00	227.00	7.00	5.00	5.00	7.00	10.00	253.00	6.00	6.00	5.00	8.00
PHF, Peak-hour factor	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650
V, Adjusted Volume	7.69	349.23	10.77	7.69	7.69	10.77	15.38	389.23	9.23	9.23	7.69	12.31

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	7.69			7.69	7.69	10.77	15.38			9.23	7.69	12.31
Conflicting Volume (Veh)	398.46			804.62	800.00	393.85	360.00			803.85	799.23	354.82
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	398.46			804.62	800.00	393.85	360.00			803.85	799.23	354.82
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
cpv, Potential Capacity	1171.11			303.33	320.44	659.55	1209.81			303.69	320.77	693.79
Capacity	1171.11			286.92	312.61	659.55	1209.81			287.67	312.93	693.79

Critical Headway and Follow Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc, base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc, base, I, Base Critical Headway (Stage I)												
tc, base, II, Base Critical Headway (Stage II)												
tc, HV, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, G, Grade Adjustment Factor	0.00			0.20	0.20	0.10	0.00			0.20	0.20	0.10
G, % Grade		0.00			0.00			0.00			0.00	
T3, II, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc, I, Critical Headway (Stage I)												
tc, II, Critical Headway (Stage II)												
tf, base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
tf, hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
tf, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	7.69	349.23	10.77	7.69	7.69	10.77	15.38	389.23	9.23	9.23	7.69	12.31
cmv, Capacity	1171.11			286.92	312.61	659.55	1209.81			287.67	312.93	693.79
V / C	0.01			0.03	0.02	0.02	0.01			0.03	0.02	0.02
d, Delay	8.09			18.22	17.19	11.14	8.01			18.25	17.24	10.93
LOS	A			C	C	B	A			C	C	B
dA, Approach Delay		0.17			15.00			0.30			14.90	
Approach LOS					C						B	
dRank1, Rank 1 Delay		0.07						0.13				

Delay and Level of Service by Lane

Approach	N (Major)		E		S (Major)		W	
Lane	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	367.69	26.15	413.85	29.23				
Planned Storage Size								
cmv, Capacity	1171.11	388.06	1209.81	392.64				
V / C	0.31	0.07	0.34	0.07				
Q95, 95% Queue Length	0.02	0.22	0.04	0.24				
d, Delay	8.09	15.00	8.01	14.90				
LOS		C		B				
dA, Approach Delay	0.17	15.00	0.30	14.90				
Approach LOS		C		B				

Node 2034: S College Ave & SE 8th St

Control Type TWSC
 Method HCM 6th Edition
 dI, Average Delay 1.15
 Worst Case Delay 19.82
 Worst Case LOS C

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	5.00	240.00	5.00	5.00	5.00	8.00	11.00	282.00	6.00	5.00	5.00	5.00
PHF, Peak-hour factor	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650
V, Adjusted Volume	7.69	369.23	7.69	7.69	7.69	13.85	16.92	433.85	9.23	7.69	7.69	7.69

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	7.69			7.69	7.69	13.85	16.92			7.69	7.69	7.69
Conflicting Volume (Veh)	443.08			868.46	864.62	438.46	376.92			871.54	865.38	373.08
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	443.08			868.46	864.62	438.46	376.92			871.54	865.38	373.08
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
opx, Potential Capacity	1127.71			274.72	293.97	622.58	1192.63			273.41	293.66	677.47
Capacity	1127.71			260.50	285.93	622.58	1192.63			256.41	285.64	677.47

Critical Headway and Follow Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc, base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc, base, I, Base Critical Headway (Stage I)												
tc, base, II, Base Critical Headway (Stage II)												
tc, HV, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, G, Grade Adjustment Factor	0.00			0.20	0.20	0.10	0.00			0.20	0.20	0.10
G, % Grade		0.00			0.00			0.00			0.00	
T3, II, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc, I, Critical Headway (Stage I)												
tc, II, Critical Headway (Stage II)												
tf, base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
tf, hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
tf, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	7.69	369.23	7.69	7.69	7.69	13.85	16.92	433.85	9.23	7.69	7.69	7.69
cmx, Capacity	1127.71			260.50	285.93	622.58	1192.63			256.41	285.64	677.47
V / C	0.01			0.03	0.03	0.02	0.01			0.03	0.03	0.01
d, Delay	8.21			19.65	18.42	11.61	8.06			19.82	18.38	11.09
LOS	A			C	C	B	A			C	C	B
dA, Approach Delay		0.16			15.52			0.30			16.43	
Approach LOS					C						C	
dRank1, Rank 1 Delay		0.07						0.15				

Delay and Level of Service by Lane

Approach	N (Major)	E	S (Major)	W
Lane	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	384.62	29.23	460.00	23.08
Flared Storage Size				
cmx, Capacity	1127.71	371.55	1192.63	337.95
V / C	0.34	0.08	0.39	0.07
Q95, 95% Queue Length	0.02	0.26	0.04	0.22
d, Delay	8.21	15.52	8.06	16.43
LOS		C		C
dA, Approach Delay	0.16	15.52	0.30	16.43
Approach LOS		C		C

Node 2035: S College Ave & SE 10th St

Control Type TWSC
 Method HCM 6th Edition
 dI, Average Delay 1.32
 Worst Case Delay 27.94
 Worst Case LOS D

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	5.00	314.00	5.00	5.00	5.00	5.00	8.00	379.00	5.00	9.00	5.00	15.00
PHF, Peak-hour factor	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650
V, Adjusted Volume	7.69	483.08	7.69	7.69	7.69	7.69	9.23	583.08	7.69	13.85	7.69	23.08

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	7.69			7.69	7.69	7.69	9.23			13.85	7.69	23.08
Conflicting Volume (Veh)	590.77			1123.08	1111.54	586.92	490.77			1115.38	1111.54	486.92
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	590.77			1123.08	1111.54	586.92	490.77			1115.38	1111.54	486.92
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
cpx, Potential Capacity	994.76			184.51	210.65	513.34	1083.02			186.76	210.65	584.68
Capacity	994.76			169.14	205.76	513.34	1083.02			175.56	205.76	584.68

Critical Headway and Follow Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc,base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,base,I, Base Critical Headway (Stage I)												
tc,base,II, Base Critical Headway (Stage II)												
tc,HV, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc,G, Grade Adjustment Factor	0.00			0.20	0.20	0.10	0.00			0.20	0.20	0.10
G, % Grade		0.00			0.00			0.00			0.00	
T3,lt, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,I, Critical Headway (Stage I)												
tc,II, Critical Headway (Stage II)												
lf,base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
lf,hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
lf, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	7.69	483.08	7.69	7.69	7.69	7.69	9.23	583.08	7.69	13.85	7.69	23.08
cmx, Capacity	994.76			169.14	205.76	513.34	1083.02			175.56	205.76	584.68
V / C	0.01			0.05	0.04	0.01	0.01			0.08	0.04	0.04
d, Delay	8.65			27.94	24.15	13.67	8.35			27.82	24.81	13.47
LOS	A			D	C	B	A			D	C	B
dA, Approach Delay		0.13			21.92			0.13			19.88	
Approach LOS					C						C	
dRank1, Rank 1 Delay		0.09						0.11				

Delay and Level of Service by Lane

Approach	N (Major)			E			S (Major)			W		
Lane	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	498.46	23.08	600.00									
Flared Storage Size												
cmx, Capacity	994.76	235.84	1083.02									
V / C	0.50	0.10	0.55									
Q95, 95% Queue Length	0.02	0.32	0.03									
d, Delay	8.65	21.92	8.35									
LOS		C										
dA, Approach Delay	0.13	21.92	0.13									
Approach LOS		C										

Node 2036: S College Ave & SE 12th St

Control Type AWS
 Method HCM 6th Edition
 Average Delay 59.51
 Average LOS F

Volume and Adjustments

Approach	N			E			S			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	47.00	259.00	6.00	59.00	10.00	59.00	16.00	323.00	58.00	9.00	31.00	20.00
PHF, Peak-hour factor	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650
Flow Rate	72.31	398.46	9.23	90.77	15.38	90.77	24.62	495.92	89.23	13.85	47.89	30.77
Geometry Group	1			1			1			1		

Saturation Headway

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	480.00	196.92	610.77	92.31				
Left Turn Flow Rate	72.31	90.77	24.62	13.85				
Right Turn Flow Rate	9.23	90.77	89.23	30.77				
PLT, Proportion LT	0.15	0.46	0.04	0.15				
PRT, Proportion RT	0.02	0.46	0.15	0.33				
PHV, Proportion HV	0.00	0.00	0.00	0.00				
hLT,adj, Headway adjustment for left turns	0.20	0.20	0.20	0.20				
hRT,adj, Headway adjustment for right turns	-0.60	-0.60	-0.60	-0.60				
hHV,adj, Headway adjustment for heavy vehicles	1.70	1.70	1.70	1.70				
hadj, Headway adjustment	0.02	-0.18	-0.08	-0.17				

Departure Headway

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	480.00	196.92	610.77	92.31				
hd, initial	3.20	3.20	3.20	3.20				
x, initial	0.43	0.18	0.54	0.09				
hd, iteration 1	4.93	5.56	4.72	5.71				
Difference, iteration 1	1.73	2.36	1.52	2.51				
hd, iteration 2	5.62	6.48	5.37	6.81				
Difference, iteration 2	0.70	0.92	0.65	1.10				
hd, iteration 3	5.93	6.87	5.65	7.29				
Difference, iteration 3	0.31	0.39	0.28	0.48				
hd, iteration 4	6.06	7.04	5.77	7.50				
Difference, iteration 4	0.14	0.17	0.12	0.21				
hd, iteration 5	6.12	7.12	5.83	7.59				
Difference, iteration 5	0.06	0.08	0.06	0.09				
Convergence	Y	Y	Y	Y				
hd final, Departure Headway	6.12	7.12	5.83	7.59				
x final, Degree of Utilization	0.82	0.39	0.99	0.19				

Capacity and Level of Service

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	480.00	196.92	610.77	92.31				
hd, Departure Headway	6.12	7.12	5.83	7.59				
x, Degree of Utilization	0.82	0.39	0.99	0.19				
m, Move Up Time	2.00	2.00	2.00	2.00				
ts, Service Time	4.12	5.12	3.83	5.59				
Capacity	587.81	505.59	617.33	474.07				
Delay	34.45	14.63	100.80	12.43				
LOS	D	B	F	B				
Q95, 95% Queue Length	11.08	1.89	28.54	0.72				
Approach Delay	34.45	14.63	100.80	12.43				
Approach LOS	D	B	F	B				
Intersection Delay	59.51							
Intersection LOS	F							

Node 2037: S College and 13th 13th St

Control Type	TWSC
Method	HCM 6th Edition
dI, Average Delay	0.29
Worst Case Delay	18.12
Worst Case LOS	C

Volume and Adjustments

Approach	N (Major)		S (Major)		W	
	T	R1	L1	T	L1	R1
Movement						
Base Volume	258.00	5.00	5.00	357.00	5.00	5.00
PHF, Peak-hour factor	0.650	0.650	0.650	0.650	0.650	0.650
V, Adjusted Volume	396.92	7.69	7.69	549.23	7.69	7.69

Pedestrians

Approach	N (Major)		S (Major)		W	
	T	R1	L1	T	L1	R1
Movement						
vx, Flow (Ped/hr)			0.00		0.00	0.00
w, Lane Width (ft)			12.00		12.00	12.00
Sp, Walking Speed (ft/s)			3.50		3.50	3.50
fpb, Percent Blockage			0.00		0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)		S (Major)		W	
	T	R1	L1	T	L1	R1
Movement						
Rank	1	1	2	1	3	2
vx, Volume			7.69		7.69	7.69
Conflicting Volume (Veh)			404.62		965.38	400.77
Conflicting Volume (Ped)			0.00		0.00	0.00
Conflicting Volume			404.62		965.38	400.77
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median Refuge Area						
cpx, Potential Capacity			1165.03		285.01	653.68
Capacity			1165.03		282.30	653.68

Critical Headway and Follow Up Headway

Approach	N (Major)		S (Major)		W	
	T	R1	L1	T	L1	R1
Movement						
tc,base, Base Critical Headway			4.10		7.10	6.20
tc,base,I, Base Critical Headway (Stage I)						
tc,base,II, Base Critical Headway (Stage II)						
tc,HV, Heavy Vehicles Adjustment Factor			1.00		1.00	1.00
Phv, % Heavy Vehicles			0.00		0.00	0.00
tc,G, Grade Adjustment Factor			0.00		0.20	0.10
G, % Grade		0.00	0.00		0.00	
T3,II, Geometry Adjustment Factor			0.00		0.70	0.00
tc, Critical Headway			4.10		6.40	6.20
tc,I, Critical Headway (Stage I)						
tc,II, Critical Headway (Stage II)						
tf,base, Base Follow-Up Headway			2.20		3.50	3.30
tf,hv, Heavy Vehicles Adjustment Factor			0.90		0.90	0.90
tf, Follow-Up Headway			2.20		3.50	3.30

Delay and Level of Service by Movement

Approach	N (Major)		S (Major)		W	
	T	R1	L1	T	L1	R1
Movement						
vx, Volume	396.92	7.69	7.69	549.23	7.69	7.69
cmx, Capacity			1165.03		282.30	653.68
V / C			0.01		0.03	0.01
d, Delay			8.11		18.12	10.88
LOS			A		C	B
dA, Approach Delay		0.00		0.11		14.50
Approach LOS						B
dRank1, Rank 1 Delay		0.00		0.08		

Delay and Level of Service by Lane

Approach	N (Major)		S (Major)		W	
	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Movements	T, R1	L1, T	L1, R1			
vx, Volume	404.62	556.92	15.38			
Flared Storage Size						
cmx, Capacity		1165.03	394.32			
V / C		0.48	0.04			
Q95, 95% Queue Length		0.02	0.12			
d, Delay		8.11	14.50			
LOS			B			
dA, Approach Delay		0.00	0.11			
Approach LOS			B			

Node 2038: S College Ave & Lampert

Control Type AWSC
 Method HCM 6th Edition
 Average Delay 52.93
 Average LOS F

Volume and Adjustments

Approach	N			E			S			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	80.00	242.00	15.00	51.00	16.00	85.00	10.00	247.00	43.00	42.00	39.00	34.00
PHF, Peak-hour factor	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850
Flow Rate	123.08	372.31	23.08	78.46	24.62	130.77	15.38	380.00	66.15	64.62	60.00	52.31
Geometry Group	1			1			1			1		

Saturation Headway

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	518.46	233.85	461.54	176.92				
Left Turn Flow Rate	123.08	78.46	15.38	64.62				
Right Turn Flow Rate	23.08	130.77	66.15	52.31				
PLT, Proportion LT	0.24	0.34	0.03	0.37				
PRT, Proportion RT	0.04	0.56	0.14	0.30				
PHV, Proportion HV	0.00	0.00	0.00	0.00				
hLT, adj. Headway adjustment for left turns	0.20	0.20	0.20	0.20				
hRT, adj. Headway adjustment for right turns	-0.60	-0.60	-0.60	-0.60				
hHV, adj. Headway adjustment for heavy vehicles	1.70	1.70	1.70	1.70				
hadj, Headway adjustment	0.02	-0.27	-0.08	-0.10				

Departure Headway

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	518.46	233.85	461.54	176.92				
hd initial	3.20	3.20	3.20	3.20				
x initial	0.46	0.21	0.41	0.16				
hd, iteration 1	5.03	5.41	4.98	5.65				
Difference, iteration 1	1.83	2.21	1.78	2.45				
hd, iteration 2	5.85	6.48	5.85	6.79				
Difference, iteration 2	0.82	1.07	0.87	1.14				
hd, iteration 3	6.27	7.01	6.29	7.37				
Difference, iteration 3	0.42	0.53	0.44	0.58				
hd, iteration 4	6.49	7.29	6.52	7.67				
Difference, iteration 4	0.22	0.28	0.23	0.30				
hd, iteration 5	6.61	7.44	6.64	7.84				
Difference, iteration 5	0.12	0.15	0.12	0.16				
hd, iteration 6	6.67	7.52	6.71	7.93				
Difference, iteration 6	0.06	0.08	0.07	0.09				
Convergence	Y	Y	Y	Y				
hd final, Departure Headway	6.67	7.52	6.71	7.93				
x final, Degree of Utilization	0.96	0.49	0.86	0.39				

Capacity and Level of Service

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	518.46	233.85	461.54	176.92				
hd, Departure Headway	6.67	7.52	6.71	7.93				
x, Degree of Utilization	0.96	0.49	0.86	0.39				
m, Move Up Time	2.00	2.00	2.00	2.00				
ts, Service Time	4.67	5.52	4.71	5.93				
Capacity	538.71	478.43	536.36	453.71				
Delay	87.74	17.64	45.89	15.96				
LOS	F	C	E	C				
Q95, 95% Queue Length	23.14	2.80	13.57	1.89				
Approach Delay	87.74	17.64	45.89	15.96				
Approach LOS	F	C	E	C				
Intersection Delay	52.93							
Intersection LOS	F							

Node 2039: SE 3rd & Ash Ave

Control Type TWSC
 Method HCM 6th Edition
 dI, Average Delay 9.51
 Worst Case Delay 11.27
 Worst Case LOS B

Volume and Adjustments

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	5.00	85.00	5.00	5.00	5.00	6.00	5.00	118.00	5.00	5.00	5.00	5.00
PHF, Peak-hour factor	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650
V, Adjusted Volume	7.69	130.77	7.69	7.69	7.69	9.23	7.69	181.54	7.69	7.69	7.69	7.69

Pedestrians

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
w, Lane Width (ft)	12.00	12.00	12.00	12.00			12.00	12.00	12.00	12.00		
Sp, Walking Speed (ft/s)	3.50	3.50	3.50	3.50			3.50	3.50	3.50	3.50		
fpb, Percent Blockage	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		

Capacity of Movements below Rank 1

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	4	3	2	2	1	1	4	3	2	2	1	1
vx, Volume	7.69	130.77	7.69	7.69			7.69	181.54	7.69	7.69		
Conflicting Volume (Veh)	149.23	58.46	12.31	15.38			123.85	59.23	11.54	16.92		
Conflicting Volume (Ped)	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
Conflicting Volume	149.23	58.46	12.31	15.38			123.85	59.23	11.54	16.92		
Two-Stage Gap Acceptance	No	No					No	No				
Number of Storage Spaces in Median Refuge Area												
cpx, Potential Capacity	823.28	836.43	1074.07	1615.51			855.15	835.62	1075.11	1613.44		
Capacity	674.51	828.40	1074.07	1615.51			740.82	827.60	1075.11	1613.44		

Critical Headway and Follow Up Headway

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc,base, Base Critical Headway	7.10	6.50	6.20	4.10			7.10	6.50	6.20	4.10		
tc,base,I, Base Critical Headway (Stage I)												
tc,base,II, Base Critical Headway (Stage II)												
tc,hv, Heavy Vehicles Adjustment Factor	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00		
Phv, % Heavy Vehicles	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
tc,G, Grade Adjustment Factor	0.20	0.20	0.10	0.00			0.20	0.20	0.10	0.00		
G, % Grade		0.00			0.00			0.00			0.00	
T3,lt, Geometry Adjustment Factor	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
tc, Critical Headway	7.10	6.50	6.20	4.10			7.10	6.50	6.20	4.10		
tc,I, Critical Headway (Stage I)												
tc,II, Critical Headway (Stage II)												
If,base, Base Follow-Up Headway	3.50	4.00	3.30	2.20			3.50	4.00	3.30	2.20		
If,hv, Heavy Vehicles Adjustment Factor	0.90	0.90	0.90	0.90			0.90	0.90	0.90	0.90		
If, Follow-Up Headway	3.50	4.00	3.30	2.20			3.50	4.00	3.30	2.20		

Delay and Level of Service by Movement

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	7.69	130.77	7.69	7.69	7.69	9.23	7.69	181.54	7.69	7.69	7.69	7.69
cmx, Capacity	674.51	828.40	1074.07	1615.51			740.82	827.60	1075.11	1613.44		
V / C	0.01	0.16	0.01	0.00			0.01	0.22	0.01	0.00		
d, Delay	11.27	10.28	9.28	7.24			11.20	10.69	9.69	7.24		
LOS	B	B	A	A			B	B	A	A		
dA, Approach Delay		10.28			2.26			10.67			2.41	
Approach LOS		B						B				
dRank1, Rank 1 Delay					0.03						0.03	

Delay and Level of Service by Lane

Approach	N		E (Major)		S		W (Major)	
Lane	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	146.15	24.62	196.92	23.08				
Flared Storage Size								
cmx, Capacity	828.42	1615.51	831.27	1613.44				
V / C	0.18	0.02	0.24	0.01				
Q95, 95% Queue Length	0.64	0.01	0.93	0.01				
d, Delay	10.28	7.24	10.67	7.24				
LOS	B		B					
dA, Approach Delay	10.28	2.26	10.67	2.41				
Approach LOS	B		B					

Intersection Capacity Analysis Summary Page

Analysis Time: Thu Mar 12 20:05:23 :
 Driving Side: Right
 Analysis Period: 1 Hours

Number	Name	Control Type	V/C	Avg Delay	Avg LOS	Max Delay	Max LOS
2030	College & Whitman	Signalized	0.49	13.26	B	14.92	B
2031	N College & SE 3rd St.	TWSC	0.00	1.36	A	12.62	B
2032	S College Ave & SW 4th St	Signalized	0.26	17.89	B	25.13	C
2033	S College Ave & SE 6th St	TWSC	0.00	1.47	A	17.30	C
2034	S College Ave & SE 8th St	TWSC	0.00	1.38	A	18.87	C
2035	S College Ave & SE 10th St	TWSC	0.00	1.31	A	26.88	D
2036	S College Ave & SE 12th St	Signalized	0.52	9.30	A	24.97	C
2037	S College and 13th 13th St	TWSC	0.00	0.30	A	17.01	C
2038	S College Ave & Lamperti	Signalized	0.52	12.08	B	21.30	C
2039	SE 3rd & Ash Ave	TWSC	0.00	9.54	A	11.49	B

1. **Principles of the Theory of the Firm**

Node 2031: N College & SE 3rd St.

Control Type TWSC
 Method HCM 6th Edition
 dI, Average Delay 1.36
 Worst Case Delay 12.62
 Worst Case LOS B

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	5.00	136.00	5.00	6.00	5.00	5.00	6.00	131.00	12.00	5.00	5.00	5.00
PHF, Peak-hour factor	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650
V, Adjusted Volume	7.69	209.23	7.69	9.23	7.69	7.69	9.23	201.54	18.46	7.69	7.69	7.69

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	7.69			9.23	7.69	7.69	9.23			7.69	7.69	7.69
Conflicting Volume (Veh)	220.00			465.38	461.54	210.77	218.92			465.38	466.92	213.08
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	220.00			465.38	461.54	210.77	218.92			465.38	466.92	213.08
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
cpx, Potential Capacity	1361.23			510.71	499.98	834.49	1364.76			510.71	496.48	832.03
Capacity	1361.23			494.55	492.91	834.49	1364.76			494.61	489.48	832.03

Critical Headway and Follow Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc,base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,base,I, Base Critical Headway (Stage I)												
tc,base,II, Base Critical Headway (Stage II)												
tc,HV, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc,G, Grade Adjustment Factor	0.00			0.20	0.20	0.10	0.00			0.20	0.20	0.10
G, % Grade		0.00			0.00			0.00			0.00	
T3,lt, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,I, Critical Headway (Stage I)												
tc,II, Critical Headway (Stage II)												
tf,base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
tf,hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
tf, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	7.69	209.23	7.69	9.23	7.69	7.69	9.23	201.54	18.46	7.69	7.69	7.69
cmx, Capacity	1361.23			494.55	492.91	834.49	1364.76			494.61	489.48	832.03
V / C	0.01			0.02	0.02	0.01	0.01			0.02	0.02	0.01
d, Delay	7.66			12.57	12.59	6.60	7.66			12.55	12.62	9.59
LOS	A			B	B	A	A			B	B	A
dA, Approach Delay		0.26			11.65			0.31			11.59	
Approach LOS					B						B	
dRank1, Rank 1 Delay		0.05						0.06				

Delay and Level of Service by Lane

Approach	N (Major)	E	S (Major)	W
Lane	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	224.62	24.62	229.23	23.08
Flared Storage Size				
cmx, Capacity	1361.23	566.02	1364.76	569.62
V / C	0.17	0.04	0.17	0.04
Q95, 95% Queue Length	0.02	0.14	0.02	0.13
d, Delay	7.66	11.65	7.66	11.59
LOS		B		B
dA, Approach Delay	0.26	11.65	0.31	11.59
Approach LOS		B		B

Report 2012: 6 Colgate Ave & 20th Ave SE		
Control Type	Signalized	
Method	HCS 4th Edition	
Average Delay	12.63	
Average LOS	B	
V/C	0.20	
Loss Time	4	

Volume and Adjustments by Variant															
Approx	L1			R1			E			S			W		
Measure	L1	N	R1	L1	N	R1	L1	N	R1	L1	N	R1	L1	N	R1
Base Volume	17	152	13	15	15	15	17	152	13	15	15	17	152	13	15
Peak 15 Volume	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Adjusted Volume	7	58	5	29	49	6	40	71	48	8	34	25			

Values and Adjustments by Line Group				
Approach	H	E	S	W
Line Group	C	C	C	C
LO	8922	8921	8909	8903
Lanes	178	174	174	176
Capital Cost	Perms	Perms	Perms	Perms
V. Volume	280	303	637	269
Pct. Response Left Turns	0.05	0.19	0.28	0.13
Pct. Response Right Turns	0.07	0.03	0.30	0.31

[illegible]

Appendix: Correlation Data and Level of Service Determination				
	N	E	S	W
Appetition	8922	8921	8920	8913
Level of Care				
Case Type	Parens	Parens	Parens	Parens
V. Volume	280	303.05	696.92	266.13
a. Subsequent Risk Rate	1498	1758	1873	1469
c. Capacity	894	416	817	123
d. Green/Red	356	0.11	0.56	0.31
K. Volume Capacity	3.31	0.04	0.76	0.17
at current Delay	7.24	13.55	25.66	17.35
a. Delay Discrepancy	0.06	0.67	0.50	0.24
d. Incremental Delay	0.92	0.54	6.74	3.60
d. Total Queue Delay	0.00	0.00	6.00	0.00
No. Throughput	1.00	1.00	1.00	1.00
P. Projection Array on Green	0.56	0.31	0.66	0.31
PPI (Projected Queue Factor)	1.00	1.00	1.00	1.00
d. Delay	8.16	25.13	17.40	21.03
LEGS	A	C	B	C
dL Approach Delay	6.14	25.13	17.40	21.03
Approach LGS	A	C	B	C
d. Interchange Delay		17.89		
Interchange LGS		U		

Area of Query	A	B	C	D
Aspirin	3	3	3	3
Animal Type	3	3	3	3
Line Number	0022	0021	0020	0023
Q1: Omega Capital	0.56	0.31	0.56	0.51
Q2: Magnesium Phosphate	1.00	1.00	1.00	1.00
Q3: Fluoride Chloride	1.62	3.44	3.44	2.90
Q4: Sodium Chloride	0.23	0.67	0.57	0.53
Q5: Aspirin	0.00	0.00	0.00	0.00
Q6: Aspirin, Ac, Fluoride	1.00	1.00	1.00	1.00
Q7: Early Morning Photo	1.00	1.00	1.00	1.00
Q8: Average Size of Query	0.88	4.31	7.01	3.43
Q9: In Fluoride	1.00	1.79	1.62	1.00
Q10: Dark Reddish Pinkish	90	90	90	90
Q11: Size of Query	3.33	7.71	11.35	6.18

Signal Timing Information				
Approach	N	E	S	W
Left Turn	0.000	0.000	0.000	0.000
Through Right	Permi	Permi	Permi	Permi
Signal Type	P	P	P	P
Cycle Length	60.000	60.000	60.000	60.000
Co-Minimum Pedestrian Crossing	0	0	0	0
L Total Lost Time per Cycle	4.000	4.000	4.000	4.000
W Sat. Lost Time	2.000	2.000	2.000	2.000
Permi Through Sat. Upd. Lost Time	2.000	2.000	2.000	2.000
B Clearance Loss Time	2.000	2.000	2.000	2.000
Green Time Start	0	31.3	0	31.3
Green Time End	30.3	56	30.3	56
O All-Out Green Time	30.3	16.7	30.3	16.7
g Effective Green Time	30.3	16.7	30.3	16.7
g/C Green Cycle	0.506	0.31	0.506	0.31
Permi Through Sat. Upd. Lost Ratio	0.19	0.24	0.46	0.18
Control Line Group		Y		

[illegible]

Performance and Design Adjustment Factors									
Exposure	S			E			W		
	L ₁	T	R ₁	L ₁	T	R ₁	L ₁	T	R ₁
Movement									
go Pacesman Green	0.60		2.00	0.90		0.90	0.60		0.60
GO/Stop Average Pedestrian Occupancy	1.00		0.80	0.80		0.80	1.00		0.80
DCTC / Average Control Zone Occupancy	0.90		0.90	0.90		0.90	0.90		0.90
Average Acquisition Factor	1.00		1.00	1.00		1.00	1.00		1.00
High Right Turn Factor	1.00		1.00	1.00		1.00	1.00		1.00
High Left Turn Factor	1.00		1.00	1.00		1.00	1.00		1.00

ASSIGNMENT PROBLEM

Atlanta, Ga. Group: 10/20/2011

Project: 2010-2011

Node 2033: S College Ave & SE 6th St

Control Type TWSC
 Method HCM 6th Edition
 dl, Average Delay 1.47
 Worst Case Delay 17.3
 Worst Case LOS C

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	5.00	198.00	5.00	5.00	5.00	7.00	10.00	240.00	6.00	13.00	5.00	7.00
PHF, Peak-hour factor	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650
V, Adjusted Volume	7.69	304.82	7.69	7.69	7.69	10.77	15.38	369.23	9.23	20.00	7.69	10.77

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	7.69			7.69	7.69	10.77	15.38			20.00	7.69	10.77
Conflicting Volume (Veh)	378.46			737.69	732.31	373.85	312.31			737.69	733.08	308.46
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	378.46			737.69	732.31	373.85	312.31			737.69	733.08	308.46
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
cpx, Potential Capacity	1191.08			336.40	350.57	676.80	1259.48			336.40	350.22	736.25
Capacity	1191.08			320.04	342.45	676.80	1259.48			319.63	342.10	736.25

Critical Headway and Follow Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc, base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc, base, I, Base Critical Headway (Stage I)												
tc, base, II, Base Critical Headway (Stage II)												
tc, HV, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, G, Grade Adjustment Factor	0.00			0.20	0.20	0.10	0.00			0.20	0.20	0.10
G, % Grade		0.00			0.00			0.00			0.00	
T3, It, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc, I, Critical Headway (Stage I)												
tc, II, Critical Headway (Stage II)												
lf, base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
lf, hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
lf, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	7.69	304.82	7.69	7.69	7.69	10.77	15.38	369.23	9.23	20.00	7.69	10.77
cmx, Capacity	1191.08			320.04	342.45	676.80	1259.48			319.63	342.10	736.25
V / C	0.01			0.02	0.02	0.02	0.01			0.06	0.02	0.01
d, Delay	8.04			16.82	16.08	10.89	7.89			17.30	16.56	10.92
LOS	A			C	C	B	A			C	C	B
dA, Approach Delay		0.19			14.16			0.31			15.36	
Approach LOS					B						C	
dRank1, Rank 1 Delay		0.06						0.12				

Delay and Level of Service by Lane

Approach	N (Major)		E		S (Major)		W	
Lane	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	320.00	26.15	393.85	38.46				
Flared Storage Size								
cmx, Capacity	1191.08	419.07	1259.48	385.83				
V / C	0.27	0.06	0.31	0.10				
Q95, 95% Queue Length	0.02	0.20	0.04	0.33				
d, Delay	8.04	14.16	7.89	15.36				
LOS		B	C	C				
dA, Approach Delay	0.19	14.16	0.31	15.36				
Approach LOS		B	C	C				

Node 2034: S College Ave & SE 8th St

Control Type TWSC
 Method HCM 6th Edition
 dI, Average Delay 1.38
 Worst Case Delay 18.87
 Worst Case LOS C

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	5.00	214.00	5.00	8.00	5.00	8.00	16.00	267.00	8.00	6.00	5.00	9.00
PHF, Peak-hour factor	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650
V, Adjusted Volume	7.69	329.23	7.69	9.23	7.69	12.31	24.62	410.77	9.23	9.23	7.69	13.85

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	7.69			9.23	7.69	12.31	24.62			9.23	7.69	13.85
Conflicting Volume (Veh)	420.00			823.85	816.92	415.38	336.92			823.08	817.69	333.08
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	420.00			823.85	816.92	415.38	336.92			823.08	817.69	333.08
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
opx, Potential Capacity	1149.97			294.42	313.29	641.45	1233.61			294.77	312.97	713.31
Capacity	1149.97			275.76	302.52	641.45	1233.61			276.16	302.31	713.31

Critical Headway and Follow-Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc, base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc, base, I, Base Critical Headway (Stage I)												
tc, base, II, Base Critical Headway (Stage II)												
tc, HV, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, G, Grade Adjustment Factor	0.00			0.20	0.20	0.10	0.00			0.20	0.20	0.10
G, % Grade		0.00			0.00			0.00			0.00	
T3, It, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc, I, Critical Headway (Stage I)												
tc, II, Critical Headway (Stage II)												
uf, basa, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
uf, hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
uf, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	7.69	329.23	7.69	9.23	7.69	12.31	24.62	410.77	9.23	9.23	7.69	13.85
cmx, Capacity	1149.97			275.76	302.62	641.45	1233.61			276.16	302.31	713.31
V / C	0.01			0.03	0.03	0.02	0.02			0.03	0.03	0.02
d, Delay	8.15			18.87	17.71	11.43	7.98			18.81	17.69	10.82
LOS	A			C	C	B	A			C	C	B
dA, Approach Delay		0.18			15.43			0.44			14.94	
Approach LOS					C						B	
dRank1, Rank 1 Delay		0.07						0.21				

Delay and Level of Service by Lane

Approach	N (Major)	E	S (Major)	W
Lane	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	344.62	29.23	444.62	30.77
Flared Storage Size				
cmx, Capacity	1149.97	374.37	1233.61	393.06
V / C	0.30	0.08	0.36	0.08
Q95, 95% Queue Length	0.02	0.25	0.06	0.25
d, Delay	8.15	15.43	7.98	14.94
LOS		C		B
dA, Approach Delay	0.18	15.43	0.44	14.94
Approach LOS		C		B

Node 2035: S College Ave & SE 10th St

Control Type TWSC
 Method HCM 6th Edition
 dl, Average Delay 1.31
 Worst Case Delay 26.88
 Worst Case LOS D

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	5.00	309.00	5.00	5.00	5.00	5.00	8.00	368.00	5.00	9.00	5.00	15.00
PHF, Peak-hour factor	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650
V, Adjusted Volume	7.69	475.38	7.69	7.69	7.69	7.69	9.23	566.15	7.69	13.85	7.69	23.08

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	7.69			7.69	7.69	7.69	9.23			13.85	7.69	23.08
Conflicting Volume (Veh)	573.85			1098.46	1086.92	570.00	483.08			1090.77	1086.92	479.23
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	573.85			1098.46	1086.92	570.00	483.08			1090.77	1086.92	479.23
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
cpx, Potential Capacity	1009.19			191.79	217.82	524.79	1090.12			194.12	217.82	590.54
Capacity	1009.19			176.12	212.87	524.79	1090.12			182.79	212.87	590.54

Critical Headway and Follow Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc,base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,base,I, Base Critical Headway (Stage I)												
tc,base,II, Base Critical Headway (Stage II)												
tc,HV, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc,G, Grade Adjustment Factor	0.00			0.20	0.20	0.10	0.00			0.20	0.20	0.10
G, % Grade		0.00			0.00			0.00			0.00	
T3,II, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,I, Critical Headway (Stage I)												
tc,II, Critical Headway (Stage II)												
tf,base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
tf,hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
tf, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	7.69	475.38	7.69	7.69	7.69	7.69	9.23	566.15	7.69	13.85	7.69	23.08
cmx, Capacity	1009.19			176.12	212.87	524.79	1090.12			182.79	212.87	590.54
V / C	0.01			0.04	0.04	0.01	0.01			0.08	0.04	0.04
d, Delay	8.59			26.88	23.45	13.40	8.33			26.88	24.07	13.26
LOS	A			D	C	B	A			D	C	B
dA, Approach Delay		0.13			21.27			0.13			19.34	
Approach LOS					C						C	
dRank1, Rank 1 Delay		0.09						0.10				

Delay and Level of Service by Lane

Approach	N (Major)		E		S (Major)		W	
Lane	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	490.77	23.08	583.08					
Flared Storage Size								
cmx, Capacity	1009.19	244.28	1090.12					
V / C	0.49	0.09	0.53					
Q95, 95% Queue Length	0.02	0.31	0.03					
d, Delay	8.59	21.27	8.33					
LOS		C						
dA, Approach Delay	0.13	21.27	0.13					
Approach LOS		C						

ICAWWV7/PQ 2019 AM Remove Left Turn Lanes05-13-20.vla - Page 2038

Node 2037: S College and 13th 13th St

Control Type TWSC
 Method HCM 6th Edition
 dl, Average Delay 0.3
 Worst Case Delay 17.01
 Worst Case LOS C

Volume and Adjustments

Approach	N (Major)		S (Major)		W	
Movement	T	R1	L1	T	L1	R1
Base Volume	231.00	5.00	5.00	343.00	5.00	5.00
PHF, Peak-hour factor	0.650	0.650	0.650	0.650	0.650	0.650
V, Adjusted Volume	355.38	7.69	7.69	527.69	7.69	7.69

Pedestrians

Approach	N (Major)		S (Major)		W	
Movement	T	R1	L1	T	L1	R1
vx, Flow (Ped/hr)			0.00		0.00	0.00
w, Lane Width (ft)			12.00		12.00	12.00
Sp, Walking Speed (ft/s)			3.50		3.50	3.50
fpb, Percent Blockage			0.00		0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)		S (Major)		W	
Movement	T	R1	L1	T	L1	R1
Rank	1	1	2	1	3	2
vx, Volume			7.69		7.69	7.69
Conflicting Volume (Veh)			363.08		902.31	359.23
Conflicting Volume (Ped)			0.00		0.00	0.00
Conflicting Volume			363.08		902.31	359.23
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median Refuge Area						
cpx, Potential Capacity			1206.67		310.62	689.68
Capacity			1206.67		307.82	689.68

Critical Headway and Follow Up Headway

Approach	N (Major)		S (Major)		W	
Movement	T	R1	L1	T	L1	R1
tc,base, Base Critical Headway			4.10		7.10	6.20
tc,base,I, Base Critical Headway (Stage I)						
tc,base,II, Base Critical Headway (Stage II)						
tc,HV, Heavy Vehicles Adjustment Factor			1.00		1.00	1.00
Phv, % Heavy Vehicles			0.00		0.00	0.00
tc,G, Grade Adjustment Factor			0.00		0.20	0.10
G, % Grade		0.00		0.00		0.00
T3,I, Geometry Adjustment Factor			0.00		0.70	0.00
tc, Critical Headway			4.10		6.40	6.20
tc,I, Critical Headway (Stage I)						
tc,II, Critical Headway (Stage II)						
tf,base, Base Follow-Up Headway			2.20		3.50	3.30
tf,hv, Heavy Vehicles Adjustment Factor			0.90		0.90	0.90
tf, Follow-Up Headway			2.20		3.50	3.30

Delay and Level of Service by Movement

Approach	N (Major)		S (Major)		W	
Movement	T	R1	L1	T	L1	R1
vx, Volume	355.38	7.69	7.69	527.69	7.69	7.69
cmx, Capacity			1206.67		307.82	689.68
V / C			0.01		0.02	0.01
d, Delay			8.00		17.01	10.54
LOS			A		C	B
dA, Approach Delay		0.00		0.11		13.77
Approach LOS						B
dRank1, Rank 1 Delay		0.00		0.07		

Delay and Level of Service by Lane

Approach	N (Major)	S (Major)	W
Lane	Lane 1	Lane 1	Lane 1
Movements	T, R1	L1, T	L1, R1
vx, Volume	355.38	535.38	15.38
Flared Storage Size			
cmx, Capacity		1206.67	425.66
V / C		0.44	0.04
Q95, 95% Queue Length		0.02	0.11
d, Delay		8.00	13.77
LOS			B
dA, Approach Delay	0.00	0.11	13.77
Approach LOS			B

***NORTH 2012: S. Canada Ave & E. Linden**

Control Type	Signal-to-Noise
Variation	100.00
Average Delay	10.00
Average LOS	0
VOC	0.02
Inter-Traffic	0

Visits and Assessments by Monitors

Approach	N			E			S			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	58	241	33	51	18	83	19	719	45	34	45	34
Full (Passenger) Level	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
Peak 15 Volume	20	93	5	20	7	12	4	92	17	13	17	13
Adjusted Volume	62	371	20	78	28	128	15	368	69	54	68	52

Values and Equivalents by Line Code

[illegible]

Session 104

[illegible]

Capacity, Control, and Change in Service Organizations

AggrType	N	E	S	W
LevelFlow	8730	8730	8730	8730
Control Type	Param	Param	Param	Param
V volume	472.31	233.65	452.31	175.38
1. Subarea Flow Rate	1551	1551	1551	1551
2. Capacity	1009	648	1059	516
gk, Green Cycle	0.91	0.18	0.22	0.21
3. Volume Capacity	0.47	0.46	0.43	0.36
4. Uniform Delay	5.94	18.75	5.02	17.47
5. Delay Reduction	0.60	0.50	0.50	0.50
6. Incremental Delay	1.04	3.04	1.70	1.70
7. Initial Queue Delay	0.00	0.00	0.00	0.00
8g, Access Delay	1.02	1.00	1.00	1.00
P. Proportion Delayed Green	0.98	0.98	0.98	0.98
Pf, Proportion Factor	1.00	1.00	1.00	1.00
9. Delay	5.58	21.33	8.20	10.18
LOS	A	C	A	B
10. Accession Delay	5.58	21.33	8.20	10.18
Accession LOS	A	C	A	B
11. Intersection Delay	17.03			
Intersection LOS	B			

Run or Chew?

[illegible]

Signal Timing Information

[illegible]

Let's Not Ignore the Risks for Payroll Practices

Operation	N	E	S	W
Learn Length	60.00	60.00	60.00	60.00
Control Type	Perm	Perm	Perm	Perm
Order = $\text{arg}(a) \text{ or } \text{arg}(b)$	0	0	0	0
Operation = $\text{arg}(a) \text{ or } \text{arg}(b)$	0	0	0	0
Cycle Length	60.00	60.00	60.00	60.00
Gap Interval	35.50	16.10	35.50	16.10
Wait for perm. GT	35.50	16.10	35.50	16.10
gap = $\text{Gap} - \text{Wait for GT}$	35.50	16.10	35.50	16.10
Is this a new Area in Opposing	1	1	1	1
Is this a new Left Lane	1	1	1	1
Vol. Adj. LT Flow Rate	51.54	78.45	15.38	53.65
Per. Response = Per. in a Group	0.17	0.24	0.03	0.31
Per. Response = Per. in Opposing	0.03	0.11	0.17	0.34
LT Walk per Cycle	1.36	1.31	0.26	0.90
Vol. Opposing Flow	422.51	172.58	172.51	233.55
Vol. in a new Opposing Flow	7.54	2.94	7.81	3.00
Vol. Opposing Lane Closing Rate	1.00	1.00	1.00	1.00
Flow Opposing Performance	1.00	1.00	1.00	1.00
g	1.78	1.43	22.60	4.30
Opposing Queue Ratio	0.41	0.72	0.41	0.72
Opposing Queue Clearing Time	10.53	7.13	22.60	9.13
g	21.37	9.17	17.60	7.07
Per	0.17	0.24	0.03	0.31
de Per. as a % of Per. = 1.0				
EL1	1.81	1.36	173	1.43
EL2	1.09	1.06	1.06	1.29
gRT	1.68	3.50	0.60	4.83
g	0.01	0.06	0.90	0.96
Per. Lane Requirements	0.92	0.96	0.99	0.95

Project 57 and Social Adjustment / 193

[illegible]

Abstract

Abstract

Abstract

Node 2039: SE 3rd & Ash Ave

Control Type TWSC
 Method HCM 6th Edition
 dI, Average Delay 9.54
 Worst Case Delay 11.49
 Worst Case LOS B

Volume and Adjustments

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	5.00	78.00	5.00	5.00	9.00	5.00	5.00	132.00	5.00	5.00	5.00	5.00
PHF, Peak-hour factor	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650
V, Adjusted Volume	7.69	120.00	7.69	7.69	13.85	9.23	7.69	203.08	7.69	7.69	7.69	7.69

Pedestrians

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
w, Lane Width (ft)	12.00	12.00	12.00	12.00			12.00	12.00	12.00	12.00		
Sp, Walking Speed (ft/s)	3.50	3.50	3.50	3.50			3.50	3.50	3.50	3.50		
fpb, Percent Blockage	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		

Capacity of Movements below Rank 1

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	4	3	2	2	1	1	4	3	2	2	1	1
vx, Volume	7.69	120.00	7.69	7.69			7.69	203.08	7.69	7.69		
Conflicting Volume (Veh)	166.15	64.62	18.46	15.38			124.62	65.38	11.54	23.08		
Conflicting Volume (Ped)	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
Conflicting Volume	166.15	64.62	18.46	15.38			124.62	65.38	11.54	23.08		
Two-Stage Gap Acceptance	No	No					No	No				
Number of Storage Spaces in Median Refuge Area												
cpx, Potential Capacity	802.65	829.99	1065.74	1615.51			854.16	829.19	1075.11	1605.18		
Capacity	640.35	821.98	1065.74	1615.51			747.62	821.19	1075.11	1605.18		

Critical Headway and Follow Up Headway

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc, base, Base Critical Headway	7.10	6.50	6.20	4.10			7.10	6.50	6.20	4.10		
tc, base, I, Base Critical Headway (Stage I)												
tc, base, II, Base Critical Headway (Stage II)												
tc, HV, Heavy Vehicles Adjustment Factor	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00		
Phv, % Heavy Vehicles	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
tc, G, Grade Adjustment Factor	0.20	0.20	0.10	0.00			0.20	0.20	0.10	0.00		
G, % Grade		0.00			0.00			0.00			0.00	
T3, II, Geometry Adjustment Factor	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
tc, Critical Headway	7.10	6.50	6.20	4.10			7.10	6.50	6.20	4.10		
tc, I, Critical Headway (Stage I)												
tc, II, Critical Headway (Stage II)												
If, base, Base Follow-Up Headway	3.50	4.00	3.30	2.20			3.50	4.00	3.30	2.20		
If, hv, Heavy Vehicles Adjustment Factor	0.90	0.90	0.90	0.90			0.90	0.90	0.90	0.90		
If, Follow-Up Headway	3.50	4.00	3.30	2.20			3.50	4.00	3.30	2.20		

Delay and Level of Service by Movement

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	7.69	120.00	7.69	7.69	13.85	9.23	7.69	203.08	7.69	7.69	7.69	7.69
cmx, Capacity	640.35	821.98	1065.74	1615.51			747.62	821.19	1075.11	1605.18		
V / C	0.01	0.15	0.01	0.00			0.01	0.25	0.01	0.00		
d, Delay	11.49	10.25	9.25	7.24			11.38	10.95	9.92	7.25		
LOS	B	B	A	A			B	B	A	A		
dA, Approach Delay		10.26			1.81			10.93			2.42	
Approach LOS		B						B				
dRank1, Rank 1 Delay					0.03						0.04	

Delay and Level of Service by Lane

Approach	N		E (Major)		S		W (Major)	
Lane	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	135.38	30.77	218.46	23.08				
Flared Storage Size								
cmx, Capacity	819.43	1615.51	825.19	1605.18				
V / C	0.17	0.02	0.26	0.01				
Q95, 95% Queue Length	0.59	0.01	1.06	0.01				
d, Delay	10.26	7.24	10.93	7.25				
LOS	B		B					
dA, Approach Delay	10.26	1.81	10.93	2.42				
Approach LOS	B		B					

Intersection Capacity Analysis Summary Page

Analysis Time: Thu Mar 12 20:30:29
 Driving Side: Right
 Analysis Period: 1 Hours

Number	Name	Control Type	V/C	Avg Delay	Avg LOS	Max Delay	Max LOS
2030	College & Whitman	Signalized	0.36	10.72	B	19.62	B
2031	N College & SE 3rd St.	TWSC	0.00	1.39	A	11.88	B
2032	S College Ave & SW 4th St	Signalized	0.15	11.77	B	18.59	B
2033	S College Ave & SE 6th St	TWSC	0.00	2.15	A	14.31	B
2034	S College Ave & SE 8th St	TWSC	0.00	2.09	A	14.57	B
2035	S College Ave & SE 10th St	TWSC	0.00	1.18	A	20.00	C
2036	S College Ave & SE 12th St	Signalized	0.42	9.15	A	25.75	C
2037	S College and 13th 13th St	TWSC	0.00	0.34	A	14.27	B
2038	S College Ave & Lampert	Signalized	0.51	12.96	B	16.93	B
2039	SE 3rd & Ash Ave	TWSC	0.00	6.25	A	9.41	A

Product and Buyer Analysis

Node 2031: N College & SE 3rd St

Control Type TWSC
 Method HCM 6th Edition
 dI, Average Delay 1.39
 Worst Case Delay 11.88
 Worst Case LOS B

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	5.00	168.00	5.00	10.00	5.00	10.00	8.00	147.00	9.00	5.00	5.00	5.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
V, Adjusted Volume	5.56	186.67	5.56	11.11	5.56	11.11	8.89	163.33	10.00	5.56	5.56	5.56

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	5.56			11.11	5.56	11.11	8.89			5.56	5.56	5.56
Conflicting Volume (Veh)	173.33			392.22	389.44	168.33	192.22			395.00	391.67	189.44
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	173.33			392.22	389.44	168.33	192.22			395.00	391.67	189.44
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
cpx, Potential Capacity	1415.62			570.77	548.84	880.97	1393.36			568.37	547.26	857.55
Capacity	1415.62			557.73	542.56	880.97	1393.36			551.97	541.01	857.55

Critical Headway and Follow Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc,base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,base,I, Base Critical Headway (Stage I)												
tc,base,II, Base Critical Headway (Stage II)												
tc,HV, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc,G, Grade Adjustment Factor	0.00			0.20	0.20	0.10	0.00			0.20	0.20	0.10
G, % Grade		0.00			0.00			0.00			0.00	
T3,II, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,I, Critical Headway (Stage I)												
tc,II, Critical Headway (Stage II)												
lf,base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
lf,hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
lf, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	5.56	186.67	5.56	11.11	5.56	11.11	8.89	163.33	10.00	5.56	5.56	5.56
cmx, Capacity	1415.62			557.73	542.56	880.97	1393.36			551.97	541.01	857.55
V / C	0.00			0.02	0.01	0.01	0.01			0.01	0.01	0.01
d, Delay	7.55			11.70	11.88	9.33	7.60			11.68	11.81	9.36
LOS	A			B	B	A	A			B	B	A
dA, Approach Delay		0.21			10.79			0.37			10.95	
Approach LOS					B						B	
dRank1, Rank 1 Delay		0.03						0.05				

Delay and Level of Service by Lane

Approach	N (Major)		E		S (Major)		W	
Lane	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	197.78	27.78	182.22		16.67			
Flared Storage Size								
cmx, Capacity	1415.62	649.41	1393.36		621.61			
V / C	0.14	0.04	0.13		0.03			
Q95, 95% Queue Length	0.01	0.13	0.02		0.08			
d, Delay	7.55	10.79	7.60		10.95			
LOS		B			B			
dA, Approach Delay	0.21	10.79	0.37		10.95			
Approach LOS		B			B			

Node 1512: S College Ave & W/4th St

Control Type	Signalized
Intersection	11.77
Average Delay	0
Average LOS	0.15
W/C	4

Volume and Adjustment by Movement

Movement	N	E	S	W
Approach	15122	15121	15120	15123
Control Type	Perm	Perm	Perm	Perm
Volume	100	122	147	199
Peak to Volume	0.97	0.41	0.12	0.20
Adjusted Volume	0.06	0.11	0.18	0.37

Volume and Adjustment by Lane Group

Lane Group	N	E	S	W
Approach	15122	15121	15120	15123
Control Type	Perm	Perm	Perm	Perm
Volume	100	122	147	199
Peak to Volume	0.97	0.41	0.12	0.20
Adjusted Volume	0.06	0.11	0.18	0.37

Signalized Flow Rate

Lane Group	N	E	S	W
Approach	15122	15121	15120	15123
Control Type	Perm	Perm	Perm	Perm
Volume	100	122	147	199
Peak to Volume	0.97	0.41	0.12	0.20
Adjusted Volume	0.06	0.11	0.18	0.37

Capacity, Control Delay, and Level of Service Determination

Lane Group	N	E	S	W
Approach	15122	15121	15120	15123
Control Type	Perm	Perm	Perm	Perm
Volume	100	122	147	199
Peak to Volume	0.97	0.41	0.12	0.20
Adjusted Volume	0.06	0.11	0.18	0.37

Basic of Queue

Lane Group	N	E	S	W
Approach	15122	15121	15120	15123
Control Type	Perm	Perm	Perm	Perm
Volume	100	122	147	199
Peak to Volume	0.97	0.41	0.12	0.20
Adjusted Volume	0.06	0.11	0.18	0.37

Signal Timing Information

Lane Group	N	E	S	W
Approach	15122	15121	15120	15123
Control Type	Perm	Perm	Perm	Perm
Volume	100	122	147	199
Peak to Volume	0.97	0.41	0.12	0.20
Adjusted Volume	0.06	0.11	0.18	0.37

Left Turn Adjustment Factors for Permitted Flowing

Lane Group	N	E	S	W
Approach	15122	15121	15120	15123
Control Type	Perm	Perm	Perm	Perm
Volume	100	122	147	199
Peak to Volume	0.97	0.41	0.12	0.20
Adjusted Volume	0.06	0.11	0.18	0.37

Intersection Specific Adjustment Factors

Movement	N	E	S	W
Approach	15122	15121	15120	15123
Control Type	Perm	Perm	Perm	Perm
Volume	100	122	147	199
Peak to Volume	0.97	0.41	0.12	0.20
Adjusted Volume	0.06	0.11	0.18	0.37

Adjusted Phase Properties

Adjusted Lane Group Properties

Intersection Specific Properties

Node 2033: S College Ave & SE 6th St

Control Type TWSC
 Method HCM 6th Edition
 dI, Average Delay 2.15
 Worst Case Delay 14.31
 Worst Case LOS B

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	15.00	223.00	8.00	5.00	8.00	8.00	29.00	173.00	12.00	12.00	5.00	32.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
V, Adjusted Volume	16.67	247.78	8.89	5.56	6.67	8.89	32.22	192.22	13.33	13.33	5.56	35.56

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	16.67			5.56	6.67	8.89	32.22			13.33	5.56	35.56
Conflicting Volume (Veh)	205.56			569.44	553.33	198.89	256.67			556.67	555.56	252.22
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	205.56			569.44	553.33	198.89	256.67			556.67	555.56	252.22
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
cpx, Potential Capacity	1377.85			435.69	443.65	947.26	1319.91			444.29	442.36	791.37
Capacity	1377.85			398.98	425.31	947.26	1319.91			420.69	424.07	791.37

Critical Headway and Follow Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc,base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,base,I, Base Critical Headway (Stage I)												
tc,base,II, Base Critical Headway (Stage II)												
tc,HV, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc,G, Grade Adjustment Factor	0.00			0.20	0.20	0.10	0.00			0.20	0.20	0.10
G, % Grade		0.00			0.00		0.00				0.00	
T3,lt, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,I, Critical Headway (Stage I)												
tc,II, Critical Headway (Stage II)												
lf,base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
lf,hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
lf, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	16.67	247.78	8.89	5.56	6.67	8.89	32.22	192.22	13.33	13.33	5.56	35.56
cmx, Capacity	1377.85			398.98	425.31	947.26	1319.91			420.69	424.07	791.37
V / C	0.01			0.01	0.02	0.01	0.02			0.03	0.01	0.04
d, Delay	7.64			14.31	13.75	9.53	7.80			14.14	14.07	10.13
LOS	A			B	B	A	A			B	B	B
dA, Approach Delay		0.47			12.12			1.06			11.52	
Approach LOS					B						B	
dRank1, Rank 1 Delay		0.11						0.22				

Delay and Level of Service by Lane

Approach	N (Major)		E		S (Major)		W	
Lane	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	273.33	21.11	237.78			54.44		
Flared Storage Size								
cmx, Capacity	1377.85	526.58	1319.91			606.80		
V / C	0.20	0.04	0.18			0.09		
Q95, 95% Queue Length	0.04	0.13	0.08			0.30		
d, Delay	7.64	12.12	7.80			11.52		
LOS		B	B			B		
dA, Approach Delay	0.47	12.12	1.06			11.52		
Approach LOS		B	B			B		

Node 2034: S Collage Ave & SE 8th St

Control Type TWSC
 Method HCM 6th Edition
 df, Average Delay 2.09
 Worst Case Delay 14.57
 Worst Case LOS B

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	15.00	226.00	7.00	8.00	7.00	8.00	27.00	191.00	12.00	12.00	5.00	27.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
V, Adjusted Volume	16.67	251.11	7.78	8.89	7.78	8.89	30.00	212.22	13.33	13.33	5.56	30.00

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	16.67			8.89	7.78	8.89	30.00			13.33	5.56	30.00
Conflicting Volume (Veh)	225.56			585.00	571.11	218.89	258.89			575.56	573.89	255.00
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	225.56			585.00	571.11	218.89	258.89			575.56	573.89	255.00
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
cpx, Potential Capacity	1354.89			425.43	433.45	825.67	1317.44			431.63	431.88	788.55
Capacity	1354.89			392.69	416.08	825.87	1317.44			408.05	414.57	788.55

Critical Headway and Follow Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc,base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,base,I, Base Critical Headway (Stage I)												
tc,base,II, Base Critical Headway (Stage II)												
tc,HV, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc,G, Grade Adjustment Factor	0.00			0.20	0.20	0.10	0.00			0.20	0.20	0.10
G, % Grade		0.00			0.00			0.00			0.00	
T3,It, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,I, Critical Headway (Stage I)												
tc,II, Critical Headway (Stage II)												
lf,base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
lf,hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
lf, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	16.67	251.11	7.78	8.89	7.78	8.89	30.00	212.22	13.33	13.33	5.56	30.00
cmx, Capacity	1354.89			392.69	416.08	825.87	1317.44			408.05	414.57	788.55
V / C	0.01			0.02	0.02	0.01	0.02			0.03	0.01	0.04
d, Delay	7.69			14.57	14.06	9.76	7.80			14.39	14.25	10.13
LOS	A			B	B	A	A			B	B	B
dA, Approach Delay		0.47			12.74			0.92			11.76	
Approach LOS					B						B	
dRank1, Rank 1 Delay		0.11						0.20				

Delay and Level of Service by Lane

Approach	N (Major)		E		S (Major)		W	
Lane	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	275.56	25.56	255.56	48.89				
Flared Storage Size								
cmx, Capacity	1354.89	490.59	1317.44	581.17				
V / C	0.20	0.05	0.19	0.08				
Q95, 95% Queue Length	0.04	0.16	0.07	0.28				
d, Delay	7.69	12.74	7.80	11.76				
LOS	B	B	B	B				
dA, Approach Delay	0.47	12.74	0.92	11.76				
Approach LOS		B		B				

Node 2035: S Collage Ave & SE 10th St

Control Type TWSC
 Method HCM 6th Edition
 dI, Average Delay 1.18
 Worst Case Delay 20
 Worst Case LOS C

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Movement												
Base Volume	11.00	364.00	13.00	5.00	5.00	5.00	19.00	358.00	5.00	13.00	5.00	9.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
V, Adjusted Volume	12.22	393.33	14.44	5.56	5.56	5.56	21.11	397.78	5.56	14.44	5.56	10.00

Pedestrians

Approach	N (Major)			E			S (Major)			W		
	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Movement												
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Movement												
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	12.22			5.56	5.56	5.56	21.11			14.44	5.56	10.00
Conflicting Volume (Veh)	403.33			875.56	875.00	400.56	407.78			873.33	870.56	400.56
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	403.33			875.56	875.00	400.56	407.78			873.33	870.56	400.56
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
cpv, Potential Capacity	1166.30			271.71	289.91	653.86	1161.92			272.65	291.64	653.86
Capacity	1166.30			256.16	279.27	653.86	1161.92			258.80	280.94	653.86

Critical Headway and Follow Up Headway

Approach	N (Major)			E			S (Major)			W		
	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Movement												
tc, base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc, base, I, Base Critical Headway (Stage I)												
tc, base, II, Base Critical Headway (Stage II)												
tc, HV, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, G, Grade Adjustment Factor	0.00			0.20	0.20	0.10	0.00			0.20	0.20	0.10
G, % Grade		0.00			0.00			0.00			0.00	
T3, It, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc, I, Critical Headway (Stage I)												
tc, II, Critical Headway (Stage II)												
lf, base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
lf, hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
lf, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Movement												
vx, Volume	12.22	393.33	14.44	5.56	5.56	5.56	21.11	397.78	5.56	14.44	5.56	10.00
cmv, Capacity	1166.30			256.16	279.27	653.86	1161.92			258.80	280.94	653.86
V / C	0.01			0.02	0.02	0.01	0.02			0.06	0.02	0.02
d, Delay	8.12			19.62	18.46	11.08	8.16			20.00	18.90	11.60
LOS	A			C	C	B	A			C	C	B
dA, Approach Delay		0.24			16.39			0.41			17.00	
Approach LOS					C						C	
dRank1, Rank 1 Delay		0.11						0.19				

Delay and Level of Service by Lane

Approach	N (Major)		E		S (Major)		W	
	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Lane								
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	420.00	16.67	424.44		30.00			
Flared Storage Size								
cmv, Capacity	1166.30	332.82	1161.92		330.10			
V / C	0.36	0.06	0.37		0.09			
Q95, 95% Queue Length	0.03	0.16	0.06		0.30			
d, Delay	8.12	16.39	8.16		17.00			
LOS	C	C	C		C			
dA, Approach Delay	0.24	16.39	0.41		17.00			
Approach LOS		C			C			

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Node 2037: S College and 13th/13th St

Control Type	TWSC
Method	HCM 6th Edition
dI, Average Delay	0.34
Worst Case Delay	14.27
Worst Case LOS	B

Volume and Adjustments						
Approach	N (Major)		S (Major)		W	
Movement	T	R1	L1	T	L1	R1
Base Volume	298.00	5.00	5.00	335.00	5.00	11.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900
V, Adjusted Volume	331.11	5.56	5.56	372.22	5.56	12.22

Pedestrians						
Approach	N (Major)		S (Major)		W	
Movement	T	R1	L1	T	L1	R1
vx, Flow (Ped/hr)			0.00		0.00	0.00
w, Lane Width (ft)			12.00		12.00	12.00
Sp, Walking Speed (ft/s)			3.50		3.50	3.50
fpb, Percent Blockage			0.00		0.00	0.00

Capacity of Movements below Rank 1						
Approach	N (Major)		S (Major)		W	
Movement	T	R1	L1	T	L1	R1
Rank	1	1	2	1	3	2
vx, Volume			5.56		5.56	12.22
Conflicting Volume (Veh)			336.67		717.22	333.89
Conflicting Volume (Ped)			0.00		0.00	0.00
Conflicting Volume			336.67		717.22	333.89
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median Refuge Area						
cpx, Potential Capacity			1233.87		399.15	712.56
Capacity			1233.87		396.88	712.56

Critical Headway and Follow Up Headway						
Approach	N (Major)		S (Major)		W	
Movement	T	R1	L1	T	L1	R1
tc, base, Base Critical Headway			4.10		7.10	6.20
tc, base, I, Base Critical Headway (Stage I)						
tc, base, II, Base Critical Headway (Stage II)						
tc, HV, Heavy Vehicles Adjustment Factor			1.00		1.00	1.00
Phv, % Heavy Vehicles			0.00		0.00	0.00
tc, G, Grade Adjustment Factor			0.00		0.20	0.10
G, % Grade		0.00		0.00		0.00
T3, II, Geometry Adjustment Factor			0.00		0.70	0.00
tc, Critical Headway			4.10		6.40	6.20
tc, I, Critical Headway (Stage I)						
tc, II, Critical Headway (Stage II)						
tf, base, Base Follow-Up Headway			2.20		3.50	3.30
tf, hv, Heavy Vehicles Adjustment Factor			0.90		0.90	0.90
tf, Follow-Up Headway			2.20		3.50	3.30

Delay and Level of Service by Movement						
Approach	N (Major)		S (Major)		W	
Movement	T	R1	L1	T	L1	R1
vx, Volume	331.11	5.56	5.56	372.22	5.56	12.22
cmx, Capacity			1233.87		396.88	712.56
V / C			0.00		0.01	0.02
d, Delay			7.93		14.27	10.25
LOS			A		B	B
dA, Approach Delay		0.00		0.12		11.51
Approach LOS						B
dRank1, Rank 1 Delay		0.00		0.05		

Delay and Level of Service by Lane						
Approach	N (Major)		S (Major)		W	
Lane	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Movements	T, R1	L1, T	L1, R1	L1, T	L1, R1	L1, R1
vx, Volume	336.67	377.78	17.78			
Flared Storage Size						
cmx, Capacity		1233.87	570.71			
V / C		0.31	0.03			
Q95, 95% Queue Length		0.01	0.10			
d, Delay		7.93	11.51			
LOS			B			
dA, Approach Delay		0.00	0.12			
Approach LOS			B			

Node 2024, 9 College Ave & Temple	
Control Type	Signalized
Version	HCN 04 Edition
Average Delay	17.06
Average LOS	B
WQ	0.51
Wq1 Time	A

	L1	R	R1	L1	R	R1	L1	S	R1	L1	W	R1
Matter	127	137	43	12	65	111	8	168	12	37	48	8
Prof. Matter	900	900	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Applied Volume	152	174	48	15	15	212	10	170	11	10	44	8

Volume and Assortments by Lane Group				
Approach	N	C	B	W
Lane Group	C	C	C	C
ID	15000	15000	15000	15000
Lane	LTR	LTR	LTR	LTR
CountType	Pctm	Pctm	Pctm	Pctm
V_Volume	374	259	199	10
Per AssortmentTurn	0.41	0.04	0.05	0.35
Pct AssortmentTurn	0.13	0.71	0.07	0.07

[illegible]

Category, Control Delay, and Level of Service Determination	H	E	N	W
Approach	10000	10000	10000	10000
Left-Turn Delay		P	P	P
Control Delay	176.48	735.81	108.13	60
V. Volume	1558	1519	1717	1115
A. Saturation Flow Rate				
C. Capacity	826	641	607	612
Q. Queue at Stop	0.49	0.38	0.49	0.38
Q. Max. Queue Length	0.40	0.40	0.22	0.18
d. Delay at Stop	9.97	14.51	8.78	17.29
A. Delay at Stop	0.99	0.90	0.96	0.96
Q. Delay at Stop	1.81	2.47	0.66	0.66
Q. Delay at Stop	0.00	0.00	0.00	0.00
A. Delay at Stop	1.00	1.00	1.00	1.00
A. Delay at Stop	0.49	0.38	0.49	0.38
P. Delay at Stop	1.00	1.00	1.00	1.00
P. Delay at Stop	11.97	16.05	9.32	12.73
LOS	B	B	A	B
A. Delay at Stop	11.97	16.05	9.32	12.73
Approach	B	B	A	B
d. Delay at Stop		17.93		
Approach				

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Signal Timing Information				
Approach	H	E	S	W
Left Group	15.930	15.929	15.915	15.931
Center Right	16.000	16.000	16.000	16.000
Signal Type	P	P	P	P
Cycle Length	60.00	60.00	60.00	60.00
1. Maximum Green Time	0	0	0	0
2. Minimum Green Time per Cycle	1.00	1.00	4.00	4.00
3. Start-up Lost Time	2.00	2.00	2.00	2.00
4.9. Minimum Start-up Lost Time	2.00	2.00	2.00	2.00
5. Clearance Loss Time	2.00	2.00	2.00	2.00
6. Green Time Start	26.5	0	26.5	0
7. Green Time End	56	22.5	56	22.5
8. All-Red Green Time	23.5	22.5	24.5	22.5
9. All-Red Green Time	22.5	22.5	24.5	22.5
10. Green Cycle	0.49	0.55	0.49	0.55
11. Volume / Saturation Flow Rate	0.29	0.19	0.12	0.06

[illegible][illegible]

Abstract

Appendix A

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Node 2039: SE 3rd & Ash Ave

Control Type TWSC
 Method HCM 6th Edition
 dI, Average Delay 6.25
 Worst Case Delay 9.41
 Worst Case LOS A

Volume and Adjustments

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	5.00	5.00	5.00	5.00	7.00	5.00	5.00	20.00	5.00	5.00	5.00	5.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
V, Adjusted Volume	5.56	5.56	5.56	5.56	7.78	5.56	5.56	22.22	5.56	5.56	5.56	5.56

Pedestrians

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
w, Lane Width (ft)	12.00	12.00	12.00	12.00			12.00	12.00	12.00	12.00		
Sp, Walking Speed (ft/s)	3.50	3.50	3.50	3.50			3.50	3.50	3.50	3.50		
fpb, Percent Blockage	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		

Capacity of Movements below Rank 1

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	4	3	2	2	1	1	4	3	2	2	1	1
vx, Volume	5.56	5.56	5.56	5.56			5.56	22.22	5.56	5.56		
Conflicting Volume (Veh)	55.00	43.89	10.56	11.11			46.67	43.89	8.33	13.33		
Conflicting Volume (Ped)	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
Conflicting Volume	55.00	43.89	10.56	11.11			46.67	43.89	8.33	13.33		
Two-Stage Gap Acceptance	No	No					No	No				
Number of Storage Spaces in Median Refuge Area												
opx, Potential Capacity	947.73	851.87	1076.45	1621.28			959.57	851.87	1079.48	1618.28		
Capacity	919.11	845.99	1076.45	1621.28			944.85	845.99	1079.48	1618.28		

Critical Headway and Follow Up Headway

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc,base, Base Critical Headway	7.10	6.50	6.20	4.10			7.10	6.50	6.20	4.10		
tc,base,I, Base Critical Headway (Stage I)												
tc,base,II, Base Critical Headway (Stage II)												
tc,HV, Heavy Vehicles Adjustment Factor	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00		
Phv, % Heavy Vehicles	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
tc,G, Grade Adjustment Factor	0.20	0.20	0.10	0.00			0.20	0.20	0.10	0.00		
G, % Grade		0.00			0.00			0.00			0.00	
T3,It, Geometry Adjustment Factor	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
tc, Critical Headway	7.10	6.50	6.20	4.10			7.10	6.50	6.20	4.10		
tc,I, Critical Headway (Stage I)												
tc,II, Critical Headway (Stage II)												
tf,base, Base Follow-Up Headway	3.50	4.00	3.30	2.20			3.50	4.00	3.30	2.20		
tf,hv, Heavy Vehicles Adjustment Factor	0.90	0.90	0.90	0.90			0.90	0.90	0.90	0.90		
tf, Follow-Up Headway	3.50	4.00	3.30	2.20			3.50	4.00	3.30	2.20		

Delay and Level of Service by Movement

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	5.56	5.56	5.56	5.56	7.78	5.56	5.56	22.22	5.56	5.56	5.56	5.56
cmx, Capacity	919.11	845.99	1076.45	1621.28			944.85	845.99	1079.48	1618.28		
V / C	0.01	0.01	0.01	0.00			0.01	0.03	0.01	0.00		
d, Delay	8.99	9.32	8.41	7.23			8.97	9.41	8.49	7.23		
LOS	A	A	A	A			A	A	A	A		
dA, Approach Delay		8.91			2.13			9.18			2.41	
Approach LOS		A						A				
dRank1, Rank 1 Delay					0.02						0.02	

Delay and Level of Service by Lane

Approach	N	E (Major)	S	W (Major)
Lane	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	16.67	18.89	33.33	16.67
Flared Storage Size				
cmx, Capacity	937.78	1621.28	893.80	1618.28
V / C	0.02	0.01	0.04	0.01
Q95, 95% Queue Length	0.05	0.01	0.12	0.01
d, Delay	8.91	7.23	9.18	7.23
LOS	A		A	
dA, Approach Delay	8.91	2.13	9.18	2.41
Approach LOS	A		A	

Intersection Capacity Analysis Summary Page

Analysis Time: Thu Mar 12 21:33:17 :
 Driving Side: Right
 Analysis Period: 1 Hours

Number	Name	Control Type	V/C	Avg Delay	Avg LOS	Max Delay	Max LOS
2030	College & Whitman	AWSC	0.33	12.81	B	13.97	B
2031	N College & SE 3rd St.	TWSC	0.00	1.25	A	11.82	B
2032	S College Ave & SW 4th St	AWSC	0.37	13.78	B	16.12	C
2033	S College Ave & SE 6th St	TWSC	0.00	1.77	A	14.58	B
2034	S College Ave & SE 8th St	TWSC	0.00	1.62	A	14.41	B
2035	S College Ave & SE 10th St	TWSC	0.00	1.18	A	20.17	C
2036	S College Ave & SE 12th St	AWSC	0.45	14.45	B	15.45	C
2037	S College and 13th 13th St	TWSC	0.00	0.33	A	14.66	B
2038	S College Ave & Lampert	AWSC	0.26	13.04	B	15.34	C
2039	SE 3rd & Ash Ave	TWSC	0.00	6.87	A	9.39	A

Node 2030: College & Whitman

Control Type AWSC
 Method HCM 6th Edition
 Average Delay 12.81
 Average LOS B

Volume and Adjustments

Approach	N			E			S			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	30.00	200.00	65.00	27.00	100.00	18.00	76.00	196.00	38.00	31.00	71.00	38.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Flow Rate	33.33	222.22	72.22	30.00	111.11	20.00	84.44	217.78	40.00	34.44	78.89	42.22
Geometry Group	1			1			1			1		

Saturation Headway

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	327.78	161.11	342.22	155.56				
Left Turn Flow Rate	33.33	30.00	84.44	34.44				
Right Turn Flow Rate	72.22	20.00	40.00	42.22				
PLT, Proportion LT	0.10	0.19	0.25	0.22				
PRT, Proportion RT	0.22	0.12	0.12	0.27				
PHV, Proportion HV	0.00	0.00	0.00	0.00				
hLT,adj, Headway adjustment for left turns	0.20	0.20	0.20	0.20				
hRT,adj, Headway adjustment for right turns	-0.60	-0.60	-0.60	-0.60				
hHV,adj, Headway adjustment for heavy vehicles	1.70	1.70	1.70	1.70				
hadj, Headway adjustment	-0.11	-0.04	-0.02	-0.12				

Departure Headway

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	327.78	161.11	342.22	155.56				
hd initial	3.20	3.20	3.20	3.20				
x initial	0.29	0.14	0.30	0.14				
hd, iteration 1	4.62	5.12	4.69	5.04				
Difference, iteration 1	1.42	1.92	1.49	1.84				
hd, iteration 2	5.10	5.72	5.16	5.66				
Difference, iteration 2	0.49	0.60	0.47	0.61				
hd, iteration 3	5.26	5.92	5.32	5.86				
Difference, iteration 3	0.16	0.20	0.16	0.20				
hd, iteration 4	5.32	5.99	5.38	5.93				
Difference, iteration 4	0.05	0.07	0.05	0.07				
Convergence	Y	Y	Y	Y				
hd final, Departure Headway	5.32	5.99	5.38	5.93				
x final, Degree of Utilization	0.48	0.27	0.51	0.26				

Capacity and Level of Service

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	327.78	161.11	342.22	155.56				
hd, Departure Headway	5.32	5.99	5.38	5.93				
x, Degree of Utilization	0.48	0.27	0.51	0.26				
m, Move Up Time	2.00	2.00	2.00	2.00				
ts, Service Time	3.32	3.99	3.38	3.93				
Capacity	676.36	600.08	669.07	606.73				
Delay	13.28	11.19	13.97	10.97				
LOS	B	B	B	B				
Q95, 95% Queue Length	2.77	1.09	3.08	1.03				
Approach Delay	13.28	11.19	13.97	10.97				
Approach LOS	B	B	B	B				
Intersection Delay	12.81							
Intersection LOS	B							

Node 2031: N College & SE 3rd St

Control Type TWSC
 Method HCM 6th Edition
 dI, Average Delay 1.25
 Worst Case Delay 11.82
 Worst Case LOS B

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	5.00	163.00	5.00	5.00	5.00	10.00	8.00	152.00	9.00	5.00	5.00	5.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
V, Adjusted Volume	5.56	181.11	5.56	5.56	5.56	11.11	8.89	168.89	10.00	5.56	5.56	5.56

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	5.56			5.56	5.56	11.11	8.89			5.56	5.56	5.56
Conflicting Volume (Veh)	178.89			392.22	389.44	173.89	185.67			395.00	391.67	183.89
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	178.89			392.22	389.44	173.89	185.67			395.00	391.67	183.89
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
opx, Potential Capacity	1409.03			570.77	549.84	874.74	1399.87			568.37	547.26	863.65
Capacity	1409.03			557.76	542.56	874.74	1399.87			551.92	541.01	863.65

Critical Headway and Follow-Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc, base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc, base, I, Base Critical Headway (Stage I)												
tc, base, II, Base Critical Headway (Stage II)												
tc, HV, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, G, Grade Adjustment Factor	0.00			0.20	0.20	0.10	0.00			0.20	0.20	0.10
G, % Grade		0.00			0.00		0.00				0.00	
T3, It, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc, I, Critical Headway (Stage I)												
tc, II, Critical Headway (Stage II)												
If, base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
If, hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
If, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	5.56	181.11	5.56	5.56	5.56	11.11	8.89	168.89	10.00	5.56	5.56	5.56
cmx, Capacity	1409.03			557.76	542.56	874.74	1399.87			551.92	541.01	863.65
V / C	0.00			0.01	0.01	0.01	0.01			0.01	0.01	0.01
d, Delay	7.57			11.84	11.82	9.30	7.59			11.88	11.81	9.33
LOS	A			B	B	A	A			B	B	A
dA, Approach Delay		0.22			10.51			0.36			10.94	
Approach LOS					B						B	
dRank1, Rank 1 Delay		0.03						0.05				

