Conceptual Review Agenda

Schedule for 04/04/16 to 04/04/16

281 Conference Room A

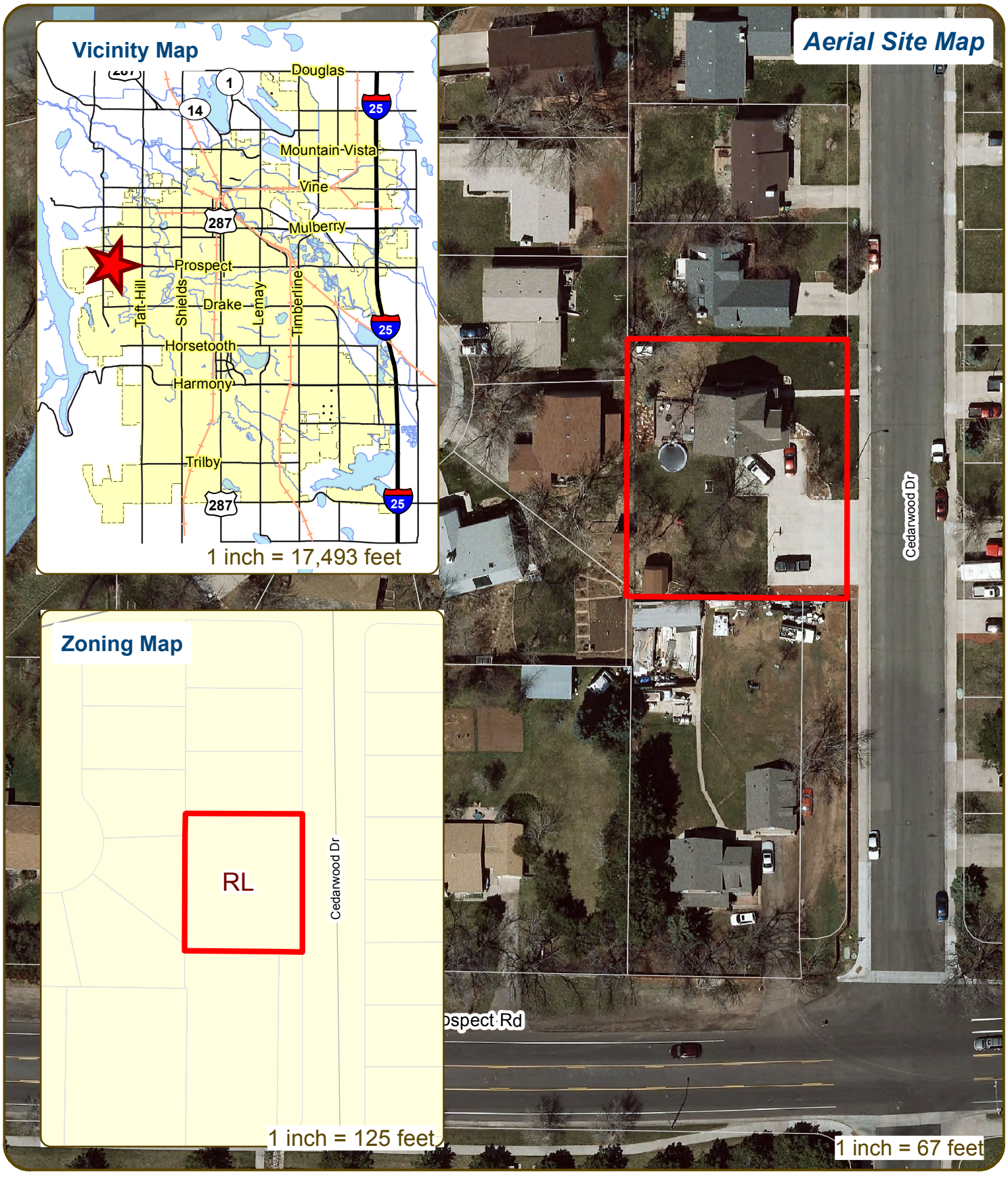
Monday, April 4, 2016

Time	Project Name	Applicant Info	Project Description	Planner
9:30	1519 Cedarwood Dr - Single-family Detached CDR160026	Blake Bush (970) 402-2400 blake.bush@yahoo.com	This is a request to build a second home on the lot located at 1519 Cedarwood Dr (parcel #9716398001). The proposed home would be two stories and have 1,190 sq. ft. of floor area. The new home and existing home would share a driveway. The lot is 14,802 sq. ft. The parcel is located in the Low Density Residential (RL) zone district. This request will be subject to Administrative (Type I) review.	Noah Beals
10:15	Vineyard/Goldelm ODP CDR160027	Michael Chalona (970) 449-4100 mchalona@logansimpson.com	This is a request to master plan and develop three parcels on S College Ave (Parcel #'s 9611100901, 9611100003 & 9611100031). This coordinated development of this site will result in the construction of a shared private drive connecting the intersection of Venus Ave and Crestridge St with a right in and right out to S. College Ave north of the property. A new lot will also be created through this development on the east side of the private drive. The parcels are located in the Medium Density Mixed-Use Neighborhood (MMN) and Service Commercial (CS) zone districts. This proposal will be subject to Planning & Zoning Board (Type II) review.	Jason Holland

Monday, April 4, 2016

Time	Project Name	Applicant Info	Project Description	Planner
11:00	Centre for Advanced Technology - Single-family Attached CDR160028	Cathy Mathis (970) 532-5891 cathy@tbgroup.us	This is a request to construct 34 units of single-family attached units (parcel #9723000904). The units will be organized around private drive leading from Worthington Ave. This development is proposed on Parcel B of the Centre for Advanced Technology Amended ODP adopted in January of 2012. The site is located in the Employment (E) zone district. This proposal will be subject to Planning & Zoning Board (Type II) review.	Clay Frickey

1519 Cedarwood Dr
Single-family Detached



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Development Review Guide – STEP 2 of 8

CONCEPTUAL REVIEW:
APPLICATION

General Information
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At Conceptual Review, you will meet with Staff from a number of City departments, such as Community Development and Neighborhood Services (Zoning, Current Planning, and Development Review Engineering), Light and Power, Stormwater, Water/Waste Water, Advance Planning (Long Range Planning and Transportation Planning) and Poudre Fire Authority. Comments are offered by staff to assist you in preparing the detailed components of the project application. There is no approval or denial of development proposals associated with Conceptual Review. At the meeting you will be presented with a letter from staff, summarizing comments on your proposal.

BOLDED ITEMS ARE REQUIRED *The more info provided, the more detailed your comments from staff will be.*

Contact Name(s) and Role(s) (Please identify whether Consultant or Owner, etc) Blake Bush

Business Name (if applicable) _____

Your Mailing Address 1519 Cedarwood Dr

Phone Number 970-402-2400 Email Address blake.bush@yahoo.com

Site Address or Description (parcel # if no address) 1519 Cedarwood Dr FC 80521

Description of Proposal (attach additional sheets if necessary) I would like to see what it would take to build another single family residence on my lot.

Proposed Use Single Family Residence **Existing Use** Yard

Total Building Square Footage 1200 ? S.F. Number of Stories 1-2? Lot Dimensions Double lot - 14,000 sf

Age of any Existing Structures I built my home in 2024

Info available on Larimer County's Website: http://www.co.larimer.co.us/assessor/query/search.cfm

If any structures are 50+ years old, good quality, color photos of all sides of the structure are required for conceptual.

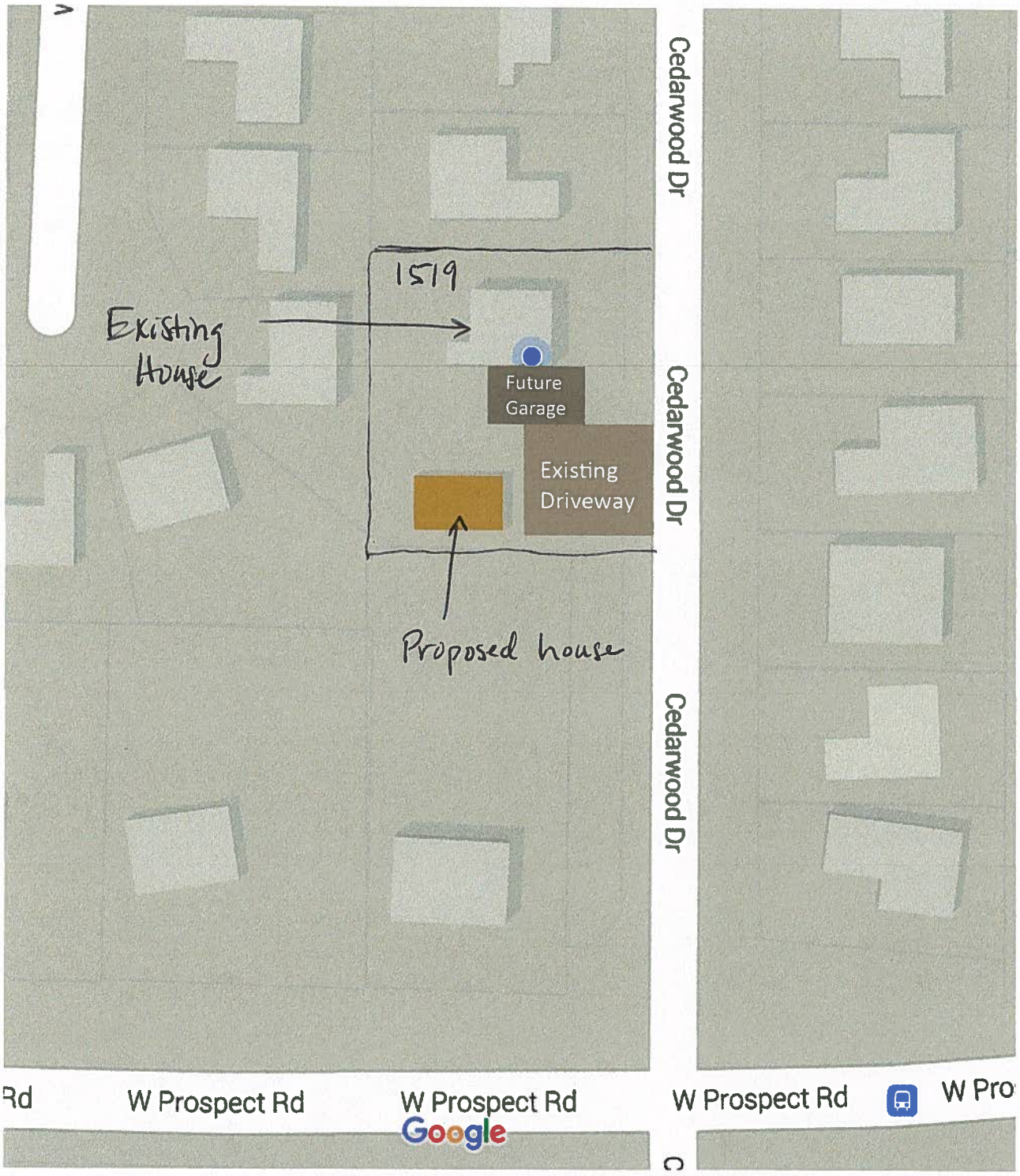
Is your property in a Flood Plain? ☐ Yes ☐ No ? If yes, then at what risk is it? _____

Info available on FC Maps: http://gisweb.fcgov.com/redirect/default.aspx?layerTheme=Floodplains.

Increase in Impervious Area ~~1200~~ 650 S.F. S.F.

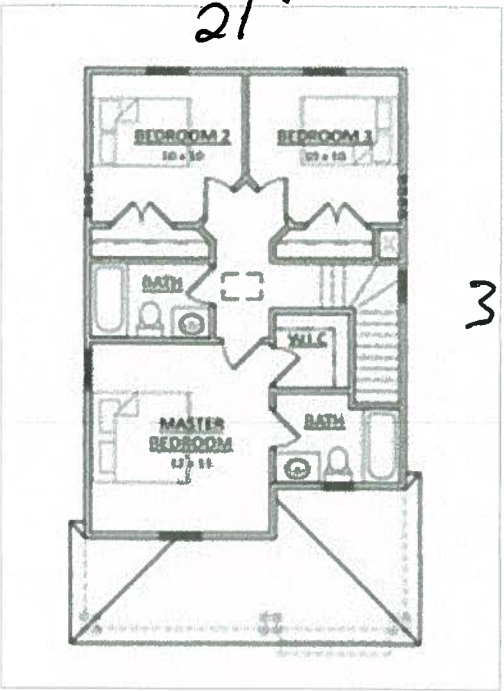
(Approximate amount of additional building, pavement, or etc. that will cover existing bare ground to be added to the site)

Suggested items for the Sketch Plan:
Property location and boundaries, surrounding land uses, proposed use(s), existing and proposed improvements (buildings, landscaping, parking/drive areas, water treatment/detention, drainage), existing natural features (water bodies, wetlands, large trees, wildlife, canals, irrigation ditches), utility line locations (if known), photographs (helpful but not required). Things to consider when making a proposal: How does the site drain now? Will it change? If so, what will change?



Proposed single family dwelling on an existing double lot. Shared driveway with 1519 Cedarwood Dr. Utilities, water, and power would be separate.

Proposal for 1519 Cedarwood Drive in FC



PLAN DETAILS

Keywords: Traditional , 3 Bedroom

More From This Designer »

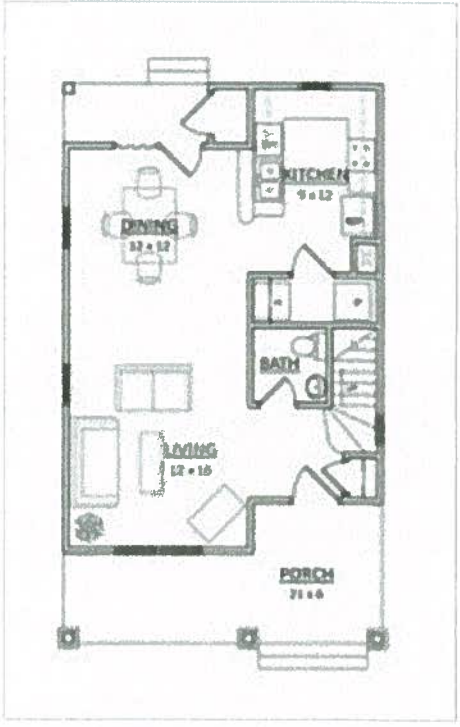
Can you create a spacious family home with just 1,190 square feet of living space? Yes, and here's the proof. This 21-foot-wide plan extends space visually with a very open layout inside and a wide porch outside. The living room flows without interruption into the dining room, which is easily served by the kitchen's snack counter. Upstairs, the master suite boasts a walk-in closet and full private bath, with the two secondary bedrooms using a hall bath.

OVERVIEW	
Primary Style	Traditional
Bedrooms:	3
Half Baths:	1
Baths:	2
Living Area:	1,190 sq ft
Width:	21' 4"
Foundation:	Crawlspace
Depth:	37' 4"
Stories:	2
Styles:	Traditional

DETAILS	
Heated/living area	1,190 sq. ft.
Foundations	Crawlspace
Framing	Wood - 2x4
Facade	Brick/Siding
Roof material	Shingle
Roof framing	Truss
First Floor	560 sq ft/ height 9
Second Floor	630 sq ft/ height 8

FEATURES

- Columned Front Entry
- Formal Dining Room
- Formal Living Room/Parlor
- Front Porch
- Garden Tub
- Laundry Room-Main Floor
- Master Suite-Second Floor
- Open Floor Plan
- Rear Porch
- Snack Bar
- Split Bedrooms
- Walk-In Closet



Community Development and Neighborhood Services
281 North College Avenue
PO Box 580
Fort Collins, CO 80522

970.221.6750
970.224.6134 - fax
fcgov.com

April 15, 2016

Blake Bush
1519 Cedarwood Dr
Fort Collins, CO 80521

Re: 1519 Cedarwood Dr - Single-family Detached
Description of project: This is a request to build a second home on the lot located at 1519 Cedarwood Dr (parcel #9716398001). The proposed home would be two stories and have 1,190 sq. ft. of floor area. The new home and existing home would share a driveway. The lot is 14,802 sq. ft. The parcel is located in the Low Density Residential (RL) zone district. This request will be subject to Administrative (Type I) review.

Please see the following summary of comments regarding the project request referenced above. The comments offered informally by staff during the Conceptual Review will assist you in preparing the detailed components of the project application. Modifications and additions to these comments may be made at the time of formal review of this project. If you have any questions regarding these comments or the next steps in the review process, you may contact the individual commenter or direct your questions through the Project Planner, Noah Beals, at 970-416-2313 or nbeals@fcgov.com.

Comment Summary:

Department: Water-Wastewater Engineering
Contact: Shane Boyle, 970-221-6339, sboyle@fcgov.com

1. Existing water and sewer mains in the vicinity include a 6-inch water main on the west side of Cedarwood Drive and a 15-inch sanitary sewer main along the eastern edge of this parcel.
2. New water and sewer services will be required to serve the new house; it cannot be served from the services already in place for the existing house.
3. The water conservation standards for landscape and irrigation will apply. Information on these requirements can be found at: http://www.fcgov.com/standards
4. Development fees and water rights will be due at building permit.

Department: Traffic Operations
Contact: Martina Wilkinson, 970-221-6887, mwilkinson@fcgov.com

1. The anticipated change in traffic volume is not expected to rise to the threshold of needing a TIS. Based on section 4.2.3.D of LCUASS, the Traffic Impact Study requirement can be waived.
2. no further comments.

Department: Stormwater Engineering

Contact: Shane Boyle, 970-221-6339, sboyle@fcgov.com

1. The design of this site must conform to the drainage basin design of the Canal Importation Master Drainage Plan as well the Fort Collins Stormwater Criteria Manual.
2. If there is an increase in imperviousness greater than 1,000 square feet a drainage report, erosion control report and construction plans are required and they must be prepared by a Professional Engineer registered in Colorado. The drainage report must address the four-step process for selecting structural BMPs. If the increase in impervious area is greater than 350 square feet and less than 1,000 square feet, a drainage letter along with a grading and erosion control plan should be sufficient to document the existing and proposed drainage patterns. A drainage letter and grading plan are required if the increase in imperviousness is greater than 350 square feet and less than 1000 square feet. A grading plan is required if the increase in imperviousness is less than 350 square feet.
3. As part of the drainage memo for this site, the developer will need to address where the runoff generated by the new impervious area is going and may need to mitigate any additional runoff directed onto adjacent properties.
4. Water quality treatment is also required as described in the Fort Collins Stormwater Criteria Manual. Extended detention is the usual method selected for water quality treatment; however the use of any of the BMPs is encouraged. (http://www.fcgov.com/utilities/business/builders-and-developers/development-forms-guidelines-regulations/stormwater-criteria) In this case disconnection of impervious areas and directing the down spouts into landscaped areas are two acceptable methods.
5. The 2016 city wide Stormwater development fee (PIF) is $8,217/acre for new impervious area over 350 sq. ft. and there is a $1,045.00/acre review fee. No fee is charged for existing impervious area. These fees are to be paid at the time each building permit is issued. Information on fees can be found at: http://www.fcgov.com/utilities/business/builders-and-developers/plant-investment-development-fees or contact Jean Pakech at 221-6375 for questions on fees. There is also an erosion control escrow required before the Development Construction permit is issued. The amount of the escrow is determined by the design engineer, and is based on the site disturbance area, cost of the measures, or a minimum amount in accordance with the Fort Collins Stormwater Manual.

Department: Historical Preservation

Contact: Maren Bzdek, 970-221-6206, mbzdek@fcgov.com

1. The property does not contain buildings 50 years old or older, and the proposed plans are unlikely to affect adjacent historic properties, if any.

Department: Fire Authority

Contact: Jim Lynxwiler, 970-416-2869, jlynxwiler@poudre-fire.org

1. FIRE ACCESS
   Fire access is required to within 150' of all exterior portions of the building perimeter. This requirement has been met from Cedarwood Dr. Code language provided below.

   > IFC 503.1.1: Approved fire Lanes shall be provided for every facility, building or portion of a building hereafter constructed or moved into or within the jurisdiction. The fire apparatus access road shall comply with the requirements of this section and shall extend to within 150

feet of all portions of the facility and all portions of the exterior walls of the first story of the building as measured by an approved route around the exterior of the building or facility.

2. WATER SUPPLY
   A hydrant is required within 400' of any residential building. This requirement has been met with the existing utility infrastructure available in the area. Code language provided below.

   > IFC 508.1 and Appendix B: RESIDENTIAL REQUIREMENTS: Within the Urban Growth Area, hydrants to provide 1,000 gpm at 20 psi residual pressure, spaced not further than 400 feet to the building.

Department: Environmental Planning

Contact: Kelly Kimple, 970-416-2401, kkimple@fcgov.com

1. In regards to lighting, if using LED fixtures, please keep in mind that cooler color temperatures are harsher at night and cause more disruption to circadian rhythms for both humans and wildlife. Please consider a warmer color temperature (3000K or less) if using LED light fixtures. Please also consider fixtures with dimming capabilities so that light levels can be adjusted as needed.
2. With respect to landscaping and design, the City of Fort Collins Land Use Code, in Article 3.2.1 (E)(3), requires that you use low-water-use plants and grasses in your landscaping or re-landscaping and reduce bluegrass lawns as much as possible. Native and wildlife-friendly landscaping is encouraged as well.
3. The applicant should make note of Article 3.2.1(C) that requires developments to submit a landscape and tree protection plan, and if receiving water service from the City, an irrigation plan, that: "...(4) protects significant trees, natural systems, and habitat, and (5) enhances the pedestrian environment". Note that a significant tree is defined as a tree having DBH (Diameter at Breast Height) of six inches or more. If any of the trees within this site have a DBH of greater than six inches, a review of the trees shall be conducted with Tim Buchanan, City Forester (970-221-6361 or tbuchanan@fcgov.com) to determine the status of the existing trees and any mitigation requirements that could result from the proposed development.

Department: Engineering Development Review

Contact: Marc Virata, 970-221-6567, mvirata@fcgov.com

1. Larimer County Road Impact Fees and Street Oversizing Fees are due at the time of building permit. Please contact Matt Baker at 224-6108 if you have any questions.
2. The City's Transportation Development Review Fee (TDRF) is due at the time of submittal. For additional information on these fees, please see: http://www.fcgov.com/engineering/dev-review.php
3. Any damaged curb, gutter and sidewalk existing prior to construction, as well as streets, sidewalks, curbs and gutters, destroyed, damaged or removed due to construction of this project, shall be replaced or restored to City of Fort Collins standards at the Developer's expense prior to the acceptance of completed improvements and/or prior to the issuance of the first Certificate of Occupancy.
4. All public sidewalk, driveways and ramps existing or proposed adjacent or within the site need to meet ADA standards, if they currently do not, they will need to be reconstructed so that they do meet current ADA standards as a part of this project.
5. Any public improvements must be designed and built in accordance with the Larimer County Urban Area Street Standards (LCUASS). They are available online at: http://www.larimer.org/engineering/GMARdStds/UrbanSt.htm

6. This project is responsible for dedicating any right-of-way and easements that are necessary or required by the City for this project. This property was previously replatted and no additional dedications are anticipated, unless required for servicing the site.
7. Utility plans may be required and a Development Agreement may be required and recorded at Larimer County once the project is finalized, with recordation costs paid by the applicant.
8. permit
9. All fences, barriers, posts or other encroachments within the public right-of-way are only permitted upon approval of an encroachment permit. Applications for encroachment permits shall be made to Engineering Department for review and approval prior to installation. Encroachment items shall not be shown on the site plan as they may not be approved, need to be modified or moved, or if the permit is revoked then the site/ landscape plan is in non-compliance.
10. In regards to construction of this site, the public right-of-way shall not be used for staging or storage of materials or equipment associated with the Development, nor shall it be used for parking by any contractors, subcontractors, or other personnel working for or hired by the Developer to construct the Development. The Developer will need to find a location(s) on private property to accommodate any necessary Staging and/or parking needs associated with the completion of the Development. Information on the location(s) of these areas will be required to be provided to the City as a part of the Development Construction Permit application.

Department: Electric Engineering

Contact: Tyler Siegmund, 970-416-2772, tsiegmund@fcgov.com

1. Electric Capacity Fee, Building Site charges and any system modification charges necessary will apply to this development. Please reference our policies, development charge processes, and use our fee estimator at http://www.fcgov.com/utilities/business/builders-and-developers.
2. Light and Power has electric facilities along the west side of Cedarwood Dr. that can be utilized to provide power to the new home.
3. Light & Power will need the AutoCAD files of the approved site plan, landscape plan, and utility plans.
4. Please contact Light & Power Engineering if you have any questions at 221-6700. Please reference our policies, development charge processes, and use our fee estimator at http://www.fcgov.com/utilities/business/builders-and-developers.

Planning Services

Contact: Noah Beals, 970-416-2313, nbeals@fcgov.com

1. The property is currently 1 lot. To add an additional primary structure the property will need to be replatted into 2 lots.
2. In the Low Density Residential (R-L) zone district the minimum lot is is 6,000 sf.

   The floor area of each lot cannot exceed 1/3 of the Lot size.
3. The setbacks in the R-L zone district are:
   Front setback: 20ft
   Rear setback: 15ft
   Side interior setback: 5ft

4. The maximum building height is 28ft.

5. Single family detached dwelling is subject to a Type 1 review. The submittal will need to include a plat and site/landscape plan.

6. The proposed development project is subject to a Type 1 review and public hearing, the decision maker for Type 1 hearings is an Administrative Hearing Officer. The applicant for this development request is not required to hold a neighborhood meeting for a Type 1 hearing, but if you would like to have one to notify your neighbors of the proposal, please let me know and I can help you in setting a date, time and location for a meeting. Neighborhood Meetings are a great way to get public feedback and avoid potential hiccups that may occur later in the review process.

7. Please see the Development Review Guide at www.fcgov.com/drg. This online guide features a color coded flowchart with comprehensive, easy to read information on each step in the process. This guide includes links to just about every resource you need during development review.

8. This development proposal will be subject to all applicable standards of the Fort Collins Land Use Code (LUC), including Article 3 General Development Standards. The entire LUC is available for your review on the web at http://www.colocode.com/ftcollins/landuse/begin.htm.

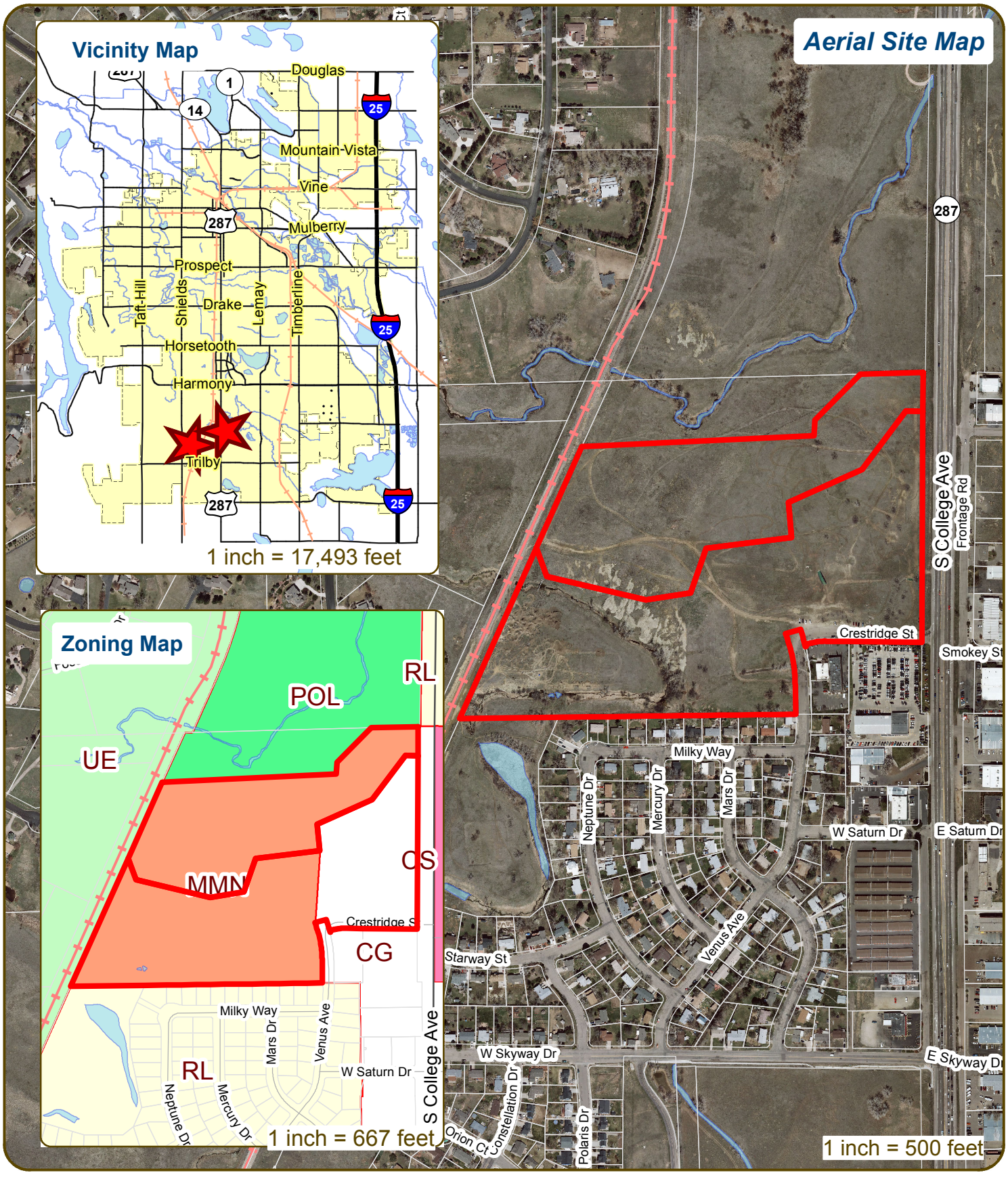
9. If this proposal is unable to satisfy any of the requirements set forth in the LUC, a Modification of Standard Request will need to be submitted with your formal development proposal. Please see Section 2.8.2 of the LUC for more information on criteria to apply for a Modification of Standard.

