

LONE TREE, CO  SITE IMPROVEMENT PLAN



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Development Application

Planning Division
9220 Kimmer Drive, Lone Tree, CO 80124
303.708.1818 | www.cityoflonetree.com



Instructions: All sections must be completed and typed or legibly printed. All required attachments must be included. This application does not cover Building Division and Public Works submittal requirements and fees.

Application Type <input type="checkbox"/> Presubmittal <input type="checkbox"/> Final Plat <input checked="" type="checkbox"/> SIP <input type="checkbox"/> Re-Plat <input type="checkbox"/> SIP Amendment <input type="checkbox"/> Rezoning <input type="checkbox"/> Preliminary Plan <input type="checkbox"/> Variance <input type="checkbox"/> Other		For Planning Division Use Project Name: In-N-Out Burger Job # SP19-13 Application Fee: \$3,200 Check/Transaction #: 109258159PT Date: 8/15/2019 Staff Initials: HGF
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Project Information	
Project Name: IN-N-OUT BURGER	Project Address: 9171 WESTVIEW RD., LONE TREE, CO 80124
State Parcel ID: 223103207002	Subdivision: PARK MEADOWS
Acreage: 1.46	Lot #: 6
Existing Zoning: PLANNED DEVELOPMENT	Block #: PARK MEADOWS TOWN CENTER
Proposed Rezoning: NA	Filing #: 1-A THIRD AMENDMENT
Project Description (submit additional sheets if necessary): PROPOSED IN-N-OUT BURGER RESTAURANT WITH DRIVE-THRU. SEE ATTACHED PROJECT DISCUSSION FOR ADDITIONAL INFORMATION.	

Owner and Representative Information	
Property Owner Information Name (Individual or Organization): SUDS FACTORY PARK MEADOWS, LLC Mailing Address: 9171 WESTVIEW RD., LONE TREE, CO 80124 Phone: NA Email: sfuselier@cajunwest.com	Applicant Information if Different than Owner Name (Individual or Organization): IN-N-OUT BURGERS Mailing Address: 13502 HAMBURGER LN., BALDWIN PARK, CA 91706 Phone: 626-813-8275 Email: AAnderson@innout.com

Letter of Authorization

Regarding Development Applications for Land Use Entitlements

City of Lone Tree
9220 Kimmer Drive #100
Lone Tree, CO 80124

RE: Property Address: 9171 E. Westview Rd., Lone Tree, CO 80124

Assessor's Parcel Number (SPN): 223103207002

To Whom It May Concern:

I/We, the owner(s) of the above described real property, authorize Aaron M Anderson of In-N-Out Burgers to act as an agent on my/our behalf for the purpose of creating, filing and/or managing an application for Site Improvement Plan (SIP) and any associated construction permits (type of development or permit application).

The undersigned hereby certifies to being the fee owner(s) or legally authorized representative of the fee owner(s) of the real property described above.

Suds Factory, LLC

(Print Name of Owner)

Aaron M Anderson
(Signature of Owner or Authorized Representative)

State of Colorado

County of Denver

The foregoing instrument was acknowledged before me this 10th day of July, 2019 by Jean Sundling.

Jean Sundling
(Notary's official signature)

June 09, 2021
(Commission expiration date)

NOTARY SEAL

JEAN SUNDLING
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 19874198444
MY COMMISSION EXPIRES JUNE 09, 2021

SITE IMPROVEMENT PLAN  PROJECT DISCUSSION



August 01, 2019

Planning Staff
 City of Lone Tree
 9220 Kimmer Drive, Suite 100
 Lone Tree, CO 80124

RE: In-N-Out Burger Project Narrative & Statement of Design Intent

PROJECT NARRATIVE

1.1: General Information

SUBDIVISION NAME	Park Meadows Town Center (PMTC)
FILING NO.	1-A Third Amendment
LOT NO.	Lot 6
ZONING	Planned Development (PD)
PROJECT ADDRESS	9171 Westview Road
SITE AREA	63,595 SF
BUILDING AREA	3,867 SF
STRUCTURE HEIGHT	28'-0" AGL
STACKING QUEUE	26 cars
PARKING FIELD	47 Stalls
ADA PARKING	2 Stalls
BICYCLE PARKING	5 Spaces

FIG 1.1 – Project Data Table

In-N-Out Burgers is excited to propose the development of a new restaurant with drive-through situated on Lot 6 of Park Meadows, Filing No. 1-A Third Amendment in Lone Tree, Colorado. The



FIG 1.2 – Vicinity Map

project site is currently occupied, and fully developed with a single commercial user. Located at 9171 Westview Road (FIG 1.2), the zoning classification is Planned Development (PD), within the Park Meadows Town Center (PMTC) subdivision. The subject site lies within an existing commercial corridor, along County Line Road. It is surrounded to the south by existing multi-tenant retail (currently zoned PD), to the north by office/retail (which lies within the City of Centennial), to the west by a single-story Bank of America

building (currently zoned PD), and to the east by Fidelity Investments and multi-use retail (currently zoned PD), which includes a Mike’s Camera, and a vacant tenant space. The proposed project will include the demolition and removal of the existing Suds Factory Car Wash, and Conoco fueling station. In its place a new 3,867 square foot restaurant building, concrete surface parking lot, drive-through lane, driveway approach, and landscaping improvements will be constructed.

1.2: Development Impacts

As with any new development, the potential impacts of our project on the subject site, and adjacent land uses, have been taken into careful consideration when developing the conceptual Site Improvement Plan (SIP). The potential issues and subsequent mitigation measures have been highlighted below.

1.2.1: Contextual and Visual Impacts

In contrast to the uses that surround the subject site, the proposed In-N-Out Burger restaurant is in character with the neighborhood, and will enrich the city’s vision for enhanced commercial activity along this particular thoroughfare. Additionally, when looking at the scale of nearby structures, the proposed use at 28 feet above grade level would be considered low-lying, and consistent with what currently exists in the nearby vicinity. For a point of reference, the existing Suds Factory Car Wash sits at 34 feet above grade level.

Moreover, we understand the purpose and intent of the City of Lone Tree Design Guidelines, and the need to promote local identity as it relates to our proposed development. As a result, we deviated from our prototypical standards, and provided stone wainscoting around the base of our building. While we have incorporated similar design elements on our building elevations in the past, in this instance the material (which is locally sourced) will be unique to this project.

We can therefore conclude that no view sheds will be obstructed, and no negative visual impacts (real or perceived) will be caused by the development of this project. This is clearly demonstrated in the photographic simulations provided as a part of the application. The restaurant with drive-through use will add both architectural and commercial interest along the County Line Road corridor.

1.2.2: Grading Challenges

Moderate grading improvements are required in order to allow for the proposed development, as there is approximately 10 feet of fall from east to west, and approximately 7 feet of fall from south to north. While the current conditions are noteworthy, our preliminary civil assessments have determined the site to be workable from an engineering perspective. As a result, the current proposal includes a new retaining wall directly adjacent to the east side of the drive-through lane, to mitigate these grading challenges. This design will allow us to maximize the parking field, while simultaneously providing the longest possible drive-through queue this site could accommodate. Further, as a part of the proposed development, the existing PCC pedestrian walk along Westview Road will be protected-in-place, to the greatest extent possible, within the limits of our project area.

1.2.3: Potential Traffic Impacts

Under existing 2019 traffic conditions, the signalized intersections within the study area currently operate at overall acceptable levels of service "D" or better during the weekday, midday, and PM peak hours.

Under background future 2020 and 2040 traffic conditions, without the development of the subject site, delays would increase slightly at study intersections due to regional traffic growth. All intersections would continue to operate at overall acceptable levels of service.

The proposed site redevelopment would generate, upon completion and full occupancy, 415 weekday midday, 335 weekday PM peak hour trips as well as 3,746 weekday daily trips. Redeveloping the existing use would remove 82 midday and 67 PM peak hour trips from the network.

Due to the nature of the proposed uses, a significant number of trips generated by the site are anticipated to be drawn from prevailing traffic volumes as pass-by trips. Thus, the site would add 130 net new midday peak hour trips, 100 net new PM peak hour trips, and 2,543 net new daily trips to the road network.

Under total future traffic conditions with development of the site, all of the study intersections would continue to operate at overall acceptable levels of service consistent with background conditions. Thus, no additional roadway improvements as part of the site development are required. ^[1]

In-N-Out Burgers has been in operation for over seventy-years. In that time we have learned that the most effective method to mitigate potential traffic impacts is through careful and thoughtful site design. This is clearly achieved in the current proposal, through the planned 27 car stacking queue, large parking field, intelligent site circulation, and lack of cross access to avoid impacting neighboring uses and public roadways. It is in our best interest, as well as the City of Lone Tree, to ensure efficient, meaningful, and long-lasting functionality. Please refer to the included Traffic Impact Study (TIS) prepared by Wells and Associates for further information.

1.4: Compliance with Intent and Approval Standards

In-N-Out Burgers is firmly committed to the City of Lone Tree's mission to promote high-quality design, strong economic growth, and fostering a sustainable and healthy community. It is the intent that the proposed development aligns and conforms with the Comprehensive Plan, the Design Guidelines, applicable chapters of the Municipal Code and applicable Planned Developments and Subarea Plans, as well as all applicable roadway, grading, drainage and erosion control standards.

The project site is zoned PD, which has an 85 foot height limitation, and a 40 foot property line setback from County Line and Westview Road(s). At 28 feet above grade level to the top of our highest roof peak, we are in strict conformance with the height limitation of the PD as currently proposed.

The PMTC Planned Development provides for yard encroachments such that: *"cornices, canopies, eaves and similar architectural features may extend not more than 10 feet into any yard or setback area required by applicable development standards (5-2)"*. At approximately 31 feet to our drive-through canopy, and approximately 48 feet 8 inches to building face-of-finish from the northern property line, we are in strict conformance with the height limitation of the PD as currently proposed.

The proposed development complies with the SIP Intent Standards in multiple ways. As part of a strong economy, this restaurant will make room for 45 to 90 new store associates in the City of Lone Tree, as well as offer new opportunities for support associates in the Denver Metro region. It is also no secret that In-N-Out Burgers prides itself on employee satisfaction. Offering above market wages, excellent benefits, and tremendous opportunity for career growth within the organization, our presence in Lone Tree will provide boundless prospects for both current and future residents for years to come. Additionally, In-N-Out Burger provides a family friendly atmosphere, and promotes a sense of community. Our restaurants have served, and will continue to serve, as a gathering place for all ages.

1.5: Development Phasing

Construction for the restaurant will be done in a single phase and take approximately 6 months, with a typical progression of construction activities. These activities, some of which would run concurrently, include: site preparation and limited grading of about 4 to 6 weeks, building construction of about 16 weeks, paving and striping of about 3 weeks, and landscaping of about 2 weeks. Our anticipated opening date is late Q4, 2020.

1.5: Other Project Data

The restaurant will operate 7 days a week, from 10:00 AM to 1:00 AM Sunday through Thursday, and from 10:00 AM to 1:30 AM on Friday and Saturday. The restaurant, drive-thru, and parking lot, as with all In-N-Out Burgers restaurants, will be well-lit and meticulously maintained. The restaurant will be staffed by approximately 15 - 20 Associates per shift, with 3 shifts per day.

In-N-Out cooks all of its burgers and fries to order – nothing is pre-cooked and there are no cooked food holding bins. This restaurant will be equipped with three burger grills. Two grills will operate at all times, and activation of the third grill will be done in response to high dine-in or, more typically, high drive-through demand as activating the third grill significantly increases the speed at which drive-through orders are delivered to customer vehicles. In addition, standard store operating procedure dictates that as soon as the drive-through queue reaches the 8th car (where the menu board/order speaker is located) In-N-Out Associates are deployed outside to take orders using hand-held ordering tablets. The use of these tablets puts orders into the kitchen faster than ordering at the menu board, and, when combined with increased production from the third grill, the result is extremely fast and efficient food production with the shortest possible food wait times, and therefore the shortest possible drive-through vehicle queues.

Awareness of the queue reaching the 8th car is enhanced with outdoor cameras and indoor monitors. There will be between 4 and 6 outdoor cameras on this site, with 3 or 4 of them specifically viewing the drive-through lane. These cameras display on multiple monitors located inside the restaurant including at the manager's office, above the grills, and at both the pay and pickup windows.

^[1] Traffic Impact Study (TIS) - Wells and Associates

There is no delivery dock or designated delivery parking bay required on the premises as deliveries are made only by In-N-Out owned and operated vehicles, after the restaurant is closed to the public, between the hours of 2 AM and 9 AM.

No alcoholic beverages will be served.

1.6: Sustainability

In-N-Out Burgers is committed to sustainability, and shares the City of Lone Tree's environmental goals. Most notably, we construct our buildings to stand the test of time. As a company, one of our primary development objectives is to keep our buildings meticulously maintained. The result is a commitment to use the highest quality materials and finishes, so our restaurants remain clean, functional, and well preserved. Additionally, all of our buildings are designed to meet, and in some instances exceed the State of California Title 24 Building Energy Efficiency Standards. Even when we construct in markets outside of California, we still apply many of these standards, whether they are required by state and/or local regulations or not.

The location of the proposed restaurant is less than 0.1 miles from the Hyatt Place Denver, which is well within walking distance. With more than 100 guest rooms, our restaurant provides the ability to serve numerous visitors to Lone Tree, without the need to utilize ground transportation of any kind. Additionally, the proposed restaurant is located approximately 0.34 miles from the nearest Willow Creek Trail access point, along County Line Road.

Lastly, the site landscape drives a few areas of sustainability. The planting approach, in limiting the use of water, planning for successional growth, and focusing on management versus maintenance, provides long range landscape resilience. We are also proposing abundant bicycle parking, above and beyond the minimum code requirement.

1.7: Variances

No variances are being requested as a part of this application.

STATEMENT OF DESIGN INTENT

2.1: Overall Design Concept

In-N-Out Burgers is eager to partner with the City of Lone Tree, to open one of our very first (if not THE first) restaurant locations in the Colorado market. The proposal is for a new restaurant with drive-through, located at 9171 Westview Road in Lone Tree, Colorado. The proposed building will be 3,867 square feet, which includes both an indoor and outdoor seating area that is capable of accommodating up to a combined 80 guests. The site will be well landscaped and will include the following: a fully enclosed trash building, a 1,300 square foot patio canopy, a drive-through with dedicated queuing for 26 cars, onsite parking for 47 guests, and excellent vehicle circulation with no "dead-end" parking aisles. Access to the site will be achieved through a proposed curb cut, located near the south west corner of the property, connecting the site with Westview Road. This proposed curb cut will serve as the single point of access/egress, and will be fully accessible from the public right-of-way.

2.2: Context and Site

As previously stated, the project site is currently occupied, and fully developed with a single commercial user. Currently the site is situated between two existing commercial users, and will

occupy Lot 6 of the Park Meadows, Filing No. 1-A Third Amendment, for the building and associated improvements. The development lies within the existing commercial corridor along County Line Road, and in contrast to the uses that surround the subject site, the proposed In-N-Out Burger restaurant is in character with the region. Our mission is to improve the city's vision for enhanced commercial activity along this particular thoroughfare, and we are confident that the design, as currently presented achieves that goal. Additionally, when looking at the scale of nearby structures, the proposed use at 28 feet above grade level would be considered low-lying, and consistent with what currently exists in the nearby vicinity. For a point of reference, the existing Suds Factory Car Wash sits at 34 feet above grade level.

2.3: Public Realm

In-N-Out Burgers is dedicated to contribute to the City's desire to promote an inviting, safe and functional public realm. At our Pre-Application meeting on 03/28 we discussed the following with Staff:

- p. 41. Provide safe and convenient outdoor areas for employees and patrons. Design opportunities for employees to enjoy the outdoors through connections with parks and trails, designated picnic and break areas and similar amenities. Public spaces, including designated outdoor employee spaces, should be located in visible, well-lit areas to encourage use and discourage unwanted activities.

In response to this comment we would like to highlight our proposal for an activated 1,300 square foot patio, and 4 outdoor tables with shade umbrellas, for our patrons and staff to use. We also provide a well-lit perimeter, parking lot, and canopies to discourage any unwanted activities. The safety of our guests and associates are of the highest priority. Additionally, we have provided bicycle parking, well above the code required minimum, in an effort to promote the use of alternative, and eco-friendly modes of transportation for our guests and associates to utilize.

2.4: Architectural Design

Our restaurant building has been designed to have 360-degree architecture, with the main focus being placed on the two customer entry doors, located on the south and west elevations, which are bookended by two prominent tower elements. The towers act as a beacon, helping our guest's way-find, while a large expanse of vision glass lines the dining room, in order to highlight our bright, friendly, and welcoming atmosphere. The secondary focus is on the north elevation, where our drive-through lane wraps the building. Again, you will notice a large span of vision glass, used to accentuate our sparkling clean kitchen, and hard-working and smiling associates. The large cantilevered canopy is essential to keeping our guests shielded from weather, as well as to provide a well-lit space, providing safety and convenience in the evening hours.

The architecture of our restaurant provides subtle massing shifts on all sides of the building, to modulate and reduce bulk, and create interest and variety. As previously stated, our colors and materials (and our meticulous building maintenance) allow our structures to remain evergreen. Drawing from a high-quality palette of materials, including cast-in-place concrete, stucco, terracotta tile, and well placed architectural reveals, our buildings are attractive, while at the same time remaining distinctly In-N-Out.

While our corporate identity is paramount to our success as a business, we do understand the City of Lone Tree's desire to promote a local identity. Taking that into account, we listened to

Staff's concerns expressed at the 03/28 Pre-Application meeting, where we discussed the following items of importance:

- Desires prototypical architecture be modified to meet Lone Tree Design Guidelines and area context. In looking at the buildings in the area, staff feels a solid white building would be out of character and may not be supported by staff, the Planning Commission, or City Council. Recommended is an off white color, combined with other more neutral beige, cream, or other complementary tones. Additionally, stucco lower than 36 inches from the grade is discouraged in the Design Guidelines. In this case, brick or CMU or other base building material around the building is supported.

Our building design is derived from a number of architectural styles. Most prominent are the mid-century modern elements, which are present in the simple, yet sharp geometric lines, and Spanish colonial revival, which are found in our neutral color palate, and red tile roofs. While these design features are what make us distinctly In-N-Out, they also provide a contemporary aesthetic, which is precisely what makes our building design fit within the context of a contemporary city like Lone Tree.

While we do feel our design is a good fit, we also see room for improvement, which is why we whole-heartedly agree with Staff's comment as it relates to the stucco at the base of our building. In response we have proposed stone wainscoting in lieu of cement plaster, for all material lower than 36 inches from grade. The base of our proposed monument sign will be wrapped in the same material, to promote a cohesive, and unified design.

Lastly, while we understand and respect Staff's concerns, we feel that making a determination on building color prior to seeing a material sample and/or color chip is a bit premature. In response, we have provided a preliminary Color and Material Information sheet, as a part of the SIP Application Package. The actual shade used on our buildings is known as Bone China. It is not to be considered "solid white", and in-fact conforms more closely to a neutral beige or cream, as recommended in the comment above. It is also worth noting, the chosen colors and materials ensure our buildings remain recognizable, timeless, and easy to maintain. Choosing alternate materials, and off-palate colors, tend to result in a dated appearance rather quickly. I would implore Staff to review the material board, photographic simulations, and renderings for a more accurate depiction of the final building appearance, prior to issuing a determination.

- p. 19. Promote local identity. Projects should be designed in a way that contributes to Lone Tree as a unique place. This may include adaptation of site plan templates or corporate prototypical architecture and colors to respond to neighborhood character and site conditions. Projects should demonstrate a balance between the need for strong, corporate identity (where applicable) and deference for local character.

In response to this comment we added stone wainscoting to the base of our building, in lieu of the "red belly band", which is our current prototypical standard. We have incorporated stone accents into our building architecture in the past, but in this instance, the material (which is locally sourced) will be unique to this project. We have proposed using Mountain Stacked Stone, which is provided by Sunset Stone, located in Castle Rock, Colorado.

- p. 34. Screen roof-mounted equipment. Roof mounted equipment, including but not limited to air conditioners, fans, vents, antennas and dishes shall be effectively screened from adjacent grade-level view. All mechanical rooftop equipment shall be shown to scale on all building elevations and/or cross sections to adequately illustrate how

effective screening will be achieved. A combination of screening methods may be required...

All roof-top equipment will be screened from public view. This has been clearly demonstrated on the building elevations submitted as a part of this application.

- p. 35. Screen ground-mounted equipment and utilitarian building components. Such features should be incorporated into the design of the building, located away from public areas or screened from public view with landscaping and/or screen walls.

Through attentive site design, we have made a determined effort to screen and/or obscure all ground-mounted equipment, to the greatest extent possible. Our electric meter will be placed within the interior of our utility closet, located on the east elevation. The gas meter will be placed at the service side of the building, directly adjacent to the utility closet. The water meter, which will remain in place along Westview Road, will be obscured by new landscaping.

- p. 36. Avoid or screen drive-through lanes. Drive-through lanes should generally be avoided to promote more walkable, compact development patterns. However, where necessary, drive-through lanes should be located or screened to reduce the prominence of the canopy and lighting, if any, and to reduce the visibility of stacked cars from the street. Strategies may include strategic location, integrated design, landscaping, berming and low walls. Canopies, menu boards, bollards and similar features related to drive through areas should be coordinated with the design of the building and detailed on the Site Improvement Plan.

While we cannot simply remove the drive-through lane, since it is fundamental to our business operations, we did however pay attention to Staff's concerns regarding the reduction in visibility of vehicles in the stacking queue. As a result, we are proposing the placement of shrubs between each of the column spans, for the entire length of the drive-through canopy. This will provide effective screening of the drive-through lane, as it pertains to views along County Line Road.

- p. 74. Stucco at base: Stucco or similar material lower than 36 inches from grade is discouraged.

As previously stated, we have proposed stone wainscoting in lieu of stucco for all material lower than 36 inches from grade. The base of our proposed monument sign will be wrapped in the same material, to promote a cohesive, and unified design.

2.5: Project Team

Project Owner: In-N-Out Burger
Address: 13502 Hamburger Lane
Baldwin Park, CA 91706
Phone: 626-813-8275
Email: AAnderson@innout.com

Application Preparer: Aaron M Anderson
Company: In-N-Out Burger
Address: 13502 Hamburger Lane
Baldwin Park, CA 91706
Phone: 626-813-8275

Email: AAnderson@innout.com

Application Preparer: Tasha Bolivar

Company: Galloway & Company, Inc.
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Greenwood Village, CO 80111
Phone: 303-770-8884
Email: TashaBolivar@galloway.us

Civil Engineer: Phil Dalrymple, PE

Company: Galloway & Company, Inc.
Address: 6162 S Willow Drive, Suite 320
Greenwood Village, CO 80111
Phone: 303-770-8884
Email: PhilDalrymple@galloway.us

Traffic Engineer: Brian J Horan, PE

Company: Wells & Associates
Address: 2301 Blake Street
Denver, CO 80205
Phone: 303-222-0077
Email: BJHoran@wellsandassociates.com

Project Renderings: Jack Fitzgerald

Company: Artistic Engineering
Address: 17602 17th Street, Suite 102-52
Tustin, CA 92780
Phone: 877-923-7467
Email: mail@AEsims.com

Our goal here is simple, build one of our first (if not THE first) Colorado locations in the City of Lone Tree, and become a proud member of your community. We are hopeful that you share our enthusiasm, and are willing to work together towards reaching a practical design.

Sincerely,



Aaron M Anderson
Project Manager
In-N-Out Burger

SITE IMPROVEMENT PLAN  CONCEPTUAL DESIGN

PARK MEADOWS, FILING NO. 1-A THIRD AMENDMENT, LOT 6
1.481 ACRES ±
SIP #SP19-13

CONCEPTUAL IRRIGATION
DESIGN ONLY.
NOT FOR CONSTRUCTION

Galloway

6162 S. Willow Drive, Suite 320
Greenwood Village, CO 80111
303.770.8884
gallowayus.com

PRELIMINARY
NOT FOR BIDDING
NOT FOR CONSTRUCTION

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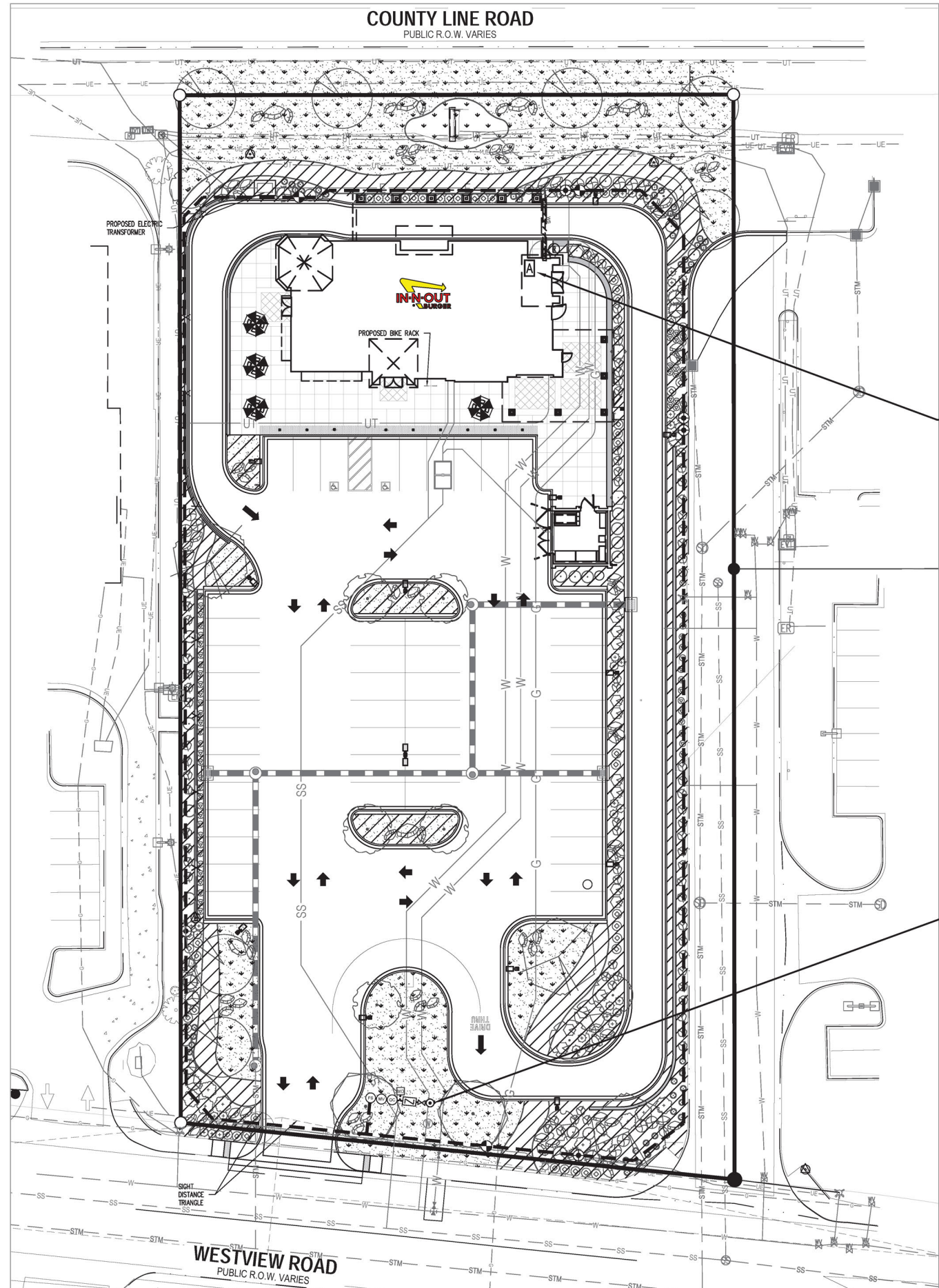


IN-N-OUT BURGER
LOT 6, PARK MEADOWS TOWN CENTER,
FILING NO. 1-A THIRD AMENDMENT - SIP
IN000011.20
9171 E WESTVIEW RD
LONE TREE, COLORADO 80124

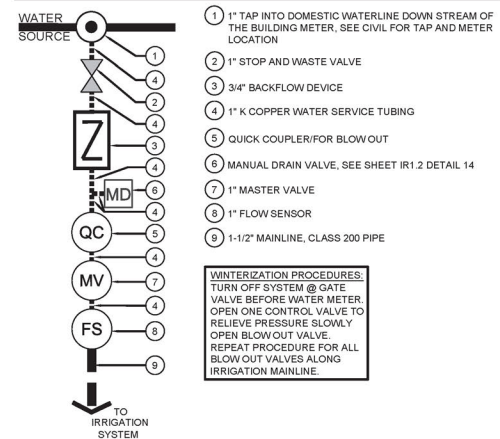
#	Date	Issue / Description	Init.
1	08/01/19	1ST SIP SUBMITTAL	PJD

Project No: IN000011.20
Drawn By: EDN
Checked By: TDN
Date: 07/22/19

IRRIGATION PLAN



TYPICAL POINT OF CONNECTION SCHEMATIC DIAGRAM



WINTERIZATION PROCEDURES:
TURN OFF SYSTEM @ GATE VALVE BEFORE WATER METER.
OPEN ONE CONTROL VALVE TO RELIEVE PRESSURE SLOWLY.
OPEN BLOW-OUT VALVE.
REPEAT PROCEDURE FOR ALL BLOW-OUT VALVES ALONG IRRIGATION MAINLINE.

IRRIGATION DISCLAIMER

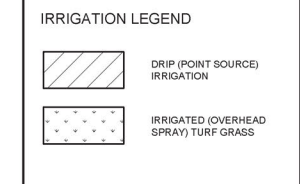
- CONTRACTOR SHALL INSTALL MAINLINES ±12" FROM PAVEMENT EDGE IN PLANTING AREAS. ALL PIPING, VALVES, AND OTHER EQUIPMENT SHOWN WITHIN PAVED AREAS OR OUT OF PROPERTY BOUNDARIES ARE FOR DESIGN CLARIFICATION ONLY, AND SHALL BE INSTALLED IN PLANTING AREAS WITHIN THE PROPERTY LINES OR LIMITS AS INDICATED ON THESE PLANS.
- THE IRRIGATION CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL ABOVE-GRADE AND VISIBLE IRRIGATION EQUIPMENT (CONTROLLERS, BACKFLOW PREVENTERS, METER PITS, ETC.) WITH THE OWNER'S AUTHORIZED REPRESENTATIVE AND / OR LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. THE INSTALLATION OF THESE ITEMS SHALL BE INTEGRATED WITHIN DESIGNATED LANDSCAPE AREAS. FAILURE TO LOCATE THIS EQUIPMENT IN AN APPROVED LOCATION MAY RESULT IN THE IRRIGATION CONTRACTOR BEING REQUIRED TO MOVE SUCH ITEMS AT HIS OWN COST.
- THE IRRIGATION SYSTEM DESIGN IS BASED ON THE MINIMUM OPERATING PRESSURE AND THE MAXIMUM FLOW DEMAND SHOWN ON THE DRAWINGS. THE IRRIGATION CONTRACTOR SHALL FIELD VERIFY THE STATIC & OPERATING WATER PRESSURE PRIOR TO CONSTRUCTION OF ANY COMPONENT OF THE IRRIGATION SYSTEM. AFTER FIELD VERIFICATION, THE IRRIGATION CONTRACTOR SHALL NOTIFY THE OWNER, OWNER'S REPRESENTATIVE, LANDSCAPE ARCHITECT, & IRRIGATION DESIGNER OF THE PRESSURE READING FOR THE TAP.
- ALL PRESSURIZED MAINLINES, VALVES, DRIP, AND ROTOR AND SPRAY HEADS SHALL BE INSTALLED A MINIMUM OF 3' AWAY FROM ANY BUILDING FOUNDATION. IF THIS EQUIPMENT IS SHOWN WITHIN THE 3' OFFSET ON THESE PLANS, IT IS FOR THE PURPOSE OF GRAPHIC CLARITY ONLY.

CONTROLLER NOTE

- CONTROLLER 'A'**
- CONTROLLER, SEE LEGEND
 - OPEN STATIONS FOR FUTURE EXPANSION
 - STATION RUN ORDER SHALL MATCH PLANS
 - LOCATE CONTROLLER IN THE UTILITY CLOSET AS SPECIFIED ON THE ARCHITECTURE PLANS. VERIFY LOCATION WITH OWNER OR REPRESENTATIVE
 - 120 VAC POWER TO CONTROLLER LOCATION SHALL BE PROVIDED BY OTHERS. HOOK-UP OF CONTROLLERS TO 120 VAC SHALL BE PERFORMED BY THE LANDSCAPE CONTRACTOR

SLEEVING / WIRING NOTES

IN ADDITION TO PROVIDING SLEEVES FOR ALL PIPING UNDER ROADWAYS AND WALKWAYS, PROVIDE AND INSTALL SCH. 40 PVC SLEEVES FOR ALL CONTROLLER WIRES OCCURRING UNDER ALL ROADWAYS AND WALKWAYS. SLEEVES FOR CONTROLLER WIRES SHALL BE 2" DIA. AND CONTAIN NO MORE THAN 25 WIRES.

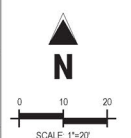


POINT OF CONNECTION 'A'

- STATIC PRESSURE: +/- TBD SIZE OF TAP: 1"
- USE 1" TAP INTO THE DOMESTIC WATERLINE DOWNSTREAM OF THE BUILDING METER
 - 1" TYPE K COPPER SERVICE FROM THE TAP THROUGH THE IRRIGATION BACKFLOW, TO THE MASTER VALVE.
 - CONTRACTOR SHALL VERIFY LOCATION OF THE EQUIPMENT, IN FIELD WITH OWNER OR OWNERS AUTHORIZED REPRESENTATIVE AND/OR LANDSCAPE ARCHITECT.
 - SEE POINT OF CONNECTION DIAGRAM, THIS SHEET, FOR THE IRRIGATION SYSTEM EQUIPMENT CONFIGURATION.
 - THE IRRIGATION CONTRACTOR SHALL FIELD VERIFY THE STATIC & OPERATING WATER PRESSURE PRIOR TO CONSTRUCTION. SEE GENERAL IRRIGATION NOTES.
 - WHEN WATER PRESSURE TO THE IRRIGATION SYSTEM EXCEEDS 95 PSI, THE IRRIGATION CONTRACTOR SHALL INSTALL A PRESSURE REDUCING / REGULATING VALVE (PRV) TO LIMIT THE WATER TO 75 PSI MAXIMUM. WHEN PRESSURE DROPS BELOW 70 PSI, THE IRRIGATION CONTRACTOR SHALL INSTALL A BOOSTER PUMP TO A MINIMUM PRESSURE OF 70 PSI.

IRRIGATION LEGEND

SYMBOL	MANUF.	MODEL NO.	DESCRIPTION	REMARKS/DETAIL
CONTROLLERS AND SENSORS				
[Symbol]	HUNTER	ICORE TBD STATION	IRRIGATION CONTROLLER TO BE A HUNTER IC-XXXX-M WITHIN METAL VANDAL RESISTANT LOCKABLE PEDESTAL CABINET. IRRIGATION CONTROLLER TO BE LOCATED AS DIRECTED BY OWNER OR OWNERS REPRESENTATIVE.	DETAIL 11/IR1.2
[Symbol]	HUNTER	SOLAR-SYNC	ETRAIN/FREEZE SENSOR - MOUNT PER DETAIL AND PLAN LOCATION	DETAIL 4 / IR1.2
POINT OF CONNECTION				
[Symbol]	PER CITY OR WATER DISTRICT CODES AND STANDARDS		1" POINT OF CONNECTION, REFERENCE CIVIL PLANS FOR TAP LOCATION	SEE P.O.C. DIAGRAM THIS SHEET
[Symbol]	FEBCO	MODEL 825YA	3/4" BACKFLOW PREVENTER-MOUNT IN GUARDSHACK MODEL #GS-1 W/ FROST GUARD BAG MODEL #FG-1 FOR WINTERIZATION. SEE POINT OF CONNECTION SCHEMATIC DIAGRAMS	DETAIL 2 / IR1.2
VALVES				
[Symbol]	HUNTER	IBV-101G-FS	1" MASTER VALVE	DETAIL 11 / IR1.2
[Symbol]	DATA INDUSTRIAL	IR SERIES	1" PVC TEE MODEL FLOW SENSOR	DETAIL 15 / IR1.2
[Symbol]	HUNTER	ICV-FS-ADJ	REMOTE CONTROL VALVE, SIZE PER PLAN. ADJUST PRESSURE REGULATOR BETWEEN 50-45PSI. GROUP VALVES TO FIT WITHIN WATER SCHEDULES/MAXIMIZE AVAILABLE GPMs.	DETAIL 3 / IR1.2
[Symbol]	RAINBIRD	KCZ-100-PRB-COM (0.5-20 GPM)	DRIP CONTROL ZONE KITS (24 VAC-60Hz) IRRIGATION CONTRACTOR TO VERIFY DRIP ZONES PRESSURE REQUIREMENTS AND USE VALVE REGULATOR FOR HIGH PRESSURES. GROUP VALVES TO FIT WITHIN WATER SCHEDULES/MAXIMIZE AVAILABLE GPMs.	DETAIL 6 / IR1.2
[Symbol]	RAINBIRD	33DR	QUICK COUPLER WITH LOCK	DETAIL 12 / IR1.2
[Symbol]	WATTS	3 WGV	GATE VALVE, SEE POINT OF CONNECTION SCHEMATIC DIAGRAMS	DETAIL 8 / IR1.2
[Symbol]	ANY APPROVED	ANY APPROVED	PVC BALL VALVE - SIZE PER MAINLINE SIZE	DETAIL 14 / IR1.2
MAIN LINE / LATERALS & SLEEVES				
[Symbol]	ANY APPROVED	ANY APPROVED	PRESSURIZED PVC MAINLINE - 1-1/2" CLASS 200 PVC PIPE UNLESS OTHERWISE NOTED	DETAIL 13 / IR1.2
[Symbol]	ANY APPROVED	ANY APPROVED	NON-PRESSURIZED LATERAL LINE - USE 1"-INCH SIZE UNLESS OTHERWISE NOTED. PIPE OVER 1" CL 200 PVC, PIPE 1" AND UNDER USE CL. 315 PVC PIPE - INSTALL ANTI-FREEZE DRAINS AT LOW POINTS	DETAIL 13 / IR1.2
[Symbol]	ANY APPROVED	ANY APPROVED	IRRIGATION SLEEVE, SCH. 40 PVC, MIN. TWICE SIZE OF PIPE TO BE INSERTED, ONE SLEEVE PER PIPE	DETAIL 13 / IR1.2
[Symbol]	ANY APPROVED	ANY APPROVED	CONTROL WIRING SLEEVE, 2" SCH. 40 PVC (SEE SLEEVE/WIRING NOTE, THIS SHEET)	DETAIL 13 / IR1.2
DRIP SYSTEM				
LAYOUT AREA	RAINBIRD	FOR LANDSCAPE AREAS - XBS-XXX	XERI BLACK STRIPE POLY TUBING (OR APPROVED EQUAL), CONNECTION TO PVC LATERAL PER CONTRACTOR. ATTACH TREE & SHRUB DRIP EMITTERS PER THE EMITTER SCHEDULE BELOW. USE 3/4"-INCH POLY TUBING SIZE UNLESS OTHERWISE NOTED. FLOWS IN GPM FOR LINE CHANGES SHALL BE: (3/4"-1" TO 7 GPM), (1"-8" TO 14 GPM), (1-1/2"-15" TO 35 GPM). INSTALL SEVERAL IN-LINE CHECK VALVES IN ZONES W/ LARGE ELEVATION DIFFERENCES. GROUP DRIP CONTROLLER VALVES TOGETHER TO MAXIMIZE WATER WINDOWS.	DETAIL 5 / IR1.2
DRIP EMITTER SCHEDULE	PROVIDE THE FOLLOWING DRIP EMITTERS FOR EACH PLANT:	PLANTS, 1 GALLON AND SMALLER: PLANTS, 5 GALLON: UPRIGHT JUNIPERS, 10-15 GALLON: TREES, 1" TO 2-1/2" CALIPER: TREES, 3" TO 4" CALIPER:	1, XB-10PC - (1 GPH) EMITTER PER PLANT 2, XB-10PC - (2 GPH) EMITTERS PER PLANT 3, XB-10PC - (3 GPH) EMITTERS PER TREE 4, XB-10PC - (4 GPH) EMITTERS PER TREE 7, XB-10PC - (7 GPH) EMITTERS PER TREE	---



PARK MEADOWS, FILING NO. 1-A THIRD AMENDMENT, LOT 6

1.481 ACRES ±

SIP #SP19-13

CONCEPTUAL IRRIGATION
DESIGN ONLY.
NOT FOR CONSTRUCTION

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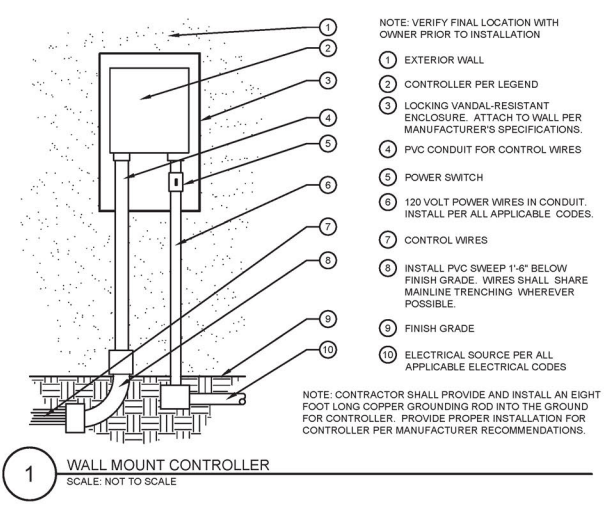
IN-N-OUT
BURGER

IN-N-OUT BURGER
LOT 6, PARK MEADOWS TOWN CENTER,
FILING NO. 1-A THIRD AMENDMENT - SIP
INO00011.20
9171 E WESTVIEW RD
LONE TREE, COLORADO 80124

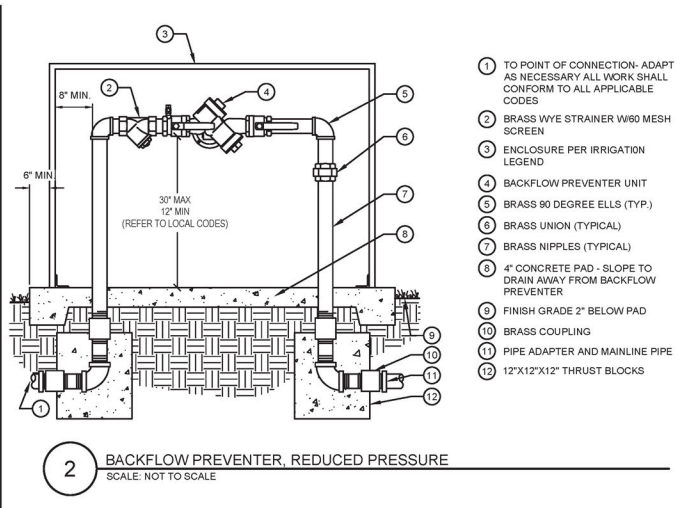
#	Date	Issue / Description	Init.
1	08/01/19	1ST SIP SUBMITTAL	TDN

Project No: INO00011.20
Drawn By: EDN
Checked By: TDN
Date: 07/22/19

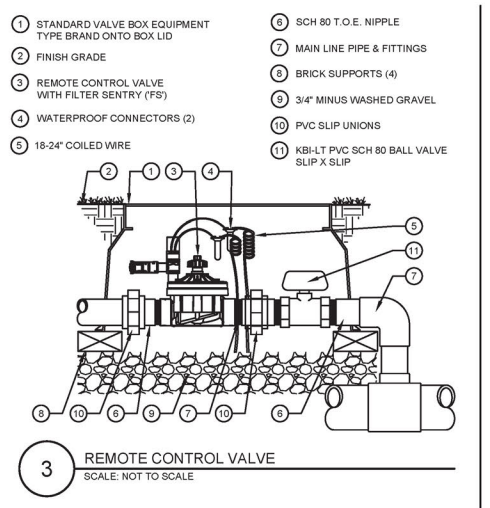
IRRIGATION DETAILS



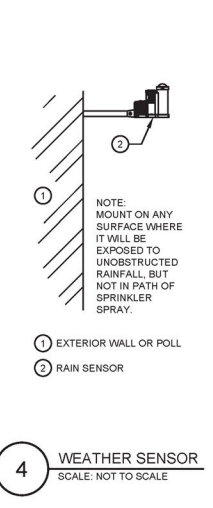
- NOTE: VERIFY FINAL LOCATION WITH OWNER PRIOR TO INSTALLATION.
- EXTERIOR WALL
 - CONTROLLER PER LEGEND
 - LOCKING VANDAL-RESISTANT ENCLOSURE. ATTACH TO WALL PER MANUFACTURER'S SPECIFICATIONS.
 - PVC CONDUIT FOR CONTROL WIRES
 - POWER SWITCH
 - 120 VOLT POWER WIRES IN CONDUIT. INSTALL PER ALL APPLICABLE CODES.
 - CONTROL WIRES
 - INSTALL PVC SWEEP 1" BELOW FINISH GRADE. WIRES SHALL SHARE MAINLINE TRENCHING WHEREVER POSSIBLE.
 - FINISH GRADE
 - ELECTRICAL SOURCE PER ALL APPLICABLE ELECTRICAL CODES
- NOTE: CONTRACTOR SHALL PROVIDE AND INSTALL AN EIGHT FOOT LONG COPPER GROUNDING ROD INTO THE GROUND FOR CONTROLLER. PROVIDE PROPER INSTALLATION FOR CONTROLLER PER MANUFACTURER RECOMMENDATIONS.