Delay and Level of Service by Lane

Approach	N (Major)		E		S (Major)		W	
Lane	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	192.22	22.22	187.78					
Planned Storage Size								
cmx, Capacity	1409.03	675.41	1399.87					
V / C	0.14	0.03	0.13					
Q95, 95% Queue Length	0.01	0.10	0.02					
d, Delay	7.57	10.51	7.59					
LOS		B						
dA, Approach Delay	0.22	10.51	0.36					
Approach LOS		B						

Node 2032: S College Ave & SW 4th St

Control Type AWSC
 Method HCM 6th Edition
 Average Delay 13.78
 Average LOS B

Volume and Adjustments

Approach	N			E			S			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	15.00	226.00	15.00	75.00	46.00	13.00	74.00	221.00	55.00	40.00	74.00	69.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Flow Rate	16.67	251.11	16.67	83.33	51.11	14.44	82.22	245.56	61.11	44.44	82.22	76.67
Geometry Group	1			1			1			1		

Saturation Headway

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	284.44	148.89	388.89	203.33				
Left Turn Flow Rate	16.67	83.33	82.22	44.44				
Right Turn Flow Rate	16.67	14.44	61.11	76.67				
PLT, Proportion LT	0.06	0.56	0.21	0.22				
PRT, Proportion RT	0.06	0.10	0.16	0.38				
PHV, Proportion HV	0.00	0.00	0.00	0.00				
hLT,adj, Headway adjustment for left turns	0.20	0.20	0.20	0.20				
hRT,adj, Headway adjustment for right turns	-0.60	-0.60	-0.60	-0.60				
hHV,adj, Headway adjustment for heavy vehicles	1.70	1.70	1.70	1.70				
hadj, Headway adjustment	-0.02	0.05	-0.05	-0.18				

Departure Headway

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	284.44	148.89	388.89	203.33				
hd initial	3.20	3.20	3.20	3.20				
x initial	0.25	0.13	0.35	0.18				
hd, iteration 1	4.81	5.27	4.69	4.97				
Difference, iteration 1	1.61	2.07	1.49	1.77				
hd, iteration 2	5.37	5.94	5.20	5.61				
Difference, iteration 2	0.56	0.67	0.51	0.64				
hd, iteration 3	5.56	6.18	5.38	5.84				
Difference, iteration 3	0.20	0.24	0.18	0.22				
hd, iteration 4	5.64	6.27	5.44	5.92				
Difference, iteration 4	0.07	0.09	0.06	0.08				
Convergence	Y	Y	Y	Y				
hd final, Departure Headway	5.64	6.27	5.44	5.92				
x final, Degree of Utilization	0.45	0.26	0.59	0.33				

Capacity and Level of Service

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	284.44	148.89	388.89	203.33				
hd, Departure Headway	5.64	6.27	5.44	5.92				
x, Degree of Utilization	0.45	0.26	0.59	0.33				
m, Move Up Time	2.00	2.00	2.00	2.00				
ts, Service Time	3.64	4.27	3.44	3.82				
Capacity	638.61	573.75	661.57	608.41				
Delay	13.14	11.46	16.12	11.88				
LOS	B	B	C	B				
Q95, 95% Queue Length	2.38	1.05	4.15	1.49				
Approach Delay	13.14	11.46	16.12	11.88				
Approach LOS	B	B	C	B				
Intersection Delay	13.78							
Intersection LOS	B							

Node 2033: S College Ave & SE 8th St

Control Type TWSC
 Method HCM 6th Edition
 dI, Average Delay 1.77
 Worst Case Delay 14.58
 Worst Case LOS B

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	15.00	299.00	13.00	5.00	5.00	9.00	12.00	211.00	11.00	11.00	5.00	33.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
V, Adjusted Volume	16.67	265.56	14.44	5.56	5.56	10.00	13.33	234.44	12.22	12.22	5.56	36.67

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
Ipb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	16.67			5.56	5.56	10.00	13.33			12.22	5.56	36.67
Conflicting Volume (Veh)	246.67			594.44	580.56	240.56	280.00			581.11	579.44	272.78
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	246.67			594.44	580.56	240.56	280.00			581.11	579.44	272.78
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
cpx, Potential Capacity	1331.06			419.32	428.13	803.28	1294.24			427.98	428.75	770.78
Capacity	1331.06			387.30	416.72	803.28	1294.24			409.86	417.33	770.78

Critical Headway and Follow Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc,base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,base,I, Base Critical Headway (Stage I)												
tc,base,II, Base Critical Headway (Stage II)												
tc,HV, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc,G, Grade Adjustment Factor	0.00			0.20	0.20	0.10	0.00			0.20	0.20	0.10
G, % Grade		0.00			0.00			0.00			0.00	
T3,It, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,I, Critical Headway (Stage I)												
tc,II, Critical Headway (Stage II)												
If,base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
If,hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
If, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	16.67	265.56	14.44	5.56	5.56	10.00	13.33	234.44	12.22	12.22	5.56	36.67
cmx, Capacity	1331.06			387.30	416.72	803.28	1294.24			409.86	417.33	770.78
V / C	0.01			0.01	0.01	0.01	0.01			0.03	0.01	0.05
d, Delay	7.74			14.58	13.92	9.77	7.81			14.38	14.22	10.27
LOS	A			B	B	A	A			B	B	B
dA, Approach Delay		0.43			12.13			0.40			11.60	
Approach LOS					B						B	
dRank1, Rank 1 Delay		0.11						0.09				

Delay and Level of Service by Lane

Approach	N (Major)		E		S (Major)		W	
Lane	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	296.67	21.11	260.00					
Flared Storage Size								
cmx, Capacity	1331.06	526.14	1294.24					600.25
V / C	0.22	0.04	0.20					0.09
Q95, 95% Queue Length	0.04	0.13	0.03					0.30
d, Delay	7.74	12.13	7.81					11.60
LOS		B	B					B
dA, Approach Delay	0.43	12.13	0.40					11.60
Approach LOS		B						B

Node 2034: S College Ave & SE 8th St

Control Type TWSC
 Method HCM 6th Edition
 dl, Average Delay 1.62
 Worst Case Delay 14.41
 Worst Case LOS B

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	14.00	236.00	12.00	5.00	6.00	9.00	12.00	214.00	12.00	9.00	5.00	26.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
V, Adjusted Volume	15.56	262.22	13.33	5.56	6.67	10.00	13.33	237.78	13.33	10.00	5.56	28.89

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	15.56			5.56	6.67	10.00	13.33			10.00	5.56	28.89
Conflicting Volume (Veh)	251.11			588.33	577.78	244.44	275.56			579.44	577.78	268.89
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	251.11			588.33	577.78	244.44	275.56			579.44	577.78	268.89
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
cpv, Potential Capacity	1326.09			423.27	429.69	799.29	1299.09			429.07	429.69	774.63
Capacity	1326.09			395.47	416.66	799.29	1299.09			410.38	416.66	774.63

Critical Headway and Follow Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc, base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc, base, I, Base Critical Headway (Stage I)												
tc, base, II, Base Critical Headway (Stage II)												
tc, hv, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, G, Grade Adjustment Factor	0.00			0.20	0.20	0.10	0.00			0.20	0.20	0.10
G, % Grade		0.00			0.00			0.00			0.00	
T3, II, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc, I, Critical Headway (Stage I)												
tc, II, Critical Headway (Stage II)												
tf, base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
tf, hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
tf, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	15.56	262.22	13.33	5.56	6.67	10.00	13.33	237.78	13.33	10.00	5.56	28.89
cmx, Capacity	1326.09			395.47	416.66	799.29	1299.09			410.38	416.66	774.63
V / C	0.01			0.01	0.02	0.01	0.01			0.02	0.01	0.04
d, Delay	7.75			14.41	13.90	9.81	7.80			14.26	14.09	10.14
LOS	A			B	B	A	A			B	B	B
dA, Approach Delay		0.41			12.19			0.39			11.56	
Approach LOS					B						B	
dRank1, Rank 1 Delay		0.11						0.09				

Delay and Level of Service by Lane

Approach	N (Major)	E	S (Major)	W
Lane	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	291.11	22.22	264.44	44.44
Flared Storage Size				
cmx, Capacity	1326.09	523.09	1299.09	593.14
V / C	0.22	0.04	0.20	0.07
Q95, 95% Queue Length	0.04	0.13	0.03	0.24
d, Delay	7.75	12.19	7.80	11.56
LOS		B		B
dA, Approach Delay	0.41	12.19	0.39	11.56
Approach LOS		B		B

Node 2035: S College Ave & SE 10th St

Control Type TWSC
 Method HCM 6th Edition
 dl, Average Delay 1.18
 Worst Case Delay 20.17
 Worst Case LOS C

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	11.00	352.00	13.00	5.00	5.00	5.00	19.00	368.00	5.00	13.00	5.00	9.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
V, Adjusted Volume	12.22	391.11	14.44	5.56	5.56	5.56	21.11	408.67	5.56	14.44	5.56	10.00

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	12.22			5.56	5.56	5.56	21.11			14.44	5.56	10.00
Conflicting Volume (Veh)	412.22			882.22	881.67	409.44	405.56			880.00	877.22	398.33
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	412.22			882.22	881.67	409.44	405.56			880.00	877.22	398.33
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
cap, Potential Capacity	1157.56			268.91	267.33	646.40	1164.11			269.84	289.05	655.74
Capacity	1157.56			253.46	276.74	646.40	1164.11			256.03	278.39	655.74

Critical Headway and Follow Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc,base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,base,I, Base Critical Headway (Stage I)												
tc,base,II, Base Critical Headway (Stage II)												
tc,HV, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc,G, Grade Adjustment Factor	0.00			0.20	0.20	0.10	0.00			0.20	0.20	0.10
G, % Grade		0.00			0.00			0.00			0.00	
T3,lt, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,I, Critical Headway (Stage I)												
tc,II, Critical Headway (Stage II)												
tf,base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
tf,hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
tf, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	12.22	391.11	14.44	5.56	5.56	5.56	21.11	408.67	5.56	14.44	5.56	10.00
cmx, Capacity	1157.56			263.46	276.74	646.40	1164.11			256.03	278.39	655.74
V / C	0.01			0.02	0.02	0.01	0.02			0.06	0.02	0.02
d, Delay	8.14			19.79	18.59	11.15	8.15			20.17	19.04	11.60
LOS	A			C	C	B	A			C	C	B
dA, Approach Delay		0.24			16.51			0.40			17.10	
Approach LOS					C						C	
dRank1, Rank 1 Delay		0.11						0.19				

Delay and Level of Service by Lane

Approach	N (Major)		E	S (Major)		W
Lane	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	417.78	16.67	433.33	30.00		
Flared Storage Size						
cmx, Capacity	1157.56	329.45	1164.11	327.43		
V / C	0.36	0.05	0.37	0.09		
Q95, 95% Queue Length	0.03	0.16	0.06	0.30		
d, Delay	8.14	16.51	8.15	17.10		
LOS		C		C		
dA, Approach Delay	0.24	16.51	0.40	17.10		
Approach LOS		C		C		

Node 2036: S College Ave & SE 12th St

Control Type AWSC
 Method HCM 6th Edition
 Average Delay 14.45
 Average LOS B

Volume and Adjustments

Approach	N			E			S			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	72.00	270.00	11.00	77.00	19.00	78.00	16.00	282.00	75.00	15.00	16.00	13.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Flow Rate	80.00	300.00	12.22	85.56	21.11	86.67	17.78	313.33	83.33	16.67	17.78	14.44
Geometry Group	1			1			1			1		

Saturation Headway

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	392.22	193.33	414.44	48.89				
Left Turn Flow Rate	80.00	85.56	17.78	16.67				
Right Turn Flow Rate	12.22	86.67	83.33	14.44				
PLT, Proportion LT	0.20	0.44	0.04	0.34				
PRT, Proportion RT	0.03	0.45	0.20	0.30				
PHV, Proportion HV	0.00	0.00	0.00	0.00				
hLT,adj, Headway adjustment for left turns	0.20	0.20	0.20	0.20				
hRT,adj, Headway adjustment for right turns	-0.60	-0.60	-0.60	-0.60				
hHV,adj, Headway adjustment for heavy vehicles	1.70	1.70	1.70	1.70				
hadj, Headway adjustment	0.02	-0.18	-0.11	-0.11				

Departure Headway

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	392.22	193.33	414.44	48.89				
hd initial	3.20	3.20	3.20	3.20				
x initial	0.35	0.17	0.37	0.04				
hd, iteration 1	4.68	5.08	4.52	5.31				
Difference, iteration 1	1.48	1.88	1.32	2.11				
hd, iteration 2	5.10	5.65	4.95	6.03				
Difference, iteration 2	0.42	0.57	0.43	0.72				
hd, iteration 3	5.24	5.82	5.09	6.26				
Difference, iteration 3	0.14	0.17	0.13	0.23				
hd, iteration 4	5.28	5.88	5.13	6.33				
Difference, iteration 4	0.04	0.06	0.04	0.07				
Convergence	Y	Y	Y	Y				
hd final, Departure Headway	5.28	5.88	5.13	6.33				
x final, Degree of Utilization	0.58	0.32	0.59	0.09				

Capacity and Level of Service

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	392.22	193.33	414.44	48.89				
hd, Departure Headway	5.28	5.88	5.13	6.33				
x, Degree of Utilization	0.58	0.32	0.59	0.09				
m, Move Up Time	2.00	2.00	2.00	2.00				
ts, Service Time	3.28	3.88	3.13	4.33				
Capacity	681.79	611.91	701.80	568.09				
Delay	15.36	11.58	15.45	9.93				
LOS	C	B	C	A				
Q95, 95% Queue Length	3.95	1.38	4.20	0.28				
Approach Delay	15.36	11.58	15.45	9.93				
Approach LOS	C	B	C	A				
Intersection Delay	14.45							
Intersection LOS	B							

Node 2037: S College and 13th 13th St

Control Type	TWSC
Method	HCM 6th Edition
dl, Average Delay	0.33
Worst Case Delay	14.66
Worst Case LOS	B

Volume and Adjustments

Approach	N (Major)		S (Major)		W	
	T	R1	L1	T	L1	R1
Movement						
Base Volume	313.00	8.00	5.00	345.00	5.00	11.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900
V, Adjusted Volume	347.78	8.89	5.56	383.33	5.56	12.22

Pedestrians

Approach	N (Major)		S (Major)		W	
	T	R1	L1	T	L1	R1
Movement						
vx, Flow (Ped/hr)			0.00		0.00	0.00
w, Lane Width (ft)			12.00		12.00	12.00
Sp, Walking Speed (ft/s)			3.50		3.50	3.50
fpb, Percent Blockage			0.00		0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)		S (Major)		W	
	T	R1	L1	T	L1	R1
Movement						
Rank	1	1	2	1	3	2
vx, Volume			5.56		5.56	12.22
Conflicting Volume (Veh)			356.67		746.67	352.22
Conflicting Volume (Ped)			0.00		0.00	0.00
Conflicting Volume			356.67		746.67	352.22
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median Refuge Area						
cpx, Potential Capacity			1213.22		383.61	695.94
Capacity			1213.22		381.38	695.94

Critical Headway and Follow Up Headway

Approach	N (Major)		S (Major)		W	
	T	R1	L1	T	L1	R1
Movement						
tc,base, Base Critical Headway			4.10		7.10	6.20
tc,base,I, Base Critical Headway (Stage I)						
tc,base,II, Base Critical Headway (Stage II)						
tc,HV, Heavy Vehicles Adjustment Factor			1.00		1.00	1.00
Phv, % Heavy Vehicles			0.00		0.00	0.00
tc,G, Grade Adjustment Factor			0.00		0.20	0.10
G, % Grade		0.00		0.00		0.00
T3,II, Geometry Adjustment Factor			0.00		0.70	0.00
tc, Critical Headway			4.10		6.40	6.20
tc,I, Critical Headway (Stage I)						
tc,II, Critical Headway (Stage II)						
tf,base, Base Follow-Up Headway			2.20		3.50	3.30
tf,hv, Heavy Vehicles Adjustment Factor			0.90		0.90	0.90
tf, Follow-Up Headway			2.20		3.50	3.30

Delay and Level of Service by Movement

Approach	N (Major)		S (Major)		W	
	T	R1	L1	T	L1	R1
Movement						
vx, Volume	347.78	8.89	5.56	383.33	5.56	12.22
cmx, Capacity			1213.22		381.38	695.94
V / C			0.00		0.01	0.02
d, Delay			7.98		14.66	10.39
LOS			A		B	B
dA, Approach Delay		0.00		0.11		11.72
Approach LOS						B
dRank1, Rank 1 Delay		0.00		0.05		

Delay and Level of Service by Lane

Approach	N (Major)		S (Major)		W	
	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Movements	T, R1	L1, T	L1, R1			
vx, Volume	356.67	388.89	17.78			
Flared Storage Size						
cmx, Capacity		1213.22	553.32			
V / C		0.32	0.03			
Q95, 95% Queue Length		0.01	0.10			
d, Delay		7.98	11.72			
LOS			B			
dA, Approach Delay		0.00	0.11			
Approach LOS			B			

Node 2038: S College Ave & Lampert

Control Type AWSC
 Method HCM 6th Edition
 Average Delay 13.04
 Average LOS B

Volume and Adjustments

Approach	N			E			S			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	144.00	159.00	46.00	12.00	61.00	191.00	9.00	185.00	9.00	29.00	37.00	5.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Flow Rate	160.00	178.67	53.33	13.33	67.78	212.22	10.00	183.33	10.00	32.22	41.11	5.56
Geometry Group	1			1			1			1		

Saturation Headway

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	390.00	293.33	203.33	78.89				
Left Turn Flow Rate	160.00	13.33	10.00	32.22				
Right Turn Flow Rate	53.33	212.22	10.00	5.56				
PLT, Proportion LT	0.41	0.05	0.05	0.41				
PRT, Proportion RT	0.14	0.72	0.05	0.07				
PHV, Proportion HV	0.00	0.00	0.00	0.00				
hLT,adj, Headway adjustment for left turns	0.20	0.20	0.20	0.20				
hRT,adj, Headway adjustment for right turns	-0.60	-0.60	-0.60	-0.60				
hHV,adj, Headway adjustment for heavy vehicles	1.70	1.70	1.70	1.70				
hadj, Headway adjustment	0.00	-0.42	-0.02	0.04				

Departure Headway

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	390.00	293.33	203.33	78.89				
hd initial	3.20	3.20	3.20	3.20				
x initial	0.35	0.26	0.18	0.07				
hd, iteration 1	4.71	4.53	4.65	5.21				
Difference, iteration 1	1.51	1.33	1.65	2.01				
hd, iteration 2	5.11	5.05	5.34	5.85				
Difference, iteration 2	0.40	0.52	0.49	0.64				
hd, iteration 3	5.25	5.19	5.51	6.05				
Difference, iteration 3	0.14	0.14	0.17	0.20				
hd, iteration 4	5.29	5.24	5.56	6.12				
Difference, iteration 4	0.04	0.05	0.05	0.07				
Convergence	Y	Y	Y	Y				
hd final, Departure Headway	5.29	5.24	5.56	6.12				
x final, Degree of Utilization	0.57	0.43	0.31	0.13				

Capacity and Level of Service

Approach	N		E		S		W	
Lanes	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Total Lane Flow Rate	390.00	293.33	203.33	78.89				
hd, Departure Headway	5.29	5.24	5.56	6.12				
x, Degree of Utilization	0.57	0.43	0.31	0.13				
m, Move Up Time	2.00	2.00	2.00	2.00				
ts, Service Time	3.29	3.24	3.56	4.12				
Capacity	680.21	686.07	646.54	587.97				
Delay	15.34	12.14	11.11	10.07				
LOS	C	B	B	B				
Q85, 95% Queue Length	3.92	2.21	1.37	0.46				
Approach Delay	15.34	12.14	11.11	10.07				
Approach LOS	C	B	B	B				
Intersection Delay	13.04							
Intersection LOS	B							

Node 2039: SE 3rd & Ash Ave

Control Type TWSC
 Method HCM 6th Edition
 d1, Average Delay 6.87
 Worst Case Delay 9.39
 Worst Case LOS A

Volume and Adjustments

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	5.00	19.00	5.00	5.00	5.00	5.00	5.00	19.00	5.00	5.00	5.00	5.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
V, Adjusted Volume	5.56	21.11	5.56	5.56	5.56	5.56	5.56	21.11	5.56	5.56	5.56	5.56

Pedestrians

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
w, Lane Width (ft)	12.00	12.00	12.00	12.00			12.00	12.00	12.00	12.00		
Sp, Walking Speed (ft/s)	3.50	3.50	3.50	3.50			3.50	3.50	3.50	3.50		
fpb, Percent Blockage	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		

Capacity of Movements below Rank 1

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	4	3	2	2	1	1	4	3	2	2	1	1
vx, Volume	5.56	21.11	5.56	5.56			5.56	21.11	5.56	5.56		
Conflicting Volume (Veh)	52.22	41.67	8.33	11.11			52.22	41.67	8.33	11.11		
Conflicting Volume (Ped)	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
Conflicting Volume	52.22	41.67	8.33	11.11			52.22	41.67	8.33	11.11		
Two-Stage Gap Acceptance	No	No					No	No				
Number of Storage Spaces in Median Refuge Area												
cp, Potential Capacity	951.66	854.25	1079.48	1621.28			951.66	854.25	1079.48	1621.28		
Capacity	923.92	848.36	1079.48	1621.28			923.92	848.36	1079.48	1621.28		

Critical Headway and Follow Up Headway

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc, base, Base Critical Headway	7.10	6.50	6.20	4.10			7.10	6.50	6.20	4.10		
tc, base, I, Base Critical Headway (Stage I)												
tc, base, II, Base Critical Headway (Stage II)												
tc, HV, Heavy Vehicles Adjustment Factor	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00		
Phv, % Heavy Vehicles	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
tc, G, Grade Adjustment Factor	0.20	0.20	0.10	0.00			0.20	0.20	0.10	0.00		
G, % Grade		0.00			0.00			0.00			0.00	
T3, It, Geometry Adjustment Factor	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
tc, Critical Headway	7.10	6.50	6.20	4.10			7.10	6.50	6.20	4.10		
tc, I, Critical Headway (Stage I)												
tc, II, Critical Headway (Stage II)												
tf, base, Base Follow-Up Headway	3.50	4.00	3.30	2.20			3.50	4.00	3.30	2.20		
tf, hv, Heavy Vehicles Adjustment Factor	0.90	0.90	0.90	0.90			0.90	0.90	0.90	0.90		
tf, Follow-Up Headway	3.50	4.00	3.30	2.20			3.50	4.00	3.30	2.20		

Delay and Level of Service by Movement

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	5.56	21.11	5.56	5.56	5.56	5.56	5.56	21.11	5.56	5.56	5.56	5.56
cmx, Capacity	923.92	848.36	1079.48	1621.28			923.92	848.36	1079.48	1621.28		
V / C	0.01	0.02	0.01	0.00			0.01	0.02	0.01	0.00		
d, Delay	9.05	9.39	8.49	7.23			9.05	9.39	8.49	7.23		
LOS	A	A	A	A			A	A	A	A		
dA, Approach Delay		9.18			2.41			9.18			2.41	
Approach LOS		A						A				
dRank1, Rank 1 Delay					0.02						0.02	

Delay and Level of Service by Lane

Approach	N	E (Major)	S	W (Major)
Lane	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	32.22	16.67	32.22	16.67
Planned Storage Size				
cmx, Capacity	893.97	1621.28	893.97	1621.28
V / C	0.04	0.01	0.04	0.01
Q95, 95% Queue Length	0.11	0.01	0.11	0.01
d, Delay	9.18	7.23	9.18	7.23
LOS	A		A	
dA, Approach Delay	9.18	2.41	9.18	2.41
Approach LOS	A		A	

Intersection Capacity Analysis Summary Page

Analysis Time: Wed Mar 11 14:36:26
 Driving Side: Right
 Analysis Period: 1 Hours

Number	Name	Control Type	V/C	Avg Delay	Avg LOS	Max Delay	Max LOS
2030	College & Whitman	Signalized	0.45	11.51	B	19.73	B
2031	N College & SE 3rd St.	TWSC	0.00	1.02	A	13.81	B
2032	S College Ave & SW 4th St	Signalized	0.42	10.25	B	20.85	C
2033	S College Ave & SE 6th St	TWSC	0.00	1.95	A	13.44	B
2034	S College Ave & SE 8th St	TWSC	0.00	2.58	A	14.00	B
2035	S College Ave & SE 10th St	TWSC	0.00	1.18	A	18.68	C
2036	S College Ave & SE 12th St	Signalized	0.44	11.05	B	25.55	C
2037	S College and 13th 13th St	TWSC	0.00	0.36	A	13.21	B
2038	S College Ave & Lamperti	Signalized	0.56	13.52	B	17.74	B
2039	SE 3rd & Ash Ave	TWSC	0.00	6.17	A	9.46	A

ICAWWW/PO 2042 PM Remove LT and RT Laces 03-11-2014 Kx - Nasty 2022

Node 2031: N College & SE 3rd St.

Control Type TWSC
 Method HCM 6th Edition
 dI, Average Delay 1.02
 Worst Case Delay 13.81
 Worst Case LOS B

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	5.00	253.00	5.00	7.00	5.00	10.00	8.00	217.00	14.00	5.00	5.00	5.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
V, Adjusted Volume	5.56	281.11	5.56	7.78	5.56	11.11	8.89	241.11	15.56	5.56	5.56	5.56

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	5.56			7.78	5.56	11.11	8.89			5.56	5.56	5.56
Conflicting Volume (Veh)	256.67			567.22	564.44	248.89	286.67			570.00	569.44	283.89
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	256.67			567.22	564.44	248.89	286.67			570.00	569.44	283.89
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
cpv, Potential Capacity	1319.91			437.17	437.25	794.75	1286.99			435.32	434.40	759.87
Capacity	1319.91			425.42	431.55	794.75	1286.99			420.80	428.73	759.87

Critical Headway and Follow-Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc, base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc, base, I, Base Critical Headway (Stage I)												
tc, base, II, Base Critical Headway (Stage II)												
tc, hv, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, G, Grade Adjustment Factor	0.00			0.20	0.20	0.10	0.00			0.20	0.20	0.10
G, % Grade		0.00			0.00			0.00			0.00	
T3, ft, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc, I, Critical Headway (Stage I)												
tc, II, Critical Headway (Stage II)												
uf, base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
uf, hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
uf, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	5.56	281.11	5.56	7.78	5.56	11.11	8.89	241.11	15.56	5.56	5.56	5.56
cmv, Capacity	1319.91			425.42	431.55	794.75	1286.99			420.80	428.73	759.87
V / C	0.00			0.02	0.01	0.01	0.01			0.01	0.01	0.01
d, Delay	7.74			13.78	13.66	9.84	7.82			13.81	13.65	9.89
LOS	A			B	B	A	A			B	B	A
dA, Approach Delay		0.15			11.96			0.26			12.48	
Approach LOS					B						B	
dRank1, Rank 1 Delay		0.04						0.06				

Delay and Level of Service by Lane

Approach	N (Major)	E	S (Major)	W
Lane	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	282.22	24.44	265.56	16.67
Flared Storage Size				
cmv, Capacity	1319.91	541.57	1286.99	497.93
V / C	0.22	0.05	0.21	0.03
Q95, 95% Queue Length	0.01	0.14	0.02	0.10
d, Delay	7.74	11.96	7.82	12.48
LOS		B		B
dA, Approach Delay	0.15	11.96	0.26	12.48
Approach LOS		B		B

Month 2023, 1st Change New & S.W. 4th Ed. 20

Volume and Acquisitions by Movement								Serialized by Movement							
Aggr. Type	N	E	S	W	N	E	S	W	N	E	S	W	N	E	S
Line Group	N	E	S	W	N	E	S	W	N	E	S	W	N	E	S
Line Type	N	E	S	W	N	E	S	W	N	E	S	W	N	E	S
Line Item	N	E	S	W	N	E	S	W	N	E	S	W	N	E	S
Control Type	N	E	S	W	N	E	S	W	N	E	S	W	N	E	S
V. Volume	70	336	33	577	49	11	27	54	0.000	0.000	0.000	0.000	0.000	0.000	0.000
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
P.L.T. Intersection Right Turns	22	229	27	30	24	12	18	312	20	55	10	20			

Volume and Acquisitions by Lane Group								
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	388	87	351	158				
P.L.T. Acquisition Left Turns	0.00	0.31	0.08	0.35				
P.L.T. Intersection Right Turns	0.09	0.13	0.04	0.17				

Separation Flow Rate								
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	2046	2045	2044	2047				
P.L.T. Acquisition Left Turns	1750	1159	1789	1759				
P.L.T. Intersection Right Turns	1	1	1	1				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	1.000	1.000	1.000	1.000				
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	1.000	1.000	1.000	1.000				
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	0.580	0.905	0.905	0.905				
P.L.T. Acquisition Left Turns	0.044	0.015	0.044	0.015				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	1.000	1.000	1.000	1.000				
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	1.000	1.000	1.000	1.000				
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	1.000	1.000	1.000	1.000				
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	1.000	1.000	1.000	1.000				
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	1.000	1.000	1.000	1.000				
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	1.000	1.000	1.000	1.000				
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	1.000	1.000	1.000	1.000				
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	1.000	1.000	1.000	1.000				
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	1.000	1.000	1.000	1.000				
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	1.000	1.000	1.000	1.000				
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	1.000	1.000	1.000	1.000				
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	1.000	1.000	1.000	1.000				
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	1.000	1.000	1.000	1.000				
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	1.000	1.000	1.000	1.000				
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	1.000	1.000	1.000	1.000				
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	1.000	1.000	1.000	1.000				
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	1.000	1.000	1.000	1.000				
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	1.000	1.000	1.000	1.000				
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W	N	E	S	W
Line Group	N	E	S	W	N	E	S	W
Line Type	N	E	S	W	N	E	S	W
Line Item	N	E	S	W	N	E	S	W
Control Type	N	E	S	W	N	E	S	W
V. Volume	1.000	1.000	1.000	1.000				
P.L.T. Acquisition Left Turns	0.000	0.000	0.000	0.000				
P.L.T. Intersection Right Turns	1.000	1.000	1.000	1.000				
Aggr. Type	N	E	S	W</				

Node 2033: S College Ave & SE 6th St

Control Type TWSC
 Method HCM 6th Edition
 d1, Average Delay 1.95
 Worst Case Delay 13.44
 Worst Case LOS B

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	17.00	213.00	14.00	8.00	8.00	9.00	5.00	175.00	11.00	21.00	7.00	16.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
V, Adjusted Volume	18.89	236.67	15.56	6.67	8.89	10.00	5.56	194.44	12.22	23.33	7.78	17.78

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	18.89			6.67	8.89	10.00	5.56			23.33	7.78	17.78
Conflicting Volume (Veh)	206.67			506.67	501.67	200.56	252.22			503.33	500.00	244.44
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	206.67			506.67	501.67	200.56	252.22			503.33	500.00	244.44
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
cp, Potential Capacity	1376.56			479.58	474.57	845.46	1324.85			482.01	475.60	799.29
Capacity	1376.56			455.64	464.76	845.46	1324.85			461.98	465.77	799.29

Critical Headway and Follow-Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc,base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,base,I, Base Critical Headway (Stage I)												
tc,base,II, Base Critical Headway (Stage II)												
tc,hv, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc,G, Grade Adjustment Factor	0.00			0.20	0.20	0.10	0.00			0.20	0.20	0.10
G, % Grade		0.00			0.00		0.00				0.00	
T3,II, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	8.50	6.20	4.10			7.10	6.50	6.20
tc,I, Critical Headway (Stage I)												
tc,II, Critical Headway (Stage II)												
tf,base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
tf,hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
tf, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	18.89	236.67	15.56	6.67	8.89	10.00	5.56	194.44	12.22	23.33	7.78	17.78
cmx, Capacity	1376.56			455.64	464.76	845.46	1324.85			461.98	465.77	799.29
V / C	0.01			0.01	0.02	0.01	0.00			0.05	0.02	0.02
d, Delay	7.65			13.21	13.05	9.56	7.73			13.44	13.38	10.15
LOS	A			B	B	A	A			B	B	B
dA, Approach Delay		0.53			11.73		0.20				12.23	
Approach LOS					B						B	
dRank1, Rank 1 Delay		0.12					0.04					

Delay and Level of Service by Lane

Approach	N (Major)	E	S (Major)	W
Lane	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	271.11	25.56	212.22	48.89
Flared Storage Size				
cmx, Capacity	1376.56	560.61	1324.85	546.56
V / C	0.20	0.05	0.16	0.09
Q95, 95% Queue Length	0.04	0.14	0.01	0.29
d, Delay	7.65	11.73	7.73	12.23
LOS		B		B
dA, Approach Delay	0.53	11.73	0.20	12.23
Approach LOS		B		B

Node 2034: S College Ave & SE 8th St

Control Type TWSC
 Method HCM 6th Edition
 dI, Average Delay 2.58
 Worst Case Delay 14
 Worst Case LOS B

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	18.00	195.00	8.00	10.00	10.00	9.00	29.00	155.00	20.00	12.00	5.00	35.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
V, Adjusted Volume	20.00	216.67	8.89	11.11	11.11	10.00	32.22	172.22	22.22	13.33	5.56	38.89

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	20.00			11.11	11.11	10.00	32.22			13.33	5.56	38.89
Conflicting Volume (Veh)	194.44			531.11	513.33	183.33	225.56			519.44	520.00	221.11
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	194.44			531.11	513.33	183.33	225.56			519.44	520.00	221.11
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
cpx, Potential Capacity	1390.76			461.99	467.41	864.26	1354.89			470.30	463.37	823.53
Capacity	1390.76			421.76	447.43	864.26	1354.89			441.22	443.56	823.53

Critical Headway and Follow Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc,base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,base,I, Base Critical Headway (Stage I)												
tc,base,II, Base Critical Headway (Stage II)												
tc,HV, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Pliv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc,G, Grade Adjustment Factor	0.00			0.20	0.20	0.10	0.00			0.20	0.20	0.10
G, % Grade		0.00			0.00		0.00				0.00	
T3,lt, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,I, Critical Headway (Stage I)												
tc,II, Critical Headway (Stage II)												
tf,base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
tf,hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
tf, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	20.00	216.67	8.89	11.11	11.11	10.00	32.22	172.22	22.22	13.33	5.56	38.89
cmx, Capacity	1390.76			421.76	447.43	864.26	1354.89			441.22	443.56	823.53
V / C	0.01			0.03	0.02	0.01	0.02			0.03	0.01	0.05
d, Delay	7.63			14.00	13.52	9.63	7.72			13.71	13.67	9.93
LOS	A			B	B	A	A			B	B	A
dA, Approach Delay		0.62			12.48			1.10			11.16	
Approach LOS					B						B	
dRank1, Rank 1 Delay		0.13						0.21				

Delay and Level of Service by Lane

Approach	N (Major)		E	S (Major)		W
Lane	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	245.56	32.22	226.67	57.78		
Flared Storage Size						
cmx, Capacity	1390.76	513.52	1354.89	642.21		
V / C	0.18	0.06	0.17	0.09		
Q95, 95% Queue Length	0.04	0.20	0.07	0.30		
d, Delay	7.63	12.48	7.72	11.16		
LOS		B		B		
dA, Approach Delay	0.62	12.48	1.10	11.16		
Approach LOS		B		B		

Node 2035: S College Ave & SE 10th St

Control Type TWSC
 Method HCM 6th Edition
 dI, Average Delay 1.18
 Worst Case Delay 18.68
 Worst Case LOS C

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	11.00	332.00	13.00	5.00	5.00	5.00	19.00	332.00	7.00	12.00	5.00	9.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
V, Adjusted Volume	12.22	368.89	14.44	5.56	5.56	5.56	21.11	368.89	7.78	13.33	5.56	10.00

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	12.22			5.56	5.56	5.56	21.11			13.33	5.56	10.00
Conflicting Volume (Veh)	376.67			823.33	822.78	372.78	383.33			821.11	819.44	376.11
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	376.67			823.33	822.78	372.78	383.33			821.11	819.44	376.11
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
capx, Potential Capacity	1192.89			294.65	310.88	677.74	1186.19			295.67	312.24	674.83
Capacity	1192.89			278.52	299.89	677.74	1186.19			281.34	301.23	674.83

Critical Headway and Follow-Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc,base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,base,I, Base Critical Headway (Stage I)												
tc,base,II, Base Critical Headway (Stage II)												
tc,HV, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc,G, Grade Adjustment Factor	0.00			0.20	0.20	0.10	0.00			0.20	0.20	0.10
G, % Grade		0.00			0.00		0.00				0.00	
T3,II, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,I, Critical Headway (Stage I)												
tc,II, Critical Headway (Stage II)												
If,base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
If,hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
If, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	12.22	368.89	14.44	5.56	5.56	5.56	21.11	368.89	7.78	13.33	5.56	10.00
cmx, Capacity	1192.89			278.52	299.89	677.74	1186.19			281.34	301.23	674.83
V / C	0.01			0.02	0.02	0.01	0.02			0.05	0.02	0.01
d, Delay	8.05			18.42	17.50	10.81	8.09			18.68	17.83	11.22
LOS	A			C	C	B	A			C	C	B
dA, Approach Delay		0.25			15.57			0.43			15.93	
Approach LOS					C						C	
dRank1, Rank 1 Delay		0.10						0.18				

Delay and Level of Service by Lane

Approach	N (Major)		E		S (Major)		W	
Lane	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	395.56	16.67	397.78	28.89				
Flared Storage Size								
cmx, Capacity	1192.89	357.12	1186.19	358.18				
V / C	0.33	0.05	0.34	0.08				
Q95, 95% Queue Length	0.03	0.15	0.05	0.26				
d, Delay	8.05	15.57	8.09	15.93				
LOS		C		C				
dA, Approach Delay	0.25	15.57	0.43	15.93				
Approach LOS		C		C				

Node 2024 - 2024 WPOD LT Channelization

Control Type	Uncontrolled
Signalized	0
Control Delay	11.05
Control LGS	0
Control LGS	0.44
Control LGS	0

Volume and Delay by Movement

Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Volume	77	227	17	23	91	13	237	87	15	43	11	
Delay (seconds)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Passive Volume	22	83	5	15	26	4	69	18	4	12	3	
Adjusted Volume	55	224	12	8	65	102	16	263	18	12	43	12

Volume and Delay by Lane Group

Lane Group	N	E	S	W
Control Type	Uncontrolled	Uncontrolled	Uncontrolled	Uncontrolled
Signalized	0	0	0	0
Control Delay	11.05	11.05	11.05	11.05
Control LGS	0	0	0	0
Control LGS	0.44	0.44	0.44	0.44
Control LGS	0	0	0	0

Signalized Phase Data

Lane Group	N	E	S	W
Control Type	Uncontrolled	Uncontrolled	Uncontrolled	Uncontrolled
Signalized	0	0	0	0
Control Delay	11.05	11.05	11.05	11.05
Control LGS	0	0	0	0
Control LGS	0.44	0.44	0.44	0.44
Control LGS	0	0	0	0

Capacity, Control Delay, and Level of Service Determination

Lane Group	N	E	S	W
Control Type	Uncontrolled	Uncontrolled	Uncontrolled	Uncontrolled
Signalized	0	0	0	0
Control Delay	11.05	11.05	11.05	11.05
Control LGS	0	0	0	0
Control LGS	0.44	0.44	0.44	0.44
Control LGS	0	0	0	0

Volume and Delay by Movement

Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Volume	77	227	17	23	91	13	237	87	15	43	11	
Delay (seconds)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Passive Volume	22	83	5	15	26	4	69	18	4	12	3	
Adjusted Volume	55	224	12	8	65	102	16	263	18	12	43	12

Volume and Delay by Lane Group

Lane Group	N	E	S	W
Control Type	Uncontrolled	Uncontrolled	Uncontrolled	Uncontrolled
Signalized	0	0	0	0
Control Delay	11.05	11.05	11.05	11.05
Control LGS	0	0	0	0
Control LGS	0.44	0.44	0.44	0.44
Control LGS	0	0	0	0

Signalized Phase Data

Lane Group	N	E	S	W
Control Type	Uncontrolled	Uncontrolled	Uncontrolled	Uncontrolled
Signalized	0	0	0	0
Control Delay	11.05	11.05	11.05	11.05
Control LGS	0	0	0	0
Control LGS	0.44	0.44	0.44	0.44
Control LGS	0	0	0	0

Volume and Delay by Movement

Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Volume	77	227	17	23	91	13	237	87	15	43	11	
Delay (seconds)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Passive Volume	22	83	5	15	26	4	69	18	4	12	3	
Adjusted Volume	55	224	12	8	65	102	16	263	18	12	43	12

Volume and Delay by Lane Group

Lane Group	N	E	S	W
Control Type	Uncontrolled	Uncontrolled	Uncontrolled	Uncontrolled
Signalized	0	0	0	0
Control Delay	11.05	11.05	11.05	11.05
Control LGS	0	0	0	0
Control LGS	0.44	0.44	0.44	0.44
Control LGS	0	0	0	0

Signalized Phase Data

Lane Group	N	E	S	W
Control Type	Uncontrolled	Uncontrolled	Uncontrolled	Uncontrolled
Signalized	0	0	0	0
Control Delay	11.05	11.05	11.05	11.05
Control LGS	0	0	0	0
Control LGS	0.44	0.44	0.44	0.44
Control LGS	0	0	0	0

Node 2037: S College and 13th/13th St

Control Type TWSC
 Method HCM 6th Edition
 dt, Average Delay 0.36
 Worst Case Delay 13.21
 Worst Case LOS B

Volume and Adjustments

Approach	N (Major)		S (Major)		W	
	T	R1	L1	T	L1	R1
Movement						
Base Volume	268.00	5.00	5.00	285.00	5.00	10.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900
V, Adjusted Volume	297.78	5.56	5.56	316.67	5.56	11.11

Pedestrians

Approach	N (Major)		S (Major)		W	
	T	R1	L1	T	L1	R1
Movement						
vx, Flow (Ped/hr)			0.00		0.00	0.00
w, Lane Width (ft)			12.00		12.00	12.00
Sp, Walking Speed (ft/s)			3.50		3.50	3.50
fpb, Percent Blockage			0.00		0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)		S (Major)		W	
	T	R1	L1	T	L1	R1
Movement						
Rank	1	1	2	1	3	2
vx, Volume			5.56		5.56	11.11
Conflicting Volume (Veh)			303.33		628.33	300.56
Conflicting Volume (Ped)			0.00		0.00	0.00
Conflicting Volume			303.33		628.33	300.56
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median Refuge Area						
cpx, Potential Capacity			1269.05		449.81	743.77
Capacity			1269.05		447.42	743.77

Critical Headway and Follow Up Headway

Approach	N (Major)		S (Major)		W	
	T	R1	L1	T	L1	R1
Movement						
tc,base, Base Critical Headway			4.10		7.10	6.20
tc,base,I, Base Critical Headway (Stage I)						
tc,base,II, Base Critical Headway (Stage II)						
tc,HV, Heavy Vehicles Adjustment Factor			1.00		1.00	1.00
Phv, % Heavy Vehicles			0.00		0.00	0.00
tc,G, Grade Adjustment Factor			0.00		0.20	0.10
G, % Grade		0.00		0.00		0.00
T3,II, Geometry Adjustment Factor			0.00		0.70	0.00
tc, Critical Headway			4.10		6.40	6.20
tc,I, Critical Headway (Stage I)						
tc,II, Critical Headway (Stage II)						
tf,base, Base Follow-Up Headway			2.20		3.50	3.30
tf,hv, Heavy Vehicles Adjustment Factor			0.90		0.90	0.90
tf, Follow-Up Headway			2.20		3.50	3.30

Delay and Level of Service by Movement

Approach	N (Major)		S (Major)		W	
	T	R1	L1	T	L1	R1
Movement						
vx, Volume	297.78	5.56	5.56	316.67	5.56	11.11
cmx, Capacity			1269.05		447.42	743.77
V / C			0.00		0.01	0.01
d, Delay			7.85		13.21	10.01
LOS			A		B	B
dA, Approach Delay		0.00		0.14		11.07
Approach LOS						B
dRank1, Rank 1 Delay		0.00		0.04		

Delay and Level of Service by Lane

Approach	N (Major)	S (Major)	W
	Lane 1	Lane 1	Lane 1
Movements	T, R1	L1, T	L1, R1
vx, Volume	303.33	322.22	16.67
Flared Storage Size			
cmx, Capacity		1269.05	609.26
V / C		0.25	0.03
Q95, 95% Queue Length		0.01	0.08
d, Delay		7.85	11.07
LOS			B
dA, Approach Delay		0.00	11.07
Approach LOS			B

From 2038: 5 College Ave & Lampert

Control Type	Signaled
Vehicle	W/RT Lane
Average Delay	13.52
Average LOS	B
WOC	0.56
Level of Service	C

Volumes and Volumes by Movement

Approach	N	E	S	W	N	E	S	W	N	E	S	W
Approach	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Volume	125	187	80	21	59	155	10	15	33	12	12	12
Peak Period Volume	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Peak Volume	37	51	19	6	24	63	5	6	10	14	3	3
Adjusted Volume	147	233	60	20	90	212	22	221	19	58	58	15

Volumes and Volumes by Lane Group

Approach	N	E	S	W
Approach	C	C	C	C
Lane Group	L1R	L1R	L1R	L1R
Volume	147	233	60	20
Peak Period Volume	0.000	0.000	0.000	0.000
Peak Volume	37	51	19	6
Adjusted Volume	147	233	60	20

Capacities and Capacities by Lane Group

Approach	N	E	S	W
Approach	C	C	C	C
Lane Group	L1R	L1R	L1R	L1R
Capacity	1000	1000	1000	1000
Peak Period Capacity	0.000	0.000	0.000	0.000
Peak Capacity	37	51	19	6
Adjusted Capacity	147	233	60	20

Capacities, Control Delay, and Level of Service Determination

Approach	N	E	S	W
Approach	C	C	C	C
Lane Group	L1R	L1R	L1R	L1R
Capacity	1000	1000	1000	1000
Peak Period Capacity	0.000	0.000	0.000	0.000
Peak Capacity	37	51	19	6
Adjusted Capacity	147	233	60	20

Work of Queue

Approach	N	E	S	W
Approach	C	C	C	C
Lane Group	L1R	L1R	L1R	L1R
Work of Queue	1000	1000	1000	1000
Peak Period Work of Queue	0.000	0.000	0.000	0.000
Peak Work of Queue	37	51	19	6
Adjusted Work of Queue	147	233	60	20

Signal Timing Information

Approach	N	E	S	W
Approach	C	C	C	C
Lane Group	L1R	L1R	L1R	L1R
Signal Timing	1000	1000	1000	1000
Peak Period Signal Timing	0.000	0.000	0.000	0.000
Peak Signal Timing	37	51	19	6
Adjusted Signal Timing	147	233	60	20

Lane Turn Adjustment Factors for Protected Phasing

Approach	N	E	S	W
Approach	C	C	C	C
Lane Group	L1R	L1R	L1R	L1R
Turn Adjustment Factor	1.00	1.00	1.00	1.00
Peak Period Turn Adjustment Factor	0.000	0.000	0.000	0.000
Peak Turn Adjustment Factor	37	51	19	6
Adjusted Turn Adjustment Factor	147	233	60	20

Peak Period Delay and Level of Service Factors

Approach	N	E	S	W
Approach	C	C	C	C
Lane Group	L1R	L1R	L1R	L1R
Delay Factor	1.00	1.00	1.00	1.00
Peak Period Delay Factor	0.000	0.000	0.000	0.000
Peak Delay Factor	37	51	19	6
Adjusted Delay Factor	147	233	60	20

Adjustment Factors

Approach	N	E	S	W
Approach	C	C	C	C
Lane Group	L1R	L1R	L1R	L1R
Adjustment Factor	1.00	1.00	1.00	1.00
Peak Period Adjustment Factor	0.000	0.000	0.000	0.000
Peak Adjustment Factor	37	51	19	6
Adjusted Adjustment Factor	147	233	60	20

Node 2039: SE 3rd & Ash Ave

Control Type TWSC
 Method HCM 6th Edition
 dt, Average Delay 6.17
 Worst Case Delay 9.46
 Worst Case LOS A

Volume and Adjustments

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	6.00	21.00	5.00	5.00	9.00	5.00	5.00	10.00	5.00	5.00	8.00	5.00
PHF, Peak-hour factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
V, Adjusted Volume	6.67	23.33	5.56	5.56	10.00	5.56	5.56	11.11	5.56	5.56	8.89	5.56

Pedestrians

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
w, Lane Width (ft)	12.00	12.00	12.00	12.00			12.00	12.00	12.00	12.00		
Sp, Walking Speed (ft/s)	3.50	3.50	3.50	3.50			3.50	3.50	3.50	3.50		
fpb, Percent Blockage	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		

Capacity of Movements below Rank 1

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	4	3	2	2	1	1	4	3	2	2	1	1
vx, Volume	6.67	23.33	5.56	5.56			5.56	11.11	5.56	5.56		
Conflicting Volume (Veh)	55.00	49.44	12.78	14.44			61.11	49.44	11.67	15.56		
Conflicting Volume (Ped)	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
Conflicting Volume	55.00	49.44	12.78	14.44			61.11	49.44	11.67	15.56		
Two-Stage Gap Acceptance	No	No					No	No				
Number of Storage Spaces in Median Refuge Area												
opx, Potential Capacity	947.73	845.95	1073.43	1616.78			939.14	845.95	1074.94	1615.28		
Capacity	928.40	840.09	1073.43	1616.78			909.66	840.09	1074.94	1615.28		

Critical Headway and Follow-Up Headway

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc, base, Base Critical Headway	7.10	6.50	6.20	4.10			7.10	6.50	6.20	4.10		
tc, base, I, Base Critical Headway (Stage I)												
tc, base, II, Base Critical Headway (Stage II)												
tc, HV, Heavy Vehicles Adjustment Factor	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00		
Phv, % Heavy Vehicles	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
tc, G, Grade Adjustment Factor	0.20	0.20	0.10	0.00			0.20	0.20	0.10	0.00		
G, % Grade		0.00			0.00			0.00			0.00	
T3, ft, Geometry Adjustment Factor	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
tc, I, Critical Headway	7.10	6.50	6.20	4.10			7.10	6.50	6.20	4.10		
tc, I, Critical Headway (Stage I)												
tc, II, Critical Headway (Stage II)												
If, base, Base Follow-Up Headway	3.50	4.00	3.30	2.20			3.50	4.00	3.30	2.20		
If, hv, Heavy Vehicles Adjustment Factor	0.90	0.90	0.90	0.90			0.90	0.90	0.90	0.90		
If, Follow-Up Headway	3.50	4.00	3.30	2.20			3.50	4.00	3.30	2.20		

Delay and Level of Service by Movement

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	6.67	23.33	5.56	5.56	10.00	5.56	5.56	11.11	5.56	5.56	8.89	5.56
cmx, Capacity	928.40	840.09	1073.43	1616.78			909.66	840.09	1074.94	1615.28		
V / C	0.01	0.03	0.01	0.00			0.01	0.01	0.01	0.00		
d, Delay	9.05	9.46	8.52	7.23			9.06	9.38	8.45	7.24		
LOS	A	A	A	A			A	A	A	A		
dA, Approach Delay		9.23			1.90			9.07			2.01	
Approach LOS		A						A				
dRank1, Rank 1 Delay					0.03						0.03	

Delay and Level of Service by Lane

Approach	N	E (Major)	S	W (Major)
Lane	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	35.56	21.11	22.22	20.00
Flared Storage Size				
cmx, Capacity	885.99	1616.78	909.97	1615.28
V / C	0.04	0.01	0.02	0.01
Q95, 95% Queue Length	0.13	0.01	0.08	0.01
d, Delay	9.23	7.23	9.07	7.24
LOS	A	A	A	A
dA, Approach Delay	9.23	1.90	9.07	2.01
Approach LOS	A		A	

Intersection Capacity Analysis Summary Page

Analysis Time: Fri Sep 27 12:46:32 21
 Driving Side: Right
 Analysis Period: 1 Hours

Number	Name	Control Type	V/C	Avg Delay	Avg LOS	Max Delay	Max LOS
2030	College & Whitman	Signalized	0.59	35.15	D	66.63	E
2031	N College & SE 3rd St.	TWSC	0.00	1.16	A	15.62	C
2032	S College Ave & SW 4th St	Signalized	0.82	50.27	D	91.25	F
2033	S College Ave & SE 6th St	TWSC	0.00	1.93	A	17.23	C
2034	S College Ave & SE 8th St	TWSC	0.00	1.79	A	17.15	C
2035	S College Ave & SE 10th St	TWSC	0.00	1.30	A	24.08	C
2036	S College Ave & SE 12th St	Signalized	0.73	25.43	C	50.03	D
2037	S College and 13th 13th St	TWSC	0.00	0.32	A	15.34	C
2038	S College Ave & Lampert	Signalized	0.73	25.83	C	41.12	D
2039	SE 3rd & Ash Ave	TWSC	0.00	9.19	A	11.27	B

1CAWAYMPO 2040 AM 02-27-19,xxx-xxxx-xxxx-xxxx

Node 2031: N College & SE 3rd St.

Control Type TWSC
 Method HCM 6th Edition
 d1, Average Delay 1.16
 Worst Case Delay 15.62
 Worst Case LOS C

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	5.00	177.00	5.00	7.00	5.00	6.00	6.00	221.00	19.00	5.00	5.00	5.00
PHF, Peak-hour factor	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850
V, Adjusted Volume	7.69	272.31	7.69	10.77	7.69	9.23	9.23	340.00	29.23	7.69	7.69	7.69

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	7.69			10.77	7.69	9.23	9.23			7.69	7.69	7.69
Conflicting Volume (Veh)	369.23			672.31	668.46	354.62	280.00			673.08	679.23	276.15
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	369.23			672.31	668.46	354.62	280.00			673.08	679.23	276.15
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
cpk, Potential Capacity	1200.41			372.06	381.43	683.79	1294.24			371.62	376.06	767.45
Capacity	1200.41			357.93	375.13	693.79	1294.24			356.40	369.84	767.45

Critical Headway and Follow Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc, base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc, base, I, Base Critical Headway (Stage I)												
tc, base, II, Base Critical Headway (Stage II)												
tc, HV, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, G, Grade Adjustment Factor	1.00			0.20	0.20	0.10	1.00			0.20	0.20	0.10
G, % Grade		0.00			0.00			0.00			0.00	
T3, It, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc, I, Critical Headway (Stage I)												
tc, II, Critical Headway (Stage II)												
lf, base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
lf, hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
lf, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	7.69	272.31	7.69	10.77	7.69	9.23	9.23	340.00	29.23	7.69	7.69	7.69
cmx, Capacity	1200.41			357.93	375.13	693.79	1294.24			356.40	369.84	767.45
V / C	0.01			0.03	0.02	0.01	0.01			0.02	0.02	0.01
d, Delay	8.02			15.62	15.16	10.76	7.80			15.55	15.19	10.14
LOS	A			C	C	B	A			C	C	B
dA, Approach Delay		0.21			13.87			0.19			13.63	
Approach LOS					B						B	
dRank1, Rank 1 Delay		0.00						0.00				

Delay and Level of Service by Lane

Approach	N (Major)			E			S (Major)			W		
Lane	Lane 1	Lane 2	Lane 1	Lane 1	Lane 2	Lane 1	Lane 1	Lane 2	Lane 1	Lane 1	Lane 2	Lane 1
Movements	T, R1	T, R1	L1, T, R1	T, R1	T, R1	T, R1	T, R1	T, R1	T, R1	T, R1	T, R1	T, R1
vx, Volume	7.69	280.00	27.69	9.23	369.23	23.08						
Flared Storage Size												
cmx, Capacity			433.38			440.35						
V / C			0.06			0.05						
Q95, 95% Queue Length			0.20			0.17						
d, Delay			13.87			13.63						
LOS			B			B						
dA, Approach Delay		0.21	13.87		0.19	13.63						
Approach LOS			B			B						

NOON TALK 5:00-5:30 PM

Control Type	Serialized
Method	HCN 6th Edition
Average Delay	50.27
Average LOS	0
VIC	0.82
Loss Time	16

Video Analysis made by Movework

Approximate Movement	N		Z		S		W	
	L1	R1	L1	R1	L1	R1	L1	R1
Base Volume	19	169	18	68	97	18	254	97
Prof. requirement 1/1/11	0.650	0.850	0.650	0.650	0.650	0.650	0.650	0.650
Peak 10 Volume	4	73	26	37	9	33	54	38
Aquired Volume	23	292	24	100	119	25	324	140

Video and Audio by Live Group

Application	N		C		N		C		N		C	
ID	137150		137154		137159		137162		137165		137168	
Level	C		R		C		R		C		R	
Control type	101.00		101.00		101.00		101.00		101.00		101.00	
PS1: application level sum	23	202	100	174	134	531	72	102	101	101	101	101
PS2: application level sum	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
PS3: application level sum	0.00	0.99	0.00	0.14	0.00	0.06	0.00	0.02	0.00	0.00	0.00	0.00

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Capacity, Control, Causality, and Level of Service Determinations

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Apparatus	N		S		3		4	
Apparatus	1	2	3	4	5	6	7	8
1. $\text{Fe}^{2+}/\text{Fe}^{3+}$	127.163	127.164	127.151	127.152	127.149	127.150	127.155	127.156
2. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.215	0.425	0.14	0.22	0.17	0.16	0.21	0.18
3. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00
4. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.41	1.23	2.72	3.75	4.63	5.93	7.19
5. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.24	0.48	0.65	0.54	2.19	1.05	0.93	0.75
6. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	2.00	0.00	1.00
7. $\text{Fe}^{2+}/\text{Fe}^{3+}$	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
8. $\text{Fe}^{2+}/\text{Fe}^{3+}$	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
9. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.32	1.33	1.58	2.09	2.12	2.12	1.44
10. $\text{Fe}^{2+}/\text{Fe}^{3+}$	1.00	1.11	1.00	1.00	1.75	1.31	1.61	1.00
11. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
43. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
61. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
63. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
64. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
66. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
67. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
68. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
69. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
71. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
72. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
74. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
76. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
77. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
81. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
82. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
83. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
84. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
87. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
88. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
89. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
91. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
92. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
93. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
94. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
96. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
97. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
98. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
99. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
101. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
102. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
103. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
106. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
107. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
108. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
109. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
111. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
112. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
113. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
114. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
116. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
117. $\text{Fe}^{2+}/\text{Fe}^{3+}$	0.00	0.00	0.00					

Study Design

[illegible]

Yeh-Tsun and Robert Yeh are Co-Editors of

[illegible]

Measure	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15	L16	L17	L18	L19	L20	L21	L22	L23	L24	L25	L26	L27	L28	L29	L30	L31	L32	L33	L34	L35	L36	L37	L38	L39	L40	L41	L42	L43	L44	L45	L46	L47	L48	L49	L50	L51	L52	L53	L54	L55	L56	L57	L58	L59	L60	L61	L62	L63	L64	L65	L66	L67	L68	L69	L70	L71	L72	L73	L74	L75	L76	L77	L78	L79	L80	L81	L82	L83	L84	L85	L86	L87	L88	L89	L90	L91	L92	L93	L94	L95	L96	L97	L98	L99	L100	L101	L102	L103	L104	L105	L106	L107	L108	L109	L110	L111	L112	L113	L114	L115	L116	L117	L118	L119	L120	L121	L122	L123	L124	L125	L126	L127	L128	L129	L130	L131	L132	L133	L134	L135	L136	L137	L138	L139	L140	L141	L142	L143	L144	L145	L146	L147	L148	L149	L150	L151	L152	L153	L154	L155	L156	L157	L158	L159	L160	L161	L162	L163	L164	L165	L166	L167	L168	L169	L170	L171	L172	L173	L174	L175	L176	L177	L178	L179	L180	L181	L182	L183	L184	L185	L186	L187	L188	L189	L190	L191	L192	L193	L194	L195	L196	L197	L198	L199	L200	L201	L202	L203	L204	L205	L206	L207	L208	L209	L210	L211	L212	L213	L214	L215	L216	L217	L218	L219	L220	L221	L222	L223	L224	L225	L226	L227	L228	L229	L230	L231	L232	L233	L234	L235	L236	L237	L238	L239	L240	L241	L242	L243	L244	L245	L246	L247	L248	L249	L250	L251	L252	L253	L254	L255	L256	L257	L258	L259	L260	L261	L262	L263	L264	L265	L266	L267	L268	L269	L270	L271	L272	L273	L274	L275	L276	L277	L278	L279	L280	L281	L282	L283	L284	L285	L286	L287	L288	L289	L290	L291	L292	L293	L294	L295	L296	L297	L298	L299	L300	L301	L302	L303	L304	L305	L306	L307	L308	L309	L310	L311	L312	L313	L314	L315	L316	L317	L318	L319	L320	L321	L322	L323	L324	L325	L326	L327	L328	L329	L330	L331	L332	L333	L334	L335	L336	L337	L338	L339	L340	L341	L342	L343	L344	L345	L346	L347	L348	L349	L350	L351	L352	L353	L354	L355	L356	L357	L358	L359	L360	L361	L362	L363	L364	L365	L366	L367	L368	L369	L370	L371	L372	L373	L374	L375	L376	L377	L378	L379	L380	L381	L382	L383	L384	L385	L386	L387	L388	L389	L390	L391	L392	L393	L394	L395	L396	L397	L398	L399	L400	L401	L402	L403	L404	L405	L406	L407	L408	L409	L410	L411	L412	L413	L414	L415	L416	L417	L418	L419	L420	L421	L422	L423	L424	L425	L426	L427	L428	L429	L430	L431	L432	L433	L434	L435	L436	L437	L438	L439	L440	L441	L442	L443	L444	L445	L446	L447	L448	L449	L450	L451	L452	L453	L454	L455	L456	L457	L458	L459	L460	L461	L462	L463	L464	L465	L466	L467	L468	L469	L470	L471	L472	L473	L474	L475	L476	L477	L478	L479	L480	L481	L482	L483	L484	L485	L486	L487	L488	L489	L490	L491	L492	L493	L494	L495	L496	L497	L498	L499	L500	L501	L502	L503	L504	L505	L506	L507	L508	L509	L510	L511	L512	L513	L514	L515	L516	L517	L518	L519	L520	L521	L522	L523	L524	L525	L526	L527	L528	L529	L530	L531	L532	L533	L534	L535	L536	L537	L538	L539	L540	L541	L542	L543	L544	L545	L546	L547	L548	L549	L550	L551	L552	L553	L554	L555	L556	L557	L558	L559	L560	L561	L562	L563	L564	L565	L566	L567	L568	L569	L570	L571	L572	L573	L574	L575	L576	L577	L578	L579	L580	L581	L582	L583	L584	L585	L586	L587	L588	L589	L590	L591	L592	L593	L594	L595	L596	L597	L598	L599	L600	L601	L602	L603	L604	L605	L606	L607	L608	L609	L610	L611	L612	L613	L614	L615	L616	L617	L618	L619	L620	L621	L622	L623	L624	L625	L626	L627	L628	L629	L630	L631	L632	L633	L634	L635	L636	L637	L638	L639	L640	L641	L642	L643	L644	L645	L646	L647	L648	L649	L650	L651	L652	L653	L654	L655	L656	L657	L658	L659	L660	L661	L662	L663	L664	L665	L666	L667	L668	L669	L670	L671	L672	L673	L674	L675	L676	L677	L678	L679	L680	L681	L682	L683	L684	L685	L686	L687	L688	L689	L690	L691	L692	L693	L694	L695	L696	L697	L698	L699	L700	L701	L702	L703	L704	L705	L706	L707	L708	L709	L710	L711	L712	L713	L714	L715	L716	L717	L718	L719	L720	L721	L722	L723	L724	L725	L726	L727	L728	L729	L730	L731	L732	L733	L734	L735	L736	L737	L738	L739	L740	L741	L742	L743	L744	L745	L746	L747	L748	L749	L750	L751	L752	L753	L754	L755	L756	L757	L758	L759	L760	L761	L762	L763	L764	L765	L766	L767	L768	L769	L770	L771	L772	L773	L774	L775	L776	L777	L778	L779	L780	L781	L782	L783	L784	L785	L786	L787	L788	L789	L790	L791	L792	L793	L794	L795	L796	L797	L798	L799	L800	L801	L802	L803	L804	L805	L806	L807	L808	L809	L810	L811	L812	L813	L814	L815	L816	L817	L818	L819	L820	L821	L822	L823	L824	L825	L826	L827	L828	L829	L830	L831	L832	L833	L834	L835	L836	L837	L838	L839	L840	L841	L842	L843	L844	L845	L846	L847	L848	L849	L850	L851	L852	L853	L854	L855	L856	L857	L858	L859	L860	L861	L862	L863	L864	L865	L866	L867	L868	L869	L870	L871	L872	L873	L874	L875	L876	L877	L878	L879	L880	L881	L882	L883	L884	L885	L886	L887	L888	L889	L890	L891	L892	L893	L894	L895	L896	L897	L898	L899	L900	L901	L902	L903	L904	L905	L906	L907	L908	L909	L910	L911	L912	L913	L914	L915	L916	L917	L918	L919	L920	L921	L922	L923	L924	L925	L926	L927	L928	L929	L930	L931	L932	L933	L934	L935	L936	L937	L938	L939	L940	L941	L942	L943	L944	L945	L946	L947	L948	L949	L950	L951	L952	L953	L954	L955	L956	L957	L958	L959	L960	L961	L962	L963	L964	L965	L966	L967	L968	L969	L970	L971	L972	L973	L974	L975	L976	L977	L978	L979	L980	L981	L982	L983	L984	L985	L986	L987	L988	L989	L990	L991	L992	L993	L994	L995	L996	L997	L998	L999	L1000
ge Proportion Green	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											

Abstract The purpose of this study was to determine the effect of a 12-week, low-intensity, supervised walking program on the physical and psychological health of sedentary, middle-aged women. The study was a randomized, controlled trial. The subjects were 40 sedentary, middle-aged women who were randomly assigned to either a supervised walking program or a control group. The walking program consisted of 12 weeks of supervised walking, 3 times per week, for 30 minutes per session. The control group consisted of 20 women who did not participate in the walking program. The subjects were assessed at baseline and at 12 weeks. The walking program had a significant positive effect on the physical and psychological health of the subjects. The walking program significantly improved the subjects' physical health, as measured by the 6-minute walk test, and their psychological health, as measured by the Beck Depression Inventory and the State-Trait Anxiety Inventory. The walking program also had a significant positive effect on the subjects' quality of life, as measured by the SF-36. The walking program was well tolerated and had no adverse effects. The results of this study suggest that a 12-week, low-intensity, supervised walking program can improve the physical and psychological health of sedentary, middle-aged women.

Abstract

Future research

Node 2033: S College Ave & SE 6th St

Control Type TWSC
 Method HCM 6th Edition
 d1, Average Delay 1.93
 Worst Case Delay 17.23
 Worst Case LOS C

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Movement												
Base Volume	5.00	168.00	5.00	5.00	5.00	8.00	5.00	248.00	7.00	22.00	12.00	5.00
PHF, Peak-hour factor	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650
V, Adjusted Volume	7.69	258.46	7.69	7.69	7.69	12.31	7.69	383.08	10.77	33.85	18.46	7.69

Pedestrians

Approach	N (Major)			E			S (Major)			W		
	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Movement												
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Movement												
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	7.69			7.69	7.69	12.31	7.69			33.85	18.46	7.69
Conflicting Volume (Veh)	393.85			694.62	685.38	388.46	268.15			691.54	686.92	262.31
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	393.85			694.62	685.38	388.46	268.15			691.54	686.92	262.31
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
cpv, Potential Capacity	1175.69			359.50	373.01	664.16	1309.41			361.21	372.26	781.20
Capacity	1175.69			338.34	367.35	664.16	1309.41			344.83	366.61	781.20

Critical Headway and Follow-Up Headway

Approach	N (Major)			E			S (Major)			W		
	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Movement												
tc,base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,base,I, Base Critical Headway (Stage I)												
tc,base,II, Base Critical Headway (Stage II)												
tc,HV, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc,G, Grade Adjustment Factor	1.00			0.20	0.20	0.10	1.00			0.20	0.20	0.10
G, % Grade		0.00			0.00		0.00				0.00	
T3,II, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,I, Critical Headway (Stage I)												
tc,II, Critical Headway (Stage II)												
tf,base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
tf,hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
tf, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Movement												
vx, Volume	7.69	258.46	7.69	7.69	7.69	12.31	7.69	383.08	10.77	33.85	18.46	7.69
cmx, Capacity	1175.69			338.34	367.36	664.16	1309.41			344.83	366.61	781.20
V / C	0.01			0.02	0.02	0.02	0.01			0.10	0.05	0.01
d, Delay	8.08			16.18	15.34	10.98	7.77			17.23	16.61	11.39
LOS	A			C	C	B	A			C	C	B
dA, Approach Delay		0.23			13.62			0.15			16.29	
Approach LOS					B						C	
dRank1, Rank 1 Delay		0.00						0.00				

Delay and Level of Service by Lane

Approach	N (Major)		E		S (Major)		W	
	Lane 1	Lane 2	Lane 1	Lane 1	Lane 2	Lane 1	Lane 1	Lane 1
Movements								
vx, Volume	7.69	266.15	27.69	7.69	393.85	60.00		
Flared Storage Size								
cmx, Capacity			445.17			378.89		
V / C			0.06			0.16		
Q95, 95% Queue Length			0.20			0.56		
d, Delay			13.62			16.29		
LOS			B			C		
dA, Approach Delay		0.23	13.62		0.15	16.29		
Approach LOS			B			C		

Node 2034: S College Ave & SE 8th St

Control Type TWSC
 Method HCM 6th Edition
 dI, Average Delay 1.79
 Worst Case Delay 17.15
 Worst Case LOS C

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	5.00	162.00	5.00	10.00	5.00	10.00	12.00	253.00	13.00	8.00	6.00	17.00
PHF, Peak-hour factor	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650
V, Adjusted Volume	7.69	249.23	7.69	15.38	7.69	15.38	18.46	389.23	20.00	12.31	9.23	26.15

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fbp, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	7.69			15.38	7.69	15.38	18.46			12.31	9.23	26.15
Conflicting Volume (Veh)	409.23			722.31	708.46	399.23	256.92			716.15	714.62	253.08
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	409.23			722.31	708.46	399.23	256.92			716.15	714.62	253.08
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
capx, Potential Capacity	1160.49			344.48	361.81	654.98	1319.62			347.76	358.88	790.50
Capacity	1160.49			319.98	352.49	654.98	1319.62			327.40	349.64	790.50

Critical Headway and Follow Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc,base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,base,I, Base Critical Headway (Stage I)												
tc,base,II, Base Critical Headway (Stage II)												
tc,HV, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc,G, Grade Adjustment Factor	1.00			0.20	0.20	0.10	1.00			0.20	0.20	0.10
G, % Grade		0.00			0.00			0.00			0.00	
T3,It, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
tc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
tc,I, Critical Headway (Stage I)												
tc,II, Critical Headway (Stage II)												
If,base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
If,hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
If, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	7.69	249.23	7.69	15.38	7.69	15.38	18.46	389.23	20.00	12.31	9.23	26.15
cmx, Capacity	1160.49			319.98	352.49	654.98	1319.62			327.40	349.64	790.50
V/C	0.01			0.05	0.02	0.02	0.01			0.04	0.03	0.03
d, Delay	8.12			17.15	18.11	11.40	7.77			16.78	16.08	10.34
LOS	A			C	C	B	A			C	C	B
dA, Approach Delay		0.24			14.64			0.34			13.12	
Approach LOS					B						B	
dRank1, Rank 1 Delay		0.00						0.00				

Delay and Level of Service by Lane

Approach	N (Major)		E	S (Major)		W
Lane	Lane 1	Lane 2	Lane 1	Lane 1	Lane 2	Lane 1
Movements	T, R1	T, R1	T, R1	T, R1	T, R1	T, R1
vx, Volume	7.69	256.92	38.46	18.46	409.23	47.69
Flared Storage Size						
cmx, Capacity			411.83			491.28
V/C			0.09			0.10
Q95, 95% Queue Length			0.31			0.32
d, Delay			14.64			13.12
LOS			B			B
dA, Approach Delay		0.24	14.64		0.34	13.12
Approach LOS			B			B

Node 2035: S College Ave & SE 10th St

Control Type TWSC
 Method HCM 6th Edition
 df, Average Delay 1.3
 Worst Case Delay 24.08
 Worst Case LOS C

Volume and Adjustments

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	5.00	269.00	5.00	5.00	5.00	5.00	5.00	355.00	5.00	9.00	5.00	15.00
PHF, Peak-hour factor	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850
V, Adjusted Volume	7.69	413.85	7.69	7.69	7.69	7.69	9.23	546.15	7.69	13.85	7.69	23.08

Pedestrians

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
w, Lane Width (ft)	12.00			12.00	12.00	12.00	12.00			12.00	12.00	12.00
Sp, Walking Speed (ft/s)	3.50			3.50	3.50	3.50	3.50			3.50	3.50	3.50
fpb, Percent Blockage	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	2	1	1	4	3	2	2	1	1	4	3	2
vx, Volume	7.69			7.69	7.69	7.69	9.23			13.85	7.69	23.08
Conflicting Volume (Veh)	553.85			1016.92	1005.38	550.00	421.54			1009.23	1005.38	417.69
Conflicting Volume (Ped)	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
Conflicting Volume	553.85			1016.92	1005.38	550.00	421.54			1009.23	1005.38	417.69
Two-Stage Gap Acceptance				No	No					No	No	
Number of Storage Spaces in Median Refuge Area												
opx, Potential Capacity	1026.51			217.95	243.28	538.65	1148.47			220.59	243.28	639.54
Capacity	1026.51			201.59	238.09	538.65	1148.47			208.65	238.09	639.54

Critical Headway and Follow-Up Headway

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
lc, base, Base Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
lc, base, I, Base Critical Headway (Stage I)												
lc, base, II, Base Critical Headway (Stage II)												
lc, HV, Heavy Vehicles Adjustment Factor	1.00			1.00	1.00	1.00	1.00			1.00	1.00	1.00
Phv, % Heavy Vehicles	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
lc, G, Grade Adjustment Factor	1.00			0.20	0.20	0.10	1.00			0.20	0.20	0.10
G, % Grade		0.00			0.00			0.00			0.00	
T3, II, Geometry Adjustment Factor	0.00			0.00	0.00	0.00	0.00			0.00	0.00	0.00
lc, Critical Headway	4.10			7.10	6.50	6.20	4.10			7.10	6.50	6.20
lc, I, Critical Headway (Stage I)												
lc, II, Critical Headway (Stage II)												
If, base, Base Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30
If, hv, Heavy Vehicles Adjustment Factor	0.90			0.90	0.90	0.90	0.90			0.90	0.90	0.90
If, Follow-Up Headway	2.20			3.50	4.00	3.30	2.20			3.50	4.00	3.30

Delay and Level of Service by Movement

Approach	N (Major)			E			S (Major)			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	7.69	413.85	7.69	7.69	7.69	7.69	9.23	546.15	7.69	13.85	7.69	23.08
cmx, Capacity	1026.51			201.59	238.09	538.65	1148.47			208.65	238.09	639.54
V / C	0.01			0.04	0.03	0.01	0.01			0.07	0.03	0.04
d, Delay	8.53			24.08	21.34	12.91	8.16			23.95	21.81	12.32
LOS	A			C	C	B	A			C	C	B
dA, Approach Delay		0.15			19.44			0.13			17.56	
Approach LOS					C						C	
dRank1, Rank 1 Delay		0.00						0.00				

Delay and Level of Service by Lane

Approach	N (Major)			E			S (Major)			W		
Lane	Lane 1	Lane 2	Lane 1	Lane 1	Lane 2	Lane 1	Lane 1	Lane 2	Lane 1	Lane 1	Lane 2	Lane 1
Movements		T, R1	L1, T, R1					T, R1				L1, T, R1
vx, Volume	7.69	421.54	23.08				9.23	553.85				44.62
Planned Storage Size												
cmx, Capacity			272.30									331.09
V / C			0.08									0.13
Q95, 95% Queue Length			0.28									0.47
d, Delay			19.44									17.56
LOS			C									C
dA, Approach Delay		0.15	19.44				0.13					17.56
Approach LOS			C									C

Node 1 TIME: 9 College Ave & SE 17th St		
Control Type		Signalized
Webcam		NO Webcam
Average Delay		25.43
Average LOS		C
V/C		0.73
Loop Time		21

Variable and Adjustment by Treatment	N			E			S			W		
Adjustment	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Multilevel	40	317	8	36	32	63	12	242	31	12	78	7
BayesVGLS	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Diff. Mean Squ. Error	17	89	7	15	7	24	5	112	20	4	30	7
Rank to 1000 N	49	334	0	58	23	47	18	442	78	36	120	26

Values and Adjustments of Lake District									
Region	L		R		B		W		
1400000	127161	137162	127155	127163	127157	127155	127163	127164	
1500000		RT		RT				RT	
1600000									
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State of Origin	H		E		S		W	
Apprentice	N	%	N	%	N	%	N	%
Apprentice Age								
Learn to Cook	137161	137162	137169	137160	137167	137158	137163	137164
Q10 Group 1-10	0.18	0.69	0.15	0.20	0.07	0.56	0.07	0.12
Q10 Group 11-20	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Q10 Group 21-30	0.78	2.40	0.69	1.42	0.31	2.67	0.24	1.03
Q10 Group 31-40	0.16	0.34	0.15	0.24	0.13	0.87	0.10	1.34
Q10 Group 41-50	0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Q10 Group 51-60	0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Q10 Group 61-70	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Q10 Group 71-80	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Q10 Group 81-90	0.84	2.73	0.80	1.76	0.34	2.74	0.34	3.27
Q10 Group 91-100	1.80	1.77	1.80	1.80	1.80	1.80	1.80	1.79
Q10 Group 101-110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Q10 Group 111-120	1.00	0.65	1.01	1.16	0.05	11.81	0.41	5.71

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Abstract

Preparation of the Study Material

Node 2037: S College and 13th/13th St

Control Type	TWSC
Method	HCM 5th Edition
dI, Average Delay	0.32
Worst Case Delay	15.34
Worst Case LOS	C

Volume and Adjustments

Approach	N (Major)		S (Major)		W	
	T	R1	L1	T	L1	R1
Movement						
Base Volume	193.00	5.00	5.00	311.00	5.00	5.00
PHF, Peak-hour factor	0.650	0.650	0.650	0.650	0.650	0.650
V, Adjusted Volume	296.92	7.69	7.69	478.46	7.69	7.69

Pedestrians

Approach	N (Major)		S (Major)		W	
	T	R1	L1	T	L1	R1
Movement						
vx, Flow (Ped/hr)			0.00		0.00	0.00
w, Lane Width (ft)			12.00		12.00	12.00
Sp, Walking Speed (ft/s)			3.50		3.50	3.50
fpb, Percent Blockage			0.00		0.00	0.00