10. Please see the Submittal Requirements and Checklist at: http://www.fcgov.com/developmentreview/applications.php.

11. The request will be subject to the Development Review Fee Schedule that is available in the Community Development and Neighborhood Services office. The fees are due at the time of submittal of the required documents for the appropriate development review process by City staff and affected outside reviewing agencies. Also, the required Transportation Development Review Fee must be paid at time of submittal.

12. When you are ready to submit your formal plans, please make an appointment with Community Development and Neighborhood Services at (970)221-6750.

Vineyard/Goldelm ODP



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Contact Name(s) and Role(s) (Please identify whether Consultant or Owner, etc) Logan Simpson, c/o Michael Chalona (consultant), Planner

Business Name (if applicable) _____

Your Mailing Address 123 N. College Ave, ste 206, FTC, CO 80524

Phone Number 449-4100 Email Address mchalona@logansimpson.com

Site Address or Description (parcel # if no address) Parcel #s 9611100901, 9611100003 & 9611100031

Description of Proposal (attach additional sheets if necessary)
Master Plan the three parcels to develop in a cohesive manner, with a central shared private drive connecting the intersection of Venus Ave and Crestridge St with a right in and right out to S. College Ave north of the property. Perform a subdivision plat for parcels 01 & 03 to create an official property line between the two parcels.

Proposed Use Multi-family, retail / vehicle sales, Church Existing Use Vacant

Total Building Square Footage 270,000 S.F. Number of Stories 2 Lot Dimensions Varies

Age of any Existing Structures vacant land
Info available on Larimer County's Website: http://www.co.larimer.co.us/assessor/query/search.cfm
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(Approximate amount of additional building, pavement, or etc. that will cover existing bare ground to be added to the site)

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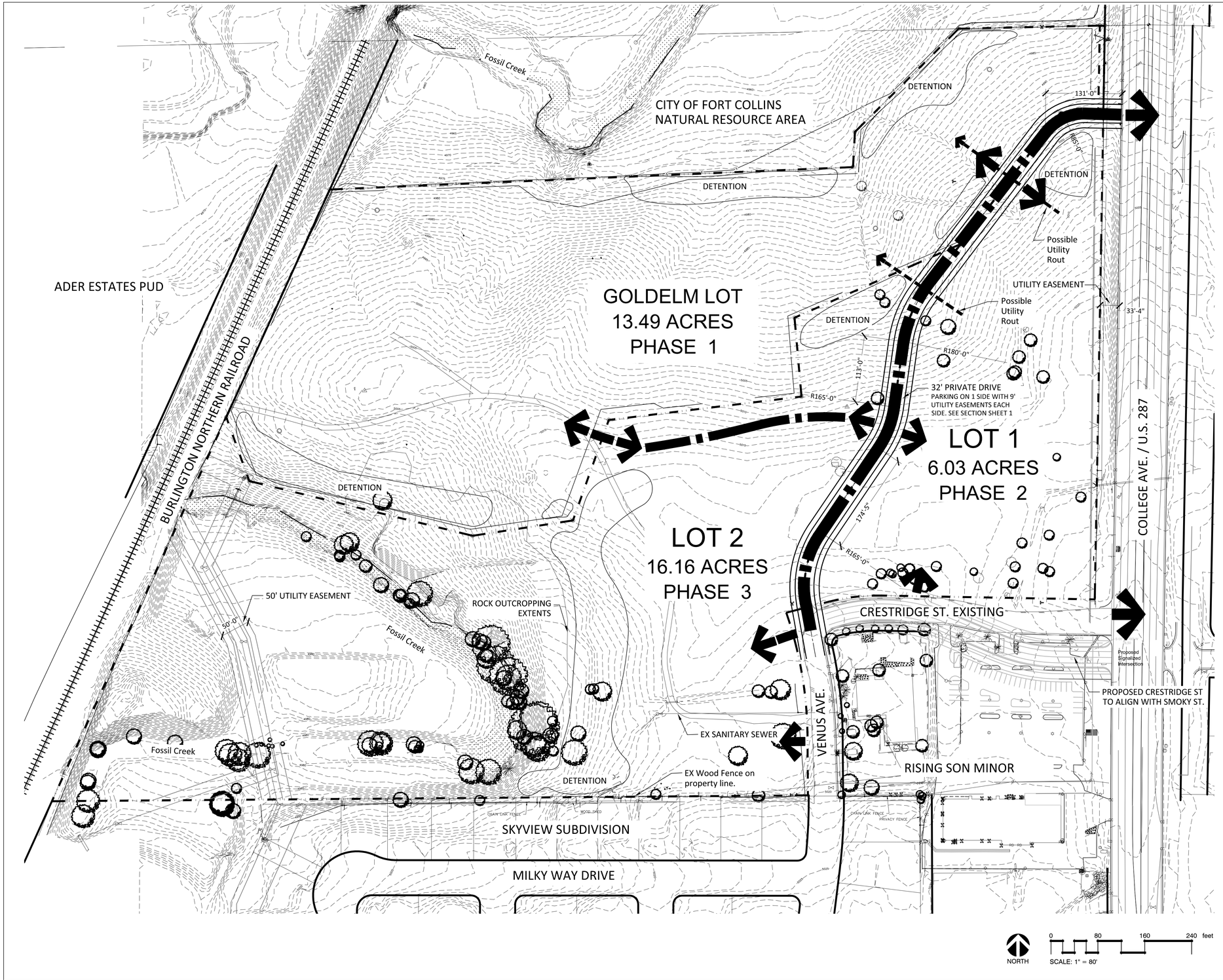

LEGEND

- LOT LINE
- EROSION CONTROL BUFFER
- CITY-REGULATORY FLOODWAY
- PRIVATE DRIVE 32' WIDE
- EXISTING WETLANDS
- EXISTING TREES
- DETENTION AREA
- POINT OF ACCESS TO STREET

LOGANSIMPSON
123 N. College Ave. Suite 206
Fort Collins, CO 80524
(970) 449-4100 Fax (970) 449-4101

LS JOB NO. 151103

DES.	CHK.	DATE	DESCRIPTION
SS	MC	03.08.16	CONCEPT REVIEW LOT PLAN

VINEYARD/ GOLDELM ODP

S. COLLEGE AVENUE
FORT COLLINS, CO. 80526

ELB Engineering, LLC
Transportation Engineering Solutions

Transportation Impact Study

Vineyard-Goldelm

Fort Collins, Colorado

February 2016

Vineyard-Goldelm

Transportation Impact Study
Fort Collins, Colorado

22 February 2016

Prepared for:

Mr. Hans H. Breuer
Executive Pastor
Vineyard Church
1201 Riverside
Fort Collins, CO 80525

Prepared by:

Eric L. Bracke, P.E., P.T.O.E.
5401 Taylor Lane
Fort Collins, CO 80528
Office: 970-988-7551

ELBEngineering@lpbroadband.net

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APPENDIX

1.0 Introduction

This transportation impact study addresses the Vineyard-Goldelm ODP/PDP located on the west side of College Avenue (US287) between Crestridge Road and Fossil Creek Boulevard in Fort Collins, Colorado. The site has sat vacant for years and numerous proposals have been submitted for this site. The site should be considered an infill development since it is surrounded by older county developments. The project will be constructed in phases and includes 250 apartments (non-student), a 42,000 square foot church, and either 18,000 square feet of car sales or specialty retail. For analysis purposes, the project will be built in three phases.

Figure 1 on the following page is a vicinity map displaying the location of the project.

2.0 Agency Discussions

Initial discussions with City staff indicated that a Full Transportation Impact Study as described in Chapter 4 of the *Larimer County Urban Area Streets Standards* (LCUASS) would be appropriate for this particular development.

The project is considered infill and redevelopment and there are no recently approved projects in the area that need to be considered in the analysis. College Avenue recently has been repaved with minor improvements to the intersection of Skyway and College. College Avenue is a State Highway (US287) and has an Access Control Plan in place.

The study will address the existing condition, a 2-year horizon, a 4-year horizon and a 20-year horizon for planning purposes. Traffic projections for College Avenue are from the Colorado Department of Transportation.

Appendix A contains the form (Attachment A), which outlines the agreed to scope of work for the study.

Figure 1 - Vicinity Map

ELB Engineering, LLC
5401Taylor Lane
Fort Collins, CO 80528
970-988-7551

3.0 Existing Conditions

3.1. Current Traffic

Peak hour turning movements for the College/Crestridge, College/Smokey, and the College/Skyway were obtained in January 2016. Counts at these three locations were taken in 2-hour blocks of time in 15-minute increments. The counts were taken in the AM between 7:00-9:00 and in the PM between 4:00-6:00. The data was collected in between the snowstorms of January when traffic was fairly normalized. The raw data regarding the turning movements is provided in **Appendix B**.

3.2 Current Street System

The project is located in south Fort Collins on the west side of College Avenue between Crestridge and Fossil Creek Boulevard. The project intends to align Crestridge with Smokey on the east for full movement access with a potential traffic signal. Additional access is proposed on the north end of the project with a limited (RI/RO) movement.

The land uses in the area are mixed with commercial and residential. All the developments in the south and to the east of the site were built under older County standards. To the north of the site is the Redtail Grove Natural Area owned by the City of Fort Collins.

Site: Looking to the north

College Avenue is the main north-south thoroughfare in Fort Collins and is also US 287. The roadway is under the jurisdiction of the Colorado Department of Transportation (CDOT). College

College Ave: Looking to the north

ELB Engineering, LLC
5401Taylor Lane
Fort Collins, CO 80528
970-988-7551

Avenue is classified as an NRA Highway and currently has an Access Control Plan (ACP) in place that governs future access. College Avenue is a four-lane highway with a center left turn lane, shoulders and auxiliary lanes at intersections where needed. The speed limit is posted 55 mph and the pavement is in good condition.

Crestridge is a collector roadway that will provide full-access to the proposed development. The roadway connects to Venus Street and provides access to the residential area to the south as well as the car dealership. The roadway appears to be used more for parking than access and is in poor condition.

Crestridge Road: Looking west

Smokey Street is a substandard roadway that provides access to an industrial area to the east of College Avenue. The roadway is in poor condition; no sidewalk, curb or gutter, and in a state of disrepair.

Smokey Street: Looking west

Skyway: Looking west

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The intersection of College Ave and Skyway is controlled under a 6-phase traffic signal. Skyway traffic movements are relatively minor and the roadway provides access to the neighborhoods on both the east and west side of College Avenue. The radii on Skyway are non-existent and traffic operations for the turning movements is hindered by the poor geometry.

Skyway: No Radius for Turning Vehicles

3.3 Current Traffic Conditions

Capacity analyses were performed at the key intersections to determine if existing deficiencies exist on the roadway network. The analyses followed the procedures of the *Highway Capacity Manual 2010*. For the intersections of College/Crestridge and College/Smokey, it was observed that most folks making the left turn maneuver from the side street were using the TWLTL as a refuge. The intersections were model/analyzed as a two-stage left turn. Observation at the intersection also revealed that although there are no north or southbound left turn lanes at Crestridge or Smokey, the shoulders act as right turn lanes.

Level of Service (LOS) is a qualitative term describing operating conditions and expressed in terms of delay. Table 1 below provides the definitions of LOS for both signalized and unsignalized intersections. Table 2 displays the results of the analyses. All key intersections operate at acceptable levels of service. The worksheets from the analyses can be found in **Appendix C.**

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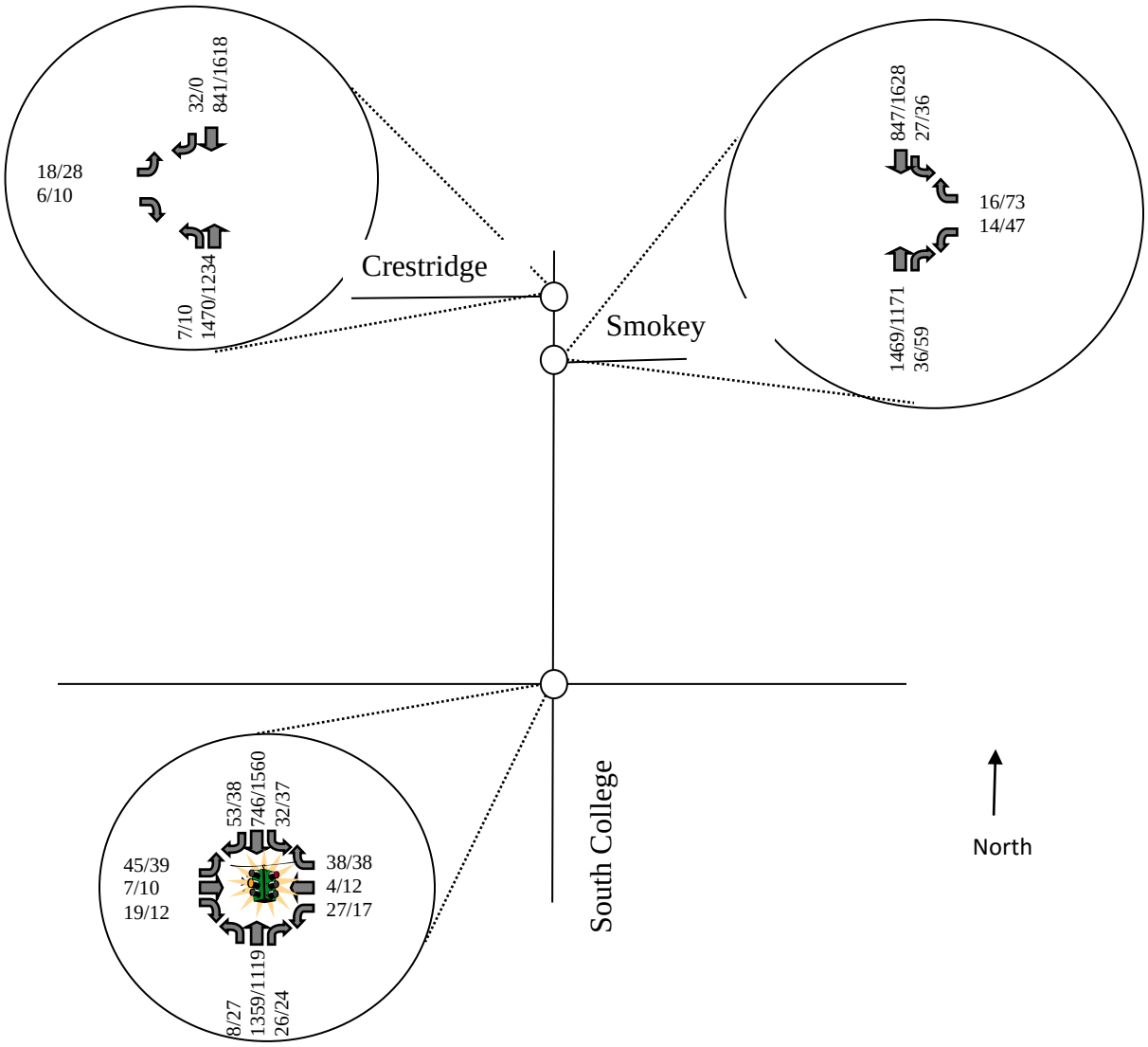

Figure 2 – Existing Peak Hour Turning Movements (AM/PM)

Level of Service	Signalized Intersection Average Total Delay (seconds/vehicle)	Unsignalized Intersection Average Total Delay (seconds/vehicle)
A	< 10	< 10
B	>10 and ≤ 20	>10 and ≤ 15
C	>20 and ≤ 35	>15 and ≤ 25
D	>35 and ≤ 55	>25 and ≤ 35
E	>55 and ≤ 80	>35 and ≤ 50
F	>80	>50

Table 1 Level of Service Definitions

		AM		PM	
Intersection	Movement	LOS	Delay(sec/ vehicle)	LOS	Delay(sec/ vehicle)
COLLEGE/SKYWAY	EBL/T/R (APPROACH)	D	51.8	D	52.2
Signal	APPROACH	D	51.8	D	52.2
	WBL/T	D	47.8	D	48.8
	WBR	D	49.0	D	52.2
	WB APPROACH	D	48.5	D	49.9
	NBL	A	3.6	A	5.9
	NBT	A	7.3	A	6.5
	NBR	A	3.9	A	4.0
	NB APPROACH	A	7.2	A	6.4
	SBL	A	5.2	A	4.9
	SBT	A	4.5	A	7.5
	SBR	A	3.4	A	3.5
	SB APPROACH	A	4.4	A	7.2
	OVERALL	A	8.8	A	8.7
COLLEGE/SMOKEY	WBL/T	D	28.7	E	38.4
STOP SIGN	SBL	A	0.4	B	12.1
	OVERALL	A	0.5	A	1.7
COLLEGE/CRESTRIDGE	EBL/R	C	21.3	F	50.3
STOP SIGN	NBL	A	9.9	C	15.4
	OVERALL	A	0.2	A	0.7

Table 2: Capacity Analysis - Existing Condition

All of the key intersections are currently operating within the city standards from an overall standpoint. The intersections of College/Crestridge and College/Smokey are

experiencing delay – primarily the left turns onto College Avenue. This is a normal condition for an urban area.

A Traffic Signal Warrant Analysis was conducted for the existing condition to determine if signalization was warranted at this time. The results indicate that the intersection of Crestridge/College/Smokey did not meet signal warrants under today's trafficand the MUTCD requirements. Only the Peak Hour Warrant (#3) was analyzed. Results of this analysis is found in **Appendix D**.

4.0 Project Description

4.1 Project

The project consists of developing the vacant parcel of land on the west side of College Avenue between Crestridge Road and Fossil Creek Boulevard. The property is situated just south of the Redtail Grove Natural Area. The project proposes to construct the project in three phases:

- Phase I – 250 apartments (non-student)
- Phase II – 18 thousand square feet of either specialty retail or auto sales
- Phase III – 42 thousand square feet for the Vineyard church

The project is surrounded by both commercial and residential developments. Access to the site will be from a right-in/right-out access on the north end of the project and on the south, at Crestridge Road. Crestridge Road is anticipated to be signalized in the future and realigned with Smokey Street on the east side of College Avenue.

For analysis purposes, it will be assumed that the development will be completed in the following years:

- Phase I by 2018
- Phase II by 2020
- Phase III is undetermined but will be considered in the long term analysis.

The preliminary site plan is displayed in Figure 3.

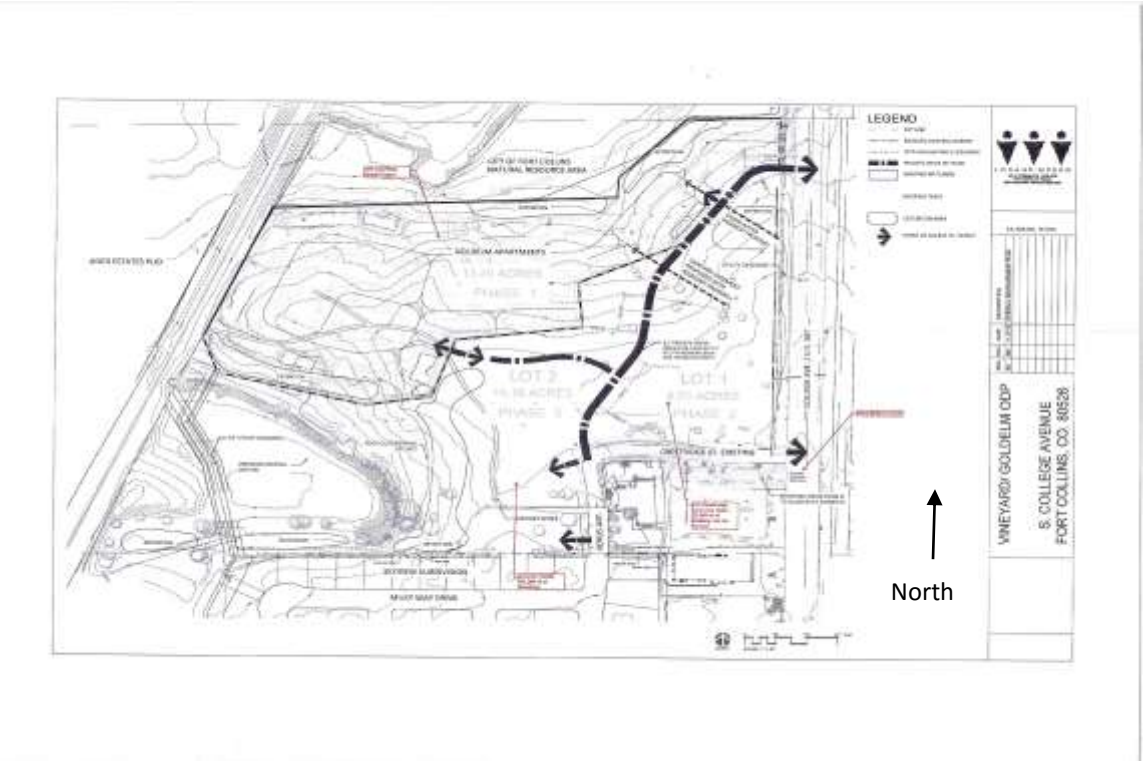

Figure 3- Preliminary Site Plan

4.2 Trip Generation

Trip generation rates for the proposed project are based on the ITE *Trip Generation, 9th Edition.* The manual presents data from numerous trip generation studies for a variety of land uses from across the country. ITE Code 220, Apartments, was used for the residential and ITE Code 826 for the retail portion, and ITE Code 560 for the church use. No trip reductions were assumed as part of the project.

Table 3 below summarizes the proposed trip generation for the project. For the entire project, during the morning peak hour, 294 trip ends can be expected and 298 trip ends can be expected from the project during the afternoon peak hours.

ITE Code	Land Use	Size	AWDTA		AM Peak Hour			PM Peak Hour		
			Rate	Trips	Rate	In	Out	Rate	In	Out
Phase I										
220	Apartments	250	6.65	I663	0.55	37	98	0.67	I02	65
Phase II										
826	Specialty Retail Center	I8	44.32	798	6.84	59	64	5.02	51	40
Phase II										
560	Church	42	9.II	383	0.87	20	I6	0.94	21	I9
	Total			2843		116	178		174	124

Table 3 - Trip Generation

4.3 Trip Distribution

Trip distribution is the process of determining where the trips are coming to and from the site. Since all trips into the site must come enter the site from College Avenue, the distribution is all north-south movements. The distribution for the project is displayed in **Figure 4**.

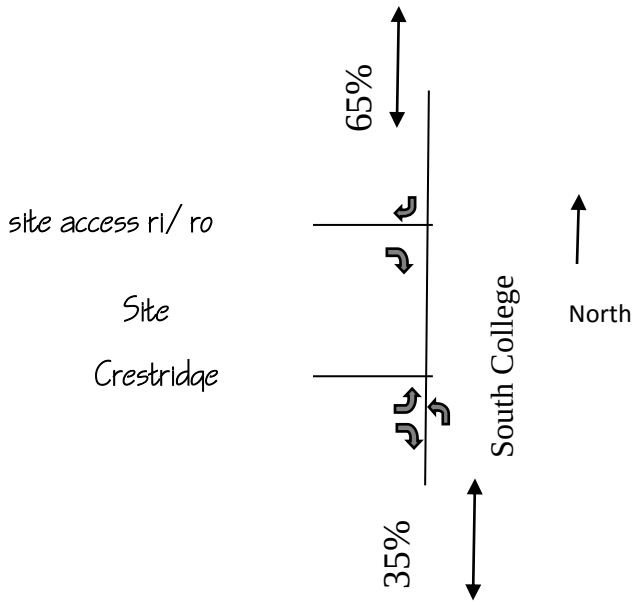

Figure 4 – Trip Distribution

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4.4 Site Distributed Traffic

Based on the trip generation, the project trips were then assigned to the surrounding roadway network based on the estimated trip distribution. The numbers have been rounded to the nearest "5". These estimated project trips will be utilized by adding them to the background traffic then analyzed to estimated roadway impact. Site distributed traffic is shown below in **Figure 5.**

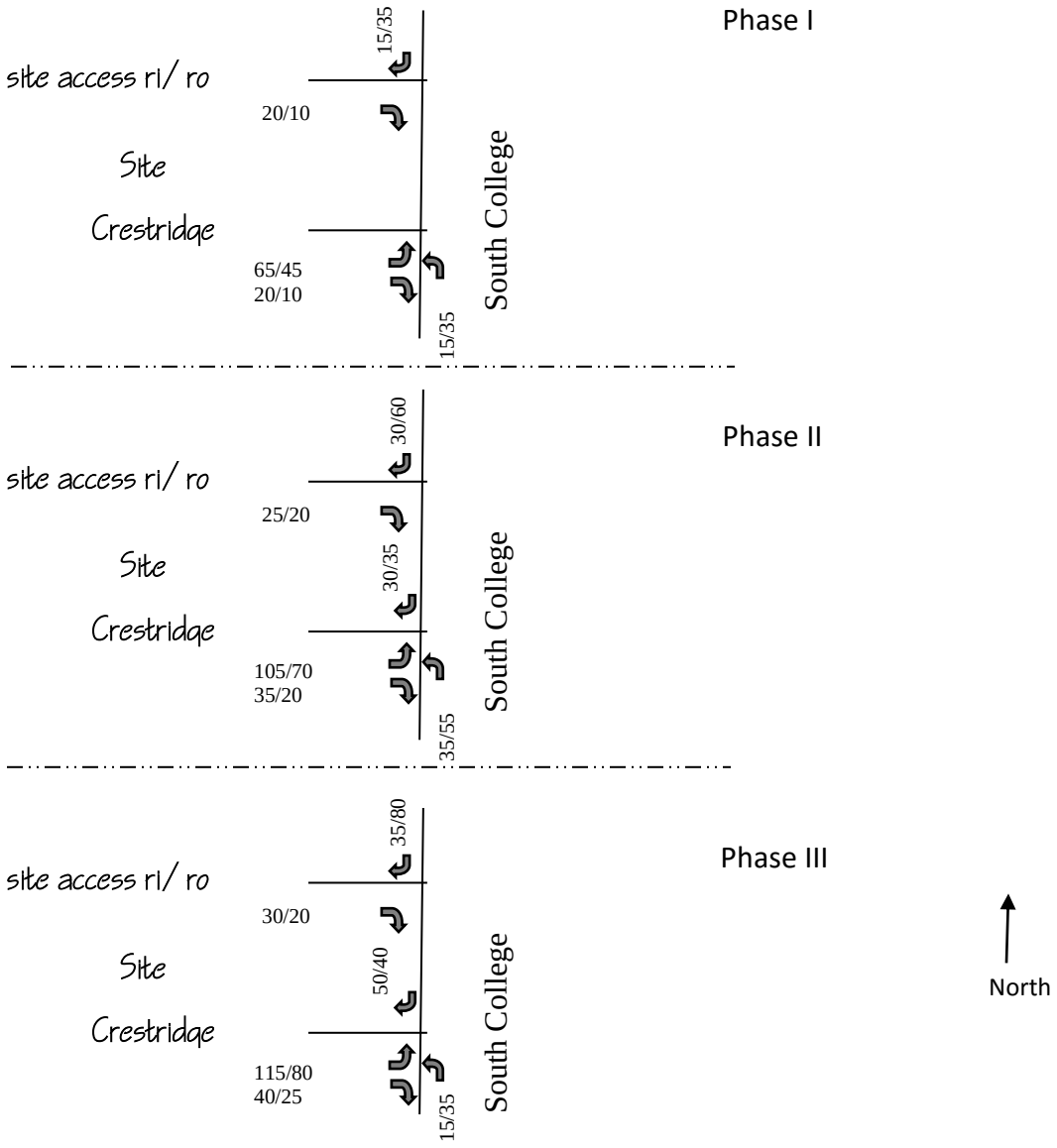

Figure 5 – Site Distributed Traffic by Phase

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5.0 Traffic Projections/Background Analysis

5.1 Traffic Projections

Background traffic for the horizon years was estimated by assuming that all traffic movements would increase by 1.0% per year, as agreed to in the initial scoping meeting with the Traffic Operations Department. The projections are based on the Colorado Department of Transportation estimates and the OTIS estimation for future traffic projections on the state highway system. Background traffic is displayed in **Figure 6, 7 and 8**.