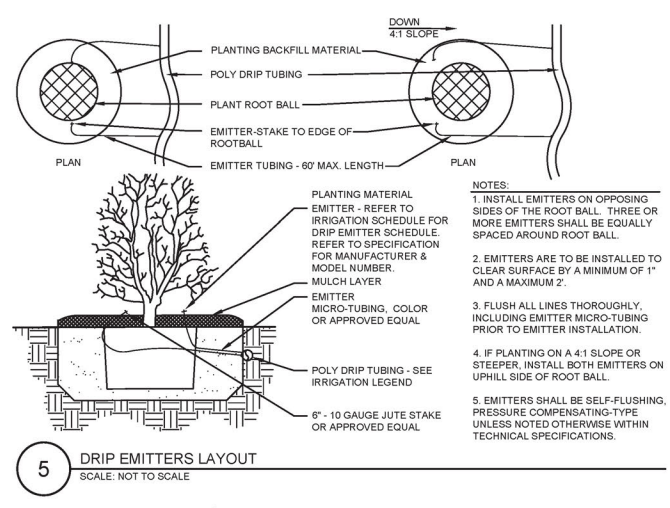
- TO POINT OF CONNECTION. ADAPT AS NECESSARY ALL WORK SHALL CONFORM TO ALL APPLICABLE CODES
- BRASS WYE STRAINER W/60 MESH SCREEN
- ENCLOSURE PER IRRIGATION LEGEND
- BACKFLOW PREVENTER UNIT
- BRASS 90 DEGREE ELLS (TYP.)
- BRASS UNION (TYPICAL)
- BRASS NIPPLES (TYPICAL)
- 4" CONCRETE PAD - SLOPE TO DRAIN AWAY FROM BACKFLOW PREVENTER
- FINISH GRADE 2" BELOW PAD
- BRASS COUPLING
- PIPE ADAPTER AND MAINLINE PIPE
- 12"x12"x12" THRUST BLOCKS



- STANDARD VALVE BOX EQUIPMENT TYPE BRAND ONTO BOX LID
- FINISH GRADE
- REMOTE CONTROL VALVE WITH FILTER SENTRY (FS)
- WATERPROOF CONNECTORS (2)
- 18-24" COILED WIRE
- SCH 80 T.O.E. NIPPLE
- MAIN LINE PIPE & FITTINGS
- BRICK SUPPORTS (4)
- 3/4" MINUS WASHED GRAVEL
- PVC SLIP UNIONS
- KB-LT PVC SCH 80 BALL VALVE SLIP X SLIP

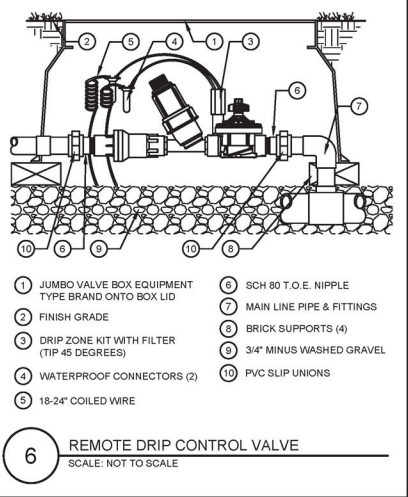


- EXTERIOR WALL OR POLL
 - RAIN SENSOR
- NOTE: MOUNT ON ANY SURFACE WHERE IT WILL BE EXPOSED TO UNOBSTRUCTED RAINFALL, BUT NOT IN PATH OF SPRINKLER SPRAY.

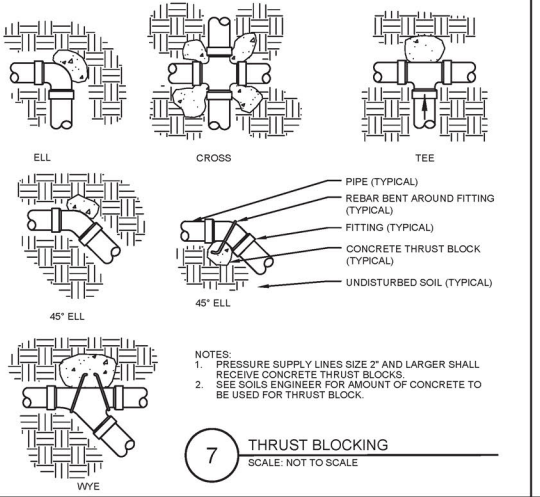


- PLANTING BACKFILL MATERIAL
- POLY DRIP TUBING
- PLANT ROOT BALL
- EMITTER-STAKE TO EDGE OF ROOTBALL
- EMITTER TUBING - 60" MAX. LENGTH
- PLANTING MATERIAL
- IRRIGATION SCHEDULE FOR DRIP EMITTER SCHEDULE. REFER TO SPECIFICATION FOR MANUFACTURER & MODEL NUMBER.
- MULCH LAYER
- EMITTER MICRO-TUBING, COLOR OR APPROVED EQUAL
- POLY DRIP TUBING - SEE IRRIGATION LEGEND
- 6" - 10 GAUGE JUTE STAKE OR APPROVED EQUAL

- NOTES:
- INSTALL EMITTERS ON OPPOSING SIDES OF THE ROOT BALL. THREE OR MORE EMITTERS SHALL BE EQUALLY SPACED AROUND ROOT BALL.
 - EMITTERS ARE TO BE INSTALLED TO CLEAR SURFACE BY A MINIMUM OF 1" AND A MAXIMUM 2".
 - FLUSH ALL LINES THOROUGHLY, INCLUDING EMITTER MICRO-TUBING PRIOR TO EMITTER INSTALLATION.
 - IF PLANTING ON A 4:1 SLOPE OR STEEPER, INSTALL BOTH EMITTERS ON UPHILL SIDE OF ROOT BALL.
 - EMITTERS SHALL BE SELF-FLUSHING, PRESSURE COMPENSATING-TYPE UNLESS NOTED OTHERWISE WITHIN TECHNICAL SPECIFICATIONS.

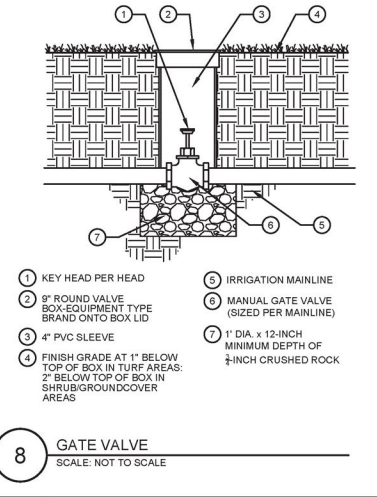


- JUMBO VALVE BOX EQUIPMENT TYPE BRAND ONTO BOX LID
- FINISH GRADE
- DRIP ZONE KIT WITH FILTER (TYP 45 DEGREES)
- WATERPROOF CONNECTORS (2)
- 18-24" COILED WIRE
- SCH 80 T.O.E. NIPPLE
- MAIN LINE PIPE & FITTINGS
- BRICK SUPPORTS (4)
- 3/4" MINUS WASHED GRAVEL
- PVC SLIP UNIONS

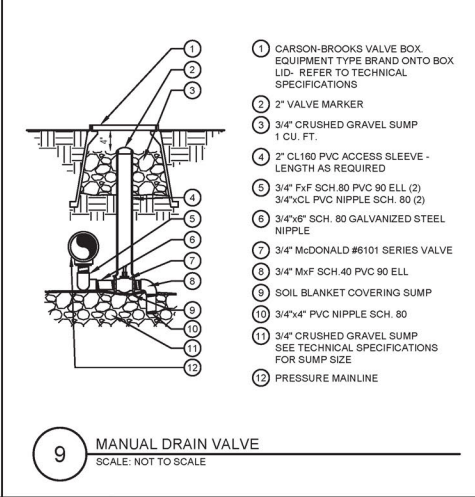


- PIPE (TYPICAL)
- REBAR BENT AROUND FITTING (TYPICAL)
- FITTING (TYPICAL)
- CONCRETE THRUST BLOCK (TYPICAL)
- UNDISTURBED SOIL (TYPICAL)

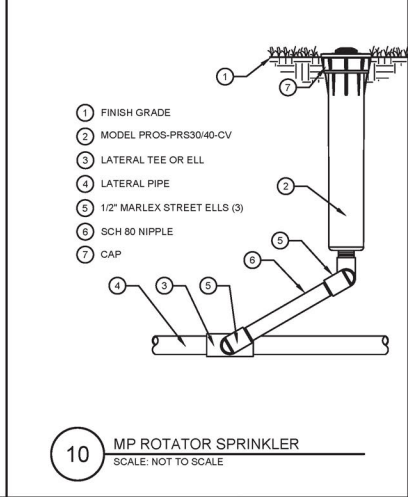
- NOTES:
- PRESSURE SUPPLY LINES SIZE 2" AND LARGER SHALL RECEIVE CONCRETE THRUST BLOCKS.
 - SEE SOILS ENGINEER FOR AMOUNT OF CONCRETE TO BE USED FOR THRUST BLOCK.



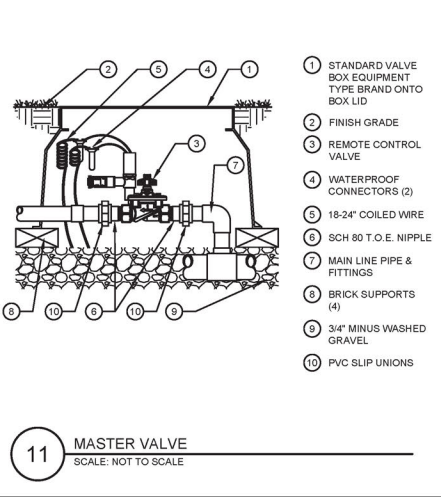
- KEY HEAD PER HEAD
- 9" ROUND VALVE BOX-EQUIPMENT TYPE BRAND ONTO BOX LID
- 4" PVC SLEEVE
- FINISH GRADE AT 1" BELOW TOP OF BOX IN TURF AREAS; 2" BELOW TOP OF BOX IN SHRUB/GROUND COVER AREAS
- IRRIGATION MAINLINE
- MANUAL GATE VALVE (SIZED PER MAINLINE)
- 1" DIA. x 12-INCH MINIMUM DEPTH OF 1/2-INCH CRUSHED ROCK



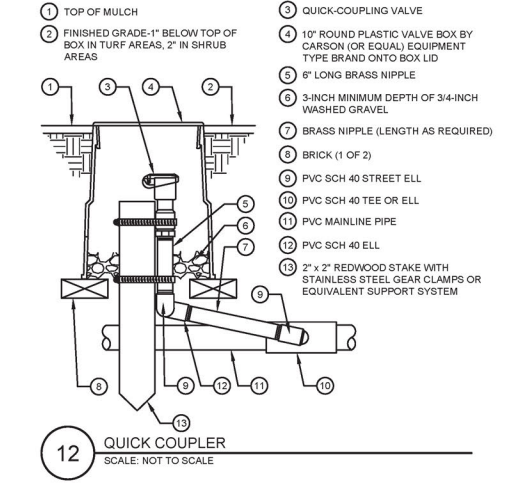
- CARSON BROOKS VALVE BOX EQUIPMENT TYPE BRAND ONTO BOX LID. REFER TO TECHNICAL SPECIFICATIONS
- 2" VALVE MARKER
- 3/4" CRUSHED GRAVEL SUMP 1 CU. FT.
- 2" CL180 PVC ACCESS SLEEVE - LENGTH AS REQUIRED
- 3/4" Fx F SCH 80 PVC 90 ELL (2)
- 3/4"x1/2" PVC NIPPLE SCH. 80 (2)
- 3/4"x1/2" SCH. 80 GALVANIZED STEEL NIPPLE
- 3/4" McDONALD #6101 SERIES VALVE
- 3/4" Mx F SCH. 40 PVC 90 ELL
- SOIL BLANKET COVERING SUMP
- 3/4"x4" PVC NIPPLE SCH. 80
- 3/4" CRUSHED GRAVEL SUMP SEE TECHNICAL SPECIFICATIONS FOR SUMP SIZE
- PRESSURE MAINLINE



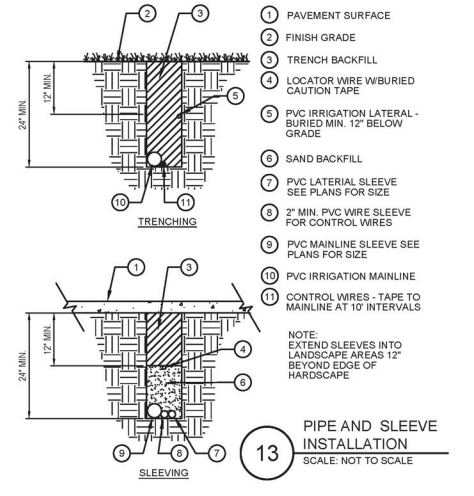
- FINISH GRADE
- MODEL PROS-PRS30/40-CV
- LATERAL TEE OR ELL
- LATERAL PIPE
- 1/2" MARLEX STREET ELLS (3)
- SCH 80 NIPPLE
- CAP



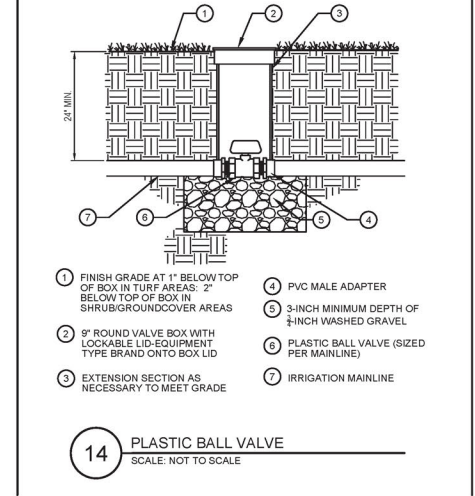
- STANDARD VALVE BOX EQUIPMENT TYPE BRAND ONTO BOX LID
- FINISH GRADE
- REMOTE CONTROL VALVE
- WATERPROOF CONNECTORS (2)
- 18-24" COILED WIRE
- SCH 80 T.O.E. NIPPLE
- MAIN LINE PIPE & FITTINGS
- BRICK SUPPORTS (4)
- 3/4" MINUS WASHED GRAVEL
- PVC SLIP UNIONS



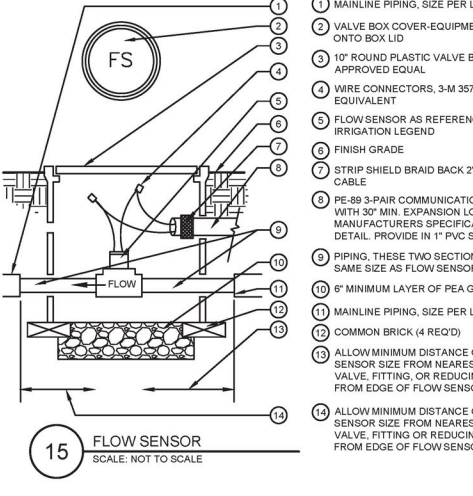
- TOP OF MULCH
- FINISHED GRADE-1" BELOW TOP OF BOX IN TURF AREAS, 2" IN SHRUB AREAS
- QUICK-COUPLING VALVE
- 10" ROUND PLASTIC VALVE BOX BY CARSON (OR EQUAL) EQUIPMENT TYPE BRAND ONTO BOX LID
- 6" LONG BRASS NIPPLE
- 3/4-INCH MINIMUM DEPTH OF 3/4-INCH WASHED GRAVEL
- BRASS NIPPLE (LENGTH AS REQUIRED)
- BRICK (1 OF 2)
- PVC SCH 40 STREET ELL
- PVC SCH 40 TEE OR ELL
- PVC MAINLINE PIPE
- PVC SCH 40 ELL
- 2" x 2" REDWOOD STAKE WITH STAINLESS STEEL GEAR CLAMPS OR EQUIVALENT SUPPORT SYSTEM



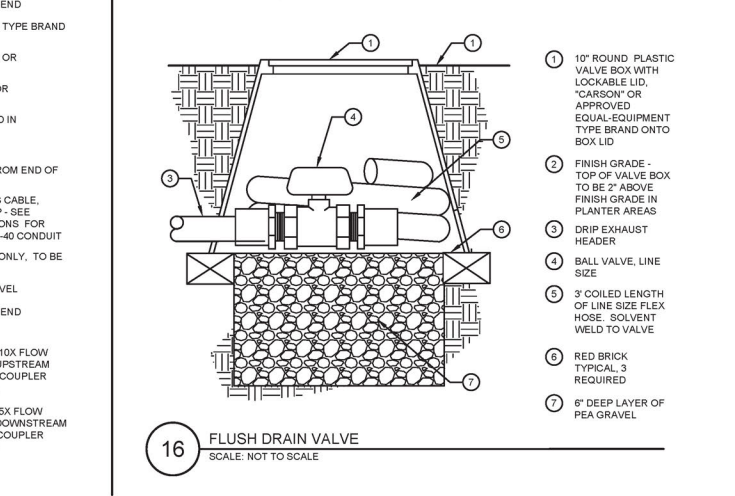
- PAVEMENT SURFACE
 - FINISH GRADE
 - TRENCH BACKFILL
 - LOCATOR WIRE W/BURIED CAUTION TAPE
 - PVC IRRIGATION LATERAL-BURIED MIN. 12" BELOW GRADE
 - SAND BACKFILL
 - PVC LATERAL SLEEVE SEE PLANS FOR SIZE
 - 2" MIN. PVC WIRE SLEEVE FOR CONTROL WIRES
 - PVC MAINLINE SLEEVE SEE PLANS FOR SIZE
 - PVC IRRIGATION MAINLINE
 - CONTROL WIRES - TAPE TO MAINLINE AT 10' INTERVALS
- NOTE: EXTEND SLEEVES INTO LANDSCAPE AREAS 12" BEYOND EDGE OF HARDSCAPE



- FINISH GRADE AT 1" BELOW TOP OF BOX IN TURF AREAS; 2" BELOW TOP OF BOX IN SHRUB/GROUND COVER AREAS
- 9" ROUND VALVE BOX WITH LOCKABLE LID-EQUIPMENT TYPE BRAND ONTO BOX LID
- EXTENSION SECTION AS NECESSARY TO MEET GRADE
- PVC MALE ADAPTER
- 3-INCH MINIMUM DEPTH OF 1/2-INCH WASHED GRAVEL
- PLASTIC BALL VALVE (SIZED PER MAINLINE)
- IRRIGATION MAINLINE



- MAINLINE PIPING, SIZE PER LEGEND
- VALVE BOX COVER-EQUIPMENT TYPE BRAND ONTO BOX LID
- 10" ROUND PLASTIC VALVE BOX OR APPROVED EQUAL
- WIRE CONNECTORS, 3-M 3570 OR EQUIVALENT
- FLOW SENSOR AS REFERENCED IN IRRIGATION LEGEND
- FINISH GRADE
- STRIP SHIELD BRAID BACK 2" FROM END OF CABLE
- PE-89 3-PAIR COMMUNICATIONS CABLE, WITH 30" MIN. EXPANSION LOOP - SEE MANUFACTURER'S SPECIFICATIONS FOR DETAIL. PROVIDE IN 1" PVC SCH-40 CONDUIT
- PIPING, THESE TWO SECTIONS ONLY, TO BE SAME SIZE AS FLOW SENSOR
- 6" MINIMUM LAYER OF PEA GRAVEL
- MAINLINE PIPING, SIZE PER LEGEND
- COMMON BRICK (4 REQ'D)
- ALLOW MINIMUM DISTANCE OF 10X FLOW SENSOR SIZE FROM NEAREST UPSTREAM VALVE, FITTING, OR REDUCING COUPLER FROM EDGE OF FLOW SENSOR
- ALLOW MINIMUM DISTANCE OF 5X FLOW SENSOR SIZE FROM NEAREST DOWNSTREAM VALVE, FITTING OR REDUCING COUPLER FROM EDGE OF FLOW SENSOR

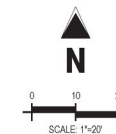


- 10" ROUND PLASTIC VALVE BOX WITH LOCKABLE LID, "CARSON" OR APPROVED EQUAL-EQUIPMENT TYPE BRAND ONTO BOX LID
- FINISH GRADE - TOP OF VALVE BOX TO BE 2" ABOVE FINISH GRADE IN PLANTER AREAS
- DRIP EXHAUST HEADER
- BALL VALVE, LINE SIZE
- 3' COILED LENGTH OF LINE SIZE FLEX HOSE. SOLVENT WELD TO VALVE
- RED BRICK TYPICAL, 3 REQUIRED
- 6" DEEP LAYER OF PEA GRAVEL

PARK MEADOWS, FILING NO. 1-A THIRD AMENDMENT, LOT 6
1.481 ACRES ±
SIP #SP19-13

Galloway

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NOTES:

PLAN WAS BASED ON THE INFORMATION PROVIDED. ALL DIMENSIONS, LUMINAIRE LOCATIONS SHOWN REPRESENT RECOMMENDED POSITIONS. THE ENGINEER AND/OR ARCHITECT MUST DETERMINE APPLICABILITY OF THE LAYOUT TO EXISTING OR FUTURE FIELD CONDITIONS.

THE STUDY IS BASED ON REQUESTED ILLUMINATION LEVELS, LUMINAIRE LOCATIONS, OR ADDITIONAL CRITERIA BY THE AUTHORITIES HAVING JURISDICTION.

THE CALCULATED PHOTOMETRIC LEVELS MAY OR MAY NOT MEET CERTAIN STANDARDS OR RECOMMENDED PRACTICES OF IESNA.

THE PHOTOMETRIC PLAN REPRESENTS ILLUMINATION LEVELS CALCULATED FROM LABORATORY DATA TAKEN UNDER CONTROLLED CONDITIONS UTILIZING CURRENT INDUSTRY STANDARD LAMP RATINGS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY (IES) APPROVED METHODS. LABORATORY TESTS ARE MADE UNDER OPTIMUM CONDITION, WITH LAMP OUTPUT AT RATED VOLTAGE, AND IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY APPROVED METHODS.

ACTUAL ILLUMINANCE LEVELS MAY DIFFER DUE TO VARIABLE FIELD CONDITIONS SUCH AS (BUT NOT LIMITED TO): VARIANCE IN LAMP LUMEN OUTPUT, LAMP TILT FACTOR, BALLAST WATTAGE OUTPUT, LINE VOLTAGE AT BALLAST, REFLECTOR SPECULARITY, LAMP LUMEN DEGRADATION, AND LUMINAIRE DIRT DEGRADATION.

THE 24'-0" MOUNTING HEIGHT IS THE ACTUAL ASSEMBLY (POLE, BASE, AND FIXTURE) AND MAY DIFFER FROM THE FROM THE LUMINAIRE'S LUMINOUS APERTURE.

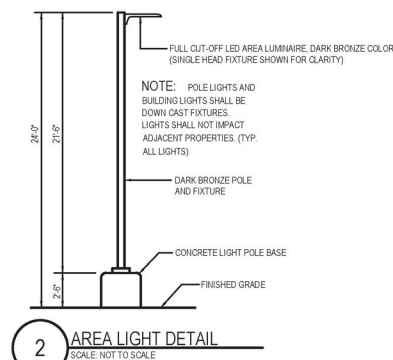
THIS PLAN REPRESENTS A SOFTWARE SIMULATED PHOTOMETRIC STUDY OF THE EXTERIOR SITE LIGHTING. IES DATA PROVIDED BY THE LIGHT MANUFACTURER OR INFORMATION TO RECREATE SAID IES DATA.

THIS PLAN IS FOR RELATIVE LAYOUT AND SCOPE OF WORK PURPOSES ONLY. REFER TO SITE PLAN PREPARED BY LOCAL CONSULTANT FOR RELATIONSHIP OF THESE LUMINAIRES AND THEIR LOCATIONS TO EXISTING STRUCTURES AND REFERENCE.

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CALCULATION SUMMARY

LABEL	UNITS	AVG	MAX	MIN
PARKING LOT AREA	FC	2.16	3.0	1.1
BUILDING ENTRIES	FC	7.14	28.5	1.8
DRIVE THRU CANOPY	FC	18.85	24.5	9.1
OUTDOOR SEATING CANOPY	FC	18.46	28.2	10.4
REMAINING ILLUMINATED AREAS	FC	1.99	6.6	0.3

LUMINAIRE SCHEDULE

MARK	SYMBOL	QTY	LAMP	HEIGHT	LLF	LUMENS	MODEL #	DESCRIPTION
OD1	[Symbol]	3	LED	24'-0" POLE	1.0	6,963	DSX1 LED P1 40K 171M MVOLT HS DBBXD	SINGLE HEAD LED LUMINAIRE, 4000K CCT, TYPE AFT WITH REAR SHIELD, DARK BRONZE COLOR, MOUNTED ON POLE #SS21-5-4C-DM19AS-FBC-DBBXD
OD1-HS	[Symbol]	9	LED	24'-0" POLE	1.0	5,436	DSX1 LED P1 40K 171M MVOLT HS DBBXD	SINGLE HEAD LED LUMINAIRE, 4000K CCT, TYPE AFT WITH REAR SHIELD, DARK BRONZE COLOR, MOUNTED ON POLE #SS21-5-4C-DM19AS-FBC-DBBXD
OA2	[Symbol]	1	LED	24'-0" POLE	1.0	9,234	DSX1 LED P1 40K 15M MVOLT DBBXD	DOUBLE HEAD LED LUMINAIRE, 4000K CCT, TYPE SM, DARK BRONZE COLOR MOUNTED ON POLE #SS21-5-4C-DM28AS-FBC-DBBXD
M	[Symbol]	12	LED	10'-0" RECESSED	1.0	2,400	125LED-24-UNV	LED 12" DOWNLIGHT, FULLY RECESSED, 24 WATT, 3000K, FLAT PRISMATIC TEMPERED GLASS LENS, WHITE DOOR FRAME
S	[Symbol]	4	LED	10'-3" WALL	1.0	9,053	FEMLE96 9000LM IMAFL MD 120 35K 80CRI	LED LOW PROFILE, 96" LENGTH, 9,000 LUMEN, MEDIUM, 3500K, MOUNTED UNDER AWNING
SI	[Symbol]	1	LED	10'-3" WALL	1.0	4,109	FEMLE48 4000LM IMAFL MD 120 35K 80CRI	LED LOW PROFILE, 48" LENGTH, 4,000 LUMEN, MEDIUM, 3500K, MOUNTED UNDER AWNING
U	[Symbol]	3	LED	8'-2" WALL	1.0	385	TR-WB-WH-CL	EXTERIOR EGRESS LANDING LIGHT WITH 90 MINUTE EMERGENCY BATTERY, COLD LOCATION, WALL MOUNTED
WI	[Symbol]	2	LED	10'-0" RECESSED	1.0	5,872	SL4L-LP-8FT-FIP-FL-80CRI-35K-800LMF-MINI-120-ZT	LED EXTERIOR RECESSED FIXTURE, 96" LENGTH, 64 WATT, 3500K, MOUNTED IN EXTERIOR NICHE

IN-N-OUT BURGER
LOT 6, PARK MEADOWS TOWN CENTER,
FILING NO. 1-A THIRD AMENDMENT - SIP
IN000011.20
9171 E WESTVIEW RD
LONE TREE, COLORADO 80124

#	Date	Issue / Description	Init.
1	08/01/19	1ST SIP SUBMITTAL	PJD

Project No: IN000011.20
Drawn By: CAC
Checked By: PJD
Date: 07/22/19

PHOTOMETRIC SITE PLAN

SITE IMPROVEMENT PLAN  PROJECT RENDERINGS

PHOTO-SIMULATION VIEW LOCATIONS

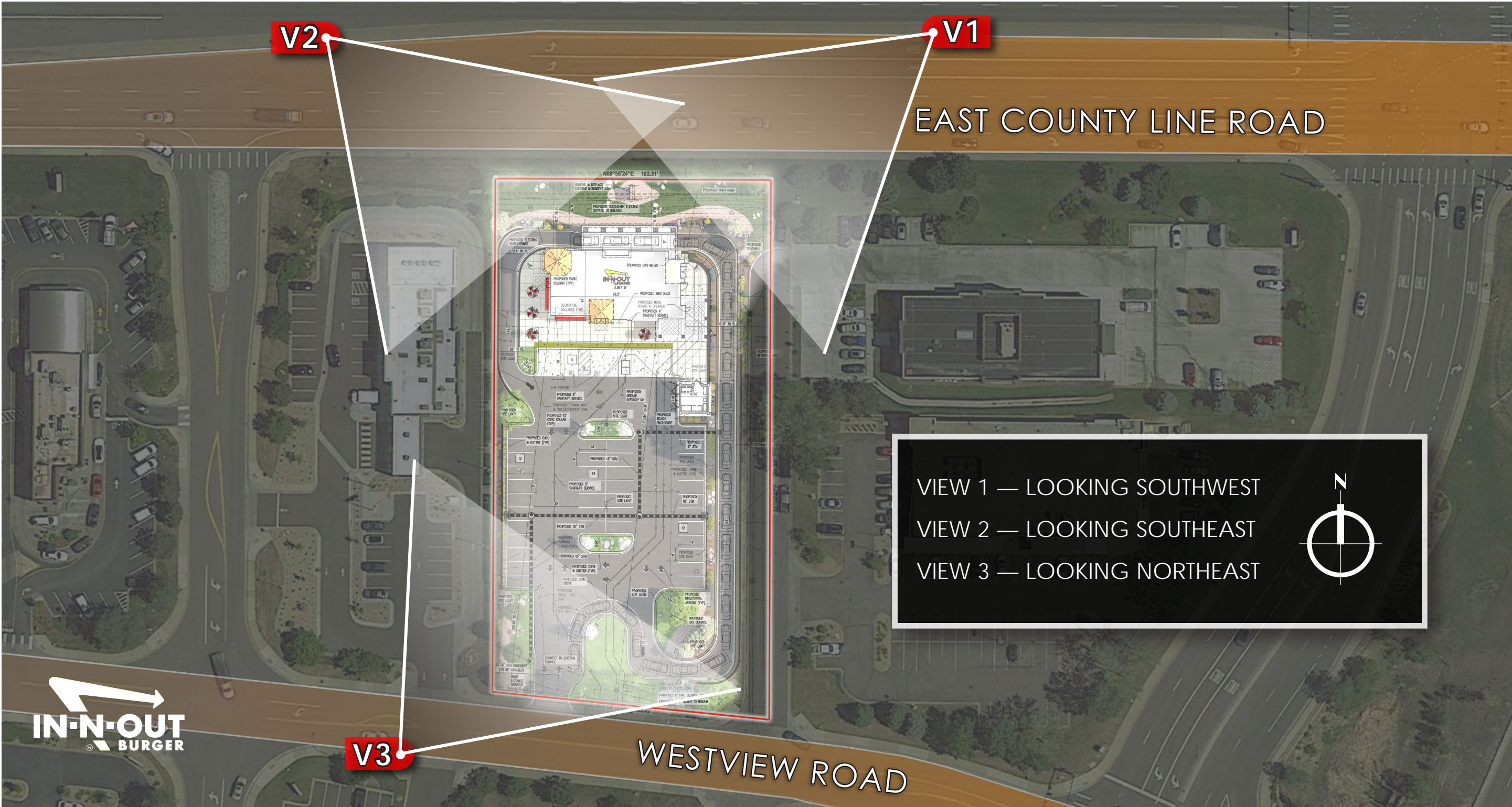


PHOTO-SIMULATION VIEW 1:EXISTING



PHOTO-SIMULATION VIEW 1:PROPOSED



NOTE: Paint colors, materials, and landscaping represented are approximations and are not to be considered exact matches. No guarantee is intended and final color, material, and landscaping appearance can vary based on numerous factors. Final color and material selection and placement is the responsibility of the property owner or the owner's agent.

PHOTO-SIMULATION VIEW 2:EXISTING



PHOTO-SIMULATION VIEW 2:PROPOSED



NOTE: Paint colors, materials, and landscaping represented are approximations and are not to be considered exact matches. No guarantee is intended and final color, material, and landscaping appearance can vary based on numerous factors. Final color and material selection and placement is the responsibility of the property owner or the owner's agent.

PHOTO-SIMULATION VIEW 3:EXISTING



PHOTO-SIMULATION VIEW 3:PROPOSED



NOTE: Paint colors, materials, and landscaping represented are approximations and are not to be considered exact matches. No guarantee is intended and final color, material, and landscaping appearance can vary based on numerous factors. Final color and material selection and placement is the responsibility of the property owner or the owner's agent.

SITE RENDER:LOOKING NORTHWEST



NOTE: Paint colors, materials, and landscaping represented are approximations and are not to be considered exact matches. No guarantee is intended and final color, material, and landscaping appearance can vary based on numerous factors. Final color and material selection and placement is the responsibility of the property owner or the owner's agent.

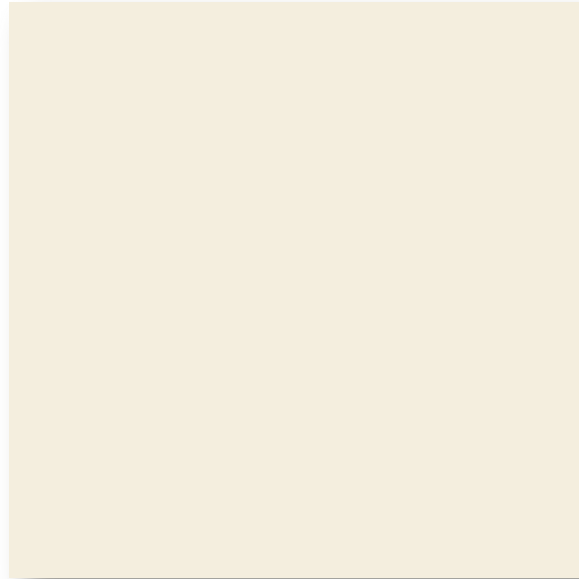
SITE RENDER:LOOKING NORTHEAST



NOTE: Paint colors, materials, and landscaping represented are approximations and are not to be considered exact matches. No guarantee is intended and final color, material, and landscaping appearance can vary based on numerous factors. Final color and material selection and placement is the responsibility of the property owner or the owner's agent.

SITE IMPROVEMENT PLAN  COLORS & MATERIALS

COLOR & MATERIAL INFORMATION



COLOR EP1, EP2, EP3
DUNN EDWARDS ~ DEW339 BONE CHINA



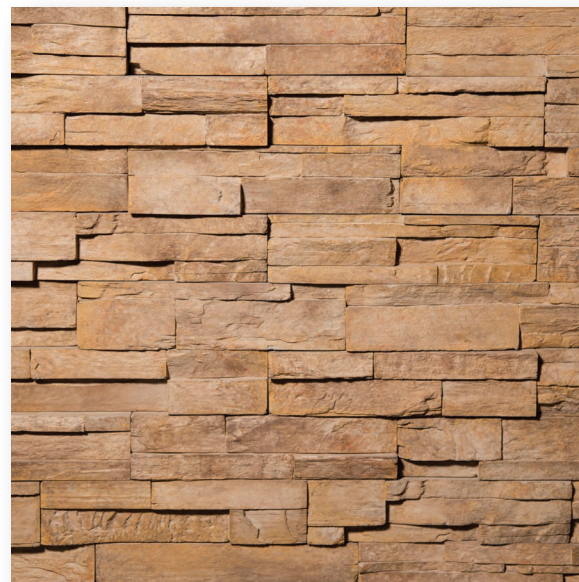
COLOR EP4
DUNN EDWARDS ~ W10-221 SAFETY RED



MATERIAL 5 (AWNING)
COOLEY BRITE ~ CUSTOM RED 79-L1124A



MATERIAL 2
STUCCO ~ 20/30 FINE SAND FLOAT FINISH



STONE TREATMENT
SUNSET STONE ~ MOUNTAIN STACKED



MATERIAL 1
EAGLE TILE ~ CAPISTRANO TERRA COTTA (3125)

NOTE: Paint colors and materials represented are approximations and are not to be considered exact matches. No guarantee is intended and final color and material appearance can vary based on environmental conditions. Final color selection and placement is the responsibility of the property owner or the owner's agent.



SUPPLEMENTAL INFORMATION

FILE NAME	FORMAT
Development Application 20190801	PDF
Notarized Letter of Authorization 20190710	PDF
Project Discussion 20190801	PDF
Site Improvement Plan Conceptual Design 20190801	PDF
Photo-Simulations 20190801	PDF
Project Renderings 20190801	PDF
Color and Material Board REV3	PDF
TIS 20190508 FINAL	PDF
Phase II Drainage Report 20190730	PDF

Lone Tree In-N-Out

Traffic Impact Study

Lone Tree, Colorado

May 8, 2019



Prepared by:

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B	Scope of Work
C	Level of Service Descriptions
D	Traffic Count Data
E	Existing Conditions Synchro Reports
F	Background Future Conditions Synchro Reports
G	In-N-Out Burger Trip Generation Excerpts
H	Total Future Conditions Synchro Reports

EXECUTIVE SUMMARY

SITE LOCATION AND STUDY AREA

The property that comprises the application area for the proposed redevelopment is approximately 1.46 acres in size and is identified as SPN: 223103207002 in Lone Tree, Colorado. It is located south of East County Line Road, and north of Westview Road at 9171 Westview Road, as shown on Figure 1-1. The subject site is currently zoned Commercial and is part of the Park Meadows Planned Development. The property is currently occupied by a car wash and convenience store with fuel pumps.

The study area, as reviewed and agreed to by the City of Lone Tree (“Staff”), is generally bounded by East County Line Road on the north, South Yosemite Street on the west and south, and Chester Street on the east. The study area for the project includes those intersections identified by Staff that could be affected by the proposed development:

1. East County Line Road/South Yosemite Road
2. East County Line Road/Parkland Road
3. East County Line Road/Chester Street
4. Westview Road/Parkland Road
5. Westview Road/Site Entrance
6. Westview Road/Chester Street
7. South Yosemite Street/Parkland Road
8. South Yosemite Street/Chester Street

DESCRIPTION OF PROPOSED DEVELOPMENT

The Applicant, In-N-Out Burger, seeks to raze and subsequently redevelop the property with a 3,995 square foot (“SF”) fast-food restaurant with drive-thru. A new access point is proposed along Westview Road to serve the site.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Based on the results of this traffic impact study, the following may be concluded:

1. Under existing 2019 traffic conditions, the signalized intersections within the study area currently operate at overall acceptable levels of service (LOS) “D” or better during the weekday midday and PM peak hours.

2. Under background future 2020 and 2040 traffic conditions, without the development of the subject site, delays would increase slightly at study intersections due to regional traffic growth. All intersections would continue to operate at overall acceptable levels of service.
3. The proposed site redevelopment would generate, upon completion and full occupancy, 415 weekday midday, 335 weekday PM peak hour trips as well as 3,746 weekday daily trips. Redeveloping the existing use would remove 82 midday and 67 PM peak hour trips from the network. Due to the nature of the proposed uses, a significant number of trips generated by the site are anticipated to be drawn from prevailing traffic volumes as pass-by trips. Thus, the site would add 130 net new midday peak hour trips, 100 net new PM peak hour trips, and 2,543 net new daily trips to the road network.
4. Under total future traffic conditions with development of the site, all of the study intersections would continue to operate at overall acceptable levels of service consistent with background conditions. Thus, no additional roadway improvements as part of the site development are required.

RECOMMENDATIONS

Based on the above conclusions and in order to mitigate the impacts of the subject development, the following are recommended:

1. The Applicant should provide the new entrance into the site as shown on the development plan.
2. The Applicant should provide 25 queueing spaces for the drive-thru as shown on the development plan to ensure proper onsite circulation and prevent any queueing on to Westview Road.

Section 1

INTRODUCTION

OVERVIEW

This report presents the results of a Traffic Impact Study (TIS) conducted in support of a site plan to develop a new fast food restaurant with drive-thru in Lone Tree, Colorado. Currently, the site is occupied by a carwash and convenience store fuel pumps.

As outlined in the adopted *Roadway Design and Construction Standards Manual* (the “Manual”) traffic studies are required for developments “with peak hour trip generation volumes anticipated to exceed 50 vehicles during any peak hour”. This report fulfills the requirement for a traffic impact study as required under the Manual.

The basis of this traffic impact assessment includes a field reconnaissance of the area to determine access opportunities and constraints, confirmation of the study area by City staff, traffic counts conducted at key intersections in the site vicinity, a review of the City’s Comprehensive Plan, as well as conversations with Staff to ascertain planned transportation improvements/enhancements, and information from In-N-Out Burger including preliminary site concepts.

SITE LOCATION AND STUDY AREA

The property that comprises the application area for the preliminary site plan is approximately 1.46 acres in size and is identified as SPN: 223103207002 in Lone Tree, Colorado. The property is located at 9171 Westview Road, as shown on Figure 1-1. The subject site is currently zoned Commercial and developed with a car wash and convenience store with fuel pumps. Access to the existing site is provided via an entrance along Westview Road.

The Applicant, In-N-Out Burger seeks to redevelop the property with a 3,995 SF fast-food restaurant with drive-thru. A reduction of the Applicant’s proposed preliminary site plan is provided on Figure 1-2. A full-size copy of the plan is provided in Appendix A.

The study area, as reviewed and agreed to by Staff in accordance with the Manual, is generally bounded by East County Line Road to the north, South Yosemite Street to the west and south and Chester Street to the east. A copy of the scoping correspondence is included in Appendix B.

Tasks undertaken in the course of this study included the following:

1. Reviewed the Applicant’s proposed development plans and other background data.

2. Conducted a field reconnaissance of existing roadway and intersection geometries, traffic controls, and speed limits.
3. Participated in correspondence with Staff and the project team to establish the general study scope and specific analysis parameters.
4. Conducted counts of existing traffic at eight (8) key study intersections during weekday lunch (midday) peak and PM peak hours.
5. Analyzed existing levels of service at each of the key study intersections based on the methodologies set forth in the Highway Capacity Manual 2000 as reported by Synchro version 10.
6. Forecasted background future traffic volumes based on baseline traffic counts, and regional traffic growth for 2020 and 2040 build-out conditions.
7. Calculated background levels of service at each of the key study intersections for the projected build-out year based on background future traffic forecasts, and the existing/future lane use and traffic controls.
8. Estimated the number of weekday midday peak and PM peak hour trips that would be generated by the proposed new fast food use based on information provided by the Applicant.
9. Prepared weekday midday peak and PM peak hour total future traffic forecasts based on background traffic forecasts plus site traffic assignments for the 2020 (buildout year) as well as 2040 (long range) conditions.
10. Calculated total future levels of service for each of the key study intersections based on projected total future traffic forecasts, existing/future traffic controls and intersection geometries.
11. Identified roadway improvements required to accommodate future traffic volumes as necessary.

Sources of data for this analysis included traffic counts conducted by IDAX Data Solutions, the Institute of Transportation Engineers (ITE), Trip Generation, 10th edition, the Highway Capacity Manual 2000, In-N-Out Burger, City of Lone Tree, Colorado and the files/library of Wells + Associates.



Figure 1-1
Site Location



NORTH

Lone Tree In-N-Out
Lone Tree, Colorado



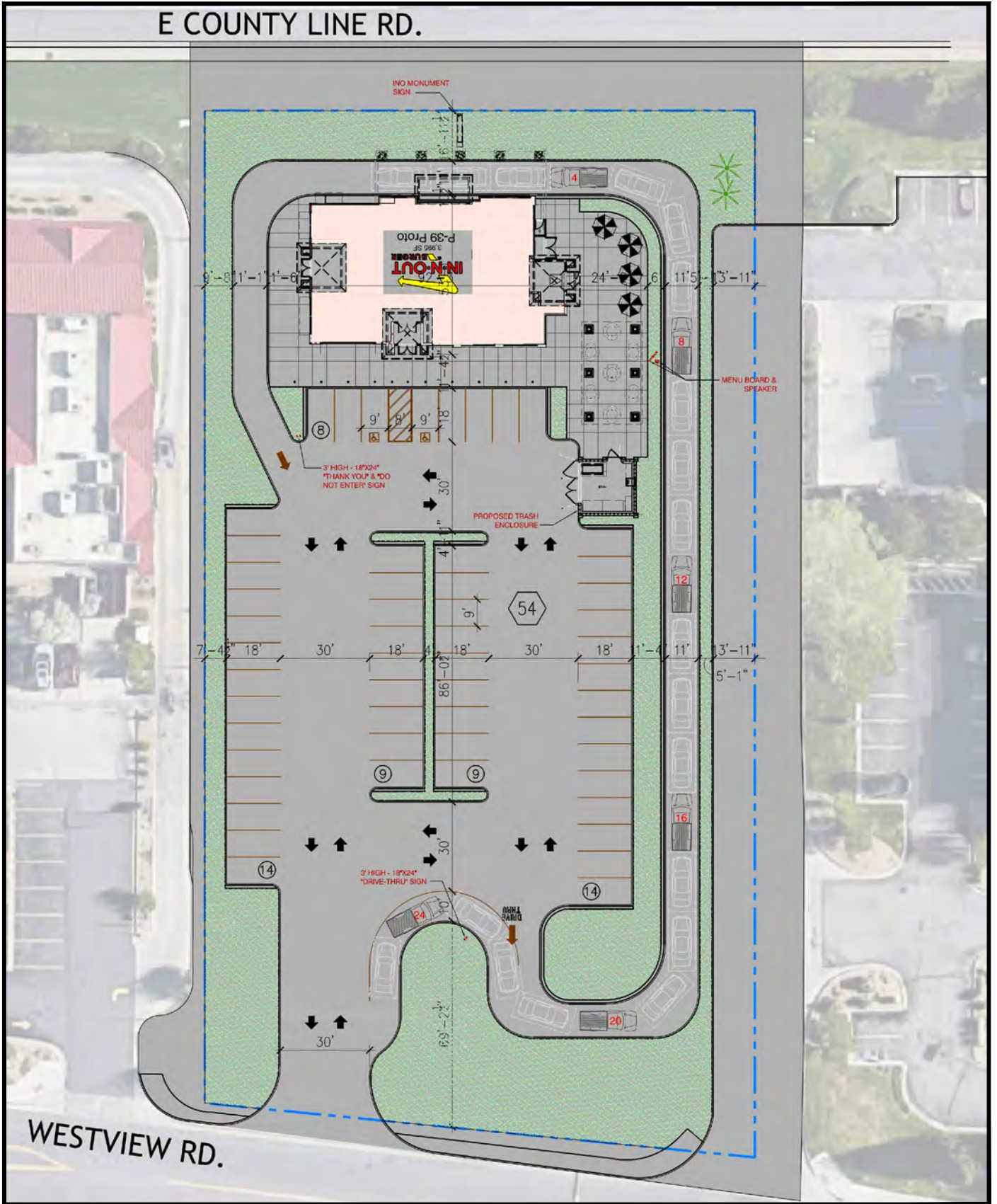


Figure 1-2
Development Plan



NORTH

Lone Tree In-N-Out
Lone Tree, Colorado

SITE DESCRIPTION AND ACCESS

Site Conditions. The terrain proximate to and surrounding the site is generally classified as “level”.

Hazardous Conditions. Based on the field reconnaissance in the vicinity of the subject site, no hazardous features or constraints were identified.

Existing and Proposed Site Access. Access to the existing on-site use is provided via a full movement entrance on Westview Road. The current site entrance also provides access to a 6,940 SF bank use and 11,250 SF of retail uses. As shown on Figure 1-2, the Applicant is seeking approval of a potential new full access entrance on Westview Road and closing the current access that the bank and retail uses share.

Existing Zoning. The subject site is currently zoned Commercial and is part of the Park Meadows Planned Development and is currently developed with a 4,072 SF car wash, 1,925 convenience store and four (4) vehicle fueling stations. Figure 1-3 depicts the existing zoning associated with the subject property, as well as neighboring properties as shown on the City of Lone Tree zoning map.

Nearby Uses. The properties surrounding the subject site along Westview Drive are generally developed with similar commercial and/or hotel uses. The subject property is west of the Park Meadows Mall.

Comprehensive Plan Land Use Recommendations for the Property. According to the City’s Comprehensive Plan, the subject property is identified for future “Commercial” use. The proposed development conforms this land use designation.