Capacity of Movements below Rank 1

Approach	N (Major)		S (Major)		W	
	T	R1	L1	T	L1	R1
Movement						
Rank	1	1	2	1	3	2
vx, Volume			7.69		7.69	7.69
Conflicting Volume (Veh)			304.62		794.62	300.77
Conflicting Volume (Ped)			0.00		0.00	0.00
Conflicting Volume			304.62		794.62	300.77
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median Refuge Area						
cpx, Potential Capacity			1267.68		359.53	743.57
Capacity			1267.68		356.56	743.57

Critical Headway and Follow Up Headway

Approach	N (Major)		S (Major)		W	
	T	R1	L1	T	L1	R1
Movement						
tc,base, Base Critical Headway			4.10		7.10	6.20
tc,base,I, Base Critical Headway (Stage I)						
tc,base,II, Base Critical Headway (Stage II)						
tc,HV, Heavy Vehicles Adjustment Factor			1.00		1.00	1.00
Phv, % Heavy Vehicles			0.00		0.00	0.00
tc,G, Grade Adjustment Factor			1.00		0.20	0.10
G, % Grade		0.00	0.00		0.00	
T3,II, Geometry Adjustment Factor			0.00		0.70	0.00
tc, Critical Headway			4.10		6.40	6.20
tc,I, Critical Headway (Stage I)						
tc,II, Critical Headway (Stage II)						
tf,base, Base Follow-Up Headway			2.20		3.50	3.30
tf,hv, Heavy Vehicles Adjustment Factor			0.90		0.90	0.90
tf, Follow-Up Headway			2.20		3.50	3.30

Delay and Level of Service by Movement

Approach	N (Major)		S (Major)		W	
	T	R1	L1	T	L1	R1
Movement						
vx, Volume	296.92	7.69	7.69	478.46	7.69	7.69
cmx, Capacity			1267.68		356.56	743.57
V / C			0.01		0.02	0.01
d, Delay			7.85		15.34	10.09
LOS			A		C	B
dA, Approach Delay		0.00		0.12		12.72
Approach LOS						B
dRank1, Rank 1 Delay		0.00		0.06		

Delay and Level of Service by Lane

Approach	N (Major)	S (Major)	W
	Lane 1	Lane 1	Lane 1
Movements	T, R1	L1, T	L1, R1
vx, Volume	304.62	486.15	15.38
Flared Storage Size			
cmx, Capacity		1267.68	481.99
V / C		0.38	0.03
Q95, 95% Queue Length		0.02	0.10
d, Delay		7.86	12.72
LOS			B
dA, Approach Delay		0.00	12.72
Approach LOS			B

Node 2220, 5 Channels, 6 Schedulers	
Control Type	Signalized
Method	MCU with Screen
Average Delay	75.63
Average LOS	C
VOC	0.73
Loop Time	16

Values and Adjustments by Movement															
Appropriation	L			T			E			S			W		
Movements	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	779	302	10	56	13	23	244	254	6	77	21	18	18	18	18
Base Volume Adjustments	0.650	0.900	0.650	0.650	0.650	0.650	0.650	0.900	0.650	0.900	0.650	0.650	0.650	0.650	0.650
Peak 15 Volume	30	116	4	29	7	30	5	98	21	18	17	18	17	18	18
Adjusted Volume	122	468	15	82	20	122	249	261	26	79	122	79	122	79	122

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Resource Unit Name	M			E			S		
Apportion	137163			137171			137166		
24	137163			137171			137166		
30	137163			137171			137166		
36	137163			137171			137166		
42	137163			137171			137166		
48	137163			137171			137166		
54	137163			137171			137166		
60	137163			137171			137166		
66	137163			137171			137166		
72	137163			137171			137166		
78	137163			137171			137166		
84	137163			137171			137166		
90	137163			137171			137166		
96	137163			137171			137166		
102	137163			137171			137166		
108	137163			137171			137166		
114	137163			137171			137166		
120	137163			137171			137166		
126	137163			137171			137166		
132	137163			137171			137166		
138	137163			137171			137166		
144	137163			137171			137166		
150	137163			137171			137166		
156	137163			137171			137166		
162	137163			137171			137166		
168	137163			137171			137166		
174	137163			137171			137166		
180	137163			137171			137166		
186	137163			137171			137166		
192	137163			137171			137166		
198	137163			137171			137166		
204	137163			137171			137166		

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S&P 500 Index of Stocks for Performance Pricing								
Account	E				S			
	137168	137170	137171	137167	137168	137165	137173	137173
	Prod.	No/Loss	No/Loss	Prod.	No/Loss	Prod.	No/Loss	No/Loss
Account								
Capital								
Balance								
Open								
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Node 2039: SE 3rd & Ash Ave

Control Type TWSC
 Method HCM 6th Edition
 dI, Average Delay 9.19
 Worst Case Delay 11.27
 Worst Case LOS B

Volume and Adjustments

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	5.00	78.00	5.00	5.00	9.00	6.00	5.00	114.00	5.00	5.00	9.00	5.00
PHF, Peak-hour factor	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850
V, Adjusted Volume	7.69	120.00	7.69	7.69	13.85	9.23	7.69	175.38	7.69	7.69	13.85	7.69

Pedestrians

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Flow (Ped/hr)	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
w, Lane Width (ft)	12.00	12.00	12.00	12.00			12.00	12.00	12.00	12.00		
Sp, Walking Speed (ft/s)	3.50	3.50	3.50	3.50			3.50	3.50	3.50	3.50		
fpb, Percent Blockage	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		

Capacity of Movements below Rank 1

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Rank	4	3	2	2	1	1	4	3	2	1	1	1
vx, Volume	7.69	120.00	7.69	7.69			7.69	175.38	7.69	7.69		
Conflicting Volume (Veh)	158.46	70.77	18.46	21.54			130.77	71.54	17.89	23.08		
Conflicting Volume (Ped)	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
Conflicting Volume	158.46	70.77	18.46	21.54			130.77	71.54	17.89	23.08		
Two-Stage Gap Acceptance	No	No					No	No				
Number of Storage Spaces in Median Refuge Area												
cpx, Potential Capacity	811.96	823.59	1065.74	1607.24			848.33	822.80	1066.77	1605.18		
Capacity	687.73	815.62	1065.74	1607.24			740.01	814.83	1066.77	1605.18		

Critical Headway and Follow Up Headway

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
tc,base, Base Critical Headway	7.10	6.50	6.20	4.10			7.10	6.50	6.20	4.10		
tc,base,I, Base Critical Headway (Stage I)												
tc,base,II, Base Critical Headway (Stage II)												
tc,HV, Heavy Vehicles Adjustment Factor	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00		
Phv, % Heavy Vehicles	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
tc,G, Grade Adjustment Factor	0.20	0.20	0.10	1.00			0.20	0.20	0.10	1.00		
G, % Grade		0.00			0.00			0.00			0.00	
T3,IT, Geometry Adjustment Factor	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00		
tc, Critical Headway	7.10	6.50	6.20	4.10			7.10	6.50	6.20	4.10		
tc,I, Critical Headway (Stage I)												
tc,II, Critical Headway (Stage II)												
If,base, Base Follow-Up Headway	3.50	4.00	3.30	2.20			3.50	4.00	3.30	2.20		
If,hv, Heavy Vehicles Adjustment Factor	0.90	0.90	0.90	0.90			0.90	0.90	0.90	0.90		
If, Follow-Up Headway	3.50	4.00	3.30	2.20			3.50	4.00	3.30	2.20		

Delay and Level of Service by Movement

Approach	N			E (Major)			S			W (Major)		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
vx, Volume	7.69	120.00	7.69	7.69	13.85	9.23	7.69	175.38	7.69	7.69	13.85	7.69
cmx, Capacity	667.73	815.62	1065.74	1607.24			740.01	814.83	1066.77	1605.18		
V / C	0.01	0.15	0.01	0.00			0.01	0.22	0.01	0.00		
d, Delay	11.27	10.29	9.25	7.25			11.20	10.75	9.71	7.25		
LOS	B	B	A	A			B	B	A	A		
dA, Approach Delay		10.29			1.81			10.73			1.91	
Approach LOS		B						B				
dRank1, Rank 1 Delay					0.04						0.04	

Delay and Level of Service by Lane

Approach	N		E (Major)		S		W (Major)	
Lane	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1	Lane 1
Movements	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1	L1, T, R1
vx, Volume	135.38	30.77	190.77	29.23				
Flared Storage Size								
cmx, Capacity	816.23	1607.24	819.29	1605.18				
V / C	0.17	0.02	0.23	0.02				
Q95, 95% Queue Length	0.60	0.01	0.91	0.01				
d, Delay	10.29	7.25	10.73	7.25				
LOS	B		B					
dA, Approach Delay	10.29	1.81	10.73	1.91				
Approach LOS	B		B					

Intersection Capacity Analysis Summary Page

Analysis Time: Wed Mar 11 11:13:19
 Driving Side: Right
 Analysis Period: 1 Hours

Number	Name	Control Type	V/C	Avg Delay	Avg LOS	Max Delay	Max LOS
2030	College & Whitman	Signalized	0.59	14.63	B	15.82	B
2031	N College & SE 3rd St.	TWSC	0.00	1.21	A	15.54	C
2032	S College Ave & SW 4th St	Signalized	0.78	15.45	B	27.30	C
2033	S College Ave & SE 6th St	TWSC	0.00	2.09	A	17.17	C
2034	S College Ave & SE 8th St	TWSC	0.00	1.67	A	16.82	C
2035	S College Ave & SE 10th St	TWSC	0.00	1.29	A	23.44	C
2036	S College Ave & SE 12th St	Signalized	0.51	10.87	B	23.25	C
2037	S College and 13th 13th St	TWSC	0.00	0.32	A	15.06	C
2038	S College Ave & Lampert	Signalized	0.59	13.15	B	23.18	C
2039	SE 3rd & Ash Ave	TWSC	0.00	9.31	A	11.60	B

Intersection Capacity Analysis Summary Page

Analysis Time: Wed Mar 11 11:13:19
 Driving Side: Right
 Analysis Period: 1 Hours

Number	Name	Control Type	V/C	Avg Delay	Avg LOS	Max Delay	Max LOS
2030	College & Whitman	Signalized	0.59	14.63	B	15.82	B
2031	N College & SE 3rd St.	TWSC	0.00	1.21	A	15.54	C
2032	S College Ave & SW 4th St	Signalized	0.78	15.45	B	27.30	C
2033	S College Ave & SE 8th St	TWSC	0.00	2.09	A	17.17	C
2034	S College Ave & SE 8th St	TWSC	0.00	1.67	A	16.62	C
2035	S College Ave & SE 10th St	TWSC	0.00	1.29	A	23.44	C
2036	S College Ave & SE 12th St	Signalized	0.51	10.87	B	23.25	C
2037	S College and 13th 13th St	TWSC	0.00	0.32	A	15.06	C
2038	S College Ave & Lampert	Signalized	0.59	13.15	B	23.18	C
2039	SE 3rd & Ash Ave	TWSC	0.00	9.31	A	11.60	B

12/20/2005 Change a Parameter

Control Type	Signalized
Method	HCM 6th Edition
Average Delay	14.53
Average LOS	D
V/C	0.52
Lost Time	8

Volume and Aquifer Effects by Minors and

Appraisal	L			C			S			W		
Movement	L1	T	R1	L1	T	R1	L1	T	R1	L1	T	R1
Base Volume	10	144	28	10	74	18	28	204	44	58	172	31
Prof. Maintenance Ratio	0.050	0.007	0.050	0.050	0.010	0.010	0.005	0.005	0.005	0.050	0.000	0.050
Park to Volume	4	71	23	12	29	7	11	60	17	22	68	12
Aqueduct Volume	15	263	51	77	112	28	43	320	63	84	245	44

Presented and Accepted for by LAM O'NEIL

	N	E	S	W
Aggravated		C	C	C
Lane Group				
LD	16570	16569	16568	16571
LTSS	LTFR	LTFR	LTFR	LTFR
Control Type	Platoon	Platoon	Platoon	Platoon
W. Volume	800	702	431	348
Peak Directional Link Flow	0.04	0.35	0.10	0.22
Peak Directional Sat. Flow	0.28	0.15	0.15	0.12

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### Capacity, Control Costs, and Lives of Service Customers

|                    | H      | E      | S      | W      |
|--------------------|--------|--------|--------|--------|
| Aggression         | 18.52  | 13.09  | 19.08  | 15.71  |
| Like to Play       |        | Pain   |        | Pain   |
| Control Type       | 265.73 | 221.14 | 450.77 | 388.45 |
| V. Volume          | 1.64   | 1.61   | 1.81   | 1.82   |
| 1. Satisfaction    | 865    | 870    | 860    | 795    |
| 2. Quantity        | 0.45   | 0.47   | 0.45   | 0.42   |
| QC. Green Cycle    | 0.48   | 0.33   | 0.56   | 0.52   |
| 3. Volume of Cycle | 1.95   | 1.64   | 2.30   | 1.17   |
| 4. Duration Day    | 0.60   | 0.76   | 0.50   | 0.50   |
| 5. Daily Cycles    | 2.00   | 1.37   | 2.30   | 2.46   |
| 6. Daily Cycles    | 2.00   | 0.93   | 0.90   | 0.90   |
| 7. Daily Cycles    | 1.00   | 1.00   | 1.00   | 1.00   |
| 8. Daily Cycles    | 0.40   | 0.47   | 0.45   | 0.47   |
| 9. Daily Cycles    | 1.00   | 1.00   | 1.00   | 1.00   |
| 10. Daily Cycles   | 1.04   | 1.37   | 1.91   | 15.82  |
| 11. Daily Cycles   | 0      | 0      | 0      | 0      |
| 12. Daily Cycles   | 14.24  | 12.97  | 14.91  | 15.82  |
| 13. Daily Cycles   | B      | 0      | 6      | 0      |
| 14. Daily Cycles   |        |        |        |        |
| 15. Daily Cycles   |        |        |        |        |
| 16. Daily Cycles   |        |        |        |        |
| 17. Daily Cycles   |        |        |        |        |
| 18. Daily Cycles   |        |        |        |        |
| 19. Daily Cycles   |        |        |        |        |
| 20. Daily Cycles   |        |        |        |        |
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| 97. Daily Cycles   |        |        |        |        |
| 98. Daily Cycles   |        |        |        |        |
| 99. Daily Cycles   |        |        |        |        |
| 100. Daily Cycles  |        |        |        |        |

**Handy Quiz**

| Apparatus    | N     | E     | S     | W     |
|--------------|-------|-------|-------|-------|
| Approx. Type |       |       |       |       |
| 14400000     | 19370 | 19099 | 19568 | 19374 |
| 200, 25000   | 0.45  | 0.42  | 0.55  | 0.40  |
| 400, 25000   | 1.00  | 1.00  | 1.00  | 1.00  |
| 600, 25000   | 3.21  | 1.73  | 2.78  | 3.64  |
| 800, 25000   | 2.47  | 0.15  | 2.68  | 2.56  |
| 1000, 25000  | 2.00  | 0.00  | 0.00  | 0.00  |
| 1200, 25000  | 1.00  | 1.00  | 1.00  | 1.00  |
| 1400, 25000  | 1.00  | 1.00  | 1.00  | 1.00  |
| 1600, 25000  | 1.00  | 1.37  | 1.37  | 4.10  |
| 1800, 25000  | 1.69  | 1.40  | 1.74  | 1.85  |
| 2000, 25000  | 0.45  | 0.45  | 0.90  | 0.45  |
| 2200, 25000  | 3.62  | 3.05  | 2.79  | 2.58  |

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### Section 2: Answering Reading the Questions Properly

| Age (yr)   | N    | E    | S    | W    |
|------------|------|------|------|------|
| 1400-1500  | 1600 | 1550 | 1550 | 1000 |
| 1500-1600  | 1600 | 1600 | 1600 | 1600 |
| 1600-1700  | 1600 | 1600 | 1600 | 1600 |
| 1700-1800  | 1600 | 1600 | 1600 | 1600 |
| 1800-1900  | 1600 | 1600 | 1600 | 1600 |
| 1900-2000  | 1600 | 1600 | 1600 | 1600 |
| 2000-2100  | 1600 | 1600 | 1600 | 1600 |
| 2100-2200  | 1600 | 1600 | 1600 | 1600 |
| 2200-2300  | 1600 | 1600 | 1600 | 1600 |
| 2300-2400  | 1600 | 1600 | 1600 | 1600 |
| 2400-2500  | 1600 | 1600 | 1600 | 1600 |
| 2500-2600  | 1600 | 1600 | 1600 | 1600 |
| 2600-2700  | 1600 | 1600 | 1600 | 1600 |
| 2700-2800  | 1600 | 1600 | 1600 | 1600 |
| 2800-2900  | 1600 | 1600 | 1600 | 1600 |
| 2900-3000  | 1600 | 1600 | 1600 | 1600 |
| 3000-3100  | 1600 | 1600 | 1600 | 1600 |
| 3100-3200  | 1600 | 1600 | 1600 | 1600 |
| 3200-3300  | 1600 | 1600 | 1600 | 1600 |
| 3300-3400  | 1600 | 1600 | 1600 | 1600 |
| 3400-3500  | 1600 | 1600 | 1600 | 1600 |
| 3500-3600  | 1600 | 1600 | 1600 | 1600 |
| 3600-3700  | 1600 | 1600 | 1600 | 1600 |
| 3700-3800  | 1600 | 1600 | 1600 | 1600 |
| 3800-3900  | 1600 | 1600 | 1600 | 1600 |
| 3900-4000  | 1600 | 1600 | 1600 | 1600 |
| 4000-4100  | 1600 | 1600 | 1600 | 1600 |
| 4100-4200  | 1600 | 1600 | 1600 | 1600 |
| 4200-4300  | 1600 | 1600 | 1600 | 1600 |
| 4300-4400  | 1600 | 1600 | 1600 | 1600 |
| 4400-4500  | 1600 | 1600 | 1600 | 1600 |
| 4500-4600  | 1600 | 1600 | 1600 | 1600 |
| 4600-4700  | 1600 | 1600 | 1600 | 1600 |
| 4700-4800  | 1600 | 1600 | 1600 | 1600 |
| 4800-4900  | 1600 | 1600 | 1600 | 1600 |
| 4900-5000  | 1600 | 1600 | 1600 | 1600 |
| 5000-5100  | 1600 | 1600 | 1600 | 1600 |
| 5100-5200  | 1600 | 1600 | 1600 | 1600 |
| 5200-5300  | 1600 | 1600 | 1600 | 1600 |
| 5300-5400  | 1600 | 1600 | 1600 | 1600 |
| 5400-5500  | 1600 | 1600 | 1600 | 1600 |
| 5500-5600  | 1600 | 1600 | 1600 | 1600 |
| 5600-5700  | 1600 | 1600 | 1600 | 1600 |
| 5700-5800  | 1600 | 1600 | 1600 | 1600 |
| 5800-5900  | 1600 | 1600 | 1600 | 1600 |
| 5900-6000  | 1600 | 1600 | 1600 | 1600 |
| 6000-6100  | 1600 | 1600 | 1600 | 1600 |
| 6100-6200  | 1600 | 1600 | 1600 | 1600 |
| 6200-6300  | 1600 | 1600 | 1600 | 1600 |
| 6300-6400  | 1600 | 1600 | 1600 | 1600 |
| 6400-6500  | 1600 | 1600 | 1600 | 1600 |
| 6500-6600  | 1600 | 1600 | 1600 | 1600 |
| 6600-6700  | 1600 | 1600 | 1600 | 1600 |
| 6700-6800  | 1600 | 1600 | 1600 | 1600 |
| 6800-6900  | 1600 | 1600 | 1600 | 1600 |
| 6900-7000  | 1600 | 1600 | 1600 | 1600 |
| 7000-7100  | 1600 | 1600 | 1600 | 1600 |
| 7100-7200  | 1600 | 1600 | 1600 | 1600 |
| 7200-7300  | 1600 | 1600 | 1600 | 1600 |
| 7300-7400  | 1600 | 1600 | 1600 | 1600 |
| 7400-7500  | 1600 | 1600 | 1600 | 1600 |
| 7500-7600  | 1600 | 1600 | 1600 | 1600 |
| 7600-7700  | 1600 | 1600 | 1600 | 1600 |
| 7700-7800  | 1600 | 1600 | 1600 | 1600 |
| 7800-7900  | 1600 | 1600 | 1600 | 1600 |
| 7900-8000  | 1600 | 1600 | 1600 | 1600 |
| 8000-8100  | 1600 | 1600 | 1600 | 1600 |
| 8100-8200  | 1600 | 1600 | 1600 | 1600 |
| 8200-8300  | 1600 | 1600 | 1600 | 1600 |
| 8300-8400  | 1600 | 1600 | 1600 | 1600 |
| 8400-8500  | 1600 | 1600 | 1600 | 1600 |
| 8500-8600  | 1600 | 1600 | 1600 | 1600 |
| 8600-8700  | 1600 | 1600 | 1600 | 1600 |
| 8700-8800  | 1600 | 1600 | 1600 | 1600 |
| 8800-8900  | 1600 | 1600 | 1600 | 1600 |
| 8900-9000  | 1600 | 1600 | 1600 | 1600 |
| 9000-9100  | 1600 | 1600 | 1600 | 1600 |
| 9100-9200  | 1600 | 1600 | 1600 | 1600 |
| 9200-9300  | 1600 | 1600 | 1600 | 1600 |
| 9300-9400  | 1600 | 1600 | 1600 | 1600 |
| 9400-9500  | 1600 | 1600 | 1600 | 1600 |
| 9500-9600  | 1600 | 1600 | 1600 | 1600 |
| 9600-9700  | 1600 | 1600 | 1600 | 1600 |
| 9700-9800  | 1600 | 1600 | 1600 | 1600 |
| 9800-9900  | 1600 | 1600 | 1600 | 1600 |
| 9900-10000 | 1600 | 1600 | 1600 | 1600 |

### Procedural Agreement Factors

[illegible]

### Activity 2: *Activity 2: Organisms*

**Abstract**

### Results and Discussion

## Node 2031: N College &amp; SE 3rd St.

Control Type TWSC  
 Method HCM 6th Edition  
 dI, Average Delay 1.21  
 Worst Case Delay 15.54  
 Worst Case LOS C

## Volume and Adjustments

| Approach              | N (Major) |        |       | E     |       |       | S (Major) |        |       | W     |       |       |
|-----------------------|-----------|--------|-------|-------|-------|-------|-----------|--------|-------|-------|-------|-------|
| Movement              | L1        | T      | R1    | L1    | T     | R1    | L1        | T      | R1    | L1    | T     | R1    |
| Base Volume           | 7.00      | 172.00 | 5.00  | 7.00  | 5.00  | 6.00  | 6.00      | 218.00 | 19.00 | 5.00  | 5.00  | 5.00  |
| PHF, Peak-hour factor | 0.650     | 0.650  | 0.650 | 0.650 | 0.650 | 0.650 | 0.650     | 0.650  | 0.650 | 0.650 | 0.650 | 0.650 |
| V, Adjusted Volume    | 10.77     | 264.62 | 7.69  | 10.77 | 7.69  | 9.23  | 9.23      | 335.38 | 29.23 | 7.69  | 7.69  | 7.69  |

## Pedestrians

| Approach                 | N (Major) |   |    | E     |       |       | S (Major) |   |    | W     |       |       |
|--------------------------|-----------|---|----|-------|-------|-------|-----------|---|----|-------|-------|-------|
| Movement                 | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    |
| vx, Flow (Ped/hr)        | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |
| w, Lane Width (ft)       | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  |
| fpb, Percent Blockage    | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |   |    | E      |        |        | S (Major) |   |    | W      |        |        |
|------------------------------------------------|-----------|---|----|--------|--------|--------|-----------|---|----|--------|--------|--------|
| Movement                                       | L1        | T | R1 | L1     | T      | R1     | L1        | T | R1 | L1     | T      | R1     |
| Rank                                           | 2         | 1 | 1  | 4      | 3      | 2      | 2         | 1 | 1  | 4      | 3      | 2      |
| vx, Volume                                     | 10.77     |   |    | 10.77  | 7.69   | 9.23   | 9.23      |   |    | 7.69   | 7.69   | 7.69   |
| Conflicting Volume (Veh)                       | 364.62    |   |    | 666.15 | 662.31 | 350.00 | 272.31    |   |    | 666.92 | 673.08 | 268.46 |
| Conflicting Volume (Ped)                       | 0.00      |   |    | 0.00   | 0.00   | 0.00   | 0.00      |   |    | 0.00   | 0.00   | 0.00   |
| Conflicting Volume                             | 364.62    |   |    | 666.15 | 662.31 | 350.00 | 272.31    |   |    | 666.92 | 673.08 | 268.46 |
| Two-Stage Gap Acceptance                       |           |   |    | No     | No     |        |           |   |    | No     | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |   |    |        |        |        |           |   |    |        |        |        |
| capx, Potential Capacity                       | 1205.10   |   |    | 375.60 | 384.54 | 697.93 | 1302.65   |   |    | 375.16 | 379.12 | 775.06 |
| Capacity                                       | 1205.10   |   |    | 360.61 | 377.09 | 697.93 | 1302.65   |   |    | 359.07 | 371.78 | 775.06 |

## Critical Headway and Follow-Up Headway

| Approach                                     | N (Major) |      |    | E    |      |      | S (Major) |   |    | W    |      |      |
|----------------------------------------------|-----------|------|----|------|------|------|-----------|---|----|------|------|------|
| Movement                                     | L1        | T    | R1 | L1   | T    | R1   | L1        | T | R1 | L1   | T    | R1   |
| tc,base, Base Critical Headway               | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 |
| tc,base,I, Base Critical Headway (Stage I)   |           |      |    |      |      |      |           |   |    |      |      |      |
| tc,base,II, Base Critical Headway (Stage II) |           |      |    |      |      |      |           |   |    |      |      |      |
| tc,HV, Heavy Vehicles Adjustment Factor      | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |   |    | 1.00 | 1.00 | 1.00 |
| Phv, % Heavy Vehicles                        | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 |
| tc,G, Grade Adjustment Factor                | 0.00      |      |    | 0.20 | 0.20 | 0.10 | 0.00      |   |    | 0.20 | 0.20 | 0.10 |
| G, % Grade                                   |           | 0.00 |    |      | 0.00 |      | 0.00      |   |    |      | 0.00 |      |
| T3,II, Geometry Adjustment Factor            | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 |
| tc, Critical Headway                         | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 |
| tc,I, Critical Headway (Stage I)             |           |      |    |      |      |      |           |   |    |      |      |      |
| tc,II, Critical Headway (Stage II)           |           |      |    |      |      |      |           |   |    |      |      |      |
| If,base, Base Follow-Up Headway              | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 |
| If,hv, Heavy Vehicles Adjustment Factor      | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |   |    | 0.90 | 0.90 | 0.90 |
| If, Follow-Up Headway                        | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |        |      | E      |        |        | S (Major) |        |       | W      |        |        |
|----------------------|-----------|--------|------|--------|--------|--------|-----------|--------|-------|--------|--------|--------|
| Movement             | L1        | T      | R1   | L1     | T      | R1     | L1        | T      | R1    | L1     | T      | R1     |
| vx, Volume           | 10.77     | 264.62 | 7.69 | 10.77  | 7.69   | 9.23   | 9.23      | 335.38 | 29.23 | 7.69   | 7.69   | 7.69   |
| cmx, Capacity        | 1205.10   |        |      | 360.61 | 377.09 | 697.93 | 1302.65   |        |       | 359.07 | 371.78 | 775.06 |
| V / C                | 0.01      |        |      | 0.03   | 0.02   | 0.01   | 0.01      |        |       | 0.02   | 0.02   | 0.01   |
| d, Delay             | 8.01      |        |      | 15.54  | 15.11  | 10.72  | 7.78      |        |       | 15.47  | 15.13  | 10.09  |
| LOS                  | A         |        |      | C      | C      | B      | A         |        |       | C      | C      | B      |
| dA, Approach Delay   |           | 0.30   |      |        | 13.81  |        |           | 0.19   |       |        | 13.56  |        |
| Approach LOS         |           |        |      |        | B      |        |           |        |       |        | B      |        |
| dRank1, Rank 1 Delay |           | 0.08   |      |        |        |        |           | 0.07   |       |        |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) |           |           | E         |           |           | S (Major) |           |           | W         |           |           |
|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Lane                  | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    |
| Movements             | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 |
| vx, Volume            | 263.08    | 27.69     | 373.65    |           |           |           |           |           |           |           |           |           |
| Flared Storage Size   |           |           |           |           |           |           |           |           |           |           |           |           |
| cmx, Capacity         | 1205.10   | 436.18    | 1302.65   |           |           |           |           |           |           |           |           |           |
| V / C                 | 0.23      | 0.06      | 0.29      |           |           |           |           |           |           |           |           |           |
| Q85, 95% Queue Length | 0.03      | 0.20      | 0.02      |           |           |           |           |           |           |           |           |           |
| d, Delay              | 8.01      | 13.81     | 7.78      |           |           |           |           |           |           |           |           |           |
| LOS                   |           | B         |           |           |           |           |           |           |           |           |           |           |
| dA, Approach Delay    | 0.30      | 13.81     | 0.19      |           |           |           |           |           |           |           |           |           |
| Approach LOS          |           | B         |           |           |           |           |           |           |           |           |           |           |

| July 2012, 8 Change Bits & 4040 Bit |             |  |
|-------------------------------------|-------------|--|
| Control Type                        | Signalers   |  |
| Method                              | ncwfm Robot |  |
| Average Delay                       | 15.45       |  |
| Average UGS                         | 0           |  |
| V/C                                 | 0.18        |  |
| Loss Time                           | 8           |  |

| Values and Adjustments by Affected |       |       |       |       |       |       |       |       |       |       |       |  |
|------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| Affected                           | N     | E     |       |       | S     |       |       | W     |       |       |       |  |
| Diabetes                           | 14    | 7     | 11    | 5     | 7     | 11    | 5     | 7     | 11    | 5     | 7     |  |
| Diabetes (cont.)                   | 10    | 168   | 8     | 37    | 8     | 37    | 168   | 8     | 37    | 8     | 37    |  |
| Diabetes (cont.)                   | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |  |
| Diabetes (cont.)                   | 6     | 71    | 7     | 23    | 37    | 6     | 33    | 94    | 10    | 15    | 23    |  |
| Diabetes (cont.)                   | 39    | 76    | 28    | 94    | 140   | 75    | 134   | 197   | 110   | 114   | 12    |  |

| Variable              | N     | E     | S     | W     |
|-----------------------|-------|-------|-------|-------|
| Age (years)           |       |       |       |       |
| C                     | C     | C     | C     | C     |
| AD                    | 19074 | 19073 | 19074 | 19076 |
| Length                | 1178  | 1181  | 1178  | 1178  |
| Depth (m)             | 9400  | 9400  | 9400  | 9400  |
| V. Volume             | 325   | 364   | 611   | 103   |
| PdL (msec) (not used) | 0.07  | 0.30  | 0.20  | 0.33  |
| PdL (msec) (not used) | 0.08  | 0.03  | 0.21  | 0.07  |

| Approximate Date | W    | G    | S    | W    |
|------------------|------|------|------|------|
| Approx. 1567     | 1567 | 1567 | 1567 | 1567 |
| Approx. 1568     | 1568 | 1568 | 1568 | 1568 |
| Approx. 1569     | 1569 | 1569 | 1569 | 1569 |
| Approx. 1570     | 1570 | 1570 | 1570 | 1570 |
| Approx. 1571     | 1571 | 1571 | 1571 | 1571 |
| Approx. 1572     | 1572 | 1572 | 1572 | 1572 |
| Approx. 1573     | 1573 | 1573 | 1573 | 1573 |
| Approx. 1574     | 1574 | 1574 | 1574 | 1574 |
| Approx. 1575     | 1575 | 1575 | 1575 | 1575 |
| Approx. 1576     | 1576 | 1576 | 1576 | 1576 |
| Approx. 1577     | 1577 | 1577 | 1577 | 1577 |
| Approx. 1578     | 1578 | 1578 | 1578 | 1578 |
| Approx. 1579     | 1579 | 1579 | 1579 | 1579 |
| Approx. 1580     | 1580 | 1580 | 1580 | 1580 |
| Approx. 1581     | 1581 | 1581 | 1581 | 1581 |
| Approx. 1582     | 1582 | 1582 | 1582 | 1582 |
| Approx. 1583     | 1583 | 1583 | 1583 | 1583 |
| Approx. 1584     | 1584 | 1584 | 1584 | 1584 |
| Approx. 1585     | 1585 | 1585 | 1585 | 1585 |
| Approx. 1586     | 1586 | 1586 | 1586 | 1586 |
| Approx. 1587     | 1587 | 1587 | 1587 | 1587 |
| Approx. 1588     | 1588 | 1588 | 1588 | 1588 |
| Approx. 1589     | 1589 | 1589 | 1589 | 1589 |
| Approx. 1590     | 1590 | 1590 | 1590 | 1590 |
| Approx. 1591     | 1591 | 1591 | 1591 | 1591 |
| Approx. 1592     | 1592 | 1592 | 1592 | 1592 |
| Approx. 1593     | 1593 | 1593 | 1593 | 1593 |
| Approx. 1594     | 1594 | 1594 | 1594 | 1594 |
| Approx. 1595     | 1595 | 1595 | 1595 | 1595 |
| Approx. 1596     | 1596 | 1596 | 1596 | 1596 |
| Approx. 1597     | 1597 | 1597 | 1597 | 1597 |
| Approx. 1598     | 1598 | 1598 | 1598 | 1598 |
| Approx. 1599     | 1599 | 1599 | 1599 | 1599 |
| Approx. 1600     | 1600 | 1600 | 1600 | 1600 |

[illegible]

| Aspect of Disease     | N     | P     | SE    | W     |
|-----------------------|-------|-------|-------|-------|
| Attitude              | 1     | 2     | 3     | 4     |
| Learn to Cope         | 10574 | 10573 | 10572 | 10575 |
| Get Used to It        | 0.61  | 0.75  | 0.61  | 0.75  |
| Put Up With It        | 1.00  | 1.00  | 1.00  | 1.00  |
| Learn to Live With It | 1.81  | 3.21  | 4.60  | 7.11  |
| Get Used to It        | 0.25  | 0.85  | 1.76  | 0.43  |
| Learn to Live With It | 0.92  | 0.90  | 0.91  | 0.90  |
| Learn to Live With It | 1.00  | 1.00  | 1.00  | 1.00  |
| Learn to Live With It | 1.00  | 1.00  | 1.00  | 1.00  |
| Learn to Live With It | 1.06  | 1.64  | 2.68  | 2.52  |
| Learn to Live With It | 1.00  | 1.00  | 1.00  | 1.00  |
| Learn to Live With It | 0.9   | 0.8   | 0.8   | 0.8   |
| Learn to Live With It | 1.35  | 7.27  | 9.85  | 4.53  |

| Signal Timing Optimization          |       |       |       |       |
|-------------------------------------|-------|-------|-------|-------|
| Algorithm                           | Y     | B     | S     | W     |
| Level of Sign                       | 15074 | 15113 | 15072 | 15075 |
| Control Type                        | Perm  | Perm  | Perm  | Perm  |
| Signal Type                         | P     | P     | P     | P     |
| C Queue Length                      | 80.00 | 80.00 | 62.00 | 80.00 |
| OP Movement/Phase Timing            | 0     | 0     | 0     | 0     |
| A. Through Traffic per Cycle        | 4.00  | 4.00  | 4.00  | 4.00  |
| B. Saturation Flow                  | 2.00  | 2.00  | 2.00  | 2.00  |
| HP Permitted Saturation Loss Time   | 4.00  | 2.00  | 2.00  | 2.00  |
| B. Queue Length Time                | 2.00  | 2.00  | 2.00  | 2.00  |
| Green Time Start                    | 0     | 0.00  | 0     | 0.00  |
| Green Time End                      | 36.00 | 36.00 | 36.00 | 36.00 |
| C. Actuated Green Time              | 36.00 | 15.1  | 36.00 | 15.1  |
| C. Effective Green Time             | 36.00 | 15.1  | 36.00 | 15.1  |
| PC Queue Type                       | 0.01  | 0.00  | 0.01  | 0.00  |
| Initial Volume Saturation Flow Rate | 0.32  | 0.10  | 0.40  | 0.14  |
| Control Line Group                  | Y     | Y     |       |       |

[illegible]

| Production and Supply Aggregated Matrix |      |    |      |      |    |      |      |    |      |      |    |      |
|-----------------------------------------|------|----|------|------|----|------|------|----|------|------|----|------|
| Product                                 | L    |    |      | G    |    |      | S    |    |      | W    |    |      |
| Material                                | LI   | IT | RI   | LI   | IT | RI   | LI   | IT | RI   | LI   | IT | RI   |
| go plants in Green                      | 0.00 |    | 0.00 | 0.00 |    | 0.00 | 0.00 |    | 0.00 | 0.00 |    | 0.00 |
| OSGing - design Production Occupancy    | 0.00 |    | 0.00 | 0.00 |    | 0.00 | 0.00 |    | 0.00 | 0.00 |    | 0.00 |
| OSG - Salesperson Production Occupancy  | 0.00 |    | 0.00 | 0.00 |    | 0.00 | 0.00 |    | 0.00 | 0.00 |    | 0.00 |
| Appl - Supply/Supplier                  | 1.00 |    | 1.00 | 1.00 |    | 1.00 | 1.00 |    | 1.00 | 1.00 |    | 1.00 |
| Appl - Supply/Supplier                  | 1.00 |    | 1.00 | 1.00 |    | 1.00 | 1.00 |    | 1.00 | 1.00 |    | 1.00 |
| Appl - Supply/Supplier                  | 1.00 |    | 1.00 | 1.00 |    | 1.00 | 1.00 |    | 1.00 | 1.00 |    | 1.00 |

Atlantic Ocean, Portugal

Arbeitskreis „Glossar-Entwurf“

**Postscript**

## Node 2033: S College Ave &amp; SE 8th St

Control Type TWSC  
 Method HCM 6th Edition  
 d1, Average Delay 2.09  
 Worst Case Delay 17.17  
 Worst Case LOS C

## Volume and Adjustments

| Approach              | N (Major) |        |       | E     |       |       | S (Major) |        |       | W     |       |       |
|-----------------------|-----------|--------|-------|-------|-------|-------|-----------|--------|-------|-------|-------|-------|
| Movement              | L1        | T      | R1    | L1    | T     | R1    | L1        | T      | R1    | L1    | T     | R1    |
| Base Volume           | 5.00      | 159.00 | 5.00  | 5.00  | 5.00  | 8.00  | 5.00      | 249.00 | 7.00  | 26.00 | 12.00 | 5.00  |
| PHF, Peak-hour factor | 0.650     | 0.650  | 0.650 | 0.650 | 0.650 | 0.650 | 0.650     | 0.650  | 0.650 | 0.650 | 0.650 | 0.650 |
| V, Adjusted Volume    | 7.69      | 244.62 | 7.69  | 7.69  | 7.69  | 12.31 | 7.69      | 383.08 | 10.77 | 40.00 | 18.46 | 7.69  |

## Pedestrians

| Approach                 | N (Major) |   |    | E     |       |       | S (Major) |   |    | W     |       |       |
|--------------------------|-----------|---|----|-------|-------|-------|-----------|---|----|-------|-------|-------|
| Movement                 | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    |
| vx, Flow (Ped/hr)        | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |
| w, Lane Width (ft)       | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  |
| fpb, Percent Blockage    | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |   |    | E      |        |        | S (Major) |   |    | W      |        |        |
|------------------------------------------------|-----------|---|----|--------|--------|--------|-----------|---|----|--------|--------|--------|
| Movement                                       | L1        | T | R1 | L1     | T      | R1     | L1        | T | R1 | L1     | T      | R1     |
| Rank                                           | 2         | 1 | 1  | 4      | 3      | 2      | 2         | 1 | 1  | 4      | 3      | 2      |
| vx, Volume                                     | 7.69      |   |    | 7.69   | 7.69   | 12.31  | 7.69      |   |    | 40.00  | 18.46  | 7.69   |
| Conflicting Volume (Veh)                       | 393.85    |   |    | 680.77 | 671.54 | 388.46 | 252.31    |   |    | 677.69 | 673.08 | 248.46 |
| Conflicting Volume (Ped)                       | 0.00      |   |    | 0.00   | 0.00   | 0.00   | 0.00      |   |    | 0.00   | 0.00   | 0.00   |
| Conflicting Volume                             | 393.85    |   |    | 680.77 | 671.54 | 388.46 | 252.31    |   |    | 677.69 | 673.08 | 248.46 |
| Two-Stage Gap Acceptance                       |           |   |    | No     | No     |        |           |   |    | No     | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |   |    |        |        |        |           |   |    |        |        |        |
| cp, Potential Capacity                         | 1175.69   |   |    | 367.25 | 379.89 | 664.16 | 1324.76   |   |    | 368.99 | 379.12 | 795.19 |
| Capacity                                       | 1175.69   |   |    | 345.99 | 374.19 | 664.16 | 1324.76   |   |    | 352.41 | 373.43 | 795.19 |

## Critical Headway and Follow-Up Headway

| Approach                                       | N (Major) |      |    | E    |      |      | S (Major) |   |    | W    |      |      |
|------------------------------------------------|-----------|------|----|------|------|------|-----------|---|----|------|------|------|
| Movement                                       | L1        | T    | R1 | L1   | T    | R1   | L1        | T | R1 | L1   | T    | R1   |
| tc, base, Base Critical Headway                | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 |
| tc, base, I, Base Critical Headway (Stage I)   |           |      |    |      |      |      |           |   |    |      |      |      |
| tc, base, II, Base Critical Headway (Stage II) |           |      |    |      |      |      |           |   |    |      |      |      |
| tc, hv, Heavy Vehicles Adjustment Factor       | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |   |    | 1.00 | 1.00 | 1.00 |
| Phv, % Heavy Vehicles                          | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 |
| tc, G, Grade Adjustment Factor                 | 0.00      |      |    | 0.20 | 0.20 | 0.10 | 0.00      |   |    | 0.20 | 0.20 | 0.10 |
| G, % Grade                                     |           | 0.00 |    |      | 0.00 |      | 0.00      |   |    |      | 0.00 |      |
| T3, It, Geometry Adjustment Factor             | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 |
| tc, Critical Headway                           | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 |
| tc, I, Critical Headway (Stage I)              |           |      |    |      |      |      |           |   |    |      |      |      |
| tc, II, Critical Headway (Stage II)            |           |      |    |      |      |      |           |   |    |      |      |      |
| tf, base, Base Follow-Up Headway               | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 |
| tf, hv, Heavy Vehicles Adjustment Factor       | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |   |    | 0.90 | 0.90 | 0.90 |
| tf, Follow-Up Headway                          | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |        |      | E      |        |        | S (Major) |        |       | W      |        |        |
|----------------------|-----------|--------|------|--------|--------|--------|-----------|--------|-------|--------|--------|--------|
| Movement             | L1        | T      | R1   | L1     | T      | R1     | L1        | T      | R1    | L1     | T      | R1     |
| vx, Volume           | 7.69      | 244.62 | 7.69 | 7.69   | 7.69   | 12.31  | 7.69      | 383.08 | 10.77 | 40.00  | 18.46  | 7.69   |
| cmx, Capacity        | 1175.69   |        |      | 345.99 | 374.19 | 664.16 | 1324.76   |        |       | 352.41 | 373.43 | 795.19 |
| V / C                | 0.01      |        |      | 0.02   | 0.02   | 0.02   | 0.01      |        |       | 0.11   | 0.05   | 0.01   |
| d, Delay             | 8.08      |        |      | 15.93  | 15.14  | 10.94  | 7.73      |        |       | 17.17  | 16.60  | 11.48  |
| LOS                  | A         |        |      | C      | C      | B      | A         |        |       | C      | C      | B      |
| dA, Approach Delay   |           | 0.24   |      |        | 13.49  |        |           | 0.15   |       |        | 16.35  |        |
| Approach LOS         |           |        |      |        | B      |        |           |        |       |        | C      |        |
| dRank1, Rank 1 Delay |           | 0.06   |      |        |        |        |           | 0.06   |       |        |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) |           | E         |           | S (Major) |           | W         |           |
|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Lane                  | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    |
| Movements             | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 |
| vx, Volume            | 260.00    | 27.69     | 401.54    | 66.15     |           |           |           |           |
| Flared Storage Size   |           |           |           |           |           |           |           |           |
| cmx, Capacity         | 1175.69   | 451.59    | 1324.76   | 383.24    |           |           |           |           |
| V / C                 | 0.22      | 0.06      | 0.30      | 0.17      |           |           |           |           |
| Q95, 95% Queue Length | 0.02      | 0.20      | 0.02      | 0.62      |           |           |           |           |
| d, Delay              | 8.08      | 13.49     | 7.73      | 16.35     |           |           |           |           |
| LOS                   |           | B         |           | C         |           |           |           |           |
| dA, Approach Delay    | 0.24      | 13.49     | 0.15      | 16.35     |           |           |           |           |
| Approach LOS          |           | B         |           | C         |           |           |           |           |

## Node 2034: S College Ave &amp; SE 8th St

Control Type TWSC  
 Method HCM 6th Edition  
 dI, Average Delay 1.67  
 Worst Case Delay 16.62  
 Worst Case LOS C

## Volume and Adjustments

| Approach              | N (Major) |        |       | E     |       |       | S (Major) |        |       | W     |       |       |
|-----------------------|-----------|--------|-------|-------|-------|-------|-----------|--------|-------|-------|-------|-------|
| Movement              | L1        | T      | R1    | L1    | T     | R1    | L1        | T      | R1    | L1    | T     | R1    |
| Base Volume           | 5.00      | 152.00 | 5.00  | 7.00  | 5.00  | 10.00 | 12.00     | 253.00 | 13.00 | 8.00  | 5.00  | 17.00 |
| PHF, Peak-hour factor | 0.650     | 0.650  | 0.650 | 0.650 | 0.650 | 0.650 | 0.650     | 0.650  | 0.650 | 0.650 | 0.650 | 0.650 |
| V, Adjusted Volume    | 7.69      | 233.85 | 7.69  | 10.77 | 7.69  | 15.38 | 18.46     | 389.23 | 20.00 | 12.31 | 7.69  | 26.15 |

## Pedestrians

| Approach                 | N (Major) |   |    | E     |       |       | S (Major) |   |    | W     |       |       |
|--------------------------|-----------|---|----|-------|-------|-------|-----------|---|----|-------|-------|-------|
| Movement                 | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    |
| vx, Flow (Ped/hr)        | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |
| w, Lane Width (ft)       | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  |
| fpb, Percent Blockage    | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |   |    | E      |        |        | S (Major) |   |    | W      |        |        |
|------------------------------------------------|-----------|---|----|--------|--------|--------|-----------|---|----|--------|--------|--------|
| Movement                                       | L1        | T | R1 | L1     | T      | R1     | L1        | T | R1 | L1     | T      | R1     |
| Rank                                           | 2         | 1 | 1  | 4      | 3      | 2      | 2         | 1 | 1  | 4      | 3      | 2      |
| vx, Volume                                     | 7.69      |   |    | 10.77  | 7.69   | 15.38  | 18.46     |   |    | 12.31  | 7.69   | 26.15  |
| Conflicting Volume (Veh)                       | 409.23    |   |    | 706.15 | 693.08 | 399.23 | 241.54    |   |    | 700.77 | 699.23 | 237.69 |
| Conflicting Volume (Ped)                       | 0.00      |   |    | 0.00   | 0.00   | 0.00   | 0.00      |   |    | 0.00   | 0.00   | 0.00   |
| Conflicting Volume                             | 409.23    |   |    | 706.15 | 693.08 | 399.23 | 241.54    |   |    | 700.77 | 699.23 | 237.69 |
| Two-Stage Gap Acceptance                       |           |   |    | No     | No     |        |           |   |    | No     | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |   |    |        |        |        |           |   |    |        |        |        |
| cpv, Potential Capacity                        | 1160.49   |   |    | 353.17 | 369.24 | 654.98 | 1336.81   |   |    | 356.11 | 368.26 | 808.23 |
| Capacity                                       | 1160.49   |   |    | 329.58 | 359.85 | 654.98 | 1336.81   |   |    | 335.45 | 356.93 | 806.23 |

## Critical Headway and Follow-Up Headway

| Approach                                      | N (Major) |      |    | E    |      |      | S (Major) |   |    | W    |      |      |
|-----------------------------------------------|-----------|------|----|------|------|------|-----------|---|----|------|------|------|
| Movement                                      | L1        | T    | R1 | L1   | T    | R1   | L1        | T | R1 | L1   | T    | R1   |
| tc, base, Base Critical Headway               | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 |
| tc, base I, Base Critical Headway (Stage I)   |           |      |    |      |      |      |           |   |    |      |      |      |
| tc, base II, Base Critical Headway (Stage II) |           |      |    |      |      |      |           |   |    |      |      |      |
| tc, HV, Heavy Vehicles Adjustment Factor      | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |   |    | 1.00 | 1.00 | 1.00 |
| Pliv, % Heavy Vehicles                        | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 |
| tc, G, Grade Adjustment Factor                | 0.00      |      |    | 0.20 | 0.20 | 0.10 | 0.00      |   |    | 0.20 | 0.20 | 0.10 |
| G, % Grade                                    |           | 0.00 |    |      | 0.00 |      | 0.00      |   |    |      | 0.00 |      |
| T3, LT, Geometry Adjustment Factor            | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 |
| tc, Critical Headway                          | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 |
| tc I, Critical Headway (Stage I)              |           |      |    |      |      |      |           |   |    |      |      |      |
| tc II, Critical Headway (Stage II)            |           |      |    |      |      |      |           |   |    |      |      |      |
| lf, base, Base Follow-Up Headway              | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 |
| lf, hv, Heavy Vehicles Adjustment Factor      | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |   |    | 0.90 | 0.90 | 0.90 |
| lf, Follow-Up Headway                         | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |        |      | E      |        |        | S (Major) |        |       | W      |        |        |
|----------------------|-----------|--------|------|--------|--------|--------|-----------|--------|-------|--------|--------|--------|
| Movement             | L1        | T      | R1   | L1     | T      | R1     | L1        | T      | R1    | L1     | T      | R1     |
| vx, Volume           | 7.69      | 233.85 | 7.69 | 10.77  | 7.69   | 15.38  | 18.46     | 389.23 | 20.00 | 12.31  | 7.69   | 26.15  |
| cmx, Capacity        | 1160.49   |        |      | 329.58 | 359.85 | 654.98 | 1336.81   |        |       | 335.45 | 356.93 | 806.23 |
| V / C                | 0.01      |        |      | 0.03   | 0.02   | 0.02   | 0.01      |        |       | 0.04   | 0.02   | 0.03   |
| d, Delay             | 6.12      |        |      | 16.62  | 15.70  | 11.19  | 7.73      |        |       | 16.44  | 15.79  | 10.17  |
| LOS                  | A         |        |      | C      | C      | B      | A         |        |       | C      | C      | B      |
| dA, Approach Delay   |           | 0.25   |      |        | 13.94  |        |           | 0.33   |       |        | 12.78  |        |
| Approach LOS         |           |        |      |        | B      |        |           |        |       |        | B      |        |
| dRank1, Rank 1 Delay |           | 0.06   |      |        |        |        |           | 0.14   |       |        |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) |           | E         |           | S (Major) |           | W         |           |
|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Lane                  | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    |
| Movements             | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 |
| vx, Volume            | 249.23    | 33.85     | 427.69    |           |           | 46.15     |           |           |
| Flared Storage Size   |           |           |           |           |           |           |           |           |
| cmx, Capacity         | 1160.49   | 436.50    | 1336.81   |           |           | 508.97    |           |           |
| V / C                 | 0.21      | 0.08      | 0.32      |           |           | 0.09      |           |           |
| Q95, 95% Queue Length | 0.02      | 0.25      | 0.04      |           |           | 0.30      |           |           |
| d, Delay              | 8.12      | 13.94     | 7.73      |           |           | 12.78     |           |           |
| LOS                   |           | B         |           |           |           | B         |           |           |
| dA, Approach Delay    | 0.25      | 13.94     | 0.33      |           |           | 12.78     |           |           |
| Approach LOS          |           | B         |           |           |           | B         |           |           |



## Node 2035: S College Ave &amp; SE 10th St

Control Type TWSC  
 Method HCM 6th Edition  
 dI, Average Delay 1.29  
 Worst Case Delay 23.44  
 Worst Case LOS C

## Volume and Adjustments

| Approach              | N (Major) |        |       | E     |       |       | S (Major) |        |       | W     |       |       |
|-----------------------|-----------|--------|-------|-------|-------|-------|-----------|--------|-------|-------|-------|-------|
| Movement              | L1        | T      | R1    | L1    | T     | R1    | L1        | T      | R1    | L1    | T     | R1    |
| Base Volume           | 5.00      | 258.00 | 5.00  | 5.00  | 5.00  | 5.00  | 6.00      | 355.00 | 5.00  | 9.00  | 5.00  | 15.00 |
| PHF, Peak-hour factor | 0.650     | 0.650  | 0.650 | 0.650 | 0.650 | 0.650 | 0.650     | 0.650  | 0.650 | 0.650 | 0.650 | 0.650 |
| V, Adjusted Volume    | 7.69      | 393.85 | 7.69  | 7.69  | 7.69  | 7.69  | 9.23      | 546.15 | 7.69  | 13.85 | 7.69  | 23.08 |

## Pedestrians

| Approach                 | N (Major) |   |    | E     |       |       | S (Major) |   |    | W     |       |       |
|--------------------------|-----------|---|----|-------|-------|-------|-----------|---|----|-------|-------|-------|
| Movement                 | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    |
| vx, Flow (Ped/hr)        | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |
| w, Lane Width (ft)       | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  |
| fpb, Percent Blockage    | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |   |    | E      |        |        | S (Major) |   |    | W      |        |        |
|------------------------------------------------|-----------|---|----|--------|--------|--------|-----------|---|----|--------|--------|--------|
| Movement                                       | L1        | T | R1 | L1     | T      | R1     | L1        | T | R1 | L1     | T      | R1     |
| Rank                                           | 2         | 1 | 1  | 4      | 3      | 2      | 2         | 1 | 1  | 4      | 3      | 2      |
| vx, Volume                                     | 7.69      |   |    | 7.69   | 7.69   | 7.69   | 9.23      |   |    | 13.85  | 7.69   | 23.08  |
| Conflicting Volume (Veh)                       | 553.85    |   |    | 996.92 | 985.38 | 550.00 | 401.54    |   |    | 989.23 | 985.38 | 397.69 |
| Conflicting Volume (Ped)                       | 0.00      |   |    | 0.00   | 0.00   | 0.00   | 0.00      |   |    | 0.00   | 0.00   | 0.00   |
| Conflicting Volume                             | 553.85    |   |    | 996.92 | 985.38 | 550.00 | 401.54    |   |    | 989.23 | 985.38 | 397.69 |
| Two-Stage Gap Acceptance                       |           |   |    | No     | No     |        |           |   |    | No     | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |   |    |        |        |        |           |   |    |        |        |        |
| cp, Potential Capacity                         | 1026.51   |   |    | 224.88 | 249.94 | 538.65 | 1168.07   |   |    | 227.60 | 249.94 | 656.29 |
| Capacity                                       | 1026.51   |   |    | 208.39 | 244.69 | 538.65 | 1168.07   |   |    | 215.48 | 244.69 | 656.29 |

## Critical Headway and Follow-Up Headway

| Approach                                     | N (Major) |      |    | E    |      |      | S (Major) |   |    | W    |      |      |
|----------------------------------------------|-----------|------|----|------|------|------|-----------|---|----|------|------|------|
| Movement                                     | L1        | T    | R1 | L1   | T    | R1   | L1        | T | R1 | L1   | T    | R1   |
| tc,base, Base Critical Headway               | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 |
| tc,base,I, Base Critical Headway (Stage I)   |           |      |    |      |      |      |           |   |    |      |      |      |
| tc,base,II, Base Critical Headway (Stage II) |           |      |    |      |      |      |           |   |    |      |      |      |
| tc,HV, Heavy Vehicles Adjustment Factor      | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |   |    | 1.00 | 1.00 | 1.00 |
| Phv, % Heavy Vehicles                        | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 |
| tc,G, Grade Adjustment Factor                | 0.00      |      |    | 0.20 | 0.20 | 0.10 | 0.00      |   |    | 0.20 | 0.20 | 0.10 |
| G, % Grade                                   |           | 0.00 |    |      | 0.00 |      | 0.00      |   |    |      | 0.00 |      |
| T3,lt, Geometry Adjustment Factor            | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 |
| tc, Critical Headway                         | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 |
| tc,I, Critical Headway (Stage I)             |           |      |    |      |      |      |           |   |    |      |      |      |
| tc,II, Critical Headway (Stage II)           |           |      |    |      |      |      |           |   |    |      |      |      |
| lf,base, Base Follow-Up Headway              | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 |
| lf,hv, Heavy Vehicles Adjustment Factor      | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |   |    | 0.90 | 0.90 | 0.90 |
| lf, Follow-Up Headway                        | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |        |      | E      |        |        | S (Major) |        |      | W      |        |        |
|----------------------|-----------|--------|------|--------|--------|--------|-----------|--------|------|--------|--------|--------|
| Movement             | L1        | T      | R1   | L1     | T      | R1     | L1        | T      | R1   | L1     | T      | R1     |
| vx, Volume           | 7.69      | 393.85 | 7.69 | 7.69   | 7.69   | 7.69   | 9.23      | 546.15 | 7.69 | 13.85  | 7.69   | 23.08  |
| cmx, Capacity        | 1026.51   |        |      | 208.39 | 244.69 | 538.65 | 1168.07   |        |      | 215.48 | 244.69 | 656.29 |
| V / C                | 0.01      |        |      | 0.04   | 0.03   | 0.01   | 0.01      |        |      | 0.06   | 0.03   | 0.04   |
| d, Delay             | 8.53      |        |      | 23.44  | 20.87  | 12.84  | 8.11      |        |      | 23.30  | 21.30  | 12.07  |
| LOS                  | A         |        |      | C      | C      | B      | A         |        |      | C      | C      | B      |
| dA, Approach Delay   |           | 0.16   |      |        | 19.05  |        |           | 0.13   |      |        | 17.15  |        |
| Approach LOS         |           |        |      |        | C      |        |           |        |      |        | C      |        |
| dRank1, Rank 1 Delay |           | 0.08   |      |        |        |        |           | 0.09   |      |        |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) |           |           | E         |           |           | S (Major) |           |           | W         |           |           |
|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Lane                  | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    |
| Movements             | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 |
| vx, Volume            | 409.23    | 23.08     | 563.08    |           |           |           |           |           |           |           |           |           |
| Flared Storage Size   |           |           |           |           |           |           |           |           |           |           |           |           |
| cmx, Capacity         | 1026.51   | 279.28    | 1168.07   |           |           |           |           |           |           |           |           |           |
| V / C                 | 0.40      | 0.08      | 0.48      |           |           |           |           |           |           |           |           |           |
| Q95, 95% Queue Length | 0.02      | 0.27      | 0.02      |           |           |           |           |           |           |           |           |           |
| d, Delay              | 8.53      | 19.05     | 8.11      |           |           |           |           |           |           |           |           |           |
| LOS                   |           | C         |           |           |           |           |           |           |           |           |           |           |
| dA, Approach Delay    | 0.16      | 19.05     | 0.13      |           |           |           |           |           |           |           |           |           |
| Approach LOS          |           | C         |           |           |           |           |           |           |           |           |           |           |

10/11/2011 10:40 AM Removal LT and RT Lane 03-11-2011 10:40 AM 2035

## Node 2037: S College and 13th 13th St

Control Type TWSC  
 Method HCM 6th Edition  
 dI, Average Delay 0.32  
 Worst Case Delay 15.06  
 Worst Case LOS C

## Volume and Adjustments

| Approach              | N (Major) |       | S (Major) |        | W     |       |
|-----------------------|-----------|-------|-----------|--------|-------|-------|
| Movement              | T         | R1    | L1        | T      | L1    | R1    |
| Base Volume           | 176.00    | 5.00  | 5.00      | 315.00 | 5.00  | 5.00  |
| PHF, Peak-hour factor | 0.650     | 0.650 | 0.650     | 0.650  | 0.650 | 0.650 |
| V, Adjusted Volume    | 270.77    | 7.69  | 7.69      | 484.62 | 7.69  | 7.69  |

## Pedestrians

| Approach                 | N (Major) |    | S (Major) |   | W     |       |
|--------------------------|-----------|----|-----------|---|-------|-------|
| Movement                 | T         | R1 | L1        | T | L1    | R1    |
| vx, Flow (Ped/hr)        |           |    | 0.00      |   | 0.00  | 0.00  |
| w, Lane Width (ft)       |           |    | 12.00     |   | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) |           |    | 3.50      |   | 3.50  | 3.50  |
| fpb, Percent Blockage    |           |    | 0.00      |   | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |    | S (Major) |   | W      |        |
|------------------------------------------------|-----------|----|-----------|---|--------|--------|
| Movement                                       | T         | R1 | L1        | T | L1     | R1     |
| Rank                                           | 1         | 1  | 2         | 1 | 3      | 2      |
| vx, Volume                                     |           |    | 7.69      |   | 7.69   | 7.69   |
| Conflicting Volume (Veh)                       |           |    | 278.46    |   | 774.62 | 274.62 |
| Conflicting Volume (Ped)                       |           |    | 0.00      |   | 0.00   | 0.00   |
| Conflicting Volume                             |           |    | 278.46    |   | 774.62 | 274.62 |
| Two-Stage Gap Acceptance                       |           |    |           |   | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |    | 1295.92   |   | 369.39 | 768.96 |
| cpx, Potential Capacity                        |           |    | 1295.92   |   | 366.39 | 768.96 |
| Capacity                                       |           |    | 1295.92   |   | 366.39 | 768.96 |

## Critical Headway and Follow-Up Headway

| Approach                                       | N (Major) |      | S (Major) |   | W    |      |
|------------------------------------------------|-----------|------|-----------|---|------|------|
| Movement                                       | T         | R1   | L1        | T | L1   | R1   |
| tc, base, Base Critical Headway                |           |      | 4.10      |   | 7.10 | 6.20 |
| tc, base, I, Base Critical Headway (Stage I)   |           |      |           |   |      |      |
| tc, base, II, Base Critical Headway (Stage II) |           |      |           |   |      |      |
| tc, HV, Heavy Vehicles Adjustment Factor       |           |      | 1.00      |   | 1.00 | 1.00 |
| Phv, % Heavy Vehicles                          |           |      | 0.00      |   | 0.00 | 0.00 |
| tc, G, Grade Adjustment Factor                 |           |      | 0.00      |   | 0.20 | 0.10 |
| G, % Grade                                     |           | 0.00 | 0.00      |   | 0.00 |      |
| T3, It, Geometry Adjustment Factor             |           |      | 0.00      |   | 0.70 | 0.00 |
| tc, Critical Headway                           |           |      | 4.10      |   | 6.40 | 6.20 |
| tc, I, Critical Headway (Stage I)              |           |      |           |   |      |      |
| tc, II, Critical Headway (Stage II)            |           |      |           |   |      |      |
| tf, base, Base Follow-Up Headway               |           |      | 2.20      |   | 3.50 | 3.30 |
| tf, hv, Heavy Vehicles Adjustment Factor       |           |      | 0.90      |   | 0.90 | 0.90 |
| tf, Follow-Up Headway                          |           |      | 2.20      |   | 3.50 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |      | S (Major) |        | W      |        |
|----------------------|-----------|------|-----------|--------|--------|--------|
| Movement             | T         | R1   | L1        | T      | L1     | R1     |
| vx, Volume           | 270.77    | 7.69 | 7.69      | 484.62 | 7.69   | 7.69   |
| cmx, Capacity        |           |      | 1295.92   |        | 366.39 | 768.96 |
| V / C                |           |      | 0.01      |        | 0.02   | 0.01   |
| d, Delay             |           |      | 7.79      |        | 15.06  | 9.91   |
| LOS                  |           |      | A         |        | C      | A      |
| dA, Approach Delay   |           | 0.00 |           | 0.12   |        | 12.49  |
| Approach LOS         |           |      |           |        |        | B      |
| dRank1, Rank 1 Delay |           | 0.00 |           | 0.06   |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) | S (Major) | W      |
|-----------------------|-----------|-----------|--------|
| Lane                  | Lane 1    | Lane 1    | Lane 1 |
| Movements             | T, R1     | L1, T     | L1, R1 |
| vx, Volume            | 278.46    | 492.31    | 15.38  |
| Flared Storage Size   |           |           |        |
| cmx, Capacity         |           | 1295.92   | 496.31 |
| V / C                 |           | 0.38      | 0.03   |
| Q95, 95% Queue Length |           | 0.02      | 0.10   |
| d, Delay              |           | 7.79      | 12.49  |
| LOS                   |           |           | B      |
| dA, Approach Delay    |           | 0.00      | 12.49  |
| Approach LOS          |           |           | B      |

| Node 2034 - S College Ave & I-590 |  |  |  |  |  |  |  |  |  |               |        |  |
|-----------------------------------|--|--|--|--|--|--|--|--|--|---------------|--------|--|
|                                   |  |  |  |  |  |  |  |  |  | Control Type  | Signal |  |
|                                   |  |  |  |  |  |  |  |  |  | Vehicle       | 10.15  |  |
|                                   |  |  |  |  |  |  |  |  |  | Average Delay | 13.15  |  |
|                                   |  |  |  |  |  |  |  |  |  | Average LOS   | B      |  |
|                                   |  |  |  |  |  |  |  |  |  | VIC           | 0.53   |  |
|                                   |  |  |  |  |  |  |  |  |  | Lost Time     | 0      |  |

| Volume and Adjustments by Movement |     |     |     |     |  |  |  |  |  |  |  |  |
|------------------------------------|-----|-----|-----|-----|--|--|--|--|--|--|--|--|
| Approach                           | N   | E   | S   | W   |  |  |  |  |  |  |  |  |
| Left Turn                          | 0   | 0   | 0   | 0   |  |  |  |  |  |  |  |  |
| Thru                               | 100 | 100 | 100 | 100 |  |  |  |  |  |  |  |  |
| Right Turn                         | 0   | 0   | 0   | 0   |  |  |  |  |  |  |  |  |
| Left Turn                          | 0   | 0   | 0   | 0   |  |  |  |  |  |  |  |  |
| Thru                               | 100 | 100 | 100 | 100 |  |  |  |  |  |  |  |  |
| Right Turn                         | 0   | 0   | 0   | 0   |  |  |  |  |  |  |  |  |
| Left Turn                          | 0   | 0   | 0   | 0   |  |  |  |  |  |  |  |  |
| Thru                               | 100 | 100 | 100 | 100 |  |  |  |  |  |  |  |  |
| Right Turn                         | 0   | 0   | 0   | 0   |  |  |  |  |  |  |  |  |

| Volume and Adjustments by Lane Group |     |     |     |     |  |  |  |  |  |  |  |  |
|--------------------------------------|-----|-----|-----|-----|--|--|--|--|--|--|--|--|
| Approach                             | N   | E   | S   | W   |  |  |  |  |  |  |  |  |
| Left Turn                            | 0   | 0   | 0   | 0   |  |  |  |  |  |  |  |  |
| Thru                                 | 100 | 100 | 100 | 100 |  |  |  |  |  |  |  |  |
| Right Turn                           | 0   | 0   | 0   | 0   |  |  |  |  |  |  |  |  |
| Left Turn                            | 0   | 0   | 0   | 0   |  |  |  |  |  |  |  |  |
| Thru                                 | 100 | 100 | 100 | 100 |  |  |  |  |  |  |  |  |
| Right Turn                           | 0   | 0   | 0   | 0   |  |  |  |  |  |  |  |  |
| Left Turn                            | 0   | 0   | 0   | 0   |  |  |  |  |  |  |  |  |
| Thru                                 | 100 | 100 | 100 | 100 |  |  |  |  |  |  |  |  |
| Right Turn                           | 0   | 0   | 0   | 0   |  |  |  |  |  |  |  |  |

| Signal Timing Parameters |       |       |       |       |  |  |  |  |  |  |  |  |
|--------------------------|-------|-------|-------|-------|--|--|--|--|--|--|--|--|
| Approach                 | N     | E     | S     | W     |  |  |  |  |  |  |  |  |
| Left Turn                | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                     | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn               | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Left Turn                | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                     | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn               | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Left Turn                | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                     | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn               | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Left Turn                | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                     | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn               | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |

| Capacity, Control Delay, and Level of Service Determination |       |       |       |       |  |  |  |  |  |  |  |  |
|-------------------------------------------------------------|-------|-------|-------|-------|--|--|--|--|--|--|--|--|
| Approach                                                    | N     | E     | S     | W     |  |  |  |  |  |  |  |  |
| Left Turn                                                   | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                                                        | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn                                                  | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Left Turn                                                   | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                                                        | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn                                                  | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Left Turn                                                   | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                                                        | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn                                                  | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Left Turn                                                   | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                                                        | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn                                                  | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |

| Level of Service |       |       |       |       |  |  |  |  |  |  |  |  |
|------------------|-------|-------|-------|-------|--|--|--|--|--|--|--|--|
| Approach         | N     | E     | S     | W     |  |  |  |  |  |  |  |  |
| Left Turn        | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru             | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn       | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Left Turn        | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru             | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn       | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Left Turn        | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru             | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn       | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Left Turn        | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru             | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn       | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |

| Signal Timing Parameters |       |       |       |       |  |  |  |  |  |  |  |  |
|--------------------------|-------|-------|-------|-------|--|--|--|--|--|--|--|--|
| Approach                 | N     | E     | S     | W     |  |  |  |  |  |  |  |  |
| Left Turn                | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                     | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn               | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Left Turn                | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                     | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn               | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Left Turn                | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                     | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn               | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Left Turn                | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                     | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn               | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |

| Level of Service Determination for Permitted Phasing |       |       |       |       |  |  |  |  |  |  |  |  |
|------------------------------------------------------|-------|-------|-------|-------|--|--|--|--|--|--|--|--|
| Approach                                             | N     | E     | S     | W     |  |  |  |  |  |  |  |  |
| Left Turn                                            | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                                                 | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn                                           | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Left Turn                                            | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                                                 | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn                                           | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Left Turn                                            | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                                                 | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn                                           | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Left Turn                                            | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                                                 | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn                                           | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |

| Permitted Phasing Adjustment Factors |       |       |       |       |  |  |  |  |  |  |  |  |
|--------------------------------------|-------|-------|-------|-------|--|--|--|--|--|--|--|--|
| Approach                             | N     | E     | S     | W     |  |  |  |  |  |  |  |  |
| Left Turn                            | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                                 | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn                           | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Left Turn                            | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                                 | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn                           | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Left Turn                            | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                                 | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn                           | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |

| Permitted Phasing Adjustment Factors |       |       |       |       |  |  |  |  |  |  |  |  |
|--------------------------------------|-------|-------|-------|-------|--|--|--|--|--|--|--|--|
| Approach                             | N     | E     | S     | W     |  |  |  |  |  |  |  |  |
| Left Turn                            | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                                 | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn                           | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Left Turn                            | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                                 | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn                           | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Left Turn                            | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                                 | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn                           | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |

| Permitted Phasing Adjustment Factors |       |       |       |       |  |  |  |  |  |  |  |  |
|--------------------------------------|-------|-------|-------|-------|--|--|--|--|--|--|--|--|
| Approach                             | N     | E     | S     | W     |  |  |  |  |  |  |  |  |
| Left Turn                            | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                                 | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn                           | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Left Turn                            | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                                 | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn                           | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Left Turn                            | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Thru                                 | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |
| Right Turn                           | 10.00 | 10.00 | 10.00 | 10.00 |  |  |  |  |  |  |  |  |

## Node 2039: SE 3rd &amp; Ash Ave

Control Type TWSC  
 Method HCM 6th Edition  
 di, Average Delay 9.31  
 Worst Case Delay 11.6  
 Worst Case LOS B

## Volume and Adjustments

| Approach              | N     |        |       | E (Major) |       |       | S     |        |       | W (Major) |       |       |
|-----------------------|-------|--------|-------|-----------|-------|-------|-------|--------|-------|-----------|-------|-------|
| Movement              | L1    | T      | R1    | L1        | T     | R1    | L1    | T      | R1    | L1        | T     | R1    |
| Base Volume           | 5.00  | 78.00  | 5.00  | 5.00      | 9.00  | 6.00  | 5.00  | 129.00 | 5.00  | 5.00      | 13.00 | 5.00  |
| PHF, Peak-hour factor | 0.650 | 0.650  | 0.650 | 0.650     | 0.650 | 0.650 | 0.650 | 0.650  | 0.650 | 0.650     | 0.650 | 0.650 |
| V, Adjusted Volume    | 7.69  | 120.00 | 7.69  | 7.69      | 13.85 | 9.23  | 7.69  | 198.46 | 7.69  | 7.69      | 20.00 | 7.69  |

## Pedestrians

| Approach                 | N     |       |       | E (Major) |   |    | S     |       |       | W (Major) |   |    |
|--------------------------|-------|-------|-------|-----------|---|----|-------|-------|-------|-----------|---|----|
| Movement                 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 |
| vx, Flow (Ped/hr)        | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    |
| w, Lane Width (ft)       | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    |
| Sp, Walking Speed (ft/s) | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    |
| fpb, Percent Blockage    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    |

## Capacity of Movements below Rank 1

| Approach                                       | N      |        |         | E (Major) |   |    | S      |        |         | W (Major) |   |    |
|------------------------------------------------|--------|--------|---------|-----------|---|----|--------|--------|---------|-----------|---|----|
| Movement                                       | L1     | T      | R1      | L1        | T | R1 | L1     | T      | R1      | L1        | T | R1 |
| Rank                                           | 4      | 3      | 2       | 2         | 1 | 1  | 4      | 3      | 2       | 2         | 1 | 1  |
| vx, Volume                                     | 7.69   | 120.00 | 7.69    | 7.69      |   |    | 7.69   | 198.46 | 7.69    | 7.69      |   |    |
| Conflicting Volume (Veh)                       | 176.15 | 76.92  | 18.46   | 27.69     |   |    | 135.92 | 77.69  | 23.85   | 23.08     |   |    |
| Conflicting Volume (Ped)                       | 0.00   | 0.00   | 0.00    | 0.00      |   |    | 0.00   | 0.00   | 0.00    | 0.00      |   |    |
| Conflicting Volume                             | 176.15 | 76.92  | 18.46   | 27.69     |   |    | 135.92 | 77.69  | 23.85   | 23.08     |   |    |
| Two-Stage Gap Acceptance                       | No     | No     |         |           |   |    | No     | No     |         |           |   |    |
| Number of Storage Spaces in Median Refuge Area | 790.70 | 817.24 | 1065.74 | 1599.01   |   |    | 838.58 | 816.45 | 1058.50 | 1605.18   |   |    |
| cpx, Potential Capacity                        | 631.83 | 809.29 | 1065.74 | 1599.01   |   |    | 732.47 | 808.51 | 1058.50 | 1605.18   |   |    |

## Critical Headway and Follow Up Headway

| Approach                                     | N    |      |      | E (Major) |   |    | S    |      |      | W (Major) |   |    |
|----------------------------------------------|------|------|------|-----------|---|----|------|------|------|-----------|---|----|
| Movement                                     | L1   | T    | R1   | L1        | T | R1 | L1   | T    | R1   | L1        | T | R1 |
| tc,base, Base Critical Headway               | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    |
| tc,base.I, Base Critical Headway (Stage I)   |      |      |      |           |   |    |      |      |      |           |   |    |
| tc,base.II, Base Critical Headway (Stage II) |      |      |      |           |   |    |      |      |      |           |   |    |
| tc,HV, Heavy Vehicles Adjustment Factor      | 1.00 | 1.00 | 1.00 | 1.00      |   |    | 1.00 | 1.00 | 1.00 | 1.00      |   |    |
| Pliv, % Heavy Vehicles                       | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    |
| tc,G, Grade Adjustment Factor                | 0.20 | 0.20 | 0.10 | 0.00      |   |    | 0.20 | 0.20 | 0.10 | 0.00      |   |    |
| G, % Grade                                   |      | 0.00 |      | 0.00      |   |    |      | 0.00 |      | 0.00      |   |    |
| T3,lt, Geometry Adjustment Factor            | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    |
| tc, Critical Headway                         | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    |
| tc.I, Critical Headway (Stage I)             |      |      |      |           |   |    |      |      |      |           |   |    |
| tc.II, Critical Headway (Stage II)           |      |      |      |           |   |    |      |      |      |           |   |    |
| lf,base, Base Follow-Up Headway              | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    |
| lf,hv, Heavy Vehicles Adjustment Factor      | 0.90 | 0.90 | 0.90 | 0.90      |   |    | 0.90 | 0.90 | 0.90 | 0.90      |   |    |
| lf, Follow-Up Headway                        | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    |

## Delay and Level of Service by Movement

| Approach             | N      |        |         | E (Major) |       |      | S      |        |         | W (Major) |       |      |
|----------------------|--------|--------|---------|-----------|-------|------|--------|--------|---------|-----------|-------|------|
| Movement             | L1     | T      | R1      | L1        | T     | R1   | L1     | T      | R1      | L1        | T     | R1   |
| vx, Volume           | 7.69   | 120.00 | 7.69    | 7.69      | 13.85 | 9.23 | 7.69   | 198.46 | 7.69    | 7.69      | 20.00 | 7.69 |
| cmx, Capacity        | 631.83 | 809.29 | 1065.74 | 1599.01   |       |      | 732.47 | 808.51 | 1058.50 | 1605.18   |       |      |
| V / C                | 0.01   | 0.15   | 0.01    | 0.00      |       |      | 0.01   | 0.25   | 0.01    | 0.00      |       |      |
| d, Delay             | 11.60  | 10.35  | 9.28    | 7.26      |       |      | 11.50  | 11.03  | 9.98    | 7.25      |       |      |
| LOS                  | B      | B      | A       | A         |       |      | B      | B      | A       | A         |       |      |
| dA, Approach Delay   |        | 10.36  |         | 1.82      |       |      |        | 11.01  |         | 1.58      |       |      |
| Approach LOS         |        | B      |         |           |       |      |        | B      |         |           |       |      |
| dRank1, Rank 1 Delay |        |        |         | 0.04      |       |      |        |        |         | 0.04      |       |      |