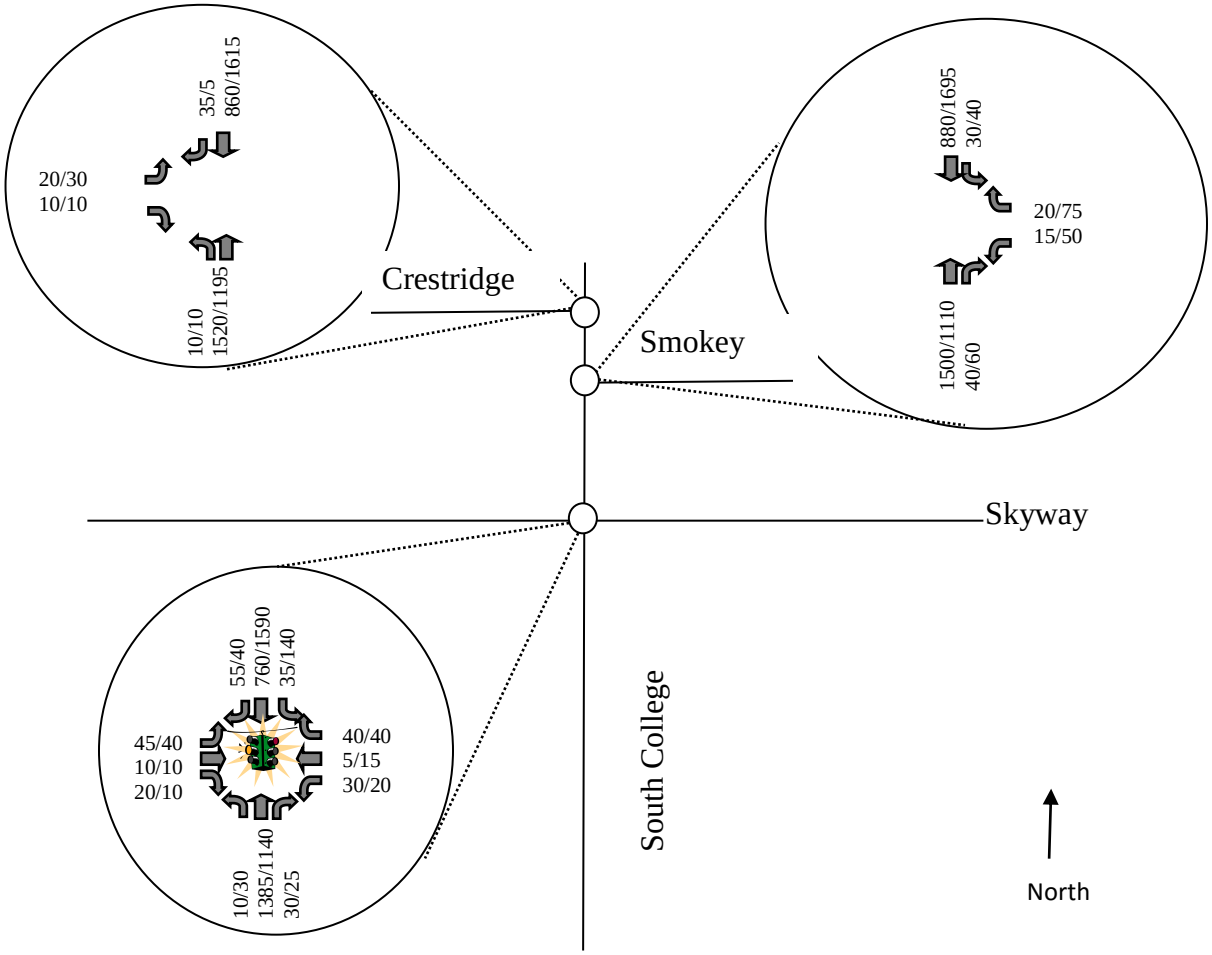

Figure 6 – Year 2018 Background Peak Hour Turning Movements (AM/PM)

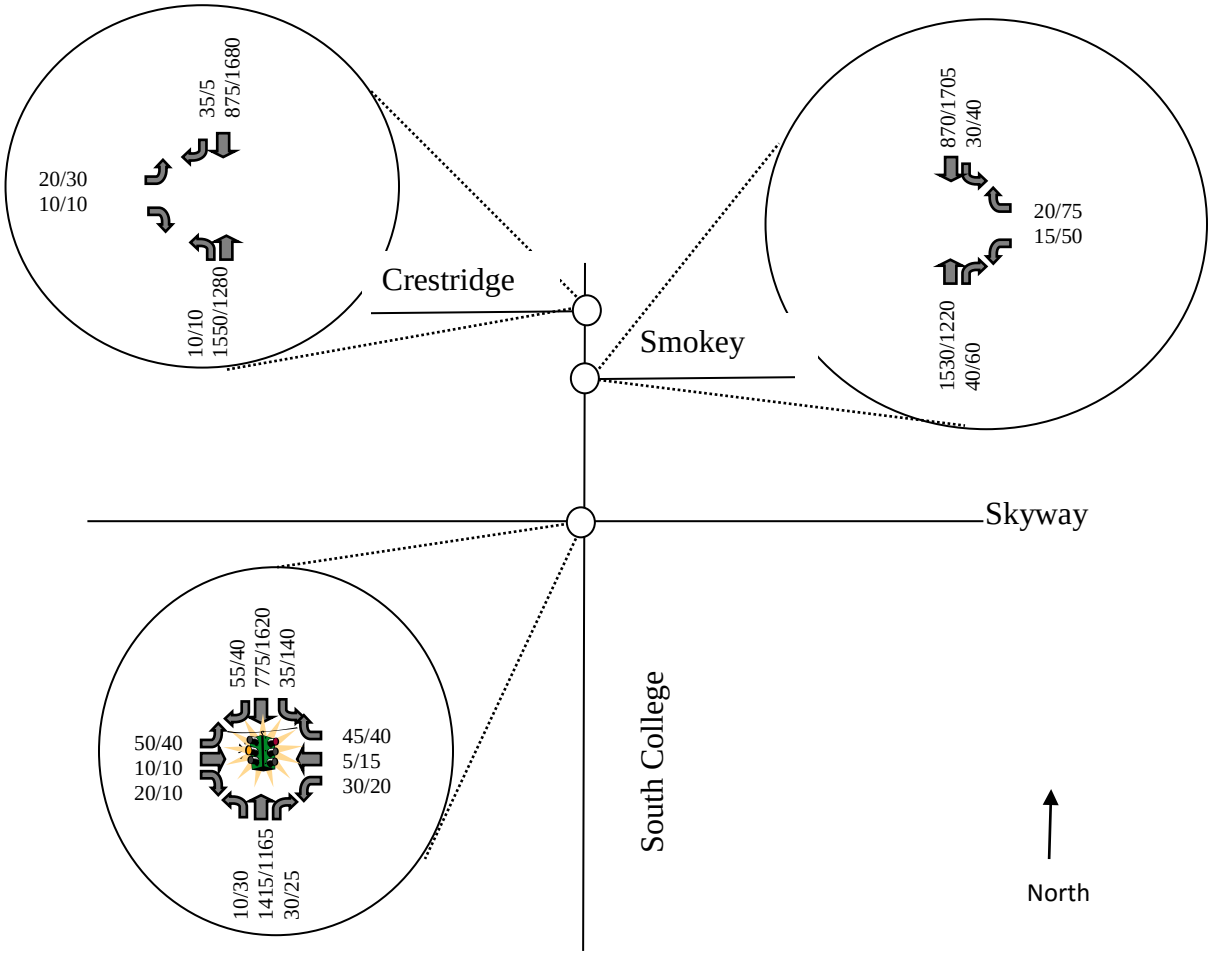

Figure 7 – Year 2020 Background Peak Hour Turning Movements (AM/PM)

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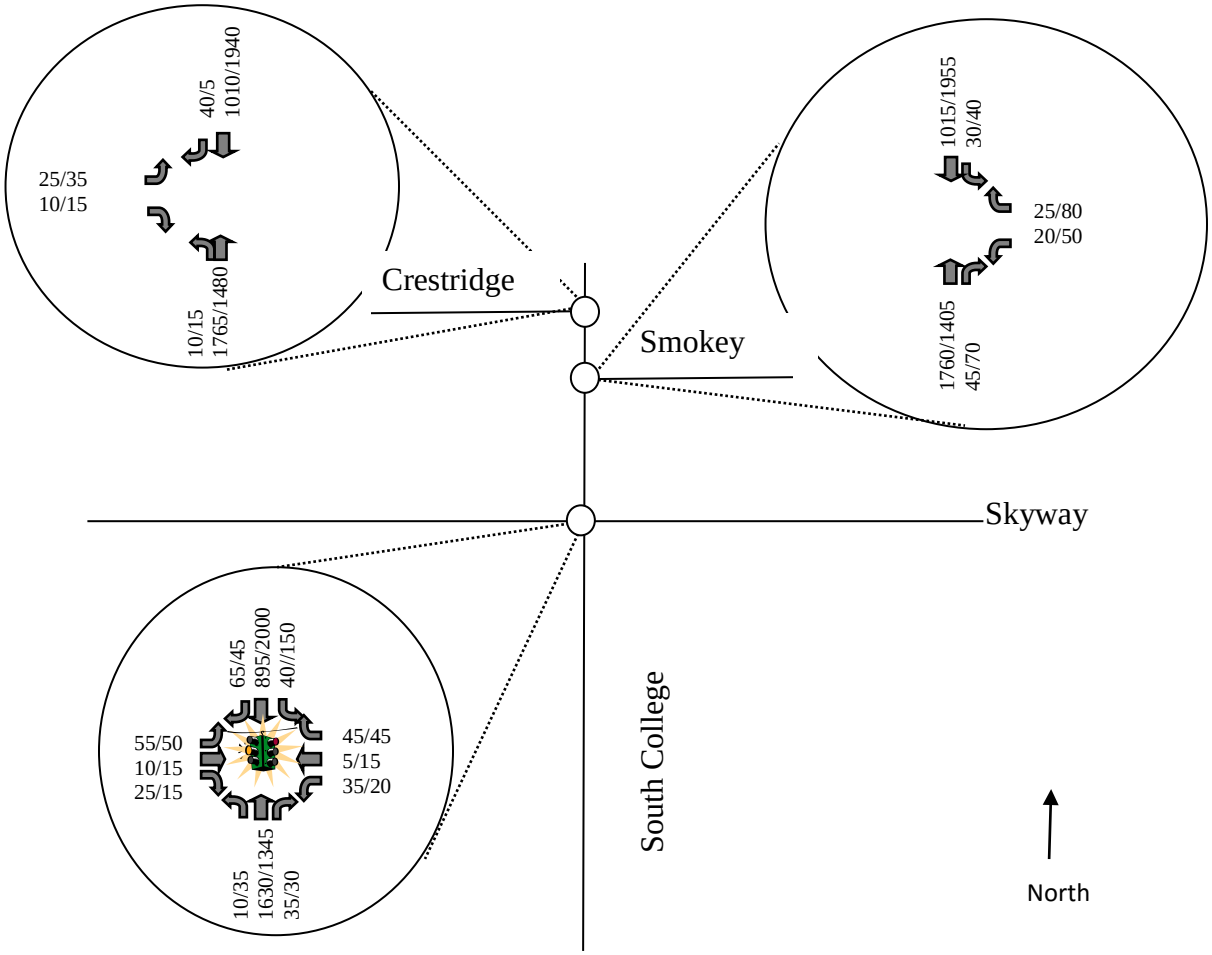

Figure 8 – Year 2036 Background Peak Hour Turning Movements (AM/PM)

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5.2 Capacity Analysis - Background

Capacity analysis was performed for all the key intersections based on the techniques of the *2010 Highway Capacity Manual*. The analysis revealed that the intersection get slightly worse in terms of delay as we moved through the horizon years. In particular, the minor street left turns from Crestridge and Smokey experience high levels of delay under stop sign control. The intersection of College/Skyway continues to operate at good levels of service without improvements through the year 2036.

Tables 4-6 display the results of the analysis and capacity worksheets can be found in **Appendix E.**

		AM		PM	
Intersection	Movement	LOS	Delay(sec/ vehicle)	LOS	Delay(sec/ vehicle)
COLLEGE/SKYWAY	EBL/T/R (APPROACH)	D	51.7	D	52.1
Signal	APPROACH	D	51.7	D	52.1
	WBL/T	D	47.5	D	48.7
	WBR	D	48.4	D	50.4
	WB APPROACH	D	48.0	D	49.6
	NBL	A	3.8	A	6.5
	NBT	A	7.8	A	6.7
	NBR	A	4.1	A	4.1
	NB APPROACH	A	7.7	A	6.7
	SBL	A	5.7	A	5.3
	SBT	A	4.8	A	8.0
	SBR	A	3.6	A	3.7
	SB APPROACH	A	4.7	A	7.7
	OVERALL	A	9.2	A	9.2
COLLEGE/SMOKEY	WBL/T	D	25.2	E	38.1
STOP SIGN	SBL	A	14.8	B	11.7
	OVERALL	A	0.5	A	1.7
COLLEGE/CRESTRIDGE	EBL/R	C	14.9	F	51.5
STOP SIGN	NBL	A	10.0	C	15.4
	OVERALL	A	0.2	A	0.8

Table 4 - Year 2018 Background Traffic

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		AM		PM	
Intersection	Movement	LOS	Delay(sec/ vehicle)	LOS	Delay(sec/ vehicle)
COLLEGE/SKYWAY	EBL/T/R (APPROACH)	D	51.3	D	52.1
Signal	APPROACH	D	51.3	D	52.1
	WBL/T	D	46.9	D	848.7
	WBR	D	47.2	D	50.4
	WB APPROACH	D	47.0	D	49.6
	NBL	A	4.1	A	6.7
	NBT	A	8.4	A	6.8
	NBR	A	4.4	A	4.1
	NB APPROACH	A	8.3	A	6.8
	SBL	A	6.3	A	5.5
	SBT	A	5.1	A	8.2
	SBR	A	3.9	A	3.7
	SB APPROACH	A	5.1	A	7.9
	OVERALL	A	9.9	A	9.3
COLLEGE/SMOKEY	WBL/T	D	30.6	E	46.1
STOP SIGN	SBL	C	15.1	B	12.5
	OVERALL	A	0.6	A	2.0
COLLEGE/CRESTRIDGE	EBL/R	C	21.8	F	58.8
STOP SIGN	NBL	B	10.0	C	16.0
	OVERALL	A	0.3	A	0.8

Table 5 - Year 2020 Background Traffic

		AM		PM	
Intersection	Movement	LOS	Delay(sec/ vehicle)	LOS	Delay(sec/ vehicle)
COLLEGE/SKYWAY	EBL/T/R (APPROACH)	D	51.1	D	51.6
Signal	APPROACH	D	51.1	D	51.6
	WBL/T	D	46.1	D	47.1
	WBR	D	46.6	D	48.6
	WB APPROACH	D	46.4	D	47.9
	NBL	A	4.5	B	15.6
	NBT	B	10.6	A	8.4
	NBR	A	4.7	A	4.6
	NB APPROACH	A	10.4	A	8.5
	SBL	A	9.2	A	8.4
	SBT	A	5.8	B	13.5
	SBR	A	4.2	A	4.2
	SB APPROACH	A	5.8	B	13.0
	OVERALL	B	11.1	B	12.9
COLLEGE/SMOKEY	WBL/T	E	46.3	F	50.3
STOP SIGN	SBL	C	17.9	B	14.1
	OVERALL	A	0.9	A	2.0
COLLEGE/CRESTRIDGE	EBL/R	D	27.5	F	76.7
STOP SIGN	NBL	B	10.7	C	19.6
	OVERALL	A	0.4	A	1.2

Table 6 - Year 2036 Background Traffic

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5.2 Total Traffic Projections and Analysis

Site generated traffic was then added to the background traffic to derive the total traffic expected on the network for the horizons years. Figures 9-11 display the total traffic that is used in the analysis.

While calculating the "Total Traffic Projections", a Warrant Study was conducted at the intersections of College Ave/Crestridge/Smokey. It was determined that with the first phase of the project completed, the intersection would meet traffic signal warrants under the *Manual on Uniform Traffic Control Devices, 2009*. For analysis purposes, it was assumed that Crestridge and Smokey would be realigned sometime in between the construction of phase I and phase II. However, this does not prohibit the developer to construct the realignment during the phase I construction (which would be preferred on several levels). The Year 2018 "Total Traffic" diagram as shown in Figure 9 assumed that 65 EB left turn morning peak hour trips and 45 EB left turn morning trips went south through the neighborhood to make the EBLT at Skyway and College. The delays in making this movement at Crestridge would be severe and they would most likely cut through the neighborhood to make the left turn safely.

From a daily trip perspective, ELB Engineering, LLC has estimated that the total project would generate over 2800 trips per day. Half of these trips ends are in and the other half are leaving the site. If the assumption is that 65% of these trips are heading north, there will probably be 900 extra trips going through the neighborhood to make the left turn at Skyway. From a traffic engineering perspective, going through the neighborhood is a safe and reasonable maneuver. From a neighborhood perspective, the increase in traffic will be unacceptable. If this project is to be successful, then the developer needs to find a way to reconstruct Crestridge Road and signalize the intersection in the early stages of the project.

The Warrant Study can be found in **Appendix F** and the Capacity Worksheets in **Appendix G**.

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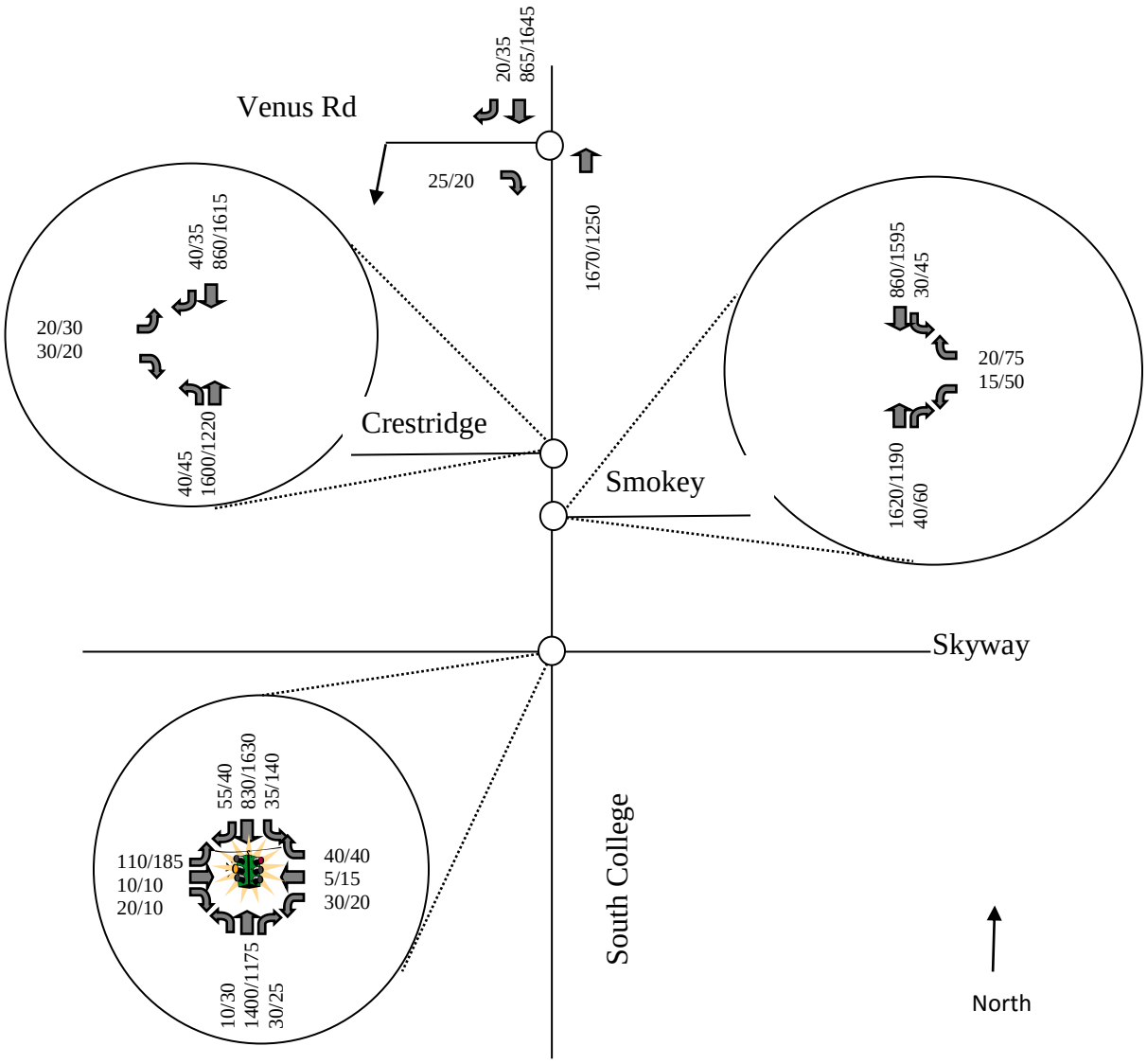

Figure 9 – Year 2018 Total Traffic – Phase I w/o realigned Crestridge

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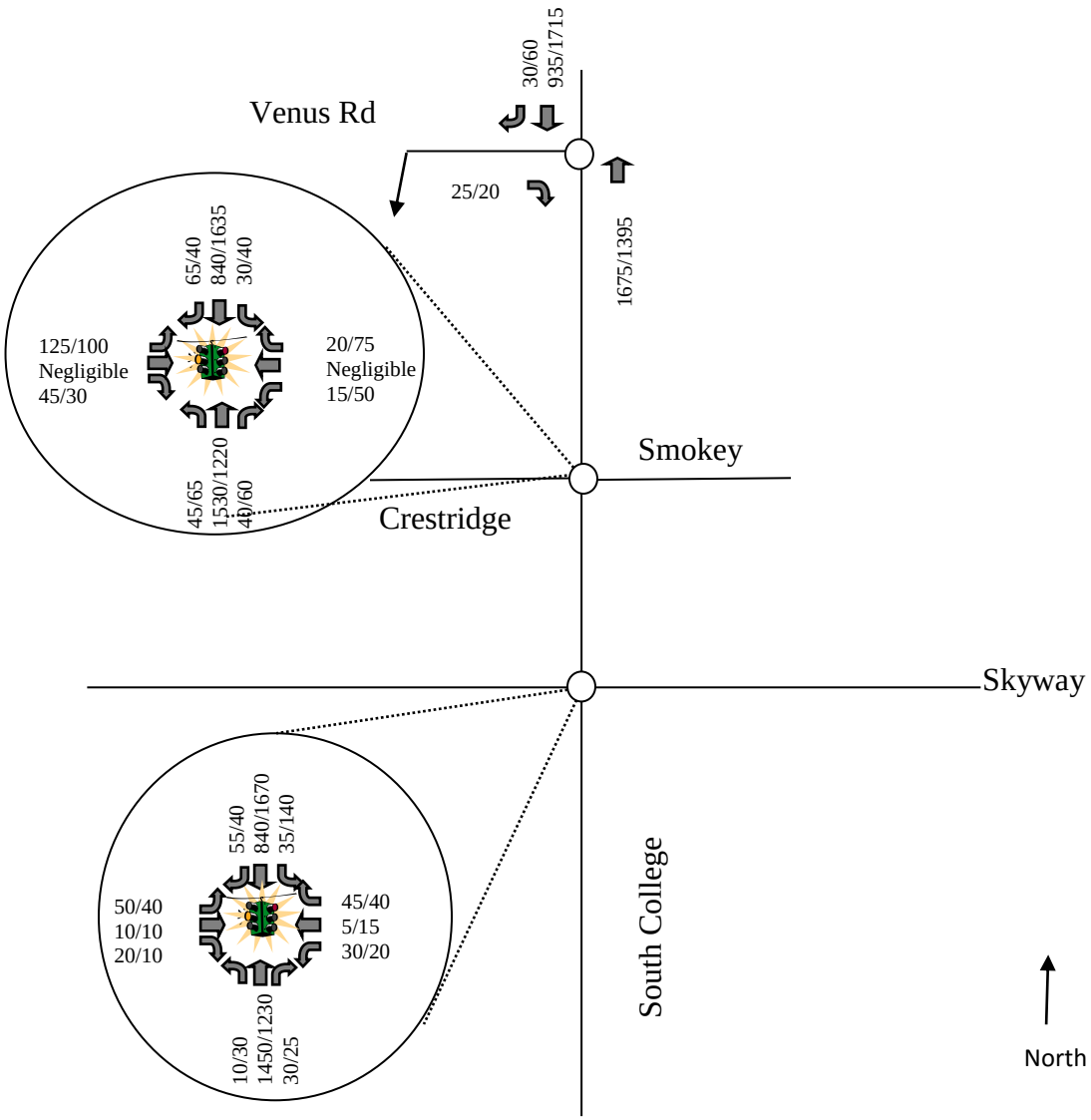

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Figure 10 – Year 2020 Total Traffic – Phase II w/ realigned Crestridge

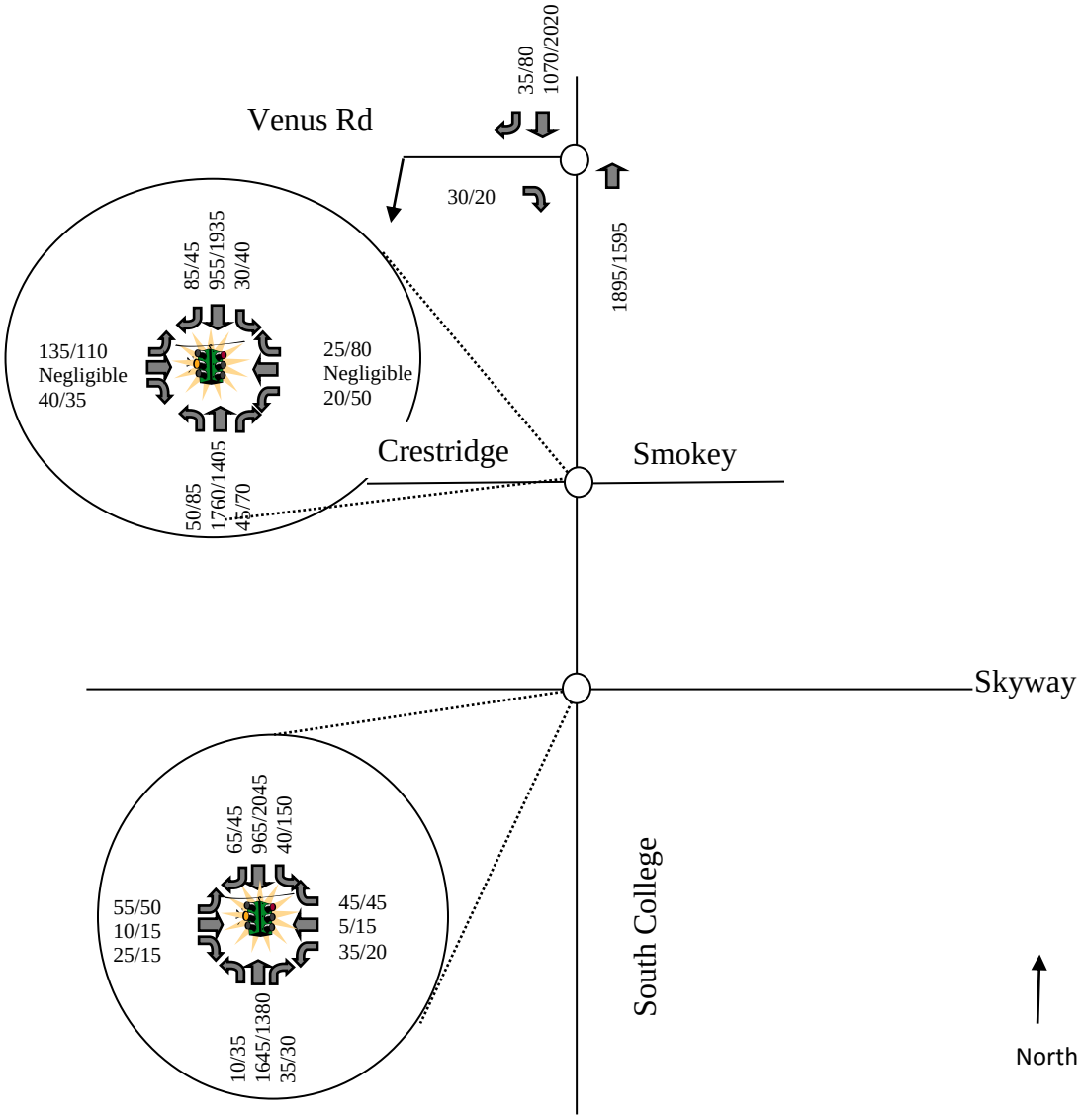

Figure 11 – Year 2036 Total Traffic – Phase III

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Capacity analysis was performed on each of the key intersections for the years 2018, 2020 and for 2036. As stated earlier, it was assumed that in 2018, Crestridge and not yet been realigned. The intersection of College and Skyway functioned well with additional WB left turns added to the intersection.

In the years 2020 and 2036, it was assumed that the key intersection had been realigned. For analysis purposes the following geometry was assumed:

- The NB and SB approaches all had left turn lanes, two through lanes and an auxiliary right turn lane.
- Crestridge approach assumed a left turn lane and a combination thru-right
- The Smokey approach assumed the existing geometry with a combination left-thru-right.
- The intersection operated under a 6-phase traffic signal with protected/permitted left turn phasing for the north and southbound left turns.

The results of the analysis are shown in Tables 7-9 on the following pages. The key intersections operate under acceptable conditions in the short and long range future.