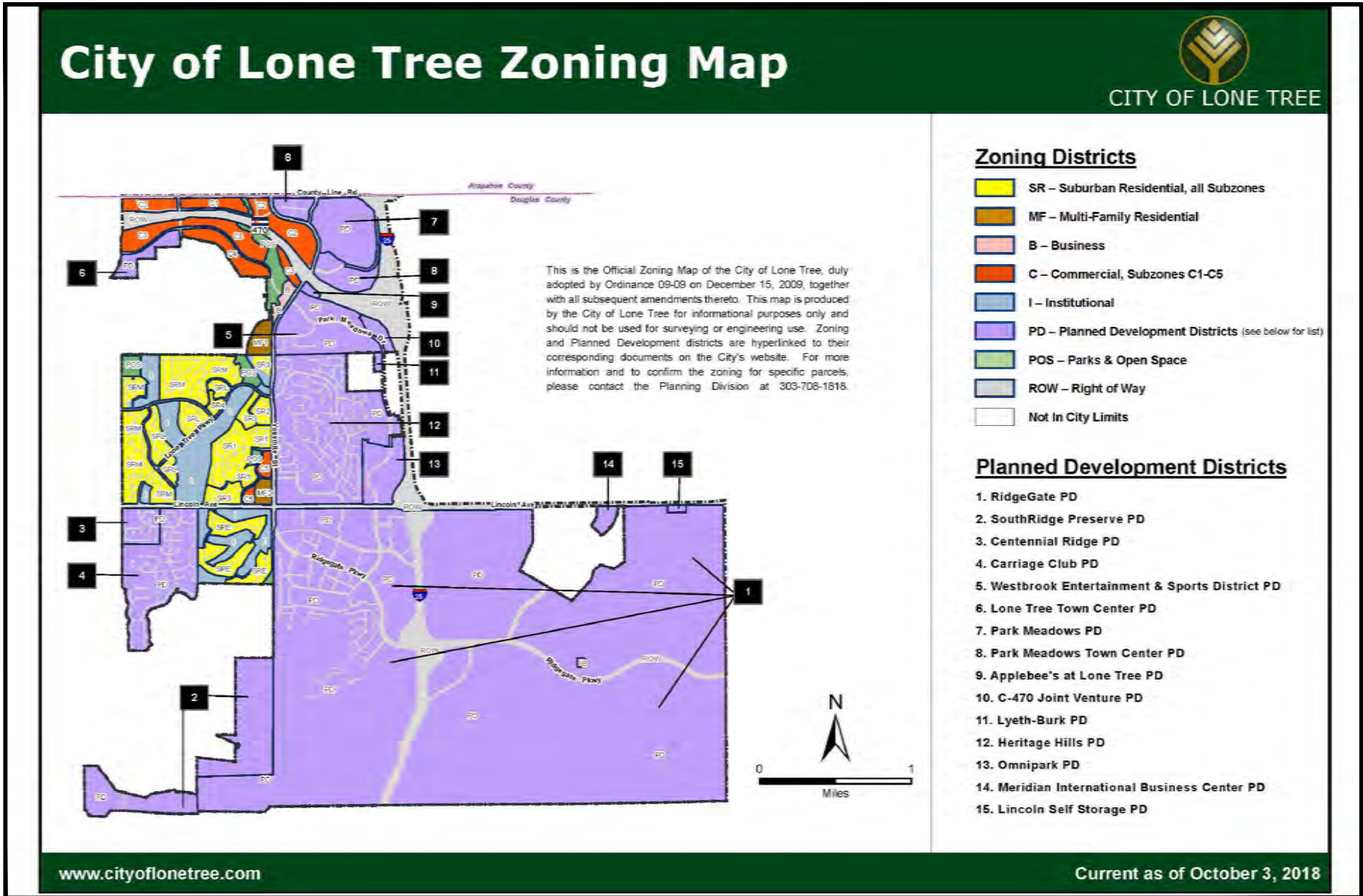


Figure 1-3
Existing Zoning Map


 NORTH
 Lone Tree In-N-Out
 Lone Tree, Colorado

Section 2

BACKGROUND INFORMATION

STUDY AREA

As required by the Manual, the scope of work was determined through conversations with City Staff to gain concurrence on the study area and basic analysis parameters. The agreed upon scope with Wells + Associates and City of Lone Tree Staff is provided in Appendix B. As discussed with Staff, the traffic study focuses primarily on the following intersections:

Existing Intersections

1. East County Line Road/South Yosemite Road
2. East County Line Road/Parkland Road
3. East County Line Road/Chester Street
4. Westview Road/Parkland Road
5. Westview Road/Site Entrance
6. Westview Road/Chester Street
7. South Yosemite Street/Parkland Road
8. South Yosemite Street/Chester Street

STUDY ASSUMPTIONS

For purposes of this analysis only, the proposed use is assumed to be completely built and occupied in one phase by 2020. As specified by City Staff, a long-term analysis of 2040 was studied which consists of 1% per year growth rate applied to nearby arterials.

STUDY METHODOLOGY

Synchro software version 10 was used to evaluate levels of service at each of the study intersections during the weekday lunch (midday) and weekday PM peak hours. Synchro is a macroscopic model used for optimizing traffic signal timing and performing capacity analyses. The software can model existing traffic signal timings or optimize splits, offsets, and cycle lengths for individual intersections, an arterial, or a complete network. Synchro allows the user to evaluate the effects of changing intersection geometrics, traffic demands, traffic control, and/or traffic signal settings as well as optimize traffic signal timings.

The levels of service reported for the signalized and unsignalized intersections analyzed herein were taken from the Highway Capacity Manual 2000 (HCM) reports generated by Synchro 10. Level of service descriptions are included in Appendix C. Peak hour factors (PHF's) were

calculated by approach using the existing count data and were applied to each of the study intersections.

The heavy vehicle (%HV) factor for the East County Line Road mainline through movements were considered using the existing traffic counts. It was observed that %HV factors along the arterials were under 2%. In order to maintain a conservative analysis a default %HV factor of 2% was used for all movements in the study area.

Existing Roadway Network. Regional access to the subject site is provided by East County Line Road and South Yosemite Street, and local access is provided via Chester Street, Parkland Road, and Westview Road. Figure 2-1 depicts existing lane use and traffic controls in the vicinity of the subject site. The following provides a description of each of the roadways within the study network

East County Line Road. County Line Road is a median divided six-lane roadway with turn lanes. The posted speed limit is 45 mph. Per Lone Tree's functional classification map, County Line Road is designated as a principal arterial. The intersections with South Yosemite Street and Chester Street operate under signalized control while the intersection with Parkland Road as right-in/right-out STOP control.

South Yosemite Street. South Yosemite Street is a median divided four-lane roadway with turn lanes. The posted speed limit is 35 mph. Per Lone Tree's functional classification map, South Yosemite Street is designated as a minor arterial. The intersections with County Line Road, Parkland Road and Chester Street operate under signalized control.

Chester Street. Chester Street is a median divided four-lane roadway with turn lanes. The posted speed limit is 30 mph. Per Lone Tree's functional classification map, Chester Street is designated as a collector. The intersections with County Line Road, Westview Road and Yosemite Street operate under signalized control.

Parkland Road (Route 2200). Parkland Road is an undivided two-lane roadway with turn lanes. The roadway has an assumed speed limit of 25 mph with no signs posted. Per Lone Tree's functional classification map, Parkland Road is designated as a local street. The intersections with County Line Road and Yosemite Street operate under signalized control while the intersection with Westview Road operate under STOP control.

Westview Road (Route 2200). Westview Road is an undivided two-lane roadway with turn lanes. The roadway has an assumed speed limit of 25 mph with no signs posted. Per Lone Tree's functional classification map, Westview Road is designated as a local street. The intersection with Chester Street operates under signalized control while the intersection with Parkland Road operate under STOP control. Westview Road provides access to the subject parcel and the proposed future access to proposed development.

Assumed Improvements. As discussed with Staff, no funded/programmed roadway improvements were identified in the study area nor assumed in this TIS.

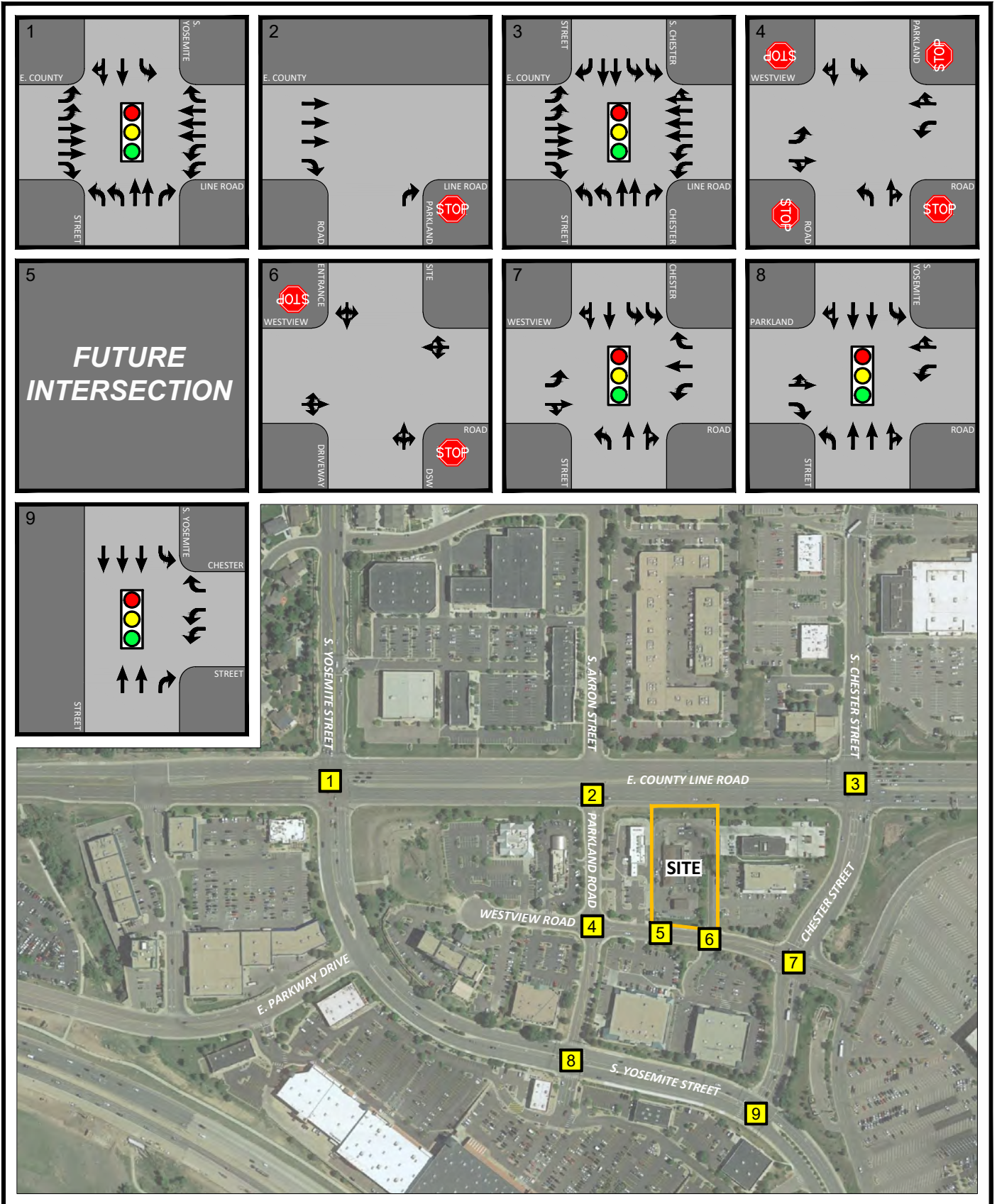


Figure 2-1
Existing Lane Use and Traffic Controls

- Represents One Travel Lane
- Signalized Intersection
- Stop Sign



NORTH

Lone Tree In-N-Out
Lone Tree, Colorado



Section 3

ANALYSIS OF EXISTING CONDITIONS

TRAFFIC VOLUMES

Weekday midday and PM peak hour turning movement counts were conducted on Tuesday, April 16, 2019 from 11:00 AM to 2:00 PM and 4:30 PM to 7:30 PM at the following intersections:

1. East County Line Road/South Yosemite Road
2. East County Line Road/Parkland Road
3. East County Line Road/Chester Street
4. Westview Road/Parkland Road
5. Westview Road/Site Entrance
6. Westview Road/Chester Street
7. South Yosemite Street/Parkland Road
8. South Yosemite Street/Chester Street

For purposes of this study, the following common peak hours were selected based on a review of the intersection volumes:

Weekday midday Peak Hour: 12:00 PM-1:00 PM

Weekday PM Peak Hour: 4:30 PM-5:30 PM

The common peak hour counts were balanced to account for variances and are summarized on Figure 3-1. Copies of traffic counts are included in Appendix D. Existing peak hour factors (PHF) were also computed by approach from the traffic counts and applied to the analysis.

OPERATIONAL ANALYSIS

Capacity/level of service (LOS) analyses were conducted at the study intersections based on the existing lane use and traffic controls shown on Figure 2-1, existing baseline vehicular traffic volumes shown on Figure 3-1, and existing traffic signal timings obtained from the City of Lone Tree (as provided in their signal controller timing/phasing sheets). The capacity analysis results are presented in Appendix E and summarized in Table 3-1 and on Figure 3-2.

As shown in Table 3-1, the signalized intersections along East County Line Road currently operate at overall acceptable levels of service (LOS) "D" or better during the weekday peak hours. The signalized intersection of Chester Street/Westview Road and Yosemite Street/Parkland Road both operate at LOS "C" or better during the weekday peak hours.

The Parkland Road/Westview Road All-way STOP control intersections currently operate at LOS “A” for all movements during the weekday peak hours. The existing site entrance operates at LOS “B” for the side street movements.

EXISTING INTERSECTION QUEUES

An analysis of intersection 95th-percentile queues was performed at key locations. The results of the queuing analysis, as reported by Synchro, are summarized in Table 3-2.

As shown in the table, the existing queues are generally contained within the effective storage within the study area. There are a number of locations that experience a 95th-percentile queue that extends beyond the effective storage which include at the Chester Street/East County Line Road signalized intersection the southbound left movement in both peak hours and the southbound right movement in the PM peak hour only. Additionally, the Yosemite Street/Chester Street signalized intersection’s westbound right movement in the midday peak hour.

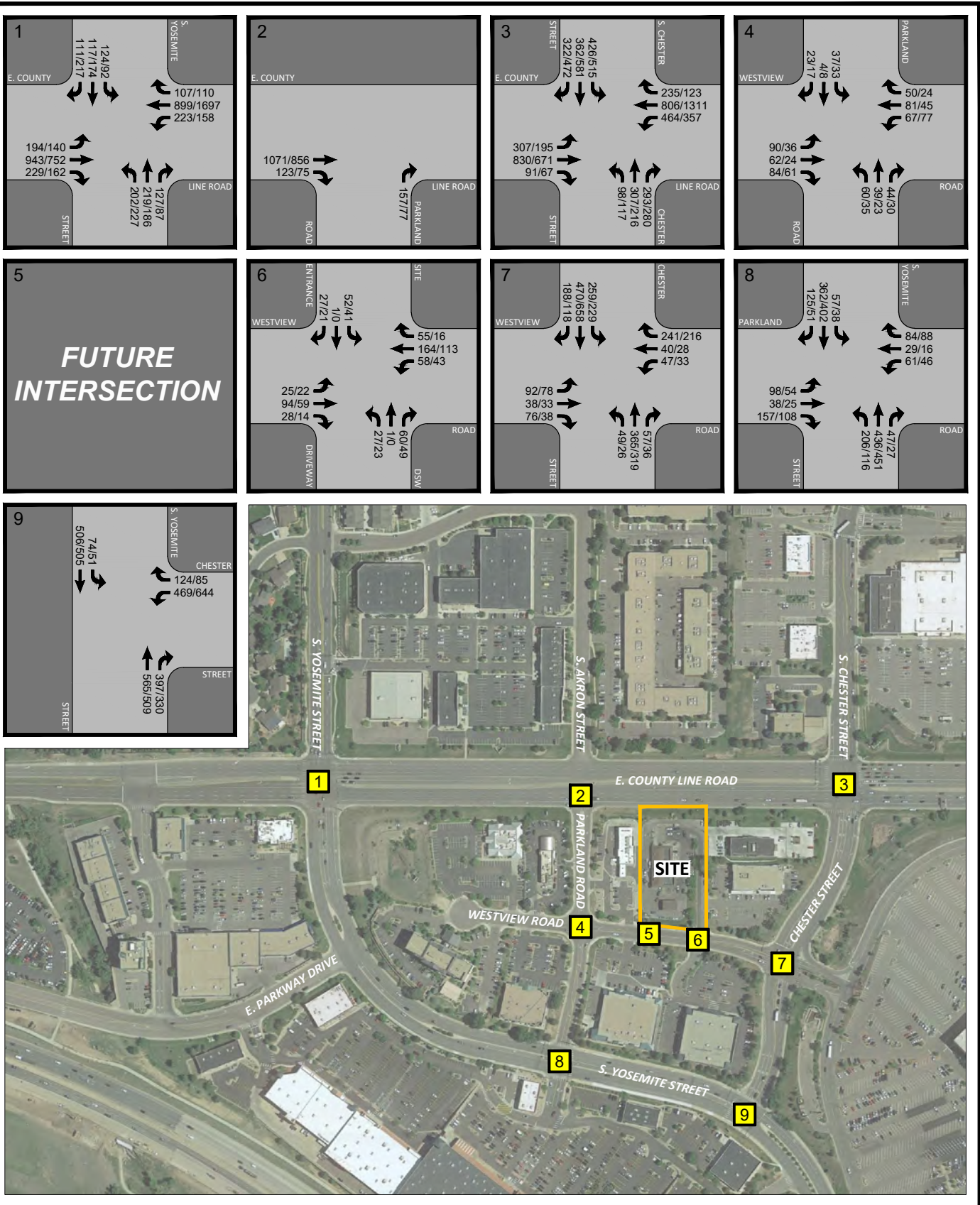


Figure 3-1
Existing Traffic Volumes

000 / 000
 MIDDAY PEAK HOUR
 PM PEAK HOUR



NORTH
 Lone Tree In-N-Out
 Lone Tree, Colorado

Table 3-1
Lone Tree In-N-Out
Existing Intersection Levels of Service Summary (1) (2) (3)

Intersection	Operating Condition	Street Name	Approach/Movement	Existing 2019	
				Mid-day Peak Hour	PM Peak Hour
1 S. Yosemite Street/E. County Line Road	Signal	E. County Line Road	EBL	E (56.1)	E (66.2)
			EBT	B (19.5)	B (14.9)
			EBR	B (17.0)	B (13.4)
		E. County Line Road	WBL	D (49.1)	E (60.9)
			WBT	B (14.2)	B (17.9)
			WBR	C (21.4)	B (18.5)
		S. Yosemite Street	NBL	E (60.2)	E (63.0)
			NBT	E (64.7)	E (56.4)
			NBR	E (74.2)	E (57.9)
		S. Yosemite Street	SBL	E (63.7)	E (74.1)
SBTR	<u>D (47.2)</u>		<u>E (66.6)</u>		
Overall	C (32.5)		C (31.8)		
2 Parkland Road/E. County Line Road	STOP	E. County Line Road Parkland Road	EBT	A [0.0]	A [0.0]
			EBR	A [0.0]	A [0.0]
			NBR	A [9.4]	A [9.2]
3 Chester Street/S. Chester Street/E. County Line Road	Signal	E. County Line Road	EBL	D (46.5)	F (87.9)
			EBT	D (50.9)	C (30.1)
			EBR	D (36.8)	B (10.4)
		E. County Line Road	WBL	D (45.3)	E (68.0)
			WBTR	D (35.5)	D (37.3)
			NBL	C (34.5)	E (59.2)
		Chester Street	NBT	D (42.5)	D (42.6)
			NBR	E (62.3)	E (65.6)
			SBL	E (63.5)	F (87.1)
		S. Chester Street	SBT	C (31.1)	D (40.2)
<u>SBR</u>	<u>C (30.2)</u>		<u>D (38.8)</u>		
Overall	D (44.2)		D (48.3)		
4 Parkland Road/Westview Road	STOP	Westview Road	EBL	A [8.7]	A [7.8]
			EBTR	A [8.0]	A [7.1]
		Westview Road	WBL	A [8.4]	A [8.3]
			WBTR	A [8.1]	A [7.3]
		Parkland Road	NBL	A [8.8]	A [8.1]
			NBTR	A [7.9]	A [7.2]
		Parkland Road	SBL	A [8.6]	A [8.1]
			SBTR	A [7.2]	A [6.9]
5 Future Site Entrance/Westview Road	STOP	Westview Road	EBLT	N/A	N/A
		Westview Road	WBTR	N/A	N/A
		Future Site Entrance	SBLR	N/A	N/A
6 Existing Site Entrance/Westview Road	STOP	Westview Road	EBLTR	A [1.4]	A [1.9]
		Westview Road	WBTR	A [1.9]	A [2.1]
		DSW Driveway	NBLTR	B [11.3]	B [10.1]
		Existing Site Entrance	SBLTR	B [14.5]	B [11.7]
7 Chester Street/Westview Road	Signal	Westview Road	EBL	D (53.6)	C (29.4)
			EBTR	D (50.8)	C (27.9)
			WBL	E (56.3)	C (32.1)
		Westview Road	WBT	E (55.1)	C (31.6)
			WBR	A (0.2)	A (0.2)
			NBL	E (57.5)	C (31.3)
		Chester Street	NBTR	E (55.6)	C (33.9)
			SBL	C (22.1)	C (21.4)
			<u>SBTR</u>	<u>A (3.0)</u>	<u>B (13.1)</u>
		Overall	C (25.8)	B (18.8)	
8 S. Yosemite Street/Parkland Road	Signal	Parkland Road	EBLT	E (57.4)	C (31.0)
			EBR	D (46.4)	C (28.4)
			WBL	D (54.9)	C (30.8)
		Parkland Road	WBTR	D (53.0)	C (30.0)
			NBL	B (10.9)	A (3.6)
			NBTR	B (16.0)	A (4.7)
		S. Yosemite Street	SBL	A (8.0)	B (10.3)
			<u>SBTR</u>	<u>A (8.7)</u>	<u>B (11.6)</u>
			Overall	C (23.0)	B (12.9)
		9 S. Yosemite Street/Chester Street	Signal	Chester Street	WBL
WBR	E (61.8)				C (34.0)
S. Yosemite Street	NBT			A (9.1)	B (12.8)
	NBR			A (9.5)	B (12.3)
S. Yosemite Street	SBL			A (9.2)	C (24.6)
	<u>SBT</u>			<u>A (7.5)</u>	<u>A (7.4)</u>
Overall	C (25.2)			C (21.4)	

Notes: (1) Numbers in brackets [] represent delay at unsignalized intersections in seconds per vehicle.
(2) Numbers in parenthesis () represent delay at signalized intersections in seconds per vehicle.
(3) "err" represents theoretical delays in excess of 999.9 seconds.
(4) Roadway names in bold are considered north/south for purposes of this analysis

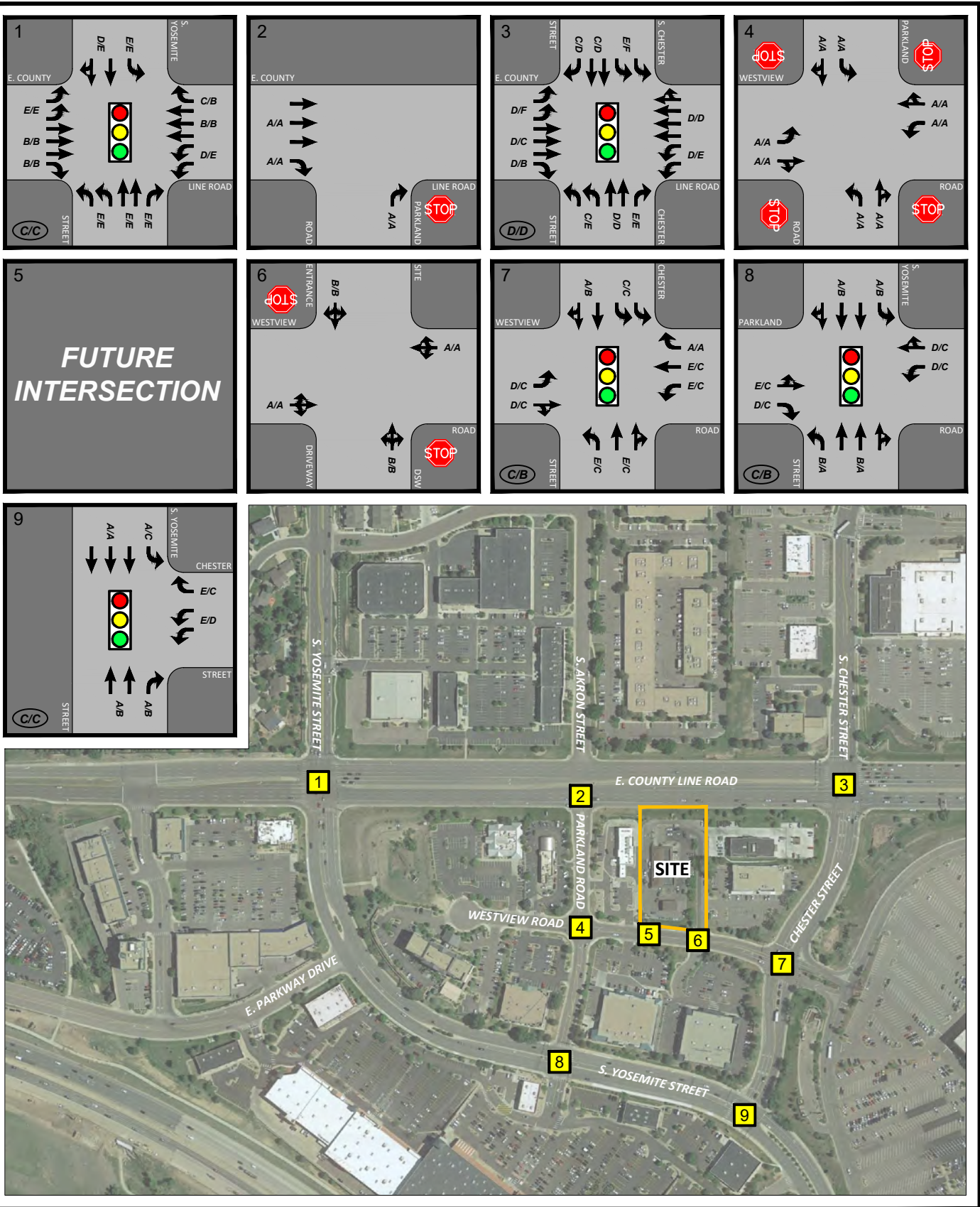


Figure 3-2
Existing Levels of Service

- Represents One Travel Lane
- Signalized Intersection
- Stop Sign



NORTH

Lone Tree In-N-Out
Lone Tree, Colorado

Table 3-2
 Lone Tree In-N-Out
 Existing Intersection Queueing Summary (1) (2) (3)

Intersection	Operating Condition	Street Name	Approach/Movement	Available Storage	Existing 2019		
					Mid-day Peak Hour	PM Peak Hour	
1 S. Yosemite Street /E. County Line Road	Signal	E. County Line Road	EBL	240	117	106	
			EBT		257	189	
			EBR		52	39	
		E. County Line Road	WBL	725	87	119	
			WBT		285	434	
			WBR		81	52	
		S. Yosemite Street	NBL	280	120	119	
			NBT		134	137	
		S. Yosemite Street	NBR		174	146	
			SBL		163	149	
SBTR			80	146			
2 Parkland Road /E. County Line Road	STOP	E. County Line Road	EBT		0	0	
			EBR		0	0	
		Parkland Road	WBT		0	0	
			NBR		15	8	
3 Chester Street / S. Chester Street /E. County Line Road	Signal	E. County Line Road	EBL	730	173	144	
			EBT		286	257	
			EBR		50	7	
		E. County Line Road	WBL	720	313	223	
			WBT		245	409	
			WTR		66	93	
		Chester Street	NBL	200	171	103	
			NBT		331	262	
		S. Chester Street	SBL	165	314	400	
			SBT		148	288	
SBR	155		80	191			
4 Parkland Road /Westview Road	STOP	Westview Road	EBL	55	13	5	
			EBTR		20	10	
		Westview Road	WBL	65	10	13	
			WBTR		18	10	
		Parkland Road	NBL	100	10	5	
			NBTR		10	8	
		Parkland Road	SBL	75	5	5	
			SBTR		3	3	
5 Future Site Entrance /Westview Road	STOP	Westview Road	EBLT		N/A	N/A	
		Westview Road	WBTR		N/A	N/A	
		Future Site Entrance	SBLR		N/A	N/A	
6 Existing Site Entrance /Westview Road	STOP	Westview Road	EBLTR		2	1	
		Westview Road	WBTR		3	2	
		DSW Driveway	NBLTR		13	8	
		Existing Site Entrance	SBLTR		17	9	
7 Chester Street /Westview Road	Signal	Westview Road	EBL		122	71	
			EBTR		88	48	
			WBL		74	38	
		Westview Road	WBT		66	34	
			WBR		0	0	
			NBL	150	81	24	
		Chester Street	NBTR		210	111	
			SBL	225	110	103	
Chester Street	SBTR		116	308			
	8 S. Yosemite Street /Parkland Road	Signal	Parkland Road	EBLT		173	71
				EBR		55	7
Parkland Road			WBL	125	95	48	
			WBTR		80	45	
S. Yosemite Street	NBL	245	178	21			
	NBTR		143	26			
S. Yosemite Street	SBL	265	25	32			
	SBTR		57	102			
9 S. Yosemite Street /Chester Street	Signal	Chester Street	WBL		269	208	
			WBR	160	174	75	
		S. Yosemite Street	NBT		146	132	
			NBR		40	49	
		S. Yosemite Street	SBL	245	51	20	
			SBT		90	21	

Notes: (1) Queue length is based on the 95th percentile queue as reported by Synchro, Version 10.
 (2) Roadway names in bold are considered north/south for purposes of this analysis
 (3) Highlighted values indicate queue exceeds available storage length.

Section 4

ANALYSIS OF FUTURE CONDITIONS WITHOUT SITE DEVELOPMENT

METHODOLOGY

The future traffic forecasts without the proposed new use were developed for 2020 and 2040 conditions based on a composite of existing baseline traffic volumes and regional traffic. This methodology was discussed and agreed to with City staff and is reflected in the subsequent email correspondence.

REGIONAL GROWTH

As agreed in the scope of work correspondence, increases in traffic associated with regional growth were estimated at one (1.0) percent per year compounded for through movements along the arterials up to 2020 as well as from 2020 to 2040. This growth accounts for increases in traffic resulting from influences outside of the immediate study area. The resulting increases in traffic within the study area are reflected on Figure 4-1 for 2020 build-out year conditions and on Figure 4-2 for 2040 long range year conditions.

BACKGROUND TRAFFIC FORECASTS

The existing traffic forecasts depicted on Figure 3-1 and the regional growth shown on Figure 4-1 (2020) and Figure 4-2 (2040), were added together to yield the background future traffic forecasts shown on Figure 4-3 for 2020 conditions and Figure 4-4 for 2040 conditions.

BACKGROUND FUTURE LEVELS OF SERVICE

Capacity analyses of 2020 and 2040 future traffic conditions without the proposed redevelopment are provided in Appendix F and summarized in Table 4-1. The forecasted levels of service are also depicted graphically on Figure 4-5 for 2020 conditions and Figure 4-6 for 2040 conditions.

As shown on Table 4-1, the signalized intersections within the study area would continue to operate at overall acceptable levels of service (at “D” or better) during both the midday and PM peak hours, consistent with

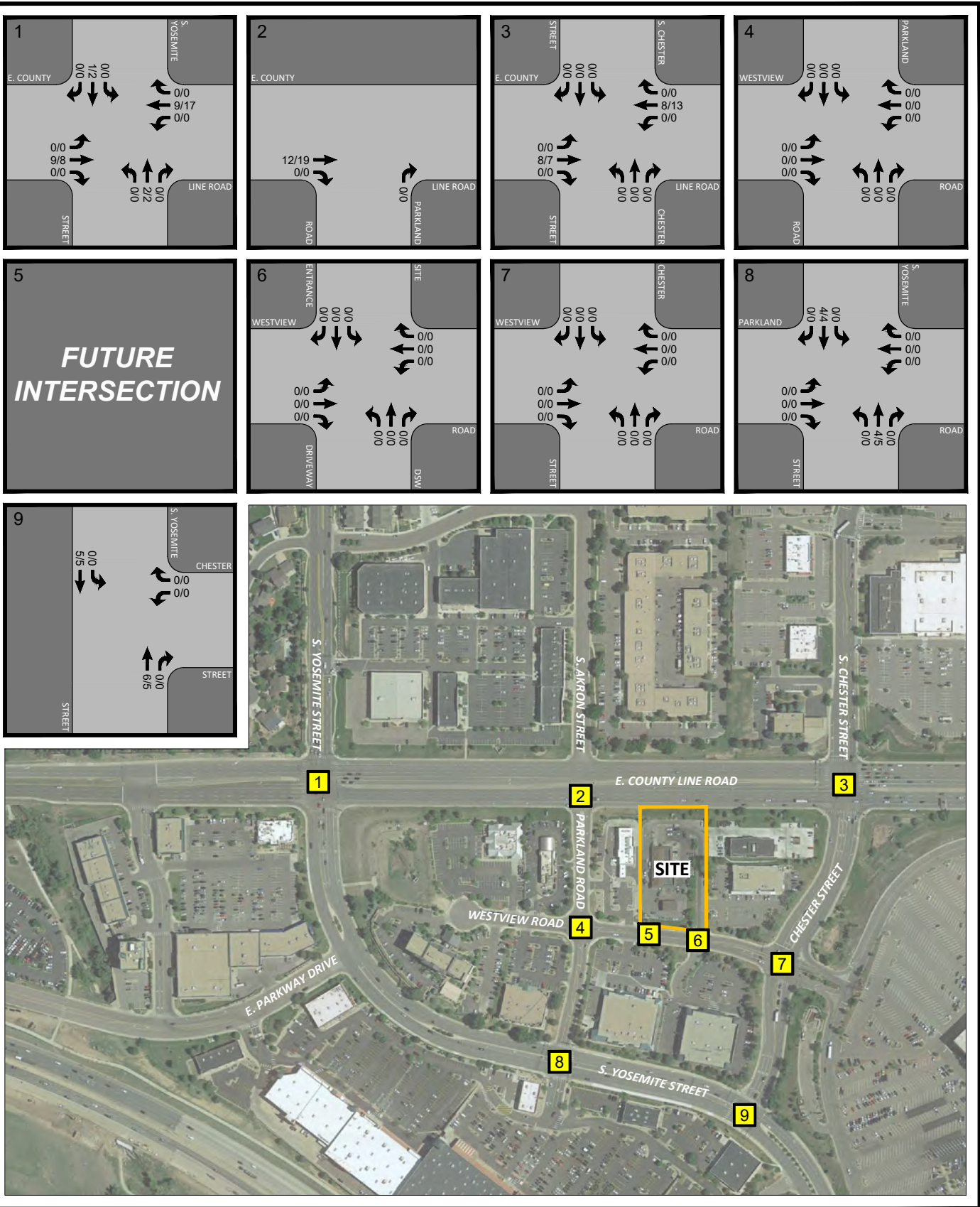


Figure 4-1
Regional Growth (2020)

MIDDAY PEAK HOUR
 PM PEAK HOUR
 000 / 000



NORTH

Lone Tree In-N-Out
Lone Tree, Colorado

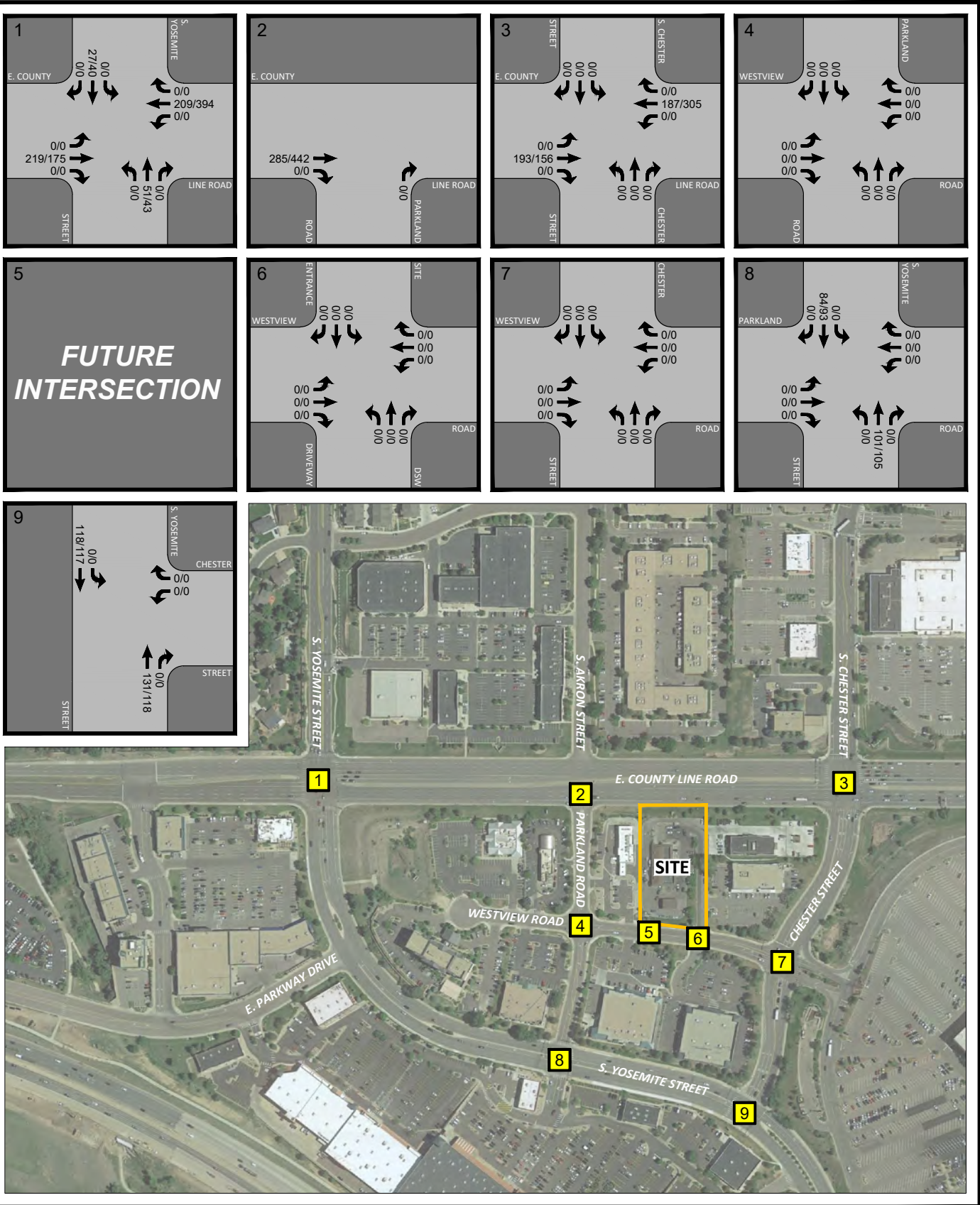


Figure 4-2
Regional Growth (2040)

— MIDDAY PEAK HOUR
— PM PEAK HOUR
000 / 000



NORTH
Lone Tree In-N-Out
Lone Tree, Colorado

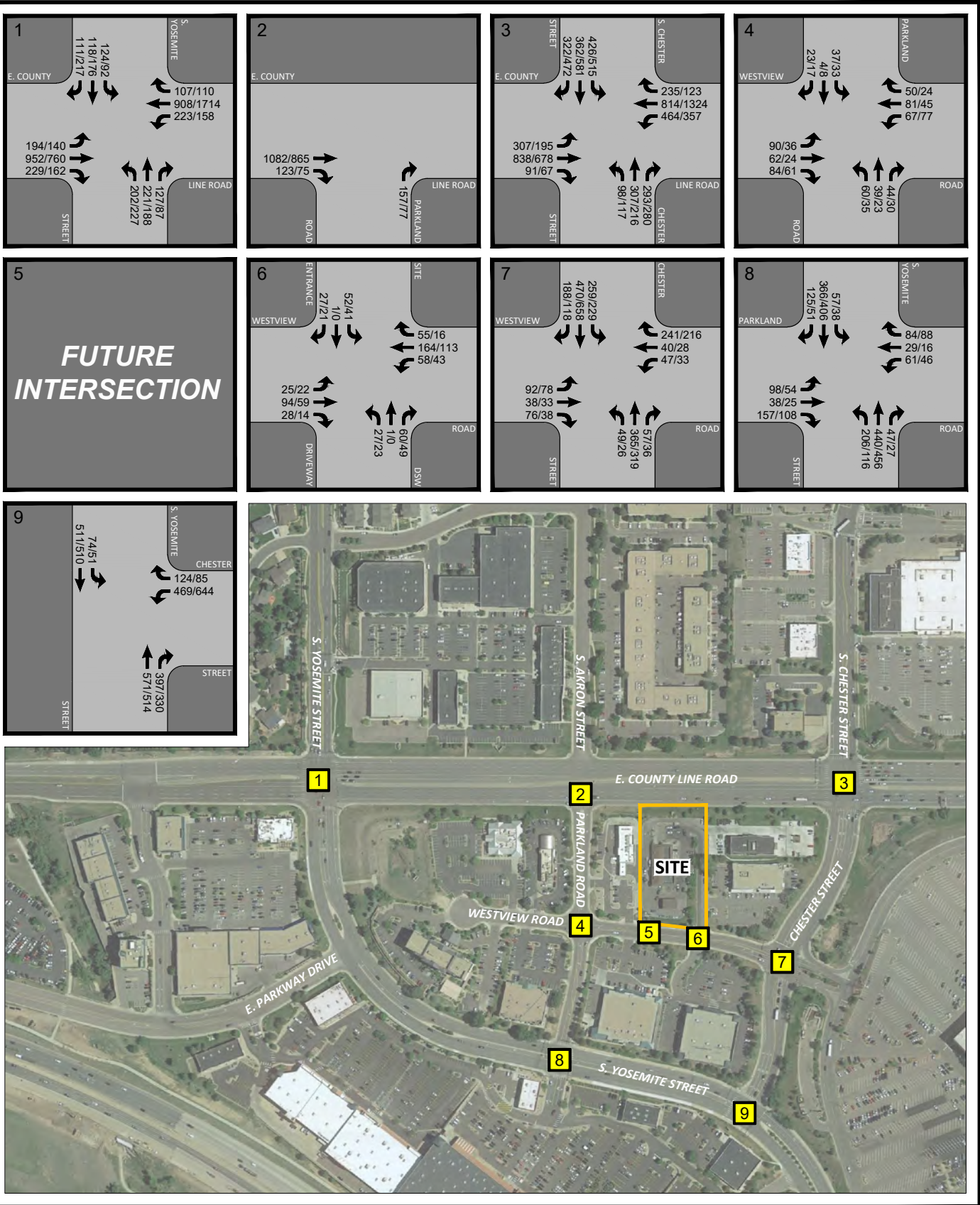


Figure 4-3
Background Traffic Forecasts (2020)

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MIDDAY PEAK HOUR
PM PEAK HOUR



NORTH

Lone Tree In-N-Out
Lone Tree, Colorado

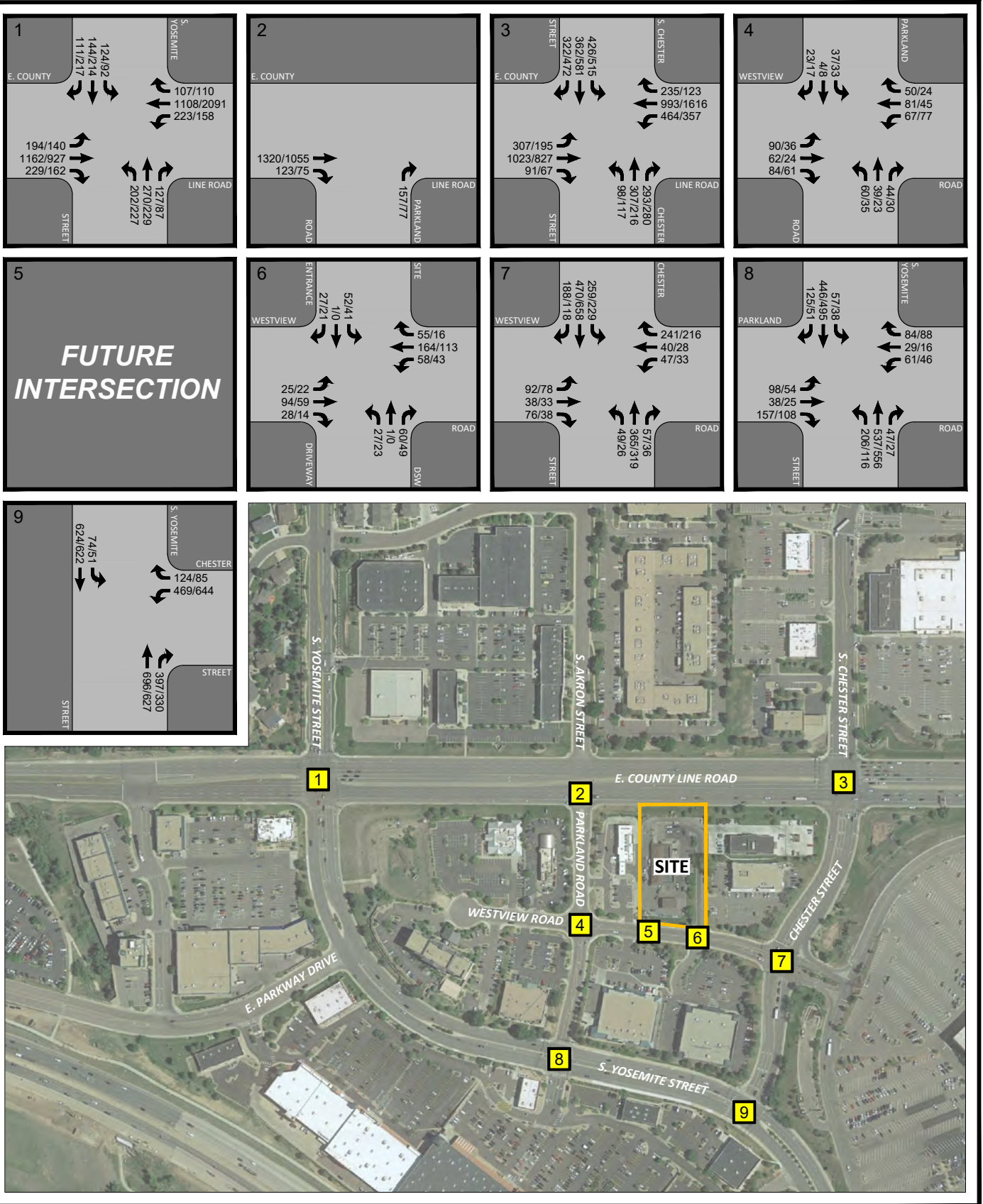


Figure 4-4
Background Traffic Forecasts (2040)