## Delay and Level of Service by Lane

| Approach              | N         | E (Major) | S         | W (Major) |
|-----------------------|-----------|-----------|-----------|-----------|
| Lane                  | Lane 1    | Lane 1    | Lane 1    | Lane 1    |
| Movements             | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 |
| vx, Volume            | 135.38    | 30.77     | 213.85    | 35.38     |
| Flared Storage Size   |           |           |           |           |
| cmx, Capacity         | 807.45    | 1599.01   | 812.38    | 1605.18   |
| V / C                 | 0.17      | 0.02      | 0.26      | 0.02      |
| Q95, 95% Queue Length | 0.60      | 0.01      | 1.07      | 0.01      |
| d, Delay              | 10.36     | 7.26      | 11.01     | 7.25      |
| LOS                   | B         |           | B         |           |
| dA, Approach Delay    | 10.36     | 1.82      | 11.01     | 1.58      |
| Approach LOS          | B         |           | B         |           |

## Intersection Capacity Analysis Summary Page

Analysis Time: Wed Mar 11 11:13:19  
 Driving Side: Right  
 Analysis Period: 1 Hours

| Number | Name                       | Control Type | V/C  | Avg Delay | Avg LOS | Max Delay | Max LOS |
|--------|----------------------------|--------------|------|-----------|---------|-----------|---------|
| 2030   | College & Whitman          | Signalized   | 0.59 | 14.63     | B       | 15.82     | B       |
| 2031   | N College & SE 3rd St.     | TWSC         | 0.00 | 1.21      | A       | 15.54     | C       |
| 2032   | S College Ave & SW 4th St  | Signalized   | 0.78 | 15.45     | B       | 27.30     | C       |
| 2033   | S College Ave & SE 6th St  | TWSC         | 0.00 | 2.09      | A       | 17.17     | C       |
| 2034   | S College Ave & SE 8th St  | TWSC         | 0.00 | 1.67      | A       | 16.62     | C       |
| 2035   | S College Ave & SE 10th St | TWSC         | 0.00 | 1.29      | A       | 23.44     | C       |
| 2036   | S College Ave & SE 12th St | Signalized   | 0.51 | 10.87     | B       | 23.25     | C       |
| 2037   | S College and 13th 13th St | TWSC         | 0.00 | 0.32      | A       | 15.06     | C       |
| 2038   | S College Ave & Lampart    | Signalized   | 0.59 | 13.15     | B       | 23.18     | C       |
| 2039   | SE 3rd & Ash Ave           | TWSC         | 0.00 | 9.31      | A       | 11.60     | B       |

**Keywords:** child sexual abuse, child sexual exploitation, child sexual abuse, child sexual exploitation, child sexual abuse, child sexual exploitation



## Node 2031: N College &amp; SE 3rd St

Control Type TWSC  
 Method HCM 6th Edition  
 dI, Average Delay 1.21  
 Worst Case Delay 15.54  
 Worst Case LOS C

## Volume and Adjustments

| Approach              | N (Major) |        |       | E     |       |       | S (Major) |        |       | W     |       |       |
|-----------------------|-----------|--------|-------|-------|-------|-------|-----------|--------|-------|-------|-------|-------|
| Movement              | L1        | T      | R1    | L1    | T     | R1    | L1        | T      | R1    | L1    | T     | R1    |
| Base Volume           | 7.00      | 172.00 | 5.00  | 7.00  | 5.00  | 6.00  | 6.00      | 218.00 | 19.00 | 5.00  | 5.00  | 5.00  |
| PHF, Peak-hour factor | 0.650     | 0.650  | 0.650 | 0.650 | 0.650 | 0.650 | 0.650     | 0.650  | 0.650 | 0.650 | 0.650 | 0.650 |
| V, Adjusted Volume    | 10.77     | 284.62 | 7.69  | 10.77 | 7.69  | 9.23  | 9.23      | 335.38 | 29.23 | 7.69  | 7.69  | 7.69  |

## Pedestrians

| Approach                 | N (Major) |   |    | E     |       |       | S (Major) |   |    | W     |       |       |
|--------------------------|-----------|---|----|-------|-------|-------|-----------|---|----|-------|-------|-------|
| Movement                 | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    |
| vx, Flow (Ped/hr)        | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |
| w, Lane Width (ft)       | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  |
| fpb, Percent Blockage    | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |   |    | E      |        |        | S (Major) |   |    | W      |        |        |
|------------------------------------------------|-----------|---|----|--------|--------|--------|-----------|---|----|--------|--------|--------|
| Movement                                       | L1        | T | R1 | L1     | T      | R1     | L1        | T | R1 | L1     | T      | R1     |
| Rank                                           | 2         | 1 | 1  | 4      | 3      | 2      | 2         | 1 | 1  | 4      | 3      | 2      |
| vx, Volume                                     | 10.77     |   |    | 10.77  | 7.69   | 9.23   | 9.23      |   |    | 7.69   | 7.69   | 7.69   |
| Conflicting Volume (Veh)                       | 364.62    |   |    | 666.15 | 662.31 | 350.00 | 272.31    |   |    | 666.92 | 673.08 | 268.46 |
| Conflicting Volume (Ped)                       | 0.00      |   |    | 0.00   | 0.00   | 0.00   | 0.00      |   |    | 0.00   | 0.00   | 0.00   |
| Conflicting Volume                             | 364.62    |   |    | 666.15 | 662.31 | 350.00 | 272.31    |   |    | 666.92 | 673.08 | 268.46 |
| Two-Stage Gap Acceptance                       |           |   |    | No     | No     |        |           |   |    | No     | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |   |    |        |        |        |           |   |    |        |        |        |
| cpk, Potential Capacity                        | 1205.10   |   |    | 375.80 | 384.54 | 697.93 | 1302.65   |   |    | 375.16 | 379.12 | 775.06 |
| Capacity                                       | 1205.10   |   |    | 360.61 | 377.09 | 697.93 | 1302.65   |   |    | 359.07 | 371.78 | 775.06 |

## Critical Headway and Follow-Up Headway

| Approach                                     | N (Major) |      |    | E    |      |      | S (Major) |      |    | W    |      |      |
|----------------------------------------------|-----------|------|----|------|------|------|-----------|------|----|------|------|------|
| Movement                                     | L1        | T    | R1 | L1   | T    | R1   | L1        | T    | R1 | L1   | T    | R1   |
| tc,base, Base Critical Headway               | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 |
| tc,base,I, Base Critical Headway (Stage I)   |           |      |    |      |      |      |           |      |    |      |      |      |
| tc,base,II, Base Critical Headway (Stage II) |           |      |    |      |      |      |           |      |    |      |      |      |
| tc,HV, Heavy Vehicles Adjustment Factor      | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |      |    | 1.00 | 1.00 | 1.00 |
| Phv, % Heavy Vehicles                        | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 |
| tc,G, Grade Adjustment Factor                | 0.00      |      |    | 0.20 | 0.20 | 0.10 | 0.00      |      |    | 0.20 | 0.20 | 0.10 |
| G, % Grade                                   |           | 0.00 |    |      | 0.00 |      |           | 0.00 |    |      | 0.00 |      |
| T3,II, Geometry Adjustment Factor            | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 |
| tc, Critical Headway                         | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 |
| tc,I, Critical Headway (Stage I)             |           |      |    |      |      |      |           |      |    |      |      |      |
| tc,II, Critical Headway (Stage II)           |           |      |    |      |      |      |           |      |    |      |      |      |
| tf,base, Base Follow-Up Headway              | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 |
| tf,hv, Heavy Vehicles Adjustment Factor      | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |      |    | 0.90 | 0.90 | 0.90 |
| tf, Follow-Up Headway                        | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |        |      | E      |        |        | S (Major) |        |       | W      |        |        |
|----------------------|-----------|--------|------|--------|--------|--------|-----------|--------|-------|--------|--------|--------|
| Movement             | L1        | T      | R1   | L1     | T      | R1     | L1        | T      | R1    | L1     | T      | R1     |
| vx, Volume           | 10.77     | 284.62 | 7.69 | 10.77  | 7.69   | 9.23   | 9.23      | 335.38 | 29.23 | 7.69   | 7.69   | 7.69   |
| cmx, Capacity        | 1205.10   |        |      | 360.61 | 377.09 | 697.93 | 1302.65   |        |       | 359.07 | 371.78 | 775.06 |
| V / C                | 0.01      |        |      | 0.03   | 0.02   | 0.01   | 0.01      |        |       | 0.02   | 0.02   | 0.01   |
| d, Delay             | 8.01      |        |      | 15.54  | 15.11  | 10.72  | 7.78      |        |       | 15.47  | 15.13  | 10.09  |
| LOS                  | A         |        |      | C      | C      | B      | A         |        |       | C      | C      | B      |
| dA, Approach Delay   |           | 0.30   |      |        | 13.81  |        |           | 0.19   |       |        | 13.56  |        |
| Approach LOS         |           |        |      |        | B      |        |           |        |       |        | B      |        |
| dRank1, Rank 1 Delay |           | 0.08   |      |        |        |        |           | 0.07   |       |        |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) |           | E         |           | S (Major) |           | W         |           |
|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Lane                  | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    |
| Movements             | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 |
| vx, Volume            | 283.08    | 27.69     | 373.85    |           | 23.08     |           |           |           |
| Flared Storage Size   |           |           |           |           |           |           |           |           |
| cmx, Capacity         | 1205.10   | 436.18    | 1302.65   |           | 443.46    |           |           |           |
| V / C                 | 0.23      | 0.06      | 0.29      |           | 0.05      |           |           |           |
| Q95, 95% Queue Length | 0.03      | 0.20      | 0.02      |           | 0.16      |           |           |           |
| d, Delay              | 8.01      | 13.81     | 7.78      |           | 13.56     |           |           |           |
| LOS                   |           | B         |           |           | B         |           |           |           |
| dA, Approach Delay    | 0.30      | 13.81     | 0.19      |           | 13.56     |           |           |           |
| Approach LOS          |           | B         |           |           | B         |           |           |           |

**Researcher's Name:**

## Node 2033: S College Ave &amp; SE 8th St

Control Type TWSC  
 Method HCM 6th Edition  
 dI, Average Delay 2.09  
 Worst Case Delay 17.17  
 Worst Case LOS C

## Volume and Adjustments

| Approach              | N (Major) |        |       | E     |       |       | S (Major) |        |       | W     |       |       |
|-----------------------|-----------|--------|-------|-------|-------|-------|-----------|--------|-------|-------|-------|-------|
| Movement              | L1        | T      | R1    | L1    | T     | R1    | L1        | T      | R1    | L1    | T     | R1    |
| Base Volume           | 5.00      | 159.00 | 5.00  | 5.00  | 5.00  | 8.00  | 5.00      | 249.00 | 7.00  | 26.00 | 12.00 | 5.00  |
| PHF, Peak-hour factor | 0.850     | 0.850  | 0.850 | 0.850 | 0.850 | 0.850 | 0.850     | 0.850  | 0.850 | 0.850 | 0.850 | 0.850 |
| V, Adjusted Volume    | 7.69      | 244.82 | 7.69  | 7.69  | 7.69  | 12.31 | 7.69      | 383.08 | 10.77 | 40.00 | 18.46 | 7.69  |

## Pedestrians

| Approach                 | N (Major) |   |    | E     |       |       | S (Major) |   |    | W     |       |       |
|--------------------------|-----------|---|----|-------|-------|-------|-----------|---|----|-------|-------|-------|
| Movement                 | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    |
| vx, Flow (Ped/hr)        | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |
| w, Lane Width (ft)       | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  |
| fpb, Percent Blockage    | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |   |    | E      |        |        | S (Major) |   |    | W      |        |        |
|------------------------------------------------|-----------|---|----|--------|--------|--------|-----------|---|----|--------|--------|--------|
| Movement                                       | L1        | T | R1 | L1     | T      | R1     | L1        | T | R1 | L1     | T      | R1     |
| Rank                                           | 2         | 1 | 1  | 4      | 3      | 2      | 2         | 1 | 1  | 4      | 3      | 2      |
| vx, Volume                                     | 7.69      |   |    | 7.69   | 7.69   | 12.31  | 7.69      |   |    | 40.00  | 18.46  | 7.69   |
| Conflicting Volume (Veh)                       | 393.85    |   |    | 680.77 | 671.54 | 388.46 | 252.31    |   |    | 677.69 | 673.08 | 248.46 |
| Conflicting Volume (Ped)                       | 0.00      |   |    | 0.00   | 0.00   | 0.00   | 0.00      |   |    | 0.00   | 0.00   | 0.00   |
| Conflicting Volume                             | 393.85    |   |    | 680.77 | 671.54 | 388.46 | 252.31    |   |    | 677.69 | 673.08 | 248.46 |
| Two-Stage Gap Acceptance                       |           |   |    | No     | No     |        |           |   |    | No     | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |   |    |        |        |        |           |   |    |        |        |        |
| cpk, Potential Capacity                        | 1175.69   |   |    | 367.25 | 379.89 | 664.16 | 1324.76   |   |    | 368.99 | 379.12 | 795.19 |
| Capacity                                       | 1175.69   |   |    | 345.99 | 374.19 | 664.16 | 1324.76   |   |    | 352.41 | 373.43 | 795.19 |

## Critical Headway and Follow-Up Headway

| Approach                                       | N (Major) |      |    | E    |      |      | S (Major) |   |    | W    |      |      |
|------------------------------------------------|-----------|------|----|------|------|------|-----------|---|----|------|------|------|
| Movement                                       | L1        | T    | R1 | L1   | T    | R1   | L1        | T | R1 | L1   | T    | R1   |
| tc, base, Base Critical Headway                | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 |
| tc, base, I, Base Critical Headway (Stage I)   |           |      |    |      |      |      |           |   |    |      |      |      |
| tc, base, II, Base Critical Headway (Stage II) |           |      |    |      |      |      |           |   |    |      |      |      |
| tc, HV, Heavy Vehicles Adjustment Factor       | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |   |    | 1.00 | 1.00 | 1.00 |
| Phv, % Heavy Vehicles                          | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 |
| tc, G, Grade Adjustment Factor                 | 0.00      |      |    | 0.20 | 0.20 | 0.10 | 0.00      |   |    | 0.20 | 0.20 | 0.10 |
| G, % Grade                                     |           | 0.00 |    |      | 0.00 |      | 0.00      |   |    |      | 0.00 |      |
| T3, II, Geometry Adjustment Factor             | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 |
| tc, Critical Headway                           | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 |
| tc, I, Critical Headway (Stage I)              |           |      |    |      |      |      |           |   |    |      |      |      |
| tc, II, Critical Headway (Stage II)            |           |      |    |      |      |      |           |   |    |      |      |      |
| tf, base, Base Follow-Up Headway               | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 |
| tf, hv, Heavy Vehicles Adjustment Factor       | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |   |    | 0.90 | 0.90 | 0.90 |
| tf, Follow-Up Headway                          | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |        |      | E      |        |        | S (Major) |        |       | W      |        |        |
|----------------------|-----------|--------|------|--------|--------|--------|-----------|--------|-------|--------|--------|--------|
| Movement             | L1        | T      | R1   | L1     | T      | R1     | L1        | T      | R1    | L1     | T      | R1     |
| vx, Volume           | 7.69      | 244.82 | 7.69 | 7.69   | 7.69   | 12.31  | 7.69      | 383.08 | 10.77 | 40.00  | 18.46  | 7.69   |
| cmx, Capacity        | 1175.69   |        |      | 345.99 | 374.19 | 664.16 | 1324.76   |        |       | 352.41 | 373.43 | 795.19 |
| V / C                | 0.01      |        |      | 0.02   | 0.02   | 0.02   | 0.01      |        |       | 0.11   | 0.05   | 0.01   |
| d, Delay             | 8.08      |        |      | 15.93  | 15.14  | 10.94  | 7.73      |        |       | 17.17  | 16.60  | 11.48  |
| LOS                  | A         |        |      | C      | C      | B      | A         |        |       | C      | C      | B      |
| dA, Approach Delay   |           | 0.24   |      |        | 13.49  |        |           | 0.15   |       |        | 16.35  |        |
| Approach LOS         |           |        |      |        | B      |        |           |        |       |        | C      |        |
| dRank1, Rank 1 Delay |           | 0.06   |      |        |        |        |           | 0.06   |       |        |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) |           | E         | S (Major) |           | W         |
|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Lane                  | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    |
| Movements             | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 |
| vx, Volume            | 260.00    | 27.69     | 401.54    | 66.15     |           |           |
| Flared Storage Size   |           |           |           |           |           |           |
| cmx, Capacity         | 1175.69   | 451.59    | 1324.76   | 383.24    |           |           |
| V / C                 | 0.22      | 0.06      | 0.30      | 0.17      |           |           |
| Q95, 95% Queue Length | 0.02      | 0.20      | 0.02      | 0.62      |           |           |
| d, Delay              | 8.08      | 13.49     | 7.73      | 16.35     |           |           |
| LOS                   |           | B         | C         | C         |           |           |
| dA, Approach Delay    | 0.24      | 13.49     | 0.15      | 16.35     |           |           |
| Approach LOS          |           | B         | C         | C         |           |           |

## Node 2034: S College Ave &amp; SE 8th St

Control Type TWSC  
 Method HCM 6th Edition  
 d1, Average Delay 1.87  
 Worst Case Delay 16.62  
 Worst Case LOS C

## Volume and Adjustments

| Approach              | N (Major) |        |       | E     |       |       | S (Major) |        |       | W     |       |       |
|-----------------------|-----------|--------|-------|-------|-------|-------|-----------|--------|-------|-------|-------|-------|
|                       | L1        | T      | R1    | L1    | T     | R1    | L1        | T      | R1    | L1    | T     | R1    |
| Movement              |           |        |       |       |       |       |           |        |       |       |       |       |
| Base Volume           | 5.00      | 152.00 | 5.00  | 7.00  | 5.00  | 10.00 | 12.00     | 253.00 | 13.00 | 8.00  | 5.00  | 17.00 |
| PHF, Peak-hour factor | 0.650     | 0.650  | 0.650 | 0.650 | 0.650 | 0.650 | 0.650     | 0.650  | 0.650 | 0.650 | 0.650 | 0.650 |
| V, Adjusted Volume    | 7.69      | 233.85 | 7.69  | 10.77 | 7.69  | 15.38 | 18.46     | 389.23 | 20.00 | 12.31 | 7.69  | 26.15 |

## Pedestrians

| Approach                 | N (Major) |   |    | E     |       |       | S (Major) |   |    | W     |       |       |
|--------------------------|-----------|---|----|-------|-------|-------|-----------|---|----|-------|-------|-------|
|                          | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    |
| Movement                 |           |   |    |       |       |       |           |   |    |       |       |       |
| vx, Flow (Ped/hr)        | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |
| w, Lane Width (ft)       | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  |
| fpb, Percent Blockage    | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |   |    | E      |        |        | S (Major) |   |    | W      |        |        |
|------------------------------------------------|-----------|---|----|--------|--------|--------|-----------|---|----|--------|--------|--------|
|                                                | L1        | T | R1 | L1     | T      | R1     | L1        | T | R1 | L1     | T      | R1     |
| Movement                                       |           |   |    |        |        |        |           |   |    |        |        |        |
| Rank                                           | 2         | 1 | 1  | 4      | 3      | 2      | 2         | 1 | 1  | 4      | 3      | 2      |
| vx, Volume                                     | 7.69      |   |    | 10.77  | 7.69   | 15.38  | 18.46     |   |    | 12.31  | 7.69   | 26.15  |
| Conflicting Volume (Veh)                       | 409.23    |   |    | 706.15 | 693.08 | 399.23 | 241.54    |   |    | 700.77 | 699.23 | 237.69 |
| Conflicting Volume (Ped)                       | 0.00      |   |    | 0.00   | 0.00   | 0.00   | 0.00      |   |    | 0.00   | 0.00   | 0.00   |
| Conflicting Volume                             | 409.23    |   |    | 706.15 | 693.08 | 399.23 | 241.54    |   |    | 700.77 | 699.23 | 237.69 |
| Two-Stage Gap Acceptance                       |           |   |    | No     | No     |        |           |   |    | No     | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |   |    |        |        |        |           |   |    |        |        |        |
| capx, Potential Capacity                       | 1160.49   |   |    | 353.17 | 369.24 | 654.98 | 1336.81   |   |    | 358.11 | 366.26 | 805.23 |
| Capacity                                       | 1160.49   |   |    | 329.58 | 359.85 | 654.98 | 1336.81   |   |    | 335.45 | 356.93 | 806.23 |

## Critical Headway and Follow-Up Headway

| Approach                                       | N (Major) |      |    | E    |      |      | S (Major) |   |    | W    |      |      |
|------------------------------------------------|-----------|------|----|------|------|------|-----------|---|----|------|------|------|
|                                                | L1        | T    | R1 | L1   | T    | R1   | L1        | T | R1 | L1   | T    | R1   |
| Movement                                       |           |      |    |      |      |      |           |   |    |      |      |      |
| tc, base, Base Critical Headway                | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 |
| tc, base, I, Base Critical Headway (Stage I)   |           |      |    |      |      |      |           |   |    |      |      |      |
| tc, base, II, Base Critical Headway (Stage II) |           |      |    |      |      |      |           |   |    |      |      |      |
| tc, HV, Heavy Vehicles Adjustment Factor       | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |   |    | 1.00 | 1.00 | 1.00 |
| Phv, % Heavy Vehicles                          | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 |
| tc, G, Grade Adjustment Factor                 | 0.00      |      |    | 0.20 | 0.20 | 0.10 | 0.00      |   |    | 0.20 | 0.20 | 0.10 |
| G, % Grade                                     |           | 0.00 |    |      | 0.00 |      | 0.00      |   |    |      | 0.00 |      |
| T3, II, Geometry Adjustment Factor             | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 |
| tc, Critical Headway                           | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 |
| tc, I, Critical Headway (Stage I)              |           |      |    |      |      |      |           |   |    |      |      |      |
| tc, II, Critical Headway (Stage II)            |           |      |    |      |      |      |           |   |    |      |      |      |
| tf, base, Base Follow-Up Headway               | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 |
| tf, hv, Heavy Vehicles Adjustment Factor       | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |   |    | 0.90 | 0.90 | 0.90 |
| tf, Follow-Up Headway                          | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |        |      | E      |        |        | S (Major) |        |       | W      |        |        |
|----------------------|-----------|--------|------|--------|--------|--------|-----------|--------|-------|--------|--------|--------|
|                      | L1        | T      | R1   | L1     | T      | R1     | L1        | T      | R1    | L1     | T      | R1     |
| Movement             |           |        |      |        |        |        |           |        |       |        |        |        |
| vx, Volume           | 7.69      | 233.85 | 7.69 | 10.77  | 7.69   | 15.38  | 18.46     | 389.23 | 20.00 | 12.31  | 7.69   | 26.15  |
| cmx, Capacity        | 1160.49   |        |      | 329.58 | 359.85 | 654.98 | 1336.81   |        |       | 335.45 | 356.93 | 806.23 |
| V / C                | 0.01      |        |      | 0.03   | 0.02   | 0.02   | 0.01      |        |       | 0.04   | 0.02   | 0.03   |
| d, Delay             | 8.12      |        |      | 16.62  | 15.70  | 11.19  | 7.73      |        |       | 16.44  | 15.79  | 10.17  |
| LOS                  | A         |        |      | C      | C      | B      | A         |        |       | C      | C      | B      |
| dA, Approach Delay   |           | 0.25   |      |        | 13.94  |        |           | 0.33   |       |        | 12.78  |        |
| Approach LOS         |           |        |      |        | B      |        |           |        |       |        | B      |        |
| dRank1, Rank 1 Delay |           | 0.06   |      |        |        |        |           | 0.14   |       |        |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) |           | E         |           | S (Major) |           | W         |           |
|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                       | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    |
| Movements             | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 |
| vx, Volume            | 249.23    | 33.85     | 427.69    | 46.15     |           |           |           |           |
| Flared Storage Size   |           |           |           |           |           |           |           |           |
| cmx, Capacity         | 1160.49   | 436.50    | 1336.81   | 508.97    |           |           |           |           |
| V / C                 | 0.21      | 0.08      | 0.32      | 0.09      |           |           |           |           |
| Q95, 95% Queue Length | 0.02      | 0.25      | 0.04      | 0.30      |           |           |           |           |
| d, Delay              | 8.12      | 13.94     | 7.73      | 12.78     |           |           |           |           |
| LOS                   |           | B         |           | B         |           |           |           |           |
| dA, Approach Delay    | 0.25      | 13.94     | 0.33      | 12.78     |           |           |           |           |
| Approach LOS          |           | B         |           | B         |           |           |           |           |

## Node 2035: S College Ave &amp; SE 10th St

Control Type TWSC  
 Method HCM 6th Edition  
 dI, Average Delay 1.29  
 Worst Case Delay 23.44  
 Worst Case LOS C

## Volume and Adjustments

| Approach              | N (Major) |        |       | E     |       |       | S (Major) |        |       | W     |       |       |
|-----------------------|-----------|--------|-------|-------|-------|-------|-----------|--------|-------|-------|-------|-------|
| Movement              | L1        | T      | R1    | L1    | T     | R1    | L1        | T      | R1    | L1    | T     | R1    |
| Base Volume           | 5.00      | 258.00 | 5.00  | 5.00  | 5.00  | 5.00  | 6.00      | 355.00 | 5.00  | 9.00  | 5.00  | 15.00 |
| PHF, Peak-hour factor | 0.850     | 0.850  | 0.850 | 0.850 | 0.850 | 0.850 | 0.850     | 0.850  | 0.850 | 0.850 | 0.850 | 0.850 |
| V, Adjusted Volume    | 7.69      | 393.85 | 7.69  | 7.69  | 7.69  | 7.69  | 9.23      | 546.15 | 7.69  | 13.85 | 7.69  | 23.08 |

## Pedestrians

| Approach                 | N (Major) |   |    | E     |       |       | S (Major) |   |    | W     |       |       |
|--------------------------|-----------|---|----|-------|-------|-------|-----------|---|----|-------|-------|-------|
| Movement                 | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    |
| vx, Flow (Ped/hr)        | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |
| w, Lane Width (ft)       | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  |
| fpb, Percent Blockage    | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |   |    | E      |        |        | S (Major) |   |    | W      |        |        |
|------------------------------------------------|-----------|---|----|--------|--------|--------|-----------|---|----|--------|--------|--------|
| Movement                                       | L1        | T | R1 | L1     | T      | R1     | L1        | T | R1 | L1     | T      | R1     |
| Rank                                           | 2         | 1 | 1  | 4      | 3      | 2      | 2         | 1 | 1  | 4      | 3      | 2      |
| vx, Volume                                     | 7.69      |   |    | 7.69   | 7.69   | 7.69   | 9.23      |   |    | 13.85  | 7.69   | 23.08  |
| Conflicting Volume (Veh)                       | 553.85    |   |    | 986.92 | 985.38 | 550.00 | 401.54    |   |    | 989.23 | 985.38 | 397.69 |
| Conflicting Volume (Ped)                       | 0.00      |   |    | 0.00   | 0.00   | 0.00   | 0.00      |   |    | 0.00   | 0.00   | 0.00   |
| Conflicting Volume                             | 553.85    |   |    | 986.92 | 985.38 | 550.00 | 401.54    |   |    | 989.23 | 985.38 | 397.69 |
| Two-Stage Gap Acceptance                       |           |   |    | No     | No     |        |           |   |    | No     | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |   |    |        |        |        |           |   |    |        |        |        |
| cpx, Potential Capacity                        | 1026.51   |   |    | 224.88 | 249.94 | 538.65 | 1168.07   |   |    | 227.60 | 249.94 | 656.29 |
| Capacity                                       | 1026.51   |   |    | 208.39 | 244.69 | 538.65 | 1168.07   |   |    | 215.48 | 244.69 | 656.29 |

## Critical Headway and Follow-Up Headway

| Approach                                     | N (Major) |      |    | E    |      |      | S (Major) |   |    | W    |      |      |
|----------------------------------------------|-----------|------|----|------|------|------|-----------|---|----|------|------|------|
| Movement                                     | L1        | T    | R1 | L1   | T    | R1   | L1        | T | R1 | L1   | T    | R1   |
| tc,base, Base Critical Headway               | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 |
| tc,base,I, Base Critical Headway (Stage I)   |           |      |    |      |      |      |           |   |    |      |      |      |
| tc,base,II, Base Critical Headway (Stage II) |           |      |    |      |      |      |           |   |    |      |      |      |
| tc,HV, Heavy Vehicles Adjustment Factor      | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |   |    | 1.00 | 1.00 | 1.00 |
| Phv, % Heavy Vehicles                        | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 |
| tc,G, Grade Adjustment Factor                | 0.00      |      |    | 0.20 | 0.20 | 0.10 | 0.00      |   |    | 0.20 | 0.20 | 0.10 |
| G, % Grade                                   |           | 0.00 |    |      | 0.00 |      | 0.00      |   |    |      | 0.00 |      |
| T3,ft, Geometry Adjustment Factor            | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 |
| tc, Critical Headway                         | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 |
| tc,I, Critical Headway (Stage I)             |           |      |    |      |      |      |           |   |    |      |      |      |
| tc,II, Critical Headway (Stage II)           |           |      |    |      |      |      |           |   |    |      |      |      |
| lf,base, Base Follow-Up Headway              | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 |
| lf,HV, Heavy Vehicles Adjustment Factor      | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |   |    | 0.90 | 0.90 | 0.90 |
| lf, Follow-Up Headway                        | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |        |      | E      |        |        | S (Major) |        |      | W      |        |        |
|----------------------|-----------|--------|------|--------|--------|--------|-----------|--------|------|--------|--------|--------|
| Movement             | L1        | T      | R1   | L1     | T      | R1     | L1        | T      | R1   | L1     | T      | R1     |
| vx, Volume           | 7.69      | 393.85 | 7.69 | 7.69   | 7.69   | 7.69   | 9.23      | 546.15 | 7.69 | 13.85  | 7.69   | 23.08  |
| cmx, Capacity        | 1026.51   |        |      | 208.39 | 244.69 | 538.65 | 1168.07   |        |      | 215.48 | 244.69 | 656.29 |
| V/C                  | 0.01      |        |      | 0.04   | 0.03   | 0.01   | 0.01      |        |      | 0.06   | 0.03   | 0.04   |
| d, Delay             | 8.53      |        |      | 23.44  | 20.87  | 12.84  | 8.11      |        |      | 23.30  | 21.30  | 12.07  |
| LOS                  | A         |        |      | C      | C      | B      | A         |        |      | C      | C      | B      |
| dA, Approach Delay   |           | 0.18   |      |        | 19.05  |        |           | 0.13   |      |        | 17.15  |        |
| Approach LOS         |           |        |      |        | C      |        |           |        |      |        | C      |        |
| dRank1, Rank 1 Delay |           | 0.08   |      |        |        |        |           | 0.09   |      |        |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) |           | E         |           | S (Major) |           | W         |           |
|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Lane                  | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    |
| Movements             | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 |
| vx, Volume            | 409.23    | 23.08     | 589.08    | 44.62     |           |           |           |           |
| Flared Storage Size   |           |           |           |           |           |           |           |           |
| cmx, Capacity         | 1026.51   | 279.28    | 1168.07   | 340.94    |           |           |           |           |
| V/C                   | 0.40      | 0.08      | 0.48      | 0.13      |           |           |           |           |
| Q95, 95% Queue Length | 0.02      | 0.27      | 0.02      | 0.45      |           |           |           |           |
| d, Delay              | 8.53      | 19.05     | 8.11      | 17.15     |           |           |           |           |
| LOS                   |           | C         |           | C         |           |           |           |           |
| dA, Approach Delay    | 0.18      | 19.05     | 0.13      | 17.15     |           |           |           |           |
| Approach LOS          |           | C         |           | C         |           |           |           |           |

MOORE, D. D. & WYBEN

## Node 2037: S College and 13th 13th St

|                   |                 |
|-------------------|-----------------|
| Control Type      | TWSC            |
| Method            | HCM 6th Edition |
| dI, Average Delay | 0.32            |
| Worst Case Delay  | 15.06           |
| Worst Case LOS    | C               |

## Volume and Adjustments

| Approach              | N (Major) |       | S (Major) |        | W     |       |
|-----------------------|-----------|-------|-----------|--------|-------|-------|
|                       | T         | R1    | L1        | T      | L1    | R1    |
| Movement              |           |       |           |        |       |       |
| Base Volume           | 176.00    | 5.00  | 5.00      | 315.00 | 5.00  | 5.00  |
| PHF, Peak-hour factor | 0.650     | 0.650 | 0.650     | 0.650  | 0.650 | 0.650 |
| V, Adjusted Volume    | 270.77    | 7.69  | 7.69      | 484.62 | 7.69  | 7.69  |

## Pedestrians

| Approach                 | N (Major) |    | S (Major) |   | W     |       |
|--------------------------|-----------|----|-----------|---|-------|-------|
|                          | T         | R1 | L1        | T | L1    | R1    |
| Movement                 |           |    |           |   |       |       |
| vx, Flow (Ped/hr)        |           |    | 0.00      |   | 0.00  | 0.00  |
| w, Lane Width (ft)       |           |    | 12.00     |   | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) |           |    | 3.50      |   | 3.50  | 3.50  |
| fpb, Percent Blockage    |           |    | 0.00      |   | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |    | S (Major) |   | W      |        |
|------------------------------------------------|-----------|----|-----------|---|--------|--------|
|                                                | T         | R1 | L1        | T | L1     | R1     |
| Movement                                       |           |    |           |   |        |        |
| Rank                                           | 1         | 1  | 2         | 1 | 3      | 2      |
| vx, Volume                                     |           |    | 7.69      |   | 7.69   | 7.69   |
| Conflicting Volume (Veh)                       |           |    | 278.46    |   | 774.62 | 274.62 |
| Conflicting Volume (Ped)                       |           |    | 0.00      |   | 0.00   | 0.00   |
| Conflicting Volume                             |           |    | 278.46    |   | 774.62 | 274.62 |
| Two-Stage Gap Acceptance                       |           |    |           |   | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |    |           |   |        |        |
| cpv, Potential Capacity                        |           |    | 1295.92   |   | 369.39 | 768.96 |
| Capacity                                       |           |    | 1295.92   |   | 366.39 | 768.96 |

## Critical Headway and Follow Up Headway

| Approach                                     | N (Major) |      | S (Major) |   | W    |      |
|----------------------------------------------|-----------|------|-----------|---|------|------|
|                                              | T         | R1   | L1        | T | L1   | R1   |
| Movement                                     |           |      |           |   |      |      |
| tc,base, Base Critical Headway               |           |      | 4.10      |   | 7.10 | 6.20 |
| tc,base,I, Base Critical Headway (Stage I)   |           |      |           |   |      |      |
| tc,base,II, Base Critical Headway (Stage II) |           |      |           |   |      |      |
| tc,hv, Heavy Vehicles Adjustment Factor      |           |      | 1.00      |   | 1.00 | 1.00 |
| Phv, % Heavy Vehicles                        |           |      | 0.00      |   | 0.00 | 0.00 |
| tc,G, Grade Adjustment Factor                |           |      | 0.00      |   | 0.20 | 0.10 |
| G, % Grade                                   |           | 0.00 | 0.00      |   | 0.00 |      |
| T3,II, Geometry Adjustment Factor            |           |      | 0.00      |   | 0.70 | 0.00 |
| tc, Critical Headway                         |           |      | 4.10      |   | 6.40 | 6.20 |
| tc,I, Critical Headway (Stage I)             |           |      |           |   |      |      |
| tc,II, Critical Headway (Stage II)           |           |      |           |   |      |      |
| tf,base, Base Follow-Up Headway              |           |      | 2.20      |   | 3.50 | 3.30 |
| tf,hv, Heavy Vehicles Adjustment Factor      |           |      | 0.90      |   | 0.90 | 0.90 |
| tf, Follow-Up Headway                        |           |      | 2.20      |   | 3.50 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |      | S (Major) |        | W      |        |
|----------------------|-----------|------|-----------|--------|--------|--------|
|                      | T         | R1   | L1        | T      | L1     | R1     |
| Movement             |           |      |           |        |        |        |
| vx, Volume           | 270.77    | 7.69 | 7.69      | 484.62 | 7.69   | 7.69   |
| cmx, Capacity        |           |      | 1295.92   |        | 366.39 | 768.96 |
| V / C                |           |      | 0.01      |        | 0.02   | 0.01   |
| d, Delay             |           |      | 7.79      |        | 15.06  | 9.91   |
| LOS                  |           |      | A         |        | C      | A      |
| dA, Approach Delay   |           | 0.00 |           | 0.12   |        | 12.49  |
| Approach LOS         |           |      |           |        |        | B      |
| dRank1, Rank 1 Delay |           | 0.00 |           | 0.06   |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) | S (Major) | W      |
|-----------------------|-----------|-----------|--------|
|                       | Lane 1    | Lane 1    | Lane 1 |
| Movements             | T, R1     | L1, T     | L1, R1 |
| vx, Volume            | 278.46    | 492.31    | 15.38  |
| Flared Storage Size   |           |           |        |
| cmx, Capacity         |           | 1295.92   | 496.31 |
| V / C                 |           | 0.38      | 0.03   |
| Q95, 95% Queue Length |           | 0.02      | 0.10   |
| d, Delay              |           | 7.79      | 12.49  |
| LOS                   |           |           | B      |
| dA, Approach Delay    |           | 0.00      | 12.49  |
| Approach LOS          |           |           | B      |



\_\_\_\_\_

## Node 2039: SE 3rd &amp; Ash Ave

Control Type TWSC  
 Method HCM 6th Edition  
 dI, Average Delay 9.31  
 Worst Case Delay 11.6  
 Worst Case LOS B

## Volume and Adjustments

| Approach              | N     |        |       | E (Major) |       |       | S     |        |       | W (Major) |       |       |
|-----------------------|-------|--------|-------|-----------|-------|-------|-------|--------|-------|-----------|-------|-------|
| Movement              | L1    | T      | R1    | L1        | T     | R1    | L1    | T      | R1    | L1        | T     | R1    |
| Base Volume           | 5.00  | 78.00  | 5.00  | 5.00      | 9.00  | 6.00  | 5.00  | 129.00 | 5.00  | 5.00      | 13.00 | 5.00  |
| PHF, Peak-hour factor | 0.850 | 0.850  | 0.850 | 0.850     | 0.850 | 0.850 | 0.850 | 0.850  | 0.850 | 0.850     | 0.850 | 0.850 |
| V, Adjusted Volume    | 7.69  | 120.00 | 7.69  | 7.69      | 13.85 | 9.23  | 7.69  | 198.46 | 7.69  | 7.69      | 20.00 | 7.69  |

## Pedestrians

| Approach                 | N     |       |       | E (Major) |   |    | S     |       |       | W (Major) |   |    |
|--------------------------|-------|-------|-------|-----------|---|----|-------|-------|-------|-----------|---|----|
| Movement                 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 |
| vx, Flow (Ped/hr)        | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    |
| w, Lane Width (ft)       | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    |
| Sp, Walking Speed (ft/s) | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    |
| fpb, Percent Blockage    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    |

## Capacity of Movements below Rank 1

| Approach                                       | N      |        |         | E (Major) |   |    | S      |        |         | W (Major) |   |    |
|------------------------------------------------|--------|--------|---------|-----------|---|----|--------|--------|---------|-----------|---|----|
| Movement                                       | L1     | T      | R1      | L1        | T | R1 | L1     | T      | R1      | L1        | T | R1 |
| Rank                                           | 4      | 3      | 2       | 2         | 1 | 1  | 4      | 3      | 2       | 2         | 1 | 1  |
| vx, Volume                                     | 7.69   | 120.00 | 7.69    | 7.69      |   |    | 7.69   | 198.46 | 7.69    | 7.69      |   |    |
| Conflicting Volume (Veh)                       | 176.15 | 76.92  | 18.46   | 27.69     |   |    | 136.92 | 77.69  | 23.85   | 23.08     |   |    |
| Conflicting Volume (Ped)                       | 0.00   | 0.00   | 0.00    | 0.00      |   |    | 0.00   | 0.00   | 0.00    | 0.00      |   |    |
| Conflicting Volume                             | 176.15 | 76.92  | 18.46   | 27.69     |   |    | 136.92 | 77.69  | 23.85   | 23.08     |   |    |
| Two-Stage Gap Acceptance                       | No     | No     |         |           |   |    | No     | No     |         |           |   |    |
| Number of Storage Spaces in Median Refuge Area | 790.70 | 817.24 | 1065.74 | 1599.01   |   |    | 838.58 | 816.45 | 1058.50 | 1605.18   |   |    |
| cap, Potential Capacity                        | 631.83 | 809.29 | 1065.74 | 1599.01   |   |    | 732.47 | 808.51 | 1058.50 | 1605.18   |   |    |

## Critical Headway and Follow Up Headway

| Approach                                      | N    |      |      | E (Major) |      |    | S    |      |      | W (Major) |      |    |
|-----------------------------------------------|------|------|------|-----------|------|----|------|------|------|-----------|------|----|
| Movement                                      | L1   | T    | R1   | L1        | T    | R1 | L1   | T    | R1   | L1        | T    | R1 |
| tc, base, Base Critical Headway               | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    |
| tc, base I, Base Critical Headway (Stage I)   |      |      |      |           |      |    |      |      |      |           |      |    |
| tc, base II, Base Critical Headway (Stage II) |      |      |      |           |      |    |      |      |      |           |      |    |
| tc, HV, Heavy Vehicles Adjustment Factor      | 1.00 | 1.00 | 1.00 | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |      |    |
| Phv, % Heavy Vehicles                         | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    |
| tc, G, Grade Adjustment Factor                | 0.20 | 0.20 | 0.10 | 0.00      |      |    | 0.20 | 0.20 | 0.10 | 0.00      |      |    |
| G, % Grade                                    |      | 0.00 |      |           | 0.00 |    |      | 0.00 |      |           | 0.00 |    |
| TGA, Geometry Adjustment Factor               | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    |
| tc, Critical Headway                          | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    |
| tc I, Critical Headway (Stage I)              |      |      |      |           |      |    |      |      |      |           |      |    |
| tc II, Critical Headway (Stage II)            |      |      |      |           |      |    |      |      |      |           |      |    |
| tf, base, Base Follow-Up Headway              | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    |
| tf, hv, Heavy Vehicles Adjustment Factor      | 0.90 | 0.90 | 0.90 | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |      |    |
| tf, Follow-Up Headway                         | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    |

## Delay and Level of Service by Movement

| Approach             | N      |        |         | E (Major) |       |      | S      |        |         | W (Major) |       |      |
|----------------------|--------|--------|---------|-----------|-------|------|--------|--------|---------|-----------|-------|------|
| Movement             | L1     | T      | R1      | L1        | T     | R1   | L1     | T      | R1      | L1        | T     | R1   |
| vx, Volume           | 7.69   | 120.00 | 7.69    | 7.69      | 13.85 | 9.23 | 7.69   | 198.46 | 7.69    | 7.69      | 20.00 | 7.69 |
| cmx, Capacity        | 631.83 | 809.29 | 1065.74 | 1599.01   |       |      | 732.47 | 808.51 | 1058.50 | 1605.18   |       |      |
| V / C                | 0.01   | 0.15   | 0.01    | 0.00      |       |      | 0.01   | 0.25   | 0.01    | 0.00      |       |      |
| d, Delay             | 11.60  | 10.35  | 9.28    | 7.26      |       |      | 11.50  | 11.03  | 9.98    | 7.25      |       |      |
| LOS                  | B      | B      | A       | A         |       |      | B      | B      | A       | A         |       |      |
| dA, Approach Delay   |        | 10.36  |         |           | 1.82  |      |        | 11.01  |         |           | 1.58  |      |
| Approach LOS         |        | B      |         |           |       |      |        | B      |         |           |       |      |
| dRank1, Rank 1 Delay |        |        |         |           | 0.04  |      |        |        |         |           | 0.04  |      |

## Delay and Level of Service by Lane

| Approach              | N         |           |           | E (Major) |           |           | S         |           |           | W (Major) |           |           |
|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Lane                  | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    |
| Movements             | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 |
| vx, Volume            | 135.38    | 30.77     | 213.85    | 35.38     |           |           |           |           |           |           |           |           |
| Planned Storage Size  |           |           |           |           |           |           |           |           |           |           |           |           |
| cmx, Capacity         | 807.45    | 1599.01   | 812.38    | 1605.18   |           |           |           |           |           |           |           |           |
| V / C                 | 0.17      | 0.02      | 0.26      | 0.02      |           |           |           |           |           |           |           |           |
| Q95, 95% Queue Length | 0.60      | 0.01      | 1.07      | 0.01      |           |           |           |           |           |           |           |           |
| d, Delay              | 10.36     | 7.26      | 11.01     | 7.25      |           |           |           |           |           |           |           |           |
| LOS                   | B         |           | B         |           |           |           |           |           |           |           |           |           |
| dA, Approach Delay    | 10.36     | 1.82      | 11.01     | 1.58      |           |           |           |           |           |           |           |           |
| Approach LOS          | B         |           | B         |           |           |           |           |           |           |           |           |           |

## Intersection Capacity Analysis Summary Page

Analysis Time: Fri Sep 27 12:57:13 20  
 Driving Side: Right  
 Analysis Period: 1 Hours

| Number | Name                       | Control Type | V/C  | Avg Delay | Avg LOS | Max Delay | Max LOS |
|--------|----------------------------|--------------|------|-----------|---------|-----------|---------|
| 2030   | College & Whitman          | Signalized   | 0.53 | 21.21     | C       | 30.02     | C       |
| 2031   | N College & SE 3rd St      | TWSC         | 0.00 | 1.05      | A       | 13.24     | B       |
| 2032   | S College Ave & SW 4th St  | Signalized   | 0.47 | 25.33     | C       | 45.09     | D       |
| 2033   | S College Ave & SE 6th St  | TWSC         | 0.00 | 1.87      | A       | 13.57     | B       |
| 2034   | S College Ave & SE 8th St  | TWSC         | 0.00 | 2.31      | A       | 13.74     | B       |
| 2035   | S College Ave & SE 10th St | TWSC         | 0.00 | 1.18      | A       | 18.81     | C       |
| 2036   | S College Ave & SE 12th St | Signalized   | 0.55 | 21.92     | C       | 30.86     | C       |
| 2037   | S College and 13th 13th St | TWSC         | 0.00 | 0.37      | A       | 13.26     | B       |
| 2038   | S College Ave & Lampart    | Signalized   | 0.66 | 28.72     | C       | 42.24     | D       |
| 2039   | SE 3rd & Ash Ave           | TWSC         | 0.00 | 6.98      | A       | 9.59      | A       |

Book 2015: Chapter 8 Worksheet

Control Type  
Manual  
Average Delay  
C  
VOC  
0.53  
Lost Time  
22

Signalization  
Intersection  
21 21  
C  
0.53  
22

| Approach         | L  | T   | R  | L  | T   | R | L  | T   | R  | L  | T  | R  | L  | T   | R  |
|------------------|----|-----|----|----|-----|---|----|-----|----|----|----|----|----|-----|----|
| Volume           | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Peak Hour Volume | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Peak Hour Volume | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Adjusted Volume  | 21 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |

| Approach         | L  | T   | R  | L  | T   | R | L  | T   | R  | L  | T  | R  | L  | T   | R  |
|------------------|----|-----|----|----|-----|---|----|-----|----|----|----|----|----|-----|----|
| Volume           | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Peak Hour Volume | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Peak Hour Volume | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Adjusted Volume  | 21 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |

| Approach         | L  | T   | R  | L  | T   | R | L  | T   | R  | L  | T  | R  | L  | T   | R  |
|------------------|----|-----|----|----|-----|---|----|-----|----|----|----|----|----|-----|----|
| Volume           | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Peak Hour Volume | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Peak Hour Volume | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Adjusted Volume  | 21 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |

| Approach         | L  | T   | R  | L  | T   | R | L  | T   | R  | L  | T  | R  | L  | T   | R  |
|------------------|----|-----|----|----|-----|---|----|-----|----|----|----|----|----|-----|----|
| Volume           | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Peak Hour Volume | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Peak Hour Volume | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Adjusted Volume  | 21 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |

| Approach         | L  | T   | R  | L  | T   | R | L  | T   | R  | L  | T  | R  | L  | T   | R  |
|------------------|----|-----|----|----|-----|---|----|-----|----|----|----|----|----|-----|----|
| Volume           | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Peak Hour Volume | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Peak Hour Volume | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Adjusted Volume  | 21 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |

| Approach         | L  | T   | R  | L  | T   | R | L  | T   | R  | L  | T  | R  | L  | T   | R  |
|------------------|----|-----|----|----|-----|---|----|-----|----|----|----|----|----|-----|----|
| Volume           | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Peak Hour Volume | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Peak Hour Volume | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Adjusted Volume  | 21 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |

| Approach         | L  | T   | R  | L  | T   | R | L  | T   | R  | L  | T  | R  | L  | T   | R  |
|------------------|----|-----|----|----|-----|---|----|-----|----|----|----|----|----|-----|----|
| Volume           | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Peak Hour Volume | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Peak Hour Volume | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Adjusted Volume  | 21 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |

| Approach         | L  | T   | R  | L  | T   | R | L  | T   | R  | L  | T  | R  | L  | T   | R  |
|------------------|----|-----|----|----|-----|---|----|-----|----|----|----|----|----|-----|----|
| Volume           | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Peak Hour Volume | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Peak Hour Volume | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |
| Adjusted Volume  | 21 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |

| Approach | L  | T   | R  | L  | T   | R | L  | T   | R  | L  | T  | R  | L  | T   | R  |
|----------|----|-----|----|----|-----|---|----|-----|----|----|----|----|----|-----|----|
| Volume   | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |

| Approach | L  | T   | R  | L  | T   | R | L  | T   | R  | L  | T  | R  | L  | T   | R  |
|----------|----|-----|----|----|-----|---|----|-----|----|----|----|----|----|-----|----|
| Volume   | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |

| Approach | L  | T   | R  | L  | T   | R | L  | T   | R  | L  | T  | R  | L  | T   | R  |
|----------|----|-----|----|----|-----|---|----|-----|----|----|----|----|----|-----|----|
| Volume   | 15 | 270 | 84 | 26 | 142 | 5 | 78 | 730 | 53 | 38 | 97 | 85 | 21 | 270 | 84 |

## Node 2031: N College &amp; SE 3rd St

Control Type TWSC  
 Method HCM 8th Edition  
 df, Average Delay 1.05  
 Worst Case Delay 13.24  
 Worst Case LOS B

## Volume and Adjustments

| Approach              | N (Major) |        |       | E     |       |       | S (Major) |        |       | W     |       |       |
|-----------------------|-----------|--------|-------|-------|-------|-------|-----------|--------|-------|-------|-------|-------|
| Movement              | L1        | T      | R1    | L1    | T     | R1    | L1        | T      | R1    | L1    | T     | R1    |
| Base Volume           | 5.00      | 232.00 | 5.00  | 5.00  | 5.00  | 10.00 | 8.00      | 200.00 | 14.00 | 5.00  | 5.00  | 5.00  |
| PHF, Peak-hour factor | 0.900     | 0.900  | 0.900 | 0.900 | 0.900 | 0.900 | 0.900     | 0.900  | 0.900 | 0.900 | 0.900 | 0.900 |
| V, Adjusted Volume    | 5.58      | 257.78 | 5.58  | 6.67  | 5.58  | 11.11 | 8.89      | 222.22 | 15.56 | 5.56  | 5.56  | 5.56  |

## Pedestrians

| Approach                 | N (Major) |   |    | E     |       |       | S (Major) |   |    | W     |       |       |
|--------------------------|-----------|---|----|-------|-------|-------|-----------|---|----|-------|-------|-------|
| Movement                 | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    |
| vx, Flow (Ped/hr)        | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |
| w, Lane Width (ft)       | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  |
| fpb, Percent Blockage    | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |   |    | E      |        |        | S (Major) |   |    | W      |        |        |
|------------------------------------------------|-----------|---|----|--------|--------|--------|-----------|---|----|--------|--------|--------|
| Movement                                       | L1        | T | R1 | L1     | T      | R1     | L1        | T | R1 | L1     | T      | R1     |
| Rank                                           | 2         | 1 | 1  | 4      | 3      | 2      | 2         | 1 | 1  | 4      | 3      | 2      |
| vx, Volume                                     | 5.58      |   |    | 6.67   | 5.58   | 11.11  | 8.89      |   |    | 5.58   | 5.56   | 5.58   |
| Conflicting Volume (Veh)                       | 237.78    |   |    | 525.00 | 522.22 | 230.00 | 263.33    |   |    | 527.78 | 527.22 | 260.56 |
| Conflicting Volume (Ped)                       | 0.00      |   |    | 0.00   | 0.00   | 0.00   | 0.00      |   |    | 0.00   | 0.00   | 0.00   |
| Conflicting Volume                             | 237.78    |   |    | 525.00 | 522.22 | 230.00 | 263.33    |   |    | 527.78 | 527.22 | 260.56 |
| Two-Stage Gap Acceptance                       |           |   |    | No     | No     |        |           |   |    | No     | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |   |    |        |        |        |           |   |    |        |        |        |
| cpx, Potential Capacity                        | 1341.04   |   |    | 466.33 | 462.03 | 814.21 | 1312.53   |   |    | 464.35 | 459.03 | 782.96 |
| Capacity                                       | 1341.04   |   |    | 454.28 | 456.19 | 814.21 | 1312.53   |   |    | 449.39 | 453.23 | 782.96 |

## Critical Headway and Follow-Up Headway

| Approach                                     | N (Major) |      |    | E    |      |      | S (Major) |      |    | W    |      |      |
|----------------------------------------------|-----------|------|----|------|------|------|-----------|------|----|------|------|------|
| Movement                                     | L1        | T    | R1 | L1   | T    | R1   | L1        | T    | R1 | L1   | T    | R1   |
| tc,base, Base Critical Headway               | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 |
| tc,base,I, Base Critical Headway (Stage I)   |           |      |    |      |      |      |           |      |    |      |      |      |
| tc,base,II, Base Critical Headway (Stage II) |           |      |    |      |      |      |           |      |    |      |      |      |
| tc,HV, Heavy Vehicles Adjustment Factor      | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |      |    | 1.00 | 1.00 | 1.00 |
| Pttv, % Heavy Vehicles                       | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 |
| tc,G, Grade Adjustment Factor                | 1.00      |      |    | 0.20 | 0.20 | 0.10 | 1.00      |      |    | 0.20 | 0.20 | 0.10 |
| G, % Grade                                   |           | 0.00 |    |      | 0.00 |      |           | 0.00 |    |      | 0.00 |      |
| T3,It, Geometry Adjustment Factor            | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 |
| tc, Critical Headway                         | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 |
| tc,I, Critical Headway (Stage I)             |           |      |    |      |      |      |           |      |    |      |      |      |
| tc,II, Critical Headway (Stage II)           |           |      |    |      |      |      |           |      |    |      |      |      |
| lf,base, Base Follow-Up Headway              | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 |
| lf,hv, Heavy Vehicles Adjustment Factor      | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |      |    | 0.90 | 0.90 | 0.90 |
| lf, Follow-Up Headway                        | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |        |      | E      |        |        | S (Major) |        |       | W      |        |        |
|----------------------|-----------|--------|------|--------|--------|--------|-----------|--------|-------|--------|--------|--------|
| Movement             | L1        | T      | R1   | L1     | T      | R1     | L1        | T      | R1    | L1     | T      | R1     |
| vx, Volume           | 5.58      | 257.78 | 5.58 | 6.67   | 5.58   | 11.11  | 8.89      | 222.22 | 15.56 | 5.56   | 5.56   | 5.56   |
| cmx, Capacity        | 1341.04   |        |      | 454.28 | 456.19 | 814.21 | 1312.53   |        |       | 449.39 | 453.23 | 782.96 |
| V / C                | 0.00      |        |      | 0.01   | 0.01   | 0.01   | 0.01      |        |       | 0.01   | 0.01   | 0.01   |
| d, Delay             | 7.70      |        |      | 13.19  | 13.16  | 9.89   | 7.76      |        |       | 13.24  | 13.17  | 9.82   |
| LOS                  | A         |        |      | B      | B      | A      | A         |        |       | B      | B      | A      |
| dA, Approach Delay   |           | 0.16   |      |        | 11.51  |        |           | 0.28   |       |        | 12.07  |        |
| Approach LOS         |           |        |      |        | B      |        |           |        |       |        | B      |        |
| dRank1, Rank 1 Delay |           | 0.00   |      |        |        |        |           | 0.00   |       |        |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) |        | E         | S (Major) |        | W         |
|-----------------------|-----------|--------|-----------|-----------|--------|-----------|
| Lane                  | Lane 1    | Lane 2 | Lane 1    | Lane 1    | Lane 2 | Lane 1    |
| Movements             | T, R1     | T, R1  | L1, T, R1 | T, R1     | T, R1  | L1, T, R1 |
| vx, Volume            | 5.58      | 263.33 | 23.33     | 8.89      | 237.78 | 16.67     |
| Flared Storage Size   |           |        |           |           |        |           |
| cmx, Capacity         |           |        | 576.13    |           |        | 525.50    |
| V / C                 |           |        | 0.04      |           |        | 0.03      |
| Q95, 95% Queue Length |           |        | 0.13      |           |        | 0.10      |
| d, Delay              |           |        | 11.51     |           |        | 12.07     |
| LOS                   |           |        | B         |           |        | B         |
| dA, Approach Delay    |           | 0.16   | 11.51     |           | 0.28   | 12.07     |
| Approach LOS          |           |        | B         |           |        | B         |

New 2042 S-Curve Peak & SW-400 M

Control Type: Splitter  
 Method: HCM 2000 Edition  
 Average Delay: 25.33  
 Average LOS: C  
 V/C: 0.47  
 Loss Time: 15

| Volume and Aggregates by Movement | L    |      |      | T    |      |      | R    |      |      | S    |      |      | W    |      |      |
|-----------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Approach                          | L    | T    | R    | L    | T    | R    | L    | T    | R    | L    | T    | R    | L    | T    | R    |
| Left Lane                         | 14   | 281  | 33   | 44   | 47   | 13   | 37   | 371  | 27   | 40   | 63   | 23   |      |      |      |
| Thru Lane                         | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Right Lane                        | 16   | 312  | 27   | 49   | 52   | 11   | 41   | 351  | 30   | 51   | 70   | 24   |      |      |      |

| Volume and Aggregates by Lane Group | L    |      |      | T    |      |      | R    |      |      | S    |      |      | W    |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Approach                            | L    | T    | R    | L    | T    | R    | L    | T    | R    | L    | T    | R    | L    | T    | R    |
| Left Lane                           | 14   | 281  | 33   | 44   | 47   | 13   | 37   | 371  | 27   | 40   | 63   | 23   |      |      |      |
| Thru Lane                           | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Right Lane                          | 16   | 312  | 27   | 49   | 52   | 11   | 41   | 351  | 30   | 51   | 70   | 24   |      |      |      |

| Volume and Aggregates by Lane Group | L    |      |      | T    |      |      | R    |      |      | S    |      |      | W    |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Approach                            | L    | T    | R    | L    | T    | R    | L    | T    | R    | L    | T    | R    | L    | T    | R    |
| Left Lane                           | 14   | 281  | 33   | 44   | 47   | 13   | 37   | 371  | 27   | 40   | 63   | 23   |      |      |      |
| Thru Lane                           | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Right Lane                          | 16   | 312  | 27   | 49   | 52   | 11   | 41   | 351  | 30   | 51   | 70   | 24   |      |      |      |

| Volume and Aggregates by Lane Group | L    |      |      | T    |      |      | R    |      |      | S    |      |      | W    |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Approach                            | L    | T    | R    | L    | T    | R    | L    | T    | R    | L    | T    | R    | L    | T    | R    |
| Left Lane                           | 14   | 281  | 33   | 44   | 47   | 13   | 37   | 371  | 27   | 40   | 63   | 23   |      |      |      |
| Thru Lane                           | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Right Lane                          | 16   | 312  | 27   | 49   | 52   | 11   | 41   | 351  | 30   | 51   | 70   | 24   |      |      |      |

| Volume and Aggregates by Lane Group | L    |      |      | T    |      |      | R    |      |      | S    |      |      | W    |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Approach                            | L    | T    | R    | L    | T    | R    | L    | T    | R    | L    | T    | R    | L    | T    | R    |
| Left Lane                           | 14   | 281  | 33   | 44   | 47   | 13   | 37   | 371  | 27   | 40   | 63   | 23   |      |      |      |
| Thru Lane                           | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Right Lane                          | 16   | 312  | 27   | 49   | 52   | 11   | 41   | 351  | 30   | 51   | 70   | 24   |      |      |      |

| Volume and Aggregates by Lane Group | L    |      |      | T    |      |      | R    |      |      | S    |      |      | W    |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Approach                            | L    | T    | R    | L    | T    | R    | L    | T    | R    | L    | T    | R    | L    | T    | R    |
| Left Lane                           | 14   | 281  | 33   | 44   | 47   | 13   | 37   | 371  | 27   | 40   | 63   | 23   |      |      |      |
| Thru Lane                           | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Right Lane                          | 16   | 312  | 27   | 49   | 52   | 11   | 41   | 351  | 30   | 51   | 70   | 24   |      |      |      |

| Volume and Aggregates by Lane Group | L    |      |      | T    |      |      | R    |      |      | S    |      |      | W    |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Approach                            | L    | T    | R    | L    | T    | R    | L    | T    | R    | L    | T    | R    | L    | T    | R    |
| Left Lane                           | 14   | 281  | 33   | 44   | 47   | 13   | 37   | 371  | 27   | 40   | 63   | 23   |      |      |      |
| Thru Lane                           | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Right Lane                          | 16   | 312  | 27   | 49   | 52   | 11   | 41   | 351  | 30   | 51   | 70   | 24   |      |      |      |

| Volume and Aggregates by Lane Group | L    |      |      | T    |      |      | R    |      |      | S    |      |      | W    |      |      |
|-------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Approach                            | L    | T    | R    | L    | T    | R    | L    | T    | R    | L    | T    | R    | L    | T    | R    |
| Left Lane                           | 14   | 281  | 33   | 44   | 47   | 13   | 37   | 371  | 27   | 40   | 63   | 23   |      |      |      |
| Thru Lane                           | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Right Lane                          | 16   | 312  | 27   | 49   | 52   | 11   | 41   | 351  | 30   | 51   | 70   | 24   |      |      |      |

Adjusted Grade Proportions:

Adjusted Lane Group Proportions:

Adjusted Lane Group Proportions:

## Node 2033: S College Ave &amp; SE 8th St

Control Type TWSC  
 Method HCM 8th Edition  
 dI, Average Delay 1.67  
 Worst Case Delay 13.57  
 Worst Case LOS B

## Volumetric and Adjustments

| Approach              | N (Major) |        |       | E     |       |       | S (Major) |        |       | W     |       |       |
|-----------------------|-----------|--------|-------|-------|-------|-------|-----------|--------|-------|-------|-------|-------|
|                       | L1        | T      | R1    | L1    | T     | R1    | L1        | T      | R1    | L1    | T     | R1    |
| Movement              |           |        |       |       |       |       |           |        |       |       |       |       |
| Base Volume           | 17.00     | 214.00 | 15.00 | 6.00  | 8.00  | 9.00  | 5.00      | 195.00 | 11.00 | 12.00 | 7.00  | 16.00 |
| PHF, Peak-hour factor | 0.900     | 0.900  | 0.900 | 0.900 | 0.900 | 0.900 | 0.900     | 0.900  | 0.900 | 0.900 | 0.900 | 0.900 |
| V, Adjusted Volume    | 18.89     | 237.78 | 16.67 | 6.67  | 8.89  | 10.00 | 5.56      | 216.67 | 12.22 | 13.33 | 7.78  | 17.78 |

## Pedestrians

| Approach                 | N (Major) |   |    | E     |       |       | S (Major) |   |    | W     |       |       |
|--------------------------|-----------|---|----|-------|-------|-------|-----------|---|----|-------|-------|-------|
|                          | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    |
| Movement                 |           |   |    |       |       |       |           |   |    |       |       |       |
| vx, Flow (Ped/hr)        | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |
| w, Lane Width (ft)       | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  |
| fpb, Percent Blockage    | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |   |    | E      |        |        | S (Major) |   |    | W      |        |        |
|------------------------------------------------|-----------|---|----|--------|--------|--------|-----------|---|----|--------|--------|--------|
|                                                | L1        | T | R1 | L1     | T      | R1     | L1        | T | R1 | L1     | T      | R1     |
| Movement                                       |           |   |    |        |        |        |           |   |    |        |        |        |
| Rank                                           | 2         | 1 | 1  | 4      | 3      | 2      | 2         | 1 | 1  | 4      | 3      | 2      |
| vx, Volume                                     | 18.89     |   |    | 6.67   | 8.89   | 10.00  | 5.56      |   |    | 13.33  | 7.78   | 17.78  |
| Conflicting Volume (Veh)                       | 228.89    |   |    | 530.56 | 526.11 | 222.78 | 254.44    |   |    | 527.22 | 523.89 | 246.11 |
| Conflicting Volume (Ped)                       | 0.00      |   |    | 0.00   | 0.00   | 0.00   | 0.00      |   |    | 0.00   | 0.00   | 0.00   |
| Conflicting Volume                             | 228.89    |   |    | 530.56 | 526.11 | 222.78 | 254.44    |   |    | 527.22 | 523.89 | 246.11 |
| Two-Stage Gap Acceptance                       |           |   |    | No     | No     |        |           |   |    | No     | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |   |    |        |        |        |           |   |    |        |        |        |
| opx, Potential Capacity                        | 1351.10   |   |    | 462.39 | 459.69 | 821.77 | 1322.38   |   |    | 464.75 | 461.03 | 797.59 |
| Capacity                                       | 1351.10   |   |    | 438.99 | 450.01 | 821.77 | 1322.38   |   |    | 444.93 | 451.32 | 797.59 |

## Critical Headway and Follow-Up Headway

| Approach                                       | N (Major) |      |    | E    |      |      | S (Major) |      |    | W    |      |      |
|------------------------------------------------|-----------|------|----|------|------|------|-----------|------|----|------|------|------|
|                                                | L1        | T    | R1 | L1   | T    | R1   | L1        | T    | R1 | L1   | T    | R1   |
| Movement                                       |           |      |    |      |      |      |           |      |    |      |      |      |
| tc, base, Base Critical Headway                | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 |
| tc, base, I, Base Critical Headway (Stage I)   |           |      |    |      |      |      |           |      |    |      |      |      |
| tc, base, II, Base Critical Headway (Stage II) |           |      |    |      |      |      |           |      |    |      |      |      |
| tc, HV, Heavy Vehicles Adjustment Factor       | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |      |    | 1.00 | 1.00 | 1.00 |
| Phv, % Heavy Vehicles                          | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 |
| tc, G, Grade Adjustment Factor                 | 1.00      |      |    | 0.20 | 0.20 | 0.10 | 1.00      |      |    | 0.20 | 0.20 | 0.10 |
| G, % Grade                                     |           | 0.00 |    |      | 0.00 |      |           | 0.00 |    |      | 0.00 |      |
| T3, R, Geometry Adjustment Factor              | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 |
| tc, Critical Headway                           | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 |
| tc, I, Critical Headway (Stage I)              |           |      |    |      |      |      |           |      |    |      |      |      |
| tc, II, Critical Headway (Stage II)            |           |      |    |      |      |      |           |      |    |      |      |      |
| tf, base, Base Follow-Up Headway               | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 |
| tf, hv, Heavy Vehicles Adjustment Factor       | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |      |    | 0.90 | 0.90 | 0.90 |
| tf, Follow-Up Headway                          | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |        |       | E      |        |        | S (Major) |        |       | W      |        |        |
|----------------------|-----------|--------|-------|--------|--------|--------|-----------|--------|-------|--------|--------|--------|
|                      | L1        | T      | R1    | L1     | T      | R1     | L1        | T      | R1    | L1     | T      | R1     |
| Movement             |           |        |       |        |        |        |           |        |       |        |        |        |
| vx, Volume           | 18.89     | 237.78 | 16.67 | 6.67   | 8.89   | 10.00  | 5.56      | 216.67 | 12.22 | 13.33  | 7.78   | 17.78  |
| cmx, Capacity        | 1351.10   |        |       | 438.99 | 450.01 | 821.77 | 1322.38   |        |       | 444.93 | 451.32 | 797.59 |
| V / C                | 0.01      |        |       | 0.02   | 0.02   | 0.01   | 0.00      |        |       | 0.03   | 0.02   | 0.02   |
| d, Delay             | 7.70      |        |       | 13.53  | 13.33  | 9.71   | 7.73      |        |       | 13.57  | 13.46  | 9.99   |
| LOS                  | A         |        |       | B      | B      | A      | A         |        |       | B      | B      | A      |
| dA, Approach Delay   |           | 0.53   |       |        | 11.96  |        |           | 0.18   |       |        | 11.91  |        |
| Approach LOS         |           |        |       |        | B      |        |           |        |       |        | B      |        |
| dRank1, Rank 1 Delay |           | 0.00   |       |        |        |        |           | 0.00   |       |        |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) |        | E         |        | S (Major) |           | W      |        |
|-----------------------|-----------|--------|-----------|--------|-----------|-----------|--------|--------|
|                       | Lane 1    | Lane 2 | Lane 1    | Lane 1 | Lane 2    | Lane 1    | Lane 1 | Lane 1 |
| Movements             |           | T, R1  | L1, T, R1 |        | T, R1     | L1, T, R1 |        |        |
| vx, Volume            | 18.89     | 254.44 | 25.56     |        | 228.89    | 38.89     |        |        |
| Flared Storage Size   |           |        |           |        |           |           |        |        |
| cmx, Capacity         |           |        | 542.49    |        |           | 559.63    |        |        |
| V / C                 |           |        | 0.05      |        |           | 0.07      |        |        |
| Q95, 95% Queue Length |           |        | 0.15      |        |           | 0.22      |        |        |
| d, Delay              |           |        | 11.96     |        |           | 11.91     |        |        |
| LOS                   |           |        | B         |        |           | B         |        |        |
| dA, Approach Delay    |           | 0.53   | 11.96     |        | 0.18      | 11.91     |        |        |
| Approach LOS          |           |        | B         |        |           | B         |        |        |



## Node 2034: S College Ave &amp; SE 8th St

Control Type TWSC  
 Method HCM 6th Edition  
 dI, Average Delay 2.31  
 Worst Case Delay 13.74  
 Worst Case LOS B

## Volume and Adjustments

| Approach              | N (Major) |        |       | E     |       |       | S (Major) |        |       | W     |       |       |
|-----------------------|-----------|--------|-------|-------|-------|-------|-----------|--------|-------|-------|-------|-------|
| Movement              | L1        | T      | R1    | L1    | T     | R1    | L1        | T      | R1    | L1    | T     | R1    |
| Base Volume           | 18.00     | 196.00 | 8.00  | 10.00 | 10.00 | 9.00  | 13.00     | 174.00 | 20.00 | 12.00 | 5.00  | 36.00 |
| PHF, Peak-hour factor | 0.900     | 0.900  | 0.900 | 0.900 | 0.900 | 0.900 | 0.900     | 0.900  | 0.900 | 0.900 | 0.900 | 0.900 |
| V, Adjusted Volume    | 20.00     | 217.78 | 8.89  | 11.11 | 11.11 | 10.00 | 14.44     | 193.33 | 22.22 | 13.33 | 5.56  | 40.00 |

## Pedestrians

| Approach                 | N (Major) |   |    | E     |       |       | S (Major) |   |    | W     |       |       |
|--------------------------|-----------|---|----|-------|-------|-------|-----------|---|----|-------|-------|-------|
| Movement                 | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    |
| vx, Flow (Ped/hr)        | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |
| w, Lane Width (ft)       | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  |
| fpo, Percent Blockage    | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |   |    | E      |        |        | S (Major) |   |    | W      |        |        |
|------------------------------------------------|-----------|---|----|--------|--------|--------|-----------|---|----|--------|--------|--------|
| Movement                                       | L1        | T | R1 | L1     | T      | R1     | L1        | T | R1 | L1     | T      | R1     |
| Rank                                           | 2         | 1 | 1  | 4      | 3      | 2      | 2         | 1 | 1  | 4      | 3      | 2      |
| vx, Volume                                     | 20.00     |   |    | 11.11  | 11.11  | 10.00  | 14.44     |   |    | 13.33  | 5.56   | 40.00  |
| Conflicting Volume (Veh)                       | 215.56    |   |    | 518.33 | 500.00 | 204.44 | 226.67    |   |    | 506.11 | 506.67 | 222.22 |
| Conflicting Volume (Ped)                       | 0.00      |   |    | 0.00   | 0.00   | 0.00   | 0.00      |   |    | 0.00   | 0.00   | 0.00   |
| Conflicting Volume                             | 215.56    |   |    | 518.33 | 500.00 | 204.44 | 226.67    |   |    | 506.11 | 506.67 | 222.22 |
| Two-Stage Gap Acceptance                       |           |   |    | No     | No     |        |           |   |    | No     | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |   |    |        |        |        |           |   |    |        |        |        |
| opx, Potential Capacity                        | 1366.32   |   |    | 471.10 | 475.60 | 841.27 | 1353.63   |   |    | 479.97 | 471.49 | 822.36 |
| Capacity                                       | 1366.32   |   |    | 434.32 | 461.94 | 841.27 | 1353.63   |   |    | 455.39 | 457.95 | 822.36 |

## Critical Headway and Follow Up Headway

| Approach                                     | N (Major) |      |    | E    |      |      | S (Major) |      |    | W    |      |      |
|----------------------------------------------|-----------|------|----|------|------|------|-----------|------|----|------|------|------|
| Movement                                     | L1        | T    | R1 | L1   | T    | R1   | L1        | T    | R1 | L1   | T    | R1   |
| tc,base, Base Critical Headway               | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 |
| tc,base,I, Base Critical Headway (Stage I)   |           |      |    |      |      |      |           |      |    |      |      |      |
| tc,base,II, Base Critical Headway (Stage II) |           |      |    |      |      |      |           |      |    |      |      |      |
| tc,HV, Heavy Vehicles Adjustment Factor      | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |      |    | 1.00 | 1.00 | 1.00 |
| Phv, % Heavy Vehicles                        | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 |
| tc,G, Grade Adjustment Factor                | 1.00      |      |    | 0.20 | 0.20 | 0.10 | 1.00      |      |    | 0.20 | 0.20 | 0.10 |
| G, % Grade                                   |           | 0.00 |    |      | 0.00 |      |           | 0.00 |    |      | 0.00 |      |
| T3,It, Geometry Adjustment Factor            | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 |
| tc,I, Critical Headway                       | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 |
| tc,I, Critical Headway (Stage I)             |           |      |    |      |      |      |           |      |    |      |      |      |
| tc,II, Critical Headway (Stage II)           |           |      |    |      |      |      |           |      |    |      |      |      |
| lf,base, Base Follow-Up Headway              | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 |
| lf,HV, Heavy Vehicles Adjustment Factor      | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |      |    | 0.90 | 0.90 | 0.90 |
| lf, Follow-Up Headway                        | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |        |      | E      |        |        | S (Major) |        |       | W      |        |        |
|----------------------|-----------|--------|------|--------|--------|--------|-----------|--------|-------|--------|--------|--------|
| Movement             | L1        | T      | R1   | L1     | T      | R1     | L1        | T      | R1    | L1     | T      | R1     |
| vx, Volume           | 20.00     | 217.78 | 8.89 | 11.11  | 11.11  | 10.00  | 14.44     | 193.33 | 22.22 | 13.33  | 5.56   | 40.00  |
| cmx, Capacity        | 1366.32   |        |      | 434.32 | 461.94 | 841.27 | 1353.63   |        |       | 455.39 | 457.95 | 822.36 |
| V / C                | 0.01      |        |      | 0.03   | 0.02   | 0.01   | 0.01      |        |       | 0.03   | 0.01   | 0.05   |
| d, Delay             | 7.67      |        |      | 13.74  | 13.24  | 9.73   | 7.69      |        |       | 13.45  | 13.41  | 9.92   |
| LOS                  | A         |        |      | B      | B      | A      | A         |        |       | B      | B      | A      |
| dA, Approach Delay   |           | 0.62   |      |        | 12.32  |        |           | 0.48   |       |        | 11.05  |        |
| Approach LOS         |           |        |      |        | B      |        |           |        |       |        | B      |        |
| dRank1, Rank 1 Delay |           | 0.00   |      |        |        |        |           | 0.00   |       |        |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) |        | E         | S (Major) |        | W         |
|-----------------------|-----------|--------|-----------|-----------|--------|-----------|
| Lane                  | Lane 1    | Lane 2 | Lane 1    | Lane 1    | Lane 2 | Lane 1    |
| Movements             | T, R1     | T, R1  | L1, T, R1 | L1, T, R1 | T, R1  | L1, T, R1 |
| vx, Volume            | 20.00     | 226.67 | 32.22     | 14.44     | 215.56 | 58.89     |
| Planned Storage Size  |           |        |           |           |        |           |
| cmx, Capacity         |           |        | 523.74    |           |        | 653.95    |
| V / C                 |           |        | 0.06      |           |        | 0.09      |
| Q95, 95% Queue Length |           |        | 0.20      |           |        | 0.30      |
| d, Delay              |           |        | 12.32     |           |        | 11.05     |
| LOS                   |           |        | B         |           |        | B         |
| dA, Approach Delay    |           | 0.62   | 12.32     |           | 0.48   | 11.05     |
| Approach LOS          |           |        | B         |           |        | B         |

## Node 2035: S College Ave. &amp; SE 10th St

Control Type TWSC  
 Method HCM 6th Edition  
 dt, Average Delay 1.18  
 Worst Case Delay 18.81  
 Worst Case LOS C

## Volume and Adjustments

| Approach              | N (Major) |        |       | E     |       |       | S (Major) |        |       | W     |       |       |
|-----------------------|-----------|--------|-------|-------|-------|-------|-----------|--------|-------|-------|-------|-------|
| Movement              | L1        | T      | R1    | L1    | T     | R1    | L1        | T      | R1    | L1    | T     | R1    |
| Base Volume           | 11.00     | 334.00 | 13.00 | 5.00  | 5.00  | 5.00  | 19.00     | 335.00 | 7.00  | 12.00 | 5.00  | 9.00  |
| PHF, Peak-hour factor | 0.900     | 0.900  | 0.900 | 0.900 | 0.900 | 0.900 | 0.900     | 0.900  | 0.900 | 0.900 | 0.900 | 0.900 |
| V, Adjusted Volume    | 12.22     | 371.11 | 14.44 | 5.56  | 5.56  | 5.56  | 21.11     | 372.22 | 7.78  | 13.33 | 5.56  | 10.00 |