		AM		PM	
Intersection	Movement	LOS	Delay(sec/ vehicle)	LOS	Delay(sec/ vehicle)
COLLEGE/SKYWAY	EBL/T/R (APPROACH)	D	50.3	D	50.8
Signal	APPROACH	D	50.3	D	50.8
	WBL/T	D	42.6	D	44.3
	WBR	D	43.1	D	45.0
	WB APPROACH	D	42.9	D	44.7
	NBL	A	5.4	A	9.3
	NBT	B	10.5	A	9.0
	NBR	A	5.5	A	5.4
	NB APPROACH	B	10.4	A	8.9
	SBL	A	8.0	A	7.5
	SBT	A	6.8	B	11.0
	SBR	A	5.0	A	4.9
	SB APPROACH	A	6.7	B	10.6
	OVERALL	B	11.9	B	12.1
COLLEGE/SMOKEY	WBL/T	D	29.0	E	41.9
STOP SIGN	SBL	C	16.1	B	12.3
	OVERALL	A	0.6	A	1.9
COLLEGE/CRESTRIDGE	EBL/R	C	19.6	F	52.1
STOP SIGN	NBL	B	10.2	C	16.6
	OVERALL	A	0.5	A	1.1
COLLEGE/VENUS (access)	EBR	B	11.9	C	18.0

Table 7 – Year 2018 Total Traffic Analysis

		AM		PM	
Intersection	Movement	LOS	Delay(sec/ vehicle)	LOS	Delay(sec/ vehicle)
COLLEGE/SKYWAY	EBL/T/R (APPROACH)	D	51.5	D	52.1
Signal	APPROACH	D	51.5	D	52.1
	WBL/T	D	47.0	D	4.7
	WBR	D	48.1	D	50.4
	WB APPROACH	D	47.6	D	49.6
	NBL	A	4.0	A	7.2
	NBT	A	8.4	A	7.1
	NBR	A	4.2	A	4.1
	NB APPROACH	A	8.3	A	7.0
	SBL	A	6.4	A	6.0
	SBT	A	5.2	B	8.5
	SBR	A	3.8	A	3.7
	SB APPROACH	A	5.1	A	8.2
	OVERALL	A	9.7	A	9.5
COLLEGE/CRESTRIDGE/SMOKEY	EBL	D	39.1	D	43.5
Signal	EBT/T	D	36.2	D	38.7
	EB APPROACH	D	38.3	D	42.3
	WBL/T/R	D	35.4	D	43.2
	WB APPROACH	D	35.4	D	43.2
	NBL	A	5.0	B	12.4
	NBT	A	9.9	A	9.5
	NBR	A	5.1	A	6.1
	NB APPROACH	A	9.7	A	9.5
	SBL	A	8.6	A	8.8
	SBT	A	7.1	B	1.3
	SBR	A	5.5	A	5.7
	SB APPROACH	A	7.0	B	11.9
	OVERALL	B	11.0	B	13.4
COLLEGE/VENUS (access)	EBR	B	12.4	C	19.4

Table 8 - Year 2020 Total Traffic Analysis

		AM		PM	
Intersection	Movement	LOS	Delay(sec/ vehicle)	LOS	Delay(sec/ vehicle)
COLLEGE/SKYWAY	EBL/T/R (APPROACH)	D	51.2	D	51.6
Signal	APPROACH	D	51.2	D	51.6
	WBL/T	D	46.2	D	47.1
	WBR	D	46.7	D	48.6
	WB APPROACH	D	46.4	D	47.9
	NBL	A	4.6	B	17.3
	NBT	B	10.6	A	8.6
	NBR	A	4.7	A	4.6
	NB APPROACH	B	10.5	A	8.7
	SBL	A	9.4	A	9.0
	SBT	A	6.0	B	14.3
	SBR	A	4.2	A	4.2
	SB APPROACH	A	6.0	A	13.8
	OVERALL	B	11.1	B	13.4
COLLEGE/CRESTRIDGE/SMOKEY	EBL	D	43.5	D	44.7
Signal	EBT/T	D	39.4	D	39.2
	EB APPROACH	D	42.5	D	43.3
	WBL/T/R	D	39.3	D	43.5
	WB APPROACH	D	39.3	D	43.5
	NBL	A	5.4	C	25.7
	NBT	B	12.3	B	10.4
	NBR	A	5.2	A	5.9
	NB APPROACH	B	12.0	B	11.0
	SBL	B	12.1	A	8.5
	SBT	A	7.6	B	19.3
	SBR	A	5.6	A	6.2
	SB APPROACH	A	7.5	B	18.8
	OVERALL	B	12.6	B	17.5
COLLEGE/VENUS (access)	EBR	B	13.4	C	23.9

Table 9 Year 2036 Total Traffic Analysis

6.0 Improvements

6.1. Auxiliary Lanes:

College Avenue is a State Highway under the "NRA" classification category with a speed limit of 55 mph. Based on the *State Highway Access Code*, the following improvements would be required:

- Connection of Venus at College Ave.:
  - Southbound deceleration lane of 600'. This may be difficult to accomplish with the bridge in place over Fossil Creek
  - A southbound acceleration lane from Venus at a length of 960'
  - Some form of median control to prevent the NB left turn and the and the EB left turn from the intersection

- College/Smokey/Crestridge Realignment
    - NB and SB right turn lanes should be provided at the new intersection with at least 600' of deceleration and 60 ' of storage.
    - NB and SB right turn lanes are already present and should be brought up to the code in terms of deceleration.
    - NB and SB acceleration lanes would be required at the intersection that would accommodate "free right turns"

7.0. Multi-Modal Evaluation

Section 4.5.3 (B) of the *Larimer County Urban Area Street Standards* requires that projects undergo a level of service analysis for alternative modes of transportation. The modes of transportation that must meet LOS standards are bicycles, and pedestrians. Transit service LOS must also be analyzed at the time of development review.

7.1 Pedestrian Level of Service

The project area was evaluated for compliance with the pedestrian level of service standards. The project will construct pedestrian facilities an amenities to ensure that on-site pedestrian is safe and pleasant. Sidewalks, crosswalks, appropriate lighting will all be in place as the project develops.

As stated previously, the site is surrounded by older county developments and there are no sidewalks in the immediate vicinity. It is physically impossible to connect to exist to surrounding neighborhoods via pedestrian facilities.

There are sidewalks in the Redtail Ponds development to the north of the site but there isn't an area considered a "pedestrian destination" in the development.

On the northeast corner of the site, a pedestrian/trail connection could be made to the Mason Street Trail that would give additional access to other locations.

The development will provide all pedestrian facilities and amenities in conformance with the City of Fort Collins standards.

7.2 Bicycles Level of Service

The project meets the standard of C for bicycle LOS. This LOS can be achieved if the project makes the connection to the Mason Street Trail to the north of the project. This trail provides access both to the north and to the east of the site.

At one time, there were bike lanes on College Avenue from Harmony Road to Carpenter Road. When CDOT repaved College Avenue in 2015, the bike lanes were removed and never replaced. The bike lanes were originally installed as an "experiment" by the City of Fort Collins under the permission of both CDOT and FHWA. The City was under the obligation to study the area and write a report on the results of the experiment. However, it is unknown if that report was ever written or why the bike lanes were removed. If the bike lanes had remained on College Avenue, then the LOS would be elevated to a B.

C. Transit Level of Service

The project is located to the south of the normal operations of the Transfort Bus Service. However, there are bus stops within walking distance to the north and to the south of the site that will allow people to access the bus system through the Flex routes.

If a connection is made to the Mason Trail, then residents, employees, and customers will have full access to the site via transit. The City of Fort Collins South Transit is located north of the site with easy access via the trail.

ELB Engineering, LLC
5401Taylor Lane
Fort Collins, CO 80528
970-988-7551

8.0 Conclusion

This TIS assessed the impacts associated with the Vineyard-Goldelm ODP/PDP located on the west side of College Avenue in South Fort Collins, CO. The project proposes to construct 250 apartments, 18 thousand square feet of retail/car sales and a 42 thousand square foot church. Based on the analyses, investigations, and findings documented in the various sections of this Transportation Impact Study, the following can be concluded.

- Current operation is acceptable at all of the key intersections. Minor street left turns at Crestridge and Smokey are problematic in the peak hours.
- Operation at the key intersections will be acceptable under full build-out of the project.
- The realignment of Crestridge and Smokey should occur with the first phase of the project when signal warrants are satisfied.
- For the entire project, during the morning peak hour, 294 trip ends can be expected and 298 trip ends can be expected from the project during the afternoon peak hours.
- A new traffic signal will be warranted at Crestridge/College and is in conformance with the *Access Control Plan*.
- The project will be required to provide auxiliary lanes in conformance with the State Highway Access Code as discussed in the report.
- Multi-modal level of service can be satisfied for bikes and transit. LOS for pedestrians cannot be satisfied since there are no sidewalks in the immediate area. The project will construct the sidewalk system in conformance with the City Standards.

Statement of Adequacy: *The transportation facilities will be adequate and available to serve this development as contained in the Larimer County Urban Area Street Standards. All applicable LOS standards will be met since all transportation facilities are in place or will be in place upon issuance of a certificate of occupancy*.

ELB Engineering, LLC
5401Taylor Lane
Fort Collins, CO 80528
970-988-7551

APPENDIX A

Attachment A
Transportation Impact Study
Base Assumptions

Use CDOT OTIS counts North station 5 of Harmony and another N of Trilby with counts back to '99.

Project Information			
Project Name	Vineyard – Golden		
Project Location	US 287 @ Crestridge		
TIS Assumptions			
Type of Study	Full: ✓		Intermediate:
Study Area Boundaries	North: Accesses		South: Accesses
	East:		West:
Study Years	Short Range: 2020		Long Range: 2035
Future Traffic Growth Rate	2% CDOT Model / MPO Model		
Study Intersections	1. ~~All access drives~~	5.	
	2. 287/Crestridge	6.	
	3. 287 / Smoky	7.	
	4.	8.	
Time Period for Study	AM: 7:00-9:00	PM: 4:00-6:00	Sat Noon:
Trip Generation Rates	ITE 9th		
Trip Adjustment Factors	Passby: None	Captive Market:	
Overall Trip Distribution	SEE ATTACHED SKETCH GS/35 ok		
Mode Split Assumptions	None		
Committed Roadway Improvements	☑ Discuss interim/ultimate access @ 287 utilizing ALP None		
Other Traffic Studies	None ☐ Discuss potential traffic on Venus to get to Skyway		
Areas Requiring Special Study	Warrant Study @ US 287 / Crestridge / Smoky		

Date: 25 January 2016

Traffic Engineer: [signature]

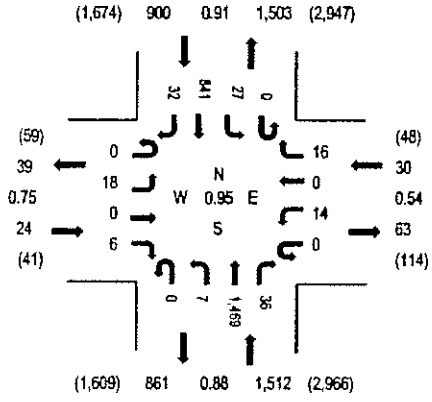
Local Entity Engineer: [signature] 1.26.16

APPENDIX B

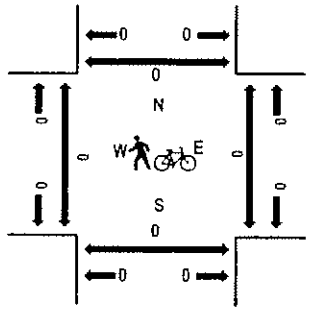
All Traffic Data
(303) 216-2439
www.alltrafficdata.net

Location: 1 COLLEGE AVE & SMOKEY ST AM
Date and Start Time: Tuesday, February 09, 2016
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

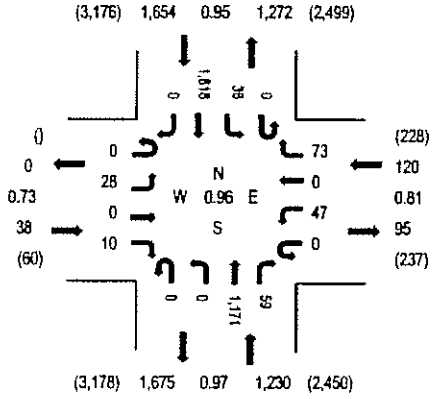
Traffic Counts

Interval Start Time	CRESTRIDGE DR Eastbound				SMOKEY ST Westbound				COLLEGE AVE Northbound				COLLEGE AVE Southbound					Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00:00 AM	0	6	0	0	0	0	0	1	0	0	329	3	0	3	129	4	475	2,327	0	0	0	0
7:15:00 AM	0	2	0	1	0	0	0	1	0	2	369	5	0	7	178	3	568	2,456	0	0	0	0
[illegible]	[illegible]																					
7:45:00 AM	0	4	0	3	0	0	0	3	0	2	361	12	0	6	229	13	633	2,448	0	0	0	0
8:00:00 AM	0	6	0	1	0	7	0	7	0	2	365	10	0	8	190	8	604	2,402	0	0	0	0
8:15:00 AM	0	6	0	2	0	4	0	4	0	2	320	6	0	9	216	9	578		0	0	0	0
8:30:00 AM	0	4	0	0	0	2	0	4	0	2	382	8	0	4	225	2	633		0	0	0	0
8:45:00 AM	0	4	0	0	0	5	0	5	0	2	337	15	0	6	208	5	587		0	0	0	0
Count Total	0	34	0	7	0	21	0	27	0	13	2,886	67	0	47	1,581	46	4,729		0	0	0	0
Peak Hour	0	18	0	6	0	14	0	16	0	7	1,469	36	0	27	841	32	2,466		0	0	0	0

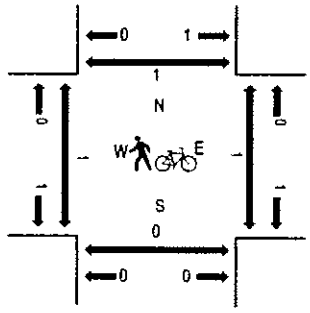
All Traffic Data
Services, Inc.
(303) 216-2439
www.alltrafficdata.net

Location: 1 COLLEGE AVE & SMOKEY ST PM
Date and Start Time: Monday, February 08, 2016
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

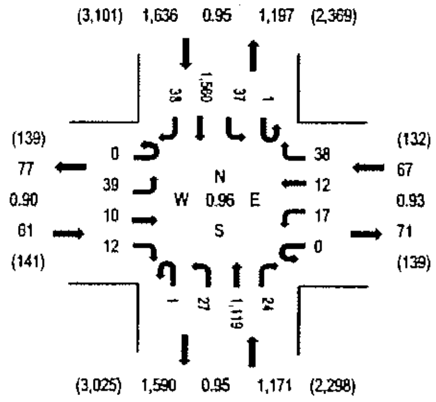
Traffic Counts

Interval Start Time	CRESTRIDGE DR Eastbound				SMOKEY ST Westbound				COLLEGE AVE Northbound				COLLEGE AVE Southbound					Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00:00 PM	0	4	0	2	0	11	0	15	0	0	271	16	0	16	367	0	702	2,937	0	0	0	0
4:15:00 PM	0	0	0	3	0	11	0	20	0	0	292	20	0	24	343	0	713	2,993	0	0	0	0
4:30:00 PM	0	5	0	2	0	12	0	25	0	0	282	21	0	10	375	0	732	3,042	0	0	0	0
[illegible]	[illegible]																					
5:00:00 PM	0	5	0	2	0	14	0	18	0	0	295	6	0	10	408	0	758	2,977	1	1	0	1
5:15:00 PM	0	8	0	5	0	10	0	13	0	0	294	16	0	6	410	0	762		0	0	0	0
5:30:00 PM	0	5	0	2	0	11	0	11	0	0	289	19	0	10	383	0	730		0	0	0	0
5:45:00 PM	0	4	0	2	0	8	0	21	0	0	295	18	0	19	360	0	727		0	0	0	0
Count Total	0	41	0	19	0	88	0	140	0	0	2,318	132	0	105	3,071	0	5,914		1	1	0	1
Peak Hour	0	28	0	10	0	47	0	73	0	0	1,171	59	0	36	1,618	0	3,042					

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

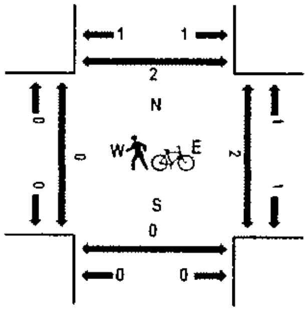
Location: 2 COLLEGE AVE & SKYWAY DR PM
Date and Start Time: Monday, February 08, 2016
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



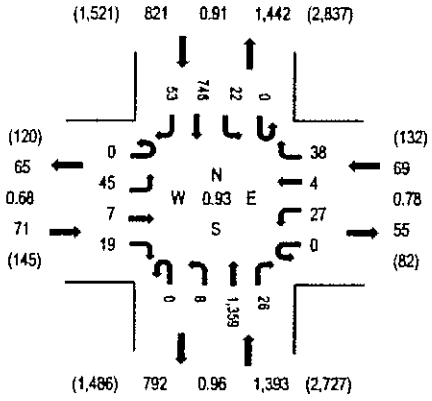
Traffic Counts

Interval Start Time	SKYWAY DR Eastbound U-Turn	Left	Thru	Right	SKYWAY DR Westbound U-Turn	Left	Thru	Right	COLLEGE AVE Northbound U-Turn	Left	Thru	Right	COLLEGE AVE Southbound U-Turn	Left	Thru	Right	Total	Rolling Hour	Pedestrain Crossings West	East	South	North
4:00:00 PM	0	12	3	3	0	7	0	5	0	4	248	4	0	15	343	10	654	2,767	0	0	0	0
4:15:00 PM	0	12	5	8	0	11	2	12	0	4	284	8	0	7	331	10	694	2,846	0	0	0	0
4:30:00 PM	0	14	2	9	0	4	3	7	0	4	267	5	0	10	366	9	700	2,920	0	0	0	0
4:45:00 PM	0	12	2	1	0	5	2	10	0	5	288	11	0	11	360	12	719	2,935	0	2	0	1
5:00:00 PM	0	8	2	3	0	7	2	9	0	5	262	6	0	10	414	5	733	2,905	0	0	0	1
[illegible]	0	[illegible]	[illegible]	4	0	4	[illegible]	[illegible]	1	7	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]		0	0	0	0
5:30:00 PM	0	10	2	4	0	1	4	11	0	10	275	2	1	7	377	11	715		0	0	0	0
5:45:00 PM	0	7	0	5	0	3	0	11	0	3	293	3	0	6	345	13	689		0	0	0	0
Count Total	0	84	20	37	0	42	17	73	1	42	2,211	44	1	75	2,945	80	5,672		0	2	0	2
Peak Hour	0	39	10	12	0	17	12	38	1	27	1,119	24	1	37	1,560	38	2,935		0	0	1	0

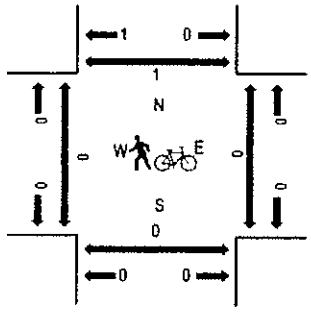
All Traffic Data Services Inc
(303) 216-2439
www.alltrafficdata.net

Location: 2 COLLEGE AVE & SKYWAY DR AM
Date and Start Time: Monday, February 08, 2016
Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk

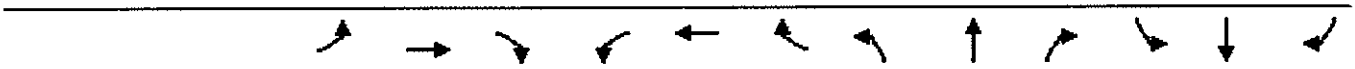


Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	SKYWAY DR Eastbound				SKYWAY DR Westbound				COLLEGE AVE Northbound				COLLEGE AVE Southbound					Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00:00 AM	0	12	0	4	0	6	0	1	0	3	288	0	1	6	118	6	445	2,207	0	0	0	0
7:15:00 AM	0	11	1	7	0	11	0	5	0	4	340	3	3	1	143	8	537	2,328	0	0	1	0
7:30:00 AM	0	15	2	8	0	1	1	10	0	1	363	1	0	3	181	8	594	2,353	0	0	0	0
[illegible]	[illegible]																					
8:00:00 AM	0	9	2	6	0	1	0	12	0	0	352	5	0	7	160	12	566	2,318	0	0	0	1
8:15:00 AM	0	9	2	3	0	13	1	8	0	2	312	8	0	2	186	16	562		0	0	0	0
8:30:00 AM	0	8	2	4	0	9	1	5	0	1	339	12	0	7	199	7	595		0	0	0	0
8:45:00 AM	0	9	0	5	0	10	4	14	0	5	323	3	0	7	200	15	595		0	0	0	0
Count Total	0	92	10	43	0	55	9	68	0	21	2,673	33	4	39	1,388	90	4,525		0	0	1	1
Peak Hour	0	45	7	19	0	27	4	38	0	8	1,359	26	0	22	746	53	2,354		0	0	1	0

Appendix C



Lane Configurations												
Volume (veh/h)	45	7	19	27	4	38	8	1359	26	32	746	53
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	48	8	20	29	4	41	9	1461	28	34	802	57
Adj No. of Lanes	0	1	0	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	110	22	28	163	19	130	524	2614	1169	313	2679	1199
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.01	0.74	0.74	0.03	0.76	0.76
Sat Flow, veh/h	688	263	340	1236	227	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	76	0	0	33	0	41	9	1461	28	34	802	57
Grp Sat Flow(s),veh/h/ln	1291	0	0	1463	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	4.4	0.0	0.0	0.0	0.0	2.7	0.1	20.2	0.5	0.5	7.8	1.0
Cycle Q Clear(g_c), s	6.6	0.0	0.0	2.3	0.0	2.7	0.1	20.2	0.5	0.5	7.8	1.0
Prop In Lane	0.63		0.26	0.88		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	159	0	0	182	0	130	524	2614	1169	313	2679	1199
V/C Ratio(X)	0.48	0.00	0.00	0.18	0.00	0.32	0.02	0.56	0.02	0.11	0.30	0.05
Avail Cap(c_a), veh/h	311	0	0	330	0	295	593	2614	1169	350	2679	1199
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.6	0.0	0.0	47.4	0.0	47.6	3.6	6.4	3.8	5.1	4.2	3.4
Incr Delay (d2), s/veh	2.2	0.0	0.0	0.5	0.0	1.4	0.0	0.9	0.0	0.2	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	0.0	1.0	0.0	1.2	0.1	10.1	0.2	0.2	3.9	0.5
LnGrp Delay(d),s/veh	51.8	0.0	0.0	47.8	0.0	49.0	3.6	7.3	3.9	5.2	4.5	3.4
LnGrp LOS	D			D		D	A	A	A	A	A	A
Approach Vol, veh/h		76			74			1498			893	
Approach Delay, s/veh		51.8			48.5			7.2			4.4	
Approach LOS		D			D			A			A	

Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.7	86.7		14.5	6.7	88.8		14.5
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5
Max Green Setting (Gmax), s	5.5	67.5		20.5	5.5	67.5		20.5
Max Q Clear Time (g_c+I1), s	2.5	22.2		8.6	2.1	9.8		4.7
Green Ext Time (p_c), s	0.0	29.0		0.5	0.0	33.4		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	8.8
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	14	16	1469	36	27	847
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	17	1580	39	29	911

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2093	790	0	0	1580	0
Stage 1	1580	-	-	-	-	-
Stage 2	513	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	45	333	-	-	412	-
Stage 1	155	-	-	-	-	-
Stage 2	566	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	42	333	-	-	412	-
Mov Cap-2 Maneuver	122	-	-	-	-	-
Stage 1	155	-	-	-	-	-
Stage 2	526	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.7	0	0.4
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	184	412	-
HCM Lane V/C Ratio	-	-	0.175	0.07	-
HCM Control Delay (s)	-	-	28.7	14.4	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	0.6	0.2	-

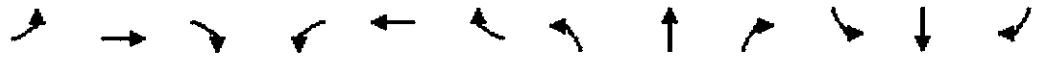
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	18	6	7	1470	841	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	6	8	1581	904	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1709	452	904	0	-	0
Stage 1	904	-	-	-	-	-
Stage 2	805	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	82	555	748	-	-	-
Stage 1	355	-	-	-	-	-
Stage 2	400	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	81	555	748	-	-	-
Mov Cap-2 Maneuver	208	-	-	-	-	-
Stage 1	355	-	-	-	-	-
Stage 2	396	-	-	-	-	-

HCM Control Delay, s	21.3	0	0
HCM LOS	C		

Capacity (veh/h)	748	- 247	-	-
HCM Lane V/C Ratio	0.01	- 0.104	-	-
HCM Control Delay (s)	9.9	- 21.3	-	-
HCM Lane LOS	A	- C	-	-
HCM 95th %tile Q(veh)	0	- 0.3	-	-



Lane Configurations												
Volume (veh/h)	39	10	10	17	12	38	27	1119	24	137	1560	38
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	42	11	11	18	13	41	29	1203	26	147	1677	41
Adj No. of Lanes	0	1	0	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	106	25	16	109	65	112	263	2600	1163	415	2664	1192
Arrive On Green	0.07	0.07	0.07	0.07	0.07	0.07	0.03	0.73	0.73	0.04	0.75	0.75
Sat Flow, veh/h	738	354	227	812	922	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	64	0	0	31	0	41	29	1203	26	147	1677	41
Grp Sat Flow(s),veh/h/ln	1319	0	0	1734	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.7	0.0	0.0	0.0	0.0	2.7	0.4	15.0	0.5	2.2	24.5	0.7
Cycle Q Clear(g_c), s	5.5	0.0	0.0	1.7	0.0	2.7	0.4	15.0	0.5	2.2	24.5	0.7
Prop In Lane	0.66		0.17	0.58		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	147	0	0	174	0	112	263	2600	1163	415	2664	1192
V/C Ratio(X)	0.43	0.00	0.00	0.18	0.00	0.37	0.11	0.46	0.02	0.35	0.63	0.03
Avail Cap(c_a), veh/h	302	0	0	340	0	281	304	2600	1163	431	2664	1192
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.2	0.0	0.0	48.3	0.0	48.8	5.7	5.9	3.9	4.4	6.4	3.4
Incr Delay (d2), s/veh	2.0	0.0	0.0	0.5	0.0	2.0	0.2	0.6	0.0	0.5	1.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	0.0	0.9	0.0	1.2	0.2	7.4	0.2	1.1	12.1	0.3
LnGrp Delay(d),s/veh	52.2	0.0	0.0	48.8	0.0	50.8	5.9	6.5	4.0	4.9	7.5	3.5
LnGrp LOS	D			D		D	A	A	A	A	A	A
Approach Vol, veh/h		64			72			1258			1865	
Approach Delay, s/veh		52.2			49.9			6.4			7.2	
Approach LOS		D			D			A			A	

Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.4	86.3		13.2	8.4	88.3		13.2
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5
Max Green Setting (Gmax), s	5.9	68.1		19.5	5.5	68.5		19.5
Max Q Clear Time (g_c+I1), s	4.2	17.0		7.5	2.4	26.5		4.7
Green Ext Time (p_c), s	0.1	40.8		0.4	0.0	34.8		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	8.7
HCM 2010 LOS	A

Int Delay, s/veh	1.7

Vol, veh/h	47	73	1171	59	36	1628
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	51	78	1259	63	39	1751

Conflicting Flow All	2212	630	0	0	1259	0
Stage 1	1259	-	-	-	-	-
Stage 2	953	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 37	424	-	-	548	-
Stage 1	231	-	-	-	-	-
Stage 2	335	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 34	424	-	-	548	-
Mov Cap-2 Maneuver	136	-	-	-	-	-
Stage 1	231	-	-	-	-	-
Stage 2	311	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	38.4	0	0.3
HCM LOS	E		

Capacity (veh/h)	-	-	232	548	-
HCM Lane V/C Ratio	-	-	0.556	0.071	-
HCM Control Delay (s)	-	-	38.4	12.1	-
HCM Lane LOS	-	-	E	B	-
HCM 95th %tile Q(veh)	-	-	3	0.2	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	28	10	10	1234	1618	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	11	11	1327	1740	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2425	870	1740	0	-	0
Stage 1	1740	-	-	-	-	-
Stage 2	685	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	~ 27	295	358	-	-	-
Stage 1	127	-	-	-	-	-
Stage 2	462	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 26	295	358	-	-	-
Mov Cap-2 Maneuver	98	-	-	-	-	-
Stage 1	127	-	-	-	-	-
Stage 2	448	-	-	-	-	-

HCM Control Delay, s	50.3	0.1	0
HCM LOS	F		

Capacity (veh/h)	358	- 119	-	-
HCM Lane V/C Ratio	0.03	- 0.343	-	-
HCM Control Delay (s)	15.4	- 50.3	-	-
HCM Lane LOS	C	- F	-	-
HCM 95th %tile Q(veh)	0.1	- 1.4	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Appendix D

Warrant 3: Peak Hour

4: Crestridge/College

Intersection Information

	Major Street	Minor Street
Street Name	College	Crestridge
Direction	NB/SB	EB
Number of Lanes	2	1
Approch Speed	55	25

Warrant 3 Met? [redacted]

Details

Low Population? [redacted]