— MIDDAY PEAK HOUR
— PM PEAK HOUR
000 / 000



NORTH
Lone Tree In-N-Out
Lone Tree, Colorado

Table 4-1
 Lone Tree In-N-Out
 Background Future Intersection Levels of Service Summary (1) (2) (3)

Intersection	Operating Condition	Street Name	Approach/ Movement	Existing 2019		Background 2020		Background 2040			
				Mid-day Peak Hour	PM Peak Hour	Mid-day Peak Hour	PM Peak Hour	Mid-day Peak Hour	PM Peak Hour		
1 S. Yosemite Street/E. County Line Road	Signal	E. County Line Road	EBL	E (56.1)	E (66.2)	E (56.1)	E (66.2)	E (56.1)	E (66.2)		
			EBT	B (19.5)	B (14.9)	B (19.7)	B (15.0)	C (21.2)	B (17.8)		
			EBR	B (17.0)	B (13.4)	B (17.1)	B (13.5)	B (17.2)	B (15.2)		
		E. County Line Road	WBL	D (49.1)	E (60.9)	D (49.1)	E (60.3)	D (43.9)	E (61.6)		
			WBT	B (14.2)	B (17.9)	B (14.3)	B (18.9)	B (17.8)	C (27.1)		
			WBR	C (21.4)	B (18.5)	C (21.4)	B (19.1)	C (24.2)	C (24.5)		
		S. Yosemite Street	NBL	E (60.2)	E (63.0)	E (61.1)	E (63.0)	E (61.5)	E (62.4)		
			NBT	E (64.7)	E (56.4)	E (65.9)	E (56.3)	E (72.0)	D (54.6)		
		S. Yosemite Street	NBR	E (74.2)	E (57.9)	E (75.0)	E (57.7)	E (77.3)	D (54.0)		
			SBL	E (63.7)	E (74.1)	E (63.7)	E (74.1)	E (63.7)	E (74.1)		
			SBTR	<u>D (47.2)</u>	<u>E (66.6)</u>	<u>D (47.1)</u>	<u>E (66.5)</u>	<u>D (47.3)</u>	<u>E (66.4)</u>		
Overall			C (32.5)	C (31.8)	C (32.7)	C (32.2)	C (33.3)	D (35.3)			
2 Parkland Road/E. County Line Road	STOP	E. County Line Road	EBT	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]		
			EBR	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]		
		Parkland Road	NBR	A [9.4]	A [9.2]	A [9.5]	A [9.0]	A [9.7]	A [9.0]		
3 Chester Street/S. Chester Street/E. County Line Road	Signal	E. County Line Road	EBL	D (46.5)	F (87.9)	D (46.3)	F (89.6)	D (42.8)	F (89.1)		
			EBT	D (50.9)	C (30.1)	D (50.6)	C (29.3)	D (50.9)	C (26.5)		
			EBR	D (36.8)	B (10.4)	D (36.6)	B (10.9)	C (34.3)	A (2.3)		
		E. County Line Road	WBL	D (45.3)	E (68.0)	D (45.3)	E (68.0)	D (45.3)	E (68.0)		
			WBTR	D (35.5)	D (37.3)	D (35.3)	D (37.1)	C (34.2)	D (38.0)		
			NBL	C (34.5)	E (59.2)	C (34.9)	E (59.5)	D (36.6)	E (60.0)		
		Chester Street	NBT	D (42.5)	D (42.6)	D (42.5)	D (42.6)	D (42.6)	D (42.4)		
			NBR	E (62.3)	E (65.6)	E (62.3)	E (64.9)	E (62.5)	E (65.4)		
		S. Chester Street	SBL	E (63.5)	F (87.1)	E (65.7)	F (92.2)	F (111.3)	F (128.6)		
			SBT	C (31.1)	D (40.2)	C (31.2)	D (40.5)	C (33.3)	D (42.7)		
			SBTR	<u>C (30.2)</u>	<u>D (38.8)</u>	<u>C (30.4)</u>	<u>D (39.1)</u>	<u>C (32.3)</u>	<u>D (40.9)</u>		
Overall			D (44.2)	D (48.3)	D (44.3)	D (48.7)	D (48.0)	D (51.2)			
4 Parkland Road/Westview Road	STOP	Westview Road	EBL	A [8.7]	A [7.8]	A [8.7]	A [7.8]	A [8.7]	A [7.8]		
			EBTR	A [8.0]	A [7.1]	A [8.0]	A [7.0]	A [8.0]	A [7.0]		
		Westview Road	WBL	A [8.4]	A [8.3]	A [8.4]	A [8.2]	A [8.4]	A [8.2]		
			WBTR	A [8.1]	A [7.3]	A [8.1]	A [7.2]	A [8.1]	A [7.2]		
		Parkland Road	NBL	A [8.8]	A [8.1]	A [8.8]	A [8.0]	A [8.8]	A [8.0]		
			NBTR	A [7.9]	A [7.2]	A [7.9]	A [7.1]	A [7.9]	A [7.1]		
		Parkland Road	SBL	A [8.6]	A [8.1]	A [8.6]	A [8.0]	A [8.6]	A [8.0]		
			SBTR	A [7.2]	A [6.9]	A [7.2]	A [6.9]	A [7.2]	A [6.9]		
5 Future Site Entrance/Westview Road	STOP	Westview Road	EBLT	N/A	N/A	N/A	N/A	N/A	N/A		
		Westview Road	WBTR	N/A	N/A	N/A	N/A	N/A	N/A		
		Future Site Entrance	SBLR	N/A	N/A	N/A	N/A	N/A	N/A		
6 Existing Site Entrance/Westview Road	STOP	Westview Road	EBLTR	A [1.4]	A [1.9]	A [1.5]	A [1.9]	A [1.5]	A [1.9]		
		Westview Road	WBTR	A [1.9]	A [2.1]	A [1.9]	A [2.1]	A [1.9]	A [2.1]		
		DSW Driveway	NBLTR	B [11.3]	B [10.1]	B [11.2]	B [10.1]	B [11.2]	B [10.1]		
		Existing Site Entrance	SBLTR	B [14.5]	B [11.7]	B [14.4]	B [11.7]	B [14.4]	B [11.7]		
7 Chester Street/Westview Road	Signal	Westview Road	EBL	D (53.6)	C (29.4)	D (53.6)	C (29.4)	D (53.6)	C (29.4)		
			EBTR	D (50.8)	C (27.9)	D (50.8)	C (27.9)	D (50.8)	C (27.9)		
			WBL	E (56.3)	C (32.1)	E (56.3)	C (32.1)	E (56.3)	C (32.1)		
		Westview Road	WBT	E (55.1)	C (31.6)	E (55.1)	C (31.6)	E (55.1)	C (31.6)		
			WBR	A (0.2)	A (0.2)	A (0.2)	A (0.2)	A (0.2)	A (0.2)		
			NBL	E (57.5)	C (31.3)	E (57.6)	C (31.4)	E (56.0)	C (32.8)		
		Chester Street	NBTR	E (55.6)	C (33.9)	E (55.7)	C (33.7)	E (55.7)	C (33.9)		
			SBL	C (22.1)	C (21.4)	C (22.1)	C (21.6)	C (22.2)	C (22.9)		
		Chester Street	SBTR	<u>A (3.0)</u>	<u>B (13.1)</u>	<u>A (2.9)</u>	<u>B (13.1)</u>	<u>A (2.5)</u>	<u>B (13.0)</u>		
			Overall	C (25.8)	B (18.8)	C (25.8)	B (18.8)	C (25.6)	B (19.0)		
		8 S. Yosemite Street/Parkland Road	Signal	Parkland Road	EBLT	E (57.4)	C (31.0)	E (56.7)	C (30.9)	E (56.7)	C (30.9)
EBR	D (46.4)				C (28.4)	D (46.8)	C (28.5)	D (46.8)	C (28.5)		
WBL	D (54.9)				C (30.8)	D (54.8)	C (30.9)	D (54.8)	C (30.9)		
Parkland Road	WBTR			D (53.0)	C (30.0)	D (53.2)	C (30.1)	D (53.2)	C (30.1)		
	NBL			B (10.9)	A (3.6)	B (10.2)	A (3.1)	A (8.0)	A (3.0)		
	NBTR			B (16.0)	A (4.7)	B (15.2)	A (4.1)	B (13.2)	A (4.5)		
S. Yosemite Street	SBL			A (8.0)	B (10.3)	A (7.5)	B (10.1)	A (7.8)	B (11.2)		
	SBTR			<u>A (8.7)</u>	<u>B (11.6)</u>	<u>A (8.1)</u>	<u>B (11.1)</u>	<u>A (8.8)</u>	<u>B (12.5)</u>		
Overall				C (23.0)	B (12.9)	C (22.4)	B (12.5)	C (20.8)	B (12.5)		
9 S. Yosemite Street/Chester Street	Signal			Chester Street	WBL	E (70.2)	D (42.0)	E (70.2)	D (41.9)	E (64.2)	D (43.0)
					WBR	E (61.8)	C (34.0)	E (61.8)	C (34.0)	E (56.0)	C (34.7)
		S. Yosemite Street	NBT	A (9.1)	B (12.8)	A (9.1)	B (12.8)	A (9.6)	B (13.0)		
			NBR	A (9.5)	B (12.3)	A (9.5)	B (12.2)	A (9.5)	B (11.8)		
		S. Yosemite Street	SBL	A (9.2)	C (24.6)	A (9.5)	C (25.3)	B (11.4)	C (22.5)		
			SBT	<u>A (7.5)</u>	<u>A (7.4)</u>	<u>A (7.7)</u>	<u>A (7.4)</u>	<u>A (8.8)</u>	<u>A (5.6)</u>		
		Overall			C (25.2)	C (21.4)	C (25.2)	C (21.3)	C (22.6)	C (20.1)	

Notes: (1) Numbers in brackets [] represent delay at unsignalized intersections in seconds per vehicle.
 (2) Numbers in parenthesis () represent delay at signalized intersections in seconds per vehicle.
 (3) "err" represents theoretical delays in excess of 999.9 seconds.
 (4) Roadway names in bold are considered north/south for purposes of this analysis

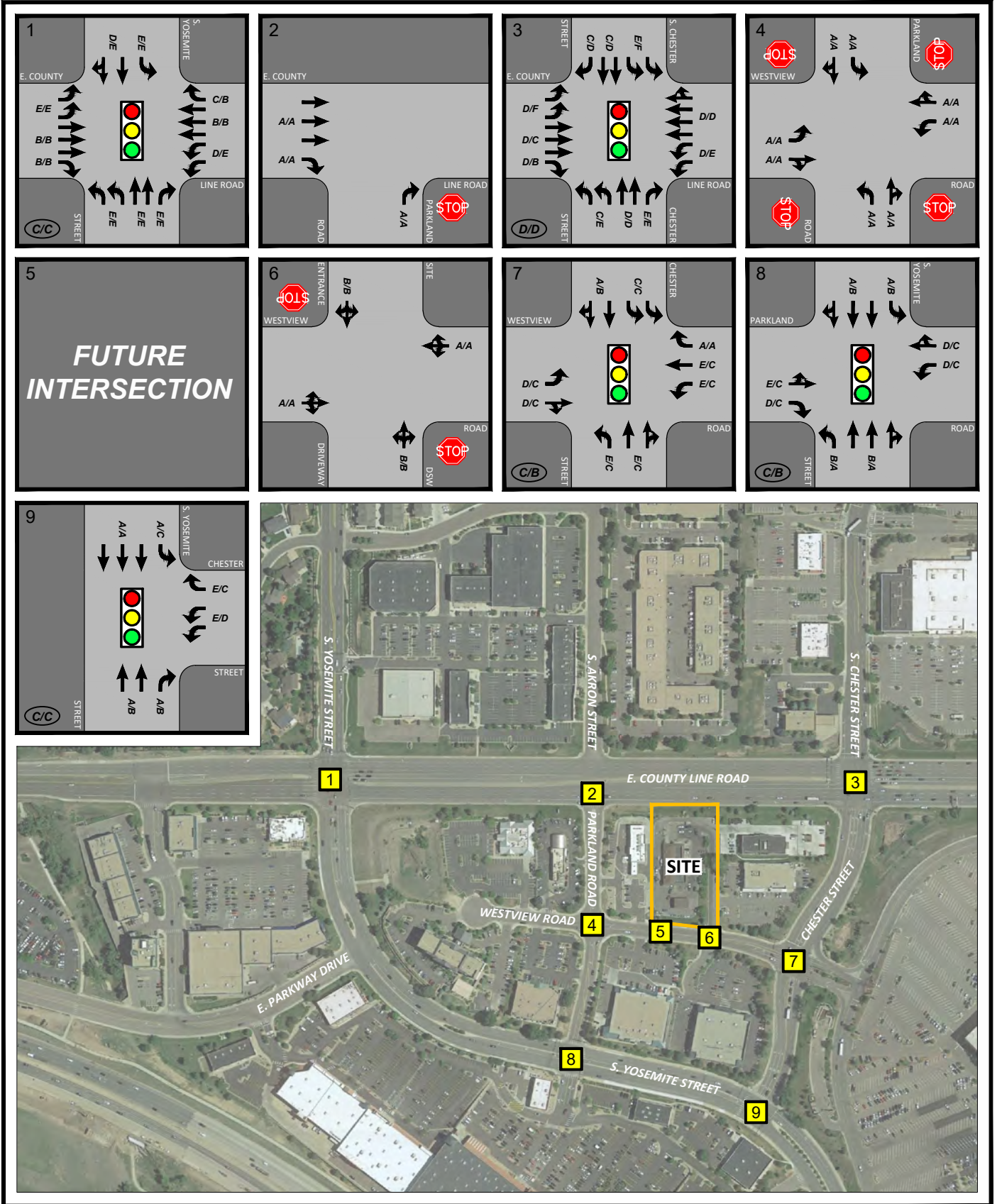


Figure 4-5
Background Levels of Service (2020)

← Represents One Travel Lane
 Signalized Intersection
 Stop Sign



NORTH

Lone Tree In-N-Out
Lone Tree, Colorado

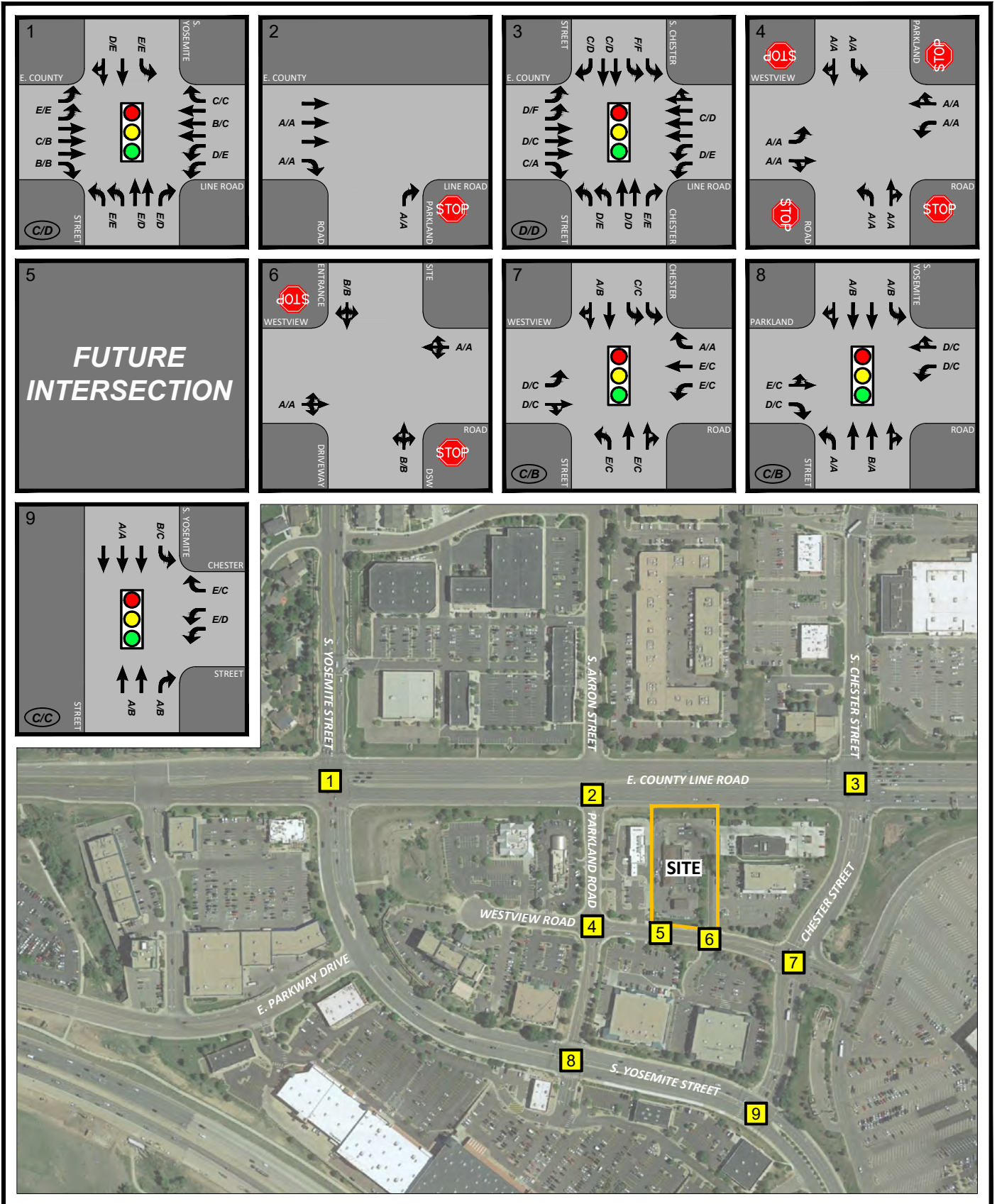


Figure 4-6
Background Levels of Service (2040)

- Represents One Travel Lane
- Signalized Intersection
- Stop Sign



NORTH

Lone Tree In-N-Out
Lone Tree, Colorado



existing conditions. Minor increases in delay are forecasted due to growth along the arterials within the study area.

BACKGROUND FUTURE QUEUING

An analysis of intersection queues was performed at key locations under background future traffic conditions. The results of the queuing analysis are summarized in Table 4-2. Those queues that are forecasted to exceed the available turn bay storage are highlighted in the table.

As shown in the table, queues within the study network will generally increase due to regional traffic growth. The increase in 95th-percentile queues within the study area are forecasted to be minor. No additional queues are forecasted to exceed their effective storage outside of those already present in the existing condition.

Table 4-2
 Lone Tree In-N-Out
 Background Future Intersection Queueing Summary (1) (2) (3)

Intersection	Operating Condition	Street Name	Approach/Movement	Available Storage	Existing 2019		Background 2020		Background 2040		
					Mid-day Peak Hour	PM Peak Hour	Mid-day Peak Hour	PM Peak Hour	Mid-day Peak Hour	PM Peak Hour	
1 S. Yosemite Street/E. County Line Road	Signal	E. County Line Road	EBL	240	117	106	117	106	117	106	
			EBT		257	189	260	191	329	253	
	EBR		52		39	52	39	52	41		
	E. County Line Road	WBL	725	87	119	88	119	96	114		
		WBT		285	434	290	436	360	590		
		WBR		81	52	82	54	81	45		
	S. Yosemite Street	NBL	280	NBT	120	119	122	120	121	121	
		NBR		134	137	137	140	163	165		
		SBL		174	146	177	145	173	146		
	S. Yosemite Street	SBR		SBT	163	149	163	149	163	149	
SBTR		80		146	80	147	92	188			
2 Parkland Road/E. County Line Road	STOP	E. County Line Road	EBT		0	0	0	0	0	0	
			EBR		0	0	0	0	0	0	
		Parkland Road	WBT	0	0	0	0	0	0		
			NBR	15	8	15	7	16	7		
3 Chester Street/S. Chester Street/E. County Line Road	Signal	E. County Line Road	EBL	730	173	144	172	144	172	144	
			EBT		286	257	289	259	362	312	
	EBR		50		7	50	7	54	1		
	E. County Line Road	WBL	720	313	223	313	223	313	223		
		WBTR		245	409	247	413	301	556		
		NBL		66	93	66	93	66	93		
	Chester Street	NBT	200	NBR	171	103	171	103	171	104	
		SBL		331	262	331	261	331	262		
		SBR		155	80	148	288	148	288		
	S. Chester Street	SBL		SBT	148	288	148	288	148	288	
SBR		155		80	80	191	85	191			
4 Parkland Road/Westview Road	STOP	Westview Road	EBL	55	13	5	13	5	13	5	
			EBTR		20	10	20	10	20	10	
		Westview Road	WBL	65	10	13	10	10	10	10	
			WBTR		18	10	18	8	18	8	
		Parkland Road	NBL	100	NBT	10	5	10	5	10	5
			NBTR		10	8	10	8	10	8	
		Parkland Road	SBL	75	SBT	5	5	5	5	5	5
			SBTR		3	3	3	3	3	3	
5 Future Site Entrance/Westview Road	STOP	Westview Road	EBLT		N/A	N/A	N/A	N/A	N/A	N/A	
		Westview Road	NBLR		N/A	N/A	N/A	N/A	N/A	N/A	
		Future Site Entrance	SBLR		N/A	N/A	N/A	N/A	N/A	N/A	
6 Existing Site Entrance/Westview Road	STOP	Westview Road	EBLTR		2	1	2	1	2	1	
		Westview Road	WBTR		3	2	3	2	3	2	
		DSW Driveway	NBLTR		13	8	13	8	12	8	
		Existing Site Entrance	SBLTR		17	9	17	9	17	9	
7 Chester Street/Westview Road	Signal	Westview Road	EBL		122	71	122	71	122	71	
			EBTR		88	48	88	48	88	48	
		Westview Road	WBL		74	38	74	38	74	38	
			WBT		66	34	66	34	66	34	
		Chester Street	WBR	150	NBL	0	0	0	0	0	0
			NBT		81	24	81	24	81	25	
		Chester Street	NBTR	225	SBL	210	111	210	111	207	110
			SBR		110	103	110	102	110	102	
	SBTR		116	308	116	308	115	302			
8 S. Yosemite Street/Parkland Road	Signal	Parkland Road	EBLT		173	71	172	71	172	71	
			EBR		55	7	61	7	61	7	
		Parkland Road	WBL	125	95	48	94	48	94	48	
			WBTR		80	45	83	48	83	48	
		S. Yosemite Street	NBL	245	NBT	178	21	173	19	139	18
			NBTR		143	26	140	7	161	10	
		S. Yosemite Street	SBL	265	SBR	25	32	23	33	24	34
			SBTR		57	102	55	103	68	123	
9 S. Yosemite Street/Chester Street	Signal	Chester Street	WBL	160	269	208	269	206	242	207	
			WBR		174	75	174	74	157	74	
		S. Yosemite Street	NBT		NBR	146	132	148	132	185	147
			SBL		40	49	40	49	40	44	
		S. Yosemite Street	SBR	245	SBT	51	20	52	26	49	36
			SBTR		90	21	91	20	102	11	

Notes: (1) Queue length is based on the 95th percentile queue as reported by Synchro, Version 10.
 (2) Roadway names in bold are considered north/south for purposes of this analysis
 (3) Highlighted values indicate queue exceeds available storage length.

Section 5

SITE ANALYSIS

OVERVIEW

The Applicant is proposing to redevelop the 1.46-acre site with a 3,995 SF fast food restaurant with drive-thru. Site access is proposed to be provided by a new access point to Westview Road. The site layout provides 54 parking spaces and 25 spaces of stacking for the drive-thru queue. For purposes of this study, it was assumed the proposed development would be built and operational by 2020.

EXISTING SITE TRIPS

As stated previously, the site is currently developed with a carwash and convenience store with fuel pumps. The redevelopment plan proposes razing these existing uses in order to redevelop the site. As a result, trips currently generated by these uses would no longer be experienced on the surrounding roadway network. The existing uses share their access to Westview Road along with a bank and other commercial uses. After determining the peak hours during the April 16, 2019 data collection effort, a second data collection was performed on April 23, 2019 to determine the existing site's actual trip generation during those peak hours. Vehicles currently traveling in and out of the existing site entrance along Westview Road as counted on April 23, 2019 were removed from the network. The entrance count data is provided in Appendix D and summarized in Table 5-1. As shown in Table 5-1, the current site uses generate 82 weekday midday and 67 weekday PM peak hour trips. For purposes of forecasting future traffic conditions with the proposed redevelopment plan, these trips were removed at key study intersections based on the entrance counts as shown on Figure 5-1.

PROPOSED SITE ACCESS

As shown on the Applicant's plan (Figure 1-2), access to the proposed fast food restaurant with drive-thru would be provided by a new full movement entrance along Westview Road. The proposed future lane use and intersection controls are provided on Figure 5-2.

Table 5-1
Lone Tree In-N-Out
Site Trip Generation

Type	Land Use Code	Amount	Units	Weekday												Average Daily Trips	
				Midday Peak Hour						PM Peak Hour							
				Rate	In	Out	Total	% In	% Out	Rate	In	Out	Total	% In	% Out	Rate	Trips
<u>ITE TRIP GENERATION</u> ⁽¹⁾ Fast-Food Restaurant with Drive-Through Window	934	3,995	GSF	11.8%	115	107	222	52.0%	48.0%	32.67	68	63	131	52.0%	48.0%	470.95	1,881
<u>PROJECTED TRIP GENERATION</u> ⁽²⁾ Fast-Food Restaurant with Drive-Through Window <i>Pass-by Reduction (49% Mid-Day/50% PM)</i>		3,995	GSF	103.88	211 (103)	204 (100)	415 (203)	50.8%	49.2%	83.77	168 (84)	167 (84)	335 (168)	50.2%	49.8%	937.61	3,746 (1,873)
Existing Car Wash and Fuel Pumps ⁽³⁾					(41)	(41)	(82)				(26)	(41)	(67)				670
Net Total New Trips					67	63	130				58	42	100				2,543

Note(s):

(1) Trip generation based on the Institute of Transportation Engineers' Trip Generation Manual, 10th Edition.

(2) Trip generation based on data provided by In-N-Out Burger

(3) Trip generation based on turning movement counts performed by Wells + Associates on April 23, 2019.

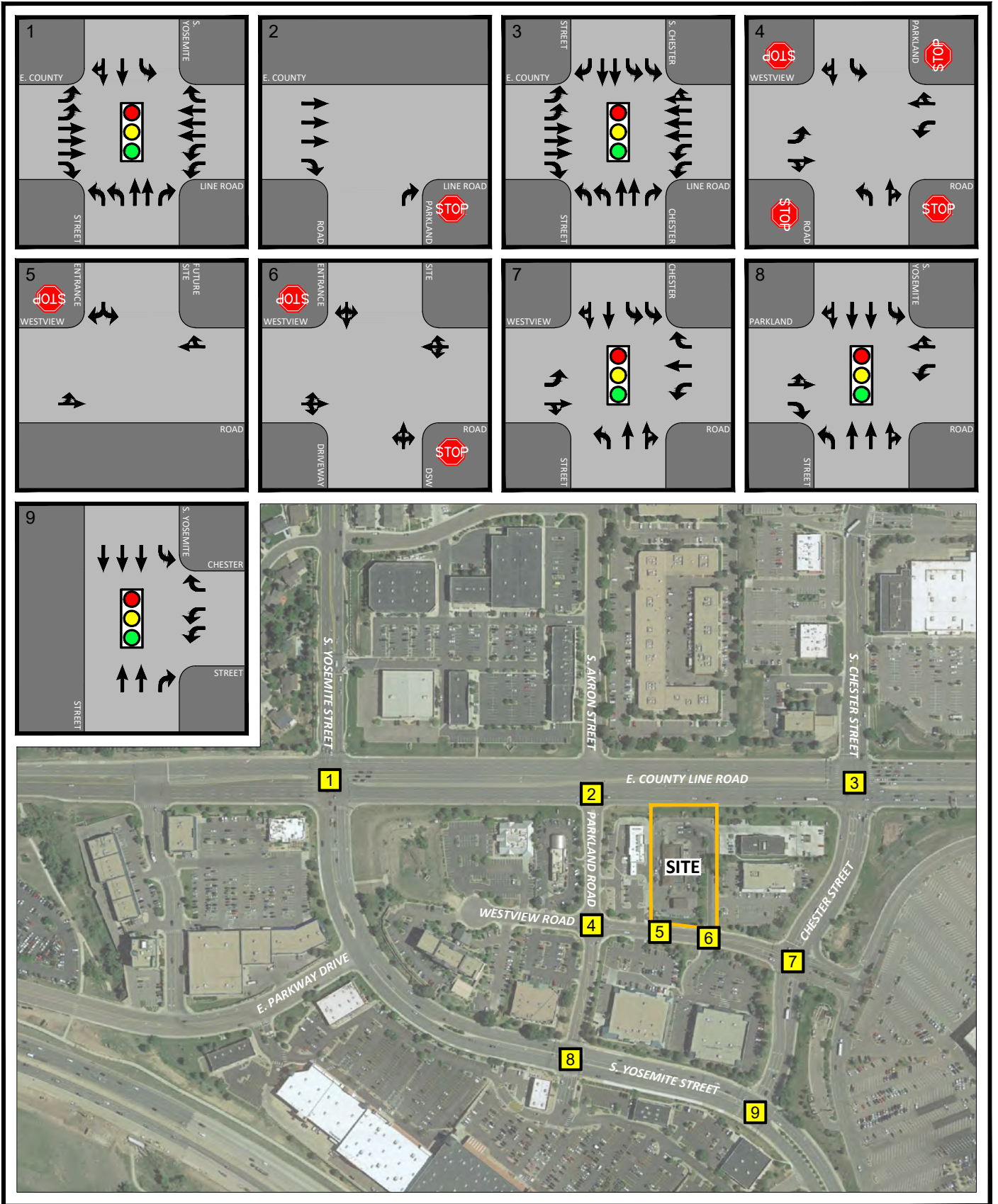





Figure 5-2
Future Lane Use and Traffic Controls

-  Represents One Travel Lane
-  Signalized Intersection
-  Stop Sign



NORTH

Lone Tree In-N-Out
Lone Tree, Colorado

TRIP GENERATION

Overview.

Based on trip data provided by the Applicant it was determined that when compared to published ITE rates, In-N-Out Burger typically has significantly higher trip generation rate than other fast food restaurants. Therefore, rates specific to In-N-Out Burger were used for this study. The Applicant has provided trip generation rates from previous studies for use in this analysis. Trip generation estimates for the weekday midday (lunchtime) and PM peak hours, as well as the weekday average daily traffic (ADT), were derived from trip generation collected from other In-N-Out facilities to achieve specific trip generation rates for this site. The standard Institute of Transportation Engineers (ITE) trip generation rates, as published in the 10th edition, are provided as reference, and indicate that they are approximately 50 to 60 percent less than the observed rates.

The trip generation analysis is presented in Table 5-1 and indicates that the site is expected to generate 415 midday peak hour trips (211 in and 204 out), 335 PM peak hour trips (168 in and 167 out), and 3,746 daily (24-hour) trips upon completion. Excerpts from the utilized studies are provided as Appendix G.

Pass-by Trips.

According to ITE, in some cases the driveway volumes at a particular land use are different from the amount of traffic added to the adjacent street system. Uses such as retail establishments attract a portion of their trips from traffic that is already present on the road network. Pass-by trip are those trips which are made as intermediate stops on the way to a primary destination. An example of a pass-by trip would be one in which a driver stops at a retail store on his/her way home from work.

The proposed use would experience pass-by trips consistent with typical fast food restaurants with drive-thru due to the uses' proximity to other significant commercial destinations such as Park Meadow Retail Resort. In recognition of this phenomenon and consistent with ITE published data, the following pass-by reductions were applied to the trip generation analysis:

- Fast-food restaurant with drive-thru 49% midday (lunch)/ 50% PM

As shown in Table 5-1, the site in total is anticipated to generate 203 weekday midday, and 168 weekday PM peak hour pass-by trips as well as 1,873 weekday daily pass-by trips. Therefore, these trips would be drawn from the existing road network and assigned to the future site entrances accordingly. Pass-by trip assignments at key study intersections are shown on Figure 5-3.

Net Site Trips.

The net vehicle trips that would be generated by the proposed redevelopment plan (after discounting existing site trips and future pass-by trips) are summarized in Table 5-1. As shown, the site would generate, upon completion and full operation, 130 weekday midday and 100 weekday PM peak hour net vehicle trips as well as 2,543 net weekday daily trips.

SITE TRIP DISTRIBUTION

The distribution of the anticipated trips generated by the completion of the proposed redevelopment was based on an examination of existing traffic counts and local knowledge. Existing travel patterns indicate the following distribution is appropriate in the forecasting of future site traffic:

- To/from the west on County Line Road: 20%
- To/from the north on South Yosemite Street: 5%
- To/from the north on South Chester Street: 25%
- To/from the east on County Line Road: 30%
- To/from the east on Westview Road: 5%
- To/from the south on South Yosemite Street: 15%

SITE TRIP ASSIGNMENTS

The assignment of the net vehicle trips generated upon the future build-out of the redevelopment project was based on the above distribution. The trips assignments are depicted on Figure 5-4.

PARKING AND STACKING

Per the zoning code of Lone Tree, a fast-food restaurant requires 1 space per 100 square feet of floor area plus six (6) stacking spaces per drive-up window. Per these requirements the proposed use would be required to provide 40 parking spaces and 6 stacking spaces. As mentioned previously the Applicant is proposing 54 parking spaces (14 more than required) and 25 stacking spaces (19 more than required).

Additional policy, implemented by In-N-Out, increases the efficiency of processing vehicles through the drive-thru. These policies include activating an additional grill during high drive-thru demand. Also included in standard store operating procedure dictates that as soon as drive-thru demand reaches 8 vehicles an In-N-Out employee is deployed to take orders via tablet to those vehicles waiting in the queue. This, combined with the additional grill, increases drive-thru efficiency and vehicle processing.

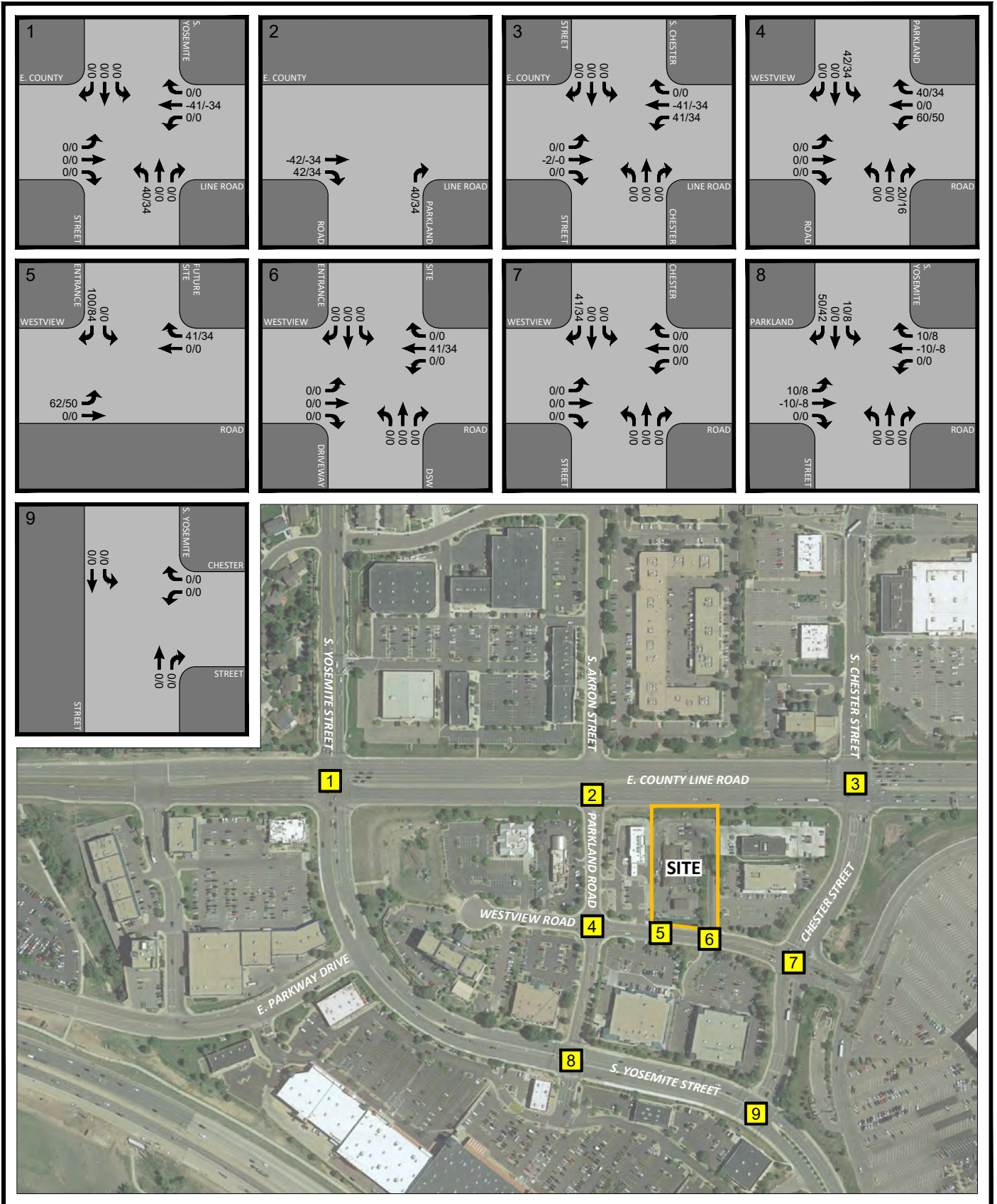


Figure 5-3
Pass-by Trip Assignments

— MIDDAY PEAK HOUR
— PM PEAK HOUR
000 / 000



NORTH

Lone Tree In-N-Out
Lone Tree, Colorado



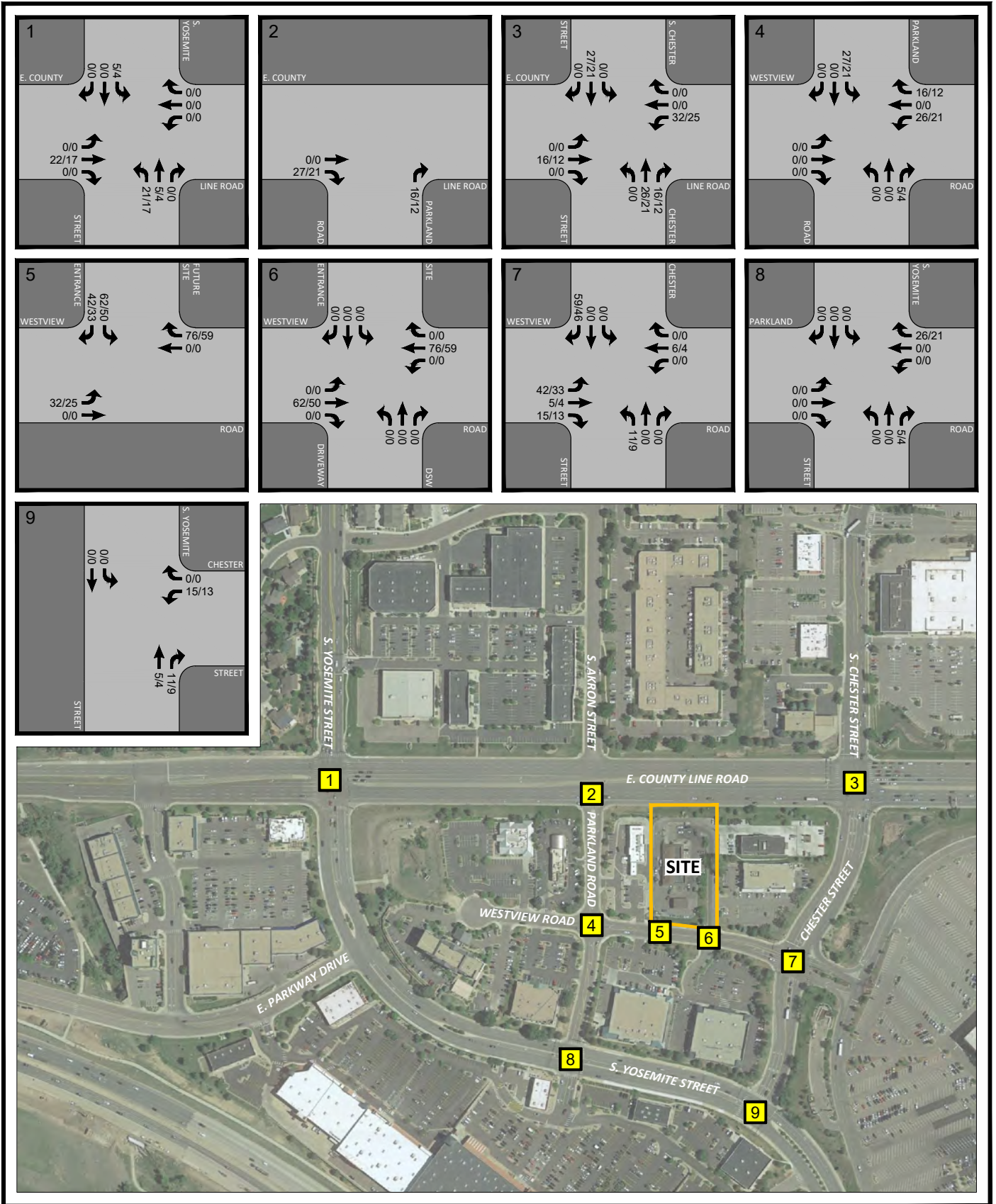


Figure 5-4
Site Trip Assignments

— MIDDAY PEAK HOUR
— PM PEAK HOUR
000 / 000



NORTH
Lone Tree In-N-Out
Lone Tree, Colorado

Section 6

ANALYSIS OF FUTURE CONDITIONS WITH SITE DEVELOPMENT

TOTAL FUTURE TRAFFIC FORECASTS

The 2020 and 2040 total future traffic forecasts associated with the proposed development were developed by combining the baseline traffic volumes shown on Figure 3-1, regional growth estimates shown on Figure 4-1 (2020) and Figure 4-2 (2040), and the total site trip assignments shown on Figure 5-4. The resulting total future traffic forecasts are provided on Figure 6-1 for 2020 and Figure 6-2 for 2040.

INFLUENCE AREA

The proportion of forecasted site trips relative to the 2020 total future traffic forecasts at site build-out were calculated for the key study intersections. Table 7-1 summarizes the percentage of build-out site trips to forecasted intersection volumes.