## Pedestrians

| Approach                 | N (Major) |   |    | E     |       |       | S (Major) |   |    | W     |       |       |
|--------------------------|-----------|---|----|-------|-------|-------|-----------|---|----|-------|-------|-------|
| Movement                 | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    |
| vx, Flow (Ped/hr)        | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |
| w, Lane Width (ft)       | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  |
| fpb, Percent Blockage    | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |   |    | E      |        |        | S (Major) |   |    | W      |        |        |
|------------------------------------------------|-----------|---|----|--------|--------|--------|-----------|---|----|--------|--------|--------|
| Movement                                       | L1        | T | R1 | L1     | T      | R1     | L1        | T | R1 | L1     | T      | R1     |
| Rank                                           | 2         | 1 | 1  | 4      | 3      | 2      | 2         | 1 | 1  | 4      | 3      | 2      |
| vx, Volume                                     | 12.22     |   |    | 5.56   | 5.56   | 5.56   | 21.11     |   |    | 13.33  | 5.56   | 10.00  |
| Conflicting Volume (Veh)                       | 380.00    |   |    | 828.89 | 828.33 | 378.11 | 385.56    |   |    | 828.67 | 825.00 | 378.33 |
| Conflicting Volume (Ped)                       | 0.00      |   |    | 0.00   | 0.00   | 0.00   | 0.00      |   |    | 0.00   | 0.00   | 0.00   |
| Conflicting Volume                             | 380.00    |   |    | 828.89 | 828.33 | 378.11 | 385.56    |   |    | 828.67 | 825.00 | 378.33 |
| Two-Stage Gap Acceptance                       |           |   |    | No     | No     |        |           |   |    | No     | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |   |    |        |        |        |           |   |    |        |        |        |
| opx, Potential Capacity                        | 1189.54   |   |    | 292.13 | 308.56 | 674.83 | 1183.96   |   |    | 293.14 | 309.94 | 672.89 |
| Capacity                                       | 1189.54   |   |    | 276.05 | 297.63 | 674.83 | 1183.96   |   |    | 276.85 | 298.96 | 672.89 |

## Critical Headway and Follow Up Headway

| Approach                                     | N (Major) |      |    | E    |      |      | S (Major) |   |    | W    |      |      |
|----------------------------------------------|-----------|------|----|------|------|------|-----------|---|----|------|------|------|
| Movement                                     | L1        | T    | R1 | L1   | T    | R1   | L1        | T | R1 | L1   | T    | R1   |
| tc,base, Base Critical Headway               | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 |
| tc,base,I, Base Critical Headway (Stage I)   |           |      |    |      |      |      |           |   |    |      |      |      |
| tc,base,II, Base Critical Headway (Stage II) |           |      |    |      |      |      |           |   |    |      |      |      |
| tc,HV, Heavy Vehicles Adjustment Factor      | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |   |    | 1.00 | 1.00 | 1.00 |
| Phv, % Heavy Vehicles                        | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 |
| tc,G, Grade Adjustment Factor                | 1.00      |      |    | 0.20 | 0.20 | 0.10 | 1.00      |   |    | 0.20 | 0.20 | 0.10 |
| G, % Grade                                   |           | 0.00 |    |      | 0.00 |      | 0.00      |   |    |      | 0.00 |      |
| T3,It, Geometry Adjustment Factor            | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 |
| tc, Critical Headway                         | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 |
| tc,I, Critical Headway (Stage I)             |           |      |    |      |      |      |           |   |    |      |      |      |
| tc,II, Critical Headway (Stage II)           |           |      |    |      |      |      |           |   |    |      |      |      |
| tf,base, Base Follow-Up Headway              | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 |
| tf,hv, Heavy Vehicles Adjustment Factor      | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |   |    | 0.90 | 0.90 | 0.90 |
| tf, Follow-Up Headway                        | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |        |       | E      |        |        | S (Major) |        |      | W      |        |        |
|----------------------|-----------|--------|-------|--------|--------|--------|-----------|--------|------|--------|--------|--------|
| Movement             | L1        | T      | R1    | L1     | T      | R1     | L1        | T      | R1   | L1     | T      | R1     |
| vx, Volume           | 12.22     | 371.11 | 14.44 | 5.56   | 5.56   | 5.56   | 21.11     | 372.22 | 7.78 | 13.33  | 5.56   | 10.00  |
| cmx, Capacity        | 1189.54   |        |       | 276.05 | 297.63 | 674.83 | 1183.96   |        |      | 276.85 | 298.96 | 672.89 |
| V / C                | 0.01      |        |       | 0.02   | 0.02   | 0.01   | 0.02      |        |      | 0.05   | 0.02   | 0.01   |
| d, Delay             | 8.06      |        |       | 18.54  | 17.60  | 10.84  | 8.10      |        |      | 18.81  | 17.94  | 11.25  |
| LOS                  | A         |        |       | C      | C      | B      | A         |        |      | C      | C      | B      |
| dA, Approach Delay   |           | 0.25   |       |        | 15.66  |        |           | 0.43   |      |        | 16.02  |        |
| Approach LOS         |           |        |       |        | C      |        |           |        |      |        | C      |        |
| dRank1, Rank 1 Delay |           | 0.90   |       |        |        |        |           | 0.00   |      |        |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) |        | E         | S (Major) |        | W         |
|-----------------------|-----------|--------|-----------|-----------|--------|-----------|
| Lane                  | Lane 1    | Lane 2 | Lane 1    | Lane 1    | Lane 2 | Lane 1    |
| Movements             | T, R1     | T, R1  | L1, T, R1 | T, R1     | T, R1  | L1, T, R1 |
| vx, Volume            | 12.22     | 385.56 | 16.67     | 21.11     | 380.00 | 28.89     |
| Flared Storage Size   |           |        |           |           |        |           |
| cmx, Capacity         |           |        | 354.43    |           |        | 355.51    |
| V / C                 |           |        | 0.05      |           |        | 0.08      |
| Q95, 95% Queue Length |           |        | 0.15      |           |        | 0.26      |
| d, Delay              |           |        | 15.66     |           |        | 16.02     |
| LOS                   |           |        | C         |           |        | C         |
| dA, Approach Delay    |           | 0.25   | 15.66     |           | 0.43   | 16.02     |
| Approach LOS          |           |        | C         |           |        | C         |

Node 2036 - 5 Colosseum Ave & SE 12th St

Control Type  
Warrant  
Average Delay  
Average LOS  
V/C  
Lost Time

Signalized  
W-CM Intersection  
21.92  
G  
0.55  
21

Volume and Adjustments by Movement

| Approach         | E    |      |       | S     |       |       | W     |       |       |
|------------------|------|------|-------|-------|-------|-------|-------|-------|-------|
| Movement         | L1   | T    | R1    | L1    | T     | R1    | L1    | T     | R1    |
| Peak Volume      | 72   | 244  | 17    | 62    | 50    | 66    | 12    | 237   | 68    |
| Peak Hour Volume | 2960 | 9300 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Adjusted Volume  | 20   | 68   | 5     | 17    | 14    | 26    | 3     | 68    | 18    |
| Adjusted LOS     | 62   | 271  | 73    | 69    | 54    | 103   | 13    | 243   | 73    |

Volume and Adjustments by Lane Group

| Approach         | E     |       |       | S     |       |       | W     |       |       |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Group       | L     | C     | L     | C     | L     | C     | L     | C     | L     |
| Left             | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Through          | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Right            | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Peak Volume      | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Peak Hour Volume | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Adjusted Volume  | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Adjusted LOS     | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |

Adjustment Factors

| Approach         | E     |       |       | S     |       |       | W     |       |       |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Group       | L     | C     | L     | C     | L     | C     | L     | C     | L     |
| Left             | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Through          | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Right            | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Peak Volume      | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Peak Hour Volume | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Adjusted Volume  | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Adjusted LOS     | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |

Adjustment Factors and Level of Service

| Approach         | E     |       |       | S     |       |       | W     |       |       |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Group       | L     | C     | L     | C     | L     | C     | L     | C     | L     |
| Left             | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Through          | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Right            | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Peak Volume      | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Peak Hour Volume | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Adjusted Volume  | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Adjusted LOS     | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |

Adjustment Factors

| Approach         | E     |       |       | S     |       |       | W     |       |       |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Group       | L     | C     | L     | C     | L     | C     | L     | C     | L     |
| Left             | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Through          | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Right            | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Peak Volume      | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Peak Hour Volume | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Adjusted Volume  | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Adjusted LOS     | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |

Adjustment Factors

| Approach         | E     |       |       | S     |       |       | W     |       |       |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Group       | L     | C     | L     | C     | L     | C     | L     | C     | L     |
| Left             | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Through          | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Right            | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Peak Volume      | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Peak Hour Volume | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Adjusted Volume  | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Adjusted LOS     | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |

Adjustment Factors

| Approach         | E     |       |       | S     |       |       | W     |       |       |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Group       | L     | C     | L     | C     | L     | C     | L     | C     | L     |
| Left             | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Through          | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Right            | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Peak Volume      | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Peak Hour Volume | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Adjusted Volume  | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Adjusted LOS     | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |

Adjustment Factors

| Approach         | E     |       |       | S     |       |       | W     |       |       |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Group       | L     | C     | L     | C     | L     | C     | L     | C     | L     |
| Left             | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Through          | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Right            | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Peak Volume      | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Peak Hour Volume | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Adjusted Volume  | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Adjusted LOS     | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |

Adjustment Factors

| Approach         | E     |       |       | S     |       |       | W     |       |       |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Group       | L     | C     | L     | C     | L     | C     | L     | C     | L     |
| Left             | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Through          | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Right            | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Peak Volume      | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Peak Hour Volume | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Adjusted Volume  | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |
| Adjusted LOS     | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 | 15407 |

## Node 2037: S College and 13th/13th St

Control Type TWSC  
 Method HCM 6th Edition  
 dt, Average Delay 0.37  
 Worst Case Delay 13.26  
 Worst Case LOS B

## Volume and Adjustments

| Approach              | N (Major) |       | S (Major) |        | W     |       |
|-----------------------|-----------|-------|-----------|--------|-------|-------|
| Movement              | T         | R1    | L1        | T      | L1    | R1    |
| Base Volume           | 270.00    | 9.00  | 5.00      | 284.00 | 5.00  | 11.00 |
| PHF, Peak-hour factor | 0.900     | 0.900 | 0.900     | 0.900  | 0.900 | 0.900 |
| V, Adjusted Volume    | 300.00    | 10.00 | 5.56      | 315.56 | 5.56  | 12.22 |

## Pedestrians

| Approach                 | N (Major) |    | S (Major) |   | W     |       |
|--------------------------|-----------|----|-----------|---|-------|-------|
| Movement                 | T         | R1 | L1        | T | L1    | R1    |
| vx, Flow (Ped/hr)        |           |    | 0.00      |   | 0.00  | 0.00  |
| w, Lane Width (ft)       |           |    | 12.00     |   | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) |           |    | 3.50      |   | 3.50  | 3.50  |
| fpb, Percent Blockage    |           |    | 0.00      |   | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |    | S (Major) |   | W      |        |
|------------------------------------------------|-----------|----|-----------|---|--------|--------|
| Movement                                       | T         | R1 | L1        | T | L1     | R1     |
| Rank                                           | 1         | 1  | 2         | 1 | 3      | 2      |
| vx, Volume                                     |           |    | 5.56      |   | 5.56   | 12.22  |
| Conflicting Volume (Veh)                       |           |    | 310.00    |   | 631.67 | 305.00 |
| Conflicting Volume (Ped)                       |           |    | 0.00      |   | 0.00   | 0.00   |
| Conflicting Volume                             |           |    | 310.00    |   | 631.67 | 305.00 |
| Two-Stage Gap Acceptance                       |           |    |           |   | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |    |           |   |        |        |
| cmx, Potential Capacity                        |           |    | 1261.94   |   | 447.81 | 739.54 |
| Capacity                                       |           |    | 1261.94   |   | 445.41 | 739.54 |

## Critical Headway and Follow Up Headway

| Approach                                       | N (Major) |      | S (Major) |      | W    |      |
|------------------------------------------------|-----------|------|-----------|------|------|------|
| Movement                                       | T         | R1   | L1        | T    | L1   | R1   |
| tc, base, Base Critical Headway                |           |      | 4.10      |      | 7.10 | 6.20 |
| tc, base, I, Base Critical Headway (Stage I)   |           |      |           |      |      |      |
| tc, base, II, Base Critical Headway (Stage II) |           |      |           |      |      |      |
| tc, HV, Heavy Vehicles Adjustment Factor       |           |      | 1.00      |      | 1.00 | 1.00 |
| Phv, % Heavy Vehicles                          |           |      | 0.00      |      | 0.00 | 0.00 |
| tc, G, Grade Adjustment Factor                 |           |      | 1.00      |      | 0.20 | 0.10 |
| G, % Grade                                     |           | 0.00 |           | 0.00 |      | 0.00 |
| TS, It, Geometry Adjustment Factor             |           |      | 0.00      |      | 0.70 | 0.00 |
| tc, Critical Headway                           |           |      | 4.10      |      | 6.40 | 6.20 |
| tc, I, Critical Headway (Stage I)              |           |      |           |      |      |      |
| tc, II, Critical Headway (Stage II)            |           |      |           |      |      |      |
| tf, base, Base Follow-Up Headway               |           |      | 2.20      |      | 3.50 | 3.30 |
| tf, hv, Heavy Vehicles Adjustment Factor       |           |      | 0.90      |      | 0.90 | 0.90 |
| tf, Follow-Up Headway                          |           |      | 2.20      |      | 3.50 | 3.30 |

## Delay and Level of Service by Movement

| Approach              | N (Major) |       | S (Major) |        | W      |        |
|-----------------------|-----------|-------|-----------|--------|--------|--------|
| Movement              | T         | R1    | L1        | T      | L1     | R1     |
| vx, Volume            | 300.00    | 10.00 | 5.56      | 315.56 | 5.56   | 12.22  |
| cmx, Capacity         |           |       | 1261.94   |        | 445.41 | 739.54 |
| V / C                 |           |       | 0.00      |        | 0.01   | 0.02   |
| d, Delay              |           |       | 7.87      |        | 13.26  | 10.04  |
| LOS                   |           |       | A         |        | B      | B      |
| dA, Approach Delay    |           | 0.00  |           | 0.14   |        | 11.05  |
| Approach LOS          |           |       |           |        |        | B      |
| dRank 1, Rank 1 Delay |           | 0.00  |           | 0.04   |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) | S (Major) | W      |
|-----------------------|-----------|-----------|--------|
| Lane                  | Lane 1    | Lane 1    | Lane 1 |
| Movements             | T, R1     | L1, T     | L1, R1 |
| vx, Volume            | 310.00    | 321.11    | 17.78  |
| Flared Storage Size   |           |           |        |
| cmx, Capacity         |           | 1261.94   | 613.04 |
| V / C                 |           | 0.25      | 0.03   |
| QS5, 95% Queue Length |           | 0.01      | 0.09   |
| d, Delay              |           | 7.87      | 11.05  |
| LOS                   |           |           | B      |
| dA, Approach Delay    | 0.00      | 0.14      | 11.05  |
| Approach LOS          |           |           | B      |

| Node 2316, 3 Change Plot 6 Legend |               |
|-----------------------------------|---------------|
| Control Type                      | Serialized    |
| Method                            | MC4 0m Cotton |
| Average Delay                     | 28.72         |
| Average LOS                       | 6             |
| V/C                               | 0.56          |
| Link Time                         | 21            |

[illegible]

|                            | N      | C      | R      | L      | E      | G      | S      | C      | T      | W      | C      |
|----------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Line group                 | 150416 | 150416 | 150417 | 150418 | 150419 | 150420 | 150421 | 150422 | 150423 | 150424 | 150425 |
| ID                         |        |        |        |        |        |        |        |        |        |        |        |
| Urban                      |        |        |        |        |        |        |        |        |        |        |        |
| General pop.               | Pop.   | Pop.   | Pop.   | Pop.   | Pop.   | Pop.   | Pop.   | Pop.   | Pop.   | Pop.   | Pop.   |
| V. volume                  | 100    | 100    | 85     | 20     | 50     | 20     | 237    | 20     | 71     |        |        |
| Pct. impervious land cover | 1.00   | 1.00   | 0.00   | 1.00   | 0.00   | 1.00   | 3.00   | 1.00   | 0.00   |        |        |
| RAI: Regional alpha factor | 0.00   | 0.00   | 1.00   | 0.00   | 0.99   | 0.00   | 0.00   | 0.00   | 0.99   |        |        |

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**Abstract** *Background:* The purpose of this study was to determine the prevalence of self-reported depression among a sample of young adults in the United States. *Methods:* Data were obtained from the 2004 National Longitudinal Study of Adolescent Health, a nationally representative sample of adolescents and young adults. *Results:* The prevalence of self-reported depression was 10.3% among the sample. The prevalence was higher among females than males, and among those with lower socioeconomic status than those with higher socioeconomic status. *Conclusions:* The prevalence of self-reported depression among young adults in the United States is 10.3%. The prevalence is higher among females than males, and among those with lower socioeconomic status than those with higher socioeconomic status.

Accepted: 17/12/2019

**Keywords:** *Self-esteem, self-esteem threat, self-esteem threat response, self-esteem threat response style, self-esteem threat response style scale, self-esteem threat response style scale, self-esteem threat response style scale*

## Node 2039: SE 3rd &amp; Ash Ave

Control Type TWSC  
 Method HCM 6th Edition  
 dt, Average Delay 8.98  
 Worst Case Delay 9.59  
 Worst Case LOS A

## Volume and Adjustments

| Approach              | N     |       |       | E (Major) |       |       | S     |       |       | W (Major) |       |       |
|-----------------------|-------|-------|-------|-----------|-------|-------|-------|-------|-------|-----------|-------|-------|
| Movement              | L1    | T     | R1    | L1        | T     | R1    | L1    | T     | R1    | L1        | T     | R1    |
| Base Volume           | 6.00  | 44.00 | 5.00  | 5.00      | 8.00  | 5.00  | 5.00  | 10.00 | 5.00  | 5.00      | 8.00  | 5.00  |
| PHF, Peak-hour factor | 0.900 | 0.900 | 0.900 | 0.900     | 0.900 | 0.900 | 0.900 | 0.900 | 0.900 | 0.900     | 0.900 | 0.900 |
| V, Adjusted Volume    | 6.67  | 48.89 | 5.56  | 5.56      | 8.89  | 5.56  | 5.56  | 11.11 | 5.56  | 5.56      | 8.89  | 5.56  |

## Pedestrians

| Approach                 | N     |       |       | E (Major) |   |    | S     |       |       | W (Major) |   |    |
|--------------------------|-------|-------|-------|-----------|---|----|-------|-------|-------|-----------|---|----|
| Movement                 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 |
| vx, Flow (Ped/hr)        | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    |
| w, Lane Width (ft)       | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    |
| Sp, Walking Speed (ft/s) | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    |
| fpb, Percent Blockage    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    |

## Capacity of Movements below Rank 1

| Approach                                       | N      |        |         | E (Major) |   |    | S      |        |         | W (Major) |   |    |
|------------------------------------------------|--------|--------|---------|-----------|---|----|--------|--------|---------|-----------|---|----|
| Movement                                       | L1     | T      | R1      | L1        | T | R1 | L1     | T      | R1      | L1        | T | R1 |
| Rank                                           | 4      | 3      | 2       | 2         | 1 | 1  | 4      | 3      | 2       | 2         | 1 | 1  |
| vx, Volume                                     | 6.67   | 48.89  | 5.56    | 5.56      |   |    | 5.56   | 11.11  | 5.56    | 5.56      |   |    |
| Conflicting Volume (Veh)                       | 53.89  | 48.33  | 11.67   | 14.44     |   |    | 72.78  | 48.33  | 11.67   | 14.44     |   |    |
| Conflicting Volume (Ped)                       | 0.00   | 0.00   | 0.00    | 0.00      |   |    | 0.00   | 0.00   | 0.00    | 0.00      |   |    |
| Conflicting Volume                             | 53.89  | 48.33  | 11.67   | 14.44     |   |    | 72.78  | 48.33  | 11.67   | 14.44     |   |    |
| Two-Stage Gap Acceptance                       | No     | No     |         |           |   |    | No     | No     |         |           |   |    |
| Number of Storage Spaces in Median Refuge Area |        |        |         |           |   |    |        |        |         |           |   |    |
| cpx, Potential Capacity                        | 949.30 | 847.13 | 1074.94 | 1616.78   |   |    | 922.94 | 847.13 | 1074.94 | 1616.78   |   |    |
| Capacity                                       | 929.96 | 841.27 | 1074.94 | 1616.78   |   |    | 872.80 | 841.27 | 1074.94 | 1616.78   |   |    |

## Critical Headway and Follow Up Headway

| Approach                                     | N    |      |      | E (Major) |      |    | S    |      |      | W (Major) |      |    |
|----------------------------------------------|------|------|------|-----------|------|----|------|------|------|-----------|------|----|
| Movement                                     | L1   | T    | R1   | L1        | T    | R1 | L1   | T    | R1   | L1        | T    | R1 |
| tc,base, Base Critical Headway               | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    |
| tc,base,I, Base Critical Headway (Stage I)   |      |      |      |           |      |    |      |      |      |           |      |    |
| tc,base,II, Base Critical Headway (Stage II) |      |      |      |           |      |    |      |      |      |           |      |    |
| tc,hv, Heavy Vehicles Adjustment Factor      | 1.00 | 1.00 | 1.00 | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |      |    |
| Phv, % Heavy Vehicles                        | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    |
| tc,G, Grade Adjustment Factor                | 0.20 | 0.20 | 0.10 | 1.00      |      |    | 0.20 | 0.20 | 0.10 | 1.00      |      |    |
| G, % Grade                                   |      | 0.00 |      |           | 0.00 |    |      | 0.00 |      |           | 0.00 |    |
| TSR, Geometry Adjustment Factor              | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    |
| tc, Critical Headway                         | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    |
| tc,I, Critical Headway (Stage I)             |      |      |      |           |      |    |      |      |      |           |      |    |
| tc,II, Critical Headway (Stage II)           |      |      |      |           |      |    |      |      |      |           |      |    |
| tf,base, Base Follow-Up Headway              | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    |
| tf,hv, Heavy Vehicles Adjustment Factor      | 0.90 | 0.90 | 0.90 | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |      |    |
| tf, Follow-Up Headway                        | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    |

## Delay and Level of Service by Movement

| Approach             | N      |        |         | E (Major) |      |      | S      |        |         | W (Major) |      |      |
|----------------------|--------|--------|---------|-----------|------|------|--------|--------|---------|-----------|------|------|
| Movement             | L1     | T      | R1      | L1        | T    | R1   | L1     | T      | R1      | L1        | T    | R1   |
| vx, Volume           | 6.67   | 48.89  | 5.56    | 5.56      | 8.89 | 5.56 | 5.56   | 11.11  | 5.56    | 5.56      | 8.89 | 5.56 |
| cmx, Capacity        | 929.96 | 841.27 | 1074.94 | 1616.78   |      |      | 872.80 | 841.27 | 1074.94 | 1616.78   |      |      |
| V/C                  | 0.01   | 0.06   | 0.01    | 0.00      |      |      | 0.01   | 0.01   | 0.01    | 0.00      |      |      |
| d, Delay             | 9.19   | 9.59   | 8.66    | 7.23      |      |      | 9.23   | 9.38   | 8.45    | 7.23      |      |      |
| LOS                  | A      | A      | A       | A         |      |      | A      | A      | A       | A         |      |      |
| dA, Approach Delay   |        | 9.46   |         |           | 2.01 |      |        | 9.11   |         |           | 2.01 |      |
| Approach LOS         |        | A      |         |           |      |      |        | A      |         |           |      |      |
| dRank1, Rank 1 Delay |        |        |         |           | 0.03 |      |        |        |         |           | 0.03 |      |

## Delay and Level of Service by Lane

| Approach              | N         |           | E (Major) |           | S         |           | W (Major) |           |
|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Lane                  | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    |
| Movements             | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 |
| vx, Volume            | 61.11     | 20.00     | 22.22     | 20.00     |           |           |           |           |
| Flared Storage Size   |           |           |           |           |           |           |           |           |
| cmx, Capacity         | 867.44    | 1616.78   | 898.20    | 1616.78   |           |           |           |           |
| V/C                   | 0.07      | 0.01      | 0.02      | 0.01      |           |           |           |           |
| GS5, 95% Queue Length | 0.23      | 0.01      | 0.08      | 0.01      |           |           |           |           |
| d, Delay              | 9.46      | 7.23      | 9.11      | 7.23      |           |           |           |           |
| LOS                   | A         |           | A         |           |           |           |           |           |
| dA, Approach Delay    | 9.46      | 2.01      | 9.11      | 2.01      |           |           |           |           |
| Approach LOS          | A         |           | A         |           |           |           |           |           |

## Intersection Capacity Analysis Summary Page

Analysis Time: Fri Sep 27 12:28:51 2  
 Driving Side: Right  
 Analysis Period: 1 Hours

| Number | Name                       | Control Type | V/C  | Avg Delay | Avg LOS | Max Delay | Max LOS |
|--------|----------------------------|--------------|------|-----------|---------|-----------|---------|
| 2030   | College & Whitman          | Signalized   | 0.43 | 20.15     | C       | 30.91     | C       |
| 2031   | N College & SE 3rd St.     | TWSC         | 0.00 | 1.32      | A       | 11.70     | B       |
| 2032   | S College Ave & SW 4th St  | Signalized   | 0.51 | 26.81     | C       | 46.79     | D       |
| 2033   | S College Ave & SE 6th St  | TWSC         | 0.00 | 1.84      | A       | 14.20     | B       |
| 2034   | S College Ave & SE 8th St  | TWSC         | 0.00 | 1.82      | A       | 14.18     | B       |
| 2035   | S College Ave & SE 10th St | TWSC         | 0.00 | 1.18      | A       | 19.97     | C       |
| 2036   | S College Ave & SE 12th St | Signalized   | 0.50 | 22.51     | C       | 35.77     | D       |
| 2037   | S College and 13th 13th St | TWSC         | 0.00 | 0.34      | A       | 14.37     | B       |
| 2038   | S College Ave & Lampert    | Signalized   | 0.62 | 25.92     | C       | 38.87     | D       |
| 2039   | SE 3rd & Ash Ave           | TWSC         | 0.00 | 6.71      | A       | 9.39      | A       |





## Node 2031: N College &amp; SE 3rd St

Control Type TWSC  
 Method HCM 6th Edition  
 dt, Average Delay 1.32  
 Worst Case Delay 11.7  
 Worst Case LOS B

## Volume and Adjustments

| Approach              | N (Major) |        |       | E     |       |       | S (Major) |        |       | W     |       |       |
|-----------------------|-----------|--------|-------|-------|-------|-------|-----------|--------|-------|-------|-------|-------|
|                       | L1        | T      | R1    | L1    | T     | R1    | L1        | T      | R1    | L1    | T     | R1    |
| Movement              |           |        |       |       |       |       |           |        |       |       |       |       |
| Base Volume           | 5.00      | 158.00 | 5.00  | 6.00  | 5.00  | 10.00 | 8.00      | 144.00 | 9.00  | 5.00  | 5.00  | 5.00  |
| PHF, Peak-hour factor | 0.900     | 0.900  | 0.900 | 0.900 | 0.900 | 0.900 | 0.900     | 0.900  | 0.900 | 0.900 | 0.900 | 0.900 |
| V, Adjusted Volume    | 5.56      | 175.58 | 5.56  | 6.67  | 5.56  | 11.11 | 8.89      | 160.00 | 10.00 | 5.56  | 5.56  | 5.56  |

## Pedestrians

| Approach                 | N (Major) |   |    | E     |       |       | S (Major) |   |    | W     |       |       |
|--------------------------|-----------|---|----|-------|-------|-------|-----------|---|----|-------|-------|-------|
|                          | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    |
| Movement                 |           |   |    |       |       |       |           |   |    |       |       |       |
| vx, Flow (Ped/hr)        | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |
| w, Lane Width (ft)       | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  |
| fpb, Percent Blockage    | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |   |    | E      |        |        | S (Major) |   |    | W      |        |        |
|------------------------------------------------|-----------|---|----|--------|--------|--------|-----------|---|----|--------|--------|--------|
|                                                | L1        | T | R1 | L1     | T      | R1     | L1        | T | R1 | L1     | T      | R1     |
| Movement                                       |           |   |    |        |        |        |           |   |    |        |        |        |
| Rank                                           | 2         | 1 | 1  | 4      | 3      | 2      | 2         | 1 | 1  | 4      | 3      | 2      |
| vx, Volume                                     | 5.56      |   |    | 6.67   | 5.56   | 11.11  | 8.89      |   |    | 5.56   | 5.56   | 5.56   |
| Conflicting Volume (Veh)                       | 170.00    |   |    | 377.78 | 375.00 | 165.00 | 181.11    |   |    | 380.56 | 377.22 | 178.33 |
| Conflicting Volume (Ped)                       | 0.00      |   |    | 0.00   | 0.00   | 0.00   | 0.00      |   |    | 0.00   | 0.00   | 0.00   |
| Conflicting Volume                             | 170.00    |   |    | 377.78 | 375.00 | 165.00 | 181.11    |   |    | 380.56 | 377.22 | 178.33 |
| Two-Stage Gap Acceptance                       |           |   |    | No     | No     |        |           |   |    | No     | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |   |    |        |        |        |           |   |    |        |        |        |
| cpv, Potential Capacity                        | 1419.58   |   |    | 583.41 | 559.15 | 884.72 | 1406.41   |   |    | 580.96 | 557.55 | 869.80 |
| Capacity                                       | 1419.58   |   |    | 570.27 | 552.83 | 884.72 | 1406.41   |   |    | 564.36 | 551.25 | 869.80 |

## Critical Headway and Follow Up Headway

| Approach                                     | N (Major) |      |    | E    |      |      | S (Major) |      |    | W    |      |      |
|----------------------------------------------|-----------|------|----|------|------|------|-----------|------|----|------|------|------|
|                                              | L1        | T    | R1 | L1   | T    | R1   | L1        | T    | R1 | L1   | T    | R1   |
| Movement                                     |           |      |    |      |      |      |           |      |    |      |      |      |
| tc,base, Base Critical Headway               | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 |
| tc,base,I, Base Critical Headway (Stage I)   |           |      |    |      |      |      |           |      |    |      |      |      |
| tc,base,II, Base Critical Headway (Stage II) |           |      |    |      |      |      |           |      |    |      |      |      |
| tc,HV, Heavy Vehicles Adjustment Factor      | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |      |    | 1.00 | 1.00 | 1.00 |
| Phv, % Heavy Vehicles                        | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 |
| tc,G, Grade Adjustment Factor                | 1.00      |      |    | 0.20 | 0.20 | 0.10 | 1.00      |      |    | 0.20 | 0.20 | 0.10 |
| G, % Grade                                   |           | 0.00 |    |      | 0.00 |      |           | 0.00 |    |      | 0.00 |      |
| T3,t, Geometry Adjustment Factor             | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 |
| tc, Critical Headway                         | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 |
| tc,I, Critical Headway (Stage I)             |           |      |    |      |      |      |           |      |    |      |      |      |
| tc,II, Critical Headway (Stage II)           |           |      |    |      |      |      |           |      |    |      |      |      |
| tf,base, Base Follow-Up Headway              | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 |
| tf,hv, Heavy Vehicles Adjustment Factor      | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |      |    | 0.90 | 0.90 | 0.90 |
| tf, Follow-Up Headway                        | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |        |      | E      |        |        | S (Major) |        |       | W      |        |        |
|----------------------|-----------|--------|------|--------|--------|--------|-----------|--------|-------|--------|--------|--------|
|                      | L1        | T      | R1   | L1     | T      | R1     | L1        | T      | R1    | L1     | T      | R1     |
| Movement             |           |        |      |        |        |        |           |        |       |        |        |        |
| vx, Volume           | 5.56      | 175.58 | 5.56 | 6.67   | 5.56   | 11.11  | 8.89      | 160.00 | 10.00 | 5.56   | 5.56   | 5.56   |
| cmv, Capacity        | 1419.58   |        |      | 570.27 | 552.83 | 884.72 | 1406.41   |        |       | 564.36 | 551.25 | 869.80 |
| V / C                | 0.00      |        |      | 0.01   | 0.01   | 0.01   | 0.01      |        |       | 0.01   | 0.01   | 0.01   |
| d, Delay             | 7.55      |        |      | 11.50  | 11.70  | 9.26   | 7.58      |        |       | 11.53  | 11.68  | 9.29   |
| LOS                  | A         |        |      | B      | B      | A      | A         |        |       | B      | B      | A      |
| dA, Approach Delay   |           | 0.22   |      |        | 10.48  |        |           | 0.38   |       |        | 10.84  |        |
| Approach LOS         |           |        |      |        | B      |        |           |        |       |        | B      |        |
| dRank1, Rank 1 Delay |           | 0.00   |      |        |        |        |           | 0.00   |       |        |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) |        | E      |        | S (Major) |        | W      |        |
|-----------------------|-----------|--------|--------|--------|-----------|--------|--------|--------|
|                       | Lane 1    | Lane 2 | Lane 1 | Lane 1 | Lane 2    | Lane 1 | Lane 1 | Lane 1 |
| Lane                  |           |        |        |        |           |        |        |        |
| Movements             |           |        |        |        |           |        |        |        |
| vx, Volume            | 5.56      | 181.11 | 23.33  | 8.89   | 170.00    | 16.67  |        |        |
| Planned Storage Size  |           |        |        |        |           |        |        |        |
| cmv, Capacity         |           |        | 680.30 |        |           | 633.49 |        |        |
| V / C                 |           |        | 0.03   |        |           | 0.03   |        |        |
| Q95, 95% Queue Length |           |        | 0.11   |        |           | 0.08   |        |        |
| d, Delay              |           |        | 10.48  |        |           | 10.84  |        |        |
| LOS                   |           |        | B      |        |           | B      |        |        |
| dA, Approach Delay    |           | 0.22   | 10.48  |        | 0.38      | 10.84  |        |        |
| Approach LOS          |           |        | B      |        |           | B      |        |        |

From 2012, S. Cabbage Ave & SW 4th St

| Control Type  | Signalized   |
|---------------|--------------|
| Warrant       | Intersection |
| Average Delay | 29.81        |
| Average LOS   | C            |
| WPC           | 0.51         |
| LOS Time      | 15           |

Vehicle and Pedestrian Movement

|            | L     | T     | R     | L     | T     | R     | L     | T     | R     | L     | T     | R     |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Approach   | 18    | 225   | 15    | 61    | 55    | 13    | 72    | 219   | 55    | 34    | 17    | 62    |
| Left Turn  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Through    | 4     | 63    | 4     | 17    | 15    | 4     | 20    | 61    | 15    | 9     | 21    | 17    |
| Right Turn | 16    | 200   | 17    | 65    | 61    | 14    | 80    | 243   | 61    | 26    | 24    | 65    |

Vehicle and Pedestrian by Lane Group

|            | L     | T     | R     | L     | T     | R     | L     | T     | R     | L     | T     | R     |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Approach   | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Left Turn  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Through    | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Right Turn | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Signalized Intersection

|            | L     | T     | R     | L     | T     | R     | L     | T     | R     | L     | T     | R     |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Approach   | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Left Turn  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Through    | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Right Turn | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Controlled Intersection Control of Service Determination

|            | L     | T     | R     | L     | T     | R     | L     | T     | R     | L     | T     | R     |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Approach   | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Left Turn  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Through    | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Right Turn | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Base of Service

|            | L     | T     | R     | L     | T     | R     | L     | T     | R     | L     | T     | R     |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Approach   | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Left Turn  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Through    | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Right Turn | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Signalized Intersection

|            | L     | T     | R     | L     | T     | R     | L     | T     | R     | L     | T     | R     |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Approach   | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Left Turn  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Through    | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Right Turn | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Left Turn Signalized Intersection

|            | L     | T     | R     | L     | T     | R     | L     | T     | R     | L     | T     | R     |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Approach   | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Left Turn  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Through    | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Right Turn | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Right Turn Signalized Intersection

|            | L     | T     | R     | L     | T     | R     | L     | T     | R     | L     | T     | R     |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Approach   | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Left Turn  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Through    | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Right Turn | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Signalized Intersection

|            | L     | T     | R     | L     | T     | R     | L     | T     | R     | L     | T     | R     |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Approach   | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Left Turn  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Through    | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Right Turn | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

## Node 2033: S College Ave &amp; SE 8th St

Control Type TWSC  
 Method HCM 6th Edition  
 dI, Average Delay 1.84  
 Worst Case Delay 14.2  
 Worst Case LOS B

## Volume and Adjustments

| Approach              | N (Major) |        |       | E     |       |       | S (Major) |        |       | W     |       |       |
|-----------------------|-----------|--------|-------|-------|-------|-------|-----------|--------|-------|-------|-------|-------|
| Movement              | L1        | T      | R1    | L1    | T     | R1    | L1        | T      | R1    | L1    | T     | R1    |
| Base Volume           | 15.00     | 224.00 | 8.00  | 5.00  | 6.00  | 8.00  | 12.00     | 205.00 | 12.00 | 12.00 | 5.00  | 32.00 |
| PHF, Peak-hour factor | 0.900     | 0.900  | 0.900 | 0.900 | 0.900 | 0.900 | 0.900     | 0.900  | 0.900 | 0.900 | 0.900 | 0.900 |
| V, Adjusted Volume    | 16.67     | 248.89 | 8.89  | 5.56  | 6.67  | 8.89  | 13.33     | 228.89 | 13.33 | 13.33 | 5.56  | 35.56 |

## Pedestrians

| Approach                 | N (Major) |   |    | E     |       |       | S (Major) |   |    | W     |       |       |
|--------------------------|-----------|---|----|-------|-------|-------|-----------|---|----|-------|-------|-------|
| Movement                 | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    |
| vx, Flow (Ped/hr)        | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |
| w, Lane Width (ft)       | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  |
| fp, Percent Blockage     | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |   |    | E      |        |        | S (Major) |   |    | W      |        |        |
|------------------------------------------------|-----------|---|----|--------|--------|--------|-----------|---|----|--------|--------|--------|
| Movement                                       | L1        | T | R1 | L1     | T      | R1     | L1        | T | R1 | L1     | T      | R1     |
| Rank                                           | 2         | 1 | 1  | 4      | 3      | 2      | 2         | 1 | 1  | 4      | 3      | 2      |
| vx, Volume                                     | 16.67     |   |    | 5.56   | 6.67   | 8.89   | 13.33     |   |    | 13.33  | 5.56   | 35.56  |
| Conflicting Volume (Veh)                       | 242.22    |   |    | 569.44 | 553.33 | 235.56 | 257.78    |   |    | 556.67 | 555.56 | 253.33 |
| Conflicting Volume (Ped)                       | 0.00      |   |    | 0.00   | 0.00   | 0.00   | 0.00      |   |    | 0.00   | 0.00   | 0.00   |
| Conflicting Volume                             | 242.22    |   |    | 569.44 | 553.33 | 235.56 | 257.78    |   |    | 556.67 | 555.56 | 253.33 |
| Two-Stage Gap Acceptance                       |           |   |    | No     | No     |        |           |   |    | No     | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |   |    |        |        |        |           |   |    |        |        |        |
| cp, Potential Capacity                         | 1336.04   |   |    | 435.69 | 443.65 | 808.44 | 1318.68   |   |    | 444.29 | 442.39 | 790.24 |
| Capacity                                       | 1336.04   |   |    | 403.80 | 432.06 | 808.44 | 1318.68   |   |    | 425.60 | 430.81 | 790.24 |

## Critical Headway and Follow-Up Headway

| Approach                                       | N (Major) |      |    | E    |      |      | S (Major) |      |    | W    |      |      |
|------------------------------------------------|-----------|------|----|------|------|------|-----------|------|----|------|------|------|
| Movement                                       | L1        | T    | R1 | L1   | T    | R1   | L1        | T    | R1 | L1   | T    | R1   |
| tc, base, Base Critical Headway                | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 |
| tc, base, I, Base Critical Headway (Stage I)   |           |      |    |      |      |      |           |      |    |      |      |      |
| tc, base, II, Base Critical Headway (Stage II) |           |      |    |      |      |      |           |      |    |      |      |      |
| tc, hv, Heavy Vehicles Adjustment Factor       | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |      |    | 1.00 | 1.00 | 1.00 |
| Phv, % Heavy Vehicles                          | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 |
| tc, G, Grade Adjustment Factor                 | 1.00      |      |    | 0.20 | 0.20 | 0.10 | 1.00      |      |    | 0.20 | 0.20 | 0.10 |
| G, % Grade                                     |           | 0.00 |    |      | 0.00 |      |           | 0.00 |    |      | 0.00 |      |
| T3, It, Geometry Adjustment Factor             | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 |
| tc, Critical Headway                           | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 |
| tc, I, Critical Headway (Stage I)              |           |      |    |      |      |      |           |      |    |      |      |      |
| tc, II, Critical Headway (Stage II)            |           |      |    |      |      |      |           |      |    |      |      |      |
| tf, base, Base Follow-Up Headway               | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 |
| tf, hv, Heavy Vehicles Adjustment Factor       | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |      |    | 0.90 | 0.90 | 0.90 |
| tf, Follow-Up Headway                          | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |        |      | E      |        |        | S (Major) |        |       | W      |        |        |
|----------------------|-----------|--------|------|--------|--------|--------|-----------|--------|-------|--------|--------|--------|
| Movement             | L1        | T      | R1   | L1     | T      | R1     | L1        | T      | R1    | L1     | T      | R1     |
| vx, Volume           | 16.67     | 248.89 | 8.89 | 5.56   | 6.67   | 8.89   | 13.33     | 228.89 | 13.33 | 13.33  | 5.56   | 35.56  |
| cmx, Capacity        | 1336.04   |        |      | 403.80 | 432.06 | 808.44 | 1318.68   |        |       | 425.60 | 430.81 | 790.24 |
| V / C                | 0.01      |        |      | 0.01   | 0.02   | 0.01   | 0.01      |        |       | 0.03   | 0.01   | 0.04   |
| d, Delay             | 7.73      |        |      | 14.20  | 13.62  | 9.74   | 7.76      |        |       | 14.04  | 13.93  | 10.13  |
| LOS                  | A         |        |      | B      | B      | A      | A         |        |       | B      | B      | B      |
| dA, Approach Delay   |           | 0.47   |      |        | 12.14  |        |           | 0.40   |       |        | 11.48  |        |
| Approach LOS         |           |        |      |        | B      |        |           |        |       |        | B      |        |
| dRank1, Rank 1 Delay |           | 0.00   |      |        |        |        |           | 0.00   |       |        |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) |        | E         | S (Major) |        | W         |
|-----------------------|-----------|--------|-----------|-----------|--------|-----------|
| Lane                  | Lane 1    | Lane 2 | Lane 1    | Lane 1    | Lane 2 | Lane 1    |
| Movements             | T, R1     | T, R1  | L1, T, R1 | T, R1     | T, R1  | L1, T, R1 |
| vx, Volume            | 16.67     | 257.78 | 21.11     | 13.33     | 242.22 | 54.44     |
| Planned Storage Size  |           |        |           |           |        |           |
| cmx, Capacity         |           |        | 525.37    |           |        | 810.25    |
| V / C                 |           |        | 0.04      |           |        | 0.09      |
| Q95, 95% Queue Length |           |        | 0.13      |           |        | 0.29      |
| d, Delay              |           |        | 12.14     |           |        | 11.48     |
| LOS                   |           |        | B         |           |        | B         |
| dA, Approach Delay    |           | 0.47   | 12.14     |           | 0.40   | 11.48     |
| Approach LOS          |           |        | B         |           |        | B         |

## Node 2034: S College Ave &amp; SE 8th St

Control Type TWSC  
 Method HCM 6th Edition  
 dI, Average Delay 1.82  
 Worst Case Delay 14.18  
 Worst Case LOS B

## Volumes and Adjustments

| Approach              | N (Major) |        |       | E     |       |       | S (Major) |        |       | W     |       |       |
|-----------------------|-----------|--------|-------|-------|-------|-------|-----------|--------|-------|-------|-------|-------|
| Movement              | L1        | T      | R1    | L1    | T     | R1    | L1        | T      | R1    | L1    | T     | R1    |
| Base Volume           | 15.00     | 224.00 | 8.00  | 5.00  | 6.00  | 8.00  | 12.00     | 208.00 | 12.00 | 12.00 | 5.00  | 31.00 |
| PHF, Peak-hour factor | 0.900     | 0.900  | 0.900 | 0.900 | 0.900 | 0.900 | 0.900     | 0.900  | 0.900 | 0.900 | 0.900 | 0.900 |
| V, Adjusted Volume    | 16.67     | 248.89 | 8.89  | 5.56  | 6.67  | 8.89  | 13.33     | 228.89 | 13.33 | 13.33 | 5.56  | 34.44 |

## Pedestrians

| Approach                 | N (Major) |   |    | E     |       |       | S (Major) |   |    | W     |       |       |
|--------------------------|-----------|---|----|-------|-------|-------|-----------|---|----|-------|-------|-------|
| Movement                 | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    |
| vx, Flow (Ped/hr)        | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |
| w, Lane Width (ft)       | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  |
| fpb, Percent Blockage    | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |   |    | E      |        |        | S (Major) |   |    | W      |        |        |
|------------------------------------------------|-----------|---|----|--------|--------|--------|-----------|---|----|--------|--------|--------|
| Movement                                       | L1        | T | R1 | L1     | T      | R1     | L1        | T | R1 | L1     | T      | R1     |
| Rank                                           | 2         | 1 | 1  | 4      | 3      | 2      | 2         | 1 | 1  | 4      | 3      | 2      |
| vx, Volume                                     | 16.67     |   |    | 5.56   | 6.67   | 8.89   | 13.33     |   |    | 13.33  | 5.56   | 34.44  |
| Conflicting Volume (Veh)                       | 242.22    |   |    | 568.89 | 553.33 | 235.56 | 257.78    |   |    | 556.67 | 555.56 | 253.33 |
| Conflicting Volume (Ped)                       | 0.00      |   |    | 0.00   | 0.00   | 0.00   | 0.00      |   |    | 0.00   | 0.00   | 0.00   |
| Conflicting Volume                             | 242.22    |   |    | 568.89 | 553.33 | 235.56 | 257.78    |   |    | 556.67 | 555.56 | 253.33 |
| Two-Stage Gap Acceptance                       |           |   |    | No     | No     |        |           |   |    | No     | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |   |    |        |        |        |           |   |    |        |        |        |
| cmx, Potential Capacity                        | 1336.04   |   |    | 436.06 | 443.65 | 808.44 | 1318.68   |   |    | 444.29 | 442.36 | 790.24 |
| Capacity                                       | 1336.04   |   |    | 404.74 | 432.06 | 808.44 | 1318.68   |   |    | 425.60 | 430.81 | 790.24 |

## Critical Headway and Follow-Up Headway

| Approach                                      | N (Major) |      |    | E    |      |      | S (Major) |      |    | W    |      |      |
|-----------------------------------------------|-----------|------|----|------|------|------|-----------|------|----|------|------|------|
| Movement                                      | L1        | T    | R1 | L1   | T    | R1   | L1        | T    | R1 | L1   | T    | R1   |
| to base, Base Critical Headway                | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 |
| to base, I, Base Critical Headway (Stage I)   |           |      |    |      |      |      |           |      |    |      |      |      |
| to base, II, Base Critical Headway (Stage II) |           |      |    |      |      |      |           |      |    |      |      |      |
| to hv, Heavy Vehicles Adjustment Factor       | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |      |    | 1.00 | 1.00 | 1.00 |
| Phv, % Heavy Vehicles                         | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 |
| to G, Grade Adjustment Factor                 | 1.00      |      |    | 0.20 | 0.20 | 0.10 | 1.00      |      |    | 0.20 | 0.20 | 0.10 |
| G, % Grade                                    |           | 0.00 |    |      | 0.00 |      |           | 0.00 |    |      | 0.00 |      |
| T3, II, Geometry Adjustment Factor            | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 |
| to Critical Headway                           | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 |
| to I, Critical Headway (Stage I)              |           |      |    |      |      |      |           |      |    |      |      |      |
| to II, Critical Headway (Stage II)            |           |      |    |      |      |      |           |      |    |      |      |      |
| to base, Base Follow-Up Headway               | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 |
| to hv, Heavy Vehicles Adjustment Factor       | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |      |    | 0.90 | 0.90 | 0.90 |
| to Follow-Up Headway                          | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |        |      | E      |        |        | S (Major) |        |       | W      |        |        |
|----------------------|-----------|--------|------|--------|--------|--------|-----------|--------|-------|--------|--------|--------|
| Movement             | L1        | T      | R1   | L1     | T      | R1     | L1        | T      | R1    | L1     | T      | R1     |
| vx, Volume           | 16.67     | 248.89 | 8.89 | 5.56   | 6.67   | 8.89   | 13.33     | 228.89 | 13.33 | 13.33  | 5.56   | 34.44  |
| cmx, Capacity        | 1336.04   |        |      | 404.74 | 432.06 | 808.44 | 1318.68   |        |       | 425.60 | 430.81 | 790.24 |
| V / C                | 0.01      |        |      | 0.01   | 0.02   | 0.01   | 0.01      |        |       | 0.03   | 0.01   | 0.04   |
| d, Delay             | 7.73      |        |      | 14.18  | 13.62  | 9.74   | 7.76      |        |       | 14.03  | 13.93  | 10.13  |
| LOS                  | A         |        |      | B      | B      | A      | A         |        |       | B      | B      | B      |
| dA, Approach Delay   |           | 0.47   |      |        | 12.13  |        |           | 0.40   |       |        | 11.50  |        |
| Approach LOS         |           |        |      |        | B      |        |           |        |       |        | B      |        |
| dRank1, Rank 1 Delay |           | 0.00   |      |        |        |        |           | 0.00   |       |        |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) |        | E         | S (Major) |        | W         |
|-----------------------|-----------|--------|-----------|-----------|--------|-----------|
| Lane                  | Lane 1    | Lane 2 | Lane 1    | Lane 1    | Lane 2 | Lane 1    |
| Movements             | T, R1     | T, R1  | L1, T, R1 | L1, T, R1 | T, R1  | L1, T, R1 |
| vx, Volume            | 16.67     | 257.78 | 21.11     | 13.33     | 242.22 | 53.33     |
| Flared Storage Size   |           |        |           |           |        |           |
| cmx, Capacity         |           |        | 525.79    |           |        | 607.36    |
| V / C                 |           |        | 0.04      |           |        | 0.09      |
| Q85, 95% Queue Length |           |        | 0.13      |           |        | 0.29      |
| d, Delay              |           |        | 12.13     |           |        | 11.50     |
| LOS                   |           |        | B         |           |        | B         |
| dA, Approach Delay    |           | 0.47   | 12.13     |           | 0.40   | 11.50     |
| Approach LOS          |           |        | B         |           |        | B         |

## Node 2035: S College Ave &amp; SE 10th St

Control Type TWSC  
 Method HCM 6th Edition  
 dt, Average Delay 1.18  
 Worst Case Delay 19.97  
 Worst Case LOS C

## Volume and Adjustments

| Approach              | N (Major) |        |       | E     |       |       | S (Major) |        |       | W     |       |       |
|-----------------------|-----------|--------|-------|-------|-------|-------|-----------|--------|-------|-------|-------|-------|
| Movement              | L1        | T      | R1    | L1    | T     | R1    | L1        | T      | R1    | L1    | T     | R1    |
| Base Volume           | 11.00     | 353.00 | 13.00 | 5.00  | 5.00  | 5.00  | 19.00     | 358.00 | 5.00  | 13.00 | 5.00  | 9.00  |
| PHF, Peak-hour factor | 0.900     | 0.900  | 0.900 | 0.900 | 0.900 | 0.900 | 0.900     | 0.900  | 0.900 | 0.900 | 0.900 | 0.900 |
| V, Adjusted Volume    | 12.22     | 392.22 | 14.44 | 5.56  | 5.56  | 5.56  | 21.11     | 397.78 | 5.56  | 14.44 | 5.56  | 10.00 |

## Pedestrians

| Approach                 | N (Major) |   |    | E     |       |       | S (Major) |   |    | W     |       |       |
|--------------------------|-----------|---|----|-------|-------|-------|-----------|---|----|-------|-------|-------|
| Movement                 | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    |
| vx, Flow (Ped/hr)        | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |
| w, Lane Width (ft)       | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  |
| fpb, Percent Blockage    | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |   |    | E      |        |        | S (Major) |   |    | W      |        |        |
|------------------------------------------------|-----------|---|----|--------|--------|--------|-----------|---|----|--------|--------|--------|
| Movement                                       | L1        | T | R1 | L1     | T      | R1     | L1        | T | R1 | L1     | T      | R1     |
| Rank                                           | 2         | 1 | 1  | 4      | 3      | 2      | 2         | 1 | 1  | 4      | 3      | 2      |
| vx, Volume                                     | 12.22     |   |    | 5.56   | 5.56   | 5.56   | 21.11     |   |    | 14.44  | 5.56   | 10.00  |
| Conflicting Volume (Veh)                       | 403.33    |   |    | 874.44 | 873.89 | 400.56 | 406.67    |   |    | 872.22 | 869.44 | 399.44 |
| Conflicting Volume (Ped)                       | 0.00      |   |    | 0.00   | 0.00   | 0.00   | 0.00      |   |    | 0.00   | 0.00   | 0.00   |
| Conflicting Volume                             | 403.33    |   |    | 874.44 | 873.89 | 400.56 | 406.67    |   |    | 872.22 | 869.44 | 399.44 |
| Two-Stage Gap Acceptance                       |           |   |    | No     | No     |        |           |   |    | No     | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |   |    |        |        |        |           |   |    |        |        |        |
| cmx, Potential Capacity                        | 1166.30   |   |    | 272.18 | 290.34 | 653.86 | 1163.01   |   |    | 273.12 | 292.07 | 654.80 |
| Capacity                                       | 1166.30   |   |    | 256.62 | 279.70 | 653.86 | 1163.01   |   |    | 259.26 | 281.36 | 654.80 |

## Critical Headway and Follow Up Headway

| Approach                                      | N (Major) |      |    | E    |      |      | S (Major) |      |    | W    |      |      |
|-----------------------------------------------|-----------|------|----|------|------|------|-----------|------|----|------|------|------|
| Movement                                      | L1        | T    | R1 | L1   | T    | R1   | L1        | T    | R1 | L1   | T    | R1   |
| tc, base, Base Critical Headway               | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 |
| tc, base I, Base Critical Headway (Stage I)   |           |      |    |      |      |      |           |      |    |      |      |      |
| tc, base II, Base Critical Headway (Stage II) |           |      |    |      |      |      |           |      |    |      |      |      |
| tc, IV, Heavy Vehicles Adjustment Factor      | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |      |    | 1.00 | 1.00 | 1.00 |
| Prv, IV, Heavy Vehicles                       | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 |
| tc, G, Grade Adjustment Factor                | 1.00      |      |    | 0.20 | 0.20 | 0.10 | 1.00      |      |    | 0.20 | 0.20 | 0.10 |
| G, % Grade                                    |           | 0.00 |    |      | 0.00 |      |           | 0.00 |    |      | 0.00 |      |
| T3, H, Geometry Adjustment Factor             | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 |
| tc, Critical Headway                          | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 |
| tc, I, Critical Headway (Stage I)             |           |      |    |      |      |      |           |      |    |      |      |      |
| tc, II, Critical Headway (Stage II)           |           |      |    |      |      |      |           |      |    |      |      |      |
| tf, base, Base Follow-Up Headway              | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 |
| tf, IV, Heavy Vehicles Adjustment Factor      | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |      |    | 0.90 | 0.90 | 0.90 |
| tf, Follow-Up Headway                         | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |        |       | E      |        |        | S (Major) |        |      | W      |        |        |
|----------------------|-----------|--------|-------|--------|--------|--------|-----------|--------|------|--------|--------|--------|
| Movement             | L1        | T      | R1    | L1     | T      | R1     | L1        | T      | R1   | L1     | T      | R1     |
| vx, Volume           | 12.22     | 392.22 | 14.44 | 5.56   | 5.56   | 5.56   | 21.11     | 397.78 | 5.56 | 14.44  | 5.56   | 10.00  |
| cmx, Capacity        | 1166.30   |        |       | 256.62 | 279.70 | 653.86 | 1163.01   |        |      | 259.26 | 281.36 | 654.80 |
| V / C                | 0.01      |        |       | 0.02   | 0.02   | 0.01   | 0.02      |        |      | 0.06   | 0.02   | 0.02   |
| d, Delay             | 8.12      |        |       | 19.80  | 18.44  | 11.07  | 8.15      |        |      | 19.97  | 18.88  | 11.58  |
| LOS                  | A         |        |       | C      | C      | B      | A         |        |      | C      | C      | B      |
| dA, Approach Delay   |           | 0.24   |       |        | 16.37  |        |           | 0.41   |      |        | 16.97  |        |
| Approach LOS         |           |        |       |        | C      |        |           |        |      |        | C      |        |
| dRank1, Rank 1 Delay |           | 0.00   |       |        |        |        |           | 0.00   |      |        |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) |        | E         | S (Major) |        | W         |
|-----------------------|-----------|--------|-----------|-----------|--------|-----------|
| Lane                  | Lane 1    | Lane 2 | Lane 1    | Lane 1    | Lane 2 | Lane 1    |
| Movements             | T, R1     | T, R1  | L1, T, R1 | T, R1     | T, R1  | L1, T, R1 |
| vx, Volume            | 12.22     | 406.67 | 16.67     | 21.11     | 403.33 | 30.00     |
| Planned Storage Size  |           |        |           |           |        |           |
| cmx, Capacity         |           |        | 333.28    |           |        | 330.65    |
| V / C                 |           |        | 0.05      |           |        | 0.09      |
| Q85, 95% Queue Length |           |        | 0.16      |           |        | 0.30      |
| d, Delay              |           |        | 16.37     |           |        | 16.97     |
| LOS                   |           |        | C         |           |        | C         |
| dA, Approach Delay    |           | 0.24   | 16.37     |           | 0.41   | 16.97     |
| Approach LOS          |           |        | C         |           |        | C         |

| Node 2030: (College Ave & 3rd 12th St) |            |
|----------------------------------------|------------|
| Control Type                           | Signalized |
| Wayins                                 | multilane  |
| Average Delay                          | 22.51      |
| C                                      | C          |
| WC                                     | 0.5        |
| Loss Time                              | 21         |

| ANALYSIS OF VARIANCE BY UNIVERSITY |       |       |       |       |       |       |       |       |       |       |       |       |
|------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| APPLICANT                          | T     |       |       | E     |       |       | S     |       |       | W     |       |       |
| DEPARTMENT                         | L1    | T1    | R1    | L1    | T1    | R1    | L1    | T1    | R1    | L1    | T1    | R1    |
| DEPT 1                             | 15    | 215   | 15    | 05    | 205   | 15    | 17    | 217   | 15    | 17    | 3     | 17    |
| DEPT 2                             | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| DEPT 3                             | 19    | 24    | 3     | 18    | 9     | 21    | 4     | 70    | 13    | 3     | 5     | 4     |
| DEPT 4                             | 77    | 205   | 12    | 75    | 22    | 09    | 16    | 510   | 28    | 12    | 19    | 14    |

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| Analysis of Variance and Cost of Survey Information |       |       |       |       |       |       |       |  |
|-----------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|--|
|                                                     | N     |       | E     |       | O     |       | V     |  |
| App. 1950                                           | 92576 | 22573 | 92574 | 92575 | 92572 | 92577 | 92571 |  |
| App. 1951                                           | 3916  | 19146 | 7111  | 19146 | 19147 | 9161  | 19147 |  |
| Co. 1950                                            | 76587 | 21556 | 7111  | 10178 | 17178 | 18775 | 18775 |  |
| Co. 1951                                            | 1667  | 17184 | 1667  | 16536 | 1667  | 16542 | 1667  |  |
| Co. 1952                                            | 490   | 974   | 212   | 201   | 95    | 201   | 95    |  |
| Co. 1953                                            | 100   | 056   | 013   | 017   | 005   | 013   | 014   |  |
| Co. 1954                                            | 016   | 032   | 034   | 041   | 019   | 07    | 013   |  |
| Co. 1955                                            | 1627  | 817   | 2755  | 2553  | 31455 | 2655  | 3134  |  |
| Co. 1956                                            | 000   | 000   | 000   | 000   | 000   | 000   | 000   |  |
| Co. 1957                                            | 063   | 064   | 425   | 452   | 432   | 706   | 278   |  |
| Co. 1958                                            | 009   | 004   | 000   | 000   | 000   | 000   | 000   |  |
| Co. 1959                                            | 002   | 000   | 100   | 100   | 003   | 100   | 100   |  |
| Co. 1960                                            | 029   | 006   | 013   | 017   | 006   | 033   | 066   |  |
| Co. 1961                                            | 100   | 100   | 100   | 100   | 100   | 100   | 100   |  |
| Co. 1962                                            | 1652  | 805   | 31413 | 30716 | 36777 | 28333 | 34172 |  |
| Co. 1963                                            | B     | A     | C     | D     | E     | F     | G     |  |
| Co. 1964                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1965                                            | B     | C     | D     | E     | F     | G     | H     |  |
| App. 1966                                           | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| App. 1967                                           | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1968                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1969                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1970                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1971                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1972                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1973                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1974                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1975                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1976                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1977                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1978                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1979                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1980                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1981                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1982                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1983                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1984                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1985                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1986                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1987                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1988                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1989                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1990                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1991                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1992                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1993                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1994                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1995                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1996                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1997                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1998                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 1999                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |
| Co. 2000                                            | 1234  | 3131  | 2856  | 2856  | 2856  | 2856  | 2856  |  |

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| Analysis of Variance for Parameter Estimating |        |        |        |        |        |        |        |        |
|-----------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| AN                                            | H      |        | B      |        | S      |        | W      |        |
|                                               | 925156 | 925176 | 925178 | 925178 | 925171 | 925171 | 925177 | 925178 |
|                                               | Proc   | NoL69  | Proc   | NoL69  | Proc   | NoL69  | Proc   | NoL69  |
| A                                             |        |        |        |        |        |        |        |        |
| B                                             |        |        |        |        |        |        |        |        |
| C                                             |        |        |        |        |        |        |        |        |
| D                                             |        |        |        |        |        |        |        |        |
| E                                             |        |        |        |        |        |        |        |        |
| F                                             |        |        |        |        |        |        |        |        |
| G                                             |        |        |        |        |        |        |        |        |
| H                                             |        |        |        |        |        |        |        |        |
| I                                             |        |        |        |        |        |        |        |        |
| J                                             |        |        |        |        |        |        |        |        |
| K                                             |        |        |        |        |        |        |        |        |
| L                                             |        |        |        |        |        |        |        |        |
| M                                             |        |        |        |        |        |        |        |        |
| N                                             |        |        |        |        |        |        |        |        |
| O                                             |        |        |        |        |        |        |        |        |
| P                                             |        |        |        |        |        |        |        |        |
| Q                                             |        |        |        |        |        |        |        |        |
| R                                             |        |        |        |        |        |        |        |        |
| S                                             |        |        |        |        |        |        |        |        |
| T                                             |        |        |        |        |        |        |        |        |
| U                                             |        |        |        |        |        |        |        |        |
| V                                             |        |        |        |        |        |        |        |        |
| W                                             |        |        |        |        |        |        |        |        |
| X                                             |        |        |        |        |        |        |        |        |
| Y                                             |        |        |        |        |        |        |        |        |
| Z                                             |        |        |        |        |        |        |        |        |
| aa                                            |        |        |        |        |        |        |        |        |
| ab                                            |        |        |        |        |        |        |        |        |
| ac                                            |        |        |        |        |        |        |        |        |
| ad                                            |        |        |        |        |        |        |        |        |
| ae                                            |        |        |        |        |        |        |        |        |
| af                                            |        |        |        |        |        |        |        |        |
| ag                                            |        |        |        |        |        |        |        |        |
| ah                                            |        |        |        |        |        |        |        |        |
| ai                                            |        |        |        |        |        |        |        |        |
| aj                                            |        |        |        |        |        |        |        |        |
| ak                                            |        |        |        |        |        |        |        |        |
| al                                            |        |        |        |        |        |        |        |        |
| am                                            |        |        |        |        |        |        |        |        |
| an                                            |        |        |        |        |        |        |        |        |
| ao                                            |        |        |        |        |        |        |        |        |
| ap                                            |        |        |        |        |        |        |        |        |
| aq                                            |        |        |        |        |        |        |        |        |
| ar                                            |        |        |        |        |        |        |        |        |
| as                                            |        |        |        |        |        |        |        |        |
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| Dependent and Keyed Assumptions Factors |      |   |      |      |   |      |      |    |      |      |      |
|-----------------------------------------|------|---|------|------|---|------|------|----|------|------|------|
| Assumptions                             | L1   | S | R1   | L3   | E | L1   | S    | R1 | L3   | W    | R3   |
| Minimum                                 | T    |   |      | T    |   | T    |      |    | T    |      |      |
| ga: Population Size                     | 0.00 |   | 0.00 | 0.00 |   | 0.00 | 3.00 |    | 0.00 | 0.00 | 0.00 |
| OC:log10 Average Population Occupancy   | 0.00 |   | 0.00 | 0.00 |   | 0.00 | 3.00 |    | 0.00 | 0.00 | 0.00 |
| OC: log10 Percent of Area Occupied      | 0.00 |   | 0.00 | 0.00 |   | 0.00 | 0.00 |    | 0.00 | 0.00 | 0.00 |
| Appl: Acquisition Factor                | 1.00 |   | 1.00 | 1.00 |   | 1.00 | 1.00 |    | 1.00 | 1.00 | 1.00 |
| Rp: Acquisition Factor                  | 1.00 |   | 1.00 | 1.00 |   | 1.00 | 1.00 |    | 1.00 | 1.00 | 1.00 |
| Ap: Acquisition Factor                  | 1.00 |   | 1.00 | 1.00 |   | 1.00 | 1.00 |    | 1.00 | 1.00 | 1.00 |
| Rp: Acquisition Factor                  | 1.00 |   | 1.00 | 1.00 |   | 1.00 | 1.00 |    | 1.00 | 1.00 | 1.00 |

### Abstract

### Abstract

1. *Practical*



## Node 2037: S College and 13th/13th St

Control Type TWSC  
 Method HCM 6th Edition  
 dI, Average Delay 0.34  
 Worst Case Delay 14.37  
 Worst Case LOS B

## Volume and Adjustments

| Approach              | N (Major) |       | S (Major) |        | W     |       |
|-----------------------|-----------|-------|-----------|--------|-------|-------|
| Movement              | T         | R1    | L1        | T      | L1    | R1    |
| Base Volume           | 304.00    | 8.00  | 5.00      | 334.00 | 5.00  | 11.00 |
| PHF, Peak-hour factor | 0.900     | 0.900 | 0.900     | 0.900  | 0.900 | 0.900 |
| V, Adjusted Volume    | 337.78    | 8.89  | 5.56      | 371.11 | 5.56  | 12.22 |

## Pedestrians

| Approach                 | N (Major) |    | S (Major) |   | W     |       |
|--------------------------|-----------|----|-----------|---|-------|-------|
| Movement                 | T         | R1 | L1        | T | L1    | R1    |
| vx, Flow (Ped/hr)        |           |    | 0.00      |   | 0.00  | 0.00  |
| w, Lane Width (ft)       |           |    | 12.00     |   | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) |           |    | 3.50      |   | 3.50  | 3.50  |
| fpb, Percent Blockage    |           |    | 0.00      |   | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |    | S (Major) |   | W      |        |
|------------------------------------------------|-----------|----|-----------|---|--------|--------|
| Movement                                       | T         | R1 | L1        | T | L1     | R1     |
| Rank                                           | 1         | 1  | 2         | 1 | 3      | 2      |
| vx, Volume                                     |           |    | 5.56      |   | 5.56   | 12.22  |
| Conflicting Volume (Veh)                       |           |    | 346.67    |   | 724.44 | 342.22 |
| Conflicting Volume (Ped)                       |           |    | 0.00      |   | 0.00   | 0.00   |
| Conflicting Volume                             |           |    | 346.67    |   | 724.44 | 342.22 |
| Two-Stage Gap Acceptance                       |           |    |           |   | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |    |           |   |        |        |
| cap, Potential Capacity                        |           |    | 1223.50   |   | 395.28 | 704.96 |
| Capacity                                       |           |    | 1223.50   |   | 393.02 | 704.96 |

## Critical Headway and Follow Up Headway

| Approach                                     | N (Major) |      | S (Major) |      | W    |      |
|----------------------------------------------|-----------|------|-----------|------|------|------|
| Movement                                     | T         | R1   | L1        | T    | L1   | R1   |
| to base, Base Critical Headway               |           |      | 4.10      |      | 7.10 | 6.20 |
| to base I, Base Critical Headway (Stage I)   |           |      |           |      |      |      |
| to base II, Base Critical Headway (Stage II) |           |      |           |      |      |      |
| to HV, Heavy Vehicles Adjustment Factor      |           |      | 1.00      |      | 1.00 | 1.00 |
| Phv, % Heavy Vehicles                        |           |      | 0.00      |      | 0.00 | 0.00 |
| to G, Grade Adjustment Factor                |           |      | 1.00      |      | 0.20 | 0.10 |
| G, % Grade                                   |           | 0.00 |           | 0.00 |      | 0.00 |
| TsIt, Geometry Adjustment Factor             |           |      | 0.00      |      | 0.70 | 0.00 |
| to, Critical Headway                         |           |      | 4.10      |      | 6.40 | 6.20 |
| to I, Critical Headway (Stage I)             |           |      |           |      |      |      |
| to II, Critical Headway (Stage II)           |           |      |           |      |      |      |
| to base, Base Follow-Up Headway              |           |      | 2.20      |      | 3.50 | 3.30 |
| to HV, Heavy Vehicles Adjustment Factor      |           |      | 0.90      |      | 0.90 | 0.90 |
| to, Follow-Up Headway                        |           |      | 2.20      |      | 3.50 | 3.30 |

## Delay and Level of Service by Movement

| Approach              | N (Major) |      | S (Major) |        | W      |        |
|-----------------------|-----------|------|-----------|--------|--------|--------|
| Movement              | T         | R1   | L1        | T      | L1     | R1     |
| vx, Volume            | 337.78    | 8.89 | 5.56      | 371.11 | 5.56   | 12.22  |
| cmx, Capacity         |           |      | 1223.50   |        | 393.02 | 704.96 |
| V / C                 |           |      | 0.00      |        | 0.01   | 0.02   |
| d, Delay              |           |      | 7.96      |        | 14.37  | 10.31  |
| LOS                   |           |      | A         |        | B      | B      |
| dA, Approach Delay    | 0.00      |      | 0.12      |        | 11.58  |        |
| Approach LOS          |           |      |           |        | B      |        |
| dRank 1, Rank 1 Delay | 0.00      |      | 0.05      |        |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) | S (Major) | W      |
|-----------------------|-----------|-----------|--------|
| Lane                  | Lane 1    | Lane 1    | Lane 1 |
| Movements             | T, R1     | L1, T     | L1, R1 |
| vx, Volume            | 346.67    | 376.67    | 17.78  |
| Flared Storage Size   |           |           |        |
| cmx, Capacity         |           | 1223.50   | 564.86 |
| V / C                 |           | 0.31      | 0.03   |
| Q95, 95% Queue Length |           | 0.01      | 0.10   |
| d, Delay              |           | 7.96      | 11.58  |
| LOS                   |           |           | B      |
| dA, Approach Delay    | 0.00      | 0.12      | 11.58  |
| Approach LOS          |           |           | B      |

| Variable Frequency Factorial Latin Group |       |       |       |       |       |       |       |       |       |       |       |  |
|------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| App                                      | L     |       |       | C     |       |       | R     |       |       | W     |       |  |
| Language                                 | L     | C     | R     | L     | C     | R     | L     | C     | R     | L     | C     |  |
| ID                                       | 92583 | 92584 | 92585 | 92586 | 92587 | 92588 | 92589 | 92590 | 92591 | 92592 | 92593 |  |
| Gender                                   | L     | T     | R     | L     | T     | R     | L     | T     | R     | L     | T     |  |
| Complexity                               | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |  |
| PLT                                      | 1.00  | 0.00  | 0.00  | 1.00  | 0.00  | 0.00  | 1.00  | 0.00  | 0.00  | 1.00  | 0.00  |  |
| PLT                                      | 0.00  | 1.00  | 0.00  | 0.00  | 1.00  | 0.00  | 0.00  | 1.00  | 0.00  | 0.00  | 1.00  |  |
| PLT                                      | 0.00  | 0.00  | 1.00  | 0.00  | 0.00  | 1.00  | 0.00  | 0.00  | 1.00  | 0.00  | 0.00  |  |

[illegible]

| Age | N |  |  |  | S |  |  |  | W |  |  |  |
|-----|---|--|--|--|---|--|--|--|---|--|--|--|
| Age | N |  |  |  | S |  |  |  | W |  |  |  |
| Age | N |  |  |  | S |  |  |  | W |  |  |  |
| Age | N |  |  |  | S |  |  |  | W |  |  |  |
| Age | N |  |  |  | S |  |  |  | W |  |  |  |
| Age | N |  |  |  | S |  |  |  | W |  |  |  |
| Age | N |  |  |  | S |  |  |  | W |  |  |  |
| Age | N |  |  |  | S |  |  |  | W |  |  |  |
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| Age | N |  |  |  | S |  |  |  | W |  |  |  |
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| Age | N |  |  |  | S |  |  |  | W |  |  |  |
| Age | N |  |  |  | S |  |  |  | W |  |  |  |
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| Age | N |  |  |  | S |  |  |  | W |  |  |  |
| Age | N |  |  |  | S |  |  |  | W |  |  |  |
| Age | N |  |  |  | S |  |  |  | W |  |  |  |
| Age | N |  |  |  | S |  |  |  | W |  |  |  |
| Age | N |  |  |  | S |  |  |  | W |  |  |  |
| Age | N |  |  |  | S |  |  |  | W |  |  |  |
| Age | N |  |  |  | S |  |  |  | W |  |  |  |
| Age | N |  |  |  | S |  |  |  | W |  |  |  |
| Age | N |  |  |  | S |  |  |  | W |  |  |  |
| Age | N |  |  |  | S |  |  |  | W |  |  |  |
| Age | N |  |  |  | S |  |  |  | W |  |  |  |

| Appendix 2: Major Equipment Factors |                          |      |  |      |      |  |      |      |  |      |      |  |
|-------------------------------------|--------------------------|------|--|------|------|--|------|------|--|------|------|--|
|                                     | L1                       |      |  | R1   |      |  | L1   |      |  | R1   |      |  |
|                                     |                          | T    |  |      | T    |  |      | T    |  | T    |      |  |
| A <sub>1</sub>                      |                          |      |  |      |      |  |      |      |  |      |      |  |
| M <sub>1</sub>                      |                          |      |  |      |      |  |      |      |  |      |      |  |
| C <sub>1</sub>                      |                          | 0.00 |  | 0.00 | 0.00 |  | 0.00 | 0.00 |  | 0.00 | 0.00 |  |
| C <sub>2</sub>                      |                          | 0.00 |  | 0.00 | 0.00 |  | 0.00 | 0.00 |  | 0.00 | 0.00 |  |
| C <sub>3</sub>                      | Major Position Occupancy | 0.00 |  | 0.00 | 0.00 |  | 0.00 | 0.00 |  | 0.00 | 0.00 |  |
| C <sub>4</sub>                      | Major Position Occupancy | 0.00 |  | 0.00 | 0.00 |  | 0.00 | 0.00 |  | 0.00 | 0.00 |  |
| A <sub>2</sub>                      |                          | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  |
| M <sub>2</sub>                      |                          | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  |
| C <sub>5</sub>                      |                          | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  |
| C <sub>6</sub>                      |                          | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  |

## Node 2039: SE 3rd &amp; Ash Ave

Control Type TWSC  
 Method HCM 6th Edition  
 d1, Average Delay 6.71  
 Worst Case Delay 9.39  
 Worst Case LOS A

## Volume and Adjustments

| Approach              | N     |       |       | E (Major) |       |       | S     |       |       | W (Major) |       |       |
|-----------------------|-------|-------|-------|-----------|-------|-------|-------|-------|-------|-----------|-------|-------|
| Movement              | L1    | T     | R1    | L1        | T     | R1    | L1    | T     | R1    | L1        | T     | R1    |
| Base Volume           | 5.00  | 14.00 | 5.00  | 5.00      | 5.00  | 5.00  | 5.00  | 19.00 | 5.00  | 5.00      | 5.00  | 5.00  |
| PHF, Peak-hour factor | 0.900 | 0.900 | 0.900 | 0.900     | 0.900 | 0.900 | 0.900 | 0.900 | 0.900 | 0.900     | 0.900 | 0.900 |
| V, Adjusted Volume    | 5.56  | 15.56 | 5.56  | 5.56      | 5.56  | 5.56  | 5.56  | 21.11 | 5.56  | 5.56      | 5.56  | 5.56  |

## Pedestrians

| Approach                 | N     |       |       | E (Major) |   |    | S     |       |       | W (Major) |   |    |
|--------------------------|-------|-------|-------|-----------|---|----|-------|-------|-------|-----------|---|----|
| Movement                 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 |
| vx, Flow (Ped/hr)        | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    |
| w, Lane Width (ft)       | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    |
| Sp, Walking Speed (ft/s) | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    |
| fbp, Percent Blockage    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    |

## Capacity of Movements below Rank 1

| Approach                                       | N      |        |         | E (Major) |   |    | S      |        |         | W (Major) |   |    |
|------------------------------------------------|--------|--------|---------|-----------|---|----|--------|--------|---------|-----------|---|----|
| Movement                                       | L1     | T      | R1      | L1        | T | R1 | L1     | T      | R1      | L1        | T | R1 |
| Rank                                           | 4      | 3      | 2       | 2         | 1 | 1  | 4      | 3      | 2       | 2         | 1 | 1  |
| vx, Volume                                     | 5.56   | 15.56  | 5.56    | 5.56      |   |    | 5.56   | 21.11  | 5.56    | 5.56      |   |    |
| Conflicting Volume (Veh)                       | 52.22  | 41.67  | 8.33    | 11.11     |   |    | 49.44  | 41.67  | 8.33    | 11.11     |   |    |
| Conflicting Volume (Ped)                       | 0.00   | 0.00   | 0.00    | 0.00      |   |    | 0.00   | 0.00   | 0.00    | 0.00      |   |    |
| Conflicting Volume                             | 52.22  | 41.67  | 8.33    | 11.11     |   |    | 49.44  | 41.67  | 8.33    | 11.11     |   |    |
| Two-Stage Gap Acceptance                       | No     | No     |         |           |   |    | No     | No     |         |           |   |    |
| Number of Storage Spaces in Median Refuge Area |        |        |         |           |   |    |        |        |         |           |   |    |
| capx, Potential Capacity                       | 951.66 | 854.25 | 1079.48 | 1621.28   |   |    | 955.61 | 854.25 | 1079.48 | 1621.28   |   |    |
| Capacity                                       | 923.92 | 848.36 | 1079.48 | 1621.28   |   |    | 932.48 | 848.36 | 1079.48 | 1621.28   |   |    |

## Critical Headway and Follow-Up Headway

| Approach                                      | N    |      |      | E (Major) |      |    | S    |      |      | W (Major) |      |    |
|-----------------------------------------------|------|------|------|-----------|------|----|------|------|------|-----------|------|----|
| Movement                                      | L1   | T    | R1   | L1        | T    | R1 | L1   | T    | R1   | L1        | T    | R1 |
| tc base, Base Critical Headway                | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    |
| tc base, I, Base Critical Headway (Stage I)   |      |      |      |           |      |    |      |      |      |           |      |    |
| tc base, II, Base Critical Headway (Stage II) |      |      |      |           |      |    |      |      |      |           |      |    |
| tc HV, Heavy Vehicles Adjustment Factor       | 1.00 | 1.00 | 1.00 | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |      |    |
| Phv, % Heavy Vehicles                         | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    |
| tc G, Grade Adjustment Factor                 | 0.20 | 0.20 | 0.10 | 1.00      |      |    | 0.20 | 0.20 | 0.10 | 1.00      |      |    |
| G, % Grade                                    |      | 0.00 |      |           | 0.00 |    |      | 0.00 |      |           | 0.00 |    |
| TG, Geometry Adjustment Factor                | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    |
| tc, Critical Headway                          | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    |
| tc I, Critical Headway (Stage I)              |      |      |      |           |      |    |      |      |      |           |      |    |
| tc II, Critical Headway (Stage II)            |      |      |      |           |      |    |      |      |      |           |      |    |
| tf base, Base Follow-Up Headway               | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    |
| tf hv, Heavy Vehicles Adjustment Factor       | 0.90 | 0.90 | 0.90 | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |      |    |
| tf, Follow-Up Headway                         | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    |

## Delay and Level of Service by Movement

| Approach              | N      |        |         | E (Major) |      |      | S      |        |         | W (Major) |      |      |
|-----------------------|--------|--------|---------|-----------|------|------|--------|--------|---------|-----------|------|------|
| Movement              | L1     | T      | R1      | L1        | T    | R1   | L1     | T      | R1      | L1        | T    | R1   |
| vx, Volume            | 5.56   | 15.56  | 5.56    | 5.56      | 5.56 | 5.56 | 5.56   | 21.11  | 5.56    | 5.56      | 5.56 | 5.56 |
| capx, Capacity        | 923.92 | 848.36 | 1079.48 | 1621.28   |      |      | 932.48 | 848.36 | 1079.48 | 1621.28   |      |      |
| V, C                  | 0.01   | 0.02   | 0.01    | 0.00      |      |      | 0.01   | 0.02   | 0.01    | 0.00      |      |      |
| d, Delay              | 9.02   | 9.36   | 8.46    | 7.23      |      |      | 9.01   | 9.39   | 8.49    | 7.23      |      |      |
| LOS                   | A      | A      | A       | A         |      |      | A      | A      | A       | A         |      |      |
| dA, Approach Delay    |        | 9.10   |         |           | 2.41 |      |        | 9.17   |         |           | 2.41 |      |
| Approach LOS          |        | A      |         |           |      |      |        | A      |         |           |      |      |
| dRank 1, Rank 1 Delay |        |        |         |           | 0.02 |      |        |        |         |           | 0.02 |      |

## Delay and Level of Service by Lane

| Approach             | N         |           |           | E (Major) |           |           | S         |           |           | W (Major) |           |           |
|----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Lane                 | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    |
| Movements            | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 |
| vx, Volume           | 26.67     | 16.67     | 32.22     | 16.67     |           |           | 26.67     | 16.67     | 32.22     | 16.67     |           |           |
| Flare: Storage Size  |           |           |           |           |           |           |           |           |           |           |           |           |
| capx, Capacity       | 904.09    | 1621.28   | 895.34    | 1621.28   |           |           | 904.09    | 1621.28   | 895.34    | 1621.28   |           |           |
| V, C                 | 0.03      | 0.01      | 0.04      | 0.01      |           |           | 0.03      | 0.01      | 0.04      | 0.01      |           |           |
| CS, 95% Queue Length | 0.09      | 0.01      | 0.11      | 0.01      |           |           | 0.09      | 0.01      | 0.11      | 0.01      |           |           |
| d, Delay             | 9.10      | 7.23      | 9.17      | 7.23      |           |           | 9.10      | 7.23      | 9.17      | 7.23      |           |           |
| LOS                  | A         | A         | A         | A         |           |           | A         | A         | A         | A         |           |           |
| dA, Approach Delay   | 9.10      | 2.41      | 9.17      | 2.41      |           |           | 9.10      | 2.41      | 9.17      | 2.41      |           |           |
| Approach LOS         | A         |           | A         |           |           |           | A         |           | A         |           |           |           |

## Intersection Capacity Analysis Summary Page

Analysis Time: Fri Sep 27 12:20:21 2019  
 Driving Side: Right  
 Analysis Period: 1 Hours

| Number | Name                       | Control Type | V/C  | Avg Delay | Avg LOS | Max Delay | Max LOS |
|--------|----------------------------|--------------|------|-----------|---------|-----------|---------|
| 2030   | College & Whitman          | Signalized   | 0.51 | 27.26     | C       | 72.05     | E       |
| 2031   | N College & SE 3rd St      | TWSC         | 0.00 | 1.40      | A       | 12.27     | B       |
| 2032   | S College Ave & SW 4th St  | Signalized   | 0.93 | 44.36     | D       | 87.29     | F       |
| 2033   | S College Ave & SE 6th St  | TWSC         | 0.00 | 1.24      | A       | 17.34     | C       |
| 2034   | S College Ave & SE 8th St  | TWSC         | 0.00 | 1.25      | A       | 18.87     | C       |
| 2035   | S College Ave & SE 10th St | TWSC         | 0.00 | 1.32      | A       | 27.52     | D       |
| 2036   | S College Ave & SE 12th St | Signalized   | 0.71 | 25.25     | C       | 34.15     | C       |
| 2037   | S College and 13th 13th St | TWSC         | 0.00 | 0.30      | A       | 17.38     | C       |
| 2038   | S College Ave & Lampert    | Signalized   | 0.68 | 24.21     | C       | 40.20     | D       |
| 2039   | SE 3rd & Ash Ave           | TWSC         | 0.00 | 9.71      | A       | 11.54     | B       |

| Node 20122: Control & Monitor |  |                 |
|-------------------------------|--|-----------------|
| Control Type                  |  | Signalized      |
| Waves                         |  | n/20 ft E/20 ft |
| Average Delay                 |  | 37.26           |
| Average LOS                   |  | C               |
| V/C                           |  | 0.51            |
| Loss Time                     |  | 21              |

| Values and Equivalents by Movement |       |       |       |       |       |       |       |       |       |       |       |       |
|------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Altitude                           | N     |       |       | E     |       |       | S     |       |       | W     |       |       |
| Measurement                        | L1    | T     | R1    | L1    | T     | R1    | L1    | T     | R1    | L1    | T     | R1    |
| Peak 150m                          | 50    | 165   | 82    | 50    | 165   | 82    | 50    | 165   | 82    | 50    | 165   | 82    |
| Peak 150m                          | 6,640 | 2,640 | 0,650 | 6,650 | 2,650 | 0,650 | 6,650 | 2,650 | 0,650 | 6,650 | 2,650 | 0,650 |
| Peak 150m                          | 12    | 58    | 24    | 14    | 25    | 13    | 11    | 48    | 7     | 50    | 43    | 15    |
| Peak 150m                          | 16    | 231   | 65    | 55    | 351   | 52    | 43    | 574   | 28    | 172   | 124   | 45    |

| Values and Assignments by Lake Group |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|--------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Approx.                              | L     |       |       | M     |       |       | E     |       |       | S     |       |       | W     |       |       |
| Lake Group                           | C     | R     | B     | L     | C     | R     | B     | L     | C     | R     | B     | L     | C     | R     | B     |
| 10                                   | 73003 | 73004 | 73005 | 73001 | 73002 | 73006 | 73007 | 73008 | 73009 | 73010 | 73011 | 73012 | 73013 | 73014 | 73015 |
| Lines                                | L     | F     | R     | L     | R     | L     | R     | L     | R     | L     | R     | L     | R     | L     | R     |
| Genus Type                           | Pos   | neg   | neg   | Pos   | neg   | Pos   | neg   | Pos   | neg   | Pos   | neg   | Pos   | neg   | Pos   | neg   |
| V. Volume                            | 48    | 301   | 56    | 56    | 163   | 43    | 191   | 38    | 172   | 174   | 45    | 172   | 174   | 45    | 172   |
| P.L. Inception Neg. Turns            | 1.00  | 0.00  | 0.00  | 1.00  | 0.00  | 1.00  | 0.00  | 1.00  | 0.00  | 1.00  | 0.00  | 1.00  | 0.00  | 1.00  | 0.00  |
| P.R. Inception Neg. Turns            | 0.00  | 0.00  | 1.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 1.00  | 0.00  | 0.00  | 0.00  | 1.00  | 0.00  | 0.00  |

| Aggregates |       | A          |       | B          |       | C          |       | D          |       | E          |       | F          |       |
|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|
| Label      | Value | Label      | Value | Label      | Value | Label      | Value | Label      | Value | Label      | Value | Label      | Value |
| Agg00Type  | 12000 | Agg01Type  | 12000 | Agg02Type  | 12000 | Agg03Type  | 12000 | Agg04Type  | 12000 | Agg05Type  | 12000 | Agg06Type  | 12000 |
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*Accepted for publication 12 November 2007*

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1. *Journal of the American Medical Association*, 2000; 283: 2689-2693.