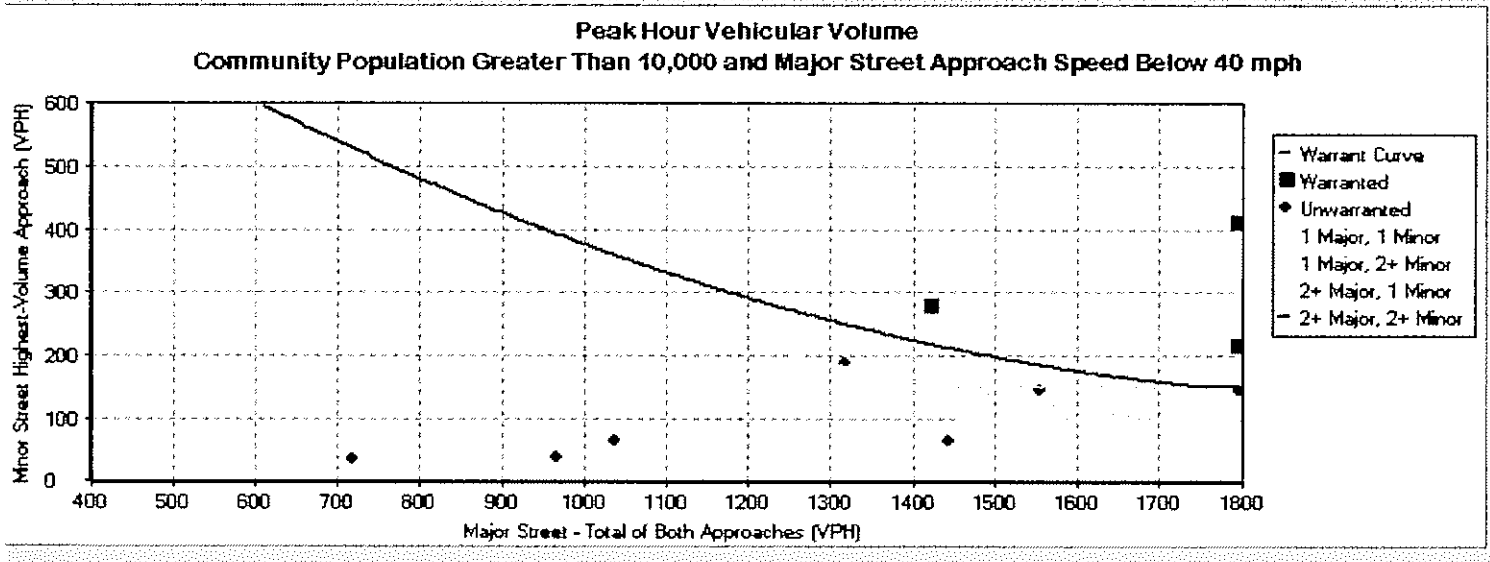
Condition A Met? [redacted] **Condition B Met?** [redacted]

Notes 0 Hours met (1 required) **Notes** 0 Hours met (1 required)

Minor Approach Time Delay Condition Met? [redacted]

Minor Approach Volume Condition Met? Met

Total Entering Intersection Volume Condition Met? [redacted]



Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
7:00	2,299	23
8:00	2,146	27
16:00	2,788	27
17:00	2,835	33

Appendix E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↰↑	↱	↰	↑↑	↱	↰	↑↑	↱
Volume (veh/h)	45	10	20	30	5	40	10	1385	30	35	760	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	48	11	22	32	5	43	11	1489	32	38	817	59
Adj No. of Lanes	0	1	0	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	27	30	163	21	138	514	2590	1159	304	2655	1188
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.01	0.73	0.73	0.03	0.75	0.75
Sat Flow, veh/h	630	307	350	1178	245	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	81	0	0	37	0	43	11	1489	32	38	817	59
Grp Sat Flow(s),veh/h/ln	1287	0	0	1424	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	4.5	0.0	0.0	0.0	0.0	2.8	0.2	21.4	0.6	0.6	8.2	1.1
Cycle Q Clear(g_c), s	7.1	0.0	0.0	2.6	0.0	2.8	0.2	21.4	0.6	0.6	8.2	1.1
Prop In Lane	0.59		0.27	0.86		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	164	0	0	185	0	138	514	2590	1159	304	2655	1188
V/C Ratio(X)	0.49	0.00	0.00	0.20	0.00	0.31	0.02	0.57	0.03	0.12	0.31	0.05
Avail Cap(c_a), veh/h	310	0	0	326	0	295	580	2590	1159	338	2655	1188
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.4	0.0	0.0	47.0	0.0	47.1	3.8	6.8	4.0	5.5	4.5	3.6
Incr Delay (d2), s/veh	2.3	0.0	0.0	0.5	0.0	1.3	0.0	0.9	0.0	0.2	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.0	1.1	0.0	1.3	0.1	10.7	0.3	0.3	4.1	0.5
LnGrp Delay(d),s/veh	51.7	0.0	0.0	47.5	0.0	48.4	3.8	7.8	4.1	5.7	4.8	3.6
LnGrp LOS	D			D		D	A	A	A	A	A	A
Approach Vol, veh/h		81			80			1532			914	
Approach Delay, s/veh		51.7			48.0			7.7			4.7	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.9	86.0		15.1	6.9	88.0		15.1
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5
Max Green Setting (Gmax), s	5.5	67.5		20.5	5.5	67.5		20.5
Max Q Clear Time (g_c+I1), s	2.6	23.4		9.1	2.2	10.2		4.8
Green Ext Time (p_c), s	0.0	29.2		0.5	0.0	34.3		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	9.2
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	15	20	1500	40	30	880
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	22	1613	43	32	946

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2151	806	0	0	1613	0
Stage 1	1613	-	-	-	-	-
Stage 2	538	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	41	325	-	-	400	-
Stage 1	149	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	38	325	-	-	400	-
Mov Cap-2 Maneuver	149	-	-	-	-	-
Stage 1	149	-	-	-	-	-
Stage 2	505	-	-	-	-	-

HCM Control Delay, s	25.2	0	0.5
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	216	400	-
HCM Lane V/C Ratio	-	-	0.174	0.081	-
HCM Control Delay (s)	-	-	25.2	14.8	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	0.6	0.3	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	20	10	10	1520	860	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	11	11	1634	925	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1764	462	925	0	-	0
Stage 1	925	-	-	-	-	-
Stage 2	839	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	75	547	734	-	-	-
Stage 1	347	-	-	-	-	-
Stage 2	384	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	74	547	734	-	-	-
Mov Cap-2 Maneuver	347	-	-	-	-	-
Stage 1	347	-	-	-	-	-
Stage 2	378	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.9	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	734	-	395	-	-
HCM Lane V/C Ratio	0.015	-	0.082	-	-
HCM Control Delay (s)	10	-	14.9	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

HCM 2010 Signalized Intersection Summary
7: College Ave & Skyway

2/20/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	10	10	20	15	40	30	1140	25	140	1590	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	43	11	11	22	16	43	32	1226	27	151	1710	43
Adj No. of Lanes	0	1	0	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	106	26	16	111	67	117	255	2587	1157	405	2646	1184
Arrive On Green	0.07	0.07	0.07	0.07	0.07	0.07	0.03	0.73	0.73	0.05	0.75	0.75
Sat Flow, veh/h	702	352	215	805	908	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	65	0	0	38	0	43	32	1226	27	151	1710	43
Grp Sat Flow(s),veh/h/ln	1269	0	0	1713	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.7	0.0	0.0	0.0	0.0	2.8	0.5	15.7	0.5	2.3	26.0	0.8
Cycle Q Clear(g_c), s	5.8	0.0	0.0	2.2	0.0	2.8	0.5	15.7	0.5	2.3	26.0	0.8
Prop In Lane	0.66		0.17	0.58		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	148	0	0	179	0	117	255	2587	1157	405	2646	1184
V/C Ratio(X)	0.44	0.00	0.00	0.21	0.00	0.37	0.13	0.47	0.02	0.37	0.65	0.04
Avail Cap(c_a), veh/h	278	0	0	318	0	259	286	2587	1157	494	2646	1184
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.1	0.0	0.0	48.1	0.0	48.5	6.2	6.1	4.1	4.7	6.8	3.6
Incr Delay (d2), s/veh	2.0	0.0	0.0	0.6	0.0	1.9	0.2	0.6	0.0	0.6	1.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	0.0	1.1	0.0	1.3	0.3	7.7	0.2	1.2	12.8	0.4
LnGrp Delay(d),s/veh	52.1	0.0	0.0	48.7	0.0	50.4	6.5	6.7	4.1	5.3	8.0	3.7
LnGrp LOS	D			D		D	A	A	A	A	A	A
Approach Vol, veh/h		65			81			1285			1904	
Approach Delay, s/veh		52.1			49.6			6.7			7.7	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.5	85.9		13.7	8.6	87.7		13.7
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5
Max Green Setting (Gmax), s	10.5	65.0		18.0	5.0	70.5		18.0
Max Q Clear Time (g_c+I1), s	4.3	17.7		7.8	2.5	28.0		4.8
Green Ext Time (p_c), s	0.2	39.0		0.4	0.0	35.7		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	9.2
HCM 2010 LOS	A

Int Delay, s/veh	1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	50	75	1110	60	40	1695
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	81	1194	65	43	1823

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2191	597	0	0	1194	0
Stage 1	1194	-	-	-	-	-
Stage 2	997	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 39	446	-	-	580	-
Stage 1	250	-	-	-	-	-
Stage 2	318	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 36	446	-	-	580	-
Mov Cap-2 Maneuver	140	-	-	-	-	-
Stage 1	250	-	-	-	-	-
Stage 2	294	-	-	-	-	-

HCM Control Delay, s	38.1	0	0.3
HCM LOS	E		

Capacity (veh/h)	-	-	238	580	-
HCM Lane V/C Ratio	-	-	0.565	0.074	-
HCM Control Delay (s)	-	-	38.1	11.7	-
HCM Lane LOS	-	-	E	B	-
HCM 95th %tile Q(veh)	-	-	3.1	0.2	-

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.8

Vol, veh/h	30	10	10	1195	1615	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	11	11	1285	1737	5

Conflicting Flow All	2401	868	1737	0	-	0
Stage 1	1737	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	~ 28	296	358	-	-	-
Stage 1	127	-	-	-	-	-
Stage 2	474	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 27	296	358	-	-	-
Mov Cap-2 Maneuver	99	-	-	-	-	-
Stage 1	127	-	-	-	-	-
Stage 2	459	-	-	-	-	-

HCM Control Delay, s	51.5	0.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	358	-	119	-	-
HCM Lane V/C Ratio	0.03	-	0.361	-	-
HCM Control Delay (s)	15.4	-	51.5	-	-
HCM Lane LOS	C	-	F	-	-
HCM 95th %tile Q(veh)	0.1	-	1.5	-	-

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	10	20	35	5	40	10	1415	30	35	775	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	54	11	22	38	5	43	11	1522	32	38	833	59
Adj No. of Lanes	0	1	0	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	114	27	30	175	19	152	499	2558	1144	291	2623	1173
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.01	0.72	0.72	0.03	0.74	0.74
Sat Flow, veh/h	635	283	311	1185	202	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	87	0	0	43	0	43	11	1522	32	38	833	59
Grp Sat Flow(s),veh/h/ln	1229	0	0	1388	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	4.9	0.0	0.0	0.0	0.0	2.8	0.2	23.0	0.6	0.6	8.8	1.1
Cycle Q Clear(g_c), s	8.1	0.0	0.0	3.1	0.0	2.8	0.2	23.0	0.6	0.6	8.8	1.1
Prop In Lane	0.62		0.25	0.88		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	171	0	0	195	0	152	499	2558	1144	291	2623	1173
V/C Ratio(X)	0.51	0.00	0.00	0.22	0.00	0.28	0.02	0.60	0.03	0.13	0.32	0.05
Avail Cap(c_a), veh/h	303	0	0	323	0	295	565	2558	1144	324	2623	1173
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.0	0.0	0.0	46.3	0.0	46.2	4.1	7.4	4.3	6.1	4.8	3.8
Incr Delay (d2), s/veh	2.3	0.0	0.0	0.6	0.0	1.0	0.0	1.0	0.0	0.2	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	0.0	1.2	0.0	1.3	0.1	11.4	0.3	0.3	4.3	0.5
LnGrp Delay(d),s/veh	51.3	0.0	0.0	46.9	0.0	47.2	4.1	8.4	4.4	6.3	5.1	3.9
LnGrp LOS	D			D		D	A	A	A	A	A	A
Approach Vol, veh/h		87			86			1565			930	
Approach Delay, s/veh		51.3			47.0			8.3			5.1	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.9	85.0		16.1	6.9	87.0		16.1
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5
Max Green Setting (Gmax), s	5.5	67.5		20.5	5.5	67.5		20.5
Max Q Clear Time (g_c+I1), s	2.6	25.0		10.1	2.2	10.8		5.1
Green Ext Time (p_c), s	0.0	29.2		0.5	0.0	35.2		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	9.9
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	15	20	1530	40	30	870
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	22	1645	43	32	935

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2177	823	0	0	1645	0
Stage 1	1645	-	-	-	-	-
Stage 2	532	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	39	317	-	-	389	-
Stage 1	143	-	-	-	-	-
Stage 2	553	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	36	317	-	-	389	-
Mov Cap-2 Maneuver	112	-	-	-	-	-
Stage 1	143	-	-	-	-	-
Stage 2	508	-	-	-	-	-

HCM Control Delay, s	30.6	0	0.5
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	178	389	-
HCM Lane V/C Ratio	-	-	0.211	0.083	-
HCM Control Delay (s)	-	-	30.6	15.1	-
HCM Lane LOS	-	-	D	C	-
HCM 95th %tile Q(veh)	-	-	0.8	0.3	-

Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	20	10	10	1550	875	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	11	11	1667	941	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1796	470	941	0	-	0
Stage 1	941	-	-	-	-	-
Stage 2	855	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	72	540	724	-	-	-
Stage 1	340	-	-	-	-	-
Stage 2	377	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	71	540	724	-	-	-
Mov Cap-2 Maneuver	194	-	-	-	-	-
Stage 1	340	-	-	-	-	-
Stage 2	371	-	-	-	-	-

HCM Control Delay, s	21.8	0.1	0
HCM LOS	C		

Capacity (veh/h)	724	- 247	- -
HCM Lane V/C Ratio	0.015	- 0.131	- -
HCM Control Delay (s)	10	- 21.8	- -
HCM Lane LOS	B	- C	- -
HCM 95th %tile Q(veh)	0	- 0.4	- -

Lane Configurations		↔			↕	↱	↰	↑↑	↱	↰	↑↑	↱
Volume (veh/h)	40	10	10	20	15	40	30	1165	25	140	1620	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	43	11	11	22	16	43	32	1253	27	151	1742	43
Adj No. of Lanes	0	1	0	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	106	26	16	111	67	117	249	2587	1157	396	2646	1184
Arrive On Green	0.07	0.07	0.07	0.07	0.07	0.07	0.03	0.73	0.73	0.05	0.75	0.75
Sat Flow, veh/h	702	352	215	805	908	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	65	0	0	38	0	43	32	1253	27	151	1742	43
Grp Sat Flow(s),veh/h/ln	1269	0	0	1713	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.7	0.0	0.0	0.0	0.0	2.8	0.5	16.2	0.5	2.3	26.9	0.8
Cycle Q Clear(g_c), s	5.8	0.0	0.0	2.2	0.0	2.8	0.5	16.2	0.5	2.3	26.9	0.8
Prop In Lane	0.66		0.17	0.58		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	148	0	0	179	0	117	249	2587	1157	396	2646	1184
V/C Ratio(X)	0.44	0.00	0.00	0.21	0.00	0.37	0.13	0.48	0.02	0.38	0.66	0.04
Avail Cap(c_a), veh/h	278	0	0	318	0	259	279	2587	1157	486	2646	1184
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.1	0.0	0.0	48.1	0.0	48.5	6.5	6.2	4.1	4.9	6.9	3.6
Incr Delay (d2), s/veh	2.0	0.0	0.0	0.6	0.0	1.9	0.2	0.7	0.0	0.6	1.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	0.0	1.1	0.0	1.3	0.3	8.1	0.2	1.2	13.3	0.4
LnGrp Delay(d),s/veh	52.1	0.0	0.0	48.7	0.0	50.4	6.7	6.8	4.1	5.5	8.2	3.7
LnGrp LOS	D			D		D	A	A	A	A	A	A
Approach Vol, veh/h		65			81			1312			1936	
Approach Delay, s/veh		52.1			49.6			6.8			7.9	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.5	85.9		13.7	8.6	87.7		13.7
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5
Max Green Setting (Gmax), s	10.5	65.0		18.0	5.0	70.5		18.0
Max Q Clear Time (g_c+I1), s	4.3	18.2		7.8	2.5	28.9		4.8
Green Ext Time (p_c), s	0.2	39.3		0.4	0.0	35.5		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	9.3
HCM 2010 LOS	A

Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	50	75	1220	60	40	1705
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	81	1312	65	43	1833

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2315	656	0	0	1312	0
Stage 1	1312	-	-	-	-	-
Stage 2	1003	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 32	408	-	-	523	-
Stage 1	216	-	-	-	-	-
Stage 2	315	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 29	408	-	-	523	-
Mov Cap-2 Maneuver	126	-	-	-	-	-
Stage 1	216	-	-	-	-	-
Stage 2	289	-	-	-	-	-

HCM Control Delay, s	46.1	0	0.3
HCM LOS	E		

Capacity (veh/h)	-	-	215	523	-
HCM Lane V/C Ratio	-	-	0.625	0.082	-
HCM Control Delay (s)	-	-	46.1	12.5	-
HCM Lane LOS	-	-	E	B	-
HCM 95th %tile Q(veh)	-	-	3.7	0.3	-

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	30	10	10	1280	1680	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	11	11	1376	1806	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2516	903	1806	0	-	0
Stage 1	1806	-	-	-	-	-
Stage 2	710	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	~ 23	280	337	-	-	-
Stage 1	116	-	-	-	-	-
Stage 2	448	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 22	280	337	-	-	-
Mov Cap-2 Maneuver	116	-	-	-	-	-
Stage 1	116	-	-	-	-	-
Stage 2	433	-	-	-	-	-

HCM Control Delay, s	43.3	0.1	0
HCM LOS	E		

Capacity (veh/h)	337	- 136	-	-
HCM Lane V/C Ratio	0.032	- 0.316	-	-
HCM Control Delay (s)	16	- 43.3	-	-
HCM Lane LOS	C	- E	-	-
HCM 95th %tile Q(veh)	0.1	- 1.3	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	30	10	10	1280	1680	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	11	11	1376	1806	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2516	903	1806	0	-	0
Stage 1	1806	-	-	-	-	-
Stage 2	710	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	~ 23	280	337	-	-	-
Stage 1	116	-	-	-	-	-
Stage 2	448	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 22	280	337	-	-	-
Mov Cap-2 Maneuver	90	-	-	-	-	-
Stage 1	116	-	-	-	-	-
Stage 2	433	-	-	-	-	-

HCM Control Delay, s	58.8	0.1	0
HCM LOS	F		

Capacity (veh/h)	337	-	108	-	-
HCM Lane V/C Ratio	0.032	-	0.398	-	-
HCM Control Delay (s)	16	-	58.8	-	-
HCM Lane LOS	C	-	F	-	-
HCM 95th %tile Q(veh)	0.1	-	1.7	-	-

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕	↱	↰	↑↑	↱	↰	↑↑	↱
Volume (veh/h)	55	10	25	35	5	45	10	1630	35	40	895	65
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	59	11	27	38	5	48	11	1753	38	43	962	70
Adj No. of Lanes	0	1	0	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	118	27	36	181	20	164	434	2525	1129	238	2596	1162
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.01	0.71	0.71	0.03	0.73	0.73
Sat Flow, veh/h	634	261	345	1156	195	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	97	0	0	43	0	48	11	1753	38	43	962	70
Grp Sat Flow(s),veh/h/ln	1241	0	0	1351	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.6	0.0	0.0	0.0	0.0	3.1	0.2	30.9	0.8	0.7	10.9	1.4
Cycle Q Clear(g_c), s	8.8	0.0	0.0	3.2	0.0	3.1	0.2	30.9	0.8	0.7	10.9	1.4
Prop In Lane	0.61		0.28	0.88		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	181	0	0	201	0	164	434	2525	1129	238	2596	1162
V/C Ratio(X)	0.54	0.00	0.00	0.21	0.00	0.29	0.03	0.69	0.03	0.18	0.37	0.06
Avail Cap(c_a), veh/h	301	0	0	318	0	295	499	2525	1129	268	2596	1162
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.6	0.0	0.0	45.6	0.0	45.6	4.5	9.0	4.6	8.8	5.4	4.1
Incr Delay (d2), s/veh	2.5	0.0	0.0	0.5	0.0	1.0	0.0	1.6	0.1	0.4	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.0	0.0	1.2	0.0	1.4	0.1	15.4	0.4	0.5	5.5	0.6
LnGrp Delay(d),s/veh	51.1	0.0	0.0	46.1	0.0	46.6	4.5	10.6	4.7	9.2	5.8	4.2
LnGrp LOS	D			D		D	A	B	A	A	A	A
Approach Vol, veh/h		97			91			1802			1075	
Approach Delay, s/veh		51.1			46.4			10.4			5.8	
Approach LOS		D			D			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.2	84.0		16.9	6.9	86.2		16.9
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5
Max Green Setting (Gmax), s	5.5	67.5		20.5	5.5	67.5		20.5
Max Q Clear Time (g_c+I1), s	2.7	32.9		10.8	2.2	12.9		5.2
Green Ext Time (p_c), s	0.0	28.6		0.6	0.0	41.2		0.8

HCM 2010 Ctrl Delay		11.1	
HCM 2010 LOS		B	

Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	25	1760	45	30	1015
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	27	1892	48	32	1091

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2502	946	0	0	1892	0
Stage 1	1892	-	-	-	-	-
Stage 2	610	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	24	262	-	-	312	-
Stage 1	104	-	-	-	-	-
Stage 2	505	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	22	262	-	-	312	-
Mov Cap-2 Maneuver	83	-	-	-	-	-
Stage 1	104	-	-	-	-	-
Stage 2	453	-	-	-	-	-

HCM Control Delay, s	46.3	0	0.5
HCM LOS	E		

Capacity (veh/h)	-	-	134	312	-
HCM Lane V/C Ratio	-	-	0.361	0.103	-
HCM Control Delay (s)	-	-	46.3	17.9	-
HCM Lane LOS	-	-	E	C	-
HCM 95th %tile Q(veh)	-	-	1.5	0.3	-

Int Delay, s/veh	0.4

Vol, veh/h	25	10	10	1765	1010	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	11	11	1898	1086	43

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2056	543	1086	0	-	0
Stage 1	1086	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	48	484	638	-	-	-
Stage 1	285	-	-	-	-	-
Stage 2	328	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	47	484	638	-	-	-
Mov Cap-2 Maneuver	159	-	-	-	-	-
Stage 1	285	-	-	-	-	-
Stage 2	322	-	-	-	-	-

HCM Control Delay, s	27.5	0.1	0
HCM LOS	D		

Capacity (veh/h)	638	- 197	-	-
HCM Lane V/C Ratio	0.017	- 0.191	-	-
HCM Control Delay (s)	10.7	- 27.5	-	-
HCM Lane LOS	B	- D	-	-
HCM 95th %tile Q(veh)	0.1	- 0.7	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕	↱	↰	↑↑	↱	↰	↑↑	↱
Volume (veh/h)	50	15	15	20	15	45	35	1345	30	150	2000	45
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	54	16	16	22	16	48	38	1446	32	161	2151	48
Adj No. of Lanes	0	1	0	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	116	32	22	121	75	140	176	2535	1134	331	2584	1156
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.03	0.72	0.72	0.05	0.73	0.73
Sat Flow, veh/h	706	360	244	784	844	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	86	0	0	38	0	48	38	1446	32	161	2151	48
Grp Sat Flow(s),veh/h/ln	1310	0	0	1628	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.1	0.0	0.0	0.0	0.0	3.1	0.6	21.6	0.6	2.6	46.0	0.9
Cycle Q Clear(g_c), s	7.3	0.0	0.0	2.2	0.0	3.1	0.6	21.6	0.6	2.6	46.0	0.9
Prop In Lane	0.63		0.19	0.58		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	169	0	0	196	0	140	176	2535	1134	331	2584	1156
V/C Ratio(X)	0.51	0.00	0.00	0.19	0.00	0.34	0.22	0.57	0.03	0.49	0.83	0.04
Avail Cap(c_a), veh/h	278	0	0	312	0	259	201	2535	1134	420	2584	1156
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.3	0.0	0.0	46.7	0.0	47.1	15.0	7.5	4.5	7.3	10.2	4.1
Incr Delay (d2), s/veh	2.3	0.0	0.0	0.5	0.0	1.4	0.6	0.9	0.0	1.1	3.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	0.0	1.1	0.0	1.4	0.6	10.8	0.3	1.8	23.3	0.4
LnGrp Delay(d),s/veh	51.6	0.0	0.0	47.1	0.0	48.6	15.6	8.4	4.6	8.4	13.5	4.2
LnGrp LOS	D			D		D	B	A	A	A	B	A
Approach Vol, veh/h		86			86			1516			2360	
Approach Delay, s/veh		51.6			47.9			8.5			13.0	
Approach LOS		D			D			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.5	84.3		15.2	8.9	85.8		15.2
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5
Max Green Setting (Gmax), s	10.5	65.0		18.0	5.0	70.5		18.0
Max Q Clear Time (g_c+I1), s	4.6	23.6		9.3	2.6	48.0		5.1
Green Ext Time (p_c), s	0.2	39.1		0.5	0.0	21.8		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	12.9
HCM 2010 LOS	B

Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	80	50	1405	70	40	1955
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	86	54	1511	75	43	2102

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2648	755	0	0	1511	0
Stage 1	1511	-	-	-	-	-
Stage 2	1137	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 19	351	-	-	439	-
Stage 1	169	-	-	-	-	-
Stage 2	268	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 17	351	-	-	439	-
Mov Cap-2 Maneuver	169	-	-	-	-	-
Stage 1	169	-	-	-	-	-
Stage 2	242	-	-	-	-	-

HCM Control Delay, s	50.3	0	0.3
HCM LOS	F		

Capacity (veh/h)	-	-	211	439	-
HCM Lane V/C Ratio	-	-	0.662	0.098	-
HCM Control Delay (s)	-	-	50.3	14.1	-
HCM Lane LOS	-	-	F	B	-
HCM 95th %tile Q(veh)	-	-	4	0.3	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	35	15	15	1480	1940	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	16	16	1591	2086	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2914	1043	2086	0	-	0
Stage 1	2086	-	-	-	-	-
Stage 2	828	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	~ 12	226	262	-	-	-
Stage 1	81	-	-	-	-	-
Stage 2	389	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 11	226	262	-	-	-
Mov Cap-2 Maneuver	81	-	-	-	-	-
Stage 1	81	-	-	-	-	-
Stage 2	365	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	76.7	0.2	0
HCM LOS	F		

Capacity (veh/h)	262	- 100	-	-
HCM Lane V/C Ratio	0.062	- 0.538	-	-
HCM Control Delay (s)	19.6	- 76.7	-	-
HCM Lane LOS	C	- F	-	-
HCM 95th %tile Q(veh)	0.2	- 2.5	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Appendix F

Warrant 3: Peak Hour

4: Crestridge/College

Intersection Information

	Major Street	Minor Street
Street Name	College	Crestridge
Direction	NB/SB	EB
Number of Lanes	2	1
Approch Speed	55	25

Warrant 3 Met? Yes

Details

Low Population? [redacted]

Condition A Met [redacted]

Condition B Met Yes

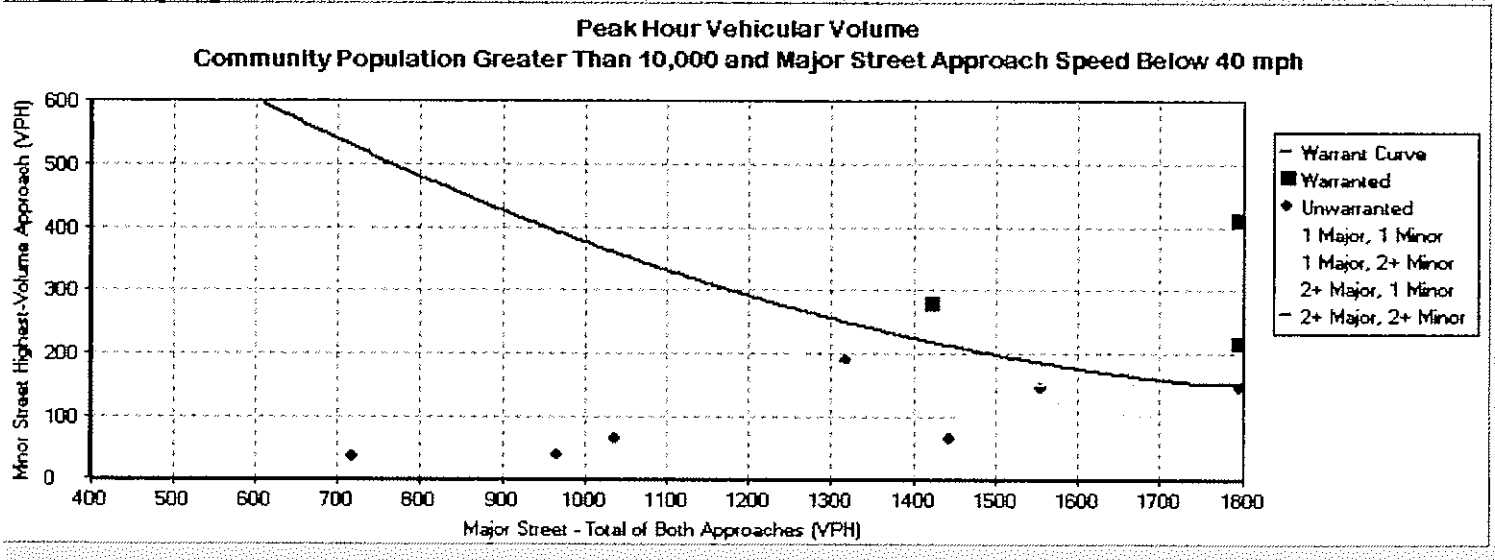
Notes 0 Hours met (1 required)