Table 6-1
2020 Influence Area

Intersection	2020 Site Trips		2020 Future Forecasts		Percent Impact	
	MD	PM	MD	PM	MD	PM
East County Line Road/South Yosemite Road	53	42	3,548	4,056	1.5%	1.0%
East County Line Road/Parkland Road	43	33	2,626	2,956	1.6%	1.1%
East County Line Road/Chester Street	117	91	4,626	4,979	2.5%	1.8%
Westview Road/Parkland Road	74	58	847	579	8.7%	10.0%
Westview Road/Site Entrance	212	167	750	561	28.2%	29.7%
Westview Road/Existing Site Entrance	138	109	689	477	20.0%	15.8%

South Yosemite Street/Chester Street	138	109	2,049	1,914	6.7%	5.6%
South Yosemite Street/Parkland Road	31	25	1,785	1,493	1.7%	1.6%
South Yosemite Street/Chester Street	31	26	2,165	2,150	1.4%	1.2%

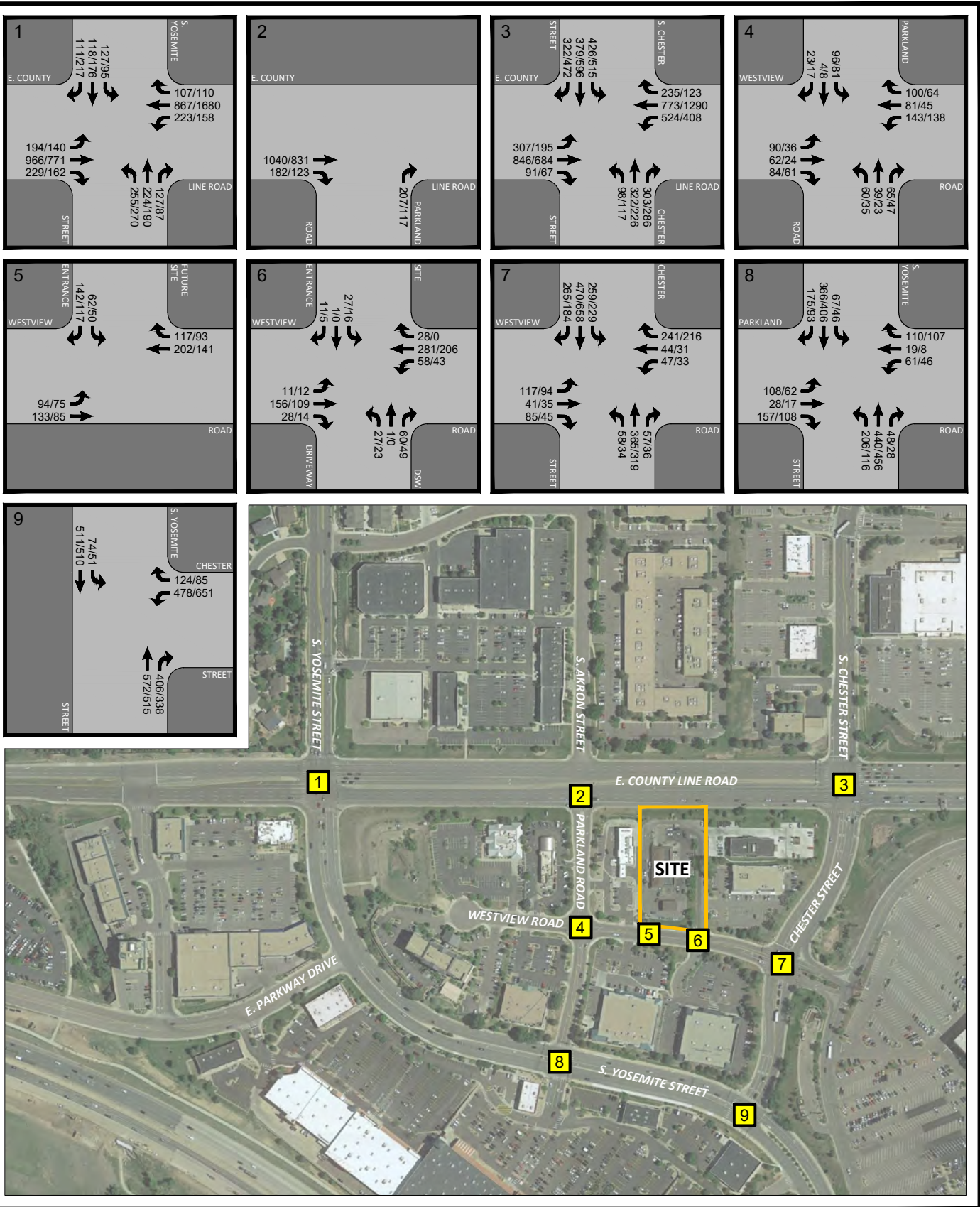


Figure 6-1
Total Future Traffic Forecasts (2020)

000 / 000
 MIDDAY PEAK HOUR
 PM PEAK HOUR



NORTH
 Lone Tree In-N-Out
 Lone Tree, Colorado

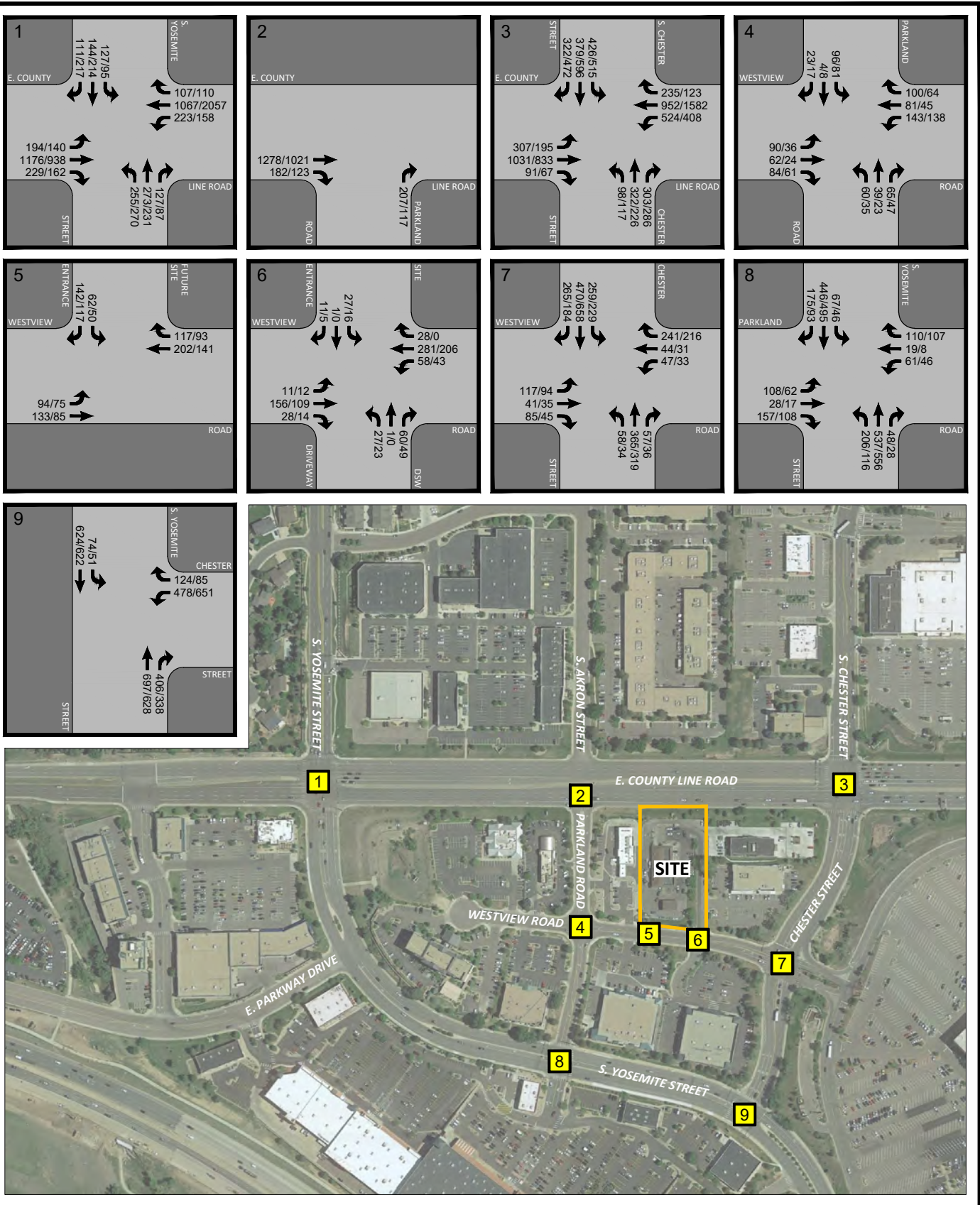


Figure 6-2
Total Future Traffic Forecasts (2040)

000 / 000

MIDDAY PEAK HOUR
PM PEAK HOUR

NORTH

Lone Tree In-N-Out
Lone Tree, Colorado

TOTAL FUTURE LEVELS OF SERVICE WITH PROPOSED DEVELOPMENT

Future levels of service with the proposed redevelopment plan were estimated at key study intersections based on the future traffic volumes shown on Figures 6-1 and 6-2, the future lane use on Figure 5-2, the signal timings for the signalized intersections provided by Staff and the 2000 HCM methodologies for signalized and unsignalized intersections. The results of these analyses are provided in Appendix H and presented in Table 6-2. Total future levels of service are also presented graphically on Figure 6-3 (2020), and Figure 6-4 (2040).

As shown in Table 6-2, levels of service under future site development conditions would remain generally consistent with future background conditions (i.e., without site development). Overall delays would experience minor increase due to site trips. No degradation of LOS over background conditions is forecasted.

The proposed new site entrance is forecasted to operate at LOS “B” or better during both the midday and PM peak hours for the southbound approach and LOS “A” along the mainline.

These results indicate that the redevelopment of the site would not require additional road improvements beyond the site improvements proposed by the Applicant to include a new entrance on Westview Road and a vehicle stacking area to accommodate 25 vehicles.

TOTAL FUTURE QUEUING

Total future queues were forecasted using Synchro software. The results of the queuing analysis are summarized in Table 6-3. In general, vehicle queues would not increase significantly as a result of the proposed redevelopment. Queues that are forecasted to exceed the available turn bay storage under background conditions would continue to do so under total future conditions, as highlighted in the table.

Table 6-2
Lone Tree In-N-Out
Total Future Intersection Levels of Service Summary (1) (2) (3)

Intersection	Operating Street Condition Name	Approach/Movement	Existing 2019		Background 2020		Background 2040		Total Future 2020		Total Future 2040			
			Mid-day Peak Hour	PM Peak Hour	Mid-day Peak Hour	PM Peak Hour	Mid-day Peak Hour	PM Peak Hour	Mid-day Peak Hour	PM Peak Hour	Mid-day Peak Hour	PM Peak Hour		
1 S. Yosemite Street/E. County Line Road	Signal	E. County Line Road	EBL	E (56.1)	E (66.2)	E (56.1)	E (66.2)	E (56.1)	E (66.2)	E (56.1)	E (66.2)	E (56.1)	E (66.2)	
			EBT	B (19.5)	B (14.9)	B (19.7)	B (15.0)	B (19.8)	B (17.8)	B (19.8)	B (15.6)	B (21.3)	B (18.5)	
			EBR	B (17.0)	B (13.4)	B (17.1)	B (13.5)	B (17.2)	B (15.2)	B (17.1)	B (13.9)	B (17.3)	B (15.7)	
		E. County Line Road	WBL	D (49.1)	E (60.9)	D (49.1)	E (60.3)	D (49.3)	E (61.6)	D (47.7)	E (61.0)	D (43.3)	E (62.1)	
			WBT	B (14.2)	B (17.9)	B (14.3)	B (18.9)	B (17.8)	C (27.1)	B (14.2)	B (19.0)	B (17.4)	C (27.5)	
			WBR	C (21.4)	B (18.5)	C (21.4)	B (19.1)	C (24.2)	C (24.5)	C (21.5)	B (19.3)	C (24.1)	C (25.3)	
	S. Yosemite Street	NBL	E (60.2)	E (63.0)	E (61.1)	E (63.0)	E (61.5)	E (62.4)	E (63.3)	E (70.4)	E (66.4)	E (69.8)		
		NBT	E (64.7)	E (56.4)	E (65.9)	E (56.3)	E (72.0)	D (54.6)	E (65.0)	E (55.4)	E (70.9)	D (53.4)		
		NBR	E (74.2)	E (57.9)	E (75.0)	E (57.7)	E (77.3)	D (54.0)	E (73.6)	E (55.9)	E (75.8)	D (52.8)		
	S. Yosemite Street	SBL	E (63.7)	E (74.1)	E (63.7)	E (74.1)	E (63.7)	E (74.1)	E (64.7)	E (74.5)	E (64.7)	E (74.5)		
		SBTR	D (47.2)	E (66.6)	D (47.1)	E (66.5)	D (47.3)	E (66.4)	D (48.4)	E (66.5)	D (48.1)	E (66.1)		
		Overall	C (32.5)	C (31.8)	C (32.7)	C (32.2)	C (33.3)	D (35.3)	D (33.4)	C (33.2)	C (34.0)	D (36.2)		
2 Parkland Road/E. County Line Road	STOP	E. County Line Road	EBT	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]	
			EBR	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]	
		Parkland Road	NBR	A [9.4]	A [9.2]	A [9.5]	A [9.0]	A [9.7]	A [9.0]	A [9.7]	A [9.1]	B [10.1]	A [9.2]	
			Overall	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]	A [0.0]	
3 Chester Street/S. Chester Street/E. County Line Road	Signal	E. County Line Road	EBL	D (46.5)	F (87.9)	D (46.3)	F (89.6)	D (42.8)	F (89.1)	D (47.4)	F (88.6)	D (43.9)	F (88.3)	
			EBT	D (50.9)	C (30.1)	D (50.6)	C (29.3)	D (50.9)	C (26.5)	D (50.3)	C (31.6)	D (51.4)	C (28.5)	
			EBR	D (36.8)	B (10.4)	D (36.6)	B (10.9)	C (34.3)	A (2.3)	D (36.4)	B (13.8)	C (34.4)	A (3.6)	
		E. County Line Road	WBL	D (45.3)	E (68.0)	D (45.3)	E (68.0)	D (45.3)	E (68.0)	D (49.2)	E (69.1)	D (49.2)	E (69.1)	
			WBTR	D (35.5)	D (37.3)	D (35.3)	D (37.1)	C (34.2)	D (38.0)	C (34.9)	D (37.5)	C (34.1)	D (38.0)	
			NBL	C (34.5)	E (59.2)	C (34.9)	E (59.5)	D (36.6)	E (60.0)	C (35.0)	E (58.7)	D (36.6)	E (59.3)	
	Chester Street	NBT	D (42.5)	D (42.6)	D (42.5)	D (42.6)	D (42.6)	D (42.4)	D (41.9)	D (43.0)	D (41.9)	D (42.9)		
		NBR	E (62.3)	E (65.6)	E (62.3)	E (64.9)	E (62.5)	E (65.4)	E (61.7)	E (66.6)	E (61.7)	E (66.6)		
		SBL	E (63.5)	F (87.1)	E (65.7)	F (92.2)	F (111.3)	F (128.6)	E (70.3)	F (85.6)	F (118.3)	F (128.6)		
	S. Chester Street	SBT	C (31.1)	D (40.2)	C (31.2)	D (40.5)	C (33.3)	D (42.7)	C (31.2)	D (40.0)	C (33.1)	D (42.6)		
		SBR	C (30.2)	D (38.8)	C (30.4)	D (39.1)	C (32.3)	D (40.9)	C (30.1)	D (38.5)	C (32.0)	D (40.6)		
		Overall	D (44.2)	D (48.3)	D (44.3)	D (48.7)	D (48.0)	D (51.2)	D (45.0)	D (48.7)	D (49.1)	D (50.8)		
4 Parkland Road/Westview Road	STOP	Westview Road	EBL	A [8.7]	A [7.8]	A [8.7]	A [7.8]	A [8.7]	A [7.8]	A [9.4]	A [8.2]	A [9.4]	A [8.2]	
			EBTR	A [8.0]	A [7.1]	A [8.0]	A [7.0]	A [8.0]	A [7.0]	A [8.9]	A [7.5]	A [8.9]	A [7.5]	
		Westview Road	WBL	A [8.4]	A [8.3]	A [8.4]	A [8.2]	A [8.4]	A [8.2]	B [10.2]	A [9.4]	B [10.2]	A [9.4]	
			WBTR	A [8.1]	A [7.3]	A [8.1]	A [7.2]	A [8.1]	A [7.2]	A [9.2]	A [7.6]	A [9.2]	A [7.6]	
		Parkland Road	NBL	A [8.8]	A [8.1]	A [8.8]	A [8.0]	A [8.8]	A [8.0]	A [8.4]	A [8.4]	A [8.4]	A [8.4]	
			NBTR	A [7.9]	A [7.2]	A [7.9]	A [7.1]	A [7.9]	A [7.1]	A [8.8]	A [7.6]	A [8.8]	A [7.6]	
		Parkland Road	SBL	A [8.6]	A [8.1]	A [8.6]	A [8.0]	A [8.6]	A [8.0]	B [10.1]	A [9.0]	B [10.1]	A [9.0]	
			SBTR	A [7.2]	A [6.9]	A [7.2]	A [6.9]	A [7.2]	A [6.9]	A [7.7]	A [7.2]	A [7.7]	A [7.2]	
5 Future Site Entrance/Westview Road	STOP	Westview Road	EBLT	N/A	N/A	N/A	N/A	N/A	N/A	A [3.8]	A [4.0]	A [3.8]	A [4.0]	
			WBTR	N/A	N/A	N/A	N/A	N/A	N/A	A [0.0]	A [0.0]	A [0.0]	A [0.0]	
		Future Site Entrance	SBLR	N/A	N/A	N/A	N/A	N/A	N/A	B [14.5]	B [11.8]	B [14.5]	B [11.8]	
			Overall	N/A	N/A	N/A	N/A	N/A	N/A	A [3.8]	A [4.0]	A [3.8]	A [4.0]	
6 Existing Site Entrance/Westview Road	STOP	Westview Road	EBLTR	A [1.4]	A [1.9]	A [1.5]	A [1.9]	A [1.5]	A [1.9]	A [0.5]	A [0.8]	A [0.5]	A [0.8]	
			WBTR	A [1.9]	A [2.1]	A [1.9]	A [2.1]	A [1.9]	A [2.1]	A [1.6]	A [1.5]	A [1.6]	A [1.5]	
		DSW Driveway	NBLTR	B [11.3]	B [10.1]	B [11.2]	B [10.1]	B [11.2]	B [10.1]	B [12.3]	B [10.7]	B [12.3]	B [10.7]	
			SBLTR	B [14.5]	B [11.7]	B [14.4]	B [11.7]	B [14.4]	B [11.7]	C [16.1]	B [12.9]	C [16.1]	B [12.9]	
		Overall	A [1.4]	A [1.9]	A [1.5]	A [1.9]	A [1.5]	A [1.9]	A [0.5]	A [0.8]	A [0.5]	A [0.8]		
7 Chester Street/Westview Road	Signal	Westview Road	EBL	D (53.6)	C (29.4)	D (53.6)	C (29.4)	D (53.6)	C (29.4)	D (53.7)	C (29.9)	D (53.7)	C (29.9)	
			EBTR	D (50.8)	C (27.9)	D (50.8)	C (27.9)	D (50.8)	C (27.9)	D (49.3)	C (27.8)	D (49.3)	C (27.8)	
			WBL	E (56.3)	C (32.1)	E (56.3)	C (32.1)	E (56.3)	C (32.1)	E (56.3)	C (32.1)	E (56.3)	C (32.1)	
		Westview Road	WBT	E (55.1)	C (31.6)	E (55.1)	C (31.6)	E (55.1)	C (31.6)	E (55.6)	C (31.8)	E (55.6)	C (31.8)	
			WBR	A (0.2)	A (0.2)	A (0.2)	A (0.2)	A (0.2)	A (0.2)	A (0.2)	A (0.2)	A (0.2)	A (0.2)	
			NBL	E (57.5)	C (31.3)	E (57.6)	C (31.4)	E (56.0)	C (32.8)	E (58.2)	C (31.9)	E (56.7)	C (32.3)	
	Chester Street	NBTR	E (55.6)	C (33.9)	E (55.7)	C (33.7)	E (55.7)	C (33.9)	E (56.6)	C (34.3)	E (56.6)	C (33.8)		
		SBL	C (22.1)	C (21.4)	C (22.1)	C (21.6)	C (22.2)	C (22.9)	C (24.6)	C (20.9)	C (24.6)	C (22.4)		
		SBTR	A (3.0)	B (13.1)	A (2.9)	B (13.1)	A (2.5)	B (13.0)	A (3.8)	B (14.3)	A (3.3)	B (14.2)		
	Overall	C (25.8)	B (18.8)	C (25.6)	B (18.8)	C (25.6)	B (19.0)	C (26.4)	B (19.5)	C (26.2)	B (19.5)			
	8 S. Yosemite Street/Parkland Road	Signal	Parkland Road	EBLT	E (57.4)	C (31.0)	E (56.7)	C (30.9)	E (56.7)	C (30.9)	E (57.0)	C (30.9)	E (57.0)	C (30.9)
				EBR	D (46.4)	C (28.4)	D (46.8)	C (28.5)	D (46.8)	C (28.5)	D (46.9)	C (28.5)	D (46.9)	C (28.5)
WBL				D (54.9)	C (30.8)	D (54.8)	C (30.9)	D (54.8)	C (30.9)	D (54.8)	C (30.9)	D (54.8)	C (30.9)	
Parkland Road			WBTR	D (53.0)	C (30.0)	D (53.2)	C (30.1)	D (53.2)	C (30.1)	D (52.7)	C (29.8)	D (52.7)	C (29.8)	
			NBL	B (10.9)	A (3.6)	B (10.2)	A (3.1)	B (10.2)	A (3.0)	B (10.1)	A (3.1)	A (7.7)	A (3.0)	
			NBTR	B (16.0)	A (4.7)	B (15.2)	A (4.1)	B (13.2)	A (4.5)	B (15.2)	A (4.0)	B (13.0)	A (4.5)	
S. Yosemite Street		SBL	A (8.0)	B (10.3)	A (7.5)	B (10.1)	A (7.8)	B (11.2)	A (8.1)	B (10.1)	A (8.3)	B (11.4)		
		SBTR	A (8.7)	B (11.6)	A (8.1)	B (11.1)	A (8.8)	B (12.5)	A (8.6)	B (11.2)	A (9.3)	B (13.0)		
		Overall	C (23.0)	B (12.9)	C (22.4)	B (12.5)	C (20.8)	B (12.5)	C (22.4)	B (12.5)	C (20.8)	B (12.8)		
9 S. Yosemite Street/Chester Street		Signal	Chester Street	WBL	E (70.2)	D (42.0)	E (70.2)	D (41.9)	E (64.2)	D (43.0)	E (69.4)	D (42.0)	E (67.3)	D (43.2)
				WBR	E (61.8)	C (34.0)	E (61.8)	C (34.0)	E (56.0)	C (34.7)	E (60.6)	C (34.1)	E (59.0)	C (34.8)
				NBT	A (9.1)	B (12.8)	A (9.1)	B (12.8)	A (9.6)	B (13.0)	A (9.3)	B (12.8)	A (9.8)	B (13.1)
	S. Yosemite Street		NBR	A (9.5)	B (12.3)	A (9.5)	B (12.2)	A (9.5)	B (11.8)	A (9.7)	B (12.3)	A (9.7)	B (11.9)	
			SBL	A (9.2)	C (24.6)	A (9.5)	C (25.3)	B (11.4)	C (22.5)	A (9.3)	C (25.6)	B (11.3)	C (22.4)	
			SBTR	A (7.5)	A (7.4)	A (7.7)	A (7.4)	A (8.8)	A (5.6)	A (7.7)	A (7.1)	A (8.8)	A (5.3)	
	Overall		C (25.2)	C (21.4)	C (25.2)	C (21.3)	C (22.6)	C (20.1)	C (25.2)	C (21.4)	C (23.5)	C (20.1)		

Notes: (1) Numbers in brackets [] represent delay at unsignalized intersections in seconds per vehicle.
(2) Numbers in parentheses () represent delay at signalized intersections in seconds per vehicle.
(3) "inf" represents theoretical delays in excess of 999.9 seconds.
(4) Roadway names in bold are considered north/south for purposes of this analysis

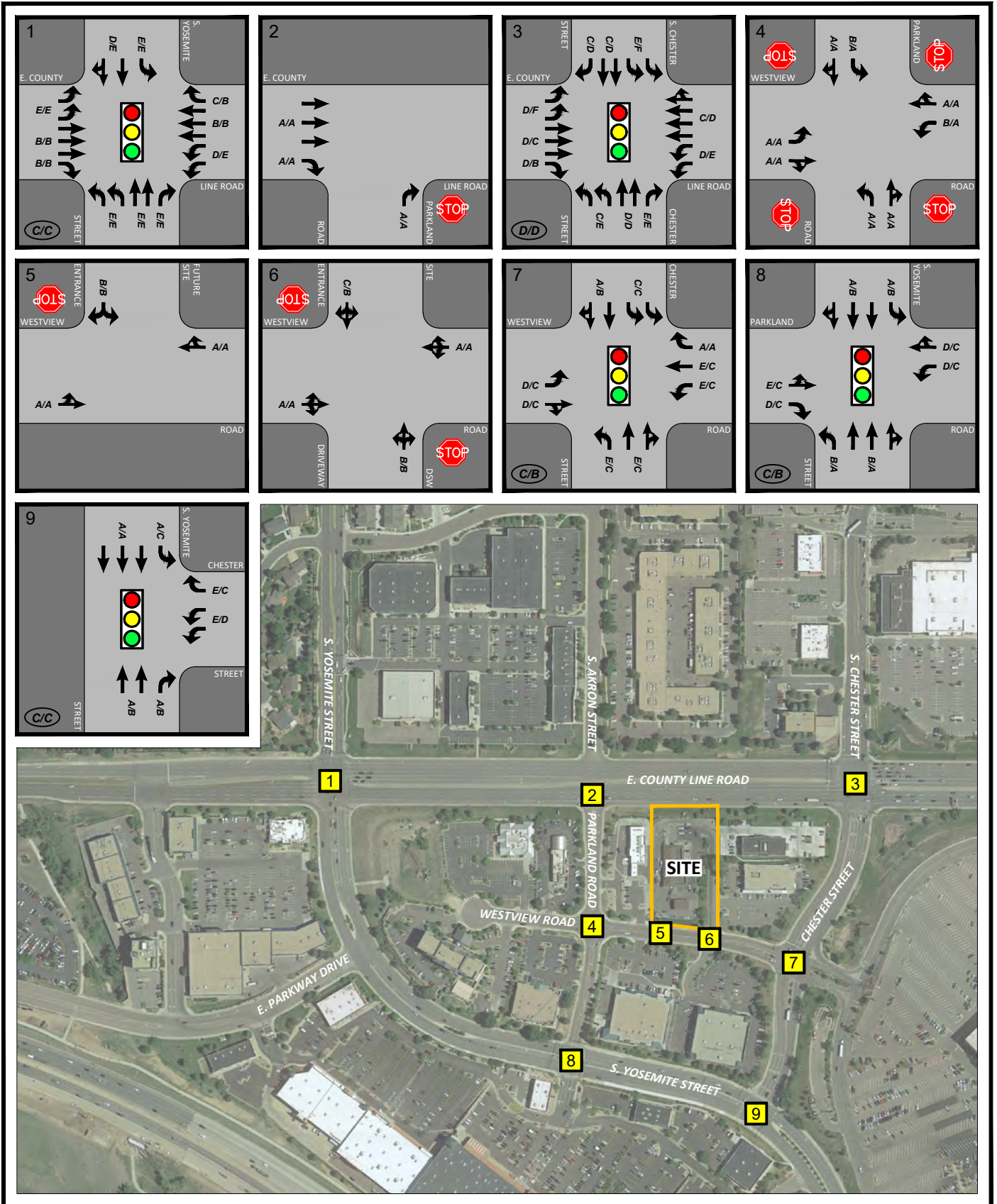


Figure 6-3
Total Future Levels of Service (2020)

- ← Represents One Travel Lane
- 🚦 Signalized Intersection
- 🛑 Stop Sign



NORTH

Lone Tree In-N-Out
Lone Tree, Colorado

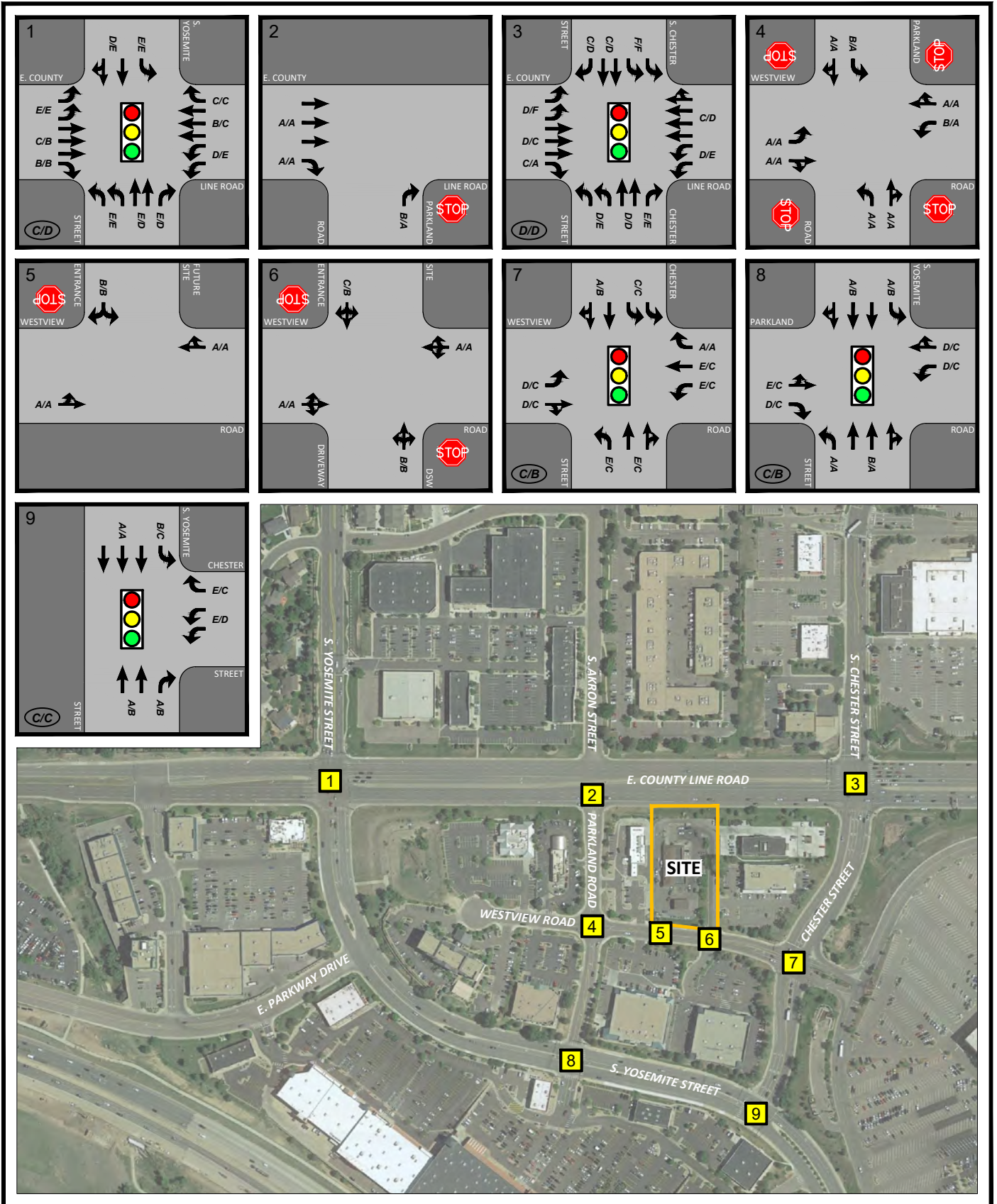


Figure 6-4
Total Future Levels of Service (2040)

- Represents One Travel Lane
- Signalized Intersection
- Stop Sign



NORTH

Lone Tree In-N-Out
Lone Tree, Colorado

Table 6-3
 Lone Tree In-N-Out
 Total Future Intersection Queueing Summary (1) (2) (3)

Intersection	Operating Condition	Street Name	Approach/Movement	Available Storage	Existing 2019		Background 2020		Background 2040		Total Future 2020		Total Future 2040				
					Mid-day Peak Hour	PM Peak Hour	Mid-day Peak Hour	PM Peak Hour	Mid-day Peak Hour	PM Peak Hour	Mid-day Peak Hour	PM Peak Hour	Mid-day Peak Hour	PM Peak Hour			
1 S. Yosemite Street/E. County Line Road	Signal	E. County Line Road	EBL	240	117	106	117	106	117	106	117	106	117	106			
			EBT		257	189	260	191	329	253	264	194	334	257			
			EBR		52	39	52	39	52	41	52	39	52	41			
			WBL	725	87	119	88	119	96	114	86	119	94	115			
			WBT		285	434	290	436	360	590	269	424	347	577			
			WBR		81	52	82	54	81	45	80	53	84	46			
			NBL	280	120	119	122	120	121	121	152	188	151	190			
			NBT		134	137	137	140	163	165	137	140	163	165			
			NBR		174	146	177	145	173	146	176	145	172	145			
			SBL		163	149	163	149	163	149	166	152	166	152			
			SBTR		80	146	80	147	92	188	80	147	92	188			
			2 Parkland Road/E. County Line Road	STOP	E. County Line Road	EBT		0	0	0	0	0	0	0	0	0	0
EBR		0				0	0	0	0	0	0	0	0	0			
WBT		0				0	0	0	0	0	0	0	0	0			
NBR		15				8	15	7	16	7	21	11	22	11			
3 Chester Street/S. Chester Street/E. County Line Road	Signal	E. County Line Road	EBL	730	173	144	172	144	172	144	173	144	173	144			
			EBT		286	257	289	259	362	312	290	262	364	314			
			EBR		50	7	50	7	54	1	47	7	51	1			
			WBL	720	313	223	313	223	313	223	378	255	378	255			
			WBT		245	409	247	413	301	556	236	402	288	536			
			WBR	200	66	93	66	93	66	93	65	92	65	92			
			NBL		171	103	171	103	171	104	178	109	178	109			
			NBT		331	262	331	261	331	262	340	269	340	270			
			NBR		314	400	314	400	314	400	314	400	314	400			
			SBL	165	148	288	148	288	148	288	153	296	153	296			
			SBTR	155	80	191	81	191	85	191	78	191	83	191			
			4 Parkland Road/Westview Road	STOP	Westview Road	EBL	55	13	5	13	5	13	5	15	5	15	5
EBTR		20				10	20	10	20	10	23	10	23	10			
WBL	65	10				13	10	10	10	10	25	23	25	23			
WBT		18				10	18	8	18	8	30	15	30	15			
WBR	100	10				5	10	5	10	5	10	5	10	5			
NBL		10				8	10	8	10	8	15	10	15	10			
NBT		5				5	5	5	5	5	18	13	18	13			
NBR	75	3				3	3	3	3	3	3	3	3	3			
SBL		3				3	3	3	3	3	3	3	3	3			
SBTR		3				3	3	3	3	3	3	3	3	3			
5 Future Site Entrance/Westview Road	STOP	Westview Road				EBLT		N/A	N/A	N/A	N/A	N/A	N/A	7	5	7	5
						WBTR		N/A	N/A	N/A	N/A	N/A	N/A	0	0	0	0
			SBLR		N/A	N/A	N/A	N/A	N/A	N/A	42	25	42	25			
			Future Site Entrance														
6 Existing Site Entrance/Westview Road	STOP	Westview Road	EBLTR		2	1	2	1	2	1	1	1	1	1			
			WBTR		3	2	3	2	3	2	4	3	4	3			
			NBLTR		13	8	13	8	12	8	14	9	14	9			
			SBLTR		17	9	17	9	17	9	10	4	10	4			
7 Chester Street/Westview Road	Signal	Westview Road	EBL		122	71	122	71	122	71	145	83	145	83			
			EBTR		88	48	88	48	88	48	96	52	96	52			
			WBL		74	38	74	38	74	38	74	38	74	38			
			WBT		66	34	66	34	66	34	70	36	70	36			
			WBR		0	0	0	0	0	0	0	0	0	0			
			NBL	150	81	24	81	24	81	25	91	29	91	29			
			NBT		210	111	210	111	207	110	211	111	207	110			
			NBR		110	103	110	102	110	102	118	95	118	95			
			SBL	225	116	308	116	308	115	302	124	260	123	260			
			SBTR														
			8 S. Yosemite Street/Parkland Road	Signal	Parkland Road	EBLT		173	71	172	71	172	71	170	71	170	71
						EBR		55	7	61	7	61	7	61	7	61	7
WBL	125	95				48	94	48	94	48	94	48	94	48			
WBT		80				45	83	48	83	48	78	46	78	46			
WBR		178				21	173	19	139	18	173	19	127	18			
NBL	245	143				26	140	7	161	10	141	6	161	10			
NBT		25				32	23	33	24	34	28	36	29	39			
NBR	265	57				102	55	103	68	123	61	105	77	126			
SBL																	
SBTR																	
9 S. Yosemite Street/Chester Street	Signal	Chester Street				WBL		269	208	269	206	242	207	273	208	265	212
						WBR	160	174	75	174	74	157	74	174	74	169	74
			NBT		146	132	148	132	185	147	150	132	187	148			
			NBR		40	49	40	49	40	44	41	49	41	44			
			SBL	245	51	20	52	26	49	36	50	27	47	34			
			SBT		90	21	91	20	102	11	89	21	99	12			

Notes (1) Queue length is based on the 95th percentile queue as reported by Synchro, Version 10.
 (2) Roadway names in bold are considered north/south for purposes of this analysis
 (3) Highlighted values indicate queue exceeds available storage length.

Section 7

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Based on the results of this traffic impact study, the following may be concluded:

1. Under existing 2019 traffic conditions, the signalized intersections within the study area currently operate at overall acceptable levels of service (LOS) "D" or better during the weekday midday and PM peak hours.
2. Under background future 2020 and 2040 traffic conditions, without the development of the subject site, delays would increase slightly at study intersections due to regional traffic growth. All intersections would continue to operate at overall acceptable levels of service.
3. The proposed site redevelopment would generate, upon completion and full occupancy, 415 weekday midday, 335 weekday PM peak hour trips as well as 3,746 weekday daily trips. Redeveloping the existing use would remove 82 midday and 67 PM peak hour trips from the network. Due to the nature of the proposed uses, a significant number of trips generated by the site are anticipated to be drawn from prevailing traffic volumes as pass-by trips. Thus, the site would add 130 net new midday peak hour trips, 100 net new PM peak hour trips, and 2,543 net new daily trips to the road network.
4. Under total future traffic conditions with development of the site, all of the study intersections would continue to operate at overall acceptable levels of service consistent with background conditions. Thus, no additional roadway improvements as part of the site development are required.

RECOMMENDATIONS

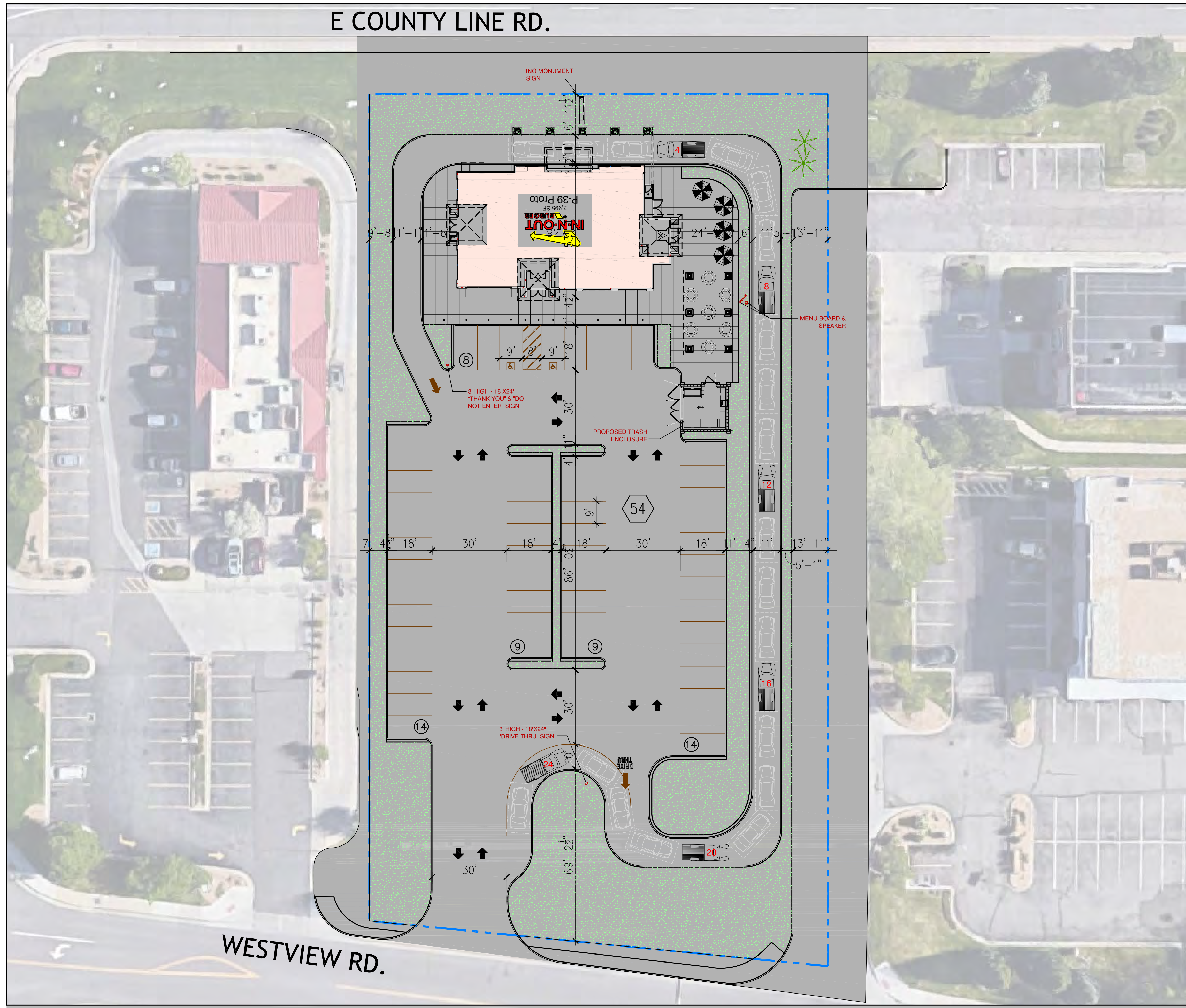
Based on the above conclusions and in order to mitigate the impacts of the subject development, the following are recommended:

1. The Applicant should provide the new entrance into the site as shown on the development plan.
2. The Applicant should provide 25 queueing spaces for the drive-thru as shown on the development plan to ensure proper onsite circulation and prevent any queueing on to Westview Road.

APPENDIX A

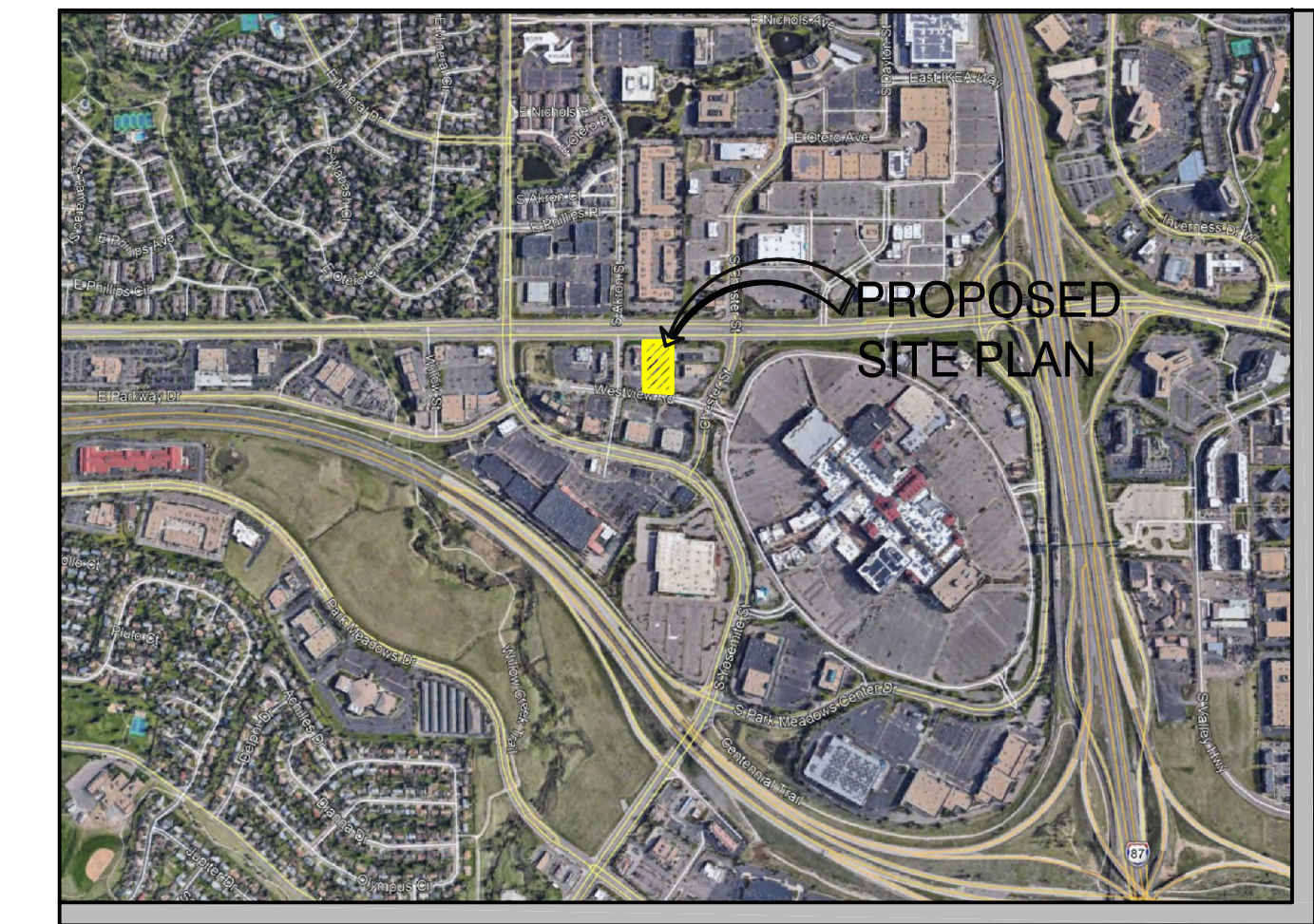
Development Plan

E COUNTY LINE RD.



WESTVIEW RD.

THIS SITE PLAN IS BASED ON AERIAL FILE OF A EXISTING/NEW SITE PLAN



VICINITY MAP N.T.S.

SUMMARY

IN-N-OUT SITE AREA:	±1.46 ACRE (63,597 SF±)
SITE ADDRESS:	9171 E WESTVIEW RD.
JURISDICTION:	CITY OF LONE TREE, CO
APN	223103207002
ZONING:	COMMERCIAL
PROPOSED USE:	DRIVE-THRU FASTFOOD
CAR STACKING IN DRIVE THRU:	25 CARS MIN.

REQ. SET BUILDING SET BACKS	REQ.	PROV.'D
FRONT:	0'-0"	0'-0"
SIDE:	0'-0"	0'-0"
SIDE:	0'-0"	0'-0"
REAR:	0'-0"	0'-0"

DRIVE THRUS ALLOWED IN ZONING	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
CONDITIONAL USE PERMIT NEED FOR D/T:	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>

BUILDING AREA

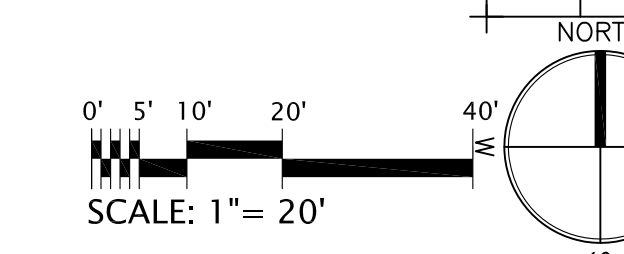
IN-N-OUT BUILDING AREA: 3,995 S.F.

IN-N-OUT SEATING:	
INDOOR:	77 SEATS
OUTDOOR:	32 SEATS

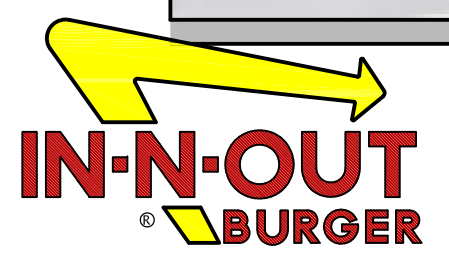
PARKING SUMMARY

	REQ.	PROV.'D
IN-N-OUT BLDG(@1 SP PER 100 S.F.)		
AREA 3995 SF :	40	54
OUTDOOR SEATING(1 SP@100 S.F.)		
4 TABLES*64 EA=256 S.F.+200 S.F.	5	
	45	54

DATE	REVISIONS



INO_CO-LONE TREE
(9171 E WESTVIEW RD.) - SP
(CAR WASH SITE DEMO)



GOD BLESS AMERICA
13502 HAMBURGER LANE
BALDWIN PARK, CA 91706

PRELIMINARY SITE PLAN-5

SHEET OF 1

THE INFORMATION, DRAWINGS AND SPECIFICATIONS SHOWN ARE AND SHALL REMAIN THE PROPERTY OF IN-N-OUT BURGER. THESE DOCUMENTS MAY NOT BE USED WITHOUT THE EXPRESSED WRITTEN CONSENT OF IN-N-OUT BURGERS.

LONE TREE, CO
9171 E WESTVIEW RD.

PRELIMINARY SITE PLAN LAYOUT
(9171 E WESTVIEW RD.) LONE TREE, CO



01-04-19

APPENDIX B

Scope of Work



Robert M. Browning

From: Stephen Ellis <Stephen.Ellis@cityoflonetree.com>
Sent: Monday, April 8, 2019 11:44 AM
To: Brian J. Horan
Cc: Hans Friedel; Justin Schmitz; Michael J. Workosky
Subject: RE: In-N-Out Burger Traffic Study
Attachments: Traffic Study Area_bjh.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Brian,

There are two additional intersections that will need to be included in the Traffic Study. I placed a “yellow-filled” circle on each of these intersections. They are both located on County Line Road. Unfortunately, we do not have any recent traffic counts that would be of use in this area for your traffic study. Feel free to let me know if you have any additional questions.