## Node 2031: N College &amp; SE 3rd St

Control Type TWSC  
 Method HCM 6th Edition  
 dI, Average Delay 1.4  
 Worst Case Delay 12.27  
 Worst Case LOS B

## Volume and Adjustments

| Approach              | N (Major) |        |       | E     |       |       | S (Major) |        |       | W     |       |       |
|-----------------------|-----------|--------|-------|-------|-------|-------|-----------|--------|-------|-------|-------|-------|
| Movement              | L1        | T      | R1    | L1    | T     | R1    | L1        | T      | R1    | L1    | T     | R1    |
| Base Volume           | 5.00      | 128.00 | 5.00  | 5.00  | 5.00  | 5.00  | 6.00      | 116.00 | 12.00 | 5.00  | 5.00  | 5.00  |
| PHF, Peak-hour factor | 0.650     | 0.650  | 0.650 | 0.650 | 0.650 | 0.650 | 0.650     | 0.650  | 0.650 | 0.650 | 0.650 | 0.650 |
| V, Adjusted Volume    | 7.69      | 196.92 | 7.69  | 7.69  | 7.69  | 7.69  | 9.23      | 176.46 | 18.46 | 7.69  | 7.69  | 7.69  |

## Pedestrians

| Approach                 | N (Major) |   |    | E     |       |       | S (Major) |   |    | W     |       |       |
|--------------------------|-----------|---|----|-------|-------|-------|-----------|---|----|-------|-------|-------|
| Movement                 | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    |
| vx, Flow (Ped/hr)        | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |
| w, Lane Width (ft)       | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  |
| fpb, Percent Blockage    | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |   |    | E      |        |        | S (Major) |   |    | W      |        |        |
|------------------------------------------------|-----------|---|----|--------|--------|--------|-----------|---|----|--------|--------|--------|
| Movement                                       | L1        | T | R1 | L1     | T      | R1     | L1        | T | R1 | L1     | T      | R1     |
| Rank                                           | 2         | 1 | 1  | 4      | 3      | 2      | 2         | 1 | 1  | 4      | 3      | 2      |
| vx, Volume                                     | 7.69      |   |    | 7.69   | 7.69   | 7.69   | 9.23      |   |    | 7.69   | 7.69   | 7.69   |
| Conflicting Volume (Veh)                       | 196.92    |   |    | 430.00 | 426.15 | 187.69 | 204.82    |   |    | 430.00 | 431.54 | 200.77 |
| Conflicting Volume (Ped)                       | 0.00      |   |    | 0.00   | 0.00   | 0.00   | 0.00      |   |    | 0.00   | 0.00   | 0.00   |
| Conflicting Volume                             | 196.92    |   |    | 430.00 | 426.15 | 187.69 | 204.82    |   |    | 430.00 | 431.54 | 200.77 |
| Two-Stage Gap Acceptance                       |           |   |    | No     | No     |        |           |   |    | No     | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |   |    |        |        |        |           |   |    |        |        |        |
| opx, Potential Capacity                        | 1387.87   |   |    | 538.95 | 523.42 | 859.47 | 1378.94   |   |    | 538.95 | 519.78 | 845.23 |
| Capacity                                       | 1387.87   |   |    | 522.41 | 516.22 | 859.47 | 1378.94   |   |    | 522.53 | 512.64 | 845.23 |

## Critical Headway and Follow Up Headway

| Approach                                       | N (Major) |      |    | E    |      |      | S (Major) |      |    | W    |      |      |
|------------------------------------------------|-----------|------|----|------|------|------|-----------|------|----|------|------|------|
| Movement                                       | L1        | T    | R1 | L1   | T    | R1   | L1        | T    | R1 | L1   | T    | R1   |
| tc, base, Base Critical Headway                | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 |
| tc, base, I, Base Critical Headway (Stage I)   |           |      |    |      |      |      |           |      |    |      |      |      |
| tc, base, II, Base Critical Headway (Stage II) |           |      |    |      |      |      |           |      |    |      |      |      |
| tc, HV, Heavy Vehicles Adjustment Factor       | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |      |    | 1.00 | 1.00 | 1.00 |
| Pttv, % Heavy Vehicles                         | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 |
| tc, G, Grade Adjustment Factor                 | 1.00      |      |    | 0.20 | 0.20 | 0.10 | 1.00      |      |    | 0.20 | 0.20 | 0.10 |
| G, % Grade                                     |           | 0.00 |    |      | 0.00 |      |           | 0.00 |    |      | 0.00 |      |
| T3, k, Geometry Adjustment Factor              | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 |
| tc, Critical Headway                           | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 |
| tc, I, Critical Headway (Stage I)              |           |      |    |      |      |      |           |      |    |      |      |      |
| tc, II, Critical Headway (Stage II)            |           |      |    |      |      |      |           |      |    |      |      |      |
| tf, base, Base Follow-Up Headway               | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 |
| tf, HV, Heavy Vehicles Adjustment Factor       | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |      |    | 0.90 | 0.90 | 0.90 |
| tf, Follow-Up Headway                          | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |        |      | E      |        |        | S (Major) |        |       | W      |        |        |
|----------------------|-----------|--------|------|--------|--------|--------|-----------|--------|-------|--------|--------|--------|
| Movement             | L1        | T      | R1   | L1     | T      | R1     | L1        | T      | R1    | L1     | T      | R1     |
| vx, Volume           | 7.69      | 196.92 | 7.69 | 7.69   | 7.69   | 7.69   | 9.23      | 176.46 | 18.46 | 7.69   | 7.69   | 7.69   |
| cmx, Capacity        | 1387.87   |        |      | 522.41 | 516.22 | 859.47 | 1378.94   |        |       | 522.53 | 512.64 | 845.23 |
| V, C                 | 0.01      |        |      | 0.01   | 0.01   | 0.01   | 0.01      |        |       | 0.01   | 0.02   | 0.01   |
| d, Delay             | 7.61      |        |      | 12.13  | 12.22  | 9.43   | 7.63      |        |       | 12.13  | 12.27  | 9.50   |
| LOS                  | A         |        |      | B      | B      | A      | A         |        |       | B      | B      | A      |
| dA, Approach Delay   |           | 0.28   |      |        | 11.26  |        |           | 0.34   |       |        | 11.30  |        |
| Approach LOS         |           |        |      |        | B      |        |           |        |       |        | B      |        |
| dRank1, Rank 1 Delay |           | 0.00   |      |        |        |        |           | 0.00   |       |        |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) |        | E         | S (Major) |        | W         |
|-----------------------|-----------|--------|-----------|-----------|--------|-----------|
| Lane                  | Lane 1    | Lane 2 | Lane 1    | Lane 1    | Lane 2 | Lane 1    |
| Movements             | T, R1     | T, R1  | L1, T, R1 | L1, T, R1 | T, R1  | L1, T, R1 |
| vx, Volume            | 7.69      | 204.62 | 23.08     | 9.23      | 196.92 | 23.08     |
| Flared Storage Size   |           |        |           |           |        |           |
| cmx, Capacity         |           |        | 598.22    |           |        | 594.35    |
| V, C                  |           |        | 0.04      |           |        | 0.04      |
| Qs6, 95% Queue Length |           |        | 0.12      |           |        | 0.12      |
| d, Delay              |           |        | 11.26     |           |        | 11.30     |
| LOS                   |           |        | B         |           |        | B         |
| dA, Approach Delay    |           | 0.28   | 11.26     |           | 0.34   | 11.30     |
| Approach LOS          |           |        | B         |           |        | B         |

| March 2022: 35 Complete Runs & 11V Ap. In: |        |              |
|--------------------------------------------|--------|--------------|
| Control Type                               | Manual | Signalized   |
| Wardens                                    | 4      | no 6th E200s |
| Average Delay                              | 43.35  |              |
| Average LOS                                | D      |              |
| V/C                                        | 0.61   |              |
| Lost Time                                  | 19     |              |

| Variable and description by treatment | N     |       | E     |       | S     |       | W     |       |
|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Age (yr)                              | 11    | 11    | 11    | 11    | 11    | 11    | 11    | 11    |
| Weight (kg)                           | 8     | 13    | 8     | 16    | 10    | 13    | 8     | 16    |
| Height (cm)                           | 163   | 163   | 163   | 163   | 163   | 163   | 163   | 163   |
| Pretest (N=10)                        | 0.650 | 0.650 | 0.650 | 0.650 | 0.650 | 0.650 | 0.650 | 0.650 |
| Posttest (N=10)                       | 3     | 5     | 3     | 4     | 4     | 4     | 3     | 5     |
| Age (N=10)                            | 12    | 20    | 13    | 10    | 19    | 21    | 23    | 12    |

| ANALYSIS OF VARIANCE FOR LAMINAR |       |       |       |       |       |       |       |       |  |
|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|--|
|                                  | L     |       | B     |       | S     |       | V     |       |  |
| Factor                           | C     | G     | L     | G     | L     | G     | L     | G     |  |
| Lane Group                       | 73013 | 73014 | 73017 | 73012 | 73008 | 73015 | 73013 | 73013 |  |
| ID                               |       | ST    |       | RT    |       | L     |       | L     |  |
| Lane                             |       |       |       |       |       |       |       |       |  |
| Count Type                       | Pct   | 100/L | Once  | 100/L | Pct   | 100/L | Pct   | 100/L |  |
| Volume                           | 12    | 249   | 135   | 163   | 155   | 455   | 23    | 231   |  |
| Plat. Presentation Turns         | 1.00  | 0.00  | 1.00  | 0.00  | 1.00  | 0.00  | 1.00  | 0.00  |  |
| Plat. Presentation Negs Turns    | 9.00  | 9.00  | 0.00  | 0.13  | 0.00  | 0.41  | 9.00  | 0.43  |  |

[illegible][illegible]

| Grade of Outcome  | N     |       | B     |       | W     |       |
|-------------------|-------|-------|-------|-------|-------|-------|
|                   | 73014 | 73015 | 73014 | 73009 | 73015 | 73016 |
| APR               | 0.13  | 0.12  | 0.14  | 0.22  | 0.12  | 0.10  |
| APR + 1 year      | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Q1 - APR + 1 year | 0.13  | 0.27  | 1.71  | 2.15  | 2.25  | 0.23  |
| Q2 - APR + 1 year | 0.42  | 0.31  | 0.67  | 0.58  | 0.27  | 0.13  |
| Q3 - APR + 1 year | 0.09  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Q4 - APR + 1 year | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Q5 - APR + 1 year | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Q6 - APR + 1 year | 0.16  | 0.33  | 2.62  | 2.76  | 5.45  | 0.38  |
| Q7 - APR + 1 year | 0.25  | 1.20  | 4.79  | 1.77  | 1.55  | 1.47  |
| Q8 - APR + 1 year | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Q9 - APR + 1 year | 0.25  | 0.48  | 1.70  | 4.91  | 8.44  | 1.15  |

[illegible][illegible]

| Table 1. The results of the ANOVA test |                     |      |      |      |                |      |      |      |    |      |      |      |  |
|----------------------------------------|---------------------|------|------|------|----------------|------|------|------|----|------|------|------|--|
| ANOVA                                  | Source of Variation |      |      |      | Sum of Squares |      |      |      |    |      |      |      |  |
|                                        | df                  | SS   | MS   | F    | df             | SS   | MS   | F    | df | SS   | MS   | F    |  |
| Between Groups                         | 1                   | 0.00 | 0.00 | 0.00 | 1              | 0.00 | 0.00 | 0.00 | 1  | 0.00 | 0.00 | 0.00 |  |
| Within Groups                          | 1                   | 0.00 | 0.00 | 0.00 | 1              | 0.00 | 0.00 | 0.00 | 1  | 0.00 | 0.00 | 0.00 |  |
| Total                                  | 2                   | 0.00 | 0.00 | 0.00 | 2              | 0.00 | 0.00 | 0.00 | 2  | 0.00 | 0.00 | 0.00 |  |
| Error                                  | 1                   | 0.00 | 0.00 | 0.00 | 1              | 0.00 | 0.00 | 0.00 | 1  | 0.00 | 0.00 | 0.00 |  |
| Corrected Total                        | 1                   | 0.00 | 0.00 | 0.00 | 1              | 0.00 | 0.00 | 0.00 | 1  | 0.00 | 0.00 | 0.00 |  |
| Adjusted R Squared                     | 1                   | 0.00 | 0.00 | 0.00 | 1              | 0.00 | 0.00 | 0.00 | 1  | 0.00 | 0.00 | 0.00 |  |
| Adjusted F                             | 1                   | 0.00 | 0.00 | 0.00 | 1              | 0.00 | 0.00 | 0.00 | 1  | 0.00 | 0.00 | 0.00 |  |
| Adjusted R Squared                     | 1                   | 0.00 | 0.00 | 0.00 | 1              | 0.00 | 0.00 | 0.00 | 1  | 0.00 | 0.00 | 0.00 |  |
| Adjusted F                             | 1                   | 0.00 | 0.00 | 0.00 | 1              | 0.00 | 0.00 | 0.00 | 1  | 0.00 | 0.00 | 0.00 |  |

**Abstract** *Background:* The purpose of this study was to determine the prevalence of self-reported depression and anxiety among a sample of young adults in the United States. *Methods:* Data were obtained from the 2007 National Survey of Adolescent Health, a nationally representative survey of adolescents and young adults. *Results:* The prevalence of self-reported depression was 10.3% and the prevalence of self-reported anxiety was 12.1%. *Conclusions:* The prevalence of self-reported depression and anxiety among young adults in the United States is high. *Keywords:* Depression, Anxiety, Prevalence, Young Adults.

As a result, the *Journal of Management* is the only journal in the field to have been ranked in the top 10 of the ISI Social Sciences Citation Index® for 10 years.

**Figure 4**



## Node 2033: S Collage Ave &amp; SE 8th St

Control Type TWSC  
 Method HCM 6th Edition  
 dI, Average Delay 1.24  
 Worst Case Delay 17.34  
 Worst Case LOS C

## Volume and Adjustments

| Approach              | N (Major) |        |       | E     |       |       | S (Major) |        |       | W     |       |       |
|-----------------------|-----------|--------|-------|-------|-------|-------|-----------|--------|-------|-------|-------|-------|
|                       | L1        | T      | R1    | L1    | T     | R1    | L1        | T      | R1    | L1    | T     | R1    |
| Movement              |           |        |       |       |       |       |           |        |       |       |       |       |
| Base Volume           | 5.00      | 208.00 | 5.00  | 5.00  | 5.00  | 7.00  | 10.00     | 245.00 | 6.00  | 8.00  | 5.00  | 8.00  |
| PHF, Peak-Hour factor | 0.650     | 0.650  | 0.650 | 0.650 | 0.650 | 0.650 | 0.650     | 0.650  | 0.650 | 0.650 | 0.650 | 0.650 |
| V, Adjusted Volume    | 7.69      | 320.00 | 7.69  | 7.69  | 7.69  | 10.77 | 15.38     | 376.92 | 9.23  | 9.23  | 7.69  | 12.31 |

## Pedestrians

| Approach                 | N (Major) |   |    | E     |       |       | S (Major) |   |    | W     |       |       |
|--------------------------|-----------|---|----|-------|-------|-------|-----------|---|----|-------|-------|-------|
|                          | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    |
| Movement                 |           |   |    |       |       |       |           |   |    |       |       |       |
| vx, Flow (Ped/hr)        | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |
| w, Lane Width (ft)       | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  |
| fpb, Percent Blockage    | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |   |    | E      |        |        | S (Major) |   |    | W      |        |        |
|------------------------------------------------|-----------|---|----|--------|--------|--------|-----------|---|----|--------|--------|--------|
|                                                | L1        | T | R1 | L1     | T      | R1     | L1        | T | R1 | L1     | T      | R1     |
| Rank                                           | 2         | 1 | 1  | 4      | 3      | 2      | 2         | 1 | 1  | 4      | 3      | 2      |
| vx, Volume                                     | 7.69      |   |    | 7.69   | 7.69   | 10.77  | 15.38     |   |    | 9.23   | 7.69   | 12.31  |
| Conflicting Volume (Veh)                       | 386.15    |   |    | 761.54 | 755.38 | 381.54 | 327.69    |   |    | 760.77 | 756.15 | 323.85 |
| Conflicting Volume (Ped)                       | 0.00      |   |    | 0.00   | 0.00   | 0.00   | 0.00      |   |    | 0.00   | 0.00   | 0.00   |
| Conflicting Volume                             | 386.15    |   |    | 761.54 | 755.38 | 381.54 | 327.69    |   |    | 760.77 | 756.15 | 323.85 |
| Two-Stage Gap Acceptance                       |           |   |    | No     | No     |        |           |   |    | No     | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |   |    |        |        |        |           |   |    |        |        |        |
| cpx, Potential Capacity                        | 1183.37   |   |    | 324.23 | 340.01 | 670.12 | 1243.25   |   |    | 324.62 | 339.67 | 721.83 |
| Capacity                                       | 1183.37   |   |    | 307.44 | 331.99 | 670.12 | 1243.25   |   |    | 308.12 | 331.65 | 721.83 |

## Critical Headway and Follow-Up Headway

| Approach                                     | N (Major) |      |    | E    |      |      | S (Major) |      |    | W    |      |      |
|----------------------------------------------|-----------|------|----|------|------|------|-----------|------|----|------|------|------|
|                                              | L1        | T    | R1 | L1   | T    | R1   | L1        | T    | R1 | L1   | T    | R1   |
| Movement                                     |           |      |    |      |      |      |           |      |    |      |      |      |
| tc,base, Base Critical Headway               | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 |
| tc,base,I, Base Critical Headway (Stage I)   |           |      |    |      |      |      |           |      |    |      |      |      |
| tc,base,II, Base Critical Headway (Stage II) |           |      |    |      |      |      |           |      |    |      |      |      |
| tc,HV, Heavy Vehicles Adjustment Factor      | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |      |    | 1.00 | 1.00 | 1.00 |
| Phv, % Heavy Vehicles                        | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 |
| tc,G, Grade Adjustment Factor                | 1.00      |      |    | 0.20 | 0.20 | 0.10 | 1.00      |      |    | 0.20 | 0.20 | 0.10 |
| G, % Grade                                   |           | 0.00 |    |      | 0.00 |      |           | 0.00 |    |      | 0.00 |      |
| T3It, Geometry Adjustment Factor             | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 |
| tc, Critical Headway                         | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 |
| tc,I, Critical Headway (Stage I)             |           |      |    |      |      |      |           |      |    |      |      |      |
| tc,II, Critical Headway (Stage II)           |           |      |    |      |      |      |           |      |    |      |      |      |
| tf,base, Base Follow-Up Headway              | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 |
| tf,HV, Heavy Vehicles Adjustment Factor      | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |      |    | 0.90 | 0.90 | 0.90 |
| tf, Follow-Up Headway                        | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |        |      | E      |        |        | S (Major) |        |      | W      |        |        |
|----------------------|-----------|--------|------|--------|--------|--------|-----------|--------|------|--------|--------|--------|
|                      | L1        | T      | R1   | L1     | T      | R1     | L1        | T      | R1   | L1     | T      | R1     |
| Movement             |           |        |      |        |        |        |           |        |      |        |        |        |
| vx, Volume           | 7.69      | 320.00 | 7.69 | 7.69   | 7.69   | 10.77  | 15.38     | 376.92 | 9.23 | 9.23   | 7.69   | 12.31  |
| cmx, Capacity        | 1183.37   |        |      | 307.44 | 331.99 | 670.12 | 1243.25   |        |      | 308.12 | 331.65 | 721.83 |
| V, C                 | 0.01      |        |      | 0.03   | 0.02   | 0.02   | 0.01      |        |      | 0.03   | 0.02   | 0.02   |
| d, Delay             | 8.06      |        |      | 17.32  | 16.45  | 10.98  | 7.93      |        |      | 17.34  | 16.51  | 10.64  |
| LOS                  | A         |        |      | C      | C      | B      | A         |        |      | C      | C      | B      |
| dA, Approach Delay   |           | 0.18   |      |        | 14.45  |        |           | 0.30   |      |        | 14.30  |        |
| Approach LOS         |           |        |      |        | B      |        |           |        |      |        | B      |        |
| dRank1, Rank 1 Delay |           | 0.00   |      |        |        |        |           | 0.00   |      |        |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) |        | E         |           | S (Major) |           | W         |           |
|-----------------------|-----------|--------|-----------|-----------|-----------|-----------|-----------|-----------|
|                       | Lane 1    | Lane 2 | Lane 1    | Lane 1    | Lane 2    | Lane 1    | Lane 1    | Lane 1    |
| Lane                  |           |        |           |           |           |           |           |           |
| Movements             |           |        | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 |
| vx, Volume            | 7.69      | 327.69 | 26.15     | 15.38     | 386.15    | 29.23     |           |           |
| Planned Storage Size  |           |        |           |           |           |           |           |           |
| cmx, Capacity         |           |        | 406.99    |           |           | 416.37    |           |           |
| V, C                  |           |        | 0.06      |           |           | 0.07      |           |           |
| QSS, 95% Queue Length |           |        | 0.21      |           |           | 0.23      |           |           |
| d, Delay              |           |        | 14.45     |           |           | 14.30     |           |           |
| LOS                   |           |        | B         |           |           | B         |           |           |
| dA, Approach Delay    |           | 0.18   | 14.45     |           | 0.30      | 14.30     |           |           |
| Approach LOS          |           |        | B         |           |           | B         |           |           |

## Node 2034: S College Ave &amp; SE 8th St

Control Type TWSC  
 Method HCM 6th Edition  
 d1, Average Delay 1.25  
 Worst Case Delay 18.87  
 Worst Case LOS C

## Volume and Adjustments

| Approach              | N (Major) |        |       | E     |       |       | S (Major) |        |       | W     |       |       |
|-----------------------|-----------|--------|-------|-------|-------|-------|-----------|--------|-------|-------|-------|-------|
| Movement              | L1        | T      | R1    | L1    | T     | R1    | L1        | T      | R1    | L1    | T     | R1    |
| Base Volume           | 5.00      | 223.00 | 5.00  | 5.00  | 5.00  | 8.00  | 11.00     | 272.00 | 6.00  | 6.00  | 5.00  | 9.00  |
| PHF, Peak-hour factor | 0.650     | 0.650  | 0.650 | 0.650 | 0.650 | 0.650 | 0.650     | 0.650  | 0.650 | 0.650 | 0.650 | 0.650 |
| V, Adjusted Volume    | 7.69      | 343.08 | 7.69  | 7.69  | 7.69  | 12.31 | 16.92     | 418.46 | 9.23  | 9.23  | 7.69  | 13.85 |

## Pedestrians

| Approach                 | N (Major) |   |    | E     |       |       | S (Major) |   |    | W     |       |       |
|--------------------------|-----------|---|----|-------|-------|-------|-----------|---|----|-------|-------|-------|
| Movement                 | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    |
| vx, Flow (Ped/hr)        | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |
| w, Lane Width (ft)       | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  |
| fp, Percent Blockage     | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |   |    | E      |        |        | S (Major) |   |    | W      |        |        |
|------------------------------------------------|-----------|---|----|--------|--------|--------|-----------|---|----|--------|--------|--------|
| Movement                                       | L1        | T | R1 | L1     | T      | R1     | L1        | T | R1 | L1     | T      | R1     |
| Rank                                           | 2         | 1 | 1  | 4      | 3      | 2      | 2         | 1 | 1  | 4      | 3      | 2      |
| vx, Volume                                     | 7.69      |   |    | 7.69   | 7.69   | 12.31  | 16.92     |   |    | 9.23   | 7.69   | 13.85  |
| Conflicting Volume (Veh)                       | 427.69    |   |    | 830.00 | 823.08 | 423.08 | 350.77    |   |    | 829.23 | 823.85 | 346.92 |
| Conflicting Volume (Ped)                       | 0.00      |   |    | 0.00   | 0.00   | 0.00   | 0.00      |   |    | 0.00   | 0.00   | 0.00   |
| Conflicting Volume                             | 427.69    |   |    | 830.00 | 823.08 | 423.08 | 350.77    |   |    | 829.23 | 823.85 | 346.92 |
| Two-Stage Gap Acceptance                       |           |   |    | No     | No     |        |           |   |    | No     | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |   |    |        |        |        |           |   |    |        |        |        |
| cp, Potential Capacity                         | 1142.50   |   |    | 291.62 | 310.73 | 635.10 | 1219.27   |   |    | 291.97 | 310.42 | 700.70 |
| Capacity                                       | 1142.50   |   |    | 274.67 | 302.52 | 635.10 | 1219.27   |   |    | 275.11 | 302.21 | 700.70 |

## Critical Headway and Follow Up Headway

| Approach                                       | N (Major) |      |    | E    |      |      | S (Major) |   |    | W    |      |      |
|------------------------------------------------|-----------|------|----|------|------|------|-----------|---|----|------|------|------|
| Movement                                       | L1        | T    | R1 | L1   | T    | R1   | L1        | T | R1 | L1   | T    | R1   |
| tc, base, Base Critical Headway                | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 |
| tc, base, I, Base Critical Headway (Stage I)   |           |      |    |      |      |      |           |   |    |      |      |      |
| tc, base, II, Base Critical Headway (Stage II) |           |      |    |      |      |      |           |   |    |      |      |      |
| tc, HV, Heavy Vehicles Adjustment Factor       | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |   |    | 1.00 | 1.00 | 1.00 |
| Phv, % Heavy Vehicles                          | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 |
| tc, G, Grade Adjustment Factor                 | 1.00      |      |    | 0.20 | 0.20 | 0.10 | 1.00      |   |    | 0.20 | 0.20 | 0.10 |
| G, % Grade                                     |           | 0.00 |    |      | 0.00 |      | 0.00      |   |    |      | 0.00 |      |
| T3, II, Geometry Adjustment Factor             | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 |
| tc, Critical Headway                           | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 |
| tc, I, Critical Headway (Stage I)              |           |      |    |      |      |      |           |   |    |      |      |      |
| tc, II, Critical Headway (Stage II)            |           |      |    |      |      |      |           |   |    |      |      |      |
| tf, base, Base Follow-Up Headway               | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 |
| tf, hv, Heavy Vehicles Adjustment Factor       | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |   |    | 0.90 | 0.90 | 0.90 |
| tf, Follow-Up Headway                          | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |        |      | E      |        |        | S (Major) |        |      | W      |        |        |
|----------------------|-----------|--------|------|--------|--------|--------|-----------|--------|------|--------|--------|--------|
| Movement             | L1        | T      | R1   | L1     | T      | R1     | L1        | T      | R1   | L1     | T      | R1     |
| vx, Volume           | 7.69      | 343.08 | 7.69 | 7.69   | 7.69   | 12.31  | 16.92     | 418.46 | 9.23 | 9.23   | 7.69   | 13.85  |
| cmx, Capacity        | 1142.50   |        |      | 274.67 | 302.52 | 635.10 | 1219.27   |        |      | 275.11 | 302.21 | 700.70 |
| V / C                | 0.01      |        |      | 0.03   | 0.03   | 0.02   | 0.01      |        |      | 0.03   | 0.03   | 0.02   |
| d, Delay             | 8.17      |        |      | 18.95  | 17.64  | 11.41  | 7.99      |        |      | 18.87  | 17.70  | 10.93  |
| LOS                  | A         |        |      | C      | C      | B      | A         |        |      | C      | C      | B      |
| dA, Approach Delay   |           | 0.18   |      |        | 15.21  |        | 0.30      |        |      |        | 15.00  |        |
| Approach LOS         |           |        |      |        | C      |        |           |        |      |        | C      |        |
| aRank1, Rank 1 Delay |           | 0.00   |      |        |        |        | 0.00      |        |      |        |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) |        | E         | S (Major) |        | W         |
|-----------------------|-----------|--------|-----------|-----------|--------|-----------|
| Lane                  | Lane 1    | Lane 2 | Lane 1    | Lane 1    | Lane 2 | Lane 1    |
| Movements             | T, R1     | T, R1  | L1, T, R1 | L1, T, R1 | T, R1  | L1, T, R1 |
| vx, Volume            | 7.69      | 350.77 | 27.69     | 16.92     | 427.69 | 30.77     |
| Flared Storage Size   |           |        |           |           |        |           |
| cmx, Capacity         |           |        | 390.33    |           |        | 390.64    |
| V / C                 |           |        | 0.07      |           |        | 0.08      |
| Q95, 95% Queue Length |           |        | 0.24      |           |        | 0.26      |
| d, Delay              |           |        | 15.21     |           |        | 15.00     |
| LOS                   |           |        | C         |           |        | C         |
| dA, Approach Delay    |           | 0.18   | 15.21     |           | 0.30   | 15.00     |
| Approach LOS          |           |        | C         |           |        | C         |

## Node 2035: S College Ave &amp; SE 10th St

Control Type TWSC  
 Method HCM 6th Edition  
 di, Average Delay 1.32  
 Worst Case Delay 27.52  
 Worst Case LOS D

## Volume and Adjustments

| Approach              | N (Major) |        |       | E     |       |       | S (Major) |        |       | W     |       |       |
|-----------------------|-----------|--------|-------|-------|-------|-------|-----------|--------|-------|-------|-------|-------|
| Movement              | L1        | T      | R1    | L1    | T     | R1    | L1        | T      | R1    | L1    | T     | R1    |
| Base Volume           | 5.00      | 317.00 | 5.00  | 5.00  | 5.00  | 5.00  | 6.00      | 369.00 | 5.00  | 9.00  | 5.00  | 15.00 |
| PHF, Peak-hour factor | 0.650     | 0.650  | 0.650 | 0.650 | 0.650 | 0.650 | 0.650     | 0.650  | 0.650 | 0.650 | 0.650 | 0.650 |
| V, Adjusted Volume    | 7.69      | 487.69 | 7.69  | 7.69  | 7.69  | 7.69  | 9.23      | 567.69 | 7.69  | 13.85 | 7.69  | 23.08 |

## Pedestrians

| Approach                 | N (Major) |   |    | E     |       |       | S (Major) |   |    | W     |       |       |
|--------------------------|-----------|---|----|-------|-------|-------|-----------|---|----|-------|-------|-------|
| Movement                 | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    |
| vx, Flow (Ped/hr)        | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |
| w, Lane Width (ft)       | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  |
| fpb, Percent Blockage    | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |   |    | E       |         |        | S (Major) |   |    | W       |         |        |
|------------------------------------------------|-----------|---|----|---------|---------|--------|-----------|---|----|---------|---------|--------|
| Movement                                       | L1        | T | R1 | L1      | T       | R1     | L1        | T | R1 | L1      | T       | R1     |
| Rank                                           | 2         | 1 | 1  | 4       | 3       | 2      | 2         | 1 | 1  | 4       | 3       | 2      |
| vx, Volume                                     | 7.69      |   |    | 7.69    | 7.69    | 7.69   | 9.23      |   |    | 13.85   | 7.69    | 23.08  |
| Conflicting Volume (Veh)                       | 575.38    |   |    | 1112.31 | 1100.77 | 571.54 | 495.38    |   |    | 1104.62 | 1100.77 | 491.54 |
| Conflicting Volume (Ped)                       | 0.00      |   |    | 0.00    | 0.00    | 0.00   | 0.00      |   |    | 0.00    | 0.00    | 0.00   |
| Conflicting Volume                             | 575.38    |   |    | 1112.31 | 1100.77 | 571.54 | 495.38    |   |    | 1104.62 | 1100.77 | 491.54 |
| Two-Stage Gap Acceptance                       |           |   |    | No      | No      |        |           |   |    | No      | No      |        |
| Number of Storage Spaces in Median Refuge Area |           |   |    |         |         |        |           |   |    |         |         |        |
| cap, Potential Capacity                        | 1007.87   |   |    | 187.66  | 213.76  | 523.74 | 1078.79   |   |    | 189.95  | 213.76  | 581.19 |
| Capacity                                       | 1007.87   |   |    | 172.09  | 208.84  | 523.74 | 1078.79   |   |    | 178.72  | 208.84  | 581.19 |

## Critical Headway and Follow Up Headway

| Approach                                     | N (Major) |      |    | E    |      |      | S (Major) |   |    | W    |      |      |
|----------------------------------------------|-----------|------|----|------|------|------|-----------|---|----|------|------|------|
| Movement                                     | L1        | T    | R1 | L1   | T    | R1   | L1        | T | R1 | L1   | T    | R1   |
| tc,base, Base Critical Headway               | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 |
| tc,base,I, Base Critical Headway (Stage I)   |           |      |    |      |      |      |           |   |    |      |      |      |
| tc,base,II, Base Critical Headway (Stage II) |           |      |    |      |      |      |           |   |    |      |      |      |
| tc,HV, Heavy Vehicles Adjustment Factor      | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |   |    | 1.00 | 1.00 | 1.00 |
| Plv, % Heavy Vehicles                        | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 |
| tc,G, Grade Adjustment Factor                | 1.00      |      |    | 0.20 | 0.20 | 0.10 | 1.00      |   |    | 0.20 | 0.20 | 0.10 |
| G, % Grade                                   |           | 0.00 |    |      | 0.00 |      | 0.00      |   |    |      | 0.00 |      |
| T3,lt, Geometry Adjustment Factor            | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |   |    | 0.00 | 0.00 | 0.00 |
| tc, Critical Headway                         | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |   |    | 7.10 | 6.50 | 6.20 |
| tc,I, Critical Headway (Stage I)             |           |      |    |      |      |      |           |   |    |      |      |      |
| tc,II, Critical Headway (Stage II)           |           |      |    |      |      |      |           |   |    |      |      |      |
| tf,base, Base Follow-Up Headway              | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 |
| tf,hv, Heavy Vehicles Adjustment Factor      | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |   |    | 0.90 | 0.90 | 0.90 |
| tf, Follow-Up Headway                        | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |   |    | 3.50 | 4.00 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |        |      | E      |        |        | S (Major) |        |      | W      |        |        |
|----------------------|-----------|--------|------|--------|--------|--------|-----------|--------|------|--------|--------|--------|
| Movement             | L1        | T      | R1   | L1     | T      | R1     | L1        | T      | R1   | L1     | T      | R1     |
| vx, Volume           | 7.69      | 487.69 | 7.69 | 7.69   | 7.69   | 7.69   | 9.23      | 567.69 | 7.69 | 13.85  | 7.69   | 23.08  |
| cmx, Capacity        | 1007.87   |        |      | 172.09 | 208.84 | 523.74 | 1078.79   |        |      | 178.72 | 208.84 | 581.19 |
| V / C                | 0.01      |        |      | 0.04   | 0.04   | 0.01   | 0.01      |        |      | 0.08   | 0.04   | 0.04   |
| d, Delay             | 8.60      |        |      | 27.52  | 23.83  | 13.47  | 8.37      |        |      | 27.40  | 24.50  | 13.45  |
| LOS                  | A         |        |      | D      | C      | B      | A         |        |      | D      | C      | B      |
| dA, Approach Delay   |           | 0.13   |      |        | 21.61  |        |           | 0.13   |      |        | 19.69  |        |
| Approach LOS         |           |        |      |        | C      |        |           |        |      |        | C      |        |
| dRank1, Rank 1 Delay |           | 0.00   |      |        |        |        |           | 0.00   |      |        |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) |        | E         | S (Major) |           | W         |
|-----------------------|-----------|--------|-----------|-----------|-----------|-----------|
| Lane                  | Lane 1    | Lane 2 | Lane 1    | Lane 2    | Lane 1    | Lane 1    |
| Movements             | T, R1     | T, R1  | L1, T, R1 | T, R1     | L1, T, R1 | L1, T, R1 |
| vx, Volume            | 7.69      | 495.38 | 23.08     | 9.23      | 575.38    | 44.62     |
| Planned Storage Size  |           |        |           |           |           |           |
| cmx, Capacity         |           |        | 239.84    |           |           | 289.68    |
| V / C                 |           |        | 0.10      |           |           | 0.15      |
| Q95, 95% Queue Length |           |        | 0.32      |           |           | 0.54      |
| d, Delay              |           |        | 21.61     |           |           | 19.69     |
| LOS                   |           |        | C         |           |           | C         |
| dA, Approach Delay    |           | 0.13   | 21.61     | 0.13      |           | 19.69     |
| Approach LOS          |           |        | C         |           |           | C         |

| Node 2330: S. Ganga, Feb 6, 2019 |                |
|----------------------------------|----------------|
| Control Type                     | Serialized     |
| Waves                            | 150 6m Section |
| Average Delay                    | 25.25          |
| Average LOS                      | C              |
| W/S                              | 0.21           |
| Left Time                        | 21             |

[illegible]

| WATER QUALITY DATA BY CATCH AREA |       |       |       |       |       |       |       |       |   |
|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|---|
| Area                             | H     |       | K     |       | S     |       | W     |       | C |
|                                  | L     | C     | L     | C     | L     | C     | L     | C     |   |
| LAKE SUPERIOR                    | 73021 | 73021 | 73019 | 73019 | 73017 | 73018 | 73013 | 73021 |   |
| LAKE MICHIGAN                    | L     | RT    | L     | RT    | L     | RT    | L     | RT    |   |
| LAKE ERIE                        | L     | RT    | L     | RT    | L     | RT    | L     | RT    |   |
| LAKE ONTARIO                     | RT    | RT    | RT    | RT    | RT    | RT    | RT    | RT    |   |
| LAKE ST. CLAIR                   | 38    | RT    | 66    | 106   | 23    | 566   | 8     | 68    |   |
| LAKE HURON                       | 1.00  | 0.00  | 1.00  | 0.00  | 1.00  | 0.00  | 1.00  | 0.00  |   |
| LAKE SUPERIOR                    | 0.00  | 0.02  | 0.00  | 0.05  | 0.00  | 0.14  | 0.00  | 0.34  |   |

[illegible]

| Appendix 2: Data and Level of Service Descriptions |       |       |       |       |       |       |       |       |       |
|----------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ap.                                                | V     | E     |       |       | W     |       |       | V     | W     |
|                                                    |       | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 |       |       |
| 1                                                  | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 2                                                  | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 3                                                  | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 4                                                  | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 5                                                  | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 6                                                  | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 7                                                  | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 8                                                  | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 9                                                  | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 10                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 11                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 12                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 13                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 14                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 15                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 16                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 17                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 18                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 19                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 20                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 21                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 22                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 23                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 24                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 25                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 26                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 27                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 28                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 29                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 30                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 31                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 32                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 33                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 34                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 35                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 36                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 37                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 38                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 39                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 40                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 41                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 42                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 43                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 44                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 45                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 46                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 47                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 48                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 49                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 50                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 51                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 52                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 53                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 54                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 55                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 56                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 57                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 58                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 59                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 60                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 61                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 62                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 63                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 64                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 65                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 66                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 67                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 68                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 69                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 70                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 71                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 72                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 73                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 74                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 75                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 76                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 77                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 78                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 79                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 80                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 81                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 82                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 83                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 84                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 85                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 86                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 87                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 88                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 89                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 90                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 91                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 92                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 93                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 94                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 95                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 96                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 97                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 98                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 99                                                 | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |
| 100                                                | 12071 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 | 73071 | 75011 |

| Age        | N     | S     | S     | S     | S     | W     |
|------------|-------|-------|-------|-------|-------|-------|
| Age 1-2    | 13021 | 13022 | 13015 | 13020 | 13014 | 13003 |
| Age 3-4    | 0.18  | 0.45  | 0.15  | 0.20  | 0.07  | 0.36  |
| Age 5-6    | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 7-8    | 0.77  | 1.00  | 0.76  | 1.00  | 0.32  | 0.10  |
| Age 9-10   | 0.15  | 0.46  | 0.18  | 0.27  | 0.14  | 0.28  |
| Age 11-12  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 13-14  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 15-16  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 17-18  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 19-20  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 21-22  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 23-24  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 25-26  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 27-28  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 29-30  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 31-32  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 33-34  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 35-36  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 37-38  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 39-40  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 41-42  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 43-44  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 45-46  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 47-48  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 49-50  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 51-52  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 53-54  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 55-56  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 57-58  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 59-60  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 61-62  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 63-64  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 65-66  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 67-68  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 69-70  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 71-72  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 73-74  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 75-76  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 77-78  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 79-80  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 81-82  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 83-84  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 85-86  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 87-88  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 89-90  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 91-92  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 93-94  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 95-96  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Age 97-98  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Age 99-100 | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |

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**Access Free Content**

**Abstract** *Contingency planning*

2019年12月26日

## Node 2037: S College and 13th/13th St

Control Type TWSC  
 Method HCM 8th Edition  
 dI, Average Delay 0.3  
 Worst Case Delay 17.38  
 Worst Case LOS C

## Volume and Adjustments

| Approach              | N (Major) |       | S (Major) |        | W     |       |
|-----------------------|-----------|-------|-----------|--------|-------|-------|
|                       | T         | R1    | L1        | T      | L1    | R1    |
| Movement              |           |       |           |        |       |       |
| Base Volume           | 248.00    | 5.00  | 5.00      | 340.00 | 5.00  | 5.00  |
| PHF, Peak-hour factor | 0.650     | 0.650 | 0.650     | 0.650  | 0.650 | 0.650 |
| V, Adjusted Volume    | 381.54    | 7.69  | 7.69      | 523.08 | 7.69  | 7.69  |

## Pedestrians

| Approach                 | N (Major) |    | S (Major) |   | W     |       |
|--------------------------|-----------|----|-----------|---|-------|-------|
|                          | T         | R1 | L1        | T | L1    | R1    |
| Movement                 |           |    |           |   |       |       |
| vx, Flow (Ped/hr)        |           |    | 0.00      |   | 0.00  | 0.00  |
| w, Lane Width (ft)       |           |    | 12.00     |   | 12.00 | 12.00 |
| Sp, Walking Speed (ft/s) |           |    | 3.50      |   | 3.50  | 3.50  |
| fpb, Percent Blockage    |           |    | 0.00      |   | 0.00  | 0.00  |

## Capacity of Movements below Rank 1

| Approach                                       | N (Major) |    | S (Major) |   | W      |        |
|------------------------------------------------|-----------|----|-----------|---|--------|--------|
|                                                | T         | R1 | L1        | T | L1     | R1     |
| Movement                                       |           |    |           |   |        |        |
| Rank                                           | 1         | 1  | 2         | 1 | 3      | 2      |
| vx, Volume                                     |           |    | 7.69      |   | 7.69   | 7.69   |
| Conflicting Volume (Veh)                       |           |    | 389.23    |   | 923.85 | 385.38 |
| Conflicting Volume (Ped)                       |           |    | 0.00      |   | 0.00   | 0.00   |
| Conflicting Volume                             |           |    | 389.23    |   | 923.85 | 385.38 |
| Two-Stage Gap Acceptance                       |           |    |           |   | No     |        |
| Number of Storage Spaces in Median Refuge Area |           |    |           |   |        |        |
| cmx, Potential Capacity                        |           |    | 1180.29   |   | 301.64 | 666.80 |
| Capacity                                       |           |    | 1180.29   |   | 288.87 | 666.80 |

## Critical Headway and Follow Up Headway

| Approach                                      | N (Major) |      | S (Major) |      | W    |      |
|-----------------------------------------------|-----------|------|-----------|------|------|------|
|                                               | T         | R1   | L1        | T    | L1   | R1   |
| Movement                                      |           |      |           |      |      |      |
| to base, Base Critical Headway                |           |      | 4.10      |      | 7.10 | 6.20 |
| to base, I, Base Critical Headway (Stage I)   |           |      |           |      |      |      |
| to base, II, Base Critical Headway (Stage II) |           |      |           |      |      |      |
| to HV, Heavy Vehicles Adjustment Factor       |           |      | 1.00      |      | 1.00 | 1.00 |
| Pbv, % Heavy Vehicles                         |           |      | 0.00      |      | 0.00 | 0.00 |
| to G, Grade Adjustment Factor                 |           |      | 1.00      |      | 0.20 | 0.10 |
| G, % Grade                                    |           | 0.00 |           | 0.00 |      | 0.00 |
| TAB, Geometry Adjustment Factor               |           |      | 0.00      |      | 0.70 | 0.00 |
| to, Critical Headway                          |           |      | 4.10      |      | 6.40 | 6.20 |
| to I, Critical Headway (Stage I)              |           |      |           |      |      |      |
| to II, Critical Headway (Stage II)            |           |      |           |      |      |      |
| to base, Base Follow-Up Headway               |           |      | 2.20      |      | 3.50 | 3.30 |
| to hv, Heavy Vehicles Adjustment Factor       |           |      | 0.90      |      | 0.90 | 0.90 |
| to, Follow-Up Headway                         |           |      | 2.20      |      | 3.50 | 3.30 |

## Delay and Level of Service by Movement

| Approach             | N (Major) |      | S (Major) |        | W      |        |
|----------------------|-----------|------|-----------|--------|--------|--------|
|                      | T         | R1   | L1        | T      | L1     | R1     |
| Movement             |           |      |           |        |        |        |
| vx, Volume           | 381.54    | 7.69 | 7.69      | 523.08 | 7.69   | 7.69   |
| cmx, Capacity        |           |      | 1180.29   |        | 298.87 | 666.80 |
| V / C                |           |      | 0.01      |        | 0.03   | 0.01   |
| d, Delay             |           |      | 8.07      |        | 17.38  | 10.74  |
| LOS                  |           |      | A         |        | C      | B      |
| dA, Approach Delay   |           | 0.00 |           | 0.12   |        | 14.06  |
| Approach LOS         |           |      |           |        |        | B      |
| dRank1, Rank 1 Delay |           | 0.00 |           | 0.07   |        |        |

## Delay and Level of Service by Lane

| Approach              | N (Major) |         | S (Major) |        | W      |        |
|-----------------------|-----------|---------|-----------|--------|--------|--------|
|                       | Lane 1    | Lane 1  | Lane 1    | Lane 1 | Lane 1 | Lane 1 |
| Movements             |           |         |           |        |        |        |
| vx, Volume            | 389.23    | 530.77  | 15.38     |        |        |        |
| Flared Storage Size   |           |         |           |        |        |        |
| cmx, Capacity         |           | 1180.29 | 412.74    |        |        |        |
| V / C                 |           | 0.45    | 0.04      |        |        |        |
| Q95, 95% Queue Length |           | 0.02    | 0.12      |        |        |        |
| d, Delay              |           | 8.07    | 14.06     |        |        |        |
| LOS                   |           |         | B         |        |        |        |
| dA, Approach Delay    |           | 0.00    | 0.12      |        |        |        |
| Approach LOS          |           |         | B         |        |        |        |

| Node 2536: 8 College Ave & Lanier |  |  |  |  |  |            |  |  |  |  |  |
|-----------------------------------|--|--|--|--|--|------------|--|--|--|--|--|
| Concord Type                      |  |  |  |  |  | Squares    |  |  |  |  |  |
| Vehicle                           |  |  |  |  |  | Hd/Min/Sec |  |  |  |  |  |
| Average Delay                     |  |  |  |  |  | 24.21      |  |  |  |  |  |
| Average LOS                       |  |  |  |  |  | C          |  |  |  |  |  |
| V/C                               |  |  |  |  |  | 0.55       |  |  |  |  |  |
| Loss Time                         |  |  |  |  |  | 10         |  |  |  |  |  |

| Volume and Assignment by Movement |      |      |    |    |    |     |    |     |    |    |    |
|-----------------------------------|------|------|----|----|----|-----|----|-----|----|----|----|
| Approach                          | L1   | T    | R1 | L1 | T  | R1  | L1 | T   | R1 | L1 | T  |
| Left Turn                         | 74   | 240  | 13 | 51 | 18 | 83  | 10 | 220 | 45 | 35 | 45 |
| Through                           | 9460 | 8450 | 0  | 0  | 0  | 0   | 0  | 0   | 0  | 0  | 0  |
| Right Turn                        | 28   | 92   | 5  | 20 | 7  | 32  | 4  | 87  | 17 | 13 | 13 |
| Adjustment                        | 114  | 363  | 20 | 78 | 25 | 125 | 15 | 344 | 69 | 54 | 52 |

| Volume and Assignment by Lane Group |      |      |    |    |    |     |    |     |    |    |    |
|-------------------------------------|------|------|----|----|----|-----|----|-----|----|----|----|
| Lane Group                          | L    | C    | R  | L  | C  | R   | L  | C   | R  | L  | C  |
| Left                                | 74   | 240  | 13 | 51 | 18 | 83  | 10 | 220 | 45 | 35 | 45 |
| Through                             | 9460 | 8450 | 0  | 0  | 0  | 0   | 0  | 0   | 0  | 0  | 0  |
| Right                               | 28   | 92   | 5  | 20 | 7  | 32  | 4  | 87  | 17 | 13 | 13 |
| Adjustment                          | 114  | 363  | 20 | 78 | 25 | 125 | 15 | 344 | 69 | 54 | 52 |

| Signal Timing Data |       |       |       |       |       |       |       |       |       |       |       |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Signal             | 73029 | 73030 | 73031 | 73032 | 73033 | 73034 | 73035 | 73036 | 73037 | 73038 | 73039 |
| Left               | 74    | 240   | 13    | 51    | 18    | 83    | 10    | 220   | 45    | 35    | 45    |
| Through            | 9460  | 8450  | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Right              | 28    | 92    | 5     | 20    | 7     | 32    | 4     | 87    | 17    | 13    | 13    |
| Adjustment         | 114   | 363   | 20    | 78    | 25    | 125   | 15    | 344   | 69    | 54    | 52    |

| Control Delay Data and Level of Service Determination |       |       |       |       |       |       |       |       |       |       |       |
|-------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Control                                               | 73029 | 73030 | 73031 | 73032 | 73033 | 73034 | 73035 | 73036 | 73037 | 73038 | 73039 |
| Left                                                  | 74    | 240   | 13    | 51    | 18    | 83    | 10    | 220   | 45    | 35    | 45    |
| Through                                               | 9460  | 8450  | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Right                                                 | 28    | 92    | 5     | 20    | 7     | 32    | 4     | 87    | 17    | 13    | 13    |
| Adjustment                                            | 114   | 363   | 20    | 78    | 25    | 125   | 15    | 344   | 69    | 54    | 52    |

| Signal Timing Data and Level of Service Determination |       |       |       |       |       |       |       |       |       |       |       |
|-------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Signal                                                | 73029 | 73030 | 73031 | 73032 | 73033 | 73034 | 73035 | 73036 | 73037 | 73038 | 73039 |
| Left                                                  | 74    | 240   | 13    | 51    | 18    | 83    | 10    | 220   | 45    | 35    | 45    |
| Through                                               | 9460  | 8450  | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Right                                                 | 28    | 92    | 5     | 20    | 7     | 32    | 4     | 87    | 17    | 13    | 13    |
| Adjustment                                            | 114   | 363   | 20    | 78    | 25    | 125   | 15    | 344   | 69    | 54    | 52    |

| Signal Timing Data and Level of Service Determination |       |       |       |       |       |       |       |       |       |       |       |
|-------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Signal                                                | 73029 | 73030 | 73031 | 73032 | 73033 | 73034 | 73035 | 73036 | 73037 | 73038 | 73039 |
| Left                                                  | 74    | 240   | 13    | 51    | 18    | 83    | 10    | 220   | 45    | 35    | 45    |
| Through                                               | 9460  | 8450  | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Right                                                 | 28    | 92    | 5     | 20    | 7     | 32    | 4     | 87    | 17    | 13    | 13    |
| Adjustment                                            | 114   | 363   | 20    | 78    | 25    | 125   | 15    | 344   | 69    | 54    | 52    |

| Signal Timing Data and Level of Service Determination |       |       |       |       |       |       |       |       |       |       |       |
|-------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Signal                                                | 73029 | 73030 | 73031 | 73032 | 73033 | 73034 | 73035 | 73036 | 73037 | 73038 | 73039 |
| Left                                                  | 74    | 240   | 13    | 51    | 18    | 83    | 10    | 220   | 45    | 35    | 45    |
| Through                                               | 9460  | 8450  | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Right                                                 | 28    | 92    | 5     | 20    | 7     | 32    | 4     | 87    | 17    | 13    | 13    |
| Adjustment                                            | 114   | 363   | 20    | 78    | 25    | 125   | 15    | 344   | 69    | 54    | 52    |

| Pedestrian and Bicycle Movement Factors |      |      |      |      |      |      |      |      |      |      |      |
|-----------------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Factor                                  | L1   | T    | R1   | L1   | T    | R1   | L1   | T    | R1   | L1   | T    |
| Left                                    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Through                                 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Right                                   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Adjustment                              | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Additional Signal Timing Data |       |       |       |       |       |       |       |       |       |       |       |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Signal                        | 73029 | 73030 | 73031 | 73032 | 73033 | 73034 | 73035 | 73036 | 73037 | 73038 | 73039 |

| Additional Signal Timing Data |       |       |       |       |       |       |       |       |       |       |       |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Signal                        | 73029 | 73030 | 73031 | 73032 | 73033 | 73034 | 73035 | 73036 | 73037 | 73038 | 73039 |

| Additional Signal Timing Data |       |       |       |       |       |       |       |       |       |       |       |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Signal                        | 73029 | 73030 | 73031 | 73032 | 73033 | 73034 | 73035 | 73036 | 73037 | 73038 | 73039 |

## Node 2039: SE 3rd &amp; Ash Ave

Control Type TWSC  
 Method HCM 8th Edition  
 d1, Average Delay 9.71  
 Worst Case Delay 11.54  
 Worst Case LOS B

## Volume and Adjustments

| Approach              | N     |        |       | E (Major) |       |       | S     |        |       | W (Major) |       |       |
|-----------------------|-------|--------|-------|-----------|-------|-------|-------|--------|-------|-----------|-------|-------|
| Movement              | L1    | T      | R1    | L1        | T     | R1    | L1    | T      | R1    | L1        | T     | R1    |
| Base Volume           | 5.00  | 89.00  | 5.00  | 5.00      | 5.00  | 6.00  | 5.00  | 132.00 | 5.00  | 5.00      | 5.00  | 5.00  |
| PHF, Peak-hour factor | 0.650 | 0.650  | 0.650 | 0.650     | 0.650 | 0.650 | 0.650 | 0.650  | 0.650 | 0.650     | 0.650 | 0.650 |
| V, Adjusted Volume    | 7.69  | 136.92 | 7.69  | 7.69      | 7.69  | 9.23  | 7.69  | 203.08 | 7.69  | 7.69      | 7.69  | 7.69  |

## Pedestrians

| Approach                 | N     |       |       | E (Major) |   |    | S     |       |       | W (Major) |   |    |
|--------------------------|-------|-------|-------|-----------|---|----|-------|-------|-------|-----------|---|----|
| Movement                 | L1    | T     | R1    | L1        | T | R1 | L1    | T     | R1    | L1        | T | R1 |
| vx, Flow (Ped/hr)        | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    |
| w, Lane Width (ft)       | 12.00 | 12.00 | 12.00 | 12.00     |   |    | 12.00 | 12.00 | 12.00 | 12.00     |   |    |
| Sp, Walking Speed (ft/s) | 3.50  | 3.50  | 3.50  | 3.50      |   |    | 3.50  | 3.50  | 3.50  | 3.50      |   |    |
| fpb, Percent Blockage    | 0.00  | 0.00  | 0.00  | 0.00      |   |    | 0.00  | 0.00  | 0.00  | 0.00      |   |    |

## Capacity of Movements below Rank 1

| Approach                                       | N      |        |         | E (Major) |   |    | S      |        |         | W (Major) |   |    |
|------------------------------------------------|--------|--------|---------|-----------|---|----|--------|--------|---------|-----------|---|----|
| Movement                                       | L1     | T      | R1      | L1        | T | R1 | L1     | T      | R1      | L1        | T | R1 |
| Rank                                           | 4      | 3      | 2       | 2         | 1 | 1  | 4      | 3      | 2       | 2         | 1 | 1  |
| vx, Volume                                     | 7.69   | 136.92 | 7.69    | 7.69      |   |    | 7.69   | 203.08 | 7.69    | 7.69      |   |    |
| Conflicting Volume (Veh)                       | 160.00 | 58.46  | 12.31   | 15.38     |   |    | 126.92 | 59.23  | 11.54   | 16.92     |   |    |
| Conflicting Volume (Ped)                       | 0.00   | 0.00   | 0.00    | 0.00      |   |    | 0.00   | 0.00   | 0.00    | 0.00      |   |    |
| Conflicting Volume                             | 160.00 | 58.46  | 12.31   | 15.38     |   |    | 126.92 | 59.23  | 11.54   | 16.92     |   |    |
| Two-Stage Gap Acceptance                       | No     | No     |         |           |   |    | No     | No     |         |           |   |    |
| Number of Storage Spaces in Median Refuge Area |        |        |         |           |   |    |        |        |         |           |   |    |
| cpk, Potential Capacity                        | 810.09 | 836.43 | 1074.07 | 1615.51   |   |    | 851.22 | 835.62 | 1075.11 | 1613.44   |   |    |
| Capacity                                       | 647.50 | 828.40 | 1074.07 | 1615.51   |   |    | 732.60 | 827.60 | 1075.11 | 1613.44   |   |    |

## Critical Headway and Follow-Up Headway

| Approach                                     | N    |      |      | E (Major) |      |    | S    |      |      | W (Major) |      |    |
|----------------------------------------------|------|------|------|-----------|------|----|------|------|------|-----------|------|----|
| Movement                                     | L1   | T    | R1   | L1        | T    | R1 | L1   | T    | R1   | L1        | T    | R1 |
| tc base, Base Critical Headway               | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    |
| tc base I, Base Critical Headway (Stage I)   |      |      |      |           |      |    |      |      |      |           |      |    |
| tc base II, Base Critical Headway (Stage II) |      |      |      |           |      |    |      |      |      |           |      |    |
| tc IV, Heavy Vehicles Adjustment Factor      | 1.00 | 1.00 | 1.00 | 1.00      |      |    | 1.00 | 1.00 | 1.00 | 1.00      |      |    |
| Phv, Heavy Vehicles                          | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    |
| tc G, Grade Adjustment Factor                | 0.20 | 0.20 | 0.10 | 1.00      |      |    | 0.20 | 0.20 | 0.10 | 1.00      |      |    |
| G, % Grade                                   |      | 0.00 |      |           | 0.00 |    |      | 0.00 |      |           | 0.00 |    |
| Ta, Geometry Adjustment Factor               | 0.00 | 0.00 | 0.00 | 0.00      |      |    | 0.00 | 0.00 | 0.00 | 0.00      |      |    |
| tc Critical Headway                          | 7.10 | 6.50 | 6.20 | 4.10      |      |    | 7.10 | 6.50 | 6.20 | 4.10      |      |    |
| tc I Critical Headway (Stage I)              |      |      |      |           |      |    |      |      |      |           |      |    |
| tc II Critical Headway (Stage II)            |      |      |      |           |      |    |      |      |      |           |      |    |
| tf base, Base Follow-Up Headway              | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    |
| tf Phv, Heavy Vehicles Adjustment Factor     | 0.90 | 0.90 | 0.90 | 0.90      |      |    | 0.90 | 0.90 | 0.90 | 0.90      |      |    |
| tf, Follow-Up Headway                        | 3.50 | 4.00 | 3.30 | 2.20      |      |    | 3.50 | 4.00 | 3.30 | 2.20      |      |    |

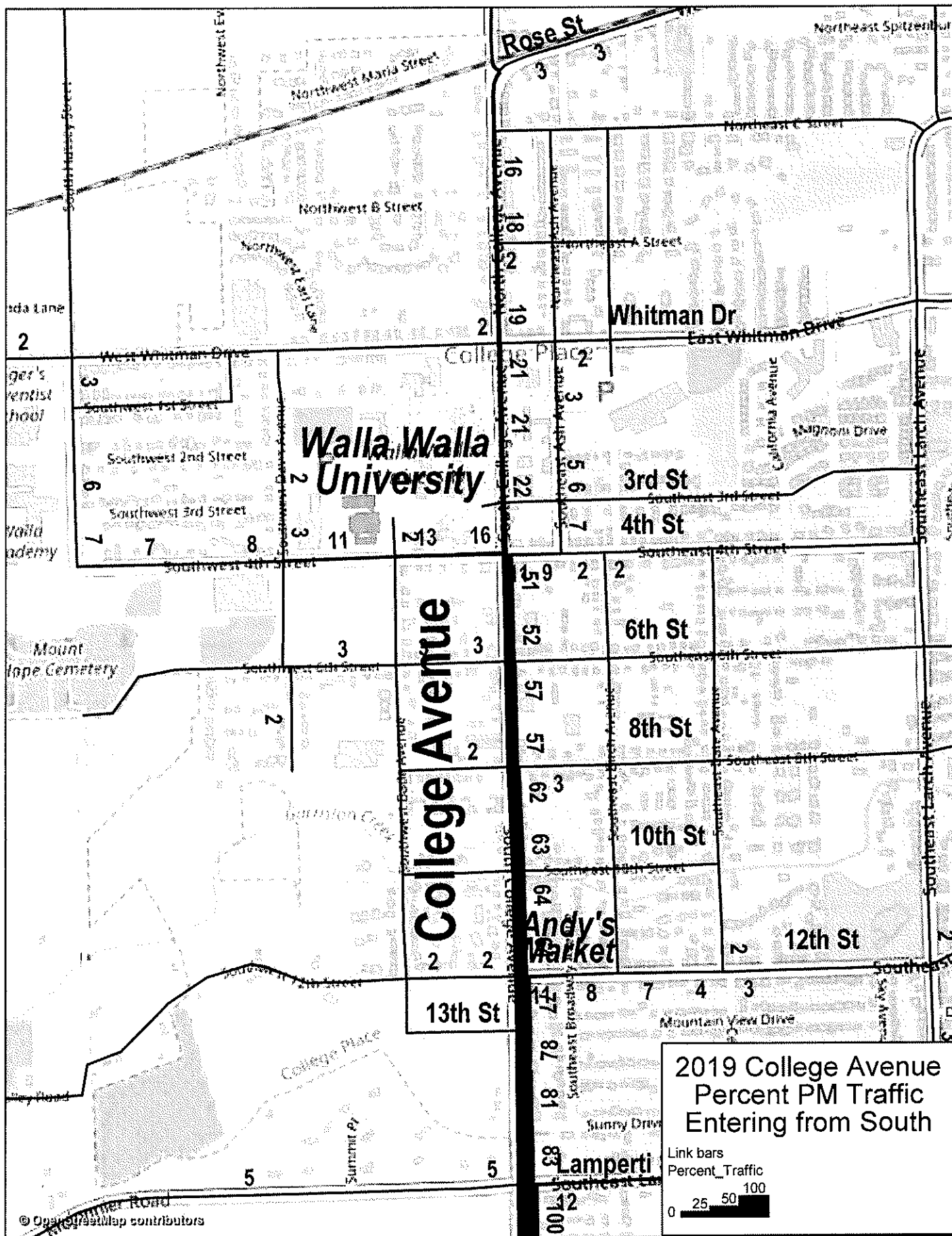
## Delay and Level of Service by Movement

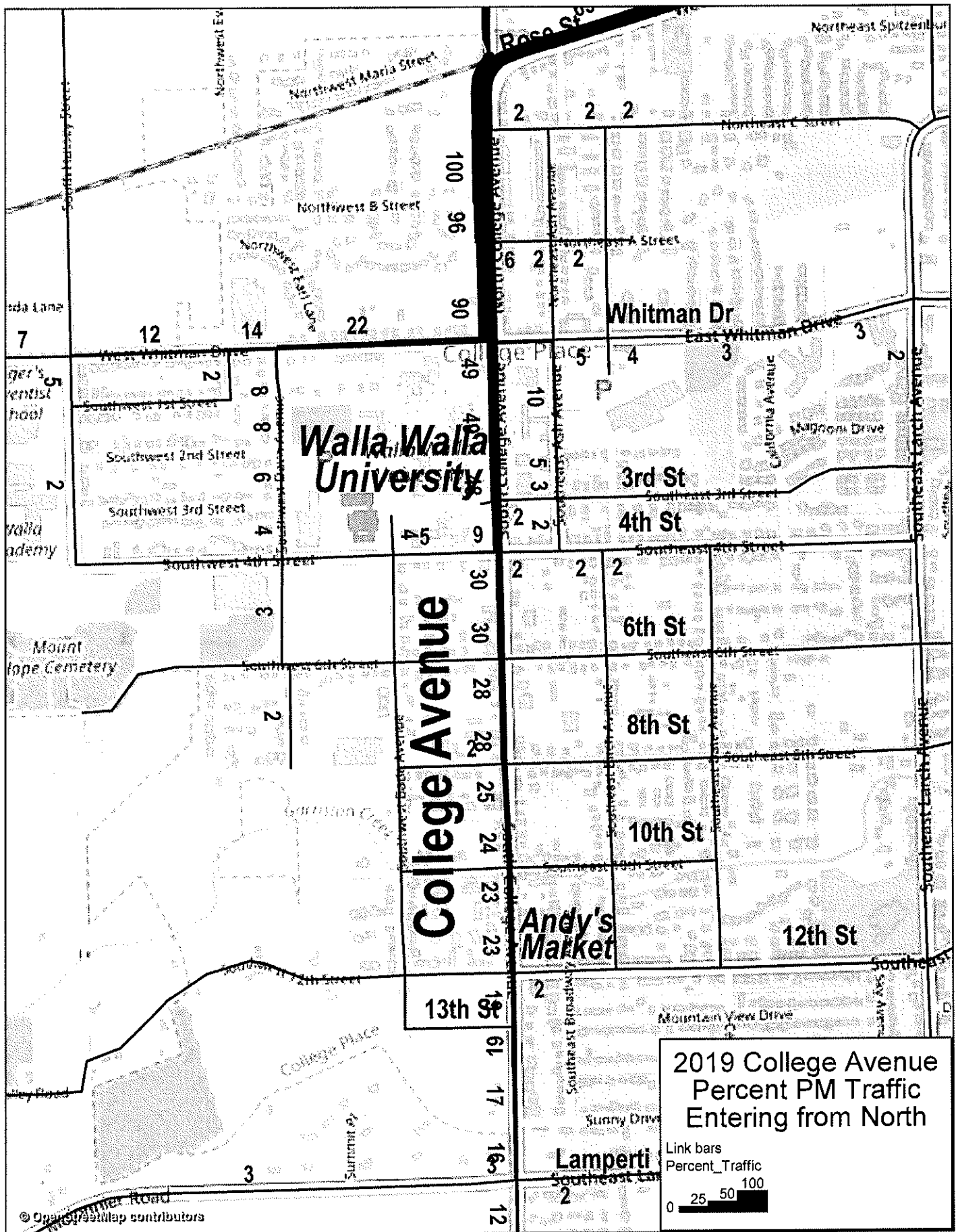
| Approach              | N      |        |         | E (Major) |      |      | S      |        |         | W (Major) |      |      |
|-----------------------|--------|--------|---------|-----------|------|------|--------|--------|---------|-----------|------|------|
| Movement              | L1     | T      | R1      | L1        | T    | R1   | L1     | T      | R1      | L1        | T    | R1   |
| vx, Volume            | 7.69   | 136.92 | 7.69    | 7.69      | 7.69 | 9.23 | 7.69   | 203.08 | 7.69    | 7.69      | 7.69 | 7.69 |
| cnx, Capacity         | 647.50 | 828.40 | 1074.07 | 1615.51   |      |      | 732.60 | 827.60 | 1075.11 | 1613.44   |      |      |
| V/C                   | 0.01   | 0.17   | 0.01    | 0.00      |      |      | 0.01   | 0.25   | 0.01    | 0.00      |      |      |
| d, Delay              | 11.54  | 10.33  | 9.34    | 7.24      |      |      | 11.46  | 10.90  | 9.89    | 7.24      |      |      |
| LOS                   | B      | B      | A       | A         |      |      | B      | B      | A       | A         |      |      |
| dA, Approach Delay    |        | 10.34  |         |           | 2.26 |      |        | 10.88  |         |           | 2.41 |      |
| Approach LOS          |        | B      |         |           |      |      |        | B      |         |           |      |      |
| dRank 1, Rank 1 Delay |        |        |         |           | 0.03 |      |        |        |         |           | 0.03 |      |