Notes 2 Hours met (1 required)

Minor Approach Time Delay Condition Met? [redacted]

Minor Approach Volume Condition Met? Met

Total Entering Intersection Volume Condition Met? [redacted]



Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
7:00	2,270	37
7:15	2,425	150
8:15	1,757	19
16:00	2,788	62
16:15	2,882	146
17:15	2,146	26

Appendix G

HCM 2010 Signalized Intersection Summary
7: College Ave & Skyway

2/21/2016

Lane Configurations												
Volume (veh/h)	110	10	2	30	5	40	10	1400	30	35	830	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	118	11	2	32	5	43	11	1505	32	38	892	59
Adj No. of Lanes	0	1	0	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	202	15	2	245	34	208	445	2433	1088	274	2498	1117
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.01	0.69	0.69	0.03	0.71	0.71
Sat Flow, veh/h	1068	113	18	1404	260	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	131	0	0	37	0	43	11	1505	32	38	892	59
Grp Sat Flow(s),veh/h/ln	1199	0	0	1664	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	10.0	0.0	0.0	0.0	0.0	2.7	0.2	25.4	0.7	0.7	10.9	1.3
Cycle Q Clear(g_c), s	12.1	0.0	0.0	2.1	0.0	2.7	0.2	25.4	0.7	0.7	10.9	1.3
Prop In Lane	0.90		0.02	0.86		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	220	0	0	279	0	208	445	2433	1088	274	2498	1117
V/C Ratio(X)	0.60	0.00	0.00	0.13	0.00	0.21	0.02	0.62	0.03	0.14	0.36	0.05
Avail Cap(c_a), veh/h	264	0	0	326	0	259	502	2433	1088	388	2498	1117
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.7	0.0	0.0	42.4	0.0	42.7	5.3	9.3	5.5	7.8	6.4	4.9
Incr Delay (d2), s/veh	2.6	0.0	0.0	0.2	0.0	0.5	0.0	1.2	0.1	0.2	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.0	0.0	1.0	0.0	1.2	0.1	12.7	0.3	0.3	5.3	0.6
LnGrp Delay(d),s/veh	50.3	0.0	0.0	42.6	0.0	43.1	5.4	10.5	5.5	8.0	6.8	5.0
LnGrp LOS	D			D		D	A	B	A	A	A	A
Approach Vol, veh/h		131			80			1548			989	
Approach Delay, s/veh		50.3			42.9			10.4			6.7	
Approach LOS		D			D			B			A	

Assigned Phs	1	2	4	5	6	8		
Phs Duration (G+Y+Rc), s	8.9	81.1	19.9	6.9	83.1	19.9		
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5		
Max Green Setting (Gmax), s	10.5	65.0	18.0	5.0	70.5	18.0		
Max Q Clear Time (g_c+I1), s	2.7	27.4	14.1	2.2	12.9	4.7		
Green Ext Time (p_c), s	0.0	27.2	0.3	0.0	36.2	0.8		

Intersection Summary	
HCM 2010 Ctrl Delay	11.9
HCM 2010 LOS	B

Int Delay, s/veh 0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	15	20	1620	40	30	860
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	22	1742	43	32	925

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2269	871	0	0	1742	0
Stage 1	1742	-	-	-	-	-
Stage 2	527	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	34	294	-	-	357	-
Stage 1	126	-	-	-	-	-
Stage 2	557	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	31	294	-	-	357	-
Mov Cap-2 Maneuver	126	-	-	-	-	-
Stage 1	126	-	-	-	-	-
Stage 2	507	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	29	0	0.5
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	187	357	-
HCM Lane V/C Ratio	-	-	0.201	0.09	-
HCM Control Delay (s)	-	-	29	16.1	-
HCM Lane LOS	-	-	D	C	-
HCM 95th %tile Q(veh)	-	-	0.7	0.3	-

Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	20	30	40	1600	860	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	32	43	1720	925	43

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1871	462	925	0	-	0
Stage 1	925	-	-	-	-	-
Stage 2	946	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	64	547	734	-	-	-
Stage 1	347	-	-	-	-	-
Stage 2	338	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	60	547	734	-	-	-
Mov Cap-2 Maneuver	179	-	-	-	-	-
Stage 1	347	-	-	-	-	-
Stage 2	318	-	-	-	-	-

HCM Control Delay, s	19.6	0.2	0
HCM LOS	C		

Capacity (veh/h)	734	-	300	-	-
HCM Lane V/C Ratio	0.059	-	0.179	-	-
HCM Control Delay (s)	10.2	-	19.6	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.6	-	-

Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	20	0	1670	865	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	22	0	1796	930	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1828	465	930	0	-	0
Stage 1	930	-	-	-	-	-
Stage 2	898	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	68	544	731	-	-	-
Stage 1	344	-	-	-	-	-
Stage 2	358	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	68	544	731	-	-	-
Mov Cap-2 Maneuver	344	-	-	-	-	-
Stage 1	344	-	-	-	-	-
Stage 2	358	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.9	0	0
HCM LOS	B		

Capacity (veh/h)	731	-	544	-	-	
HCM Lane V/C Ratio	-	-	0.04	-	-	
HCM Control Delay (s)	0	-	11.9	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↑	↱	↰	↑↑	↱	↰	↑↑	↱
Volume (veh/h)	85	10	10	20	15	40	30	1175	25	140	1630	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	91	11	11	22	16	43	32	1263	27	151	1753	43
Adj No. of Lanes	0	1	0	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	166	20	14	147	94	181	226	2444	1093	366	2503	1120
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.03	0.69	0.69	0.05	0.71	0.71
Sat Flow, veh/h	938	173	120	836	822	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	113	0	0	38	0	43	32	1263	27	151	1753	43
Grp Sat Flow(s),veh/h/ln	1230	0	0	1658	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	8.1	0.0	0.0	0.0	0.0	2.7	0.6	18.9	0.6	2.7	31.6	0.9
Cycle Q Clear(g_c), s	10.2	0.0	0.0	2.1	0.0	2.7	0.6	18.9	0.6	2.7	31.6	0.9
Prop In Lane	0.81		0.10	0.58		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	200	0	0	242	0	181	226	2444	1093	366	2503	1120
V/C Ratio(X)	0.57	0.00	0.00	0.16	0.00	0.24	0.14	0.52	0.02	0.41	0.70	0.04
Avail Cap(c_a), veh/h	269	0	0	318	0	259	256	2444	1093	456	2503	1120
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.3	0.0	0.0	44.0	0.0	44.3	9.0	8.2	5.4	6.7	9.3	4.8
Incr Delay (d2), s/veh	2.5	0.0	0.0	0.3	0.0	0.7	0.3	0.8	0.0	0.7	1.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	0.0	1.1	0.0	1.2	0.3	9.4	0.3	1.3	15.9	0.4
LnGrp Delay(d),s/veh	50.8	0.0	0.0	44.3	0.0	45.0	9.3	9.0	5.4	7.5	11.0	4.9
LnGrp LOS	D			D		D	A	A	A	A	B	A
Approach Vol, veh/h		113			81			1322			1947	
Approach Delay, s/veh		50.8			44.7			8.9			10.6	
Approach LOS		D			D			A			B	

Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.5	81.5		18.1	8.6	83.3		18.1				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	10.5	65.0		18.0	5.0	70.5		18.0				
Max Q Clear Time (g_c+I1), s	4.7	20.9		12.2	2.6	33.6		4.7				
Green Ext Time (p_c), s	0.2	37.6		0.4	0.0	32.2		0.7				

Intersection Summary		
HCM 2010 Ctrl Delay	12.1	
HCM 2010 LOS	B	

Intersection	
Int Delay, s/veh	1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	50	75	1190	60	40	1595
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	81	1280	65	43	1715

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2224	640	0	0	1280	0
Stage 1	1280	-	-	-	-	-
Stage 2	944	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 37	418	-	-	538	-
Stage 1	225	-	-	-	-	-
Stage 2	339	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 34	418	-	-	538	-
Mov Cap-2 Maneuver	134	-	-	-	-	-
Stage 1	225	-	-	-	-	-
Stage 2	312	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	41.9	0	0.3
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	226	538	-
HCM Lane V/C Ratio	-	-	0.595	0.08	-
HCM Control Delay (s)	-	-	41.9	12.3	-
HCM Lane LOS	-	-	E	B	-
HCM 95th %tile Q(veh)	-	-	3.4	0.3	-

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	30	20	45	1220	1615	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	22	48	1312	1737	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2490	868	1737	0	-	0
Stage 1	1737	-	-	-	-	-
Stage 2	753	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	~ 24	296	358	-	-	-
Stage 1	127	-	-	-	-	-
Stage 2	426	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 21	296	358	-	-	-
Mov Cap-2 Maneuver	93	-	-	-	-	-
Stage 1	127	-	-	-	-	-
Stage 2	369	-	-	-	-	-

HCM Control Delay, s	52.1	0.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	358	-	128	-	-
HCM Lane V/C Ratio	0.135	-	0.42	-	-
HCM Control Delay (s)	16.6	-	52.1	-	-
HCM Lane LOS	C	-	F	-	-
HCM 95th %tile Q(veh)	0.5	-	1.8	-	-

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	10	0	1250	1645	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	11	0	1344	1769	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2441	884	1769	0	-	0
Stage 1	1769	-	-	-	-	-
Stage 2	672	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	26	288	348	-	-	-
Stage 1	122	-	-	-	-	-
Stage 2	469	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	26	288	348	-	-	-
Mov Cap-2 Maneuver	96	-	-	-	-	-
Stage 1	122	-	-	-	-	-
Stage 2	469	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18	0	0
HCM LOS	C		

Capacity (veh/h)	348	-	288	-	-	
HCM Lane V/C Ratio	-	-	0.037	-	-	
HCM Control Delay (s)	0	-	18	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	10	20	30	5	45	10	1450	30	35	840	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	54	11	22	32	5	48	11	1559	32	38	903	59
Adj No. of Lanes	0	1	0	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	114	26	30	169	22	146	471	2572	1151	284	2637	1180
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.01	0.73	0.73	0.03	0.75	0.75
Sat Flow, veh/h	668	283	322	1173	241	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	87	0	0	37	0	48	11	1559	32	38	903	59
Grp Sat Flow(s),veh/h/ln	1272	0	0	1414	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.1	0.0	0.0	0.0	0.0	3.1	0.2	23.7	0.6	0.6	9.6	1.1
Cycle Q Clear(g_c), s	7.7	0.0	0.0	2.6	0.0	3.1	0.2	23.7	0.6	0.6	9.6	1.1
Prop In Lane	0.62		0.25	0.86		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	170	0	0	191	0	146	471	2572	1151	284	2637	1180
V/C Ratio(X)	0.51	0.00	0.00	0.19	0.00	0.33	0.02	0.61	0.03	0.13	0.34	0.05
Avail Cap(c_a), veh/h	281	0	0	299	0	266	537	2572	1151	318	2637	1180
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.2	0.0	0.0	46.5	0.0	46.8	4.0	7.3	4.2	6.2	4.8	3.7
Incr Delay (d2), s/veh	2.4	0.0	0.0	0.5	0.0	1.3	0.0	1.1	0.0	0.2	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	0.0	1.1	0.0	1.4	0.1	11.9	0.3	0.3	4.8	0.5
LnGrp Delay(d),s/veh	51.5	0.0	0.0	47.0	0.0	48.1	4.0	8.4	4.2	6.4	5.2	3.8
LnGrp LOS	D			D		D	A	A	A	A	A	A
Approach Vol, veh/h		87			85			1602			1000	
Approach Delay, s/veh		51.5			47.6			8.3			5.1	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.9	85.4		15.6	6.9	87.5		15.6
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5
Max Green Setting (Gmax), s	5.5	69.5		18.5	5.5	69.5		18.5
Max Q Clear Time (g_c+I1), s	2.6	25.7		9.7	2.2	11.6		5.1
Green Ext Time (p_c), s	0.0	31.3		0.5	0.0	37.8		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	9.7
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	125	5	45	15	5	20	45	1530	40	30	840	65
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	134	5	48	16	5	22	48	1645	43	32	903	70
Adj No. of Lanes	1	1	0	0	1	0	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	253	18	171	103	44	94	461	2349	1051	245	2319	1038
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.04	0.66	0.66	0.03	0.66	0.66
Sat Flow, veh/h	1378	152	1455	395	371	803	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	134	0	53	43	0	0	48	1645	43	32	903	70
Grp Sat Flow(s),veh/h/ln	1378	0	1606	1569	0	0	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.7	0.0	2.6	0.0	0.0	0.0	0.7	25.7	0.8	0.5	10.4	1.4
Cycle Q Clear(g_c), s	7.7	0.0	2.6	2.0	0.0	0.0	0.7	25.7	0.8	0.5	10.4	1.4
Prop In Lane	1.00		0.91	0.37		0.51	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	253	0	189	241	0	0	461	2349	1051	245	2319	1038
V/C Ratio(X)	0.53	0.00	0.28	0.18	0.00	0.00	0.10	0.70	0.04	0.13	0.39	0.07
Avail Cap(c_a), veh/h	412	0	375	416	0	0	494	2735	1224	293	2735	1224
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.4	0.0	35.4	35.1	0.0	0.0	4.9	9.3	5.1	8.4	7.0	5.5
Incr Delay (d2), s/veh	1.7	0.0	0.8	0.4	0.0	0.0	0.1	0.7	0.0	0.2	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	1.2	1.0	0.0	0.0	0.4	12.6	0.4	0.3	5.1	0.6
LnGrp Delay(d),s/veh	39.1	0.0	36.2	35.4	0.0	0.0	5.0	9.9	5.1	8.6	7.1	5.5
LnGrp LOS	D		D	D			A	A	A	A	A	A
Approach Vol, veh/h		187			43			1736			1005	
Approach Delay, s/veh		38.3			35.4			9.7			7.0	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.2	63.8		15.8	9.0	63.1		15.8
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5
Max Green Setting (Gmax), s	5.1	67.9		20.5	5.1	67.9		20.5
Max Q Clear Time (g_c+I1), s	2.5	27.7		9.7	2.7	12.4		4.0
Green Ext Time (p_c), s	0.0	30.7		0.7	0.0	38.8		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	11.0
HCM 2010 LOS	B

Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	25	0	1675	935	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	27	0	1801	1005	32

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1906	503	1005	0	-	0
Stage 1	1005	-	-	-	-	-
Stage 2	901	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	60	514	685	-	-	-
Stage 1	315	-	-	-	-	-
Stage 2	357	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	60	514	685	-	-	-
Mov Cap-2 Maneuver	315	-	-	-	-	-
Stage 1	315	-	-	-	-	-
Stage 2	357	-	-	-	-	-

HCM Control Delay, s	12.4	0	0
HCM LOS	B		

Capacity (veh/h)	685	-	514	-	-	
HCM Lane V/C Ratio	-	-	0.052	-	-	
HCM Control Delay (s)	0	-	12.4	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.2	-	-	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	10	10	20	15	40	30	1230	25	140	1670	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	43	11	11	22	16	43	32	1323	27	151	1796	43
Adj No. of Lanes	0	1	0	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	106	26	16	111	67	117	238	2587	1157	375	2646	1184
Arrive On Green	0.07	0.07	0.07	0.07	0.07	0.07	0.03	0.73	0.73	0.05	0.75	0.75
Sat Flow, veh/h	702	352	215	805	908	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	65	0	0	38	0	43	32	1323	27	151	1796	43
Grp Sat Flow(s),veh/h/ln	1269	0	0	1713	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.7	0.0	0.0	0.0	0.0	2.8	0.5	17.7	0.5	2.3	28.6	0.8
Cycle Q Clear(g_c), s	5.8	0.0	0.0	2.2	0.0	2.8	0.5	17.7	0.5	2.3	28.6	0.8
Prop In Lane	0.66		0.17	0.58		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	148	0	0	179	0	117	238	2587	1157	375	2646	1184
V/C Ratio(X)	0.44	0.00	0.00	0.21	0.00	0.37	0.13	0.51	0.02	0.40	0.68	0.04
Avail Cap(c_a), veh/h	278	0	0	318	0	259	273	2587	1157	461	2646	1184
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.1	0.0	0.0	48.1	0.0	48.5	7.0	6.4	4.1	5.3	7.1	3.6
Incr Delay (d2), s/veh	2.0	0.0	0.0	0.6	0.0	1.9	0.3	0.7	0.0	0.7	1.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	0.0	1.1	0.0	1.3	0.3	8.7	0.2	1.2	14.2	0.4
LnGrp Delay(d),s/veh	52.1	0.0	0.0	48.7	0.0	50.4	7.2	7.1	4.1	6.0	8.5	3.7
LnGrp LOS	D			D		D	A	A	A	A	A	A
Approach Vol, veh/h		65			81			1382			1990	
Approach Delay, s/veh		52.1			49.6			7.0			8.2	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.5	85.9		13.7	8.6	87.7		13.7
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5
Max Green Setting (Gmax), s	10.3	65.2		18.0	5.3	70.2		18.0
Max Q Clear Time (g_c+I1), s	4.3	19.7		7.8	2.5	30.6		4.8
Green Ext Time (p_c), s	0.2	39.5		0.4	0.0	34.9		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	9.5
HCM 2010 LOS	A

Lane Configurations												
Volume (veh/h)	100	5	30	50	5	75	65	1220	60	140	1635	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	108	5	32	54	5	81	70	1312	65	151	1758	43
Adj No. of Lanes	1	1	0	0	1	0	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	215	27	175	111	21	111	236	2320	1038	340	2344	1049
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.04	0.66	0.66	0.05	0.66	0.66
Sat Flow, veh/h	1306	218	1398	479	167	886	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	108	0	37	140	0	0	70	1312	65	151	1758	43
Grp Sat Flow(s),veh/h/ln	1306	0	1616	1532	0	0	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	1.0	0.0	2.0	6.4	0.0	0.0	1.2	19.9	1.4	2.7	32.6	0.9
Cycle Q Clear(g_c), s	9.5	0.0	2.0	8.5	0.0	0.0	1.2	19.9	1.4	2.7	32.6	0.9
Prop In Lane	1.00		0.86	0.39		0.58	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	215	0	203	243	0	0	236	2320	1038	340	2344	1049
V/C Ratio(X)	0.50	0.00	0.18	0.58	0.00	0.00	0.30	0.57	0.06	0.44	0.75	0.04
Avail Cap(c_a), veh/h	298	0	305	338	0	0	277	2339	1047	438	2477	1108
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.7	0.0	38.3	41.1	0.0	0.0	11.7	9.2	6.1	7.9	11.1	5.7
Incr Delay (d2), s/veh	1.8	0.0	0.4	2.1	0.0	0.0	0.7	0.3	0.0	0.9	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.0	0.9	3.8	0.0	0.0	0.9	9.8	0.6	1.4	16.0	0.4
LnGrp Delay(d),s/veh	43.5	0.0	38.7	43.2	0.0	0.0	12.4	9.5	6.1	8.8	12.3	5.7
LnGrp LOS	D		D	D			B	A	A	A	B	A
Approach Vol, veh/h		145			140			1447			1952	
Approach Delay, s/veh		42.3			43.2			9.5			11.9	
Approach LOS		D			D			A			B	

Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.4	69.7		17.8	9.8	70.3		17.8
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5
Max Green Setting (Gmax), s	10.3	64.7		18.5	6.5	68.5		18.5
Max Q Clear Time (g_c+I1), s	4.7	21.9		11.5	3.2	34.6		10.5
Green Ext Time (p_c), s	0.2	37.2		0.8	0.0	30.2		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	13.4
HCM 2010 LOS	B

Int Delay, s/veh	0.1

Vol, veh/h	0	20	0	1395	1715	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	22	0	1500	1844	65

Conflicting Flow All	2594	922	1844	0	-	0
Stage 1	1844	-	-	-	-	-
Stage 2	750	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	20	272	326	-	-	-
Stage 1	111	-	-	-	-	-
Stage 2	427	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	20	272	326	-	-	-
Mov Cap-2 Maneuver	86	-	-	-	-	-
Stage 1	111	-	-	-	-	-
Stage 2	427	-	-	-	-	-

HCM Control Delay, s	19.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	326	-	272	-	-
HCM Lane V/C Ratio	-	-	0.079	-	-
HCM Control Delay (s)	0	-	19.4	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Lane Configurations		↔			↕	↱	↰	↑↑	↱	↰	↑↑	↱
Volume (veh/h)	55	10	25	35	5	45	10	1645	35	40	965	65
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	59	11	27	38	5	48	11	1769	38	43	1038	70
Adj No. of Lanes	0	1	0	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	118	27	35	180	20	163	405	2527	1130	235	2599	1163
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.01	0.71	0.71	0.03	0.73	0.73
Sat Flow, veh/h	632	260	344	1154	195	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	97	0	0	43	0	48	11	1769	38	43	1038	70
Grp Sat Flow(s),veh/h/ln	1235	0	0	1349	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.7	0.0	0.0	0.0	0.0	3.1	0.2	31.4	0.8	0.7	12.1	1.4
Cycle Q Clear(g_c), s	8.9	0.0	0.0	3.2	0.0	3.1	0.2	31.4	0.8	0.7	12.1	1.4
Prop In Lane	0.61		0.28	0.88		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	180	0	0	200	0	163	405	2527	1130	235	2599	1163
V/C Ratio(X)	0.54	0.00	0.00	0.21	0.00	0.30	0.03	0.70	0.03	0.18	0.40	0.06
Avail Cap(c_a), veh/h	268	0	0	286	0	259	462	2527	1130	268	2599	1163
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.7	0.0	0.0	45.7	0.0	45.7	4.6	9.0	4.6	9.0	5.5	4.1
Incr Delay (d2), s/veh	2.5	0.0	0.0	0.5	0.0	1.0	0.0	1.6	0.1	0.4	0.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.0	0.0	1.2	0.0	1.4	0.1	15.6	0.4	0.5	6.1	0.6
LnGrp Delay(d),s/veh	51.2	0.0	0.0	46.2	0.0	46.7	4.6	10.6	4.7	9.4	6.0	4.2
LnGrp LOS	D			D		D	A	B	A	A	A	A
Approach Vol, veh/h		97			91			1818			1151	
Approach Delay, s/veh		51.2			46.4			10.5			6.0	
Approach LOS		D			D			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.2	84.0		16.8	6.9	86.3		16.8
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5
Max Green Setting (Gmax), s	5.7	69.8		18.0	5.0	70.5		18.0
Max Q Clear Time (g_c+I1), s	2.7	33.4		10.9	2.2	14.1		5.2
Green Ext Time (p_c), s	0.0	30.6		0.5	0.0	43.6		0.7

HCM 2010 Ctrl Delay			11.1									
HCM 2010 LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	135	5	40	20	5	25	50	1760	45	30	955	85
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	145	5	43	22	5	27	54	1892	48	32	1027	91
Adj No. of Lanes	1	1	0	0	1	0	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	251	20	174	108	37	94	413	2407	1077	198	2372	1061
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.04	0.68	0.68	0.03	0.67	0.67
Sat Flow, veh/h	1372	168	1441	467	308	775	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	145	0	48	54	0	0	54	1892	48	32	1027	91
Grp Sat Flow(s),veh/h/ln	1372	0	1608	1550	0	0	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	6.4	0.0	2.6	0.0	0.0	0.0	0.9	35.8	1.0	0.5	13.1	2.0
Cycle Q Clear(g_c), s	9.2	0.0	2.6	2.8	0.0	0.0	0.9	35.8	1.0	0.5	13.1	2.0
Prop In Lane	1.00		0.90	0.41		0.50	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	251	0	194	239	0	0	413	2407	1077	198	2372	1061
V/C Ratio(X)	0.58	0.00	0.25	0.23	0.00	0.00	0.13	0.79	0.04	0.16	0.43	0.09
Avail Cap(c_a), veh/h	346	0	306	343	0	0	436	2547	1139	236	2543	1138
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.4	0.0	38.8	38.8	0.0	0.0	5.2	10.7	5.1	11.7	7.5	5.6
Incr Delay (d2), s/veh	2.1	0.0	0.7	0.5	0.0	0.0	0.1	1.6	0.0	0.4	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	0.0	1.2	1.4	0.0	0.0	0.4	17.6	0.4	0.4	6.3	0.8
LnGrp Delay(d),s/veh	43.5	0.0	39.4	39.3	0.0	0.0	5.4	12.3	5.2	12.1	7.6	5.6
LnGrp LOS	D		D	D			A	B	A	B	A	A
Approach Vol, veh/h		193			54			1994			1150	
Approach Delay, s/veh		42.5			39.3			12.0			7.5	
Approach LOS		D			D			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.4	71.6		17.2	9.3	70.7		17.2
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5
Max Green Setting (Gmax), s	5.0	70.0		18.5	5.1	69.9		18.5
Max Q Clear Time (g_c+I1), s	2.5	37.8		11.2	2.9	15.1		4.8
Green Ext Time (p_c), s	0.0	28.4		0.6	0.0	44.6		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	12.6
HCM 2010 LOS	B

Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	30	0	1895	1070	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	32	0	2038	1151	86

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2170	575	1151	0	-	0
Stage 1	1151	-	-	-	-	-
Stage 2	1019	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	40	461	603	-	-	-
Stage 1	263	-	-	-	-	-
Stage 2	309	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	40	461	603	-	-	-
Mov Cap-2 Maneuver	148	-	-	-	-	-
Stage 1	263	-	-	-	-	-
Stage 2	309	-	-	-	-	-

HCM Control Delay, s	13.4	0	0
HCM LOS	B		

Capacity (veh/h)	603	- 461	-	-
HCM Lane V/C Ratio	-	- 0.07	-	-
HCM Control Delay (s)	0	- 13.4	-	-
HCM Lane LOS	A	- B	-	-
HCM 95th %tile Q(veh)	0	- 0.2	-	-

Lane Configurations		↔			↕	↱	↰	↑↑	↱	↰	↑↑	↱
Volume (veh/h)	50	15	15	20	15	45	35	1380	30	150	2045	45
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	54	16	16	22	16	48	38	1484	32	161	2199	48
Adj No. of Lanes	0	1	0	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	116	32	22	121	75	140	169	2535	1134	321	2584	1156
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.03	0.72	0.72	0.05	0.73	0.73
Sat Flow, veh/h	706	360	244	784	844	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	86	0	0	38	0	48	38	1484	32	161	2199	48
Grp Sat Flow(s),veh/h/ln	1310	0	0	1628	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.1	0.0	0.0	0.0	0.0	3.1	0.6	22.5	0.6	2.6	48.7	0.9
Cycle Q Clear(g_c), s	7.3	0.0	0.0	2.2	0.0	3.1	0.6	22.5	0.6	2.6	48.7	0.9
Prop In Lane	0.63		0.19	0.58		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	169	0	0	196	0	140	169	2535	1134	321	2584	1156
V/C Ratio(X)	0.51	0.00	0.00	0.19	0.00	0.34	0.22	0.59	0.03	0.50	0.85	0.04
Avail Cap(c_a), veh/h	278	0	0	312	0	259	199	2535	1134	407	2584	1156
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.3	0.0	0.0	46.7	0.0	47.1	16.6	7.6	4.5	7.8	10.6	4.1
Incr Delay (d2), s/veh	2.3	0.0	0.0	0.5	0.0	1.4	0.7	1.0	0.0	1.2	3.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	0.0	1.1	0.0	1.4	0.7	11.3	0.3	1.9	24.6	0.4
LnGrp Delay(d),s/veh	51.6	0.0	0.0	47.1	0.0	48.6	17.3	8.6	4.6	9.0	14.3	4.2
LnGrp LOS	D			D		D	B	A	A	A	B	A
Approach Vol, veh/h		86			86			1554			2408	
Approach Delay, s/veh		51.6			47.9			8.7			13.8	
Approach LOS		D			D			A			B	

Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.5	84.3		15.2	8.9	85.8		15.2
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5
Max Green Setting (Gmax), s	10.3	65.2		18.0	5.3	70.2		18.0
Max Q Clear Time (g_c+I1), s	4.6	24.5		9.3	2.6	50.7		5.1
Green Ext Time (p_c), s	0.2	38.7		0.5	0.0	19.0		0.6

Intersection Summary		
HCM 2010 Ctrl Delay	13.4	
HCM 2010 LOS	B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	110	5	35	50	5	80	85	1405	70	40	1935	45
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	118	5	38	54	5	86	91	1511	75	43	2081	48
Adj No. of Lanes	1	1	0	0	1	0	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	221	25	192	111	22	123	183	2360	1056	267	2321	1038
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.05	0.67	0.67	0.03	0.66	0.66
Sat Flow, veh/h	1300	187	1424	457	166	909	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	118	0	43	145	0	0	91	1511	75	43	2081	48
Grp Sat Flow(s),veh/h/ln	1300	0	1611	1532	0	0	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	1.9	0.0	2.4	6.5	0.0	0.0	1.6	25.1	1.7	0.8	49.6	1.1
Cycle Q Clear(g_c), s	10.9	0.0	2.4	9.0	0.0	0.0	1.6	25.1	1.7	0.8	49.6	1.1
Prop In Lane	1.00		0.88	0.37		0.59	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	221	0	218	256	0	0	183	2360	1056	267	2321	1038
V/C Ratio(X)	0.53	0.00	0.20	0.57	0.00	0.00	0.50	0.64	0.07	0.16	0.90	0.05
Avail Cap(c_a), veh/h	283	0	295	328	0	0	217	2360	1056	386	2401	1074
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.7	0.0	38.8	41.6	0.0	0.0	23.6	9.8	5.9	8.2	14.5	6.2
Incr Delay (d2), s/veh	2.0	0.0	0.4	2.0	0.0	0.0	2.1	0.6	0.0	0.3	4.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	1.1	4.0	0.0	0.0	1.8	12.4	0.7	0.4	25.5	0.5
LnGrp Delay(d),s/veh	44.7	0.0	39.2	43.5	0.0	0.0	25.7	10.4	5.9	8.5	19.3	6.2
LnGrp LOS	D		D	D			C	B	A	A	B	A
Approach Vol, veh/h		161			145			1677			2172	
Approach Delay, s/veh		43.3			43.5			11.0			18.8	
Approach LOS		D			D			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.0	72.8		19.1	10.1	71.7		19.1
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5
Max Green Setting (Gmax), s	10.3	64.7		18.5	6.5	68.5		18.5
Max Q Clear Time (g_c+I1), s	2.8	27.1		12.9	3.6	51.6		11.0
Green Ext Time (p_c), s	0.0	35.7		0.7	0.0	14.6		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	17.5
HCM 2010 LOS	B

Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	20	0	1595	2020	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	22	0	1715	2172	86

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	3030	1086	2172	0	-	0
Stage 1	2172	-	-	-	-	-
Stage 2	858	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	10	212	242	-	-	-
Stage 1	73	-	-	-	-	-
Stage 2	376	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	10	212	242	-	-	-
Mov Cap-2 Maneuver	73	-	-	-	-	-
Stage 1	73	-	-	-	-	-
Stage 2	376	-	-	-	-	-

HCM Control Delay, s	23.9	0	0
HCM LOS	C		

Capacity (veh/h)	242	- 212	-	-
HCM Lane V/C Ratio	-	- 0.101	-	-
HCM Control Delay (s)	0	- 23.9	-	-
HCM Lane LOS	A	- C	-	-
HCM 95th %tile Q(veh)	0	- 0.3	-	-

Community Development and Neighborhood Services
281 North College Avenue
PO Box 580
Fort Collins, CO 80522

970.221.6750
970.224.6134 - fax
fcgov.com

April 15, 2016

Michael Chalona
Logan Simpson
123 N College Ave
Suite 206
Fort Collins, CO 80524

Re: Vineyard/Goldelm ODP
Description of project: This is a request to master plan and develop three parcels on S College Ave (Parcel #'s 9611100901, 9611100003 & 9611100031). This coordinated development of this site will result in the construction of a shared private drive connecting the intersection of Venus Ave and Crestridge St with a right in and right out to S. College Ave north of the property. A new lot will also be created through this development on the east side of the private drive. The parcels are located in the Medium Density Mixed-Use Neighborhood (MMN) and Service Commercial (CS) zone districts. This proposal will be subject to Planning & Zoning Board (Type II) review.