Thanks,

Stephen Ellis, P.E., CFM

City Engineer

City of Lone Tree

Public Works Department

9220 Kimmer Drive, Suite 100

Lone Tree, Colorado 80124

(720) 509-1241

Stephen.Ellis@cityoflonetree.com

www.cityoflonetree.com

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From: Brian J. Horan <bjhoran@wellsandassociates.com>
Sent: Monday, April 8, 2019 8:19 AM
To: Stephen Ellis <Stephen.Ellis@cityoflonetree.com>
Cc: Hans Friedel <hans.friedel@cityoflonetree.com>; Justin Schmitz <justin.schmitz@cityoflonetree.com>; Michael J. Workosky <mjworkosky@wellsandassociates.com>
Subject: RE: In-N-Out Burger Traffic Study

Stephen,

Thank you for providing this information. To clarify the intersections that the City will be requiring within the study can you look at the attached? I want to give In-N-Out specific expectations on the cost of the study. The intersections I've circled would be the ones with the highest percentage of Site turning movements and therefore areas where you might need In-N-Out to consider improvements. Could you please clarify exactly which intersections need to be studied, if different from the attached?

Additionally, does the City have existing traffic data at any of these intersections that we could use for our existing analysis to help provide consistency and reduce cost of the study?

Thanks again for your time and attention on this project,
Brian

Brian J. Horan, P.E. | Senior Associate

WELLS + ASSOCIATES

2301 Blake Street | Denver, CO 80205

D: 303.222.0077 | M: 203.641.6879

[Web](#) | [Blog](#) | [LinkedIn](#) | [Twitter](#) | [Facebook](#)

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From: Stephen Ellis <Stephen.Ellis@cityoflonetree.com>

Sent: Monday, April 08, 2019 10:04 AM

To: Brian J. Horan <bjhoran@wellsandassociates.com>

Cc: Hans Friedel <hans.friedel@cityoflonetree.com>; Justin Schmitz <justin.schmitz@cityoflonetree.com>

Subject: In-N-Out Burger Traffic Study

Brian,

Please find attached a pdf that indicates the limits of the Traffic Study that the City will require for the development of the In-N-Out Burger site. Please include an analysis of each intersection noted on the attached drawing.

We like your idea of comparing the proposed traffic generated by the In-N-Out Burger to the existing Car Wash/Gas Station usage so that we can understand the difference in the impact that In-N-Out Burger will have in this area.

Typically, we ask for the study to address Short and Long term impacts to the traffic in the area and ask for an AM and PM peak analysis. Since In-N-Out Burger will not have a typical AM and PM peak, we ask that you supply us with the peak lunch and dinner hours that In-N-Out Burger experiences and analyze those times in the study.

If you have any questions, feel free to call or email me at your convenience.

Thanks,

Stephen Ellis, P.E., CFM

City Engineer

City of Lone Tree

Public Works Department

9220 Kimmer Drive, Suite 100

Lone Tree, Colorado 80124

(720) 509-1241

Stephen.Ellis@cityoflonetree.com

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APPENDIX C

Levels of Service Descriptions



Level of Service for Signalized Intersections

Level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. Specifically, level-of-service (LOS) criteria are stated in terms of the average stopped delay per vehicle for a 15-min analysis period. The criteria are given in Exhibit 16-2. Delay may be measured in the field or estimated using procedures presented later in this chapter. Delay is a complex measure and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group in question.

LOS A describes operations with very low delay, up to 10 sec per vehicle. This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

LOS B describes operations with delay greater than 10 and up to 20 sec per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.

Exhibit 16-2. Level-of-Service Criteria for Signalized Intersections

LEVEL OF SERVICE	STOPPED DELAY PER VEHICLE (SEC)
A	≤ 10.0
B	> 10.0 and ≤ 20.0
C	> 20.0 and ≤ 35.0
D	> 35.0 and ≤ 55.0
E	> 55.0 and ≤ 80.0
F	> 80.0

LOS C describes operations with delay greater than 20 and up to 35 sec per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

LOS D describes operations with delay greater than 35 and up to 55 sec per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

LOS E describes operations with delay greater than 55 and up to 80 sec per vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

LOS F describes operations with delay in excess of 80 sec per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Source: Highway Capacity Manual, 2000. Transportation Research Board, National Research Council

Level of Service Criteria for Stop Sign Controlled Intersections

The level of service criteria are given in Table 17-2. As used here, control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to the speed of vehicles in queue.

The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation. . . .

Table 17-2. Level of Service Criteria for TWSC Intersections

LEVEL OF SERVICE	AVERAGE CONTROL DELAY (sec/veh)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Average total delay less than 10 sec/veh is defined as Level of Service (LOS) A. Follow-up times of less than 5 sec have been measured when there is no conflicting traffic for a minor street movement, so control delays of less than 10 sec/veh are appropriate for low flow conditions. To remain consistent with the AWSC intersection analysis procedure described later in this chapter, a total delay of 50 sec/veh is assumed as the break point between LOS E and F.

The proposed level of service criteria for TWSC intersections are somewhat different from the criteria used in Chapter 16 for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection. Additionally, several driver behavior considerations combine to make delays at signalized intersections less onerous than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, where drivers on the minor approaches to unsignalized intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized than signalized intersections. For these reasons, it is considered that the total delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection. . . .

LOS F exists when there are insufficient gaps of suitable size to allow a side street demand to cross safely through a major street traffic stream. This level of service is generally evident from extremely long total delays experienced by side street traffic and by queueing on the minor approaches. The method, however, is based on a constant critical gap size - that is, the critical gap remains constant, no matter how long the side street motorist waits. LOS F may also appear in the form of side street vehicles' selecting smaller-than-usual gaps. In such cases, safety may be a problem and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior. The latter is more difficult to observe on the field than queueing, which is more obvious.

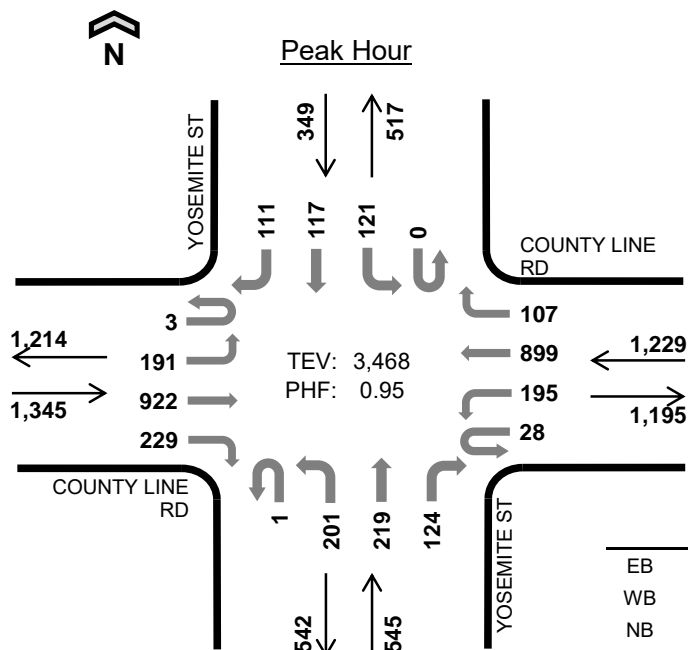
Source: Highway Capacity Manual, 2000. Transportation Research Board, National Research Council

APPENDIX D
Traffic Count Data

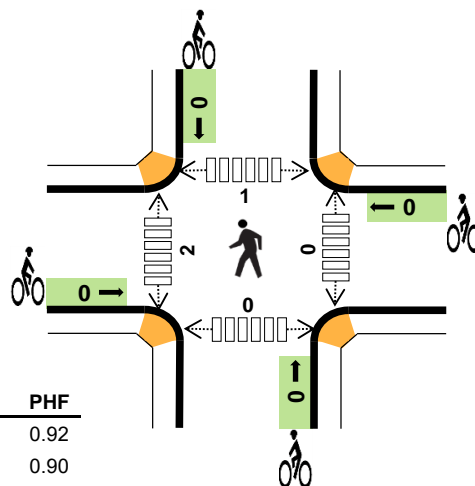




YOSEMITE ST COUNTY LINE RD



Date: Tue, Apr 16, 2019
 Count Period: 11:00 AM to 2:00 PM
 Peak Hour: 12:00 PM to 1:00 PM



	HV %:	PHF
EB	0.6%	0.92
WB	1.4%	0.90
NB	0.7%	0.93
SB	2.0%	0.95
TOTAL	1.0%	0.95

Three-Hour Count Summaries

Interval Start	COUNTY LINE RD				COUNTY LINE RD				YOSEMITE ST				YOSEMITE ST				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
12:00 PM	0	48	189	63	11	45	249	37	1	54	49	34	0	29	25	24	858	0
12:15 PM	2	37	249	55	5	55	258	24	0	50	57	29	0	25	36	31	913	0
12:30 PM	1	55	242	67	6	48	169	26	0	58	61	28	0	30	30	29	850	0
12:45 PM	0	51	242	44	6	47	223	20	0	39	52	33	0	37	26	27	847	3,468
Peak Hour	3	191	922	229	28	195	899	107	1	201	219	124	0	121	117	111	3,468	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
12:00 PM	2	3	1	0	6	0	0	0	0	0	0	1	1	0	2
12:15 PM	1	5	1	1	8	0	0	0	0	0	0	0	0	0	0
12:30 PM	2	4	0	1	7	0	0	0	0	0	0	0	0	0	0
12:45 PM	3	5	2	5	15	0	0	0	0	0	0	1	0	0	1
Peak Hour	8	17	4	7	36	0	0	0	0	0	0	2	1	0	3

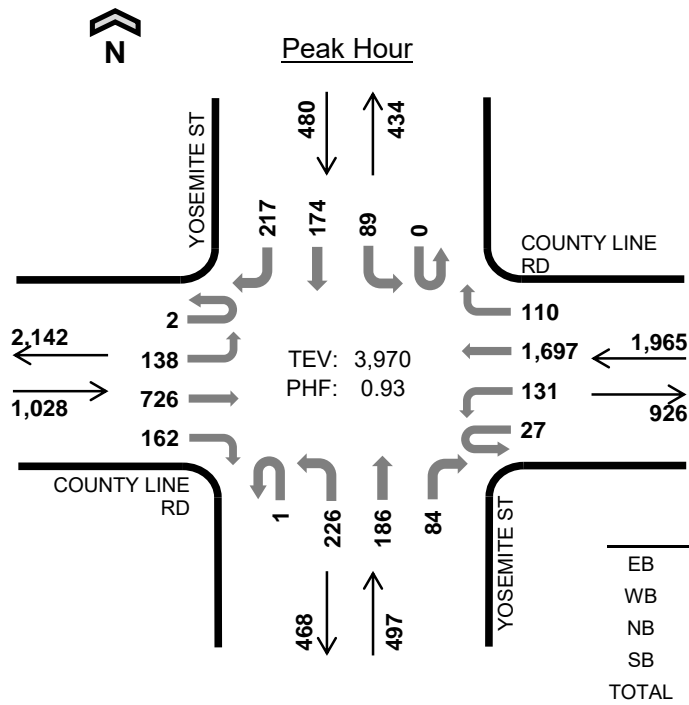
Three-Hour Count Summaries																		
Interval Start	COUNTY LINE RD				COUNTY LINE RD				YOSEMITE ST				YOSEMITE ST				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
11:00 AM	0	34	164	51	4	36	192	26	0	45	42	13	0	22	26	24	679	0
11:15 AM	1	39	207	48	6	33	179	17	0	44	27	22	0	24	30	26	703	0
11:30 AM	0	58	176	41	8	39	183	28	0	53	51	36	0	25	29	34	761	0
11:45 AM	1	43	213	55	5	46	225	34	0	42	47	24	0	27	26	26	814	2,957
12:00 PM	0	48	189	63	11	45	249	37	1	54	49	34	0	29	25	24	858	3,136
12:15 PM	2	37	249	55	5	55	258	24	0	50	57	29	0	25	36	31	913	3,346
12:30 PM	1	55	242	67	6	48	169	26	0	58	61	28	0	30	30	29	850	3,435
12:45 PM	0	51	242	44	6	47	223	20	0	39	52	33	0	37	26	27	847	3,468
1:00 PM	0	49	179	53	4	30	183	23	0	45	53	36	0	24	35	33	747	3,357
1:15 PM	1	45	212	51	10	35	229	23	1	48	49	28	0	23	21	20	796	3,240
1:30 PM	0	32	181	47	10	35	188	16	1	61	44	34	0	29	29	29	736	3,126
1:45 PM	0	45	206	39	6	42	215	36	0	52	41	16	0	21	20	30	769	3,048
Count Total	6	536	2,460	614	81	491	2,493	310	3	591	573	333	0	316	333	333	9,473	0
Peak Hour	3	191	922	229	28	195	899	107	1	201	219	124	0	121	117	111	3,468	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

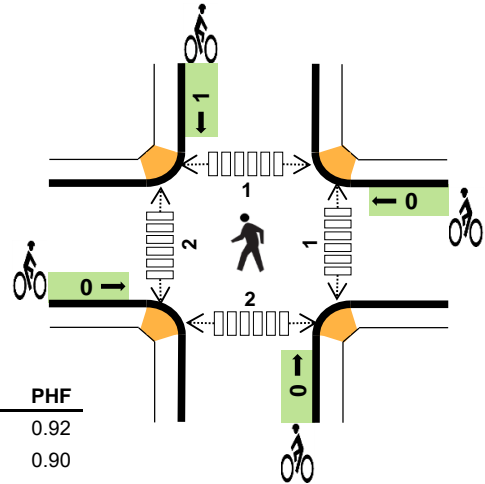
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
11:00 AM	2	1	0	0	3	0	0	0	0	0	0	1	1	1	3
11:15 AM	3	3	1	1	8	0	0	0	0	0	1	0	1	1	3
11:30 AM	6	7	2	2	17	0	0	1	0	1	0	0	0	0	0
11:45 AM	5	2	3	0	10	0	0	0	0	0	0	0	0	0	0
12:00 PM	2	3	1	0	6	0	0	0	0	0	0	1	1	0	2
12:15 PM	1	5	1	1	8	0	0	0	0	0	0	0	0	0	0
12:30 PM	2	4	0	1	7	0	0	0	0	0	0	0	0	0	0
12:45 PM	3	5	2	5	15	0	0	0	0	0	0	1	0	0	1
1:00 PM	3	3	1	1	8	0	1	0	0	1	0	1	0	0	1
1:15 PM	7	2	1	1	11	0	0	0	0	0	0	0	0	0	0
1:30 PM	3	3	0	1	7	0	0	0	0	0	0	0	0	0	0
1:45 PM	4	5	2	1	12	0	0	1	0	1	1	0	0	1	2
Count Total	41	43	14	14	112	0	1	2	0	3	2	4	3	3	12
Peak Hour	8	17	4	7	36	0	0	0	0	0	0	2	1	0	3



YOSEMITE ST COUNTY LINE RD



Date: Tue, Apr 16, 2019
 Count Period: 4:30 PM to 7:30 PM
 Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	1.2%	0.92
WB	0.4%	0.90
NB	0.4%	0.85
SB	1.7%	0.89
TOTAL	0.7%	0.93

Three-Hour Count Summaries

Interval Start	COUNTY LINE RD				COUNTY LINE RD				YOSEMITE ST				YOSEMITE ST				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM	0	40	169	42	12	26	410	18	1	73	50	23	0	19	39	56	978	0
4:45 PM	0	30	178	36	5	29	422	28	0	41	34	19	0	31	31	41	925	0
5:00 PM	0	34	164	55	6	39	465	34	0	66	51	23	0	21	57	50	1,065	0
5:15 PM	2	34	215	29	4	37	400	30	0	46	51	19	0	18	47	70	1,002	3,970
Peak Hour	2	138	726	162	27	131	1,697	110	1	226	186	84	0	89	174	217	3,970	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	2	2	0	3	7	0	0	0	0	0	0	0	0	0	0
4:45 PM	6	1	1	0	8	0	0	0	1	1	0	0	0	0	0
5:00 PM	2	3	0	2	7	0	0	0	0	0	1	1	1	1	4
5:15 PM	2	1	1	3	7	0	0	0	0	0	0	1	0	1	2
Peak Hour	12	7	2	8	29	0	0	0	1	1	1	2	1	2	6

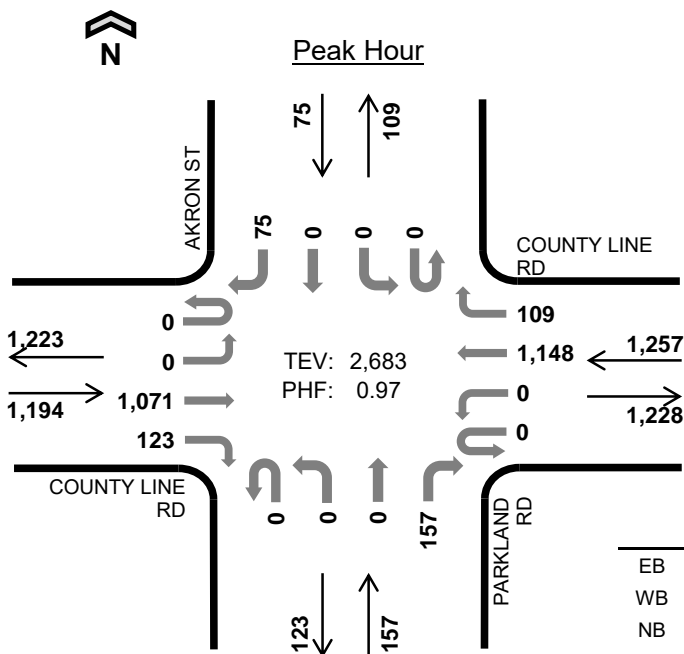
Three-Hour Count Summaries																		
Interval Start	COUNTY LINE RD				COUNTY LINE RD				YOSEMITE ST				YOSEMITE ST				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM	0	40	169	42	12	26	410	18	1	73	50	23	0	19	39	56	978	0
4:45 PM	0	30	178	36	5	29	422	28	0	41	34	19	0	31	31	41	925	0
5:00 PM	0	34	164	55	6	39	465	34	0	66	51	23	0	21	57	50	1,065	0
5:15 PM	2	34	215	29	4	37	400	30	0	46	51	19	0	18	47	70	1,002	3,970
5:30 PM	0	36	185	41	8	34	359	24	0	48	51	11	0	27	34	44	902	3,894
5:45 PM	1	27	212	41	4	31	339	32	0	51	48	22	0	21	34	41	904	3,873
6:00 PM	0	33	167	36	3	30	315	32	0	52	41	35	0	22	22	29	817	3,625
6:15 PM	0	34	173	32	3	35	227	14	0	38	44	22	0	10	38	22	692	3,315
6:30 PM	2	23	173	32	4	23	229	14	0	34	27	16	0	14	23	23	637	3,050
6:45 PM	1	24	146	29	2	29	182	23	0	44	35	14	0	13	19	21	582	2,728
7:00 PM	1	27	139	26	7	17	175	10	0	34	34	11	0	20	21	18	540	2,451
7:15 PM	0	25	111	18	1	26	204	23	0	27	28	18	0	7	10	10	508	2,267
Count Total	7	367	2,032	417	59	356	3,727	282	1	554	494	233	0	223	375	425	9,552	0
Peak Hour	2	138	726	162	27	131	1,697	110	1	226	186	84	0	89	174	217	3,970	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

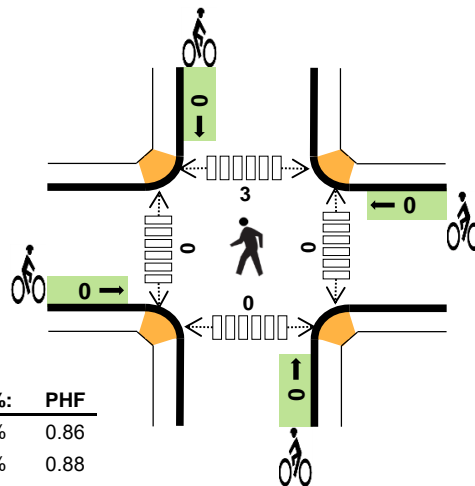
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	2	2	0	3	7	0	0	0	0	0	0	0	0	0	0
4:45 PM	6	1	1	0	8	0	0	0	1	1	0	0	0	0	0
5:00 PM	2	3	0	2	7	0	0	0	0	0	1	1	1	1	4
5:15 PM	2	1	1	3	7	0	0	0	0	0	0	1	0	1	2
5:30 PM	1	0	0	1	2	0	0	0	0	0	0	1	0	0	1
5:45 PM	4	3	2	0	9	0	0	0	0	0	0	2	0	1	3
6:00 PM	2	0	0	1	3	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1
6:30 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0
6:45 PM	3	0	3	0	6	0	0	0	0	0	0	0	0	0	0
7:00 PM	1	0	0	4	5	0	0	0	0	0	0	0	0	0	0
7:15 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0
Count Total	25	12	8	14	59	0	0	0	1	1	1	5	2	3	11
Peak Hour	12	7	2	8	29	0	0	0	1	1	1	2	1	2	6



PARKLAND RD COUNTY LINE RD



Date: Tue, Apr 16, 2019
Count Period: 11:00 AM to 2:00 PM
Peak Hour: 12:00 PM to 1:00 PM



	HV %:	PHF
EB	0.9%	0.86
WB	1.4%	0.88
NB	0.6%	0.75
SB	0.0%	0.78
TOTAL	1.1%	0.97

Three-Hour Count Summaries

Interval Start	COUNTY LINE RD				COUNTY LINE RD				PARKLAND RD				AKRON ST				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
12:00 PM	0	0	243	37	0	0	328	29	0	0	0	28	0	0	0	24	689	0
12:15 PM	0	0	241	30	0	0	314	30	0	0	0	52	0	0	0	18	685	0
12:30 PM	0	0	319	28	0	0	257	29	0	0	0	41	0	0	0	12	686	0
12:45 PM	0	0	268	28	0	0	249	21	0	0	0	36	0	0	0	21	623	2,683
Peak Hour	0	0	1,071	123	0	0	1,148	109	0	0	0	157	0	0	0	75	2,683	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
12:00 PM	2	4	0	0	6	0	0	0	0	0	0	0	1	0	1
12:15 PM	3	6	0	0	9	0	0	0	0	0	0	0	2	0	2
12:30 PM	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0
12:45 PM	5	5	1	0	11	0	0	0	0	0	0	0	0	0	0
Peak Hour	11	18	1	0	30	0	0	0	0	0	0	0	3	0	3

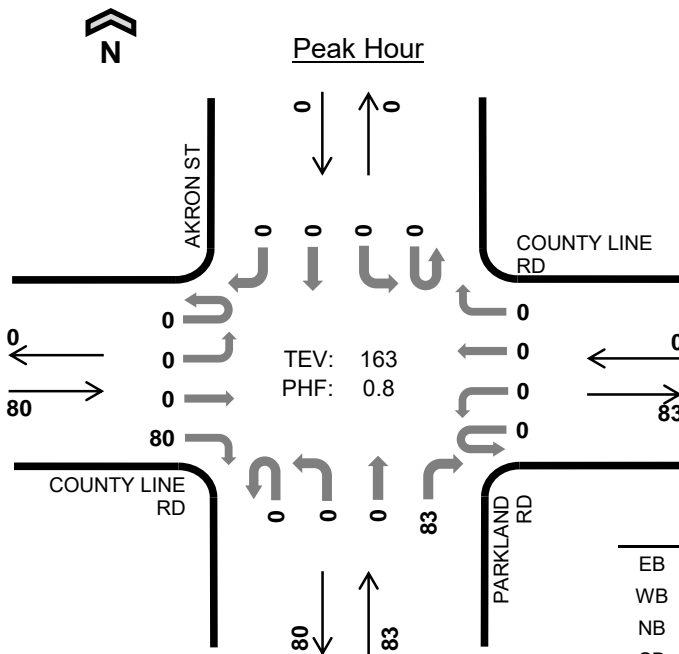
Three-Hour Count Summaries																		
Interval Start	COUNTY LINE RD				COUNTY LINE RD				PARKLAND RD				AKRON ST				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
11:00 AM	0	0	195	21	0	0	260	25	0	0	0	24	0	0	0	15	540	0
11:15 AM	0	0	213	34	0	0	192	22	0	0	0	28	0	0	0	21	510	0
11:30 AM	0	0	226	29	0	0	259	29	0	0	0	38	0	0	0	19	600	0
11:45 AM	0	0	235	14	0	0	278	35	0	0	0	30	0	0	0	13	605	2,255
12:00 PM	0	0	243	37	0	0	328	29	0	0	0	28	0	0	0	24	689	2,404
12:15 PM	0	0	241	30	0	0	314	30	0	0	0	52	0	0	0	18	685	2,579
12:30 PM	0	0	319	28	0	0	257	29	0	0	0	41	0	0	0	12	686	2,665
12:45 PM	0	0	268	28	0	0	249	21	0	0	0	36	0	0	0	21	623	2,683
1:00 PM	0	0	238	31	0	0	259	21	0	0	0	44	0	0	0	9	602	2,596
1:15 PM	0	0	236	24	0	0	258	24	0	0	0	41	0	0	0	13	596	2,507
1:30 PM	0	0	226	30	0	0	250	19	0	0	0	30	0	0	0	12	567	2,388
1:45 PM	0	0	227	21	0	0	273	13	0	0	0	35	0	0	0	9	578	2,343
Count Total	0	0	2,867	327	0	0	3,177	297	0	0	0	427	0	0	0	186	7,281	0
Peak Hour	0	0	1,071	123	0	0	1,148	109	0	0	0	157	0	0	0	75	2,683	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

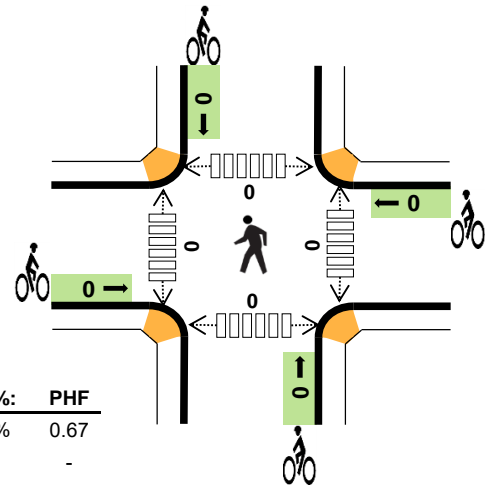
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
11:00 AM	3	3	1	0	7	0	0	0	0	0	0	0	1	0	1
11:15 AM	3	1	0	0	4	0	0	0	0	0	0	0	0	0	0
11:30 AM	6	7	0	0	13	0	0	0	0	0	0	0	0	0	0
11:45 AM	5	2	0	0	7	0	0	0	0	0	2	1	0	2	5
12:00 PM	2	4	0	0	6	0	0	0	0	0	0	0	1	0	1
12:15 PM	3	6	0	0	9	0	0	0	0	0	0	0	2	0	2
12:30 PM	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0
12:45 PM	5	5	1	0	11	0	0	0	0	0	0	0	0	0	0
1:00 PM	3	3	0	0	6	0	0	0	1	1	0	0	0	0	0
1:15 PM	4	2	0	0	6	0	0	0	0	0	0	0	0	0	0
1:30 PM	4	3	0	0	7	0	0	0	0	0	0	0	0	0	0
1:45 PM	3	5	0	0	8	0	0	0	0	0	3	1	0	1	5
Count Total	42	44	2	0	88	0	0	0	1	1	5	2	4	3	14
Peak Hour	11	18	1	0	30	0	0	0	0	0	0	0	3	0	3



PARKLAND RD COUNTY LINE RD



Date: Tue, Apr 16, 2019
 Count Period: 4:30 PM to 7:30 PM
 Peak Hour: 5:15 PM to 6:15 PM



	HV %:	PHF
EB	0.0%	0.67
WB	-	-
NB	0.0%	0.90
SB	-	-
TOTAL	0.0%	0.80

Three-Hour Count Summaries

Interval Start	COUNTY LINE RD Eastbound				COUNTY LINE RD Westbound				PARKLAND RD Northbound				AKRON ST Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
5:15 PM	0	0	0	16	0	0	0	0	0	0	0	23	0	0	0	0	39	0
5:30 PM	0	0	0	30	0	0	0	0	0	0	0	21	0	0	0	0	51	0
5:45 PM	0	0	0	21	0	0	0	0	0	0	0	22	0	0	0	0	43	0
6:00 PM	0	0	0	13	0	0	0	0	0	0	0	17	0	0	0	0	30	163
Peak Hour	0	0	0	80	0	0	0	0	0	0	0	83	0	0	0	0	163	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

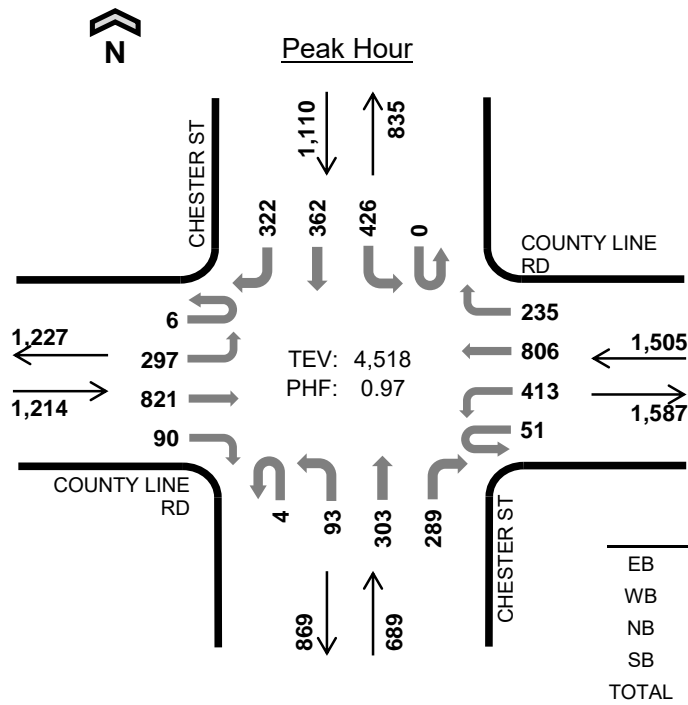
Three-Hour Count Summaries																		
Interval Start	COUNTY LINE RD				COUNTY LINE RD				PARKLAND RD				AKRON ST				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM	0	0	0	29	0	0	0	0	0	0	0	21	0	0	0	0	50	0
4:45 PM	0	0	0	19	0	0	0	0	0	0	0	19	0	0	0	0	38	0
5:00 PM	0	0	0	11	0	0	0	0	0	0	0	14	0	0	0	0	25	0
5:15 PM	0	0	0	16	0	0	0	0	0	0	0	23	0	0	0	0	39	152
5:30 PM	0	0	0	30	0	0	0	0	0	0	0	21	0	0	0	0	51	153
5:45 PM	0	0	0	21	0	0	0	0	0	0	0	22	0	0	0	0	43	158
6:00 PM	0	0	0	13	0	0	0	0	0	0	0	17	0	0	0	0	30	163
6:15 PM	0	0	0	19	0	0	0	0	0	0	0	12	0	0	0	0	31	155
6:30 PM	0	0	0	22	0	0	0	0	0	0	0	21	0	0	0	0	43	147
6:45 PM	0	0	0	15	0	0	0	0	0	0	0	19	0	0	0	0	34	138
7:00 PM	0	0	0	20	0	0	0	0	0	0	0	20	0	0	0	0	40	148
7:15 PM	0	0	0	12	0	0	0	0	0	0	0	23	0	0	0	0	35	152
Count Total	0	0	0	227	0	0	0	0	0	0	0	232	0	0	0	0	459	0
Peak Hour	0	0	0	80	0	0	0	0	0	0	0	83	0	0	0	0	163	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

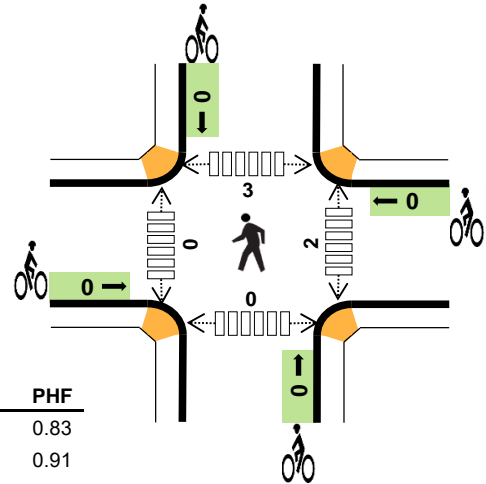
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



CHESTER ST COUNTY LINE RD



Date: Tue, Apr 16, 2019
 Count Period: 11:00 AM to 2:00 PM
 Peak Hour: 12:00 PM to 1:00 PM



	HV %:	PHF
EB	0.8%	0.83
WB	1.0%	0.91
NB	0.6%	0.91
SB	0.9%	0.92
TOTAL	0.9%	0.97

Three-Hour Count Summaries

Interval Start	COUNTY LINE RD				COUNTY LINE RD				CHESTER ST				CHESTER ST				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
12:00 PM	1	86	164	25	12	108	227	65	1	15	71	67	0	87	91	92	1,112	0
12:15 PM	2	64	196	24	11	105	214	53	2	26	80	75	0	117	92	92	1,153	0
12:30 PM	2	88	256	20	10	100	199	55	0	23	65	74	0	98	105	69	1,164	0
12:45 PM	1	59	205	21	18	100	166	62	1	29	87	73	0	124	74	69	1,089	4,518
Peak Hour	6	297	821	90	51	413	806	235	4	93	303	289	0	426	362	322	4,518	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
12:00 PM	2	3	0	5	10	0	0	0	0	0	0	0	2	0	2
12:15 PM	2	3	1	4	10	0	0	0	0	0	2	0	1	0	3
12:30 PM	1	4	3	1	9	0	0	0	0	0	0	0	0	0	0
12:45 PM	5	5	0	0	10	0	0	0	0	0	0	0	0	0	0
Peak Hour	10	15	4	10	39	0	0	0	0	0	2	0	3	0	5

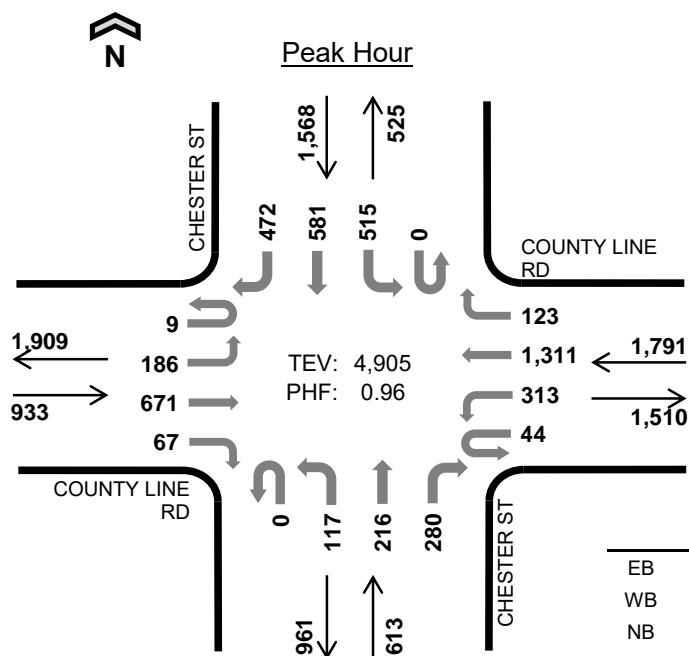
Three-Hour Count Summaries																		
Interval Start	COUNTY LINE RD				COUNTY LINE RD				CHESTER ST				CHESTER ST				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
11:00 AM	0	42	162	19	6	91	189	46	0	15	37	46	0	54	57	67	831	0
11:15 AM	2	63	146	18	9	80	133	47	1	16	70	59	0	65	84	69	862	0
11:30 AM	5	69	187	19	8	84	203	59	1	20	60	56	0	78	84	66	999	0
11:45 AM	0	62	173	20	11	99	202	63	0	23	81	52	0	83	104	86	1,059	3,751
12:00 PM	1	86	164	25	12	108	227	65	1	15	71	67	0	87	91	92	1,112	4,032
12:15 PM	2	64	196	24	11	105	214	53	2	26	80	75	0	117	92	92	1,153	4,323
12:30 PM	2	88	256	20	10	100	199	55	0	23	65	74	0	98	105	69	1,164	4,488
12:45 PM	1	59	205	21	18	100	166	62	1	29	87	73	0	124	74	69	1,089	4,518
1:00 PM	2	93	190	14	14	81	186	59	0	36	71	67	0	83	80	59	1,035	4,441
1:15 PM	3	67	165	21	21	71	161	34	0	38	84	83	0	111	80	78	1,017	4,305
1:30 PM	0	61	192	14	12	87	188	44	0	27	60	63	0	85	84	68	985	4,126
1:45 PM	3	46	190	24	16	45	179	31	1	38	59	73	0	60	75	59	899	3,936
Count Total	21	800	2,226	239	148	1,051	2,247	618	7	306	825	788	0	1,045	1,010	874	12,205	0
Peak Hour	6	297	821	90	51	413	806	235	4	93	303	289	0	426	362	322	4,518	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

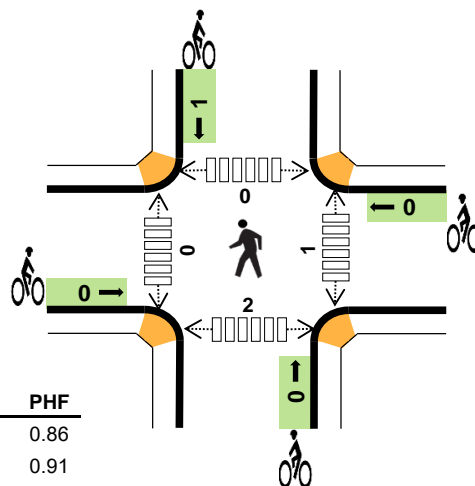
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
11:00 AM	4	4	0	0	8	0	0	0	0	0	0	0	1	0	1
11:15 AM	3	1	1	1	6	0	0	0	0	0	0	0	0	0	0
11:30 AM	6	5	1	3	15	0	0	0	0	0	0	1	1	0	2
11:45 AM	5	2	0	1	8	0	0	0	0	0	0	0	0	0	0
12:00 PM	2	3	0	5	10	0	0	0	0	0	0	0	2	0	2
12:15 PM	2	3	1	4	10	0	0	0	0	0	2	0	1	0	3
12:30 PM	1	4	3	1	9	0	0	0	0	0	0	0	0	0	0
12:45 PM	5	5	0	0	10	0	0	0	0	0	0	0	0	0	0
1:00 PM	2	2	2	1	7	0	0	0	0	0	0	0	0	0	0
1:15 PM	5	2	1	2	10	0	0	0	0	0	2	0	0	0	2
1:30 PM	3	1	5	1	10	0	0	0	0	0	0	0	0	0	0
1:45 PM	2	7	1	1	11	0	0	0	0	0	0	0	0	0	0
Count Total	40	39	15	20	114	0	0	0	0	0	4	1	5	0	10
Peak Hour	10	15	4	10	39	0	0	0	0	0	2	0	3	0	5



CHESTER ST COUNTY LINE RD



Date: Tue, Apr 16, 2019
 Count Period: 4:30 PM to 7:30 PM
 Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	1.3%	0.86
WB	0.4%	0.91
NB	0.3%	0.96
SB	0.0%	0.89
TOTAL	0.4%	0.96

Three-Hour Count Summaries

Interval Start	COUNTY LINE RD				COUNTY LINE RD				CHESTER ST				CHESTER ST				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM	0	55	150	13	10	84	304	35	0	29	56	74	0	140	134	128	1,212	0
4:45 PM	1	50	175	19	11	68	334	27	0	29	53	68	0	111	137	113	1,196	0
5:00 PM	4	36	143	17	10	90	358	33	0	37	49	68	0	161	157	120	1,283	0
5:15 PM	4	45	203	18	13	71	315	28	0	22	58	70	0	103	153	111	1,214	4,905
Peak Hour	9	186	671	67	44	313	1,311	123	0	117	216	280	0	515	581	472	4,905	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	1	2	1	0	4	0	0	0	1	1	0	0	0	0	0
4:45 PM	5	2	0	0	7	0	0	0	0	0	1	0	0	0	1
5:00 PM	1	2	1	0	4	0	0	0	0	0	0	0	0	1	1
5:15 PM	5	1	0	0	6	0	0	0	0	0	0	0	0	1	1
Peak Hour	12	7	2	0	21	0	0	0	1	1	1	0	0	2	3

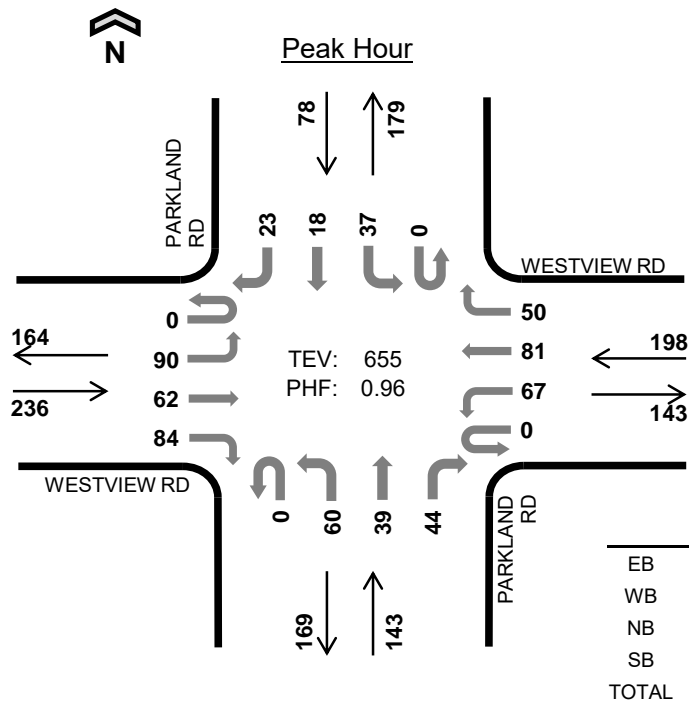
Three-Hour Count Summaries																		
Interval Start	COUNTY LINE RD				COUNTY LINE RD				CHESTER ST				CHESTER ST				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM	0	55	150	13	10	84	304	35	0	29	56	74	0	140	134	128	1,212	0
4:45 PM	1	50	175	19	11	68	334	27	0	29	53	68	0	111	137	113	1,196	0
5:00 PM	4	36	143	17	10	90	358	33	0	37	49	68	0	161	157	120	1,283	0
5:15 PM	4	45	203	18	13	71	315	28	0	22	58	70	0	103	153	111	1,214	4,905
5:30 PM	2	44	164	16	14	75	252	29	0	30	49	55	0	128	136	112	1,106	4,799
5:45 PM	1	50	190	15	7	63	284	42	0	26	63	47	0	104	142	106	1,140	4,743
6:00 PM	1	42	182	15	8	83	242	29	0	34	52	58	0	85	87	89	1,007	4,467
6:15 PM	0	35	132	15	11	56	183	14	0	22	58	66	0	68	93	71	824	4,077
6:30 PM	0	57	152	18	8	53	177	25	0	26	32	48	0	72	76	52	796	3,767
6:45 PM	2	31	124	9	13	75	149	31	0	23	38	59	0	78	48	57	737	3,364
7:00 PM	4	38	133	13	20	52	145	20	0	26	28	59	0	59	46	59	702	3,059
7:15 PM	3	24	104	9	19	45	136	28	0	30	36	66	0	50	48	54	652	2,887
Count Total	22	507	1,852	177	144	815	2,879	341	0	334	572	738	0	1,159	1,257	1,072	11,869	0
Peak Hour	9	186	671	67	44	313	1,311	123	0	117	216	280	0	515	581	472	4,905	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

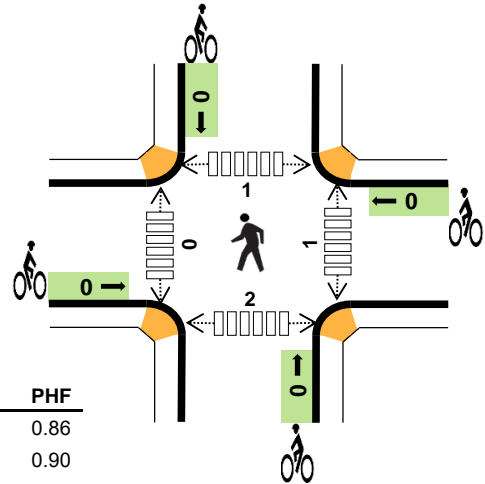
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	1	2	1	0	4	0	0	0	1	1	0	0	0	0	0
4:45 PM	5	2	0	0	7	0	0	0	0	0	1	0	0	0	1
5:00 PM	1	2	1	0	4	0	0	0	0	0	0	0	0	1	1
5:15 PM	5	1	0	0	6	0	0	0	0	0	0	0	0	1	1
5:30 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
5:45 PM	2	2	0	2	6	0	0	0	0	0	0	0	0	1	1
6:00 PM	3	0	1	0	4	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
6:30 PM	0	1	0	2	3	0	0	0	0	0	1	0	0	0	1
6:45 PM	3	0	1	1	5	0	1	0	0	1	0	0	0	0	0
7:00 PM	6	1	0	0	7	0	0	0	0	0	0	0	0	0	0
7:15 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0
Count Total	27	12	5	5	49	0	1	0	1	2	4	0	0	3	7
Peak Hour	12	7	2	0	21	0	0	0	1	1	1	0	0	2	3



PARKLAND RD WESTVIEW RD



Date: Tue, Apr 16, 2019
 Count Period: 11:00 AM to 2:00 PM
 Peak Hour: 12:00 PM to 1:00 PM



	HV %:	PHF
EB	0.4%	0.86
WB	1.0%	0.90
NB	0.7%	0.81
SB	1.3%	0.72
TOTAL	0.8%	0.96

Three-Hour Count Summaries

Interval Start	WESTVIEW RD Eastbound				WESTVIEW RD Westbound				PARKLAND RD Northbound				PARKLAND RD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
12:00 PM	0	14	15	19	0	18	18	15	0	20	9	15	0	17	4	6	170	0
12:15 PM	0	26	13	14	0	20	22	13	0	15	12	11	0	4	3	11	164	0
12:30 PM	0	29	14	26	0	18	21	9	0	16	8	10	0	7	6	2	166	0
12:45 PM	0	21	20	25	0	11	20	13	0	9	10	8	0	9	5	4	155	655
Peak Hour	0	90	62	84	0	67	81	50	0	60	39	44	0	37	18	23	655	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	1	0	1	2	0	0	0	0	0	1	0	0	1	2
12:30 PM	0	0	1	0	1	0	0	0	0	0	0	0	1	1	2
12:45 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0
Peak Hour	1	2	1	1	5	0	0	0	0	0	1	0	1	2	4