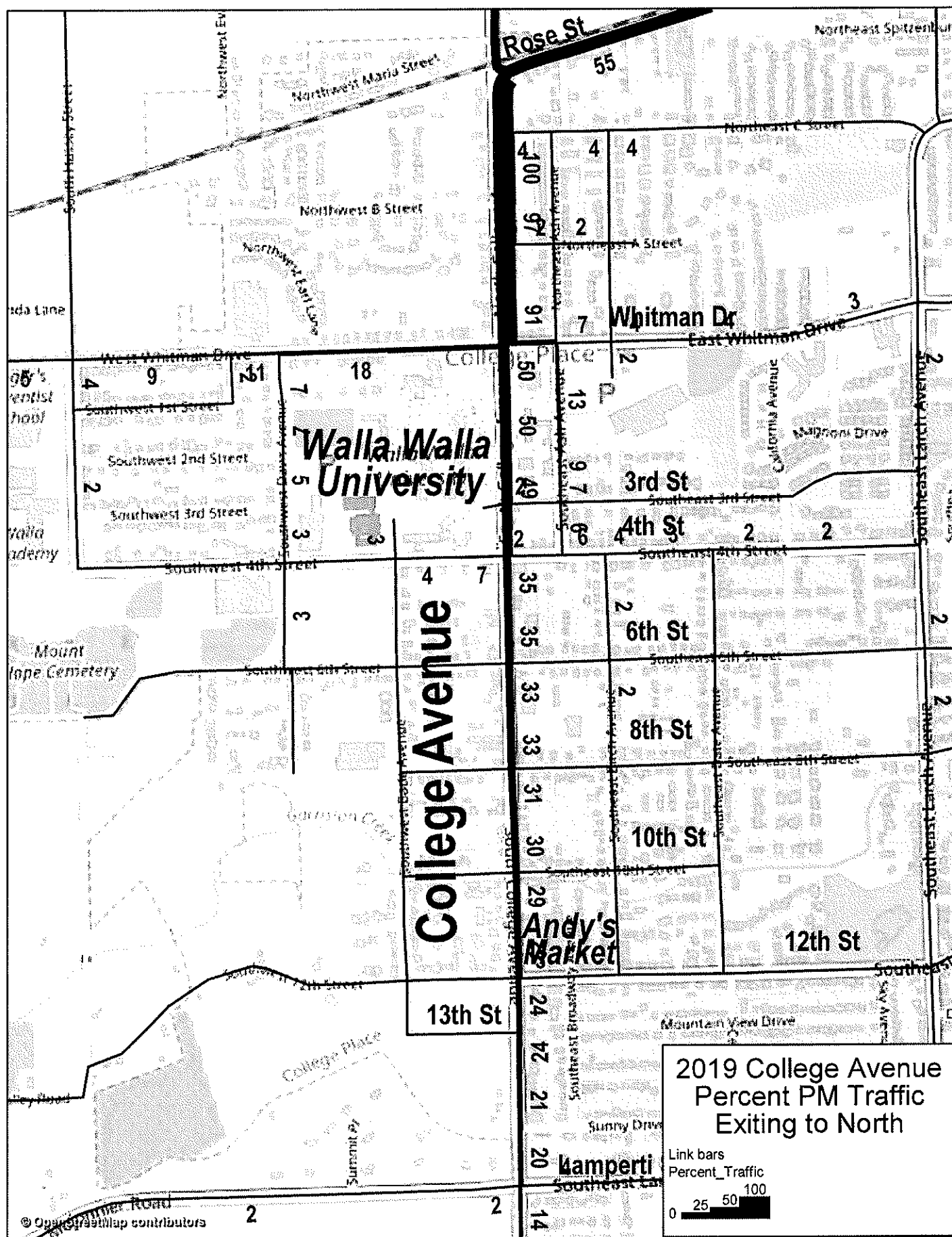
## Delay and Level of Service by Lane

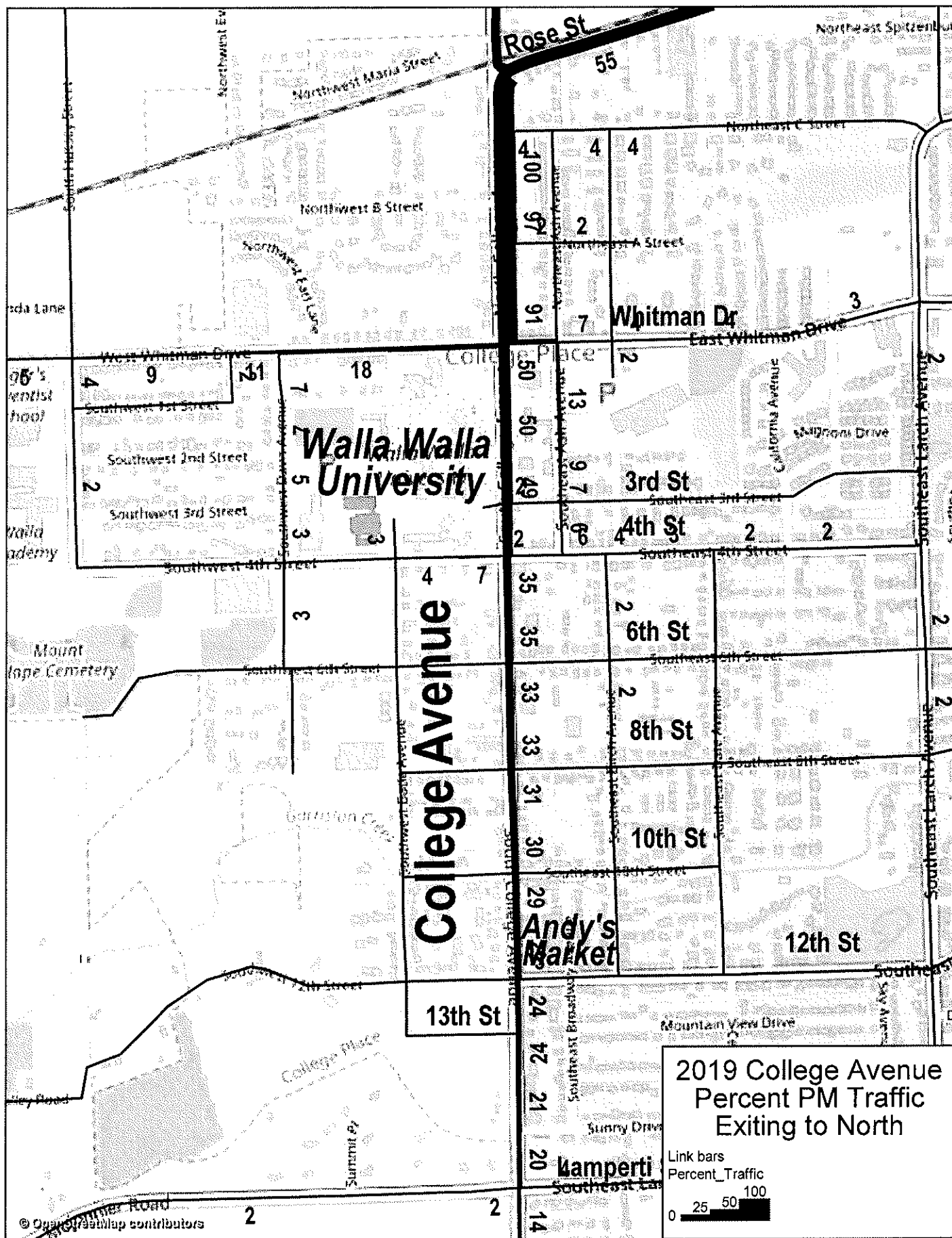
| Approach              | N         |           | E (Major) |           | S         |           | W (Major) |           |
|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Lane                  | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    | Lane 1    |
| Movements             | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 | L1, T, R1 |
| vx, Volume            | 152.31    | 24.62     | 218.46    | 23.08     |           |           |           |           |
| Planned Storage Size  |           |           |           |           |           |           |           |           |
| cnx, Capacity         | 826.28    | 1615.51   | 830.54    | 1613.44   |           |           |           |           |
| V/C                   | 0.18      | 0.02      | 0.26      | 0.01      |           |           |           |           |
| Q95, 95% Queue Length | 0.68      | 0.01      | 1.07      | 0.01      |           |           |           |           |
| d, Delay              | 10.34     | 7.24      | 10.88     | 7.24      |           |           |           |           |
| LOS                   | B         |           | B         |           |           |           |           |           |
| dA, Approach Delay    | 10.34     | 2.26      | 10.88     | 2.41      |           |           |           |           |
| Approach LOS          | B         |           | B         |           |           |           |           |           |

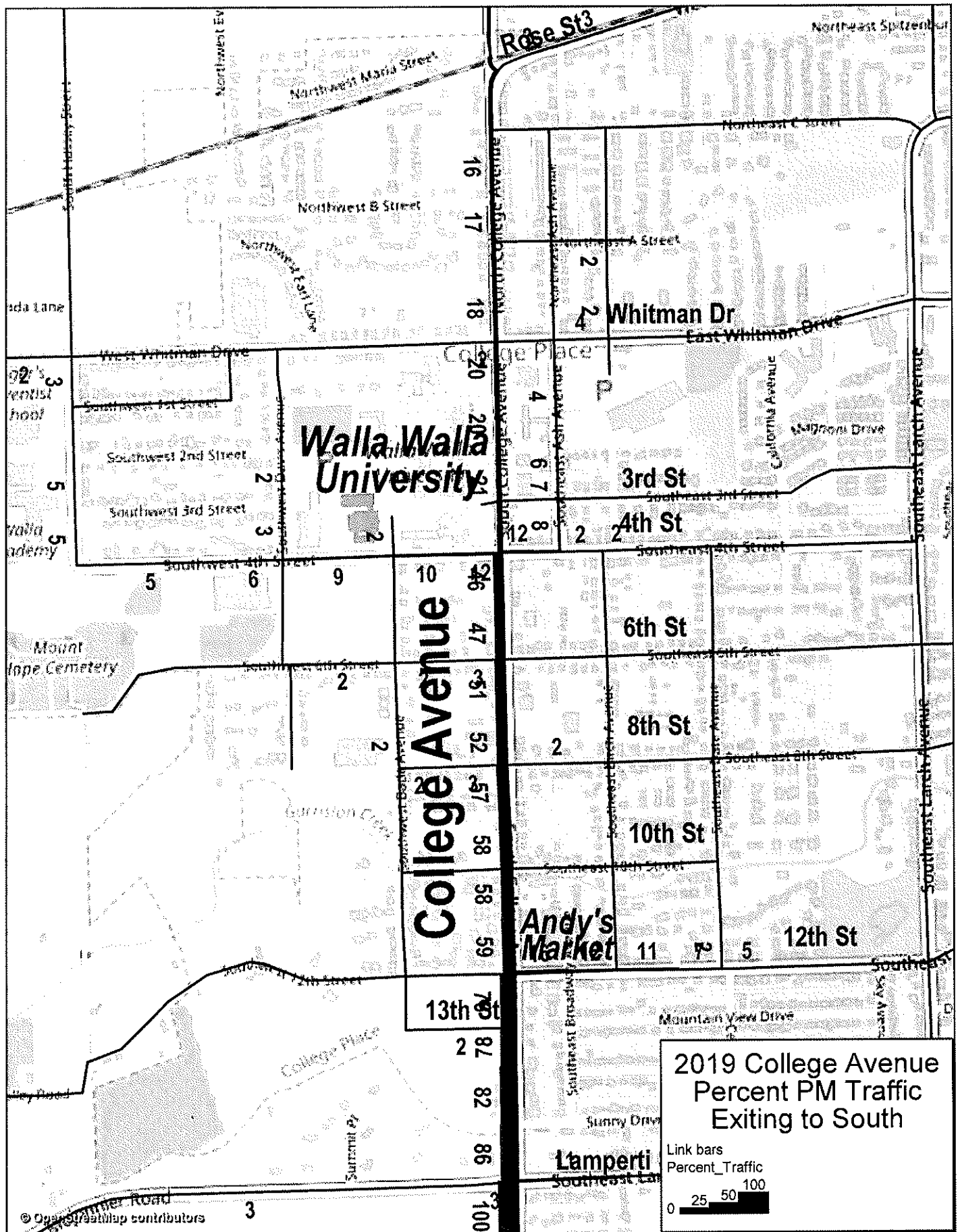






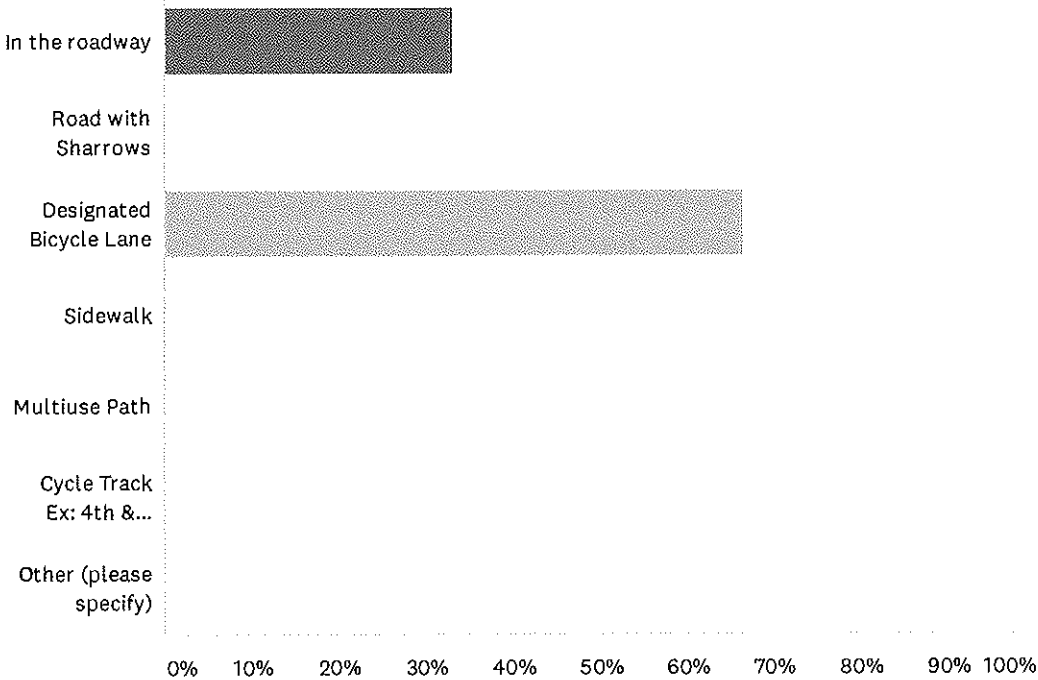






Q1 What is your preferred transportation mode when riding a bicycle?

Answered: 6 Skipped: 0



| ANSWER CHOICES                                        |  | RESPONSES |   |
|-------------------------------------------------------|--|-----------|---|
| In the roadway                                        |  | 33.33%    | 2 |
| Road with Sharrows                                    |  | 0.00%     | 0 |
| Designated Bicycle Lane                               |  | 66.67%    | 4 |
| Sidewalk                                              |  | 0.00%     | 0 |
| Multiuse Path                                         |  | 0.00%     | 0 |
| Cycle Track    Ex: 4th & Academy Way in College Place |  | 0.00%     | 0 |
| Other (please specify)                                |  | 0.00%     | 0 |
| TOTAL                                                 |  |           | 6 |

| # | OTHER (PLEASE SPECIFY)  | DATE |
|---|-------------------------|------|
|   | There are no responses. |      |

## Q2 Where do you ride your bicycle on College Avenue - the sidewalk or the roadway, and why?

Answered: 6 Skipped: 0

| # | RESPONSES                                                                                                                                     | DATE              |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1 | sidewalk because its safer                                                                                                                    | 7/23/2019 3:35 PM |
| 2 | Roadway. I don't choose the sidewalk because of pedestrian traffic.                                                                           | 7/15/2019 8:39 AM |
| 3 | Roadway, bikes don't belong on sidewalks.                                                                                                     | 7/15/2019 6:49 AM |
| 4 | Roadway. Always have                                                                                                                          | 7/12/2019 5:23 PM |
| 5 | Roadway. I ride fairly fast and the roadway is safest. Too many driveway cuts and potential for pedestrian/bicycle conflicts on the sidewalk. | 7/12/2019 5:11 PM |
| 6 | Sidewalk - Traffic is scary. I know I am not supposed to ride on the sidewalk but I am not going to get killed to satisfy a city ordinance.   | 7/12/2019 4:40 PM |



### Q3 Would you be comfortable riding your bicycle between parked cars and the curb?

Answered: 6 Skipped: 0

| # | RESPONSES                                                                                       | DATE              |
|---|-------------------------------------------------------------------------------------------------|-------------------|
| 1 | not really                                                                                      | 7/23/2019 3:35 PM |
| 2 | no                                                                                              | 7/15/2019 8:39 AM |
| 3 | Maybe, prefer outside of cars, don't want to get doored and have no place to escape.            | 7/15/2019 6:49 AM |
| 4 | No                                                                                              | 7/12/2019 5:23 PM |
| 5 | NO, this would be very non-standard and the potential for door opening would be very hazardous. | 7/12/2019 5:11 PM |
| 6 | Yes                                                                                             | 7/12/2019 4:40 PM |

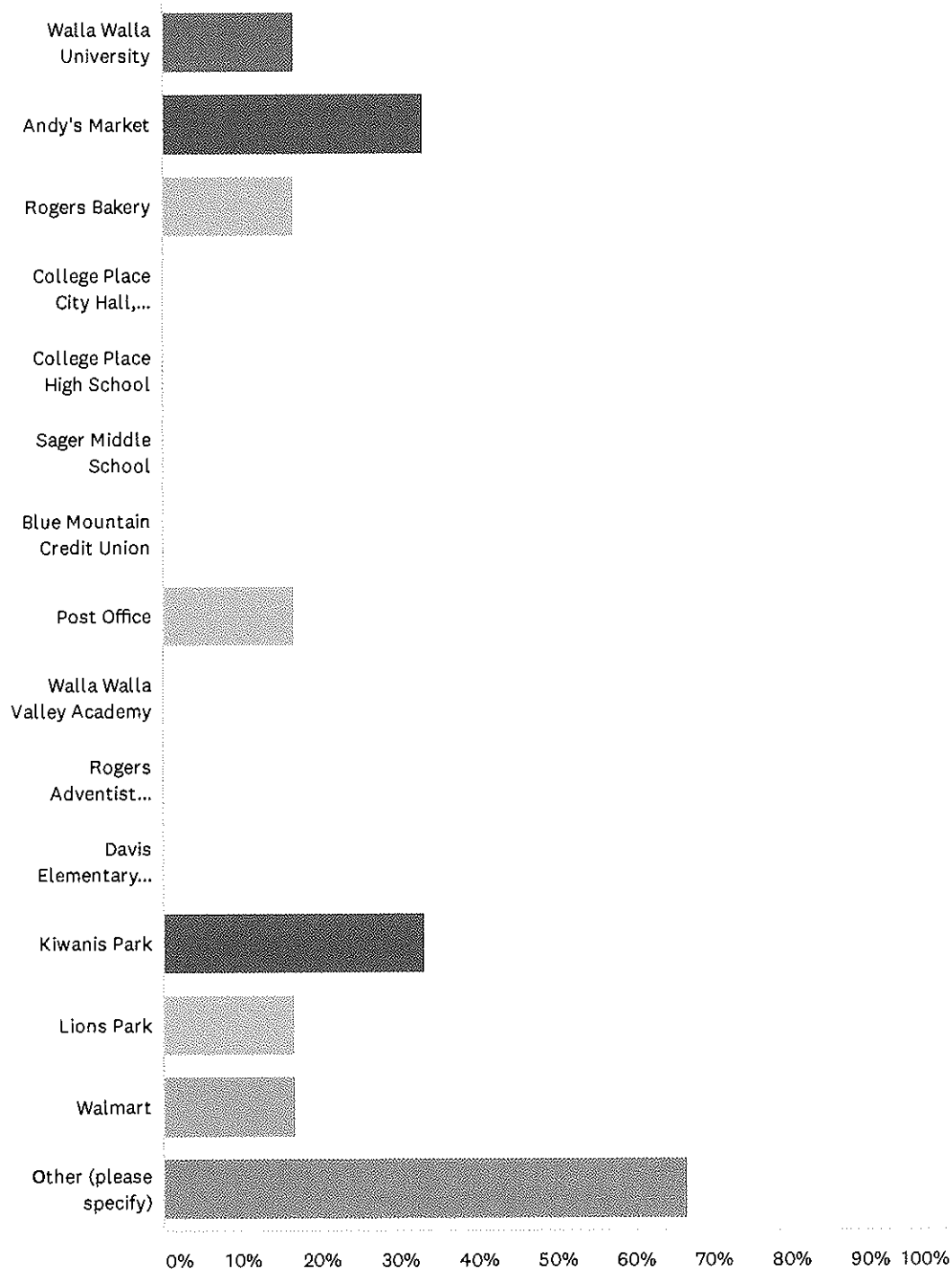
## Q4 What preferred north-south route; if any, would you like to see designated as an alternate to College Avenue for bicycle traffic?

Answered: 6 Skipped: 0

| # | RESPONSES                                                                     | DATE              |
|---|-------------------------------------------------------------------------------|-------------------|
| 1 | 6th st                                                                        | 7/23/2019 3:35 PM |
| 2 | There really is no good direct alternative.                                   | 7/15/2019 8:39 AM |
| 3 | n/a                                                                           | 7/15/2019 6:49 AM |
| 4 | Don't know                                                                    | 7/12/2019 5:23 PM |
| 5 | There is no other north-south route that I know of to traverse College Place. | 7/12/2019 5:11 PM |
| 6 | Bade                                                                          | 7/12/2019 4:40 PM |

## Q5 Please list your three most frequent destinations when riding a bicycle?

Answered: 6 Skipped: 0



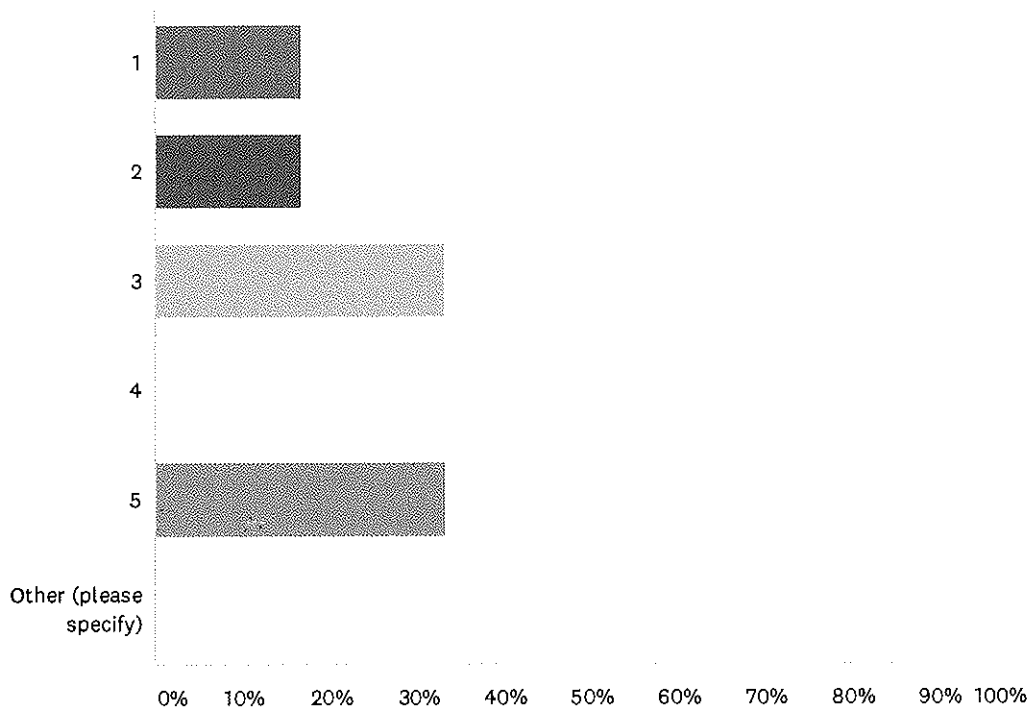
# College Avenue Bicycle Traffic Accomodation Survey

| ANSWER CHOICES                                    | RESPONSES |   |
|---------------------------------------------------|-----------|---|
| Walla Walla University                            | 16.67%    | 1 |
| Andy's Market                                     | 33.33%    | 2 |
| Rogers Bakery                                     | 16.67%    | 1 |
| College Place City Hall, Police, Fire Departments | 0.00%     | 0 |
| College Place High School                         | 0.00%     | 0 |
| Sager Middle School                               | 0.00%     | 0 |
| Blue Mountain Credit Union                        | 0.00%     | 0 |
| Post Office                                       | 16.67%    | 1 |
| Walla Walla Valley Academy                        | 0.00%     | 0 |
| Rogers Adventist School                           | 0.00%     | 0 |
| Davis Elementary School                           | 0.00%     | 0 |
| Kiwanis Park                                      | 33.33%    | 2 |
| Lions Park                                        | 16.67%    | 1 |
| Walmart                                           | 16.67%    | 1 |
| Other (please specify)                            | 66.67%    | 4 |
| Total Respondents: 6                              |           |   |

| # | OTHER (PLEASE SPECIFY)                                       | DATE              |
|---|--------------------------------------------------------------|-------------------|
| 1 | going either north or south to longer rides outside of town. | 7/15/2019 8:39 AM |
| 2 | Often just passing through                                   | 7/15/2019 6:49 AM |
| 3 | Ride for workout                                             | 7/12/2019 5:23 PM |
| 4 | Recreational ride through the city.                          | 7/12/2019 5:11 PM |

## Q6 How many times a week do you ride your bicycle?

Answered: 6 Skipped: 0



### ANSWER CHOICES

### RESPONSES

|                        |        |          |
|------------------------|--------|----------|
| 1                      | 16.67% | 1        |
| 2                      | 16.67% | 1        |
| 3                      | 33.33% | 2        |
| 4                      | 0.00%  | 0        |
| 5                      | 33.33% | 2        |
| Other (please specify) | 0.00%  | 0        |
| <b>TOTAL</b>           |        | <b>6</b> |

# OTHER (PLEASE SPECIFY) DATE

There are no responses.

**Q7 What improvements or activities would encourage you to ride your bicycle more frequently? For Example: better connections, more bike lanes, more separation from traffic, better street lighting.**

Answered: 6 Skipped: 0

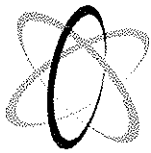
| # | RESPONSES                                                                                             | DATE              |
|---|-------------------------------------------------------------------------------------------------------|-------------------|
| 1 | all the above                                                                                         | 7/23/2019 3:35 PM |
| 2 | more bike lanes - although not configured like they are along 4th and Academy way.                    | 7/15/2019 8:39 AM |
| 3 | More bike lanes                                                                                       | 7/15/2019 6:49 AM |
| 4 | More bike lanes                                                                                       | 7/12/2019 5:23 PM |
| 5 | More bike lanes on the street and separated from traffic.                                             | 7/12/2019 5:11 PM |
| 6 | Sharrows, lower speed limit on College Ave, and paint green bike boxes at intersections with signals. | 7/12/2019 4:40 PM |

**Q8 If there is anything else that you would like to note in completing this survey, please include below:**

Answered: 5    Skipped: 1

| # | RESPONSES                                                                                                                                      | DATE              |
|---|------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1 | thank you for having this survey                                                                                                               | 7/23/2019 3:35 PM |
| 2 | The configuration with the poles along the path on 4th Street and Academy are a real eye sore and make bike riding through there castraphobic. | 7/15/2019 8:39 AM |
| 3 | No                                                                                                                                             | 7/12/2019 5:23 PM |
| 4 | Thanks for seeking input from those who ride bikes.                                                                                            | 7/12/2019 5:11 PM |
| 5 | College Ave from 10th to Whitman is narrow and dangerous for bicyclists.                                                                       | 7/12/2019 4:40 PM |



**Western Systems**

Innovative Transportation Solutions

# Quotation

**Quote #: Q-01438**

Revision #:

Date: 10/22/2019

Estimator: Robert Nims

Sales: Kai Antrim

Project: **City of Walla Walla / HAWK Pedestrian Detection**  
Attention: **Gary Norris / DN Traffic Consultants**  
Bid Opening: 10/22/2019

We are pleased to provide you with this quotation. If you have any questions, please let us know immediately.

| Qty | Part #     | Description                                                                                                                                                | Ind. Cost   | Total Cost  |
|-----|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------|
| 1   | 5885000030 | MIGMA WALKTIME; SIGNALIZED CROSSING PEDESTRIAN DETECTION & EXTENSION IN THE CROSSWALK INCLUDES; (1) SBC CONTROLLER AND (2) DUAL IR CAMERA SYSTEMS (MW0611) | \$ 3,553.85 | \$ 3,553.85 |
| 1   | 5885000150 | ETHERNET SURGE PROTECTOR                                                                                                                                   | \$ 67.69    | \$ 67.69    |
| 1   | 5885000110 | MIGMA MONITOR; 10" PORTABLE PRE-CONFIGURED                                                                                                                 | \$ 372.31   | \$ 372.31   |
| 2   | 5885000140 | MIGMA BRACKET; CAMERA AMOUNTING BRACKET                                                                                                                    | \$ 126.92   | \$ 253.84   |
| 1   | 0000000000 | CAT5E CABLE; SHIELDED GEL FILLED DIRECT BURIAL (1000FT) PART # 5885000130                                                                                  | \$ 355.38   | \$ 355.38   |
| 2   | 7110020000 | LED 16" ORANGE/WHITE PEDESTRIAN SIDE BY SIDE DIALIGHT (2007 ITE)                                                                                           | \$ 193.17   | \$ 386.34   |
| 1   | 9780010000 | SIGNAL/VIDEO TURN-ON ASSISTANCE                                                                                                                            | \$ 1,625.00 | \$ 1,625.00 |

**GENERAL CONDITIONS OF SALE**

The acceptance of this quotation implies the acceptance of the following terms and conditions which cannot be varied or waived except by express written authorization by a Western Systems representative. These terms govern the sale of goods and services supplied by Western Systems. Differing terms from Buyer in any purchase order or written communication shall not be binding on Western Systems.

|                    |                    |
|--------------------|--------------------|
| <b>Subtotal</b>    | <b>\$ 6,614.41</b> |
| <b>Shipping</b>    | <b>\$ 110.00</b>   |
| <b>Tax</b>         | <b>\$ 588.68</b>   |
| <b>Grand Total</b> | <b>\$ 7,313.09</b> |

**TERMS AND CONDITIONS**

**Purchase Order:** All purchases require a formal purchase order. Emails or verbal communication does not constitute an acceptable purchase order.

**Material Lead Time** (after release of order):

**Freight Terms:** **FOB DESTINATION** - Seller is responsible for all freight charges & fees

**Validity Period:** 30 days from date of quotation.

**Taxes/Fees:** Unless current resale certificate is on file with Western Systems, purchaser shall be responsible for all, tariffs, duties or sales or use taxes in addition to the quoted prices herein.

**Payment Terms:** **Net 30** Upon Approval of Credit / we impose a surcharge of 2% on the transaction amount on VISA and Master Card credit card products, which is not greater than our cost of acceptance.

We do not surcharge VISA and Master Card debit cards. All prices are quoted as USD funds.

**Non-Payment Penalties:** If payment has not been received within terms, the purchaser will be considered in default. Western Systems will be entitled, without prejudice to our other rights, without serving notice of default, to charge the purchaser for all costs incurred such as administration, storage, legal advice etc. The unpaid portion of any amount due to Western Systems will bear interest at the rate of 1.5% per month simple interest. Western Systems reserves the right to hold goods until customer balances their account.

**Collections:** Upon Buyer default of these terms, Western Systems may, in addition to any other rights or remedies at contract or law, declare the entire balance of Buyer's account immediately due and payable. If unpaid balance is referred for collections, Buyer agrees to pay Western Systems, to

1122 Industry Street, Bldg. B, Everett, WA 98203

Phone (425) 438-1133 | Fax (425) 438-1585

the extent permitted by law, reasonable attorney fees in addition to all damages otherwise available, plus any court costs or expenses incurred by Western Systems, plus any finance charges accrued on any unpaid balance owed by Purchaser. Deferment or Cancellation Policy: Order deferment or cancellation once materials have been released will be subject to cancellation and/or restocking fees.

Documentation: Any operational documentation supplied as a part of this quotation remains the property of Western Systems and may not be copied, reproduced, transmitted or communicated to 3rd parties without the express written consent of Western Systems.

On-Site Services: On-site services such as signal or video system turn-on support shall be scheduled three weeks in advance. If services need to be cancelled or postponed, any non-reimbursable travel expenses will be billed to purchaser. This quotation does not provide nor imply any on-site support services unless mentioned specifically herein. If on-site support services are required, and not included as part of this proposed scope of work, please contact Western Systems for a revised quotation.

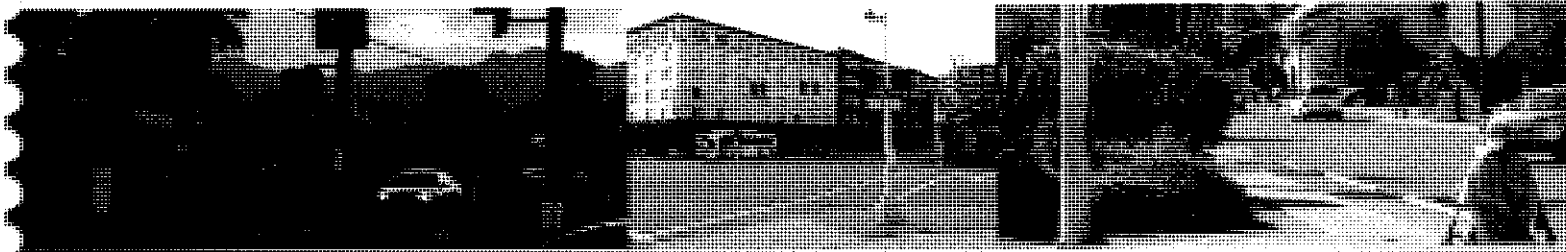
Warranty: Standard one-year warranty on material goods manufactured or supplied by Western Systems from the date of manufacturers factory shipment, unless superseded by an additional manufacturer's warranty, provided such goods are maintained and operated in accordance with manufacturers standard method of operation. For additional information on Western Systems warranty, please send an email to [info@westernsystems-inc.com](mailto:info@westernsystems-inc.com)

Return and Restocking Policy: Western Systems will be the sole source in determining whether any item is eligible for return. To be eligible the item(s) must be standard product models, new and unused, in the original packaging, and invoiced within the last 90 days.

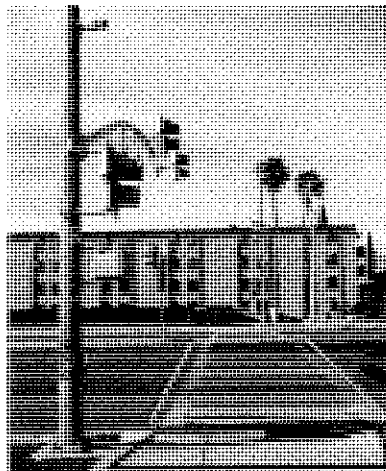
Restocking fees are applied to all returns and can vary between 20-50% based on annual sales activity. In no case will Western Systems be obligated to take returns for materials, including items that are obsolete, custom orders, or past the 90-day invoice period.

Delivery Inspection: All materials deliveries must be inspected upon receipt from freight carrier. Any freight damages must be reported to the carrier at the time of receipt of goods. Any materials shortages or inaccuracies in shipment must be reported to Western Systems within ten days receipt of goods. Thereafter, any discrepancies will be considered incidental and the responsibility of the receiver.

Force Majeure: Western Systems, Inc. shall in no event be responsible for delays in performance due to actions beyond its reasonable control including without limitation acts of God, strikes, labor shortage or disturbance, fire, accident, war, civil disturbance or carrier delays. Western Systems, Inc. accepts no liability for errors or omissions or the accuracy or the completeness of this quotation. It has been prepared to the best of our knowledge per plans, specifications, documentation and communications provided but we do not guarantee these to be accurate or of the latest revision. Determination of accuracy of this quotation and final quantities are the sole responsibility of recipient. Western Systems, Inc. shall in no event be liable for any special, consequential, incidental or liquidated damages (including without limitation damages for loss of use of facilities or equipment, loss of revenue, loss of profits or loss of goodwill), regardless of whether seller (a) has been informed of the possibility of such damages or (b) is negligent.



## **MigmaWalktime™** *for Pedestrian Walktime Extension and Ped Call Canceling*

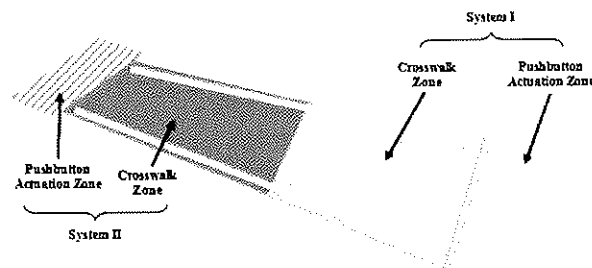


**MigmaWalktime™** is an outdoor passive pedestrian detector for the pedestrian walktime extension and ped call canceling. As long as slow-walking pedestrians such as senior citizens, visually impaired or wheel-chair pedestrians are still in the crosswalk, it can automatically extend the walktime for them.

- △ High resolution IR LED stereo camera for day and night detection
- △ Industrial single board computer (SBC) running Windows XPe
- △ Remote view, configuration and diagnosis over Ethernet (option)
- △ Robust pedestrian detection using stereo vision analysis
- △ Two-zone support for reliable detection of pedestrians
- △ Coordination of two systems for very long crosswalks

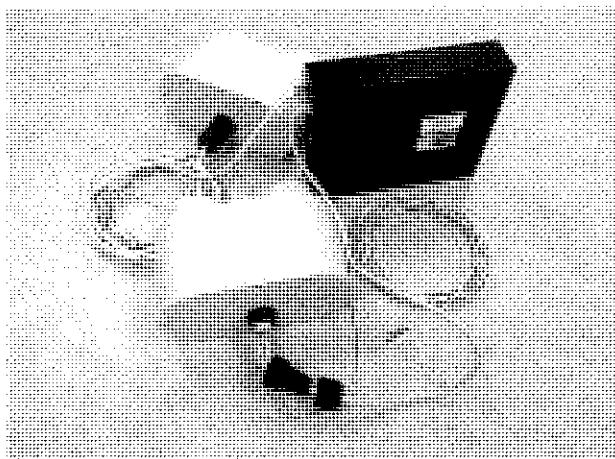
**MigmaWalktime™** utilizes the field-proven technologies to extend the walktime for slow-walking pedestrians.

- △ Analytical video cueing and 3D pattern recognition
- △ Operational under any weather conditions
- △ Simple wiring and connection using CAT5e Ethernet cables
- △ Support of both walktime extension and ped call canceling
- △ Support of APS buttons made by Campbell, Novax and Polara
- △ Over 98% detection rate and negligible false calls per day



### **SPECIFICATIONS**

- △ Image Sensor: 1/3" Sony CCD Chip
- △ Camera Resolution: 600 TV lines
- △ Camera Mounting Height: 18 ~ 20 ft
- △ Camera Power: Power over Ethernet (application dependable)
- △ IR Range: 100 ft (~30m) in total darkness
- △ S/N Ratio: ≥ 48 dB
- △ Cable: CAT5e Ethernet cable
- △ Operating Temperature: -22 °F ~ 158 °F (-30 °C ~ 70 °C)
- △ Operating Humidity: 0% ~ 96%
- △ Operating Environment: All weather, day and night
- △ Chassis Dimension (one crosswalk): 8(L)×6.5(W)×2(H) (inch)
- △ Chassis Dimension (one intersection): 11.5(L)×5(W)×9(H) (inch)
- △ Stereo Camera Dimension: 5(L)×7.5(W)×3.5(H) (inch)
- △ Failsafe and watchdog timer support



**Corporate Headquarters**  
Migma Systems, Inc.  
1600 Providence Highway  
Walpole, Massachusetts 02081

**Contact Information**  
Web: <http://www.migmapd.com>  
Sales: [sales@migmapd.com](mailto:sales@migmapd.com)  
Support: [support@migmapd.com](mailto:support@migmapd.com)  
Phone: 508-660-0328

**Migma**

# Migma Walktime™

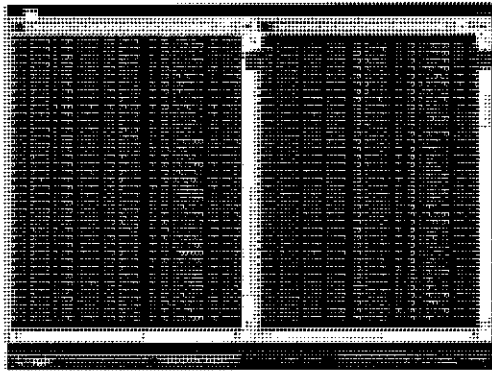
for pedestrian detection and walk time extension

## Configuration Instructions

### SBC Display

There are three ways to interfacing with SBC:

- MigmaMonitor™, a portable computer monitor with VGA connector and touch screen. This monitor can be left in the controller cabinet.
- A laptop using an Ethernet crossover cable (not provided). You can find the remote login procedures in this guide.
- A regular desktop PC VGA monitor and USB mouse/keyboard. This approach is suitable for configuration and test in the office.



Once connecting to SBC using one of these methods, close both programs (two screens with yellow prints) by clicking on the exit button (X) on top of each DOS window.

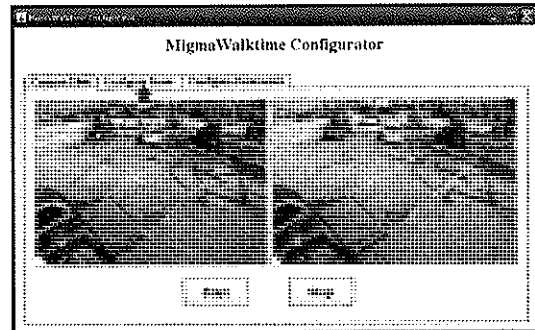
### Zone Configuration

The configuration procedures for System1 and System2 are exactly the same. To configure the two zones for System1, please follow the steps under each zone configuration.

On the desktop double click on the **System1\_GUI** icon to start the configurator for System1.



Once the configuration software application has started, select the tab named **Configure Zones**.

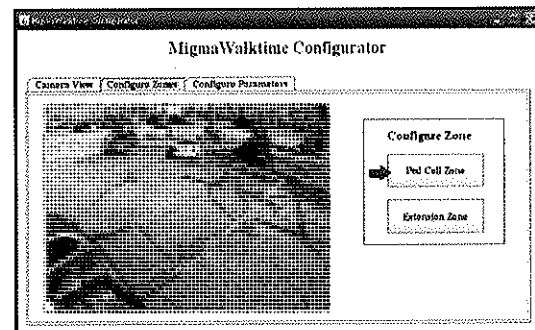


The camera view from System1 is shown. The existing zones are in RED and YELLOW. There are two configuration zones, one for automated ped call, and the other for walk time extension.

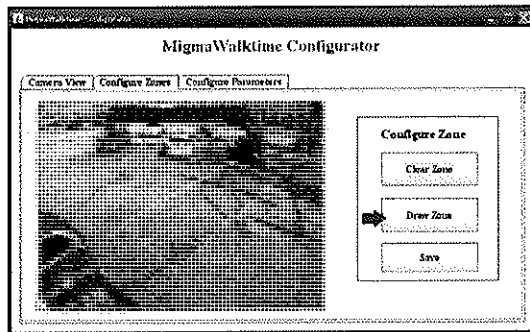
### Configuring Ped Call Zone

**Ped Call Zone** is a zone in which the pedestrian will enter and wait for green light. Once the pedestrian is detected in this zone, a ped call will be placed automatically. It should be drawn to cover as much of the waiting area as possible. **Ped Call Zone** will be shown in color red.

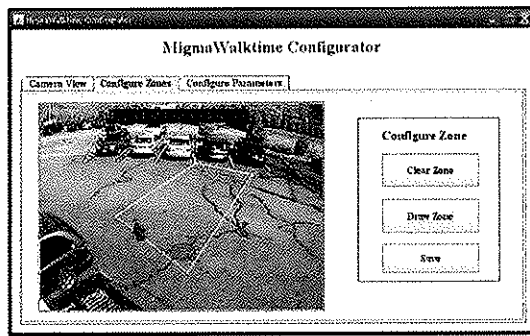
**Step 1:** Click on the **Ped Call Zone** button.



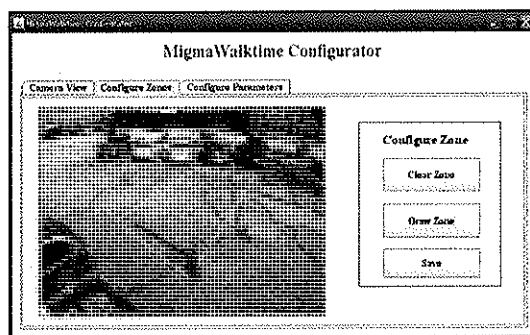
**Step 2:** Click on **Clear Zone** and then click on **Draw Zone** buttons.



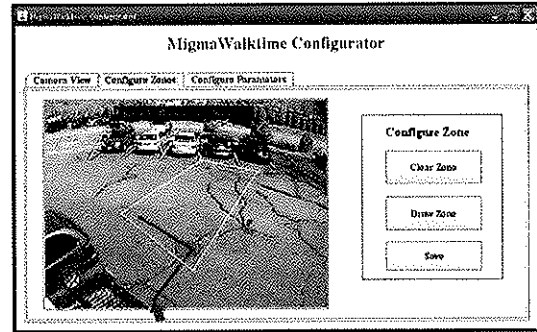
**Step 3:** Now using the stylus or mouse touch the *upper left corner* of the desired zone to start drawing.



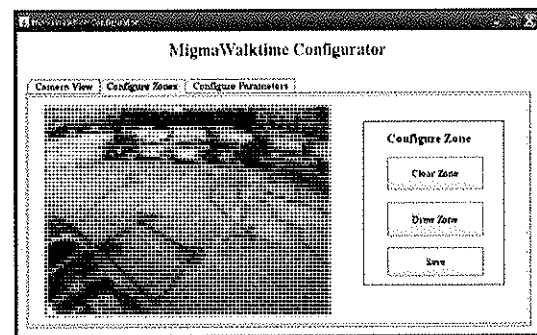
**Step 4:** Next touch the upper right corner of the zone with the stylus or mouse. This will connect the two points and there will be one red line drawn.



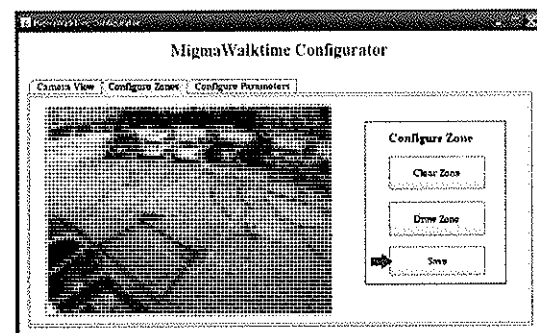
**Step 5:** Next touch the lower right corner of the zone and this will connect the three points. There will be two red lines drawn.



**Step 6:** Finally touch the lower left corner with the stylus or mouse and this will complete the zone by connecting all four points.



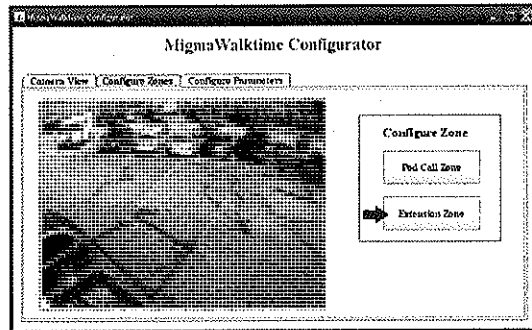
**Step 7:** After completing the zone configuration, click on the **Save** button. This will save the newly configured **Ped Call Zone** to the computer. This is the zone that will be used to detect pedestrians and place a ped call.



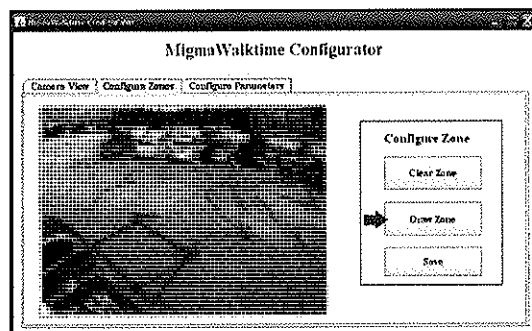
**Note:** All configured zones can be cleared and drawn again.

### Configuring Extension Zone

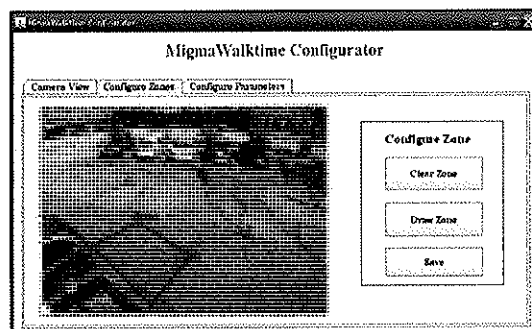
**Step 1:** Click on **Extension Zone** button to start configuration.



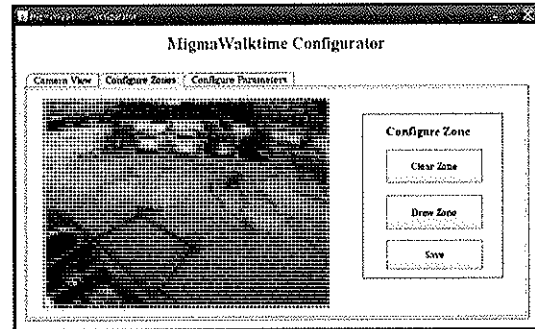
**Step 2:** Click on the **Clear Zone** button to clear the existing zone and then click the **Draw Zone** button. The **Extension Zone** should cover as much of the crosswalk as possible. As long as there are pedestrians detected in this zone, the walk time extension request (i.e., relay contact closure) is sent to the controller until he or she is out of this zone.



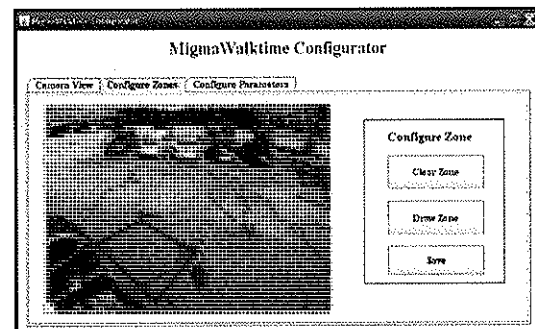
**Step 3:** Use the stylus or mouse and touch the upper left corner of the desired zone.



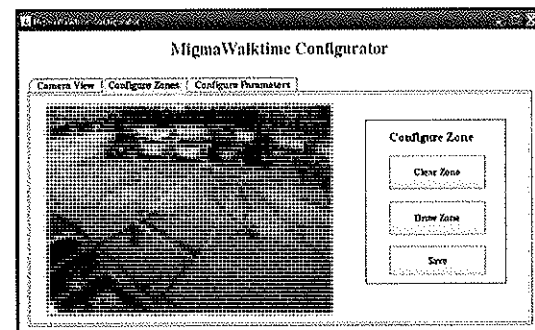
**Step 4:** Now touch the upper right corner with the stylus or mouse. This will connect the two points and there will be one yellow line drawn.



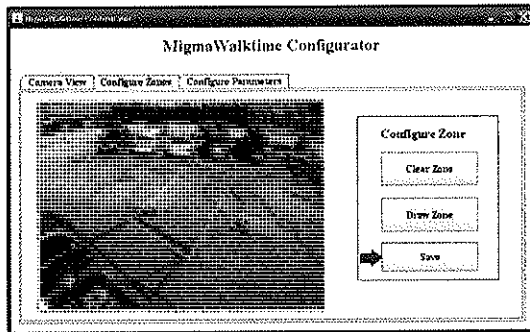
**Step 5:** Touch the lower right corner with the stylus or mouse. This will connect the three points and there will be two yellow lines drawn.



**Step 6:** Finally touch the lower left corner of the zone and this will complete the small zone.



**Step 7:** Click on **Save** to save the zone configuration.



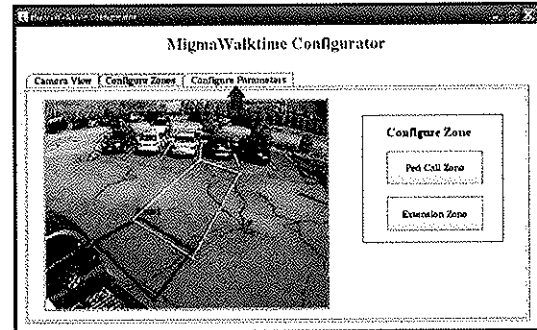
You have completed the System1 zone configuration. Now you need to configure two zones for System2 by following the same procedures outlined for System1.

### Parameters Configuration

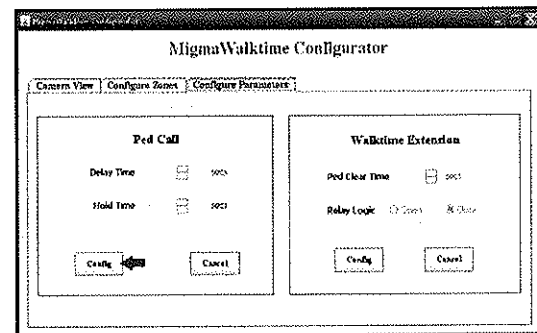
For **Ped Call** part, you can configure the Delay Time (*i.e. how long the pedestrian must be in the ped call zone before being detected*) and the Hold Time (*i.e. how long ped call will be held by the system*). The default Delay Time for **Ped Call** is 4 seconds, meaning the pedestrian will be detected after staying in the zone for 4 seconds. Default time for the Hold Time is 3 seconds (*i.e., relay will be closed for 3 seconds*).

For **Walktime Extension** part, you can configure Ped Clear Time (*i.e. how long the extension is released once the pedestrian is no longer in the crosswalk*). The default Ped Clear Time is 2 seconds, meaning the extension will be cleared in 2 seconds after a pedestrian leaves the crosswalk. The Relay Logic can be used to set whether or not the extension relay should be *close* or *open* when the system makes the extension request to the controller. It should be set based on the controller you use.

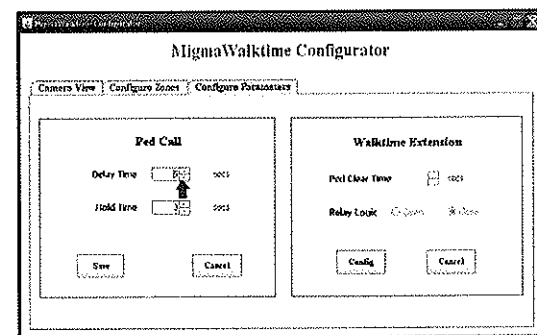
To configure Delay Time and Hold Time, please select the **Configure Parameters** tab to start the configuration. The screen is shown below.



For both **Ped Call**, click on the **Config** button to configure the system for your specific needs.



Simply click the Up or Down arrow to adjust the time to your application. Once the time configurations are complete, please click on the **Save** button.

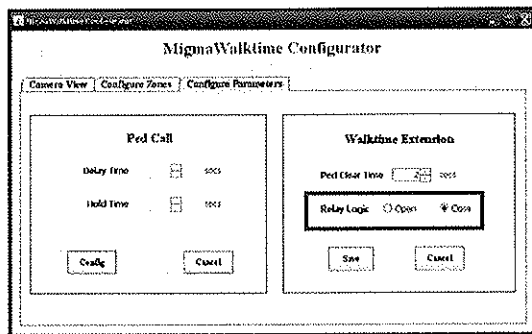
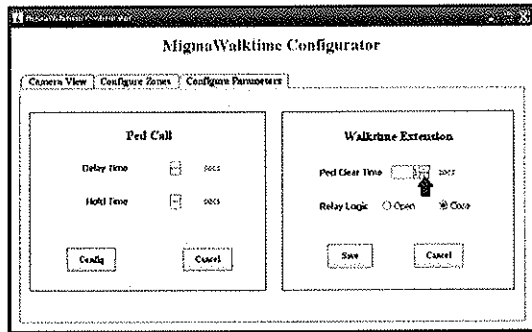


Configuring the **Walktime Extension** is identical to the **Ped Call**. Click on the **Config** button, select your preferred time for Ped Clear Time and your choice for Relay Logic.

# Migma Walktime™

for pedestrian detection and walk time extension

## Configuration Instructions



You have completed the System1 parameter configurations. Now you will need to configure System2 by following the same procedures outlined for System1.

Now that you have finished all configurations and ready to have the system operational, you MUST save all configuration data to the disk inside SBC.



To do this, on the desktop screen,

**Double Click on the Save icon**

The system will then save the data and automatically reboot. The system will use the new configuration data for detecting pedestrians and extend walk time at street intersections.

**REMEMBER:** Whenever you configure the system, you must click on the Save icon to save the configuration. Otherwise your configuration changes will NOT be saved.

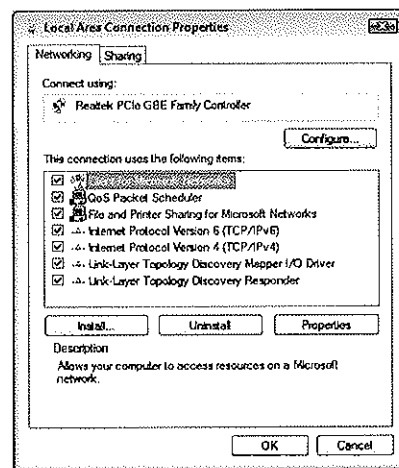


Once the system has restarted, you may unplug the monitor and close the cabinet door. The system is ready for use.

### Remote Login Configuration

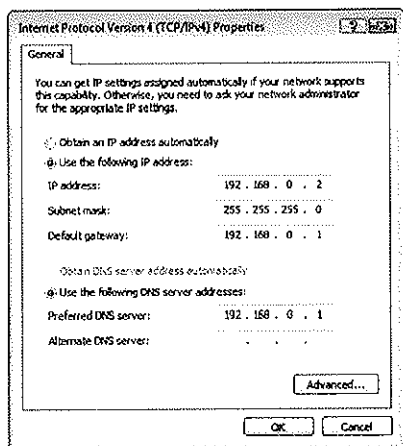
Before logging into SBC remotely, you should configure your laptop you will use to connect to SBC with crossover Ethernet cable.

- Open **Properties of Local Area Connection** in **Network Connections** in **Control Panel**



- Open **Properties of Internet Protocol version 4 (TCP/IPv4)**





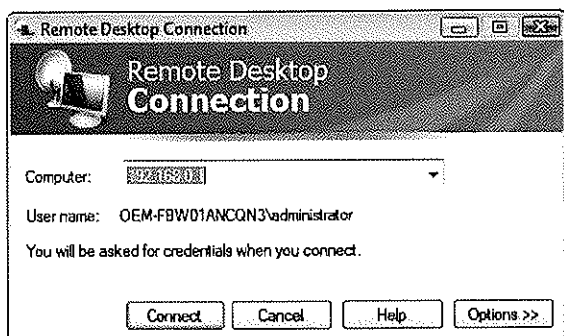
- Select **Use the following IP address** and enter the following network information:
  - IP address: 192.168.0.2
  - Subnet mask: 255.255.255.0
  - Default gateway: 192.168.0.1

Select **Use the following DNS server addresses:**

- Preferred DNS server: 192.168.0.1
- Click on **OK** button to finish configuration of local area connection.

### Remote Access

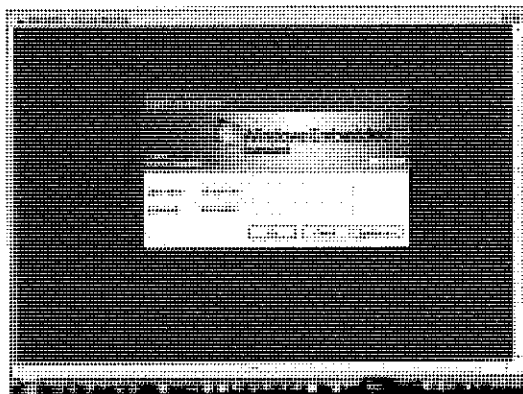
- Open **Remote Desktop Connection** in Windows
- Enter 192.168.0.1 in **Computer**
- Click **Connect** button



A remote desktop login window appears. Enter the following information:

- **Username:** administrator
- **Password:** migmasys

Click on **OK** button to access the SBC.



# MigmaWalktime™

Product for pedestrian detection and walktime extension

## INSTALLATION INSTRUCTIONS

### Camera Height

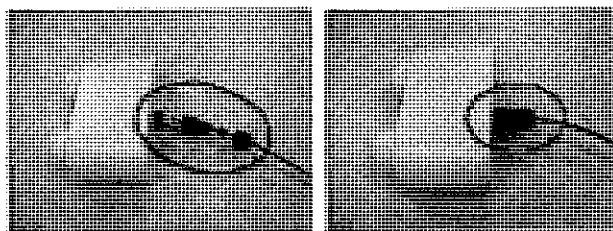
One MigmaWalktime™ unit comprises of one single board computer (SBC) and two stereo cameras. The SBC needs to be placed inside a cabinet. The two stereo cameras should be mounted to the existing signal poles or pedestals at a desired height above the ground, typically 15 - 20 ft.

### Camera Alignment

For the stereo camera to work properly, it must be leveled. If the signal pole the camera is mounted to is vertical, Migma's mounting bracket is sufficient for the camera alignment. Otherwise, please use a ball-type mounting bracket and place a bubble level on top of stereo camera to measure the camera alignment.

### Camera Wiring

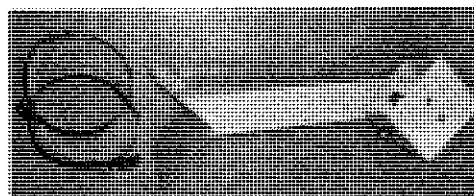
Unscrew the waterproof Ethernet connector at the back of the stereo camera, carefully push the Cat5e cable through the connector, and then crimp the RJ45 connector to the Cat5e cable. Now screw back the connector and tighten it.



Mount the cameras on the signal poles. Mark the Cat5e cable connected to each camera as "System 1" or "System 2". At the back of SBC, there are two RJ45 connectors. Connect Cat5e cable marked as "System 1" to RJ45 connector labeled as "System 1". Similarly connect Cat5e cable marked as "System 2" to the connector labeled as "System 2".

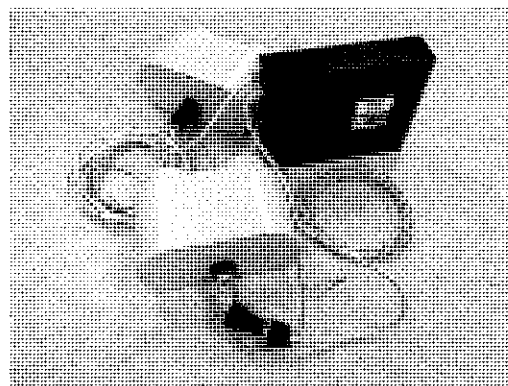
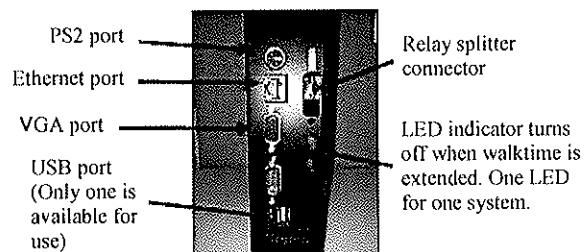
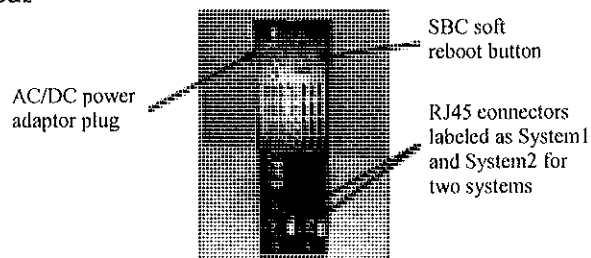
### Camera Mounting

Attach the mounting bracket to the signal pole, and use two banding strips to tie the mounting bracket to the signal pole. Put camera on the bracket, adjust its view and tighten it completely.



### Power for Cameras

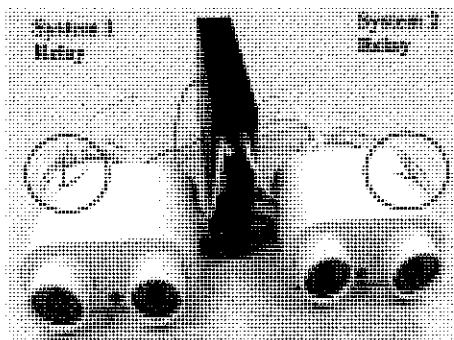
The stereo cameras are powered by SBC over Cat5e cable (PoE).



## Relay Connections for MigmaWalktime™

### Connection for Pushbuttons

Each camera has a relay cable. Please use this relay cable to connect to the pushbutton (regular or APS pushbutton) at one side of crosswalk.



#### System 1 (one side of crosswalk)

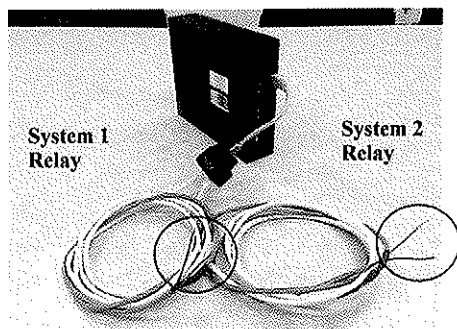
Red wire → Ped call terminal  
Black wire → Ped call terminal

#### System 2 (the other side of crosswalk)

Red wire → Ped call terminal  
Black wire → Ped call terminal

### Connection for Walktime Extension

Connect Migma Ethernet splitter to the RJ45 connector located at the front of SBC and labeled as Relay. Plug two relay cables marked as System 1 and System 2 to the splitter. System 1 is associated with System 1 camera mounted to one side of a crosswalk. System 2 is associated with the System 2 camera at the other side of the crosswalk.



#### System 1 (one side of crosswalk)

Red wire → Controller terminal block  
Black wire → Controller terminal block

#### System 2 (the other side of crosswalk)

Red wire → Controller terminal block  
Black wire → Controller terminal block

# Memorandum

**Date:** May 6, 2020

**To:** Robert Gordon, City Engineer  
City of College Place

**From:** Gary A. Norris, PE, PTOE  
DN Traffic Consultants, Inc.

Robert M Shull, P.E.  
eRMSi, Inc

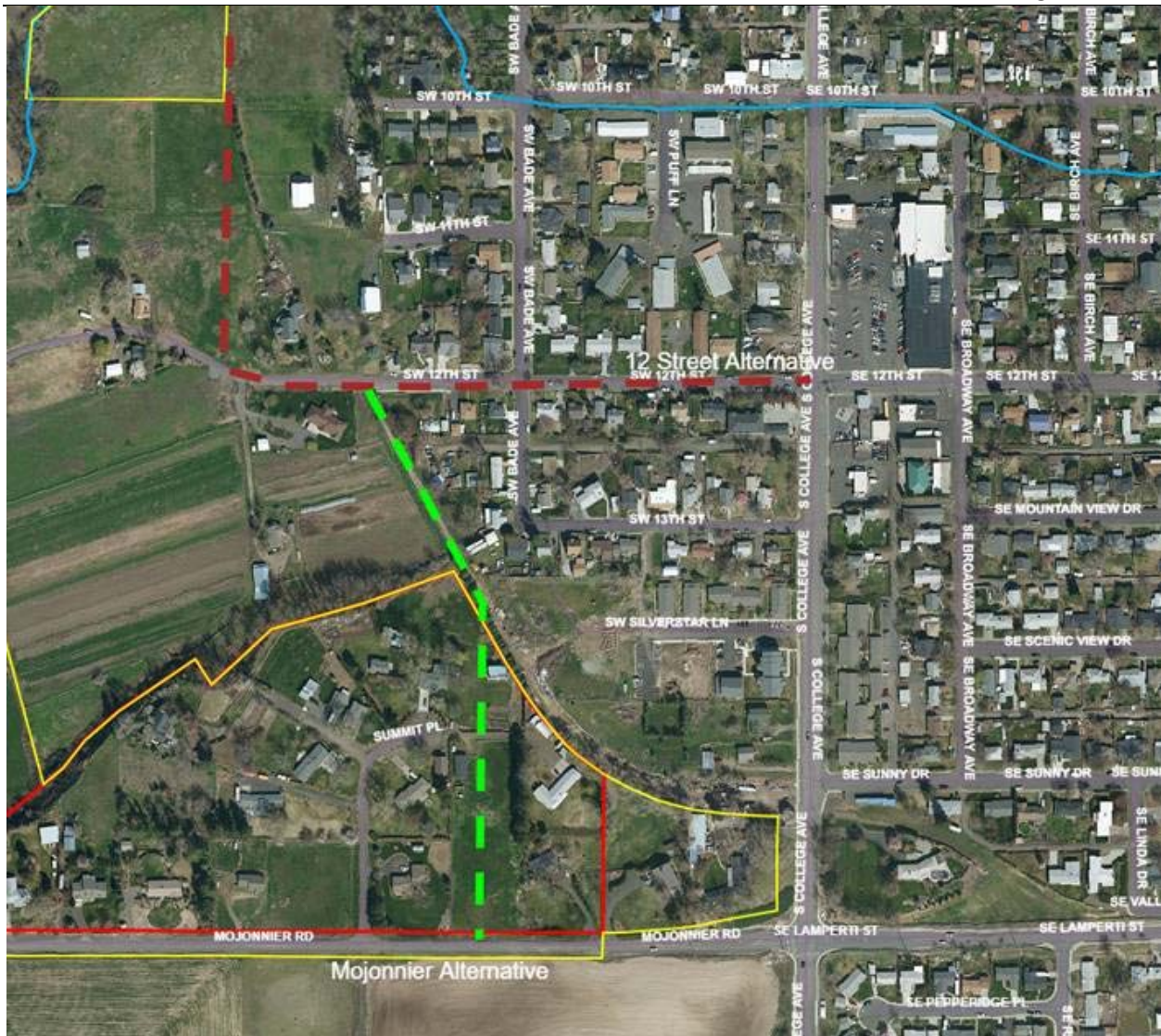
**Subject:** Alternatives Analysis

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The following memorandum was prepared to summarize the process, findings, and conclusions of the analysis prepared to evaluate the levels of service on College Avenue for three (3) alternatives related to the extension of Davis Avenue west of College Avenue. The City requested an analysis of the following three (3) alternatives:

- Existing Condition Alternative. – represents the existing arterial network without the extension of Davis Avenue. Under this configuration, Davis Avenue runs north/south parallel to College Avenue from Whitman Drive to SW 8<sup>th</sup> Street where it terminates.
- SW 12<sup>th</sup> Street Alternative. Under this alternative, SW Davis Avenue would be extended approximately 1,350 feet from its existing termini at the SW 8<sup>th</sup> Street alignment to an intersection with SW 12<sup>th</sup> Street, approximately 1,350 west of S College Avenue.
- Mojonnier Alternative. The Mojonnier Alternative would extend Davis Avenue from the existing termini at the SW 8<sup>th</sup> Street alignment to an intersection with SW 12<sup>th</sup> Street approximately 1,350 feet west of S College Avenue to a point 1,050 west of S College Avenue where it runs at a diagonal along the old railroad right of way for approximately 650 feet where it runs north/south for approximately 725 feet where it intersects with Mojonnier Road approximately 730 feet west of S College Avenue.

These alternatives are illustrated in the map below. The red dash line illustrates the extension of Davis Avenue to SW 12<sup>th</sup> Street and the yellow dash line represents the Davis Avenue extension to Mojonnier Street.



### WWVMPO Traffic Assignment Model

The Walla Walla Valley Metropolitan Planning Organization (WWVMPO) traffic assignment model was used to evaluate the impact of each alternative. The 2019 and 2040 “Do Nothing” alternative used the same model that was developed for the *College Avenue Traffic Assessment* recently completed by DN Traffic Consultants/eRMSI<sup>1</sup> with the caveat that the Davis Avenue extension included in the 2040 analysis was deleted for the Do Nothing alternative analysis.

The existing WWVMPO model includes College Avenue intersections with Rose, C Street, Whitman Drive, 4<sup>th</sup> Street, 12<sup>th</sup> Street, and Lamperti Avenue in this corridor. For the College Avenue Traffic Assessment project, the model was enhanced to add intersections for 6<sup>th</sup>, 8<sup>th</sup>, 10<sup>th</sup>, and 13<sup>th</sup> Streets with street connections to ensure the volumes were properly modeled. This

<sup>1</sup> College Avenue Traffic Assessment; DN Traffic Consultants, Inc; March 2020.



included adding additional links, nodes, and zone connectors. Traffic analysis zones were not subdivided so that the current land use forecasts could be used. New traffic count data, including bicycle and pedestrian volumes for the project area and the analysis intersections of Whitman Drive, 4<sup>th</sup>, 6<sup>th</sup>, 8<sup>th</sup>, 10<sup>th</sup>, 12<sup>th</sup>, 13<sup>th</sup>, and Lamperti was entered into the WWVMPO model. Geometrics, traffic control, and signal timing as appropriate was updated in the model.

The model network surrounding the study area, was evaluated and updated with new construction and changes based upon Google Streetview and a field review. Land use was adjusted to 2019 by interpolation to better reflect existing conditions.

Model calibration was updated and verified in the study area to replicate the new count data and to improve the forecasts. HCM intersection LOS was reported for the AM and PM peak hours for 2019 conditions with testing of different left turn configurations and with and without signal coordination. The PM peak hour level of service analysis was not included in this alternative evaluation.

### Alternatives Analysis

The WWVMPO model was modified to analyze the three alternatives, each with existing channelization and with removal of the channelization as per the recommendations of the College Avenue Traffic Assessment, March 2020. The modifications are as follows:

- Existing Condition Alternative – the model remained the same for the 2019 “Do Nothing” alternative. For the 2040 “Do Nothing” analysis the proposed Davis Avenue and 12 Street extension links were eliminated to represent the existing condition.
- SW 12<sup>th</sup> Street Alternative – Building on the model used for the Existing Condition alternative, a link was provided connecting Davis Avenue from its existing termini at SW 8th Street to the existing SW 12<sup>th</sup> Street alignment for both the 2019 and 2040 scenarios.
- Mojonner Alternative – Building on the SW 12<sup>th</sup> Street alternative, the Mojonner connection was added between SW 12<sup>th</sup> Street to Mojonner Street.

### Findings

The following summarizes the findings of level of service analysis for the three (3) alternatives and two (2) channelization scenarios. The level of service analysis was determined using the WWVMPO traffic assignment model.

### Traffic Volumes

Peak hour traffic volumes were generated for each alternative and channelization scenario. The AM peak hour was used for this analysis as it was determined to represent the “worst case” volume scenario for the College Avenue corridor. This determination was made through an evaluation of intersection turning movement counts collected during the AM and PM peak period during May 2019, as part of the College Avenue Traffic Assessment<sup>2</sup>.

The model was used to generate AM peak hour turning movement volumes which were used to generate the intersection level of service for each alternative and channelization scenario used

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<sup>2</sup> Ibid.

in this analysis for the 2019 and 2040 volume scenarios. The City requested a summary of ADT volumes on the College Avenue corridor be provided. The model volumes were used to develop a two-way link volume for sections of College Avenue to include:

- Whitman Drive to 4<sup>th</sup> Street
- 4<sup>th</sup> Street to 8<sup>th</sup> Street
- 8<sup>th</sup> Street to 12<sup>th</sup> Street
- 12<sup>th</sup> Street to Lamperti Street

The two way link volumes on these section were factored to Average Daily Traffic (ADT) using the “k” factor determined from the AM peak hour intersection turning movement volumes compared to the daily volume obtained from the 24 hour counts collected on College Avenue as part of the College Avenue Traffic Analysis. This comparison resulted in a “k” factor of 0.08. The daily volumes on the College Avenue corridor were achieved by dividing the AM peak hour two-way link volumes by 0.08.

The resultant 2019 ADT link volumes for each section are presented in Table 1.

**Table 1. 2019 ADT Volumes.**

|                                | 2019       |        |             |        |           |        |
|--------------------------------|------------|--------|-------------|--------|-----------|--------|
|                                | Do Nothing |        | 12th Street |        | Mojonnier |        |
| Section                        | Existing   | w/o LT | Existing    | w/o LT | Existing  | w/o LT |
| Whitman Drive to 4th Street    | 4300       | 4600   | 4200        | 4500   | 4300      | 4500   |
| 4th Street to 8th Street       | 7100       | 6900   | 6500        | 6400   | 6000      | 5500   |
| 8th Street to 12th Street      | 7500       | 7400   | 6900        | 6900   | 6400      | 6000   |
| 12th Street to Lamperti Street | 7700       | 7600   | 7600        | 7400   | 6600      | 6200   |

As shown in Table 1, the ADT volume in the College Avenue section between Whitman Drive and 4<sup>th</sup> Street is virtually the same for each of the three (3) alternatives under the Existing Channelization scenario. For the w/o Left Turn Channelization scenario, ADT volumes are slightly higher than the Existing Channelization scenario but consistent between the three (3) alternatives.

For the 4<sup>th</sup> Street to 8<sup>th</sup> Street section, the volume is significantly higher for the “Do Nothing” Existing Channelization scenario than for the 12<sup>th</sup> Street and Mojonnier alternatives. The volume for the w/o Left Turn Channelization scenario is somewhat less than the Existing Channelization scenario for each of the three (3) alternatives.

For the 8<sup>th</sup> Street to 12<sup>th</sup> Street section, the Do-Nothing Existing Channelization and w/o Left Turn Channelization scenarios are significantly higher than the ADT volumes for the 12<sup>th</sup> Street and Mojonnier alternatives under both channelization scenarios. The volumes for the Do Nothing alternative are similar between the two channelization scenarios; the volumes for the 12<sup>th</sup> Street alternative are the same for both channelization scenarios; and the volume for the Existing Channelization scenario under the Mojonnier alternative is somewhat higher than the w/o Left Turn Channelization scenario.

For the 12<sup>th</sup> Street to Lamperti Street section, the Mojonier volumes are significantly less than the volumes for the Do Nothing and 12<sup>th</sup> Street alternatives. The volumes for the Do Nothing and 12<sup>th</sup> Street alternative are relatively the same for the alternative channelization scenarios.

Overall, it appears, except for the Whitman Drive to 4<sup>th</sup> section, the 2019 volumes on the College Avenue corridor are reduced under the w/o Left Turn Channelization scenario.

The 2040 ADT link volumes for each section are presented in Table 2.

**Table 2. 2040 ADT Volumes**

| Section                        | 2040       |        |             |        |           |        |
|--------------------------------|------------|--------|-------------|--------|-----------|--------|
|                                | Do Nothing |        | 12th Street |        | Mojonnier |        |
|                                | Existing   | w/o LT | Existing    | w/o LT | Existing  | w/o LT |
| Whitman Drive to 4th Street    | 6400       | 6500   | 6400        | 6400   | 6300      | 6300   |
| 4th Street to 8th Street       | 8600       | 8400   | 7800        | 7500   | 7200      | 7100   |
| 8th Street to 12th Street      | 9200       | 9000   | 8400        | 8200   | 7800      | 7600   |
| 12th Street to Lamperti Street | 8900       | 8900   | 8600        | 8400   | 7400      | 7300   |

As shown in Table 2, for the Whitman Drive to 4<sup>th</sup> Street section, the 2040 ADT volumes are virtually the same for the three (3) alternatives and two (2) channelization scenarios.

For the section between 4<sup>th</sup> Street and 8<sup>th</sup> Street, the volumes under the Do Nothing alternative for both channelization scenarios, are significantly higher than the 12<sup>th</sup> Street and Mojonier alternatives. The Existing Channelization ADT volumes are somewhat higher than the w/o Left Turn Channelization for 12<sup>th</sup> Street alternative, and the volumes for both channelization scenarios are virtually the same for the Mojonier alternative.