Please see the following summary of comments regarding the project request referenced above. The comments offered informally by staff during the Conceptual Review will assist you in preparing the detailed components of the project application. Modifications and additions to these comments may be made at the time of formal review of this project. If you have any questions regarding these comments or the next steps in the review process, you may contact the individual commenter or direct your questions through the Project Planner, Jason Holland, at 970-224-6126 or jholland@fcgov.com.

Comment Summary:

Department: Zoning

Contact: Marcus Glasgow, 970-416-2338, mglasgow@fcgov.com

1. LUC 4.6(D)(3) Buildings shall be limited to maximum of Three (3) stories. MMN Zoning district.
2. Any residential use consisting in whole or in part of multi-family dwellings that contain more than fifty (50) dwelling units, or more than 75 bedrooms would be an allowed use for each zone district subject to a Planning and Zoning Board review.
   MMN- LUC 4.6(B)(3)(a)3.
   CS- LUC 4.22(B)(3)(a)1.
3. Vehicle sales and leasing establishments for cars and light trucks is an allowed use only in the CS zone district subject to an Administrative review.
   LUC 4.22(B)(2)(c)14.
4. Places of worship or assembly is an allowed use in each zone district subject to an Administrative review.
   MMN- LUC 4.6(B)(2)(b)1.
   CS- LUC 4.22(B)(2)(b)1.

5. Please show Pedestrian/Bicycle routes and access points.

6. Is there plans for open space or parks? Plan shows 1,554,220 sq. ft. of total space with 620,500 sq. ft. of that being impervious.
7. Street trees are required to be installed along all abutting right-of-way.

8. The use of the property of uses not approved prior to Development Review is prohibited. (Vehicle storage)

Department: Water-Wastewater Engineering

Contact: Shane Boyle, 970-221-6339, sboyle@fcgov.com

1. 1. This project site is located within the Fort Collins-Loveland Water District and the South Fort Collins Sanitation District. Please contact them for any water and sewer requirements.

Department: Stormwater Engineering

Contact: Heidi Hansen, 970-221-6854, hhansen@fcgov.com

1. 1. A portion of this property is located in the City regulated, 100-year Fossil Creek floodway. Any development within the floodway must obtain a floodplain use permit and comply with the safety regulations of Chapter 10 of City Municipal Code. A FEMA Flood Risk Map is attached.
2. 2. Per Sections 10-102 and 10-104 of the City Municpal Code, construction of residential and/or mixed-use structures is prohibited within the 100-year floodway.
3. 3. Construction of non-residential and/or accessory structures is allowed in the floodway provided the structures meet all the requirements of Chapter 10 including is allowed as long as the lowest finished floor of the building, and all duct work, heating, ventilation, electrical systems, etc. are elevated or floodproofed to the Regulatory Flood Protection Elevation (RFPE). The RFPE is the Base Flood Elevation (BFE) plus an additional amount for safety. RFPE = BFE + 18-inches for non-residential structures and RFPE=BFE + 12-inches for accessory structure. A no-rise certification as described below is also required for any new structure in the floodway.
4. 4. If floodproofing is chosen as on option rather than elevating the structure, all the requirements of Section 10-38 of City Code must be met. Floodproofing Guidelines as well as a FEMA Floodproofing Certificate (which will be required before construction begins, and again after construction is complete and prior to issuing a Certificate of Occupancy) can be obtained at http://www.fcgov.com/utilities/what-we-do/stormwater/flooding/forms-documents. FEMA Technical Bulletin 3, “Non-Residential Floodproofing – Requirements and Certification” can be found at http://www.fema.gov/media-library-data/20130726-1511-20490-5294/job6.pdf.
5. 5. Nonstructural development (grading, fencing, detention ponds, hard surface paths, trails, walkways, vegetation, etc.) is allowed in the floodway as long as a floodway no-rise certification is prepared by a professional engineer, licensed in the State of Colorado, proving that the development will not cause a rise in the Base Flood Elevation or change the floodway boundary. Nonstructural development must meet the requirements in Section 10-105 of the Code.
6. 6. Storage of equipment or materials in the floodway, whether temporary or permanent, is prohibited.
7. 7. A portion of this property is within an Erosion Buffer Zone for Fossil Creek. Per Section 10-202 of the Code, the following development is prohibited: New Construction of Any Structure, Detention Ponds, Placement of Fill, Outdoor Storage, Driveways and Parking

Areas, and Irrigated and Nonnative Vegetation. Some improvements such as Fencing, Hard Surface Paths, Bridges and Utilities are allowed provided they meet the requirements of Section 10-202.

8. 8. Development review checklists and permit application forms for floodplain requirements can be obtained at http://www.fcgov.com/utilities/what-we-do/stormwater/flooding/forms-documents. Please utilize these documents when preparing your plans for submittal.

9. 9. Please show the boundaries of the floodway and erosion buffer zone on site drawings as applicable. Contact Beck Anderson of Stormwater Master Planning at banderson@fcgov.com for floodplain CAD line work.

10. 10. Please contact Heidi Hansen with any questions about these comments or to schedule a meeting to discuss any requirements for development in the floodplain. hhansen@fcgov.com 970-221-6854.

11. 1. The design of this site must conform to the drainage basin design of the Fossil Creek Basin Master Drainage Plan as well the Fort Collins Stormwater Criteria Manual.

12. 2. A drainage report and construction plans are required and they must be prepared by a Professional Engineer registered in the State of Colorado. The drainage report must address the four-step process for selecting structural BMPs. There is a final site inspection required when the project is complete and the maintenance is handed over to an HOA or another maintenance organization.

13. 3. Onsite detention is required for the runoff volume difference between the 100-year developed flow rate and the 2-year historic release rate. In the Fossil Creek basin the two year historic release rate is 0.2 cfs/acre.

14. 4. There is potential for significant erosion in Lang Gulch, as well as overtopping of the railroad in a large storm event. These existing drainage conditions will need to be accounted for in the design and development of this site.

15. 5. Fifty percent of the site runoff is required to be treated using the standard water quality treatment as described in the Fort Collins Stormwater Manual, Volume 3-Best Management Practices (BMPs). (http://www.fcgov.com/utilities/business/builders-and-developers/development-forms-guidelines-regulations/stormwater-criteria) Extended detention is the usual method selected for water quality treatment; however the use of any of the BMPs is encouraged.

16. 6. Low Impact Development (LID) requirements are required on all new or redeveloping property which includes sites required to be brought into compliance with the Land Use Code. These require a higher degree of water quality treatment with one of the two following options:

    a. 50% of the newly added or modified impervious area must be treated by LID techniques and 25% of new paved areas must be pervious.
    b. 75% of all newly added or modified impervious area must be treated by LID techniques.

17. 7. Standard operating procedures (SOPs) for all onsite drainage facilities will be included as part of the Development Agreement. More information and links can be found at: http://www.fcgov.com/utilities/what-we-do/stormwater/stormwater-quality/low-impact-development

18. 8. Per Colorado Revised Statute §37-92-602 (8) effective August 5, 2015, criteria regarding detention drain time will apply to this project. As part of the drainage design, the engineer will be required to show compliance with this statute using a standard spreadsheet (available on request) that will need to be included in the drainage report. Upon completion of the project, the engineer will also be required to upload the approved spreadsheet onto the Statewide Compliance Portal. This will apply to any volume based stormwater storage, including extended detention basins.

19. 9. The 2016 city wide Stormwater development fee (PIF) is $8,217/acre for new impervious

area over 350 sq.-ft., and there is a $1,045.00/acre review fee. No fee is charged for existing impervious area. These fees are to be paid at the time each building permit is issued. Information on fees can be found at: http://www.fcgov.com/utilities/business/builders-and-developers/plant-investment-development-fees or contact Jean Pakech at 221-6375 for questions on fees. There is also an erosion control escrow required before the Development Construction permit is issued. The amount of the escrow is determined by the design engineer, and is based on the site disturbance area, cost of the measures, or a minimum amount in accordance with the Fort Collins Stormwater Manual.

Department: Fire Authority

Contact: Jim Lynxwiler, 970-416-2869, jlynxwiler@poudre-fire.org

1. WATER SUPPLY
   Hydrant spacing and flow must meet minimum requirements based on type of occupancy. Code language provided below.

   > IFC 508.1 and Appendix B: COMMERCIAL REQUIREMENTS: Hydrants to provide 1,500 gpm at 20 psi residual pressure, spaced not further than 300 feet to the building, on 600-foot centers thereafter.
   >IFC 508.1 and Appendix B: RESIDENTIAL REQUIREMENTS: Within the Urban Growth Area, hydrants to provide 1,000 gpm at 20 psi residual pressure, spaced not further than 400 feet to the building, on 800-foot centers thereafter.
2. FIRE ACCESS
   Fire access is required to within 150ft of any building. Code language provided below.

   > IFC 503.1.1: Approved fire Lanes shall be provided for every facility, building or portion of a building hereafter constructed or moved into or within the jurisdiction. The fire apparatus access road shall comply with the requirements of this section and shall extend to within 150 feet of all portions of the facility and all portions of the exterior walls of the first story of the building as measured by an approved route around the exterior of the building or facility. When any portion of the facility or any portion of an exterior wall of the first story of the building is located more than 150 feet from fire apparatus access, the fire code official is authorized to increase the dimension if the building is equipped throughout with an approved, automatic fire-sprinkler system.
3. PRIVATE DRIVES
   Private drives which serve as fire lanes will require an Emergency Access Easement and standard Fire Lane specifications shall apply.

   FIRE LANE SPECIFICATIONS
   A fire lane plan shall be submitted for approval prior to installation. In addition to the design criteria already contained in relevant standards and policies, any new fire lane must meet the following general requirements:
   > Shall be designated on the plat as an Emergency Access Easement.
   > Maintain the required 20 foot minimum unobstructed width & 14 foot minimum overhead clearance.
   > Be designed as a flat, hard, all-weather driving surface capable of supporting 40 tons.
   > Dead-end fire access roads in excess of 150 feet in length shall be provided with an approved area for turning around fire apparatus.
   > The required turning radii of a fire apparatus access road shall be a minimum of 25 feet inside and 50 feet outside. Turning radii shall be detailed on submitted plans.
   > Be visible by painting and/or signage, and maintained unobstructed at all times.
   > Additional access requirements exist for buildings greater than 30' in height. Refer to Appendix D of the 2012 IFC or contact PFA for details.
   International Fire Code 503.2.3, 503.2.4, 503.2.5, 503.3, 503.4 and Appendix D; FCLUC

3.6.2(B)2006 and Local Amendments.

4. DEAD-END FIRE LANES
   Be advised that any dead-end road over 660ft in length requires a second point of access. Code language provided below.

   > FCLUC 3.6.2(B)2006; 06IFC 503.2.5 and Appendix D: Dead-end fire apparatus access roads cannot exceed 660 feet in length. Dead-end fire access roads in excess of 150 feet in length shall be provided with an approved area for turning around fire apparatus.

5. BUILDINGS OVER 30FT IN HEIGHT
   Be advised any building over 30ft in height triggers additional fire access requirements. Code language provided below. See also IFC Appendix D for further details.

   AERIAL FIRE APPARATUS ACCESS ROADS:
   WHERE REQUIRED - IFC D105.1: Where the vertical distance between the grade plane and the highest roof surface exceeds 30 feet, approved aerial fire apparatus access roads shall be provided. For purposes of this section, the highest roof surface shall be determined by measurement to the eave of a pitched roof, the intersection of the roof to the exterior wall, or the top of parapet walls, whichever is greater.
   WIDTH - IFC D105.2; FCLUC 3.6.2(B)2006; and Local Amendments: Aerial fire apparatus access roads shall have a minimum unobstructed width of 30 feet, exclusive of shoulders, in the immediate vicinity of the building or portion thereof.
   PROXIMITY TO BUILDING - IFC D105.3: At least one of the required access routes meeting this condition shall be located within a minimum of 15 feet and a maximum of 30 feet from the building, and shall be positioned parallel to one entire side of the building. The side of the building on which the aerial fire apparatus access road is positioned shall be approved by the fire code official.

6. FIRE CONTAINMENT
   Any building exceeding 5000 square feet shall be sprinklered or fire contained. If containment is used, the containment construction shall be reviewed and approved by the Poudre Fire Authority prior to installation.

Department: Environmental Planning

Contact: Rebecca Everette, 970-416-2625, reverette@fcgov.com

1. According to Section 2.3.2(H)(3)(5) of the Land Use Code, "the overall development plan shall show the general location and approximate size of all natural areas, habitats and features within its boundaries and shall indicate the applicant's proposed rough estimate of the natural area buffer zones as required pursuant to Section 3.4.1(E)." The plans will need to include approximate buffer zones for, e.g., the Fossil Creek and its tributaries, natural spring, any wetlands, rock outcropping and any other natural features present on the site.
2. Please include a note on the ODP that indicates something similar to the following, "This Overall Development Plan shows the general location and approximate size of all natural areas, habitats, and features within its boundaries and the proposed rough estimate of the natural area buffer zone as required by Land Use Code Section 3.4.1(E). Detailed mapping of a site's natural areas, habitats, and features will be provided at the time of individual PDP submittals. General buffer zones shown on this ODP may be reduced or enlarged by the decision maker during the PDP process."
3. An Ecological Characterization Study will be required at the PDP stage, as the site is within 500 feet of known natural habitats (Fossil Creek and tributaries, wetlands, wet meadows, natural spring, native grassland, and rock outcropping). An ECS has already been submitted for the Goldelm site; however, this ECS will need to be either updated to include the Vineyard Church site or a separate ECS will need to be prepared for that site.

   Please note the buffer zone standards range from 50-100' for these features, as identified in

Section 3.4.1(E) of the Land Use Code, as you proceed with your site design process.

The Ecological Characterization Study should include a delineation of all wetlands, delineation of the rock outcropping, and detailed recommendations for protecting and enhancing the features that are on or adjacent to the site. The report should also address whether the Bell's Twinpod (Physaria bellii) is observed on the site.

Please contact me if you would like to discuss the scope and requirements of the ECS further. Please note that the Ecological Characterization Study is due a minimum of 10 days prior to submittal of a PDP (but not the ODP).

4. Exact buffer zones will be established at the PDP stage. However, please note that within any buffer zones, according to Article 3.4.1(E)(1)(g), the City has the ability to determine if the existing landscaping is incompatible with the purposes of the buffer zone. Please ensure that your ECS discusses the existing vegetation and identifies potential restoration options. If it is determined to be insufficient, then restoration and mitigation measures will be required.
5. This project must comply with the following standard, as it is adjacent to the Redtail Grove Natural Area, Section 3.4.1(L) Compatibility with Public Natural Areas or Conserved Land. If the project contains or abuts a publicly owned natural area or conserved land, the development plan shall be designed so that it will be compatible with the management of such natural area or conserved land. In order to achieve this, the development plan shall include measures such as barriers or landscaping measures to minimize wildlife conflicts, setbacks or open space tracts to provide a transition between the development and the publicly owned natural area or conserved land, and educational signage or printed information regarding the natural values, management needs and potential conflicts associated with living in close proximity to such natural area or conserved land. Please ensure that the ODP and subsequent PDPs conform to this standard.
6. Our city has an established identity as a forward-thinking community that cares about the quality of life it offers its citizens and has many sustainability programs and goals that may benefit your project. Of particular interest may be the:

   1. ClimateWise program: fcgov.com/climatewise/
   2. Zero Waste Plan and the Waste Reduction and Recycling Assistance Program (WRAP): fcgov.com/recycling/pdf/_20120404_WRAP_ProgramOverview.pdf, contact Caroline Mitchell at 970-221-6288 or cmtichell@fcgov.com
   3. Green Building Program: fcgov.com/enviro/green-building.php, contact Tony Raeker at 970-416-4238 or traeker@fcgov.com
   4. Solar Energy: www.fcgov.com/solar, contact Norm Weaver at 970-416-2312 or nweaver@fcgov.com
   5. Integrated Design Assistance Program: fcgov.com/idap, contact Gary Schroeder at 970-224-6003 or gschroeder@fcgov.com
   6. Nature in the City Strategic Plan: fcgov.com/planning/natureinthecity/?key=advanceplanning/natureinthecity/, contact Justin Scharton at 970-221-6213 or jscharton@fcgov.com

   Please consider the City's sustainability goals and ways for your development to engage with these efforts, and let me know if I can help connect you to these programs.
7. The southern detention area on the Goldelm lot should be moved outside the buffer from the rock outcropping, as it is not compatible with the protection of that resource.

Department: Engineering Development Review

Contact: Marc Ragasa, 970.221.6603, mragasa@fcgov.com

1. Larimer County Road Impact Fees and Street Oversizing Fees are due at the time of building permit. Please contact Matt Baker at 224-6108 if you have any questions.

2. The City's Transportation Development Review Fee (TDRF) is due at the time of submittal. For additional information on these fees, please see: http://www.fcgov.com/engineering/dev-review.php
3. Any damaged curb, gutter and sidewalk existing prior to construction, as well as streets, sidewalks, curbs and gutters, destroyed, damaged or removed due to construction of this project, shall be replaced or restored to City of Fort Collins standards at the Developer's expense prior to the acceptance of completed improvements and/or prior to the issuance of the first Certificate of Occupancy. All public sidewalk, driveways and ramps existing or proposed adjacent or within the site need to meet ADA standards, if they currently do not, they will need to be reconstructed so that they do meet current ADA standards as a part of this project.
4. This project is responsible for dedicating any right-of-way and easements that are necessary or required by the City for this project. This shall including the standard utility easements that are to be provided behind the right-of-way (15 foot along an arterial (College Ave), and 9 foot along all other street classifications).
5. The traffic study will be key in determining the lengths of the right turn lanes needed and the impact to the intersections and the neighborhood.
6. Utility plans will be required and a Development Agreement will be recorded once the project is finalized.
7. LCUASS parking setbacks (Figure 19-6) apply and will need to be followed depending on parking design.
8. For Venus Drive (existing) – It appears that adequate row should be in place, provided that the roadways are not offset within the existing row. Additional row will need to be dedicated to accommodate the standard parkway and sidewalk section if it will not fit into the current row due to an offset of the road.
9. For Crestridge Road and Venus Drive – The roadways will need to be designed and improved along the frontage of this property by this development. Curb, gutter and sidewalk will need to be designed and built. The roadway pavement will need to be replaced as it does not meet City Standards.
10. Venus Drive or an adequate access needs to be extended north thru this site to serve the parcel to the north. Adequate design and dedication of row/easement shall be provided. The plan that was submitted shows a private drive making this connection, which looks like it will work for this. The connection from Venus to the site to the north does not need to be a street, it can be a drive provided it is designed adequately (width, features, sidewalk connection and grades) to meet Transportation and Poudre Fire Authority needs.
11. All design for College Ave (State Highway 287) will need to meet CDOT design standards and criteria and will need to be approved by CDOT. Access permits will need to be obtained for any changes to existing access points, new access points and any work within the SH287 ROW. Design parameters not covered by CDOT design criteria need to meet City of Fort Collins design standards and criteria.
12. All other public improvements must be designed and built in accordance with the Larimer County Urban Area Street Standards (LCUASS). They are available online at: http://www.larimer.org/engineering/GMARdStds/UrbanSt.htm
13. There is an approved and adopted access control plan for SH287 that identifies where accesses can be placed and what kind of access they can be. The northern access point is to be a right-in right-out access point.
14. It is possible a raised median in SH287 will need to be installed by this project to control access. The access points will need to be controlled and that is one way in which to do so. Per the adopted access control plan a median will be needed in the short term and the long term. Ideally this median would be able to be designed to accommodate the interim and ultimate roadway sections.

15. Per the access control plan the intersection of SH287/ Crestridge Road/ Smokey Street could be signalized if the streets (Crestridge and Smokey) could be aligned, the intersection meets traffic signal warrants and the grade of the intersection approaches are reduced. If the intersection cannot be aligned then the plan shows that this access shall become a right-in right-out intersection. The conversion of the intersection to a right-in right-out configuration will probably be triggered by the additional traffic that would be added to this intersection by this development. This intersection currently has a high accident rate due to the offset in the roads and limited visibility due to not quite being at the crest of the hill. The plan submitted does not show the realignment of Crestridge.

16. I do not know exactly how much row actually exists along College Ave, but it does appear that close to adequate row does exist. A 72 foot minimum half row is needed where a right turn lane is not needed; where a right turn lane is needed a half row of 84 feet minimum is needed. More than likely a preliminary layout design will be needed to determine exactly how much row is needed.

17. Any necessary additional row needed for the ultimate SH287 cross section shall be provided.

18. There will probably need to be an interim and ultimate design done for SH287. An ultimate design will be needed to determine where sidewalk and curb and gutter shall be placed and if there are any design parameters that need to be accommodated. If the ultimate section is not what is constructed a design for the interim improvements will need to be provided. SH287 is considered an arterial roadway thus a 1000 feet of preliminary offsite design in each direction shall be provided as a part of roadway design.

19. This project will need to install sidewalk along the street frontages adjacent to the site, plus any off-site that may be needed to meet level of service criteria.

20. A 15 utility easement is needed along SH287.
A 9 foot utility easement is needed along Crestridge and Venus.

21. Some of the improvements to be installed along College Ave would be eligible for Street Oversizing reimbursement. Only those improvements which meet the oversizing criteria and are designed and installed in the ultimate location are eligible for reimbursement. Example the sidewalk along College will need to be installed in the ultimate location and the standards is a sidewalk wider than a local street – thus the width 3.5 feet of the 8 foot wide sidewalk is eligible for reimbursement.

22. All fences, barriers, posts or other encroachments within the public right-of-way are only permitted upon approval of an encroachment permit. Applications for encroachment permits shall be made to Engineering Department for review and approval prior to installation. Encroachment items shall not be shown on the site plan as they may not be approved, need to be modified or moved, or if the permit is revoked then the site/ landscape plan is in non-compliance.

23. Bike parking required for the project cannot be placed within the right-of-way and if placed just behind the right-of-way need to be placed so that when bikes are parked they do not extend into the right-of-way.

24. In regards to construction of this site. The public right-of-way shall not be used for staging or storage of materials or equipment associated with the Development, nor shall it be used for parking by any contractors, subcontractors, or other personnel working for or hired by the Developer to construct the Development. The Developer will need to find a location(s) on private property to accommodate any necessary Staging and/or parking needs associated with the completion of the Development . Information on the location(s) of these areas will be required to be provided to the City as a part of the Development Construction Permit application.

Department: Electric Engineering

Contact: Tyler Siegmund, 970-416-2772, tsiegmund@fcgov.com

1. Electric capacity fees, development fees, building site charges and any system modification charges necessary to feed the site will apply to this development. Please visit the following website for an estimate of charges and fees:

   http://www.fcgov.com/utilities/business/builders-and-developers/plant-investment-development-fees
2. Light and Power has electric facilities south of the site that can be extend into the development to provide power.
3. Please contact Light & Power Engineering if you have any questions at 221-6700. Please reference our policies, development charge processes, and use our fee estimator at http://www.fcgov.com/utilities/business/builders-and-developers.

Department: Advance Planning

Contact: Martina Wilkinson, 970-221-6887, mwilkinson@fcgov.com

1. A traffic impact study was already submitted with the CDR. This will need to be reviewed, and it is recommended that a separate meeting be set up to discuss short term and long term traffic approach, including improvements along College.
2. We'll be interested in discussing bike and ped connections to north Natural Areas and future Fossil Creek Trail extension that will go under the RR tracks.

Planning Services

Contact: Jason Holland, 970-224-6126, jholland@fcgov.com

1. Show the boundary / limits of the ODP and this would need to include the existing and proposed limits of the Crestridge right of way, which would need to be a part of the ODP in tandem with the traffic study.
2. Coordinate with Goldelm and show all spur trail connections and proposed routes including the approximate location of the main City trail through the Redtail natural area. Show a distinct linetype and label the public trail connections.
3. Re-alignment of Crestridge, show the existing and proposed ROW. Label which phase will include the construction of this area with and which phase will include the traffic signal.
4. Would recommend that the ODP include an accurate demarcation of the rock outcroppings using a flagged survey for Lot 2 so that there are no surprises at the PDP phase. Make rock outcropping lines and all buffer lines bolder and directly labeled in addition to the legend.
5. The ODP will need to demonstrate that it satisfies connectivity standards to ensure ped./bike connectivity to the adjacent Skyview neighborhood to the south. This is explained in detail in in LUC sections 3.6.3(F) and 3.2.2(C)(6). As part of this requirement, show the spur trail access through Lots 1 and 2, along the southern boundary of the ODP. Construction of the trail spur shall be a part of the ODP and subsequent PDP.
6. Would recommend looking at the feasibility of slightly straightening out north end of Venus Avenue. This would make Lot 2 slightly large and improve the road alignment.
7. Include standard ODP notes and land use table on the site plan with the formal submittal.

8. The proposed development project is subject to a Type 2 (Planning and Zoning Board) review and public hearing. The applicant for this development request is required to hold a neighborhood information meeting prior to formal submittal of the proposal. Neighborhood meetings offer an informal way to get feedback from your surrounding neighbors and discover any potential hiccups prior to the formal hearing. Please contact me, at 221-6750, to assist you in setting a date, time, and location. I and possibly other City staff, would be present to facilitate the meeting.

9. Please see the Development Review Guide at www.fcgov.com/drg. This online guide features a color coded flowchart with comprehensive, easy to read information on each step in the process. This guide includes links to just about every resource you need during development review.

10. This development proposal will be subject to all applicable standards of the Fort Collins Land Use Code (LUC), including Article 3 General Development Standards. The entire LUC is available for your review on the web at http://www.colocode.com/ftcollins/landuse/begin.htm.