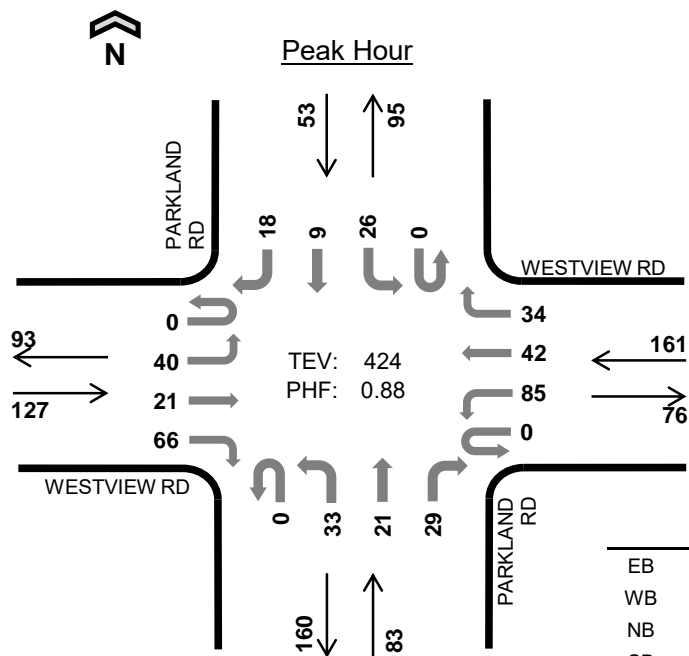
Three-Hour Count Summaries																		
Interval Start	WESTVIEW RD				WESTVIEW RD				PARKLAND RD				PARKLAND RD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
11:00 AM	0	9	3	4	0	17	18	8	0	10	12	5	0	6	1	3	96	0
11:15 AM	0	22	9	17	0	6	21	9	0	9	7	15	0	11	3	6	135	0
11:30 AM	0	21	11	19	0	9	21	15	0	11	7	9	0	9	2	5	139	0
11:45 AM	0	20	10	18	1	15	16	9	0	13	9	13	0	3	3	0	130	500
12:00 PM	0	14	15	19	0	18	18	15	0	20	9	15	0	17	4	6	170	574
12:15 PM	0	26	13	14	0	20	22	13	0	15	12	11	0	4	3	11	164	603
12:30 PM	0	29	14	26	0	18	21	9	0	16	8	10	0	7	6	2	166	630
12:45 PM	0	21	20	25	0	11	20	13	0	9	10	8	0	9	5	4	155	655
1:00 PM	0	20	6	18	0	14	18	16	0	15	13	14	0	10	3	6	153	638
1:15 PM	0	21	15	24	0	19	13	14	0	12	14	15	0	5	1	5	158	632
1:30 PM	0	19	17	14	0	3	15	11	0	3	7	13	0	7	2	8	119	585
1:45 PM	0	20	16	14	0	19	10	14	0	16	6	14	0	11	4	1	145	575
Count Total	0	242	149	212	1	169	213	146	0	149	114	142	0	99	37	57	1,730	0
Peak Hour	0	90	62	84	0	67	81	50	0	60	39	44	0	37	18	23	655	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

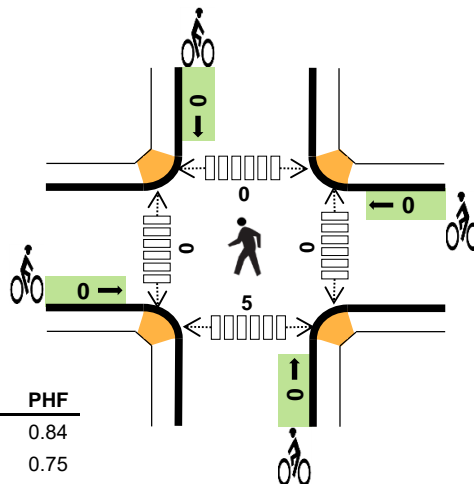
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
11:00 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	3	3
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	2	0	0	2	0	0	0	0	0	1	0	0	1	2
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	1	0	1	2	0	0	0	0	0	1	0	0	1	2
12:30 PM	0	0	1	0	1	0	0	0	0	0	0	0	1	1	2
12:45 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	1	1	0	0	0	0	0	1	0	2	2	5
1:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	1	4	3	2	10	0	0	0	0	0	4	0	3	9	16
Peak Hour	1	2	1	1	5	0	0	0	0	0	1	0	1	2	4



PARKLAND RD WESTVIEW RD



Date: Tue, Apr 16, 2019
 Count Period: 4:30 PM to 7:30 PM
 Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	0.0%	0.84
WB	1.2%	0.75
NB	0.0%	0.80
SB	0.0%	0.78
TOTAL	0.5%	0.88

Three-Hour Count Summaries

Interval Start	WESTVIEW RD Eastbound				WESTVIEW RD Westbound				PARKLAND RD Northbound				PARKLAND RD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
5:00 PM	0	6	4	12	0	22	8	10	0	10	3	13	0	4	5	2	99	0
5:15 PM	0	10	5	22	0	26	19	9	0	7	6	6	0	8	0	3	121	0
5:30 PM	0	14	8	16	0	21	10	10	0	8	5	2	0	7	3	7	111	0
5:45 PM	0	10	4	16	0	16	5	5	0	8	7	8	0	7	1	6	93	424
Peak Hour	0	40	21	66	0	85	42	34	0	33	21	29	0	26	9	18	424	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
5:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	1	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
5:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	1	1
Peak Hour	0	2	0	0	2	0	0	0	0	0	0	0	0	5	5

Three-Hour Count Summaries																		
Interval Start	WESTVIEW RD				WESTVIEW RD				PARKLAND RD				PARKLAND RD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM	0	9	8	13	0	17	9	1	0	9	10	6	0	11	3	8	104	0
4:45 PM	0	11	7	14	0	12	9	4	0	9	4	5	0	10	0	4	89	0
5:00 PM	0	6	4	12	0	22	8	10	0	10	3	13	0	4	5	2	99	0
5:15 PM	0	10	5	22	0	26	19	9	0	7	6	6	0	8	0	3	121	413
5:30 PM	0	14	8	16	0	21	10	10	0	8	5	2	0	7	3	7	111	420
5:45 PM	0	10	4	16	0	16	5	5	0	8	7	8	0	7	1	6	93	424
6:00 PM	0	7	6	13	0	9	15	10	0	8	7	5	0	2	2	4	88	413
6:15 PM	0	9	5	29	0	11	17	5	0	13	3	8	0	2	2	6	110	402
6:30 PM	0	7	7	20	1	3	6	12	0	8	5	6	0	3	1	5	84	375
6:45 PM	0	14	6	18	0	6	13	8	0	7	7	11	0	1	1	2	94	376
7:00 PM	0	12	3	23	0	10	12	5	0	4	5	6	0	3	0	4	87	375
7:15 PM	0	17	13	10	0	6	11	5	0	7	5	4	0	4	2	3	87	352
Count Total	0	126	76	206	1	159	134	84	0	98	67	80	0	62	20	54	1,167	0
Peak Hour	0	40	21	66	0	85	42	34	0	33	21	29	0	26	9	18	424	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	1	1
5:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	1	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
5:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	1	1
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Count Total	1	2	0	0	3	0	0	0	0	0	0	0	0	8	8
Peak Hour	0	2	0	0	2	0	0	0	0	0	0	0	0	5	5

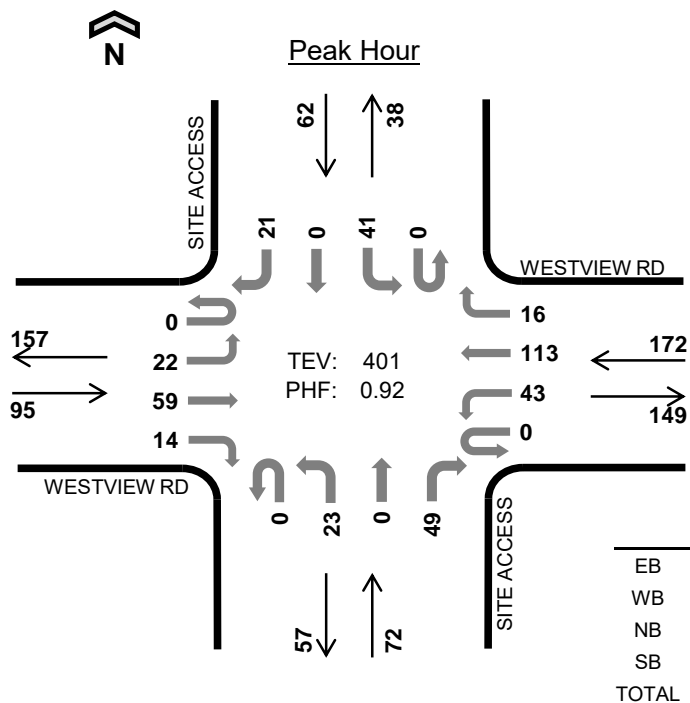
Three-Hour Count Summaries																		
Interval Start	WESTVIEW RD				WESTVIEW RD				SITE ACCESS				SITE ACCESS				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
11:00 AM	0	3	9	4	0	16	38	9	0	5	0	9	0	10	1	5	109	0
11:15 AM	0	4	24	7	0	10	32	4	0	5	0	16	0	12	0	4	118	0
11:30 AM	0	1	19	8	0	11	42	10	0	2	1	13	0	6	0	2	115	0
11:45 AM	0	6	22	1	0	14	36	16	0	5	0	11	0	12	0	5	128	470
12:00 PM	0	11	23	12	0	19	45	15	0	5	0	9	0	14	1	7	161	522
12:15 PM	0	5	20	7	0	12	41	18	0	8	1	19	0	17	0	11	159	563
12:30 PM	0	2	23	6	0	13	33	13	0	10	0	10	0	13	0	2	125	573
12:45 PM	0	7	26	3	0	14	45	9	0	4	0	21	0	8	0	7	144	589
1:00 PM	0	7	12	8	0	12	35	12	0	6	1	17	0	5	1	9	125	553
1:15 PM	0	2	25	5	0	15	31	12	0	7	0	10	0	10	0	6	123	517
1:30 PM	0	9	22	7	1	15	24	8	0	4	0	19	0	9	1	4	123	515
1:45 PM	0	10	18	5	0	11	21	12	0	8	1	13	0	9	0	11	119	490
Count Total	0	67	243	73	1	162	423	138	0	69	4	167	0	125	4	73	1,549	0
Peak Hour	0	25	92	28	0	58	164	55	0	27	1	59	0	52	1	27	589	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

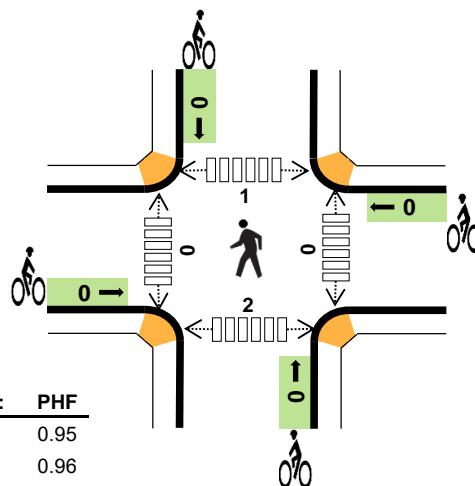
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	2	3
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	1	1	0	1	3	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0
12:30 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
1:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	1	1
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2
Count Total	3	3	1	2	9	0	0	0	0	0	2	0	1	4	7
Peak Hour	1	1	1	1	4	0	0	0	0	0	0	0	0	1	1



SITE ACCESS WESTVIEW RD



Date: Tue, Apr 16, 2019
 Count Period: 4:30 PM to 7:30 PM
 Peak Hour: 4:30 PM to 5:30 PM



Three-Hour Count Summaries

Interval Start	WESTVIEW RD				WESTVIEW RD				SITE ACCESS				SITE ACCESS				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM	0	3	18	4	0	8	24	9	0	4	0	11	0	11	0	2	94	0
4:45 PM	0	7	15	2	0	18	22	3	0	2	0	11	0	10	0	9	99	0
5:00 PM	0	6	14	5	0	8	32	3	0	5	0	9	0	13	0	4	99	0
5:15 PM	0	6	12	3	0	9	35	1	0	12	0	18	0	7	0	6	109	401
Peak Hour	0	22	59	14	0	43	113	16	0	23	0	49	0	41	0	21	401	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
4:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	2	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	1	0	0	1	2	0	0	0	0	0	0	0	1	2	3

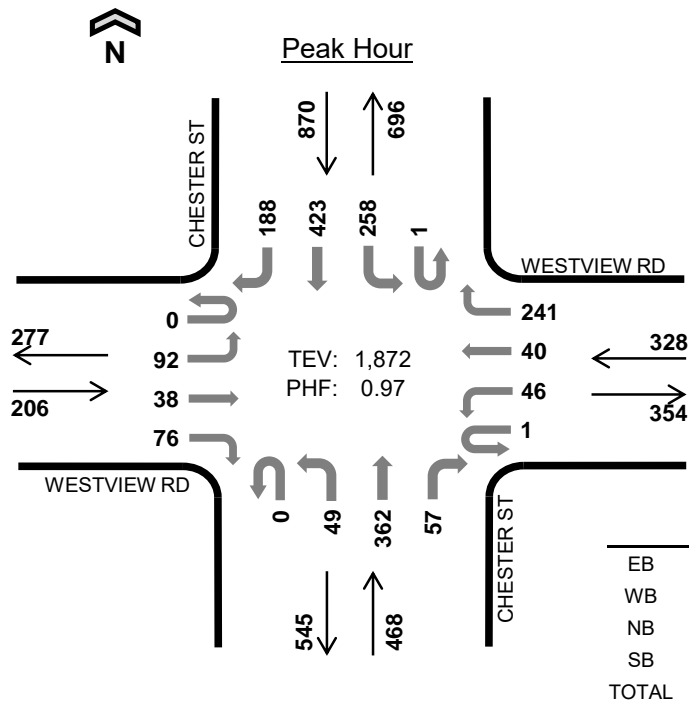
Three-Hour Count Summaries														15-min Total	Rolling One Hour			
Interval Start	WESTVIEW RD				WESTVIEW RD				SITE ACCESS				SITE ACCESS					
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM	0	3	18	4	0	8	24	9	0	4	0	11	0	11	0	2	94	0
4:45 PM	0	7	15	2	0	18	22	3	0	2	0	11	0	10	0	9	99	0
5:00 PM	0	6	14	5	0	8	32	3	0	5	0	9	0	13	0	4	99	0
5:15 PM	0	6	12	3	0	9	35	1	0	12	0	18	0	7	0	6	109	401
5:30 PM	0	4	16	0	0	8	32	2	0	0	0	9	0	6	0	8	85	392
5:45 PM	0	3	12	5	0	7	24	4	0	2	0	9	0	5	0	2	73	366
6:00 PM	0	3	12	3	0	6	23	0	0	4	1	8	0	9	0	5	74	341
6:15 PM	0	1	12	4	0	13	32	2	0	2	0	10	0	4	0	2	82	314
6:30 PM	0	1	15	5	0	3	17	3	0	1	0	6	0	2	0	3	56	285
6:45 PM	0	1	15	4	0	7	20	1	0	4	0	7	0	1	0	1	61	273
7:00 PM	0	2	13	1	0	3	19	2	0	2	0	8	0	4	0	2	56	255
7:15 PM	0	2	16	2	0	10	18	1	0	4	0	6	0	4	0	1	64	237
Count Total	0	39	170	38	0	100	298	31	0	42	1	112	0	76	0	45	952	0
Peak Hour	0	22	59	14	0	43	113	16	0	23	0	49	0	41	0	21	401	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

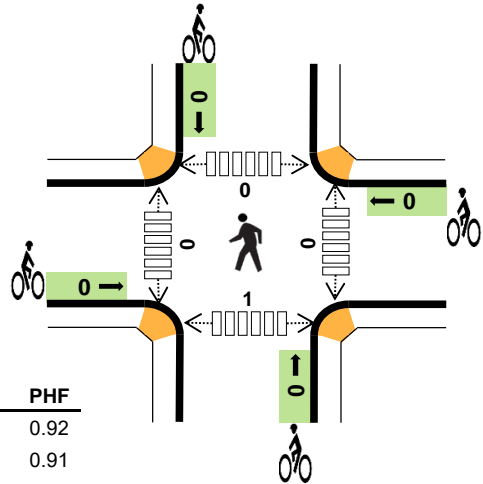
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
4:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	2	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
5:45 PM	0	1	1	0	2	0	0	0	0	0	0	0	0	1	1
6:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Count Total	1	1	1	1	4	0	0	0	0	0	3	0	1	7	11
Peak Hour	1	0	0	1	2	0	0	0	0	0	0	0	1	2	3



CHESTER ST WESTVIEW RD



Date: Tue, Apr 16, 2019
 Count Period: 11:00 AM to 2:00 PM
 Peak Hour: 12:00 PM to 1:00 PM



	HV %:	PHF
EB	0.0%	0.92
WB	0.9%	0.91
NB	0.6%	0.87
SB	0.2%	0.95
TOTAL	0.4%	0.97

Three-Hour Count Summaries

Interval Start	WESTVIEW RD				WESTVIEW RD				CHESTER ST				CHESTER ST				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
12:00 PM	0	23	7	17	1	16	14	51	0	6	82	8	1	70	98	60	454	0
12:15 PM	0	24	13	19	0	8	9	62	0	11	93	16	0	68	107	51	481	0
12:30 PM	0	20	11	18	0	10	9	58	0	15	88	15	0	63	120	34	461	0
12:45 PM	0	25	7	22	0	12	8	70	0	17	99	18	0	57	98	43	476	1,872
Peak Hour	0	92	38	76	1	46	40	241	0	49	362	57	1	258	423	188	1,872	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
12:00 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	3	1	4	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	1	1
Peak Hour	0	3	3	2	8	0	0	0	0	0	0	0	0	1	1

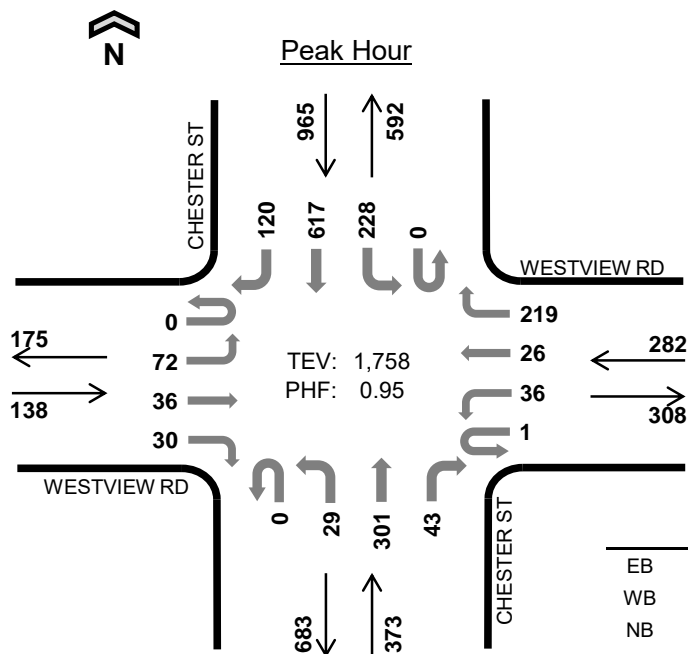
Three-Hour Count Summaries																		
Interval Start	WESTVIEW RD				WESTVIEW RD				CHESTER ST				CHESTER ST				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
11:00 AM	0	18	5	8	0	4	8	24	0	13	57	8	0	46	79	41	311	0
11:15 AM	0	24	14	12	0	7	6	32	0	14	87	9	0	59	95	28	387	0
11:30 AM	0	22	7	9	0	5	4	47	0	11	77	13	0	55	85	48	383	0
11:45 AM	0	19	6	15	0	6	6	31	0	11	98	14	0	70	106	47	429	1,510
12:00 PM	0	23	7	17	1	16	14	51	0	6	82	8	1	70	98	60	454	1,653
12:15 PM	0	24	13	19	0	8	9	62	0	11	93	16	0	68	107	51	481	1,747
12:30 PM	0	20	11	18	0	10	9	58	0	15	88	15	0	63	120	34	461	1,825
12:45 PM	0	25	7	22	0	12	8	70	0	17	99	18	0	57	98	43	476	1,872
1:00 PM	0	17	6	12	0	15	9	73	0	13	89	12	0	45	94	37	422	1,840
1:15 PM	0	18	16	11	0	14	10	83	0	15	95	11	0	40	98	33	444	1,803
1:30 PM	0	23	11	15	0	7	8	68	0	15	65	11	0	44	113	26	406	1,748
1:45 PM	0	18	9	10	0	9	6	67	0	10	76	10	0	38	85	28	366	1,638
Count Total	0	251	112	168	1	113	97	666	0	151	1,006	145	1	655	1,178	476	5,020	0
Peak Hour	0	92	38	76	1	46	40	241	0	49	362	57	1	258	423	188	1,872	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

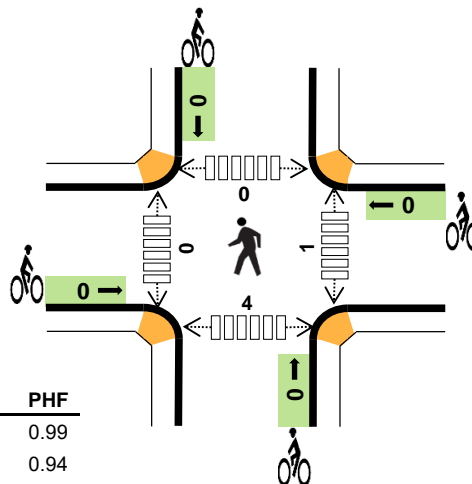
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
11:00 AM	0	0	1	0	1	0	0	0	0	0	0	1	0	4	5
11:15 AM	0	1	0	0	1	0	0	0	0	0	0	2	0	1	3
11:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	
11:45 AM	0	0	1	0	1	0	0	0	0	0	0	1	0	1	2
12:00 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	3	1	4	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	1	1
1:00 PM	1	1	1	0	3	0	0	0	0	0	1	0	0	1	2
1:15 PM	0	0	2	0	2	0	0	0	0	0	0	0	0	1	1
1:30 PM	0	3	3	0	6	0	0	0	0	0	0	0	0	3	3
1:45 PM	1	1	1	0	3	0	0	0	0	0	0	0	0	2	2
Count Total	2	10	12	2	26	0	0	0	0	0	1	4	0	14	19
Peak Hour	0	3	3	2	8	0	0	0	0	0	0	0	0	1	1



CHESTER ST WESTVIEW RD



Date: Tue, Apr 16, 2019
 Count Period: 4:30 PM to 7:30 PM
 Peak Hour: 4:45 PM to 5:45 PM



	HV %:	PHF
EB	0.0%	0.99
WB	0.4%	0.94
NB	0.3%	0.91
SB	0.2%	0.94
TOTAL	0.2%	0.95

Three-Hour Count Summaries

Interval Start	WESTVIEW RD Eastbound				WESTVIEW RD Westbound				CHESTER ST Northbound				CHESTER ST Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:45 PM	0	20	6	9	0	10	6	59	0	10	74	12	0	61	143	27	437	0
5:00 PM	0	20	8	7	0	9	5	53	0	9	81	12	0	58	171	29	462	0
5:15 PM	0	17	10	8	0	9	9	50	0	5	76	7	0	50	153	31	425	0
5:30 PM	0	15	12	6	1	8	6	57	0	5	70	12	0	59	150	33	434	1,758
Peak Hour	0	72	36	30	1	36	26	219	0	29	301	43	0	228	617	120	1,758	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:45 PM	0	0	0	1	1	0	0	0	0	0	1	0	0	0	1
5:00 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	2	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	0	1	2	0	0	0	0	0	0	0	0	2	2
Peak Hour	0	1	1	2	4	0	0	0	0	0	1	0	0	4	5

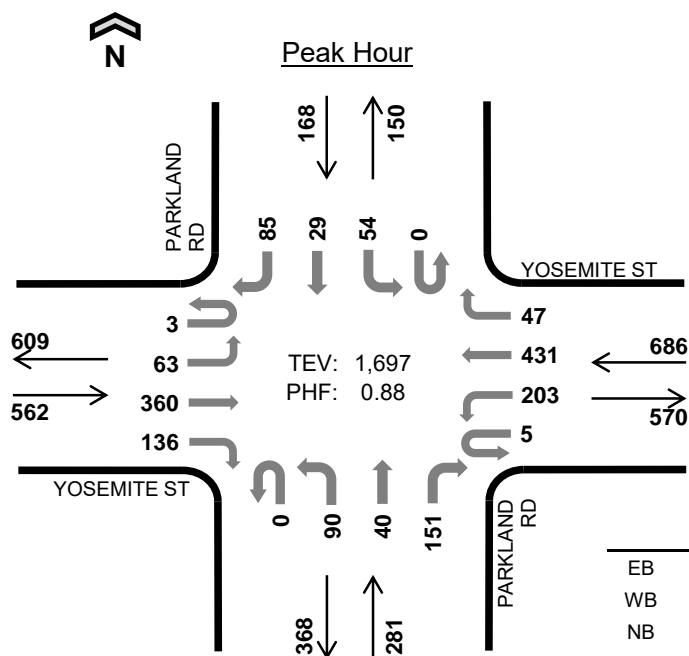
Three-Hour Count Summaries																		
Interval Start	WESTVIEW RD				WESTVIEW RD				CHESTER ST				CHESTER ST				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM	0	21	9	14	0	5	8	54	0	2	82	5	0	60	130	30	420	0
4:45 PM	0	20	6	9	0	10	6	59	0	10	74	12	0	61	143	27	437	0
5:00 PM	0	20	8	7	0	9	5	53	0	9	81	12	0	58	171	29	462	0
5:15 PM	0	17	10	8	0	9	9	50	0	5	76	7	0	50	153	31	425	1,744
5:30 PM	0	15	12	6	1	8	6	57	0	5	70	12	0	59	150	33	434	1,758
5:45 PM	0	9	8	8	0	9	5	55	0	5	72	14	0	54	144	23	406	1,727
6:00 PM	0	17	4	9	0	14	2	50	0	5	74	7	0	52	111	22	367	1,632
6:15 PM	0	11	7	10	0	6	10	60	0	11	66	9	0	49	93	26	358	1,565
6:30 PM	0	10	5	9	0	16	5	52	0	6	52	8	0	50	83	13	309	1,440
6:45 PM	0	12	7	4	0	13	5	51	0	4	49	5	0	39	72	19	280	1,314
7:00 PM	0	10	6	10	0	16	5	59	0	4	54	8	0	42	52	16	282	1,229
7:15 PM	0	9	4	8	0	13	6	70	0	4	52	8	0	36	48	19	277	1,148
Count Total	0	171	86	102	1	128	72	670	0	70	802	107	0	610	1,350	288	4,457	0
Peak Hour	0	72	36	30	1	36	26	219	0	29	301	43	0	228	617	120	1,758	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

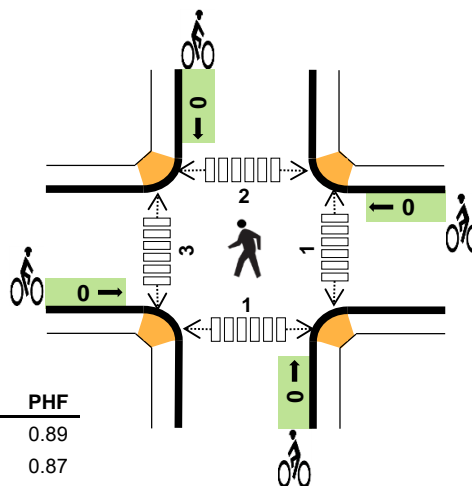
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	0	0	1	0	1	0	0	0	1	1	0	0	1	0	1
4:45 PM	0	0	0	1	1	0	0	0	0	0	1	0	0	0	1
5:00 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	2	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	0	1	2	0	0	0	0	0	0	0	0	2	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
6:00 PM	0	1	1	0	2	0	0	0	0	0	0	0	0	3	3
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
6:30 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
6:45 PM	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	2	4	4	10	0	0	0	1	1	1	0	2	11	14
Peak Hour	0	1	1	2	4	0	0	0	0	0	1	0	0	4	5



PARKLAND RD YOSEMITE ST



Date: Tue, Apr 16, 2019
 Count Period: 11:00 AM to 2:00 PM
 Peak Hour: 11:45 AM to 12:45 PM



	HV %:	PHF
EB	1.1%	0.89
WB	1.0%	0.87
NB	0.7%	0.87
SB	2.4%	0.81
TOTAL	1.1%	0.88

Three-Hour Count Summaries

Interval Start	YOSEMITE ST Eastbound				YOSEMITE ST Westbound				PARKLAND RD Northbound				PARKLAND RD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
11:45 AM	1	14	73	34	2	42	100	8	0	19	15	38	0	11	8	16	381	0
12:00 PM	0	20	100	27	1	50	99	15	0	19	3	30	0	9	6	22	401	0
12:15 PM	1	15	89	31	0	51	110	11	0	24	13	44	0	17	9	18	433	0
12:30 PM	1	14	98	44	2	60	122	13	0	28	9	39	0	17	6	29	482	1,697
Peak Hour	3	63	360	136	5	203	431	47	0	90	40	151	0	54	29	85	1,697	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
11:45 AM	0	4	0	2	6	0	0	0	0	0	0	0	0	0	0
12:00 PM	3	2	2	0	7	0	0	0	0	0	1	1	0	1	3
12:15 PM	1	0	0	1	2	0	0	0	0	0	0	1	0	0	1
12:30 PM	2	1	0	1	4	0	0	0	0	0	0	1	2	0	3
Peak Hour	6	7	2	4	19	0	0	0	0	0	1	3	2	1	7

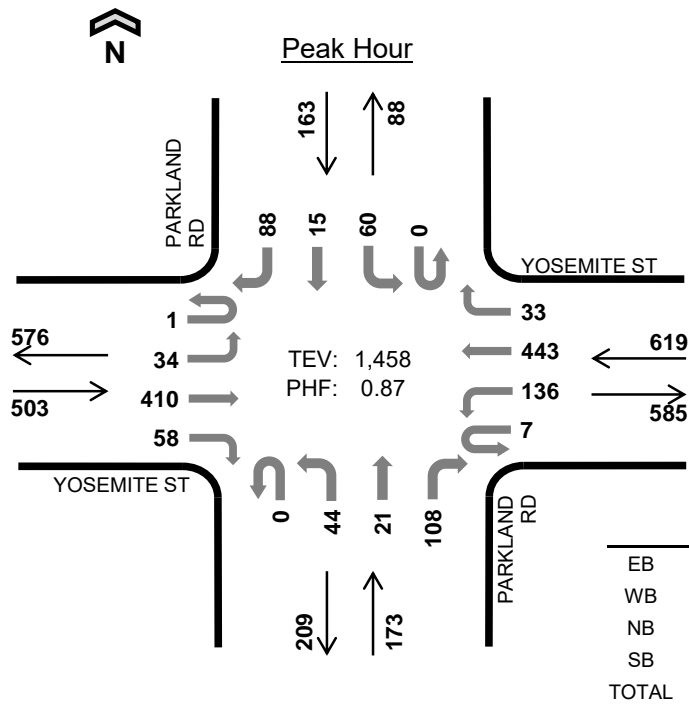
Three-Hour Count Summaries																		
Interval Start	YOSEMITE ST				YOSEMITE ST				PARKLAND RD				PARKLAND RD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
11:00 AM	0	13	75	25	1	36	74	9	0	21	9	21	0	4	8	10	306	0
11:15 AM	0	13	76	29	1	43	99	13	0	17	8	20	0	11	3	14	347	0
11:30 AM	1	7	67	28	0	41	107	13	0	21	3	25	0	7	3	22	345	0
11:45 AM	1	14	73	34	2	42	100	8	0	19	15	38	0	11	8	16	381	1,379
12:00 PM	0	20	100	27	1	50	99	15	0	19	3	30	0	9	6	22	401	1,474
12:15 PM	1	15	89	31	0	51	110	11	0	24	13	44	0	17	9	18	433	1,560
12:30 PM	1	14	98	44	2	60	122	13	0	28	9	39	0	17	6	29	482	1,697
12:45 PM	0	6	75	23	0	42	90	8	0	27	13	44	0	18	8	15	369	1,685
1:00 PM	0	12	101	18	2	34	87	14	0	24	14	46	0	10	9	17	388	1,672
1:15 PM	0	16	69	21	0	40	125	18	0	22	7	32	0	13	8	25	396	1,635
1:30 PM	0	6	78	24	1	41	100	11	0	19	9	34	0	7	2	10	342	1,495
1:45 PM	0	16	64	19	0	46	91	15	0	22	3	38	0	6	4	23	347	1,473
Count Total	4	152	965	323	10	526	1,204	148	0	263	106	411	0	130	74	221	4,537	0
Peak Hour	3	63	360	136	5	203	431	47	0	90	40	151	0	54	29	85	1,697	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

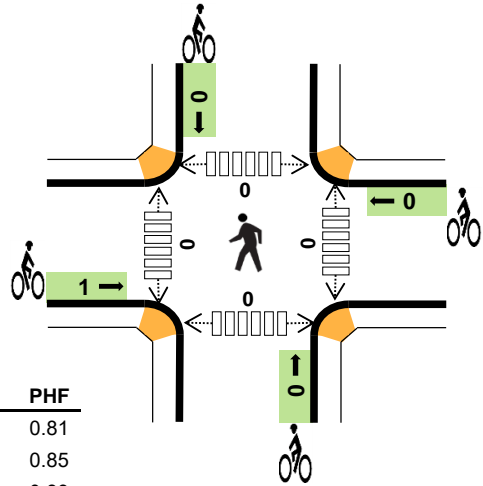
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
11:00 AM	3	1	1	0	5	0	0	0	0	0	1	0	0	0	1
11:15 AM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0
11:30 AM	4	1	0	0	5	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	4	0	2	6	0	0	0	0	0	0	0	0	0	0
12:00 PM	3	2	2	0	7	0	0	0	0	0	1	1	0	1	3
12:15 PM	1	0	0	1	2	0	0	0	0	0	0	1	0	0	1
12:30 PM	2	1	0	1	4	0	0	0	0	0	0	1	2	0	3
12:45 PM	0	1	0	1	2	1	0	0	0	1	0	2	2	0	4
1:00 PM	0	2	0	0	2	1	0	0	0	1	1	2	0	1	4
1:15 PM	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0
1:30 PM	2	2	0	0	4	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	2	0	0	2	0	1	0	0	1	0	0	1	0	1
Count Total	17	17	4	5	43	2	1	0	0	3	3	7	5	2	17
Peak Hour	6	7	2	4	19	0	0	0	0	0	1	3	2	1	7



PARKLAND RD YOSEMITE ST



Date: Tue, Apr 16, 2019
 Count Period: 4:30 PM to 7:30 PM
 Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	0.2%	0.81
WB	0.5%	0.85
NB	0.0%	0.83
SB	1.2%	0.83
TOTAL	0.4%	0.87

Three-Hour Count Summaries

Interval Start	YOSEMITE ST				YOSEMITE ST				PARKLAND RD				PARKLAND RD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
5:00 PM	0	10	126	19	0	35	135	13	0	13	6	25	0	11	3	23	419	0
5:15 PM	1	9	100	13	0	27	115	5	0	12	4	36	0	20	4	25	371	0
5:30 PM	0	8	99	9	1	33	80	6	0	10	3	24	0	19	3	21	316	0
5:45 PM	0	7	85	17	6	41	113	9	0	9	8	23	0	10	5	19	352	1,458
Peak Hour	1	34	410	58	7	136	443	33	0	44	21	108	0	60	15	88	1,458	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
5:00 PM	1	0	0	1	2	1	0	0	0	1	0	0	0	0	0
5:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	2	0	1	3	0	0	0	0	0	0	0	0	0	0
Peak Hour	1	3	0	2	6	1	0	0	0	1	0	0	0	0	0

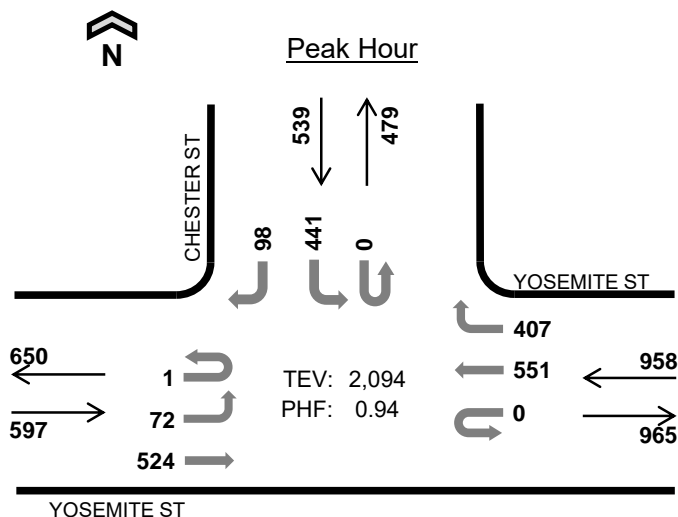
Three-Hour Count Summaries																		
Interval Start	YOSEMITE ST				YOSEMITE ST				PARKLAND RD				PARKLAND RD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM	0	12	90	13	0	23	97	4	0	19	9	27	0	8	6	20	328	0
4:45 PM	0	6	86	6	1	30	89	5	0	10	6	20	0	7	3	20	289	0
5:00 PM	0	10	126	19	0	35	135	13	0	13	6	25	0	11	3	23	419	0
5:15 PM	1	9	100	13	0	27	115	5	0	12	4	36	0	20	4	25	371	1,407
5:30 PM	0	8	99	9	1	33	80	6	0	10	3	24	0	19	3	21	316	1,395
5:45 PM	0	7	85	17	6	41	113	9	0	9	8	23	0	10	5	19	352	1,458
6:00 PM	0	8	67	17	2	21	100	7	0	11	5	30	0	5	2	17	292	1,331
6:15 PM	1	9	83	15	0	25	89	13	0	6	2	22	0	13	6	21	305	1,265
6:30 PM	0	5	66	11	1	19	75	8	0	12	5	14	0	10	0	18	244	1,193
6:45 PM	0	12	53	17	0	25	72	9	0	16	5	12	0	14	1	15	251	1,092
7:00 PM	0	6	57	7	0	17	62	5	0	16	3	20	0	11	2	21	227	1,027
7:15 PM	0	6	41	13	0	15	66	6	0	9	3	13	0	7	1	10	190	912
Count Total	2	98	953	157	11	311	1,093	90	0	143	59	266	0	135	36	230	3,584	0
Peak Hour	1	34	410	58	7	136	443	33	0	44	21	108	0	60	15	88	1,458	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

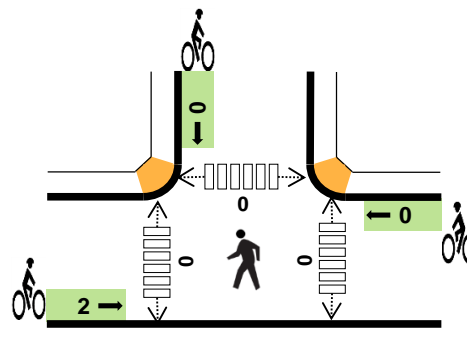
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0
5:00 PM	1	0	0	1	2	1	0	0	0	1	0	0	0	0	0
5:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	2	0	1	3	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	1	2	0	3	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
Count Total	1	9	2	2	14	1	0	0	0	1	0	0	0	0	0
Peak Hour	1	3	0	2	6	1	0	0	0	1	0	0	0	0	0



CHESTER ST YOSEMITE ST



Date: Tue, Apr 16, 2019
 Count Period: 11:00 AM to 2:00 PM
 Peak Hour: 12:15 PM to 1:15 PM



	HV %:	PHF
EB	0.8%	0.94
WB	0.9%	0.94
NB	-	-
SB	0.4%	0.80
TOTAL	0.8%	0.94

Three-Hour Count Summaries

Interval Start	YOSEMITE ST Eastbound				YOSEMITE ST Westbound				YOSEMITE ST Northbound				YOSEMITE ST Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
12:15 PM	0	20	139	0	0	0	156	98	0	0	0	0	0	94	0	20	527	0
12:30 PM	0	18	124	0	0	0	146	102	0	0	0	0	0	131	0	37	558	0
12:45 PM	1	18	130	0	0	0	135	111	0	0	0	0	0	105	0	16	516	0
1:00 PM	0	16	131	0	0	0	114	96	0	0	0	0	0	111	0	25	493	2,094
Peak Hour	1	72	524	0	0	0	551	407	0	0	0	0	0	441	0	98	2,094	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
12:15 PM	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0
12:30 PM	1	4	0	1	6	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	2	0	1	3	1	0	0	0	1	0	0	0	0	0
1:00 PM	0	3	0	0	3	1	0	0	0	1	0	0	0	0	0
Peak Hour	5	9	0	2	16	2	0	0	0	2	0	0	0	0	0

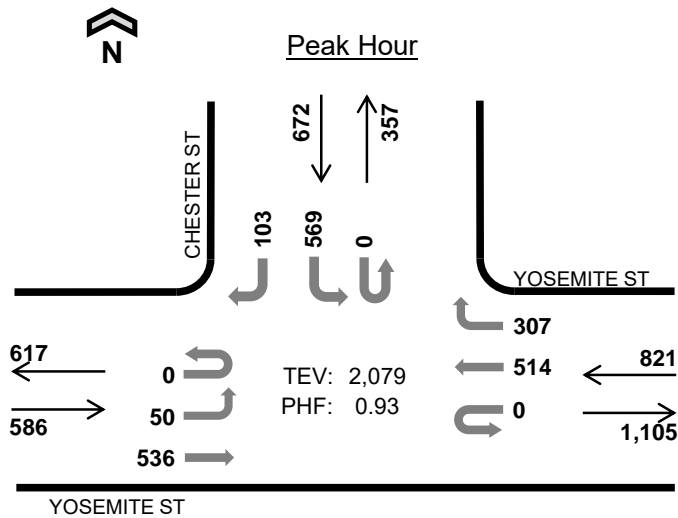
Three-Hour Count Summaries																		
Interval Start	YOSEMITE ST				YOSEMITE ST				O				CHESTER ST				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
11:00 AM	0	9	91	0	0	0	106	74	0	0	0	0	0	80	0	18	378	0
11:15 AM	1	6	101	0	0	0	122	100	0	0	0	0	0	91	0	22	443	0
11:30 AM	1	7	89	0	0	0	157	98	0	0	0	0	0	83	0	14	449	0
11:45 AM	0	18	108	0	0	0	125	96	0	0	0	0	0	101	0	22	470	1,740
12:00 PM	0	17	109	0	0	0	128	86	0	0	0	0	0	105	0	33	478	1,840
12:15 PM	0	20	139	0	0	0	156	98	0	0	0	0	0	94	0	20	527	1,924
12:30 PM	0	18	124	0	0	0	146	102	0	0	0	0	0	131	0	37	558	2,033
12:45 PM	1	18	130	0	0	0	135	111	0	0	0	0	0	105	0	16	516	2,079
1:00 PM	0	16	131	0	0	0	114	96	0	0	0	0	0	111	0	25	493	2,094
1:15 PM	0	15	112	0	0	0	165	111	0	0	0	0	0	76	0	24	503	2,070
1:30 PM	1	12	105	0	0	0	129	79	0	0	0	0	0	123	0	16	465	1,977
1:45 PM	0	15	93	0	0	0	131	82	0	0	0	0	0	90	0	23	434	1,895
Count Total	4	171	1,332	0	0	0	1,614	1,133	0	0	0	0	0	1,190	0	270	5,714	0
Peak Hour	1	72	524	0	0	0	551	407	0	0	0	0	0	441	0	98	2,094	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

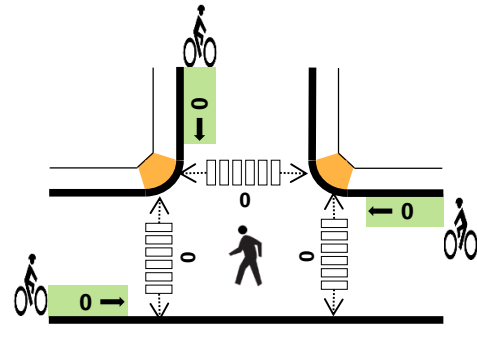
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
11:00 AM	3	2	0	0	5	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
11:30 AM	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0
12:00 PM	2	1	0	1	4	0	0	0	0	0	0	0	0	0	0
12:15 PM	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0
12:30 PM	1	4	0	1	6	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	2	0	1	3	1	0	0	0	1	0	0	0	0	0
1:00 PM	0	3	0	0	3	1	0	0	0	1	0	0	0	0	0
1:15 PM	2	0	0	1	3	0	0	0	0	0	0	0	0	0	0
1:30 PM	2	2	0	0	4	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	4	0	1	5	0	1	0	0	1	0	0	1	0	1
Count Total	15	25	0	5	45	2	1	0	0	3	0	1	1	1	3
Peak Hr	5	9	0	2	16	2	0	0	0	2	0	0	0	0	0



CHESTER ST YOSEMITE ST



Date: Tue, Apr 16, 2019
Count Period: 4:30 PM to 7:30 PM
Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	0.0%	0.92
WB	0.6%	0.91
NB	-	-
SB	0.0%	0.95
TOTAL	0.2%	0.93

Three-Hour Count Summaries

Interval Start	YOSEMITE ST				YOSEMITE ST				0				CHESTER ST				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
5:00 PM	0	10	149	0	0	0	141	84	0	0	0	0	0	144	0	33	561	0
5:15 PM	0	13	145	0	0	0	140	81	0	0	0	0	0	152	0	17	548	0
5:30 PM	0	15	125	0	0	0	98	65	0	0	0	0	0	151	0	19	473	0
5:45 PM	0	12	117	0	0	0	135	77	0	0	0	0	0	122	0	34	497	2,079
Peak Hour	0	50	536	0	0	0	514	307	0	0	0	0	0	569	0	103	2,079	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
5:00 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
5:45 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	5	0	0	5	0	0	0	0	0	0	0	0	1	1

Three-Hour Count Summaries																		
Interval Start	YOSEMITE ST				YOSEMITE ST				O				CHESTER ST				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM	0	11	108	0	0	0	119	77	0	0	0	0	0	146	0	11	472	0
4:45 PM	0	12	103	0	0	0	109	85	0	0	0	0	0	140	0	16	465	0
5:00 PM	0	10	149	0	0	0	141	84	0	0	0	0	0	144	0	33	561	0
5:15 PM	0	13	145	0	0	0	140	81	0	0	0	0	0	152	0	17	548	2,046
5:30 PM	0	15	125	0	0	0	98	65	0	0	0	0	0	151	0	19	473	2,047
5:45 PM	0	12	117	0	0	0	135	77	0	0	0	0	0	122	0	34	497	2,079
6:00 PM	0	9	100	0	0	0	108	82	0	0	0	0	0	115	0	24	438	1,956
6:15 PM	0	8	108	0	0	0	104	81	0	0	0	0	0	102	0	20	423	1,831
6:30 PM	0	7	89	0	0	0	90	53	0	0	0	0	0	99	0	24	362	1,720
6:45 PM	0	3	79	0	0	0	93	54	0	0	0	0	0	65	0	17	311	1,534
7:00 PM	0	7	77	0	0	0	57	61	0	0	0	0	0	64	0	18	284	1,380
7:15 PM	0	10	54	0	0	0	79	49	0	0	0	0	0	49	0	14	255	1,212
Count Total	0	117	1,254	0	0	0	1,273	849	0	0	0	0	0	1,349	0	247	5,089	0
Peak Hour	0	50	536	0	0	0	514	307	0	0	0	0	0	569	0	103	2,079	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	0	2	0	0	2	0	0	0	1	1	0	0	0	0	0
4:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
5:45 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	1	1	0	0	0	0	0	0	1	0	0	1
6:45 PM	0	2	0	1	3	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
Count Total	0	13	0	3	16	0	0	0	1	1	0	1	0	1	2
Peak Hr	0	5	0	0	5	0	0	0	0	0	0	0	0	1	1

Wells + Associates, Inc.