For the section between 8<sup>th</sup> Street and 12<sup>th</sup> Street, the Do-Nothing volumes for both channelization scenarios are significantly higher than the other two (2) alternatives for both channelization scenarios and significantly higher volumes than other sections on the College Avenue corridor.

For the section between 12<sup>th</sup> Street and Lamperti Street, the Do-Nothing volumes are higher than the 12<sup>th</sup> Street and Mojonier alternatives for each channelization scenario. The Do-Nothing volumes are the same for both channelization scenarios. The Existing Channelization scenario has a slightly higher volume than the w/o Left Turn Channelization scenario for the 12<sup>th</sup> Street and Mojonier alternative.

Overall, it appears, except for the Whitman Drive to 4<sup>th</sup> section, the 2040 ADT volumes on the College Avenue corridor are lower under the w/o Left Turn Channelization scenario than the Existing Channelization scenario. The Mojonier alternative appears to offer the lowest volume scenario among the three (3) alternatives.

### Level of Service

Level of service (LOS) was calculated as part of the alternative's analysis. The result of the analysis is summarized below for each alternative.



### *Do-Nothing Alternative*

A summary of the delay and resultant level of service for the 12th Street alternative during the 2019 and 2040 scenario is presented in Table 3.

**Table 3. “Do-Nothing” Level of Service**

|                           |         | 2019-Do Nothing         |       |                              |       | 2040-Do Nothing         |       |                              |       |
|---------------------------|---------|-------------------------|-------|------------------------------|-------|-------------------------|-------|------------------------------|-------|
|                           |         | Existing Channelization |       | w/o Left Turn Channelization |       | Existing Channelization |       | w/o Left Turn Channelization |       |
| Intersection              | Control | LOS                     | Delay | LOS                          | Delay | LOS                     | Delay | LOS                          | Delay |
| N College Ave/Whitman Dr  | Signal  | C                       | 27.26 | B                            | 13.26 | D                       | 36.02 | B                            | 15.19 |
| N College Ave/SE 3rd St   | TWSC    | B                       | 12.27 | B                            | 12.62 | C                       | 15.84 | C                            | 16.28 |
| S College Ave/4th St      | Signal  | D                       | 44.36 | B                            | 17.93 | E                       | 61.99 | B                            | 19.88 |
| S College Ave/6th St      | TWSC    | C                       | 17.34 | C                            | 17.30 | C                       | 22.79 | C                            | 23.45 |
| S College Ave/8th St      | TWSC    | C                       | 18.87 | C                            | 18.82 | C                       | 24.95 | C                            | 24.71 |
| S College Ave/10th St     | TWSC    | D                       | 27.52 | D                            | 27.09 | E                       | 37.57 | E                            | 36.10 |
| S College Ave/12th St     | Signal  | C                       | 25.25 | A                            | 9.30  | C                       | 30.61 | B                            | 10.53 |
| S College Ave/13th St     | TWSC    | C                       | 17.38 | C                            | 17.01 | C                       | 20.06 | C                            | 20.09 |
| S College Ave/Lamperti St | Signal  | C                       | 24.21 | B                            | 12.05 | C                       | 25.48 | C                            | 25.54 |
| SE 3rd St/Ash Ave         | TWSC    | B                       | 11.54 | B                            | 11.49 | B                       | 11.32 | B                            | 11.62 |

### *2019 Do Nothing Alternative*

As shown in Table 3, under the 2019 Do Nothing alternative, the level of service for the existing channelization ranges between LOS D at 10<sup>th</sup> Street and LOS B at SE 3<sup>rd</sup> Street. The majority of intersections, Whitman Drive, 6<sup>th</sup> Street, 8<sup>th</sup> Street, 12<sup>th</sup> Street, 13<sup>th</sup> Street and Lamperti Street all operate at LOS C. Two of the intersections, 4<sup>th</sup> Street and 10<sup>th</sup> Street operate at LOS D.

With the recommended elimination of the existing left turn channelization, the level of service in 2019 ranges between LOS D and LOS A. The level of service on College Avenue remains the same at three intersections: SE 3<sup>rd</sup> Street (LOS B), 6<sup>th</sup> Street (LOS C), 8<sup>th</sup> Street (LOS C), 10<sup>th</sup> Street (LOS D), and 13<sup>th</sup> Street (LOS C). The SE 3<sup>rd</sup> Street/Ash Avenue intersection also remains the same (LOS B). The level of service improves at four (4) of the analysis intersections: Whitman Drive improves from LOS C to LOS B; 4<sup>th</sup> Street improves from LOS D to LOS B; 12<sup>th</sup> Street improves from LOS C to LOS A, and Lamperti Street improves from LOS C to LOS B.

Overall, the Do-Nothing 2019 level of service at the College Avenue intersections is higher under the w/o Left Turn Channelization scenario than the Existing Channelization scenario.

### *2040 Do Nothing Alternative*

Comparing the 2019 Do Nothing alternative to the 2040 Do Nothing alternative the following is noted: the level of service at five (5) College Avenue intersections remain the same between 2019 and 2040 for the Existing Channelization condition: 6<sup>th</sup> Street (LOS C), 8<sup>th</sup> Street (LOS C), 12<sup>th</sup> Street (LOS C), 13<sup>th</sup> Street, and Lamperti Street (LOS C). The level of service also remains the

same at the SE 3<sup>rd</sup> Street/Ash Avenue (LOS B) intersection. For the w/o Left Turn Channelization scenario, the level of service at five (5) of the College Avenue intersections remains the same between 2019 and 2040: Whitman Drive (LOS B ), 4<sup>th</sup> Street (LOS B), 6<sup>th</sup> Street (LOS C), 8<sup>th</sup> Street (LOS C), and 13<sup>th</sup> Street (LOS C). The level of service at the SE 3<sup>rd</sup> Street/Ash Avenue also remains the same between the 2019 and 2020 without left turn channelization scenario.

Comparing the 2040 Do Nothing Existing Channelization scenario to the 2040 Do Nothing w/o Left Turn Channelization scenario found: six (6) of the College Avenue intersections maintained the same level of service between the Existing Channelization and the w/o Left Turn Channelization scenarios. These intersections included SE 3<sup>rd</sup> Street (LOS C), 6<sup>th</sup> Street (LOS C), 8<sup>th</sup> Street (LOS C), 10<sup>th</sup> Street (LOS E), 13<sup>th</sup> Street (LOS E), and Lamperti Street (LOS C). The level of service at the SE 3<sup>rd</sup> Street/Ash Avenue also remains the same (LOS B) between the 2040 existing channelization and the 2040 w/o Left Turn Channelization scenarios. The level of service improved at two (2) College Avenue intersections: Whitman Drive improved from LOS D to LOS B and 4<sup>th</sup> Street improved from LOS E to LOS B.

Overall, the Do-Nothing 2040 level of service at the College Avenue intersections is higher under the w/o Left Turn Channelization scenario than the Existing Channelization scenario.

### *SW 12th Street Alternative*

A summary of the delay and resultant level of service for the 12<sup>th</sup> Street alternative during the 2019 and 2040 scenario is presented in Table 4.

#### *2019 12<sup>th</sup> Street Alternative*

As shown in Table 4, under the 2019 12<sup>th</sup> Street alternative, the level of service for the Existing Channelization ranges between LOS D at 4<sup>th</sup> Street and LOS B at SE 3<sup>rd</sup> Street. The majority (7) of the College Avenue intersections: Whitman Drive, 6<sup>th</sup> Street, 8<sup>th</sup> Street, 10<sup>th</sup> Street, 12<sup>th</sup> Street, 13<sup>th</sup> Street and Lamperti Street all operate at LOS C under the Existing Channelization scenario. One of the intersections, 4<sup>th</sup> Street, operates at LOS D and one, SE 3<sup>rd</sup> Street, operates at LOS B. The SE 3<sup>rd</sup> Street/Ash Avenue intersection also operates at LOS B.

With the recommended elimination of the left turn channelization, the level of service in 2019 under the 12<sup>th</sup> Street Alternative ranges between LOS C and LOS A. The level of service on College Avenue remains the same as the Existing Channelization scenario at five (5) intersections: SE 3<sup>rd</sup> Street (LOS B), 6<sup>th</sup> Street (LOS C), 8<sup>th</sup> Street (LOS C), 10<sup>th</sup> Street (LOS C), and 13<sup>th</sup> Street (LOS C). The level of service at the SE 3<sup>rd</sup> Street/Ash Avenue intersection also remains the same between the Existing and w/o Left Turn Channelization scenarios. The level of service improves at four (4) intersections between the two alternative channelization scenarios: the level of service improves from LOS C to LOS B at the College Avenue/Whitman Drive intersection, LOS D to LOS B at the 4<sup>th</sup> Street intersection, LOS C to LOS A at the 12<sup>th</sup> Street intersection and LOS C to LOS B at the Lamperti Street intersection.

Overall, the 12<sup>th</sup> Street 2019 level of service at the College Avenue intersections is higher under the w/o Left Turn Channelization scenario than the Existing Channelization scenario.

**Table 4. 12th Street Alternative Level of Service.**

|                           |         | 2019-12th St Alternative |       |                              |       | 2040-12th St Alternative |       |                              |       |
|---------------------------|---------|--------------------------|-------|------------------------------|-------|--------------------------|-------|------------------------------|-------|
|                           |         | Existing Channelization  |       | w/o Left Turn Channelization |       | Existing Channelization  |       | w/o Left Turn Channelization |       |
| Intersection              | Control | LOS                      | Delay | LOS                          | Delay | LOS                      | Delay | LOS                          | Delay |
| N College Ave/Whitman Dr  | Signal  | C                        | 26.95 | B                            | 13.24 | C                        | 34.91 | B                            | 14.92 |
| S College Ave/SE 3rd St   | TWSC    | B                        | 12.24 | B                            | 12.57 | C                        | 15.92 | C                            | 15.92 |
| S College Ave/4th St      | Signal  | D                        | 41.21 | B                            | 17.68 | E                        | 58.44 | B                            | 18.52 |
| S College Ave/6th St      | TWSC    | C                        | 16.55 | C                            | 16.59 | C                        | 21.86 | C                            | 20.82 |
| S College Ave/8th St      | TWSC    | C                        | 17.33 | C                            | 17.39 | C                        | 21.80 | C                            | 21.46 |
| S College Ave/10th St     | TWSC    | C                        | 24.91 | C                            | 24.81 | D                        | 32.09 | D                            | 30.92 |
| S College Ave/12th St     | Signal  | C                        | 24.92 | A                            | 9.70  | C                        | 31.05 | B                            | 11.03 |
| S College Ave/13th St     | TWSC    | C                        | 17.07 | C                            | 16.68 | C                        | 19.26 | C                            | 18.80 |
| S College Ave/Lamperti St | Signal  | C                        | 24.25 | B                            | 11.97 | C                        | 25.66 | B                            | 13.21 |
| SE 3rd St/Ash Ave         | TWSC    | B                        | 11.54 | B                            | 11.49 | B                        | 11.29 | B                            | 11.59 |

#### 2040 12<sup>th</sup> Street Alternative

Comparing the 2019 levels of service to the 2040 levels for the 12<sup>th</sup> Street alternative the following is noted. The level of service at six (6) College Avenue intersections remain the same between 2019 and 2040 for the Existing Channelization alternative: Whitman Drive (LOS C), 6<sup>th</sup> Street (LOS C), 8<sup>th</sup> Street (LOS C), 12<sup>th</sup> Street (LOS C), 13<sup>th</sup> Street, and Lamperti Street (LOS C). The level of service also remains the same at the SE 3<sup>rd</sup> Street/Ash Avenue (LOS B) intersection. For the w/o Left Turn Channelization scenario, the level of service at six (6) of the College Avenue intersections remains the same between 2019 and 2040: Whitman Drive (LOS B), 4<sup>th</sup> Street (LOS B), 6<sup>th</sup> Street (LOS C), 8<sup>th</sup> Street (LOS C), 13<sup>th</sup> Street (LOS C), and Lamperti Street (LOS B). The level of service at the SE 3<sup>rd</sup> Street/Ash Avenue also remains the same (LOS B) between the 2019 and 2020 existing channelization scenario.

Comparing the 2040 12th Street Existing Channelization scenario to the 2040 12th Street w/o Left Turn Channelization found: five (5) of the College Avenue intersections maintained the same level of service between the Existing Channelization and the w/o Left Turn Channelization scenarios. These intersections included SE 3<sup>rd</sup> Street (LOS C), 6<sup>th</sup> Street (LOS C), 8<sup>th</sup> Street (LOS C), 10<sup>th</sup> Street (LOS D), and 13<sup>th</sup> Street (LOS C). The level of service at the SE 3<sup>rd</sup> Street/Ash Avenue also remains the same between the 2040 Existing Channelization and the 2040 w/o Left Turn Channelization scenarios. The level of service improved at four (4) College Avenue intersections: Whitman Drive improved from LOS C to LOS B, 4<sup>th</sup> Street improved from LOS E to LOS B, 12<sup>th</sup> Street improved from LOS C to LOS B, and Lamperti Street LOS C to LOS B.

Overall, the 12<sup>th</sup> Street 2040 level of service at the College Avenue intersections is higher under the w/o Left Turn Channelization scenario than the Existing Channelization scenario.

### *Mojonnier Alternative*

A summary of the delay and resultant level of service for the Mojonnier Alternative during the 2019 and 2040 scenario is presented in Table 5.

**Table 5. Mojonnier Alternative Level of Service**

|                           |         | 2019-Mojonnier Alternative |       |                              |       | 2040-Mojonnier Alternative |       |                              |       |
|---------------------------|---------|----------------------------|-------|------------------------------|-------|----------------------------|-------|------------------------------|-------|
|                           |         | Existing Channelization    |       | w/o Left Turn Channelization |       | Existing Channelization    |       | w/o Left Turn Channelization |       |
| Intersection              | Control | LOS                        | Delay | LOS                          | Delay | LOS                        | Delay | LOS                          | Delay |
| N College Ave/Whitman Dr  | Signal  | C                          | 26.86 | B                            | 13.21 | C                          | 34.65 | B                            | 14.76 |
| S College Ave/SE 3rd St.  | TWSC    | B                          | 12.28 | B                            | 12.61 | C                          | 15.79 | C                            | 15.81 |
| S College Ave/4th St      | Signal  | D                          | 35.69 | B                            | 15.99 | D                          | 53.33 | B                            | 17.69 |
| S College Ave/6th St      | TWSC    | C                          | 15.45 | B                            | 14.82 | C                          | 20.21 | C                            | 20.35 |
| S College Ave/8th St      | TWSC    | C                          | 16.19 | C                            | 15.22 | C                          | 19.65 | C                            | 19.22 |
| S College Ave/10th St     | TWSC    | C                          | 22.87 | C                            | 21.31 | D                          | 28.57 | D                            | 27.94 |
| S College Ave/12th St     | Signal  | C                          | 22.49 | A                            | 9.47  | C                          | 24.66 | B                            | 10.28 |
| S College Ave/13th St     | TWSC    | C                          | 15.21 | B                            | 14.48 | C                          | 16.56 | C                            | 16.51 |
| S College Ave/Lamperti St | Signal  | C                          | 24.04 | B                            | 13.28 | C                          | 26.58 | B                            | 14.57 |
| SE 3rd St/Ash Ave         | TWSC    | B                          | 11.50 | B                            | 11.50 | B                          | 11.27 | B                            | 11.59 |

### *2019 Mojonnier Alternative*

As shown in Table 5, under the 2019 Mojonnier alternative, the level of service for the Existing Channelization ranges between LOS D at 4<sup>th</sup> Street and LOS B at SE 3<sup>rd</sup> Street. The majority (7) of the College Avenue intersections: Whitman Drive, 6<sup>th</sup> Street, 8<sup>th</sup> Street, 10<sup>th</sup> Street, 12<sup>th</sup> Street, 13<sup>th</sup> Street and Lamperti Street all operate at LOS C. One of the intersections, 4<sup>th</sup> Street, operates at LOS D and one intersection SE 3<sup>rd</sup> Street operates at LOS B. The SE 3<sup>rd</sup> Street/Ash Avenue intersection operates at LOS B.

With the recommended elimination of the left turn channelization, the level of service in 2019, under the Mojonnier Alternative, ranges between LOS C and LOS A. The level of service on College Avenue remains the same at three (3) intersections: SE 3<sup>rd</sup> Street (LOS B), 8<sup>th</sup> Street (LOS C), and 10<sup>th</sup> Street (LOS C). The level of service at the SE 3<sup>rd</sup> Street/Ash Avenue intersection also remains the same (LOS B) between the Existing and w/o Left Turn Channelization alternatives. The level of service improves at six (6) intersections between the two alternative channelization scenarios: Whitman Drive improves from LOS C to LOS B, 4<sup>th</sup> Street improves from LOS D to LOS B, 6<sup>th</sup> Street improves from LOS C to LOS B, 12<sup>th</sup> Street improves from LOS C to LOS A, 13<sup>th</sup> Street improves from LOS C to LOS B, and Lamperti Street improves from LOS C to LOS B.

Overall, the Mojonnier 2019 level of service at the College Avenue intersections is higher under the w/o Left Turn Channelization scenario than the Existing Channelization scenario.

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### **2040 Mojonner Alternative**

Comparing the 2019 Mojonner Alternative to the 2040 Mojonner Alternative notes the following: the level of service at seven (7) College Avenue intersections remain the same between 2019 and 2040 for the Existing Channelization scenario: Whitman Drive (LOS C), 4<sup>th</sup> Street (LOS D), 6<sup>th</sup> Street (LOS C), 8<sup>th</sup> Street, 12<sup>th</sup> Street (LOS C), 13<sup>th</sup> Street and Lamperti Street (LOS C). The level of service also remains the same at the SE 3<sup>rd</sup> Street/Ash Avenue (LOS B) intersection. For the w/o Left Turn Channelization scenario, the level of service at four (4) of the College Avenue intersections remains the same between 2019 and 2040: Whitman Drive (LOS B), 4<sup>th</sup> Street (LOS B), 8<sup>th</sup> Street (LOS C), and Lamperti Street (LOS B). The level of service at the SE 3<sup>rd</sup> Street/Ash Avenue also remains the same between the 2019 and 2040 w/o Left Turn Channelization.

Comparing the 2040 Mojonner Alternative Existing Channelization scenario to the 2040 Mojonner Alternative w/o Left Turn Channelization found: five (5) of the College Avenue intersections maintained the same level of service between the Existing Channelization and the w/o Left Turn Channelization scenarios. These intersections included SE 3<sup>rd</sup> Street (LOS C), 6<sup>th</sup> Street (LOS C), 8<sup>th</sup> Street (LOS C), 10<sup>th</sup> Street (LOS D), and 13<sup>th</sup> Street (LOS C). The level of service at the SE 3<sup>rd</sup> Street/Ash Avenue also remains the same between the 2040 existing channelization and the 2040 w/o Left Turn Channelization. The level of service improved at four (4) College Avenue intersections: Whitman Drive improved from LOS C to LOS B, 4<sup>th</sup> Street improved from LOS D to LOS B, 12<sup>th</sup> Street improved from LOS C to LOS B, and Lamperti Street LOS C to LOS B.

Overall, the Mojonner 2040 level of service at the College Avenue intersections is higher under the w/o Left Turn Channelization scenario than the Existing Channelization scenario.

### ***Comparison of Three Alternatives***

A comparison of the result of the level of service for the three alternatives is discussed below.

### **2019 LOS Results**

A comparison of the 2019 level of service for the three alternatives: Do Nothing, 12<sup>th</sup> Street, and Mojonner and the two alternative channelization scenarios, Existing Channelization and w/o Left Turn Channelization is presented in Table 6.

As shown in Table 6, the level of service is the same for each of the three alternatives and channelization scenarios at the following two (2) College Avenue intersections: SE 3<sup>rd</sup> Street (LOS B), and 8<sup>th</sup> Street (LOS C). The level of service at the SE 3<sup>rd</sup> Street/Ash Avenue intersection remains the same for all analysis scenarios.

The level of service is the same for all three alternatives for either the Existing Channelization or w/o Left Turn Channelization scenarios at the following two (2) College Avenue intersections: Whitman Drive LOS C for each of the three alternatives under the Existing Channelization scenario and LOS B under the w/o Left Turn Channelization scenario, 4<sup>th</sup> Street LOS D for each of the three alternatives under the Existing Channelization scenario and LOS B under the w/o Left

Turn Channelization scenario, Lamperti Street LOS C for the Existing Channelization and LOS B for the w/o Left Turn Channelization scenario.

**Table 6. 2019 LOS Comparison for Three Alternatives**

|                           | 2019        |        |             |        |           |        |
|---------------------------|-------------|--------|-------------|--------|-----------|--------|
|                           | Alternative |        |             |        |           |        |
|                           | Do Nothing  |        | 12th Street |        | Mojonnier |        |
| Intersection              | Existing    | w/o LT | Existing    | w/o LT | Existing  | w/o LT |
| N College Ave/Whitman Dr  | C           | B      | C           | B      | C         | B      |
| S College Ave/SE 3rd St.  | B           | B      | B           | B      | B         | B      |
| S College Ave/4th St      | D           | B      | D           | B      | D         | B      |
| S College Ave/6th St      | C           | C      | C           | C      | C         | B      |
| S College Ave/8th St      | C           | C      | C           | C      | C         | C      |
| S College Ave/10th St     | D           | D      | C           | C      | C         | C      |
| S College Ave/12th St     | C           | A      | C           | A      | C         | A      |
| S College Ave/13th St     | C           | C      | C           | C      | C         | B      |
| S College Ave/Lamperti St | C           | B      | C           | B      | C         | B      |
| SE 3rd St/Ash Ave         | B           | B      | B           | B      | B         | B      |

At the College Avenue/10<sup>th</sup> Street intersection, the 2019 level of service is D for the Do Nothing alternative for both the Existing and w/o Left Turn Channelization scenarios.

For the S College Avenue/13<sup>th</sup> Street intersection, the 2019 level of service is the same for each of the three (3) alternatives and channelization scenarios (LOS C) with the exception of the Mojonnier Alternative in the w/o Left Turn Channelization scenario was LOS B.

Overall, comparing the 2019 level of service for the three alternatives and two channelization scenarios, the Mojonnier Alternative, w/o Left Turn Channelization appears to offer the best overall performance. The 2040 level of service at the College Avenue intersections is higher under the w/o Left Turn Channelization scenario than the Existing Channelization scenario.

#### 2040 LOS Results

A comparison of the 2040 level of service for the three alternatives: Do Nothing, 12<sup>th</sup> Street, and Mojonnier and the two alternative channelization scenarios, Existing Channelization and w/o Left Turn Channelization is presented in Table 7.

As shown in Table 7, the level of service is the same for each of the three alternatives and channelization scenarios at the following four (4) College Avenue intersections: SE 3<sup>rd</sup> Street (LOS B), 6<sup>th</sup> Street (LOS C), 8<sup>th</sup> Street (LOS C), and 13<sup>th</sup> Street (LOS C). The level of service at the SE 3<sup>rd</sup> Street/Ash Avenue intersection remains the same for all analysis scenarios.

The level of service at the College Avenue/12<sup>th</sup> Street intersection is the same for all three alternatives for either the Existing Channelization (LOS C) or w/o Left Turn Channelization (LOS B) scenarios.



At the N College Avenue/Whitman Drive intersection, the level of service is LOS D for the Do Nothing alternative under the Existing Channelization scenario. The level of service is LOS C for both the 12<sup>th</sup> Avenue Alternative and Mojonnier Alternative under the Existing Channelization scenario. For the w/o Left Turn Channelization alternative, the level of service is the same for all alternatives (LOS B).

**Table 7. 2040 LOS Comparison for Three Alternatives**

|                           | 2040        |        |             |        |           |        |
|---------------------------|-------------|--------|-------------|--------|-----------|--------|
|                           | Alternative |        |             |        |           |        |
|                           | Do Nothing  |        | 12th Street |        | Mojonnier |        |
| Intersection              | Existing    | w/o LT | Existing    | w/o LT | Existing  | w/o LT |
| N College Ave/Whitman Dr  | D           | B      | C           | B      | C         | B      |
| S College Ave/SE 3rd St.  | C           | C      | C           | C      | C         | C      |
| S College Ave/4th St      | E           | B      | E           | B      | D         | B      |
| S College Ave/6th St      | C           | C      | C           | C      | C         | C      |
| S College Ave/8th St      | C           | C      | C           | C      | C         | C      |
| S College Ave/10th St     | E           | E      | D           | D      | D         | D      |
| S College Ave/12th St     | C           | B      | C           | B      | C         | B      |
| S College Ave/13th St     | C           | C      | C           | C      | C         | C      |
| S College Ave/Lamperti St | C           | C      | C           | B      | C         | B      |
| SE 3rd St/Ash Ave         | B           | B      | B           | B      | B         | B      |

At the S College Avenue/4<sup>th</sup> Street intersection, the level of service is LOS E for the Do Nothing and 12<sup>th</sup> Avenue Alternatives under the Existing Channelization scenario improving to LOS D under the Mojonnier alternative. The level of service is the same (LOS B) for all alternatives under the w/o Left Turn Channelization scenario.

For the S College Avenue/10<sup>th</sup> Street, the level of service is LOS E for the Do Nothing alternative under both channelization scenarios. For the other alternatives and channelization scenarios, the level of service is LOS D.

For the S College Avenue/Lamperti Street intersection, the level of service is C for both the Do-Nothing alternative channelization scenarios. For the 12<sup>th</sup> Street and Mojonnier alternatives, the level of service is C for the Existing Channelization and LOS B for the w/o Left Turn Channelization scenarios.

## Conclusions

Overall, the Mojonnier Alternative w/o Left Turn Channelization offers the best overall level of service performance among the three alternatives. As shown in the College Avenue Traffic Assessment, removing the left turn channelization, and corresponding traffic signal timing plans, on College Avenue will significantly improve traffic operations on the College Avenue corridor.



---

With the construction of the Mojonier connection to Davis Avenue level of service benefits will be realized on the south end of College Avenue.

General Comments.

For the 2019 scenario:

- The result of the level of service analysis indicated that all intersections would operate at LOS D or above. Under the Do Nothing alternative, two intersections are estimated to operate at LOS D with 10<sup>th</sup> Street operating at LOS D for both the Existing and w/o Left Turn Channelization scenarios.
- The 12<sup>th</sup> Street and Mojonier alternatives have one intersection, College Avenue/4<sup>th</sup> Street, operating at LOS D, both under the Existing Channelization condition.
- The level of service for the 12<sup>th</sup> Street and Mojonier alternatives is virtually the same with the exception of College Avenue/6<sup>th</sup> Street and College Avenue/13<sup>th</sup> Street where the level of service at these intersections is LOS B compared to LOS C at the other intersections
- Overall, the Mojonier Alternative w/o LT Channelization offers a slightly better level of service than the other three alternatives and channelization scenarios.

For the 2040 scenario:

- The result of the level of service analysis indicates all intersections would operate at LOS E or above. Under the Do Nothing alternative, two intersections are estimated to operate at LOS E with 4<sup>th</sup> Street operating at LOS E for the Existing Channelization scenario and 10<sup>th</sup> Street operating at LOS E for both the Existing and w/o Left Turn Channelization scenarios.
- Under the 12<sup>th</sup> Street alternative, the College Avenue/4<sup>th</sup> Street intersection operates at LOS E under the Existing Channelization scenario and the College Avenue/10<sup>th</sup> Street intersection operates at LOS D
- One intersection, College Avenue/Whitman Drive, is estimated to operate at LOS D under the Do Nothing alternative and the Existing Channelization scenario.
- Overall, the Mojonier alternative w/o LT Channelization offers a slightly better level of service than the other three alternatives and channelization scenarios.



**Community Development  
Service Agreement for  
College Place, WA**

**iWorQ**

*Community Development & Public Works Software*

## Table of Contents iWorQ Pricing Proposal

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## Executive Summary

Thank you for your interest in iWorQ Systems! We have been providing government software solutions since 2001 and serve more than 1,500 customers throughout the United States and Canada. We lead the industry in delivering hosted web-based solutions and were the first vendor in this market to provide a fully web-based system.

Since cities and counties often have limited capital budgets, we lease our applications so that our clients are not confronted with large capital investments and our annual support and maintenance fees do not increase year to year. We have found that this model allows agencies to plan for growth in a cost-conscious way.

To access our applications all you need is an internet connection and your choice of device including desktops, laptops, smartphones (iPhone, Android) and tablet devices (iPad, Galaxy, etc.) The system's graphical user interface, including all screens and dashboards, is natively touch screen enabled allowing your staff the flexibility to determine which device to utilize inside the office or in the field.

We are confident in providing a solution that can improve your internal communication as well as increase your responsiveness to your citizens and customers while reducing the time and effort from your staff. We also provide additional access through our Citizen Engagement mobile app and web portal for internal staff and citizens.

Thank you again for considering iWorQ, we will follow up with you to review any questions you may have about this proposal and the next steps in our consultative sales process.

*Best Regards,*

A handwritten signature in black ink, appearing to read "Adam Laing".

Adam Laing  
Vice President



## **Application Description**

iWorQ software solutions and professional services together provide a seamless fit for College Place software project. Having implemented over 1,500 customers and configuring a unique fit for each one provides our team the experience and background required to ensure a successful implementation.

iWorQ's browser-based software is an off-the-shelf system which requires no custom modifications to the code, only configuration of the application which requires no coding. As it is already utilized by hundreds of offices of all different sizes, we can scale and configure as much as needed for each implementation in order to meet your project goals. The system will provide access in the field and in the office, assuring your staff will be efficient and have all the data necessary to run a paperless system. iWorQ's hosted solution provides a smooth transition from your current system because much of the complexity of setting up the server hardware and networking environment is not required, which helps save time, money, and resources.

Since iWorQ's applications are configurable, we are able to provide a familiar and intuitive system that easy to use and understand. For example, when a user logs in, their screen contains only the fields on their dashboard that are pertinent to them, which makes the training process resonate with each of the end users. iWorQ implementers will consult with each department during the set-up process to configure the applications in order to meet the unique needs of each of your departments.

## **Project Initiation and Management**

Throughout the history of our company, iWorQ's success with adding and maintaining customers can be accredited to our carefully structured methodology and approach with each implementation. Our phased project methodology allows regular checkpoints and frequent opportunities to ensure that all of our team members are in sync. During the planning phase, our project teams meet to analyze how each department operates today, and how you would like your new system to work going forward. Based on our discussions, we create a project plan, agree on major milestones, and set a project schedule. The project plan will also address communications, managing risk and change management.

Throughout the project, iWorQ will hold regular status meetings in which both teams report on progress, tasks, and timelines, as agreed upon during the planning phase and outlined in the project plan. The iWorQ project manager acts as your main point of contact during the project and works with your staff to ensure that adequate communication takes place, assuring that the project moves along smoothly.

iWorQ has standard documentation to record decisions made during the project. These documents list tasks, person responsibilities, decisions made, etc.



## Developing Specific Deliverables for Your Project

The iWorQ team works with your subject matter experts (that you assign) during the initiating and planning phases to determine what deliverables to build for your solution (e.g., reports, documents, templates, and dashboards etc.). After we create a deliverable, we test it to ensure it meets your specifications and then pass it to your team for user acceptance.

**Figure 1.1**

Stored Permit Templates Delete Template

Select a Template

Electrical Permit ▼

Create From Template

*The above image shows how easy it is to create a permit template with prefilled information.*

**Figure 1.2**

Design Permit Report

Save Group By Calculate Style Refresh Run

Report Title: Permit Report Query Date: Permit Date ▼

| Column | Field           | Width | Format  | Sum                      | Sort Order | Sort Type |       |
|--------|-----------------|-------|---------|--------------------------|------------|-----------|-------|
| 1      | Permit #        | 1     | Numeric | <input type="checkbox"/> | Add        |           | ↓     |
| 2      | Permit Date     | 1     | Date    |                          | Add        |           | ↑ ↓ ✕ |
| 3      | Assigned To     | 1     | Text    |                          | Add        |           | ↑ ↓ ✕ |
| 4      | Permit Type     | 1     | Text    |                          | Add        |           | ↑ ↓ ✕ |
| 5      | Expiration Date | 1     | Date    |                          | Add        |           | ↑ ✕   |

Total Fields: 5

**Add Fields**

**Permit Information**

- Permit #
- Permit Date
- Assigned To
- Permit Type
- Expiration Date
- Applicant Name
- Applicant Address
- City, State, Zip
- Phone Number
- Status
- Description
- Valuation
- Square Feet
- TEST LOOKUP
- TEST LOOKUP2

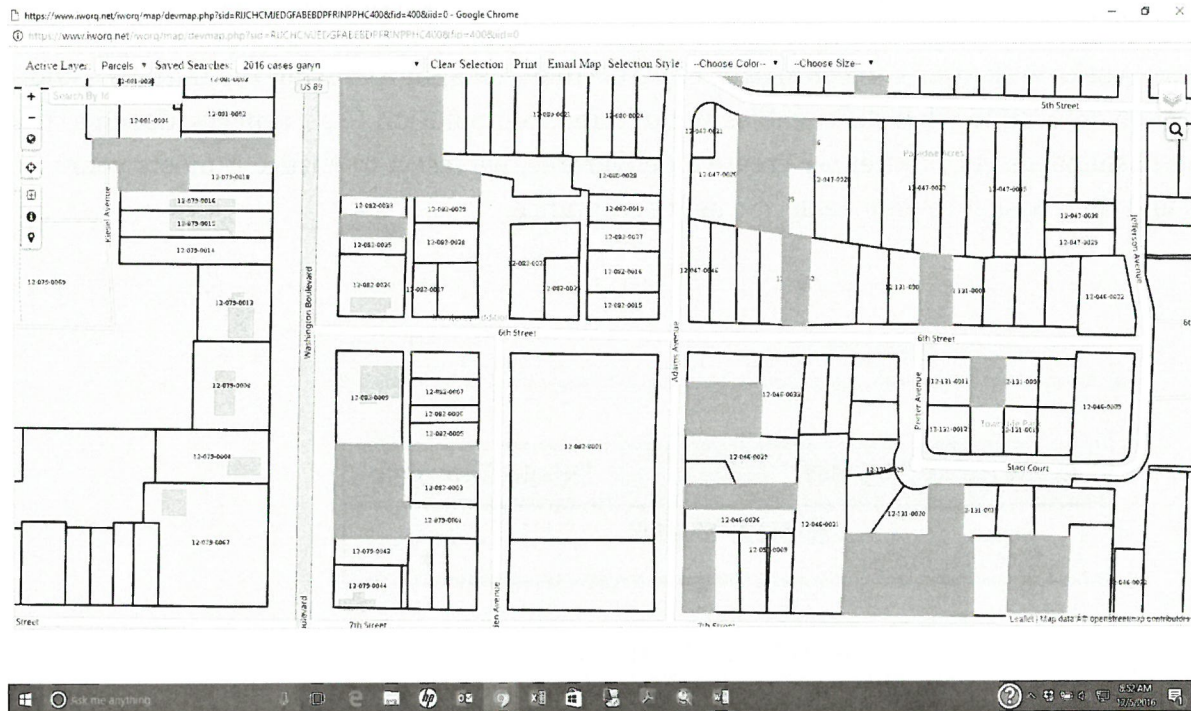
**Contractor**

- Primary Contractor

*iWorQ's report builder provides a user interface that only requires a user to simply click on the "+" button below to instantly report on desired input. This enables you to add new fields when desired and create adhoc and saved reports.*



Figure 1.3



Map above shows Responsive interface- Showing the parcel layer with highlighted parcels. The map is showing the permits issued last year. User can select, display, and edit data directly from the map.

Figure 1.4

The screenshot shows iWorQ's Mobile HTML 5 Interface making access in the field easy to use, which includes icons to help assure your field staff will be successful accessing the system.



## Implementation Phases

Your project is configured through a four-phased approach that includes Initiation, Planning, Executing, and Closing phases. Throughout these phases, iWorQ bears the bulk of the project risk. We provide as much training and services as you need to be successful throughout the project.

This section discusses:

- *Initiation Phase*
- *Planning Phase*
- *Executing Phase*
- *Closing Phase*

### Initiation Phase

During this phase, we install your software in our secure, hosted (SaaS) data center utilizing Amazon Web Services (AWS). During this phase, you should determine what staff members will assist with the project. We ask you to complete worksheets that allow us to import data into iWorQ dropdown fields. These worksheets do not require that you understand iWorQ data structures to complete this phase.

### Planning Phase

During the Planning phase, the iWorQ project team works with your team to define how processes at College Place work today and how you would like your new system to operate going forward. As part of this, your team should analyze the reports and documents you currently have to determine which ones you need to have in iWorQ. Based on our discussions, we create a project plan that includes project timelines, goals, priorities, and responsibilities. Our project team will work with you to set a clear project plan with detailed requirements. Both teams follow this plan during the executing phase.

### Executing Phase

During the Executing phase, we train your project team and together configure the solution. Concurrent with your system configuration, our data integration team will work with you to build data interfaces and migrate data if they are part of the project scope. After our teams complete these tasks, we train your staff members.

Your success is our highest priority. While each of our training phases has a specific plan, we provide additional or repeat trainings at no additional cost if necessary for a successful implementation. As a customer, we will provide additional training anytime it is desired for no additional cost. The time completion of project phases is often dependent upon College Place go-live goals and staff availability.



## Go Live

After the configuration, iWorQ will train each of your staff members. During our training, attendees learn by doing actual data entry. They should come to the training with any materials they regularly use to enter cases (e.g., a stack of permits or code cases to be entered). Instructors will provide the training online. Instructors provide personal assistance to attendees, answer specific questions, and personalize teaching styles to meet the needs of individual attendees.

## Closing Phase

During the closing phase, your iWorQ project team continues to work with you to answer any questions and resolve any configuration questions. We hold a project closure meeting to ensure a smooth transition from our project team to our iWorQ customer support team, who will support you going forward and as long as you are a customer.

## Training

Your administrator and other individuals you designate receive several different types of training that cover iWorQ's key functionalities.

Our training involves guiding staff to use iWorQ to complete actual work tasks. Instructors provide personal assistance to attendees, answer specific questions, model examples and exercises, and personalize teaching styles to individual attendees. This informal style helps your staff relax and feel comfortable asking and responding to questions.

These trainings are described in further detail below:

**Administrator Training:** Administrator training teaches your iWorQ administrator(s) how to manage iWorQ going forward. This training covers items such as setting up code tables (options in drop-down lists); security rules; and iWorQ tools.

**Configuration Training:** During the configuration phase, your administrators make many decisions about configuring iWorQ to make your office its most efficient. During Configuration Training, iWorQ's project team helps trainees understand approaches, methodologies, and best practices for making these decisions and recognizing the ramifications of the decisions they make.

**Go-Live Training:** Prior to Go-Live, every user on the system will receive training pertinent to their role type on the system. We provide unlimited training during implementation and after Go-Live via conference calls, webinars, or online screen share and we offer an annual, national users' conference to learn new and advanced skills.



|                                                     |                                               |
|-----------------------------------------------------|-----------------------------------------------|
| <b>College Place</b>                                | <b>Quote creation: 6/29/2020</b>              |
| <b>625 S. College Ave., College Place, WA 99324</b> | <b>Prepared by: Nick Bishop and Ty Pebley</b> |

## 1. QUOTE

College Place- hereafter known as "Customer", enters into the following Service Agreement with iWorQ Systems, "iWorQ", headquartered Logan, UT. Customer will pay an annual fee for the services and a one-time setup fee detailed below: Population: 9,590

| <b><u>Community Development Applications and Services</u></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b><u>Package Price</u></b> | <b><u>Billing</u></b> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------------|
| <b>Community Development (Enterprise Package)</b><br>*Permit Management<br>*Code Enforcement<br>*Portal Home<br><br>Quarterly upload of parcel information to iWorQ's GIS Map<br>Track contractors, inspections, property information<br><br>Track code violations, fees, and activities<br>Unlimited reports and ad-hoc reporting<br>Unlimited letters and documents configured through iWorQ's template library and 3 custom letters<br>3 custom forms for Portal Home<br>Premium Data (25MB Uploads & 100GB Storage)<br>Online credit/debit card processing integrated with iWorQ.<br>GIS REST Services - iWorQ will publish your agency's WMS layers in iWorQ Community Development applications. iWorQ will update property details weekly. Annual fees are \$500 per layer (currently includes 2 layers)<br>Note: If GIS configurations change (FTP location, name format, field changes, etc.) iWorQ will charge a minimum \$500 fee to accommodate new configuration adjustments (subject to additional hourly charges) | <b>\$8,300</b>              | Annual                |
| <b>Permit Management – Plan Review</b><br>- Available on any computer, tablet, or mobile device using Chrome browser<br>- OpenStreetMap<br>- Track your contractors and their licensing<br>- Quarterly parcel upload<br>- Free forms, letters, and / or permits utilizing iWorQ's template library, and up to 3 custom letters / forms.<br><b>Plan Review Management</b><br>- Draw & annotate on plans<br>- Save data in layers on plans<br>- Place watermarks on plans<br>- Must have premium data to use                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>\$2,500</b>              | Annual                |
| <b>Additional Forms/Letters (Including Web Forms)</b><br>-6 Additional letters, forms, or other required documents or web forms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>\$1,000</b>              | Annual                |



|                                          |                 |  |
|------------------------------------------|-----------------|--|
|                                          |                 |  |
| <b>ANNUAL TOTAL (Years 4, 5, 6, etc)</b> | <b>\$11,800</b> |  |

|                                                             |                 |      |
|-------------------------------------------------------------|-----------------|------|
| Setup, training, and system configuration                   | \$7,800         | Once |
|                                                             |                 |      |
| <b>Grand total due (First three years- Including Setup)</b> | <b>\$43,200</b> |      |

## Notes

- 1- Invoices for amount will be sent out 2 weeks after signature. Terms of the invoicing is Net 30 days.
- 2- This quote is provided at the customer's request and is good until **June 30<sup>th</sup>, 2020**.
- 3- This quote cannot be disclosed by the City for the unfair purpose of attempting to "price shop". Disclosure will be made as required by law. The City shall notify iWorQ in writing of any request for documents which identify this quote and only disclose documents after 30 days after notice to iWorQ. Notice shall be made by Domestic Certified Mail Receipt or by email with the capability of providing notice to the parties that the email has been received.
- 4- Pricing is based on population and number of applications. Removing any items from this quote may require application prices to be updated.

## 2. ADDITIONAL SERVICES

iWorQ provides additional applications and services that can be purchased as part of the Community Development solution. These can be added to the customer's annual\* cost, upon request.

|                                                                                                                                                          |                           |        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------|
| <b>Licensing</b> – track business, animal, liquor, rental, and other license types. Includes customized automated reminder letters and online renewal.   | Price based on Population | Annual |
| <b>Additional Storage</b> – Each unit of storage contains an additional 100 GB.                                                                          | \$250                     | Annual |
| <b>Onsite Backup</b> – iWorQ will send a *.BAK on a scheduled basis to an FTP server maintained by the customer.                                         | \$500                     | Annual |
| <b>Monthly Parcel Update</b> – iWorQ will import an electronic file on a scheduled basis from a file stored on an FTP server maintained by the Customer. | \$500                     | Annual |
| <b>Interactive Voice Response (IVR)</b> – used by contractors to schedule inspections via telephone.                                                     | \$1000                    | Annual |
| <b>Additional letters/forms – Additional 3 Custom Forms</b>                                                                                              | \$500                     | Annual |

*\*Additional services are subject to setup fees which are 2/3 of the annual cost.*



### 3. GUIDELINES

#### 3.1 Getting started

iWorQ will assign an account manager to your account to begin the setup and training process upon contract signature.

**Send the signed service agreement to iWorQ Systems:**

Email: [sales@iworq.com](mailto:sales@iworq.com)

**Mailing address:**

PO Box 3784

Logan, UT 84323

**Physical address:**

1125 W. 400. N. Suite 102

Logan, UT 84321

#### 3.2 Billing information

iWorQ will invoice Customers on an annual basis. Customers reserves the right to cancel service at any time after the initial year, by providing iWorQ a 30-day written notice.

#### 3.3 Data conversion

As part of the project setup, iWorQ provides a data conversion service. This service consists of importing data, sent by the Customer, in an electronic (relational database) format. iWorQ provides contact information and an upload site where the electronic data can be sent. Additional costs apply for data that does not meet the criteria listed above.

### 4. SERVICES and SUPPORT

#### 4.1 Data ownership

All customer data remains the property of the customer. Customer can request data electronically or on disk, upon cancellation of Service Agreement. iWorQ will disburse data within 30 days of written notification.

#### 4.2 FREE training

iWorQ provides FREE training and support. iWorQ provides webinars, phone support, written manuals, web videos, documentation and help files. Training is available to any Customer with a login.

#### 4.3 FREE updates

All updates, bug fixes, and upgrades are FREE to the Customer. iWorQ is a web-based application. Customer only needs to login to get any updates to the applications.

#### 4.4 FREE support

Customer support and training are FREE and available from 6:00 A.M. to 5:00 p.m. Mountain Standard Time.

#### 4.5 FREE data back up

iWorQ does back-ups twice weekly and offsite once weekly.

#### 4.6 Proprietary letters/forms

Letters and forms, including permits, certificates, or other documents must be owned by the customer and have a clear copyright.



#### **4.7 Data upload and storage limits**

Standard data plan includes uploads of up to 3 MB per file and 10 GB total storage. iWorQ offers a premium data plan available for an additional annual cost.

#### **4.8 Software Terms and Limitations**

The iWorQ Software is the proprietary information and a trade secret of iWorQ, Systems Inc. and this agreement grants no title or rights of ownership with the software. The software is protected by United States copyright laws and international copyright treaties, as well as other intellectual property laws. Customer shall not permit any user or other party to, (a) copy or otherwise reproduce, reverse engineer or decompile all or any part of the iWorQ Software, (b) make alterations to or modify the Software, (c) grant sublicenses, leases or other rights, or (d) permit any party access to the Licensed Software for purposes of programming against it.



## 5. SETUP & BILLING INFORMATION

*\*Please fill out all fields to ensure our team can reach the implementation & billing contacts*

### 5.1 Community Development Implementation Contacts

Primary Contact Jon Rickard Title CD Director

Phone 509-394-8529 Cell \_\_\_\_\_

Email jrickard@cpwa.us

Additional Contact(s) Mike Rizzitello Title City Administrator

Phone 509-394-8506 Cell 509-520-9091

Email mrizzitello@cpwa.us

### 5.2 Billing information

Billing Contact Brian Carleton Phone 509-394-8507 Cell \_\_\_\_\_

Email bcarleton@cpwa.us Prefer to receive invoice by email? Yes ☒ No ☐

Billing Address 625 S. College Ave

City College Place State WA Zip 99324

PO# COUPD (if required) Tax exempt ID# \_\_\_\_\_

## 6. SIGNATURE

Signature of this Agreement is based on the understanding and acknowledgement of the terms and conditions stated within this Service Agreement.

509-394-8506 509-520-9091 mrizzitello@cpwa.us  
(Phone) (Mobile) (Email)

[Signature] Michael Rizzitello 6-29-2020  
(Signature) (Print Name & Title) (Date)

City Administrator





## City of College Place: Development Activity - July 2020

| Project Name                 | Use                             | Location                 | Status                                                                                                                                                                                                                                                                                                                                                                                                                     | Lead Generated  |
|------------------------------|---------------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <b>Commercial/Industrial</b> |                                 |                          |                                                                                                                                                                                                                                                                                                                                                                                                                            |                 |
| Project CK                   | Gas Station & Convenience Store | NW corner of 12th & Myra | <ul style="list-style-type: none"> <li>- Jan 2019 In site negotiations.</li> <li>- May 2019 Continue working with developer on plans.</li> <li>- June 2019 Issues with land chosen. May consider 12th and Myra as alternate site.</li> <li>- August 2019 Performing due diligence on 12th and Myra site.</li> <li>- March 2020 Still working on Myra/Whitman and Myra/12th sites.</li> <li>- July 2020 On Hold.</li> </ul> | ICSC Las Vegas  |
| Project HM                   | Automotive                      | College Avenue Corridor  | <ul style="list-style-type: none"> <li>- March 2020 Coffee shop located on west side of Walla Walla is potentially interested in opening a second location as primarily a drive through with large outdoor patio seating at southwest corner of 9th and College Avenues.</li> <li>- July 2020 On hold</li> </ul>                                                                                                           | Local Business. |

|                                  |                                                          |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                           |
|----------------------------------|----------------------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| Project Dollar                   | Finance                                                  | College Ave Corridor            | <ul style="list-style-type: none"> <li>- April 2019 Working on retaining business by assisting with site selection services.</li> <li>- May 2019 Helping business on site selection.</li> <li>- June 2019 Continue site negotiations.</li> <li>- November 2019 In due diligence for site by Meadowbrook.</li> <li>- March 2020 Due diligence for Meadowbrook area location.</li> <li>- July 2020 Cancelled</li> </ul>                                 | Local Business            |
| Project Idaho/P1FCU Credit Union | Finance                                                  | Meadowbrook Area                | <ul style="list-style-type: none"> <li>- November 2019 Growing Idaho Credit Union looking at establishing location in College Place.</li> <li>- December 2019 Looking at adjacent sites to Hapo.</li> <li>- February 2020 Development lease signed for spot inside College Place Walmart. Will open by April.</li> <li>- April 2020 Renovating tenant space in Walmart. Will be open by early April.</li> <li>- June 2020 Open in Walmart.</li> </ul> | SEWEDA                    |
| Project HD                       | Chain restaurant that has multiple Tri-Cities locations. | Across Sydnee Ln from HopThief. | <ul style="list-style-type: none"> <li>- January 2020 Chain restaurant based out of Washington State looking at site across Sydnee Lane from HopThief.</li> <li>- March 2020 Site negotiations continue.</li> <li>- July 2020 Cancelled</li> </ul>                                                                                                                                                                                                    | Outreach from City staff. |

|                 |                                   |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |
|-----------------|-----------------------------------|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| Project SC      | Corporate Hairstyle Establishment | Meadowbrook Plaza                                          | <ul style="list-style-type: none"> <li>- March 2020 Corporate bought back territory from franchisee. Now have a interest in our market. Large fast growing hairstyle/barber establishment.</li> <li>- July 2020 Cancelled</li> </ul>                                                                                                                                                                                                                                                                           | ICSC Las Vegas |
| Project MD      | Fast Food restaurant              | Wal-Mart Area                                              | <ul style="list-style-type: none"> <li>- March 2019 Contacted by real estate department looking for sites in South College Place area.</li> <li>- November 2019 Looking at site next to Hapo.</li> <li>- December 2019 Waiting on final corporate approvals.</li> <li>- March 2020 No Change.</li> <li>- July 2020 Cancelled.</li> </ul>                                                                                                                                                                       | ICSC Las Vegas |
| Project Country | 60 Room Hotel.                    | End of Larch Street, behind Les Schwab, next to Hop Thief. | <ul style="list-style-type: none"> <li>- Jan 2019 Hotelier is going through due diligence for site - Mar 2019. Due diligence continuing.</li> <li>- December 2019 Property Agreement still being negotiated.</li> <li>- January 2020 Property Agreement in progress.</li> <li>- February 2020 Looking for additional financial development partners to make happen.</li> <li>- March 2020 Project partners continue to court additional financing partners.</li> <li>- July 2020 Project cancelled.</li> </ul> | ICSC Las Vegas |

|            |                                                     |                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                   |
|------------|-----------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| Project FM | Medium sized grocery and general merchandise store. | College Avenue, across from College Place High School. | <p>- Jan 2019 This site is shortlisted with another site at end of Myra Rd in Walla Walla. User would like to open up by 2021/2022.</p> <p>- October 2019 Will commit to site once wastewater trunk is done next Summer. Gave city benchmarks to hit. Closing on lift station sewer property.</p> <p>- November 2019 City closed on lift station property. Achieving timelines.</p> <p>- February 2020 No change. - March 2020 Wastewater engineering plans will be done by June then to construction of sewer. This project is contingent on City getting sewer constructed. - July 2020 Company still interested. Waiting on SW Sewer to be completed.</p> | Discussion with potential client. |
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|            |                        |                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                   |
|------------|------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| Human Bean | Drive-thru Coffee Shop | NW corner of Myra Rd & Whitman Dr, CP | <ul style="list-style-type: none"> <li>- Jan 2019 Site is leased to Operator.</li> <li>- June 2019 Plans turned in and financing in place.</li> <li>- August 2019 Building Plans turned in. Awaiting civil plans</li> <li>- September 2019 Awaiting required edits to storm engineering document.</li> <li>- October 2019 Plans released</li> <li>- November 2019 Construction Started.</li> <li>- December 2019 Waiting for final property commitment until SW Sewer is done.</li> <li>- January 2020 Expecting business to open in First Quarter of 2020.</li> <li>- March 2020 Finishing a couple of punchlist items.</li> <li>- May 2020 Complete and Open.</li> </ul> | Discussion with potential client. |
|------------|------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|

|                                    |                                                   |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                    |
|------------------------------------|---------------------------------------------------|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| Project BK                         | Fast food burger establishment.                   | Either SR 125 & Commercial Dr or Tamaurson & SR 125. | <ul style="list-style-type: none"> <li>- Jan 2019 Two sites are shortlisted. In due diligence/negotiation phase.</li> <li>- August 2019 Due diligence.</li> <li>- September 2019 Site agreement signed.</li> <li>- October 2019 Construction to take place next Spring.</li> <li>- December 2019 Getting plans together.</li> <li>- January 2020 Conceptual plans turned into City.</li> <li>- February 2020 Also reviewing a site on Commercial Drive.</li> <li>- March 2020 Continue to work with corporate on final location of Burger King.</li> <li>- July 2020 On hold.</li> </ul>             | ICSC Las Vegas                                     |
| Walla Walla Rural Library District | Interim location for Library for next five years. | Meadowbrook Plaza                                    | <ul style="list-style-type: none"> <li>- December 2019 Lease formally signed for former Inland Cellular space at Meadowbrook Plaza. Will open up at the earliest by March and latest by early May.</li> <li>- January 2020 Former Inland Cellular site is being renovated for the Library.</li> <li>- February 2020 Renovations continue. Should be open by May.</li> <li>- March 2020 The space has new flooring. New furniture and shelving is being ordered. Should be ready for early May.</li> <li>- July 2020 Facility is ready to go. Waiting for the County to move to Phase 2.9.</li> </ul> | City annexed into Library District in August 2019. |



|            |                      |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                |
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| Project G6 | Motel                | Meadowbrook Area | <ul style="list-style-type: none"> <li>- May 2019 Motel chain ordered site analysis.</li> <li>- June 2019 Site selection.</li> <li>- August 2019 Due diligence underway on select sites along SR 125.</li> <li>- November 2019 Also reviewing South College Ave frontage as well.</li> <li>- March 2020 Due diligence.</li> <li>- July 2020 Project cancelled.</li> </ul>                                                                                        | ICSC Las Vegas |
| Project W  | Fast Food restaurant | Meadowbrook Area | <ul style="list-style-type: none"> <li>- June 2019 Corporate looking to open up a tri-branded location of a fast food restaurant.</li> <li>- August 2019 Due diligence underway on Meadowbrook taxlots.</li> <li>- October 2019 Sites narrowed to Commercial Drive and Tamaurson</li> <li>- November 2019 Narrowed to Commercial Dr site.</li> <li>- March 2020 Site negotiations ongoing for Commercial Drive.</li> <li>- July 2020 Project on hold.</li> </ul> | ICSC Las Vegas |
| Project CJ | Fast Food restaurant | Meadowbrook Area | <ul style="list-style-type: none"> <li>- June 2019 New corporate franchisee has our area and will tour the area in July.</li> <li>- August 2019 Going to tour area this month.</li> <li>- January 2020 Due diligence</li> <li>- March 2020 Evaluating Meadowbrook ara.</li> <li>- July 2020 Project cancelled.</li> </ul>                                                                                                                                        | ICSC Las Vegas |

|                |                         |                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |
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| Project D      | Sit Down restaurant     | Sites are either SR 125/Commercial Drive or SR 125/Tamaurson. | <ul style="list-style-type: none"> <li>- Jan 2019 Two sites are going through due diligence.</li> <li>- Mar 2019 Due diligence continues.</li> <li>- April 2019 Awaiting plans from State about SR 125 to determine next move.</li> <li>- June 2019 Waiting for the Myra and SR 125 intersection to be improved for site to be acquired.</li> <li>- August 2019 Awaiting permanent Myra/SR 125/Commercial Dr plans.</li> <li>- March 2020 No Change</li> <li>- July 2020 Project on hold.</li> </ul> | ICSC Las Vegas  |
| Project Flight | Aerospace Manufacturing | Martin Airfield                                               | <ul style="list-style-type: none"> <li>- September 2019 Interest by incoming owner of Airfield about potential siting of facility on west side of property. Improve airport. Likely this project will start between four and five years.</li> <li>- October 2019 Airfield now owned by Tarragon/Mike Corliss.</li> <li>- February 2020 No Change.</li> <li>- July 2020 Tarragon doing preliminary planning of site.</li> </ul>                                                                       | Property owner. |

|                                                      |                   |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                     |
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|                                                      |                   |                                 | <ul style="list-style-type: none"> <li>- September 2019 Board of company getting ready to approve purchase of 1.94 acre John Stejer site behind Banner Bank.</li> <li>- October 2019 Awaiting word from Board of this company.</li> <li>- November 2019 Property deal closed. Goodwill is moving to College Place by March 2021.</li> <li>- December 2019 Goodwill is working on site plans. They control site.</li> <li>- February 2020 Plans are in development.</li> <li>- March 2020 Developing preliminary site plans.</li> <li>- July 2020 Project is paused until stores open back up for liquidity.</li> </ul> |                                     |
| Project GW/Goodwill                                  | Second hand store | C Street across from Home Depot |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Board member of Company             |
| College Place Public Schools - Portable Construction | Classrooms        | Davis School - 2nd & Ash.       | <ul style="list-style-type: none"> <li>- July 2020 Construction going on three portable buildings on the soccer field section of the Davis School property.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                 | College Place Public Schools Board. |

|                   |               |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                       |
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| Project Food Cart | Food Cart Pod | Southwest corner of 8th & College Avenue. | <ul style="list-style-type: none"> <li>- December 2019 Since new development regulations allow food cart pods, Christian Bell and Chris Murray are working on a concept to develop a food cart pod on the vacant land at 8th and College.</li> <li>- January 2020 Had conceptual development meeting with the Bell family on this concept.</li> <li>-March 2020 Planning to run a pilot first with a couple of food trucks.</li> <li>- July 2020 Project on hold.</li> </ul> | College Place Farmer's Market vendor. |
| Residential       |               |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                       |

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| Homestead Subdivision Phase 3C, 3D, and 3E. | Residential subdivision constructed by Hayden Homes. | Homestead and Doans Street south of Fourth Street. | <ul style="list-style-type: none"> <li>- August 2019 Phase 3D is wrapping up. Plans for 3E still being revised. Still dealing with stormwater.</li> <li>- October 2019 Phase 3D development ongoing. Looking at development of underground stormwater storage. Community park under development for late October opening.</li> <li>- Jan 2020 Cement Treated Base will be installed on Doans first full week of January. Stormwater in progress.</li> <li>- February 2020 Additional MOU to be signed in Feb to permit Phase 3E and Tract 1 and 2 if they deal with Stormwater, finish up punch list, and put Doans thru.</li> <li>- March 2020 MOU signed.</li> <li>- July 2020 Doans put through. Utility infrastructure is being installed.</li> </ul> <p>No permanent installed stormwater solution yet.</p> | Hayden Homes has owned property for the last decade. |
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| Villages at Fort Walla Walla | 180 multi-family apartment units. | South side of Whitman Drive/Deccion intersection. | <ul style="list-style-type: none"> <li>- Jan 2019 Plan submittal is being reviewed by development staff. Spring 2019 construction.</li> <li>- Feb 2019 Plans reviewed and approved.</li> <li>- October 2019 Engineering issuing approval for first group of buildings.</li> <li>- November 2019 Engineer will likely be starting work again. Was told to idle by developer.</li> <li>- February 2020 Farran requested groundbreak meeting with staff in February.</li> <li>- July 2020 Q4 groundbreaking.</li> </ul> | Port of Walla Walla was approached by Farran Group about property and was directed to Bob Price and the City. |
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| Stepper Addition | Multi-family apartments. | South side of C Street near Della intersection. | <ul style="list-style-type: none"> <li>- Jan 2019 Plan submittal is being reviewed by development staff.</li> <li>- Feb 2019 Developer about to break ground.</li> <li>- Mar 2019 Plans approved. Waiting for snow to melt to break ground.</li> <li>- April 2019 Wrapping up bonding issues and will be ready to go.</li> <li>- June 2019 Site has broken ground.</li> <li>- August 2019 Road and utilities are installed and in place.</li> <li>- Sept 2019 Construction of structures to begin.</li> <li>- February 2020 Under construction.</li> <li>- March 2020 Getting ready to release bond on this.</li> <li>- July 2020 Structures being built.</li> </ul> | Property owner. |
|------------------|--------------------------|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|



|                 |                                                                   |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |
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| Country Estates | Additional manufactured units on former Poor Form House property. | 924 SE Scenic View Dr | <p>- Jan 2019 Poor Farm House is demolished. Site ready for manufactured unit construction.</p> <p>- Feb 2019 Development plans for additional units turned into the Community Development Department. - March 2019 Waiting for additional information from Country Estates. - April 2019 Met with property owner to discuss plans and what was needed to move development along. - June 2019 First double wide is on site. Waiting for plans for others.</p> <p>- August 2019 Awaiting revised plans. - November 2019 No change</p> <p>- July 2020 No change.</p> | Property owner. |
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| Sirmon Development | Multi-family apartments. | 942 NE Spitzenburg St | <ul style="list-style-type: none"> <li>- Jan 2019 Plan submittal is being reviewed by development staff.</li> <li>- Feb 2019 Development needs fire flow test. Applicant will coordinate with Green Tank Irrigation District.</li> <li>- March 2019 Planning approvals done. Contingent on fire flow water test with Green Tank.</li> <li>- April 2019 No Update.</li> <li>- June 2019 No Update.</li> <li>- August 2019 No update.</li> <li>- Sept 2019 Site passed flow test. It does support multifamily now.</li> <li>- November 2019 Planning to develop next Summer.</li> <li>- July 2020 Still planning to develop this year.</li> </ul> | Property owner. |
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|                    |               |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |
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|                    |               |                     | <p>- Jan 2019 Plan reviewed, awaiting resubmittal. -</p> <p>Feb 2019 Working with applicant on remaining items for plans. -</p> <p>Mar 2019 Met with applicant on plans to subdivide property and discuss needed improvements.</p> <p>- June 2019 Continue to work with applicant on various thoughts pertaining to short and long plats. -</p> <p>August 2019 Still working on platting issues. -</p> <p>October 2019 Earthwork is now occurring. -</p> <p>December 2019 Wrapping up 12th Street half road improvements. -</p> <p>January 2020 Issue and record final plat. - July</p> <p>2020 Some properties on 12th selling.</p> |                 |
| Mauiri Development | Single-Family | 428 SW 12th Street. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Property owner. |

|                          |                       |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                 |
|--------------------------|-----------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Stone Creek Development. | Single & Multi-Family | 197 Mojonnier Rd | <ul style="list-style-type: none"> <li>- Feb 2019 SW Trunk Line MOU contents agreed upon with property owners. MOU needed to make this property and others developable. - March 2019 MOU approved by City Council. Plan to let engineering contract on SW Sewer at March 12th, 2019 City Council meeting.</li> <li>- Nov 2019 City owns lift station property. Doing engineering plans for it. Courting residential developers. -</li> <li>Jan 2020 Working on easements right-of-way for wastewater trunk line. -March 2020 Property owner short platting development to permit more developable tracts.</li> <li>- July 2020 Awaiting Sewer Trunk line to actively market. Planning for late summer construction.</li> </ul> | Property owner. |
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|       |                          |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |
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| Hanby | Multi-family apartments. | West side of College & Sunny | <ul style="list-style-type: none"> <li>- June 2019 Turned in preliminary plans for additional multifamily structures.</li> <li>-November 2019 Planning approvals done. In Civil review.</li> <li>- December 2019 Ongoing</li> <li>- January 2020 Apartment building under construction.</li> <li>- February 2020 Under construction.</li> <li>- March 2020 Apartments continue to be under construction.</li> <li>- July 2020 Construction continues.</li> </ul> | Property owner. |
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| Whispering Creek Subdivision | Single Family | 620 SE 8th Street | <ul style="list-style-type: none"> <li>- Feb 2019 Annexation hearing set for the property.</li> <li>- Mar 2019 Property annexed at February 26th, 2019 Council meeting. Awaiting plans.</li> <li>- June 2019 Property owner is prepping site for ground work. House out front is getting redone.</li> <li>- August 2019 Preliminary plat application submitted.</li> <li>- Sept 2019 Awaiting revisions from developers engineer.</li> <li>- Dec 2019 Scheduled public hearing with Hearing Examiner.</li> <li>- Feb 2020 Hearing examiner issuing conditions for development.</li> <li>- March 2020 Working with developer and engineer on final review.</li> <li>- July 2020 Utilities installed. Roadway is being constructed. Housing construction has started.</li> </ul> | Property owner. |
|------------------------------|---------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|



**Economic Development, Tourism, and Events Commission**

March 2nd, 2020

Ms. Kaleen Cottingham – Director  
State of Washington Recreation Conservation Office  
1111 Washington Street, SE  
Olympia, Washington, 98504-7027

Dear Mrs. Cottingham,

The College Place Economic Development, Tourism, and Events Commission (EDTEC) strongly supports the grant applications submitted by the City of College Place into the Recreation Conservation Office to renovate Lions Park. Renovating the park will greatly enhance the livability of the community and enhance a number of community events currently held in the park including the Annual Youth Fishing Derby, weekly Farmers Markets, and Movies at the Park events. The City's burgeoning Summer youth recreation programs are also held in this park. The City only has four parks at 17 acres total so it is of the utmost importance the parks are of high quality. Lions Park is centrally located in the City. The renovation project will include many key amenities needed by the community that will ensure Lions Park is treasured asset to all for years to come. Please award grant dollars to the City so it can be used to renovate Lions Park. Thank you.

Sincerely,

College Place Economic Development, Tourism, and Events Commission



RECREATION PATHWAY  
WITH EXERCISE  
EQUIPMENT

NORTH PARKING LOT

PARK SIGN

CENTRAL ENTRANCE  
WITH SCULPTURE

GARRISON CREEK

PLAY AREA ENTRANCE

SPLASH PAD

NATURE PLAY AREA

RESTROOM

PICNIC SHELTER

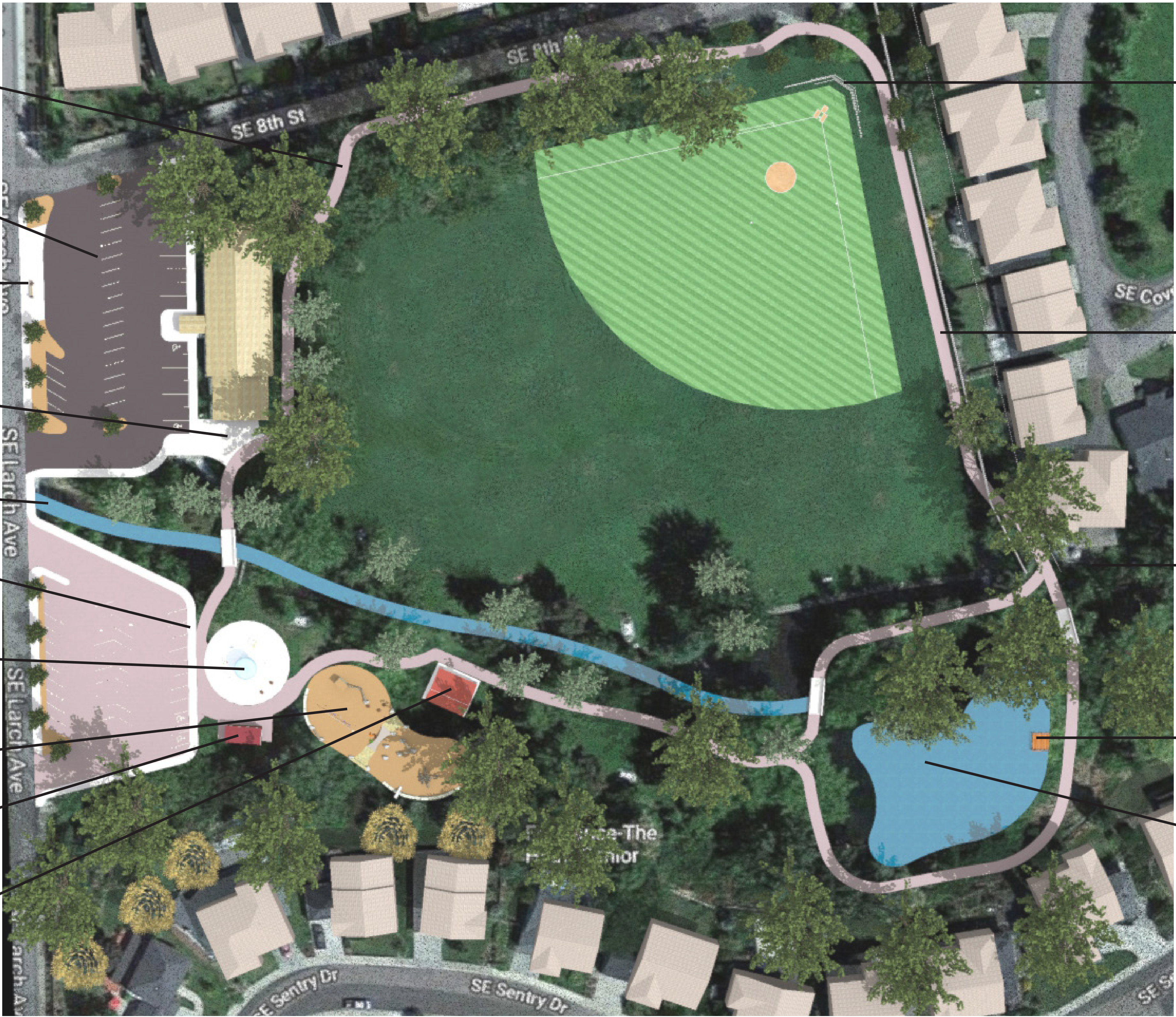
BASEBALL BACKSTOP

RECREATION PATHWAY  
WITH EXERCISE  
EQUIPMENT

FUTURE TRAIL  
CONNECTION

FISHING DOCK  
WITH ADA ACCESS

FISHING POND



NORTH

\*NOT TO SCALE

# LION'S PARK RENOVATIONS - PLAN VIEW







RECREATION PATHWAY

FISHING PLATFORM

FISHING POND

# LION'S PARK RENOVATIONS - FISH POND











LION'S PARK RENOVATIONS - PLAYGROUND 





EMBANKMENT  
SLIDE

BEAVER DAM  
LOG STRUCTURE

CHIME WALL

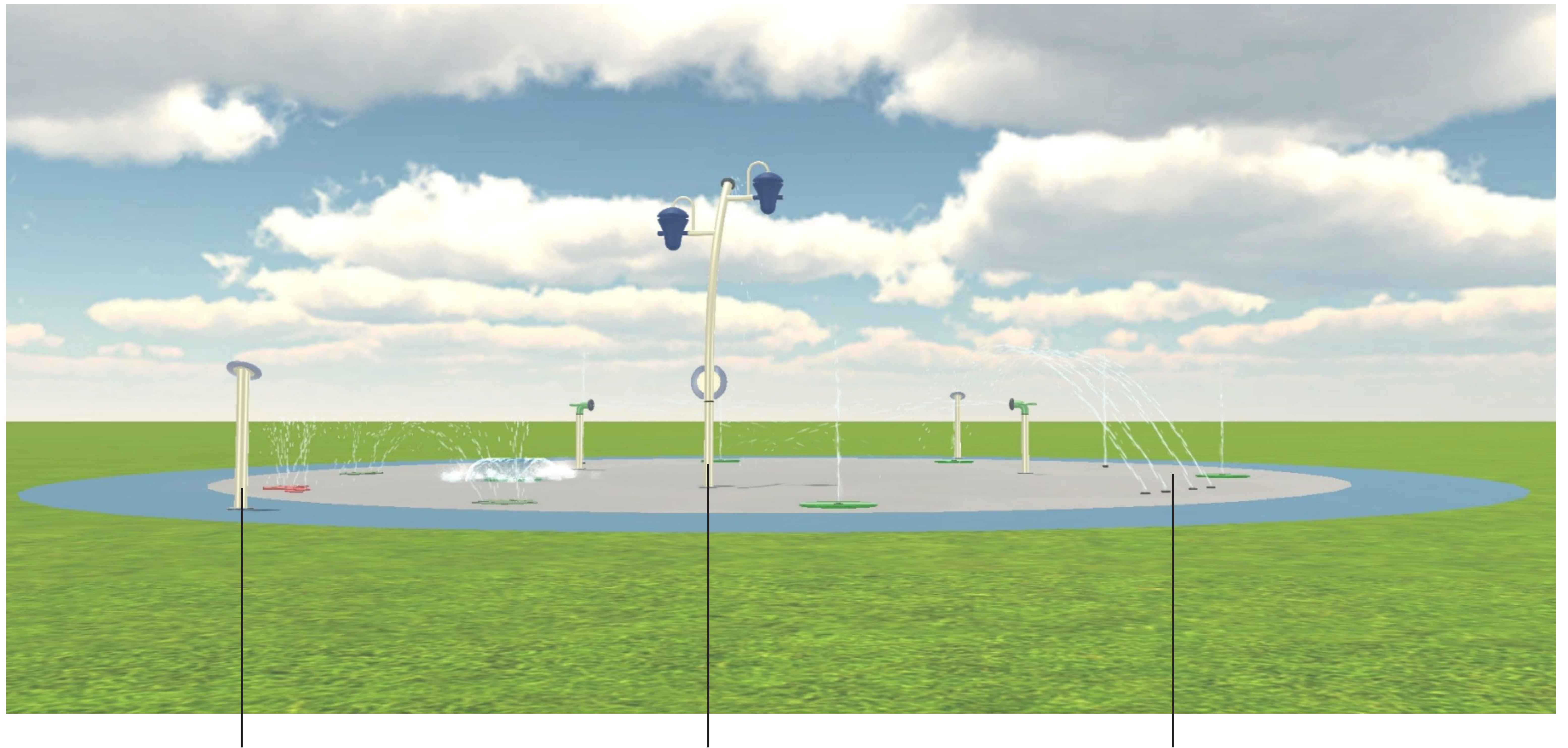


SCRAMBLING WALL

LION'S PARK RENOVATIONS - PLAYGROUND 







HAND CONTROLS

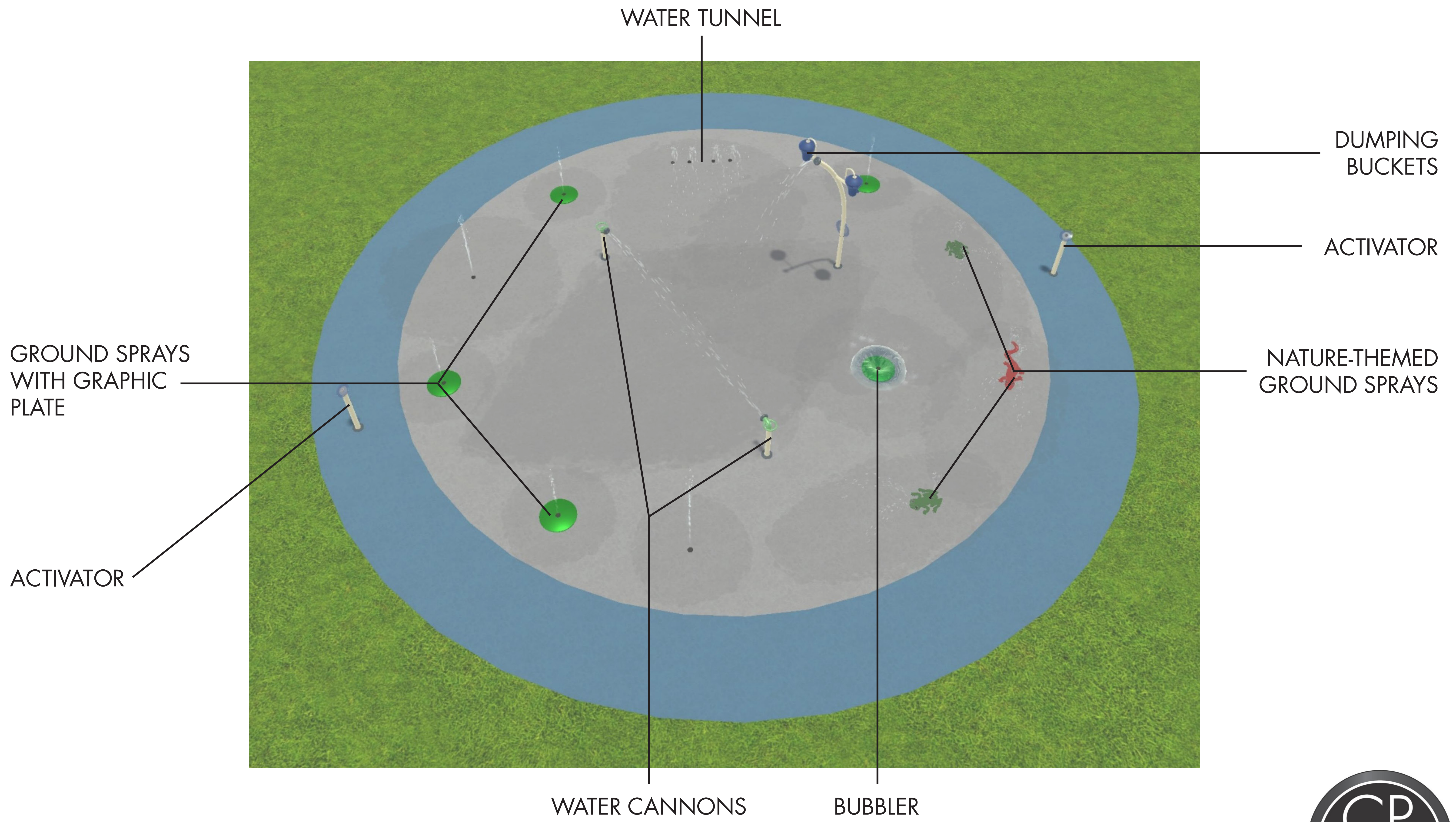
MAIN TOWER

ANGLED JETS

# LION'S PARK RENOVATIONS - SPLASH PAD







# LION'S PARK RENOVATIONS - SPLASH PAD





March 2<sup>nd</sup>, 2020

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,



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March 2nd, 2020

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