11. If this proposal is unable to satisfy any of the requirements set forth in the LUC, a Modification of Standard Request will need to be submitted with your formal development proposal. Please see Section 2.8.2 of the LUC for more information on criteria to apply for a Modification of Standard.

12. Please see the Submittal Requirements and Checklist at: http://www.fcgov.com/developmentreview/applications.php.

13. The request will be subject to the Development Review Fee Schedule that is available in the Community Development and Neighborhood Services office. The fees are due at the time of submittal of the required documents for the appropriate development review process by City staff and affected outside reviewing agencies. Also, the required Transportation Development Review Fee must be paid at time of submittal.

14. When you are ready to submit your formal plans, please make an appointment with Community Development and Neighborhood Services at (970)221-6750.

Pre-Submittal Meetings for Building Permits

Pre-Submittal meetings are offered to assist the designer/builder by assuring, early on in the design, that the new commercial or multi-family projects are on track to complying with all of the adopted City codes and Standards listed below. The proposed project should be in the early to mid-design stage for this meeting to be effective and is typically scheduled after the Current Planning conceptual review meeting.

Applicants of new commercial or multi-family projects are advised to call 970-416-2341 to schedule a pre-submittal meeting. Applicants should be prepared to present site plans, floor plans, and elevations and be able to discuss code issues of occupancy, square footage and type of construction being proposed.

Construction shall comply with the following adopted codes as amended:

20012 International Building Code (IBC)
2012 International Residential Code (IRC)
20012 International Energy Conservation Code (IECC)
2012 International Mechanical Code (IMC)
2012 International Fuel Gas Code (IFGC)
2012 International Plumbing Code (IPC) as amended by the State of Colorado
2014 National Electrical Code (NEC) as amended by the State of Colorado

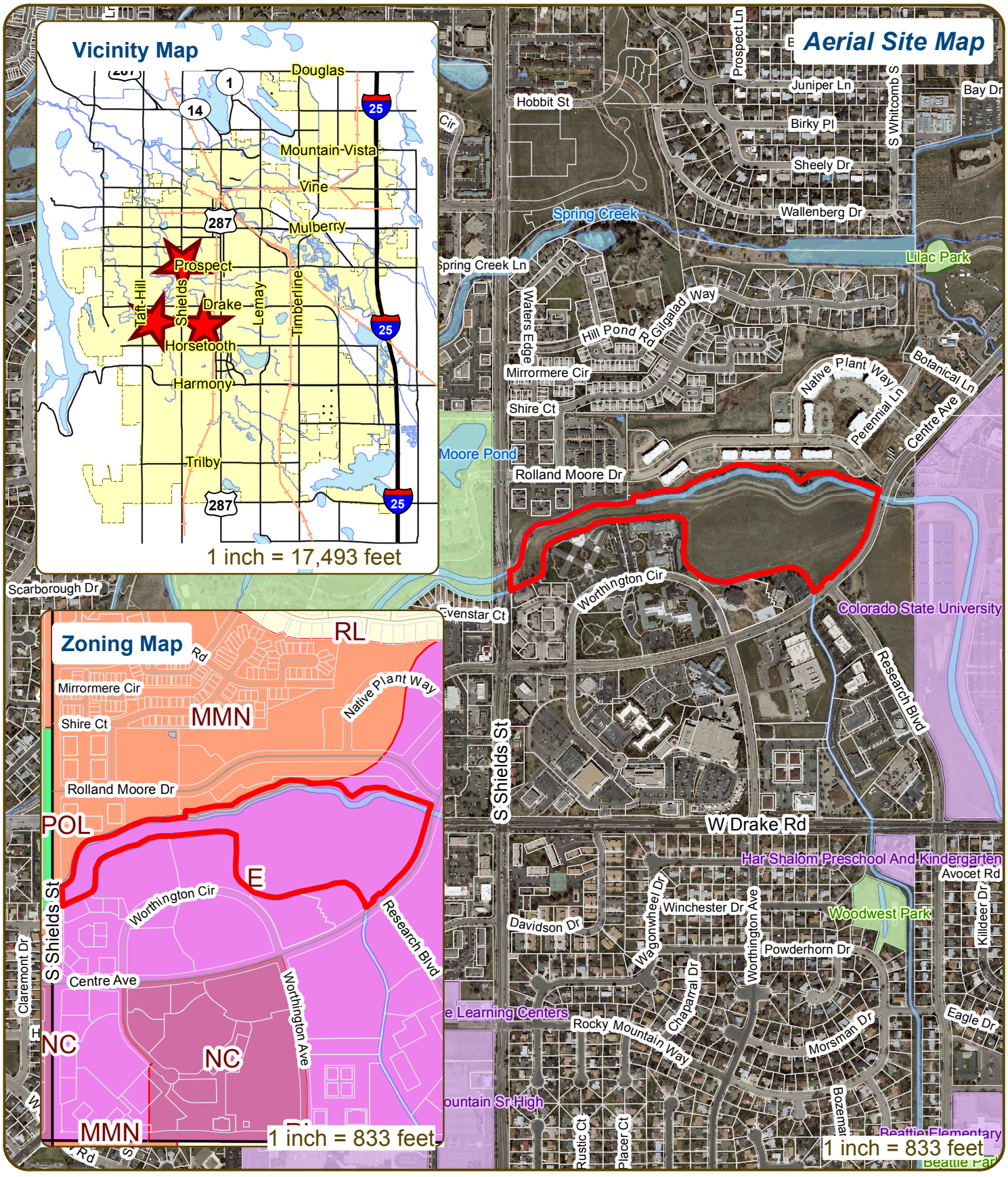
Accessibility: State Law CRS 9-5 & ICC/ANSI A117.1-2009.
Snow Load Live Load: 30 PSF / Ground Snow Load 30 PSF.
Frost Depth: 30 inches.
Wind Load: 100- MPH 3 Second Gust Exposure B.
Seismic Design: Category B.
Climate Zone: Zone 5.
Energy Code Use

1. Single Family; Duplex; Townhomes*: 2012 IRC* Chapter 11 or *2012 IECC* Chapter 4.
2. Multi-family and Condominiums 3 stories max: *2012 IECC* Chapter 4 Residential Provisions.
3. Commercial and Multi-family 4 stories and taller: *2012 IECC* Chapter 4 Commercial Provisions.

Fort Collins Green Code Amendments effective starting 2/17/2014. A copy of these requirements can be obtained at the Building Office or contact the above phone number.

City of Fort Collins
Building Services
Plan Review
970-416-2341

Centre for Advanced Technology
Single-family Attached



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City of Fort Collins GIS

CONCEPTUAL REVIEW:
APPLICATION

General Information
All proposed development projects begin with Conceptual Review. Anyone with a development idea can schedule a Conceptual Review meeting to get feedback on prospective development ideas. At this stage, the development idea does not need to be finalized or professionally presented. However, a sketch plan and this application must be submitted to City Staff prior to the Conceptual Review meeting. The more information you are able to provide, the better feedback you are likely to get from the meeting. Please be aware that any information submitted may be considered a public record, available for review by anyone who requests it, including the media.

Conceptual Reviews are scheduled on three Monday mornings per month on a "first come, first served" basis. One 45 meeting is allocated per applicant and only three conceptual reviews are done each Monday morning. Conceptual Review is a free service. **Complete applications and sketch plans must be submitted to City Staff no later than 5 pm, two Tuesdays prior to the meeting date.** Application materials must be e-mailed to currentplanning@fcgov.com. If you do not have access to e-mail, other accommodations can be made upon request.

At Conceptual Review, you will meet with Staff from a number of City departments, such as Community Development and Neighborhood Services (Zoning, Current Planning, and Development Review Engineering), Light and Power, Stormwater, Water/Waste Water, Advance Planning (Long Range Planning and Transportation Planning) and Poudre Fire Authority. Comments are offered by staff to assist you in preparing the detailed components of the project application. There is no approval or denial of development proposals associated with Conceptual Review. At the meeting you will be presented with a letter from staff, summarizing comments on your proposal.

BOLDED ITEMS ARE REQUIRED* ***The more info provided, the more detailed your comments from staff will be.

Contact Name(s) and Role(s) (Please identify whether Consultant or Owner, etc) Cathy Mathis - TBGroup

Matt Rankin-r4 Architects; Tyler Texeira - Beacon Construction

Business Name (if applicable) TBGroup

Your Mailing Address 444 Mountain Avenue, Berthoud CO 80513

Phone Number 970.532.5891 Email Address cathy@tbgroup.us

Site Address or Description (parcel # if no address) Parcel Number 97230-00-904

Description of Proposal (attach additional sheets if necessary) Construction of +/- 34 units of single family attached units on approximatley 7.31 acres. The site is located in the Employment Zone disctrict and is a portion of Parcel B of the Centre For Advanced Technology ODP.

Proposed Use Single Family Attached **Existing Use** Vacant

Total Building Square Footage +/- 61,000 S.F. Number of Stories 1 Lot Dimensions +/- 575' x 525'

Age of any Existing Structures None
Info available on Larimer County's Website: http://www.co.larimer.co.us/assessor/query/search.cfm
If any structures are 50+ years old, good quality, color photos of all sides of the structure are required for conceptual.

Is your property in a Flood Plain? ☐ Yes ☒ No If yes, then at what risk is it? _____
Info available on FC Maps: http://gisweb.fcgov.com/redirect/default.aspx?layerTheme=Floodplains.

Increase in Impervious Area _____ S.F.
(Approximate amount of additional building, pavement, or etc. that will cover existing bare ground to be added to the site)

Suggested items for the Sketch Plan:
Property location and boundaries, surrounding land uses, proposed use(s), existing and proposed improvements (buildings, landscaping, parking/drive areas, water treatment/detention, drainage), existing natural features (water bodies, wetlands, large trees, wildlife, canals, irrigation ditches), utility line locations (if known), photographs (helpful but not required). Things to consider when making a proposal: How does the site drain now? Will it change? If so, what will change?

LAND USE SUMMARY

DUPLEX UNITS = 22
TRIPLEX UNITS = 12
TOTAL UNITS = 34

0 40' 60' 80'
SCALE 1" = 40'-0"

NORTH

TB GROUP
landscape architecture | planning | illustration
444 Mountain Ave.
Berthoud, CO 80513
tel. 970.532.5891
web TBGroup.us

SEAL

PROJECT TITLE
WORTHINGTON AVENUE RESIDENCES

Fort Collins, Colorado

PREPARED FOR

REVISIONS DATE

DATE
03.18.16

SHEET TITLE
Conceptual Site Plan

SHEET INFORMATION
Sheet Number: 1
Of: 1

Community Development and Neighborhood Services
281 North College Avenue
PO Box 580
Fort Collins, CO 80522

970.221.6750
970.224.6134 - fax
fcgov.com

April 08, 2016

Cathy Mathis
TBGroup
444 Mountain Ave
Berthoud, CO 80513

Re: Centre for Advanced Technology - Single-family Attached
Description of project: This is a request to construct 34 units of single-family attached units (parcel #9723000904). The units will be organized around private drive leading from Worthington Ave. This development is proposed on Parcel B of the Centre for Advanced Technology Amended ODP adopted in January of 2012. The site is located in the Employment (E) zone district. This proposal will be subject to Planning & Zoning Board (Type II) review.

Please see the following summary of comments regarding the project request referenced above. The comments offered informally by staff during the Conceptual Review will assist you in preparing the detailed components of the project application. Modifications and additions to these comments may be made at the time of formal review of this project. If you have any questions regarding these comments or the next steps in the review process, you may contact the individual commenter or direct your questions through the Project Planner, Clay Frickey, at 970-224-6045 or cfrickey@fcgov.com.

Comment Summary:

Department: Zoning
Contact: Ali van Deutekom, 970-416-2743, avandeutekom@fcgov.com

1. LUC 3.2.2(C)(4)(b) There is a minimum bicycle parking requirement of one per bedroom. 60% of these spaces must be enclosed.
2. How will trash be handled?

Department: Water-Wastewater Engineering
Contact: Shane Boyle, 970-221-6339, sboyle@fcgov.com

1. Existing water mains in the vicinity include an 8-inch main in Worthington Avenue and a 12-inch main in Centre Avenue. Existing sewer mains in the vicinity include an 8-inch main in Worthington Avenue and a 21-inch main in Centre Avenue. It does not appear there are any service stubs into this site.
2. A water main loop will be required to service the site. Coordination with Water Utilities Engineering as design progresses is advised.
3. The water conservation standards for landscape and irrigation will apply. Information on these requirements can be found at: http://www.fcgov.com/standards

4. Development fees and water rights will be due at building permit.

Department: Traffic Operations

Contact: Martina Wilkinson, 970-221-6887, mwilkinson@fcgov.com

1. The anticipated traffic volume from this development is right at the threshold for needing a Traffic Impact Study. It would only be a simple traffic memo. Please have your traffic engineer contact me to scope the study.
2. It's great that the access is off a local road. If a connection to Centre would need to be made, it would need to be opposite Research Blvd.
3. Will there be any trail connections along the ditches?

Department: Stormwater Engineering

Contact: Shane Boyle, 970-221-6339, sboyle@fcgov.com

1. The design of this site must conform to the drainage basin design of the Spring Creek Master Drainage Plan as well the Fort Collins Stormwater Criteria Manual.
2. A drainage report, erosion control report, and construction plans are required and they must be prepared by a Professional Engineer registered in Colorado. The drainage report must address the four-step process for selecting structural BMPs. There is a final site inspection required when the project is complete and the maintenance is handed over to an HOA or another maintenance organization. The erosion control report requirements are in the Fort Collins Stormwater Manual, Section 1.3.3, Volume 3, Chapter 7 of the Fort Collins Amendments. If you need clarification concerning this section, please contact the Erosion Control Inspector, Jesse Schlam at 224-6015 or jschlam@fcgov.com.
3. Onsite detention is required for the runoff volume difference between the 100-year developed inflow rate and the 2-year historic release rate. The outfall for the site is the storm sewer in Centre Avenue which is located east of the site. No developed site release into the adjacent ditches will be allowed.
4. Fifty percent of the site runoff is required to be treated using the standard water quality treatment as described in the Fort Collins Stormwater Manual, Volume 3-Best Management Practices (BMPs). (http://www.fcgov.com/utilities/business/builders-and-developers/development-forms-guidelines-regulations/stormwater-criteria) Extended detention is the usual method selected for water quality treatment; however the use of any of the BMPs is encouraged.
5. Low Impact Development (LID) requirements are required on all new or redeveloping property which includes sites required to be brought into compliance with the Land Use Code. These require a higher degree of water quality treatment with one of the two following options:
   A. 50% of the newly added or modified impervious area must be treated by LID techniques and 25% of new paved areas must be pervious.
   B. 75% of all newly added or modified impervious area must be treated by LID techniques.
   Standard operating procedures (SOPs) for all onsite drainage facilities will be included as part of the Development Agreement. More information and links can be found at: http://www.fcgov.com/utilities/what-we-do/stormwater/stormwater-quality/low-impact-development
6. Per Colorado Revised Statute §37-92-602 (8) effective August 5, 2015, criteria regarding detention drain time will apply to this project. As part of the drainage design, the engineer will be required to show compliance with this statute using a standard spreadsheet (available on

request) that will need to be included in the drainage report. Upon completion of the project, the engineer will also be required to upload the approved spreadsheet onto the Statewide Compliance Portal. This will apply to any volume based stormwater storage, excluding bio-retention cells.

7. The 2016 city wide Stormwater development fee (PIF) is $8,217/acre for new impervious area over 350 sq. ft. and there is a $1,045.00/acre review fee. No fee is charged for existing impervious area. These fees are to be paid at the time each building permit is issued. Information on fees can be found at: http://www.fcgov.com/utilities/business/builders-and-developers/plant-investment-development-fees or contact Jean Pakech at 221-6375 for questions on fees. There is also an erosion control escrow required before the Development Construction permit is issued. The amount of the escrow is determined by the design engineer, and is based on the site disturbance area, cost of the measures, or a minimum amount in accordance with the Fort Collins Stormwater Manual.

Department: Historical Preservation

Contact: Maren Bzdek, 970-221-6206, mbzdek@fcgov.com

1. The property does not contain buildings 50 years old or older, and the proposed plans are unlikely to affect adjacent historic properties, if any.

Department: Fire Authority

Contact: Jim Lynxwiler, 970-416-2869, jlynxwiler@poudre-fire.org

1. FIRE ACCESS
   Fire access is required to within 150ft of all exterior portions of all buildings. Code language below.

   > IFC 503.1.1: Approved fire Lanes shall be provided for every facility, building or portion of a building hereafter constructed or moved into or within the jurisdiction. The fire apparatus access road shall comply with the requirements of this section and shall extend to within 150 feet of all portions of the facility and all portions of the exterior walls of the first story of the building as measured by an approved route around the exterior of the building or facility. When any portion of the facility or any portion of an exterior wall of the first story of the building is located more than 150 feet from fire apparatus access, the fire code official is authorized to increase the dimension if the building is equipped throughout with an approved, automatic fire-sprinkler system.
2. DEAD-END FIRE LANES
   Any dead end road over 660ft in length requires a secondary means of access. Code language added below.

   > IFC 503.2.5 and Appendix D: Dead-end fire apparatus access roads cannot exceed 660 feet in length. Dead-end fire access roads in excess of 150 feet in length shall be provided with an approved area for turning around fire apparatus.
3. FIRE LANE SPECIFICATIONS
   All private drives serving as a fire lane shall be built to fire Lane standards and be dedicated as an Emergency Access Easement. A fire lane plan shall be submitted for approval prior to installation. In addition to the design criteria already contained in relevant standards and policies, any new fire lane must meet the following general requirements:
   > Shall be designated on the plat as an Emergency Access Easement.
   > Maintain the required 20 foot minimum unobstructed width & 14 foot minimum overhead clearance.
   > Be designed as a flat, hard, all-weather driving surface capable of supporting 40 tons.

> Dead-end fire access roads in excess of 150 feet in length shall be provided with an approved area for turning around fire apparatus.
> The required turning radii of a fire apparatus access road shall be a minimum of 25 feet inside and 50 feet outside. Turning radii shall be detailed on submitted plans.
> Be visible by painting and/or signage, and maintained unobstructed at all times.
> Additional access requirements exist for buildings greater than 30' in height. Refer to Appendix D of the 2012 IFC or contact PFA for details.
International Fire Code 503.2.3, 503.2.4, 503.2.5, 503.3, 503.4 and Appendix D; FCLUC 3.6.2(B)2006 and Local Amendments.

4. WATER SUPPLY
Adequate water supply has to be provided for all Residential developments. Code language below.

> IFC 508.1 and Appendix B: RESIDENTIAL REQUIREMENTS: Within the Urban Growth Area, hydrants to provide 1,000 gpm at 20 psi residual pressure, spaced not further than 400 feet to the building, on 800-foot centers thereafter.

5. RESIDENTIAL SPRINKLER SYSTEMS
Singe-Family attached residences are required to be sprinklered. Contact the building department for further details.

Department: Environmental Planning

Contact: Kelly Kimple, 970-416-2401, kkimple@fcgov.com

1. An Ecological Characterization Study is required by Section 3.4.1 (D)(1) as the site is within 500 feet of multiple known natural habitats or features, including the Larimer County Canal #2, the New Mercer Ditch, and wet meadow habitat. Please note that the buffer zone standards for these features of at least 50' and that the project will need to be designed in a way that is sensitive to these natural features. This may affect the site layout that is currently proposed.

   The Ecological Characterization Study should include a delineation of natural features on the entire property and provide recommendations for protecting and enhancing the features that are on or adjacent to the site.

   Please contact me if you would like to discuss the scope and requirements of the ECS further. The Ecological Characterization Study is due a minimum of 10 days prior to the PDP submittal.

2. Within the buffer zone, according to Article 3.4.1(E)(1)(g), the City has the ability to determine if the existing landscaping within the buffer zone is incompatible with the purposes of the buffer zone. Please ensure that your ECS discusses the existing vegetation and identifies potential restoration options. If it is determined to be insufficient, then restoration and mitigation measures will be required.

3. With respect to lighting, the City of Fort Collins Land Use Code, in Article 3.2.4(D)(6) requires that "natural areas and natural features shall be protected from light spillage from off site sources." Thus, lighting from the buildings or other site amenities shall not spill over to the buffer areas.

4. In regard to LED light fixtures, IDA (International Dark-Sky Association) recommends using lighting that has a color temperature of no more than 3000 degrees Kelvin in order to limit the amount of blue light in the night environment, as blue light brightens the night sky more than any other color of light. Both LED and metal halide fixtures contain large amounts of blue light in their spectrum, and exposure to blue light at night has been shown to harm human health and endanger wildlife. Please consider a warmer color temperature (3000K or less) for your LED light fixtures. Please also consider fixtures with dimming capabilities so that light levels can be adjusted as needed.

5. With respect to landscaping and design, the City of Fort Collins Land Use Code, in Article 3.2.1 (E)(3), requires that you use low-water-use plants and grasses in your landscaping or re-landscaping and reduce bluegrass lawns as much as possible. Native and wildlife-friendly landscaping is encouraged as well.
6. The applicant should make note of Article 3.2.1(C) that requires developments to submit a landscape and tree protection plan, and if receiving water service from the City, an irrigation plan, that: "...(4) protects significant trees, natural systems, and habitat, and (5) enhances the pedestrian environment". Note that a significant tree is defined as a tree having DBH (Diameter at Breast Height) of six inches or more. If any of the trees within this site have a DBH of greater than six inches, a review of the trees shall be conducted with Tim Buchanan, City Forester (970-221-6361 or tbuchanan@fcgov.com) to determine the status of the existing trees and any mitigation requirements that could result from the proposed development.
7. Our city has an established identity as a forward-thinking community that cares about the quality of life it offers its citizens and has many sustainability programs and goals that may benefit your project. Of particular interest may be the:

   1. Green Building Program: http://www.fcgov.com/enviro/green-building.php, contact Tony Raeker at 970-416-4238 or traeker@fcgov.com
   2. Solar Energy: http://www.fcgov.com/utilities/residential/renewables/solar-contractors-resources, contact Norm Weaver at 970-416-2312 or nweaver@fcgov.com
   3. Urban Agriculture: http://www.fcgov.com/developmentreview/urbanagriculture.php
   4. Nature in the City Strategic Plan: fcgov.com/planning/natureinthecity/?key=advanceplanning/natureinthecity/, contact Justin Scharton at 970-221-6213 or jscharton@fcgov.com

   Please consider the City's sustainability goals and ways for your development to engage with these efforts.

Department: Engineering Development Review

Contact: Katie Sexton, 970-221-6501, ksexton@fcgov.com

1. Larimer County Road Impact Fees and Street Oversizing Fees are due at the time of building permit. Please contact Matt Baker at 224-6108 if you have any questions.
2. The City's Transportation Development Review Fee (TDRF) is due at the time of submittal. For additional information on these fees, please see: http://www.fcgov.com/engineering/dev-review.php
3. Any damaged curb, gutter and sidewalk existing prior to construction, as well as streets, sidewalks, curbs and gutters, destroyed, damaged or removed due to construction of this project, shall be replaced or restored to City of Fort Collins standards at the Developer's expense prior to the acceptance of completed improvements and/or prior to the issuance of the first Certificate of Occupancy.
4. All public sidewalk, driveways and ramps existing or proposed adjacent or within the site need to meet ADA standards, if they currently do not, they will need to be reconstructed so that they do meet current ADA standards as a part of this project. The existing driveway will need to be evaluated to determine if the slopes and width will meet ADA requirements or if they need to be reconstructed so that they do.
5. Any public improvements must be designed and built in accordance with the Larimer County Urban Area Street Standards (LCUASS). They are available online at: http://www.larimer.org/engineering/GMARdStds/UrbanSt.htm

6. This project is responsible for dedicating any right-of-way and easements that are necessary or required by the City for this project. This shall including the standard utility easements that are to be provided behind the right-of-way (15 foot along an arterial and 9 foot along all other street classifications).
7. The street is currently labeled as a private drive; if this changes, and the development decides to make it a public street, please keep in mind the following: The road would need to be designed as the Connector Local cross section because it is a multi-family development which requires more width to accommodate on-street parking. The median should be removed because it is not part of the standard cross section. Elbows will most likely need to be added to the curves to meet LCUASS geometry standards. Ditch/ irrigation crossings of public streets are allowed provided that the crossing is perpendicular to the roadway, the pipe is sleeved per standards, and an encroachment permit is obtained. Except for the perpendicular crossings, ditch/ irrigation lines are not allowed within the public right of way.
8. Utility plans will be required and a Development Agreement will be recorded once the project is finalized.
9. A Development Construction Permit (DCP) may need to be obtained prior to starting any work on the site.
10. All fences, barriers, posts or other encroachments within the public right-of-way are only permitted upon approval of an encroachment permit. Applications for encroachment permits shall be made to Engineering Department for review and approval prior to installation. Encroachment items shall not be shown on the site plan as they may not be approved, need to be modified or moved, or if the permit is revoked then the site/ landscape plan is in non-compliance.
11. Any rain gardens within the right-of-way cannot be used to treat the development/ site storm runoff. We can look at the use of rain gardens to treat street flows – the design standards for these are still in development.
12. Bike parking required for the project cannot be placed within the right-of-way and if placed just behind the right-of-way need to be placed so that when bikes are parked they do not extend into the right-of-way.
13. In regards to construction of this site: The public right-of-way shall not be used for staging or storage of materials or equipment associated with the Development, nor shall it be used for parking by any contractors, subcontractors, or other personnel working for or hired by the Developer to construct the Development. The Developer will need to find a location(s) on private property to accommodate any necessary Staging and/or parking needs associated with the completion of the Development. Information on the location(s) of these areas will be required to be provided to the City as a part of the Development Construction Permit application.
14. Repayment for local street portions of adjacent streets may be due with building permit.

Department: Electric Engineering

Contact: Tyler Siegmund, 970-416-2772, tsiegmund@fcgov.com

1. Light and Power has electric facilities along the east side of Centre Ave that can be utilized to provide power to the development.
2. Electric capacity fees, development fees, building site charges and any system modification charges necessary to feed the site will apply to this development. Please visit the following website for an estimate of charges and fees:

   http://www.fcgov.com/utilities/business/builders-and-developers/plant-investment-development-fees

3. Light & Power will need the following documentation to be submitted before design will begin and construction will start on the electric facilities to feed the development: AutoCAD files of the approved site plan, plat, landscape plans, and utility plans.
4. The location of the electric services will need to be coordinated with Light and Power Engineering. Please note that the residential units must be metered individually.
5. Please contact Light & Power Engineering if you have any questions at 221-6700. Please reference our policies, development charge processes, and use our fee estimator at http://www.fcgov.com/utilities/business/builders-and-developers.

Planning Services

Contact: Clay Frickey, 970-224-6045, cfrickey@fcgov.com

1. Secondary uses can make up no more than 25% of the gross area of a development plan in the Employment zone distrct. Single-family attached units are considered a secondary use. This proposal will require a modification to this standard.
2. The minimum residential density allowed in the zone district is 7 dwelling units per acre. This proposal shows a density of 4.56 dwelling units per acre. This will require a modification request.
3. How large is the proposed park? For development sites with greater than 2 acres of gross area, a minimum 10,000 sq. ft. park is required. Please show the size of the park on the site plan. If it is less than 10,000 sq. ft., this will require a modification request.
4. How will parking be provided on the site? Below are the minimum parking requirements based on the number of bedrooms per unit:

   One bedroom or less: 1.5 parking spaces
   Two bedroom: 1.75 parking spaces
   Three bedroom: 2 parking spaces
   Four bedroom or more: 3 parking spaces
5. This proposal will require a landscape plan. Consider creating a parkway around the private drive with street trees to create an urban tree canopy.
6. Will you be replatting as part of this project? On a related note, what will be happening with the remainer of the parcel to the east? The site plan shown would preclude any sort of connection to potential development on the eastern portion of the parcel.
7. How tall are the proposed buildings? The maximum building height in the E zone district is 4 stories.
8. The proposed development project is subject to a Type 2 (Planning and Zoning Board) review and public hearing. The applicant for this development request is required to hold a neighborhood information meeting prior to formal submittal of the proposal. Neighborhood meetings offer an informal way to get feedback from your surrounding neighbors and discover any potential hiccups prior to the formal hearing. Please contact me, at 221-6750, to assist you in setting a date, time, and location. I and possibly other City staff, would be present to facilitate the meeting.
9. Please see the Development Review Guide at www.fcgov.com/drg. This online guide features a color coded flowchart with comprehensive, easy to read information on each step in the process. This guide includes links to just about every resource you need during development review.
10. This development proposal will be subject to all applicable standards of the Fort Collins Land Use Code (LUC), including Article 3 General Development Standards. The entire LUC is available for your review on the web at http://www.colocode.com/ftcollins/landuse/begin.htm.

11. If this proposal is unable to satisfy any of the requirements set forth in the LUC, a Modification of Standard Request will need to be submitted with your formal development proposal. Please see Section 2.8.2 of the LUC for more information on criteria to apply for a Modification of Standard.

12. Please see the Submittal Requirements and Checklist at: http://www.fcgov.com/developmentreview/applications.php.

13. The request will be subject to the Development Review Fee Schedule that is available in the Community Development and Neighborhood Services office. The fees are due at the time of submittal of the required documents for the appropriate development review process by City staff and affected outside reviewing agencies. Also, the required Transportation Development Review Fee must be paid at time of submittal.

14. When you are ready to submit your formal plans, please make an appointment with Community Development and Neighborhood Services at (970)221-6750.