McLean, Virginia

Turning Movement Count - Passenger Cars

PROJECT: Lone Tree In-N-Out DATE: 4/23/2019 UTHBOUND ROAD: Driveway W+A JOB NO: 7823 DAY: Tuesday RTHBOUND ROAD: Driveway INTERSECTION: Carwash/Fidelity/Retail Entrance WEATHER: clear WESTBOUND ROAD: Fidelity LOCATION: Lone Tree COUNTED BY: BJH EASTBOUND ROAD: Carwash INPUTED BY: BJH															
Time Period	Retail			Carwash			Fidelity			Total			North & South	East & West	Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total			
AM 15 Minute Volumes															
11:45 AM - 12:00 PM	7	9	16	4	14	18	7	3	10	18	26	44	26	62	88
12:00 PM - 12:15 PM	8	6	14	13	12	25	4	4	8	25	22	47	22	72	94
12:15 PM - 12:30 PM	5	13	18	6	9	15	5	3	8	16	25	41	26	56	82
12:30 PM - 12:45 PM	5	5	10	10	11	21	2	4	6	17	20	37	16	58	74
12:45 PM - 1:00 PM	3	2	5	12	9	21	5	3	8	20	14	34	13	55	68
1:00 PM - 1:15 PM	2	0	2	10	7	17	4	2	6	16	9	25	8	42	50
Total	30	35	65	55	62	117	27	19	46	112	116	228	111	345	456
AM One Hour Volumes															
12:00 PM - 1:00 PM	21	26	47	41	41	82	16	14	30	78	81	159	77	241	318
PM 15 Minute Volumes															
4:15 PM - 4:30 PM	2	6	8	6	16	22	5	3	8	13	25	38	16	60	76
4:30 PM - 4:45 PM	0	2	2	5	10	15	1	6	7	6	18	24	9	39	48
4:45 PM - 5:00 PM	1	2	3	11	13	24	2	8	10	14	23	37	13	61	74
5:00 PM - 5:15 PM	0	1	1	8	10	18	0	6	6	8	17	25	7	43	50
5:15 PM - 5:30 PM	3	1	4	2	8	10	0	5	5	5	14	19	9	29	38
5:30 PM - 5:45 PM	4	4	8	6	3	9	0	0	0	10	7	17	8	26	34
Total	10	16	26	38	60	98	8	28	36	56	104	160	62	258	320
PM One Hour Volumes															
4:30 PM - 5:30 PM	4	6	10	26	41	67	3	25	28	33	72	105	38	172	210

APPENDIX E
Existing Conditions Synchro Reports



Queues

1: S. Yosemite Street & E. County Line Road

04/25/2019




































Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	204	993	241	235	946	113	213	231	134	131	240
v/c Ratio	0.65	0.40	0.27	0.67	0.37	0.13	0.68	0.53	0.69	0.72	0.45
Control Delay	62.3	21.3	3.7	53.9	15.5	6.0	66.7	67.5	83.0	73.8	25.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.3	21.3	3.7	53.9	15.5	6.0	66.7	67.5	83.0	73.8	25.5
Queue Length 50th (ft)	79	173	0	58	210	30	76	96	108	100	45
Queue Length 95th (ft)	117	257	52	87	285	81	120	134	174	163	80
Internal Link Dist (ft)		465			710			451			207
Turn Bay Length (ft)	240			725			280				
Base Capacity (vph)	341	2511	903	364	2564	854	371	1150	514	236	1224
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.40	0.27	0.65	0.37	0.13	0.57	0.20	0.26	0.56	0.20

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 1: S. Yosemite Street & E. County Line Road

04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	 			 	
Traffic Volume (vph)	194	943	229	223	899	107	202	219	127	124	117	111
Future Volume (vph)	194	943	229	223	899	107	202	219	127	124	117	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	0.93
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	1583	1770	3280	3280
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	1583	1770	3280	3280
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	204	993	241	235	946	113	213	231	134	131	123	117
RTOR Reduction (vph)	0	0	122	0	0	56	0	0	0	0	101	0
Lane Group Flow (vph)	204	993	119	235	946	57	213	231	134	131	139	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	NA
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	11.0	59.3	59.3	12.2	60.5	60.5	11.0	14.7	14.7	12.3	16.0	16.0
Effective Green, g (s)	11.0	59.3	59.3	12.2	60.5	60.5	11.0	14.7	14.7	12.3	16.0	16.0
Actuated g/C Ratio	0.09	0.49	0.49	0.10	0.50	0.50	0.09	0.12	0.12	0.10	0.13	0.13
Clearance Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.5	3.0	3.0	1.5	3.0	3.0	1.5	2.0	2.0	1.5	2.0	2.0
Lane Grp Cap (vph)	314	2512	782	349	2563	798	314	433	193	181	437	437
v/s Ratio Prot	0.06	c0.20		c0.07	0.19		0.06	0.07		c0.07	0.04	0.04
v/s Ratio Perm			0.08			0.04			c0.08			
v/c Ratio	0.65	0.40	0.15	0.67	0.37	0.07	0.68	0.53	0.69	0.72	0.32	0.32
Uniform Delay, d1	52.6	19.1	16.6	52.0	18.1	15.3	52.8	49.4	50.5	52.2	47.1	47.1
Progression Factor	1.00	1.00	1.00	0.88	0.76	1.39	1.06	1.30	1.30	1.00	1.00	1.00
Incremental Delay, d2	3.5	0.5	0.4	3.5	0.4	0.2	4.4	0.6	8.3	11.5	0.2	0.2
Delay (s)	56.1	19.5	17.0	49.1	14.2	21.4	60.2	64.7	74.2	63.7	47.2	47.2
Level of Service	E	B	B	D	B	C	E	E	E	E	D	D
Approach Delay (s)		24.3			21.2			65.3			53.0	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM 2000 Control Delay			32.5				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		21.5			
Intersection Capacity Utilization			55.4%				ICU Level of Service		B			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 2: Parkland Road & E. County Line Road

04/25/2019



Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations	↑↑↑	↗		↑↑↑		↗			
Traffic Volume (veh/h)	1071	123	0	1226	0	157			
Future Volume (Veh/h)	1071	123	0	1226	0	157			
Sign Control	Free			Free	Stop				
Grade	0%			0%	0%				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97			
Hourly flow rate (vph)	1104	127	0	1264	0	162			
Pedestrians									
Lane Width (ft)									
Walking Speed (ft/s)									
Percent Blockage									
Right turn flare (veh)									
Median type	None			None					
Median storage (veh)									
Upstream signal (ft)	790			791					
pX, platoon unblocked	0.90			0.94	0.90				
vC, conflicting volume	1104			1420	368				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	708			387	0				
tC, single (s)	4.1			6.8	6.9				
tC, 2 stage (s)									
tF (s)	2.2			3.5	3.3				
p0 queue free %	100			100	83				
cM capacity (veh/h)	794			556	971				
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	368	368	368	127	316	316	316	316	162
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	127	0	0	0	0	162
cSH	1700	1700	1700	1700	1700	1700	1700	1700	971
Volume to Capacity	0.22	0.22	0.22	0.07	0.19	0.19	0.19	0.19	0.17
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	15
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4
Lane LOS									A
Approach Delay (s)	0.0				0.0				9.4
Approach LOS									A
Intersection Summary									
Average Delay	0.6								
Intersection Capacity Utilization	37.1%			ICU Level of Service				A	
Analysis Period (min)	15								

Queues

3: Chester Street/S. Chester Street & E. County Line Road

04/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	316	856	94	478	1073	101	316	302	439	373	332
v/c Ratio	0.73	0.75	0.19	0.66	0.55	0.52	0.39	0.84	0.86	0.33	0.47
Control Delay	51.1	50.5	9.6	50.1	34.5	42.5	42.5	66.5	68.0	31.6	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.1	50.5	9.6	50.1	34.5	42.5	42.5	66.5	68.0	31.6	6.7
Queue Length 50th (ft)	125	236	12	175	189	36	128	244	174	116	15
Queue Length 95th (ft)	173	286	50	#313	245	66	171	331	#314	148	80
Internal Link Dist (ft)		711			529		497			217	
Turn Bay Length (ft)	730			720		200			165		155
Base Capacity (vph)	447	1334	536	720	1955	211	1179	527	510	1356	794
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.64	0.18	0.66	0.55	0.48	0.27	0.57	0.86	0.28	0.42
























Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 3: Chester Street/S. Chester Street & E. County Line Road

04/25/2019





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	307	830	91	464	806	235	98	307	293	426	362	322
Future Volume (vph)	307	830	91	464	806	235	98	307	293	426	362	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.5	6.5	5.0	6.5		5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6191		3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6191		3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	316	856	94	478	831	242	101	316	302	439	373	332
RTOR Reduction (vph)	0	0	73	0	41	0	0	0	0	0	0	207
Lane Group Flow (vph)	316	856	21	478	1032	0	101	316	302	439	373	125
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7		4
Permitted Phases			2						8			4
Actuated Green, G (s)	15.1	27.0	27.0	25.2	37.1		6.9	27.5	27.5	17.8	38.4	38.4
Effective Green, g (s)	15.1	27.0	27.0	25.2	37.1		6.9	27.5	27.5	17.8	38.4	38.4
Actuated g/C Ratio	0.13	0.22	0.22	0.21	0.31		0.06	0.23	0.23	0.15	0.32	0.32
Clearance Time (s)	5.0	6.5	6.5	5.0	6.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		1.5	1.5	1.5	2.0	1.5	1.5
Lane Grp Cap (vph)	431	1144	356	720	1914		197	811	362	509	1132	506
v/s Ratio Prot	0.09	c0.17		c0.14	0.17		0.03	0.09		c0.13	0.11	
v/s Ratio Perm			0.01						c0.19			0.08
v/c Ratio	0.73	0.75	0.06	0.66	0.54		0.51	0.39	0.83	0.86	0.33	0.25
Uniform Delay, d1	50.5	43.3	36.5	43.5	34.4		54.9	39.1	44.1	49.9	31.0	30.1
Progression Factor	0.82	1.08	1.00	1.00	1.00		0.61	1.08	1.10	1.00	1.00	1.00
Incremental Delay, d2	5.2	4.3	0.3	1.8	1.1		0.9	0.1	13.9	13.6	0.1	0.1
Delay (s)	46.5	50.9	36.8	45.3	35.5		34.5	42.5	62.3	63.5	31.1	30.2
Level of Service	D	D	D	D	D		C	D	E	E	C	C
Approach Delay (s)		48.8			38.5			49.7			43.3	
Approach LOS		D			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			44.2			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			22.5			
Intersection Capacity Utilization			68.7%			ICU Level of Service			C			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

4: Parkland Road & Westview Road

04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	90	62	84	67	81	50	60	39	44	37	4	23
Future Volume (vph)	90	62	84	67	81	50	60	39	44	37	4	23
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	94	65	88	70	84	52	63	41	46	39	4	24
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total (vph)	94	153	70	136	63	87	39	28				
Volume Left (vph)	94	0	70	0	63	0	39	0				
Volume Right (vph)	0	88	0	52	0	46	0	24				
Hadj (s)	0.53	-0.37	0.53	-0.23	0.53	-0.34	0.53	-0.57				
Departure Headway (s)	5.8	4.9	5.9	5.1	6.2	5.3	6.3	5.2				
Degree Utilization, x	0.15	0.21	0.11	0.19	0.11	0.13	0.07	0.04				
Capacity (veh/h)	587	698	584	673	546	630	531	637				
Control Delay (s)	8.7	8.0	8.4	8.1	8.8	7.9	8.6	7.2				
Approach Delay (s)	8.3		8.2		8.3		8.0					
Approach LOS	A		A		A		A					
Intersection Summary												
Delay			8.2									
Level of Service			A									
Intersection Capacity Utilization			32.3%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM 2010 AWSC

4: Parkland Road & Westview Road

















04/25/2019

Intersection												
Intersection Delay, s/veh	9.2											
Intersection LOS	A											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷		↶	↷	
Traffic Vol, veh/h	90	62	84	67	81	50	60	39	44	37	4	23
Future Vol, veh/h	90	62	84	67	81	50	60	39	44	37	4	23
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	94	65	88	70	84	52	63	41	46	39	4	24
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	2			2			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			2			2		
HCM Control Delay	9.3			9.2			9.3			9		
HCM LOS	A			A			A			A		
Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2				
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%				
Vol Thru, %	0%	47%	0%	42%	0%	62%	0%	15%				
Vol Right, %	0%	53%	0%	58%	0%	38%	0%	85%				
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop				
Traffic Vol by Lane	60	83	90	146	67	131	37	27				
LT Vol	60	0	90	0	67	0	37	0				
Through Vol	0	39	0	62	0	81	0	4				
RT Vol	0	44	0	84	0	50	0	23				
Lane Flow Rate	62	86	94	152	70	136	39	28				
Geometry Grp	7	7	7	7	7	7	7	7				
Degree of Util (X)	0.108	0.128	0.152	0.209	0.114	0.194	0.068	0.041				
Departure Headway (Hd)	6.229	5.35	5.845	4.936	5.885	5.112	6.342	5.235				
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
Cap	572	665	610	722	606	697	560	677				
Service Time	4.006	3.127	3.608	2.699	3.65	2.878	4.129	3.02				
HCM Lane V/C Ratio	0.108	0.129	0.154	0.211	0.116	0.195	0.07	0.041				
HCM Control Delay	9.8	8.9	9.7	9	9.4	9.1	9.6	8.2				
HCM Lane LOS	A	A	A	A	A	A	A	A				
HCM 95th-tile Q	0.4	0.4	0.5	0.8	0.4	0.7	0.2	0.1				

HCM Unsignalized Intersection Capacity Analysis

6: DSW Driveway/Site Entrance & Westview Road

04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	94	28	58	164	55	27	1	60	52	1	27
Future Volume (Veh/h)	25	94	28	58	164	55	27	1	60	52	1	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	27	103	31	64	180	60	30	1	66	57	1	30
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					257							
pX, platoon unblocked	0.99						0.99	0.99		0.99	0.99	0.99
vC, conflicting volume	240			134			541	540	118	577	526	210
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	225			134			529	529	118	566	514	194
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			96			93	100	93	85	100	96
cM capacity (veh/h)	1328			1451			416	421	933	379	429	837
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	161	304	97	88								
Volume Left	27	64	30	57								
Volume Right	31	60	66	30								
cSH	1328	1451	668	467								
Volume to Capacity	0.02	0.04	0.15	0.19								
Queue Length 95th (ft)	2	3	13	17								
Control Delay (s)	1.4	1.9	11.3	14.5								
Lane LOS	A	A	B	B								
Approach Delay (s)	1.4	1.9	11.3	14.5								
Approach LOS			B	B								
Intersection Summary												
Average Delay			4.9									
Intersection Capacity Utilization			37.5%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

7: Chester Street & Westview Road
























04/25/2019



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	95	117	48	41	248	51	435	267	679
v/c Ratio	0.51	0.48	0.34	0.28	0.16	0.39	0.73	0.16	0.33
Control Delay	59.4	27.5	57.9	55.6	0.2	61.3	51.2	25.8	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.4	27.5	57.9	55.6	0.2	61.3	51.2	25.8	3.1
Queue Length 50th (ft)	71	32	36	30	0	39	166	43	33
Queue Length 95th (ft)	122	88	74	66	0	81	210	110	116
Internal Link Dist (ft)		177		141			414		497
Turn Bay Length (ft)						150		225	
Base Capacity (vph)	309	353	191	201	1583	354	877	1680	2038
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.33	0.25	0.20	0.16	0.14	0.50	0.16	0.33
Intersection Summary									

HCM Signalized Intersection Capacity Analysis
7: Chester Street & Westview Road

04/25/2019

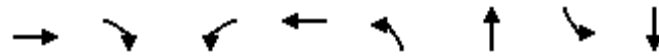
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	38	76	47	40	241	49	365	57	259	470	188
Future Volume (vph)	92	38	76	47	40	241	49	365	57	259	470	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	4.0	6.0	6.0		5.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		0.97	0.95	
Frt	1.00	0.90		1.00	1.00	0.85	1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1676		1770	1863	1583	1770	3467		3433	3388	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1676		1770	1863	1583	1770	3467		3433	3388	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	95	39	78	48	41	248	51	376	59	267	485	194
RTOR Reduction (vph)	0	65	0	0	0	0	0	12	0	0	23	0
Lane Group Flow (vph)	95	52	0	48	41	248	51	423	0	267	656	0
Turn Type	Split	NA		Split	NA	Free	Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						Free						
Actuated Green, G (s)	12.7	12.7		8.3	8.3	120.0	7.7	19.3		58.7	69.3	
Effective Green, g (s)	12.7	12.7		8.3	8.3	120.0	7.7	19.3		58.7	69.3	
Actuated g/C Ratio	0.11	0.11		0.07	0.07	1.00	0.06	0.16		0.49	0.58	
Clearance Time (s)	5.0	5.0		5.0	5.0		6.0	6.0		5.0	6.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.0	3.0		4.0	3.0	
Lane Grp Cap (vph)	187	177		122	128	1583	113	557		1679	1956	
v/s Ratio Prot	c0.05	0.03		c0.03	0.02		c0.03	c0.12		0.08	c0.19	
v/s Ratio Perm						0.16						
v/c Ratio	0.51	0.29		0.39	0.32	0.16	0.45	0.76		0.16	0.34	
Uniform Delay, d1	50.7	49.5		53.4	53.2	0.0	54.1	48.1		17.0	13.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.01	0.97		1.29	0.19	
Incremental Delay, d2	2.9	1.3		2.8	2.0	0.2	2.7	9.1		0.2	0.4	
Delay (s)	53.6	50.8		56.3	55.1	0.2	57.5	55.6		22.1	3.0	
Level of Service	D	D		E	E	A	E	E		C	A	
Approach Delay (s)		52.0			14.9			55.8			8.4	
Approach LOS		D			B			E			A	
Intersection Summary												
HCM 2000 Control Delay			25.8			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			49.1%			ICU Level of Service				A		
Analysis Period (min)			15									

c Critical Lane Group

Queues

8: S. Yosemite Street & Parkland Road

04/25/2019

























Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	157	180	70	130	237	555	66	560
v/c Ratio	0.68	0.50	0.49	0.59	0.40	0.19	0.13	0.22
Control Delay	64.0	11.3	63.9	27.7	13.6	17.2	6.6	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.0	11.3	63.9	27.7	13.6	17.2	6.6	8.5
Queue Length 50th (ft)	118	0	53	24	110	105	8	30
Queue Length 95th (ft)	173	55	95	80	178	143	m25	57
Internal Link Dist (ft)	116			330		519		654
Turn Bay Length (ft)			125		245		265	
Base Capacity (vph)	344	448	339	395	605	2929	689	2502
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.40	0.21	0.33	0.39	0.19	0.10	0.22

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
 8: S. Yosemite Street & Parkland Road

04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	38	157	61	29	84	206	436	47	57	362	125
Future Volume (vph)	98	38	157	61	29	84	206	436	47	57	362	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt		1.00	0.85	1.00	0.89		1.00	0.99		1.00	0.96	
Flt Protected		0.97	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1798	1583	1770	1654		1770	5011		1770	4889	
Flt Permitted		0.97	1.00	0.95	1.00		0.39	1.00		0.43	1.00	
Satd. Flow (perm)		1798	1583	1770	1654		722	5011		808	4889	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	113	44	180	70	33	97	237	501	54	66	416	144
RTOR Reduction (vph)	0	0	157	0	89	0	0	6	0	0	40	0
Lane Group Flow (vph)	0	157	23	70	41	0	237	549	0	66	520	0
Turn Type	Split	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases			4				6			2		
Actuated Green, G (s)		15.4	15.4	9.6	9.6		79.0	69.1		65.4	60.5	
Effective Green, g (s)		15.4	15.4	9.6	9.6		79.0	69.1		65.4	60.5	
Actuated g/C Ratio		0.13	0.13	0.08	0.08		0.66	0.58		0.55	0.50	
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)		2.5	2.5	2.5	2.5		1.5	3.0		1.5	3.0	
Lane Grp Cap (vph)		230	203	141	132		593	2885		479	2464	
v/s Ratio Prot		c0.09		c0.04	0.02		c0.04	0.11		0.01	0.11	
v/s Ratio Perm			0.01				c0.22			0.07		
v/c Ratio		0.68	0.11	0.50	0.31		0.40	0.19		0.14	0.21	
Uniform Delay, d1		50.0	46.3	52.9	52.1		8.3	12.1		12.9	16.5	
Progression Factor		1.00	1.00	1.00	1.00		1.29	1.30		0.62	0.52	
Incremental Delay, d2		7.4	0.2	2.0	1.0		0.2	0.1		0.0	0.2	
Delay (s)		57.4	46.4	54.9	53.0		10.9	16.0		8.0	8.7	
Level of Service		E	D	D	D		B	B		A	A	
Approach Delay (s)		51.5			53.7			14.4			8.6	
Approach LOS		D			D			B			A	
Intersection Summary												
HCM 2000 Control Delay			23.0				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			21.0		
Intersection Capacity Utilization			50.5%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group

Queues

9: S. Yosemite Street & Chester Street

04/25/2019



















Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	504	133	608	427	80	544
v/c Ratio	0.79	0.45	0.26	0.36	0.13	0.15
Control Delay	72.9	65.1	9.6	1.9	9.3	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.9	65.1	9.6	1.9	9.3	8.0
Queue Length 50th (ft)	209	105	98	0	25	64
Queue Length 95th (ft)	269	174	146	40	51	90
Internal Link Dist (ft)	414		219			519
Turn Bay Length (ft)		160			245	
Base Capacity (vph)	1144	527	2335	1189	672	3695
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.25	0.26	0.36	0.12	0.15
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

9: S. Yosemite Street & Chester Street

04/25/2019

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			  
Traffic Volume (vph)	469	124	565	397	74	506
Future Volume (vph)	469	124	565	397	74	506
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.5	5.5	5.0	5.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1583	3539	1583	1770	5085
Flt Permitted	0.95	1.00	1.00	1.00	0.40	1.00
Satd. Flow (perm)	3433	1583	3539	1583	753	5085
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	504	133	608	427	80	544
RTOR Reduction (vph)	0	0	0	149	0	0
Lane Group Flow (vph)	504	133	608	278	80	544
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Actuated Green, G (s)	22.3	22.3	78.2	78.2	87.7	87.2
Effective Green, g (s)	22.3	22.3	78.2	78.2	87.7	87.2
Actuated g/C Ratio	0.19	0.19	0.65	0.65	0.73	0.73
Clearance Time (s)	5.0	5.0	5.5	5.5	5.0	5.5
Vehicle Extension (s)	2.0	2.0	3.0	3.0	1.5	3.0
Lane Grp Cap (vph)	637	294	2306	1031	584	3695
v/s Ratio Prot	c0.15		0.17		0.00	c0.11
v/s Ratio Perm		0.08		c0.18	0.10	
v/c Ratio	0.79	0.45	0.26	0.27	0.14	0.15
Uniform Delay, d1	46.6	43.4	8.8	8.8	6.0	5.0
Progression Factor	1.38	1.41	1.00	1.00	1.54	1.47
Incremental Delay, d2	6.0	0.4	0.3	0.6	0.0	0.1
Delay (s)	70.2	61.8	9.1	9.5	9.2	7.5
Level of Service	E	E	A	A	A	A
Approach Delay (s)	68.4		9.2			7.7
Approach LOS	E		A			A
Intersection Summary						
HCM 2000 Control Delay			25.2		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.38			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	15.5
Intersection Capacity Utilization			46.1%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Queues

1: S. Yosemite Street & E. County Line Road

04/25/2019



































Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	151	809	174	170	1825	118	244	200	94	99	420
v/c Ratio	0.61	0.27	0.18	0.64	0.61	0.12	0.76	0.52	0.55	0.69	0.81
Control Delay	73.6	16.1	2.9	66.9	19.2	7.2	69.1	60.2	67.2	86.3	40.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.6	16.1	2.9	66.9	19.2	7.2	69.1	60.2	67.2	86.3	40.8
Queue Length 50th (ft)	70	131	0	80	220	1	114	98	88	89	92
Queue Length 95th (ft)	106	189	39	119	434	m52	119	137	146	149	146
Internal Link Dist (ft)		465			710			451			207
Turn Bay Length (ft)	240			725			280				
Base Capacity (vph)	490	2947	990	367	2974	965	367	1011	452	189	1089
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.27	0.18	0.46	0.61	0.12	0.66	0.20	0.21	0.52	0.39

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
 1: S. Yosemite Street & E. County Line Road

04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	 			 	
Traffic Volume (vph)	140	752	162	158	1697	110	227	186	87	92	174	217
Future Volume (vph)	140	752	162	158	1697	110	227	186	87	92	174	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	1583	1770	3245	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	1583	1770	3245	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	151	809	174	170	1825	118	244	200	94	99	187	233
RTOR Reduction (vph)	0	0	73	0	0	39	0	0	0	0	205	0
Lane Group Flow (vph)	151	809	101	170	1825	79	244	200	94	99	215	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	10.1	81.2	81.2	10.8	81.9	81.9	13.1	15.2	15.2	11.3	13.4	
Effective Green, g (s)	10.1	81.2	81.2	10.8	81.9	81.9	13.1	15.2	15.2	11.3	13.4	
Actuated g/C Ratio	0.07	0.58	0.58	0.08	0.59	0.59	0.09	0.11	0.11	0.08	0.10	
Clearance Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	1.5	3.0	3.0	1.5	3.0	3.0	1.5	2.0	2.0	1.5	2.0	
Lane Grp Cap (vph)	247	2949	918	264	2974	926	321	384	171	142	310	
v/s Ratio Prot	0.04	0.16		c0.05	c0.36		c0.07	0.06		0.06	c0.07	
v/s Ratio Perm			0.06			0.05			0.06			
v/c Ratio	0.61	0.27	0.11	0.64	0.61	0.09	0.76	0.52	0.55	0.70	0.69	
Uniform Delay, d1	63.0	14.7	13.2	62.7	18.8	12.7	61.9	59.0	59.2	62.7	61.3	
Progression Factor	1.00	1.00	1.00	0.92	0.91	1.45	0.87	0.95	0.95	1.00	1.00	
Incremental Delay, d2	3.1	0.2	0.2	3.4	0.8	0.2	9.1	0.6	1.9	11.4	5.3	
Delay (s)	66.2	14.9	13.4	60.9	17.9	18.5	63.0	56.4	57.9	74.1	66.6	
Level of Service	E	B	B	E	B	B	E	E	E	E	E	
Approach Delay (s)		21.5			21.4			59.7			68.0	
Approach LOS		C			C			E			E	
Intersection Summary												
HCM 2000 Control Delay			31.8				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			21.5			
Intersection Capacity Utilization			73.1%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 2: Parkland Road & E. County Line Road

04/25/2019



Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations	↑↑↑	↗		↑↑↑		↗			
Traffic Volume (veh/h)	856	75	0	1900	0	77			
Future Volume (Veh/h)	856	75	0	1900	0	77			
Sign Control	Free			Free	Stop				
Grade	0%			0%	0%				
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85			
Hourly flow rate (vph)	1007	88	0	2235	0	91			
Pedestrians									
Lane Width (ft)									
Walking Speed (ft/s)									
Percent Blockage									
Right turn flare (veh)									
Median type	None			None					
Median storage (veh)									
Upstream signal (ft)	790			791					
pX, platoon unblocked	0.93			0.86	0.93				
vC, conflicting volume	1007			1566	336				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	760			241	41				
tC, single (s)	4.1			6.8	6.9				
tC, 2 stage (s)									
tF (s)	2.2			3.5	3.3				
p0 queue free %	100			100	90				
cM capacity (veh/h)	792			621	953				
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	336	336	336	88	559	559	559	559	91
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	88	0	0	0	0	91
cSH	1700	1700	1700	1700	1700	1700	1700	1700	953
Volume to Capacity	0.20	0.20	0.20	0.05	0.33	0.33	0.33	0.33	0.10
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	8
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.2
Lane LOS									
Approach Delay (s)	0.0				0.0				9.2
Approach LOS									
A									
Intersection Summary									
Average Delay			0.2						
Intersection Capacity Utilization			30.9%			ICU Level of Service			A
Analysis Period (min)			15						

Queues

3: Chester Street/S. Chester Street & E. County Line Road

04/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	203	699	70	372	1494	122	225	292	536	605	492
v/c Ratio	0.65	0.42	0.12	0.80	0.63	0.56	0.30	0.86	0.97	0.55	0.65
Control Delay	93.6	31.2	1.2	72.1	38.1	66.7	42.1	69.3	88.2	41.8	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	93.6	31.2	1.2	72.1	38.1	66.7	42.1	69.3	88.2	41.8	13.1
Queue Length 50th (ft)	101	190	1	171	309	59	78	203	~283	247	77
Queue Length 95th (ft)	144	257	7	223	409	93	103	262	#400	288	191
Internal Link Dist (ft)		711			529		497			217	
Turn Bay Length (ft)	730			720		200			165		155
Base Capacity (vph)	490	1665	586	539	2365	490	1011	452	555	1107	759
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.42	0.12	0.69	0.63	0.25	0.22	0.65	0.97	0.55	0.65

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
























Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 3: Chester Street/S. Chester Street & E. County Line Road





















04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	671	67	357	1311	123	117	216	280	515	581	472
Future Volume (vph)	195	671	67	357	1311	123	117	216	280	515	581	472
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.5	6.5	5.0	6.5		5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6325		3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6325		3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	203	699	70	372	1366	128	122	225	292	536	605	492
RTOR Reduction (vph)	0	0	47	0	9	0	0	0	0	0	0	265
Lane Group Flow (vph)	203	699	23	372	1485	0	122	225	292	536	605	227
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	12.6	45.9	45.9	18.9	52.2		8.9	30.0	30.0	22.7	43.8	43.8
Effective Green, g (s)	12.6	45.9	45.9	18.9	52.2		8.9	30.0	30.0	22.7	43.8	43.8
Actuated g/C Ratio	0.09	0.33	0.33	0.13	0.37		0.06	0.21	0.21	0.16	0.31	0.31
Clearance Time (s)	5.0	6.5	6.5	5.0	6.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		1.5	1.5	1.5	2.0	1.5	1.5
Lane Grp Cap (vph)	308	1667	518	463	2358		218	758	339	556	1107	495
v/s Ratio Prot	0.06	0.14		c0.11	c0.23		0.04	0.06		c0.16	0.17	
v/s Ratio Perm			0.01						c0.18			0.14
v/c Ratio	0.66	0.42	0.04	0.80	0.63		0.56	0.30	0.86	0.96	0.55	0.46
Uniform Delay, d1	61.6	36.7	32.1	58.7	36.0		63.6	46.1	53.0	58.2	39.9	38.6
Progression Factor	1.36	0.80	0.32	1.00	1.00		0.90	0.92	0.90	1.00	1.00	1.00
Incremental Delay, d2	3.8	0.8	0.2	9.2	1.3		1.7	0.1	18.1	28.9	0.3	0.2
Delay (s)	87.9	30.1	10.4	68.0	37.3		59.2	42.6	65.6	87.1	40.2	38.8
Level of Service	F	C	B	E	D		E	D	E	F	D	D
Approach Delay (s)		40.8			43.4			56.3			55.2	
Approach LOS		D			D			E			E	
Intersection Summary												
HCM 2000 Control Delay			48.3			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			22.5			
Intersection Capacity Utilization			69.0%			ICU Level of Service			C			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 4: Parkland Road & Westview Road

04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	36	24	61	77	45	24	35	23	30	33	8	17
Future Volume (vph)	36	24	61	77	45	24	35	23	30	33	8	17
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	42	28	72	91	53	28	41	27	35	39	9	20
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total (vph)	42	100	91	81	41	62	39	29				
Volume Left (vph)	42	0	91	0	41	0	39	0				
Volume Right (vph)	0	72	0	28	0	35	0	20				
Hadj (s)	0.53	-0.47	0.53	-0.21	0.53	-0.36	0.53	-0.45				
Departure Headway (s)	5.6	4.6	5.6	4.9	5.9	5.0	5.9	4.9				
Degree Utilization, x	0.07	0.13	0.14	0.11	0.07	0.09	0.06	0.04				
Capacity (veh/h)	607	742	617	710	583	682	575	686				
Control Delay (s)	7.8	7.1	8.3	7.3	8.1	7.2	8.1	6.9				
Approach Delay (s)	7.3		7.8		7.6		7.6					
Approach LOS	A		A		A		A					
Intersection Summary												
Delay			7.6									
Level of Service			A									
Intersection Capacity Utilization			26.2%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM 2010 AWSC

















4: Parkland Road & Westview Road

04/25/2019

Intersection												
Intersection Delay, s/veh	8.6											
Intersection LOS	A											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷		↶	↷	
Traffic Vol, veh/h	36	24	61	77	45	24	35	23	30	33	8	17
Future Vol, veh/h	36	24	61	77	45	24	35	23	30	33	8	17
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	42	28	72	91	53	28	41	27	35	39	9	20
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	2			2			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			2			2		
HCM Control Delay	8.3			8.8			8.6			8.6		
HCM LOS	A			A			A			A		
Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2				
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%				
Vol Thru, %	0%	43%	0%	28%	0%	65%	0%	32%				
Vol Right, %	0%	57%	0%	72%	0%	35%	0%	68%				
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop				
Traffic Vol by Lane	35	53	36	85	77	69	33	25				
LT Vol	35	0	36	0	77	0	33	0				
Through Vol	0	23	0	24	0	45	0	8				
RT Vol	0	30	0	61	0	24	0	17				
Lane Flow Rate	41	62	42	100	91	81	39	29				
Geometry Grp	7	7	7	7	7	7	7	7				
Degree of Util (X)	0.067	0.086	0.067	0.129	0.141	0.11	0.064	0.04				
Departure Headway (Hd)	5.891	4.99	5.663	4.656	5.623	4.876	5.93	4.947				
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
Cap	608	717	633	769	638	735	604	722				
Service Time	3.629	2.727	3.395	2.388	3.354	2.607	3.67	2.688				
HCM Lane V/C Ratio	0.067	0.086	0.066	0.13	0.143	0.11	0.065	0.04				
HCM Control Delay	9.1	8.2	8.8	8.1	9.3	8.2	9.1	7.9				
HCM Lane LOS	A	A	A	A	A	A	A	A				
HCM 95th-tile Q	0.2	0.3	0.2	0.4	0.5	0.4	0.2	0.1				

HCM Unsignalized Intersection Capacity Analysis
6: DSW Driveway/Site Entrance & Westview Road

04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	59	14	43	113	16	23	0	49	41	0	21
Future Volume (Veh/h)	22	59	14	43	113	16	23	0	49	41	0	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	64	15	47	123	17	25	0	53	45	0	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					257							
pX, platoon unblocked												
vC, conflicting volume	140			79			368	354	72	398	352	132
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	140			79			368	354	72	398	352	132
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			97			95	100	95	91	100	97
cM capacity (veh/h)	1443			1519			553	545	991	513	545	918
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	103	187	78	68								
Volume Left	24	47	25	45								
Volume Right	15	17	53	23								
cSH	1443	1519	790	603								
Volume to Capacity	0.02	0.03	0.10	0.11								
Queue Length 95th (ft)	1	2	8	9								
Control Delay (s)	1.9	2.1	10.1	11.7								
Lane LOS	A	A	B	B								
Approach Delay (s)	1.9	2.1	10.1	11.7								
Approach LOS			B	B								
Intersection Summary												
Average Delay			4.9									
Intersection Capacity Utilization			26.3%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

7: Chester Street & Westview Road

04/25/2019


























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	83	75	35	30	230	28	377	244	826
v/c Ratio	0.37	0.30	0.17	0.14	0.15	0.17	0.53	0.22	0.46
Control Delay	32.6	18.8	29.5	28.9	0.2	27.3	29.3	24.0	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	18.8	29.5	28.9	0.2	27.3	29.3	24.0	12.3
Queue Length 50th (ft)	33	14	14	12	0	10	78	90	184
Queue Length 95th (ft)	71	48	38	34	0	24	111	103	308
Internal Link Dist (ft)		177		141			414		497
Turn Bay Length (ft)						150		225	
Base Capacity (vph)	252	279	379	399	1583	227	709	1123	1808
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.27	0.09	0.08	0.15	0.12	0.53	0.22	0.46

Intersection Summary

HCM Signalized Intersection Capacity Analysis
7: Chester Street & Westview Road

04/25/2019

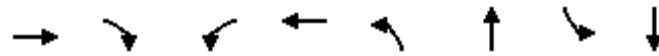
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	33	38	33	28	216	26	319	36	229	658	118
Future Volume (vph)	78	33	38	33	28	216	26	319	36	229	658	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	4.0	6.0	6.0		5.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		0.97	0.95	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1714		1770	1863	1583	1770	3486		3433	3458	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1714		1770	1863	1583	1770	3486		3433	3458	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	83	35	40	35	30	230	28	339	38	244	700	126
RTOR Reduction (vph)	0	35	0	0	0	0	0	12	0	0	15	0
Lane Group Flow (vph)	83	40	0	35	30	230	28	365	0	244	811	0
Turn Type	Split	NA		Split	NA	Free	Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						Free						
Actuated Green, G (s)	8.9	8.9		5.2	5.2	70.0	3.1	12.0		22.9	30.8	
Effective Green, g (s)	8.9	8.9		5.2	5.2	70.0	3.1	12.0		22.9	30.8	
Actuated g/C Ratio	0.13	0.13		0.07	0.07	1.00	0.04	0.17		0.33	0.44	
Clearance Time (s)	5.0	5.0		5.0	5.0		6.0	6.0		5.0	6.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.0	3.0		4.0	3.0	
Lane Grp Cap (vph)	225	217		131	138	1583	78	597		1123	1521	
v/s Ratio Prot	c0.05	0.02		0.02	0.02		0.02	0.10		c0.07	c0.23	
v/s Ratio Perm						c0.15						
v/c Ratio	0.37	0.18		0.27	0.22	0.15	0.36	0.61		0.22	0.53	
Uniform Delay, d1	28.0	27.3		30.6	30.5	0.0	32.5	26.8		17.1	14.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.88	1.10		1.23	0.84	
Incremental Delay, d2	1.4	0.6		1.5	1.1	0.2	2.7	4.4		0.4	1.1	
Delay (s)	29.4	27.9		32.1	31.6	0.2	31.3	33.9		21.4	13.1	
Level of Service	C	C		C	C	A	C	C		C	B	
Approach Delay (s)		28.7			7.2			33.7			15.0	
Approach LOS		C			A			C			B	
Intersection Summary												
HCM 2000 Control Delay			18.8			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			70.0			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			51.3%			ICU Level of Service			A			
Analysis Period (min)			15									

c Critical Lane Group

Queues

8: S. Yosemite Street & Parkland Road

04/25/2019



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	93	127	54	123	136	563	45	533
v/c Ratio	0.43	0.34	0.29	0.47	0.25	0.21	0.09	0.22
Control Delay	33.8	3.6	32.3	15.1	4.5	5.0	9.3	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	3.6	32.3	15.1	4.5	5.0	9.3	12.5
Queue Length 50th (ft)	38	0	22	8	10	17	5	26
Queue Length 95th (ft)	71	7	48	45	21	26	32	102
Internal Link Dist (ft)	116			330		519		654
Turn Bay Length (ft)			125		245		265	
Base Capacity (vph)	385	498	379	430	553	2681	504	2411
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.26	0.14	0.29	0.25	0.21	0.09	0.22

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 8: S. Yosemite Street & Parkland Road

04/25/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	25	108	46	16	88	116	451	27	38	402	51
Future Volume (vph)	54	25	108	46	16	88	116	451	27	38	402	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt		1.00	0.85	1.00	0.87		1.00	0.99		1.00	0.98	
Flt Protected		0.97	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1801	1583	1770	1626		1770	5042		1770	4999	
Flt Permitted		0.97	1.00	0.95	1.00		0.41	1.00		0.43	1.00	
Satd. Flow (perm)		1801	1583	1770	1626		759	5042		801	4999	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	64	29	127	54	19	104	136	531	32	45	473	60
RTOR Reduction (vph)	0	0	114	0	95	0	0	7	0	0	17	0
Lane Group Flow (vph)	0	93	13	54	28	0	136	556	0	45	516	0
Turn Type	Split	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases			4				6			2		
Actuated Green, G (s)		7.4	7.4	6.3	6.3		37.9	32.0		32.7	29.4	
Effective Green, g (s)		7.4	7.4	6.3	6.3		37.9	32.0		32.7	29.4	
Actuated g/C Ratio		0.11	0.11	0.09	0.09		0.54	0.46		0.47	0.42	
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)		2.5	2.5	2.5	2.5		1.5	3.0		1.5	3.0	
Lane Grp Cap (vph)		190	167	159	146		496	2304		419	2099	
v/s Ratio Prot		c0.05		c0.03	0.02		c0.02	0.11		0.01	0.10	
v/s Ratio Perm			0.01				c0.13			0.04		
v/c Ratio		0.49	0.08	0.34	0.19		0.27	0.24		0.11	0.25	
Uniform Delay, d1		29.5	28.2	29.9	29.5		8.0	11.6		10.2	13.1	
Progression Factor		1.00	1.00	1.00	1.00		0.43	0.39		1.01	0.86	
Incremental Delay, d2		1.4	0.2	0.9	0.5		0.1	0.2		0.0	0.3	
Delay (s)		31.0	28.4	30.8	30.0		3.6	4.7		10.3	11.6	
Level of Service		C	C	C	C		A	A		B	B	
Approach Delay (s)		29.5			30.2			4.5			11.5	
Approach LOS		C			C			A			B	
Intersection Summary												
HCM 2000 Control Delay			12.9				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			70.0				Sum of lost time (s)				21.0	
Intersection Capacity Utilization			42.4%				ICU Level of Service				A	
Analysis Period (min)			15									

c Critical Lane Group

Queues

9: S. Yosemite Street & Chester Street

04/25/2019















Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	708	93	559	363	56	555
v/c Ratio	0.80	0.23	0.33	0.38	0.35	0.18
Control Delay	44.2	34.3	13.6	3.3	27.2	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	34.3	13.6	3.3	27.2	7.7
Queue Length 50th (ft)	173	42	84	0	26	60
Queue Length 95th (ft)	208	75	132	49	20	21
Internal Link Dist (ft)	414		219			519
Turn Bay Length (ft)		160			245	
Base Capacity (vph)	915	421	1871	1008	162	3126
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.22	0.30	0.36	0.35	0.18
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

9: S. Yosemite Street & Chester Street

04/25/2019

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	644	85	509	330	51	505
Future Volume (vph)	644	85	509	330	51	505
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.5	5.5	5.0	5.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1583	3539	1583	1770	5085
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1583	3539	1583	1770	5085
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	708	93	559	363	56	555
RTOR Reduction (vph)	0	0	0	197	0	0
Lane Group Flow (vph)	708	93	559	166	56	555
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	18.1	18.1	32.0	32.0	4.4	41.4
Effective Green, g (s)	18.1	18.1	32.0	32.0	4.4	41.4
Actuated g/C Ratio	0.26	0.26	0.46	0.46	0.06	0.59
Clearance Time (s)	5.0	5.0	5.5	5.5	5.0	5.5
Vehicle Extension (s)	2.0	2.0	3.0	3.0	1.5	3.0
Lane Grp Cap (vph)	887	409	1617	723	111	3007
v/s Ratio Prot	c0.21		c0.16		c0.03	0.11
v/s Ratio Perm		0.06		0.10		
v/c Ratio	0.80	0.23	0.35	0.23	0.50	0.18
Uniform Delay, d1	24.2	20.4	12.3	11.5	31.7	6.6
Progression Factor	1.55	1.66	1.00	1.00	0.73	1.11
Incremental Delay, d2	4.4	0.1	0.6	0.7	1.3	0.1
Delay (s)	42.0	34.0	12.8	12.3	24.6	7.4
Level of Service	D	C	B	B	C	A
Approach Delay (s)	41.0		12.6			9.0
Approach LOS	D		B			A
Intersection Summary						
HCM 2000 Control Delay			21.4	HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.51			
Actuated Cycle Length (s)			70.0	Sum of lost time (s)		15.5
Intersection Capacity Utilization			49.5%	ICU Level of Service		A
Analysis Period (min)			15			
c Critical Lane Group						

APPENDIX F
Background Future Conditions Synchro Reports



Queues

1: S. Yosemite Street & E. County Line Road

04/25/2019



































Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	204	1002	241	235	956	113	213	233	134	131	241
v/c Ratio	0.65	0.40	0.27	0.67	0.37	0.13	0.68	0.54	0.69	0.72	0.45
Control Delay	62.3	21.4	3.7	54.0	15.6	6.0	67.6	68.9	84.5	73.8	25.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.3	21.4	3.7	54.0	15.6	6.0	67.6	68.9	84.5	73.8	25.6
Queue Length 50th (ft)	79	175	0	59	213	30	76	97	108	100	46
Queue Length 95th (ft)	117	260	52	88	290	82	122	137	177	163	80
Internal Link Dist (ft)		465			710			451			207
Turn Bay Length (ft)	240			725			280				
Base Capacity (vph)	341	2510	903	364	2563	854	371	1150	514	236	1224
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.40	0.27	0.65	0.37	0.13	0.57	0.20	0.26	0.56	0.20

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 1: S. Yosemite Street & E. County Line Road

04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	 			 	
Traffic Volume (vph)	194	952	229	223	908	107	202	221	127	124	118	111
Future Volume (vph)	194	952	229	223	908	107	202	221	127	124	118	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	1583	1770	3281	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	1583	1770	3281	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	204	1002	241	235	956	113	213	233	134	131	124	117
RTOR Reduction (vph)	0	0	122	0	0	56	0	0	0	0	101	0
Lane Group Flow (vph)	204	1002	119	235	956	57	213	233	134	131	140	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	11.0	59.2	59.2	12.2	60.4	60.4	11.0	14.8	14.8	12.3	16.1	
Effective Green, g (s)	11.0	59.2	59.2	12.2	60.4	60.4	11.0	14.8	14.8	12.3	16.1	
Actuated g/C Ratio	0.09	0.49	0.49	0.10	0.50	0.50	0.09	0.12	0.12	0.10	0.13	
Clearance Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	1.5	3.0	3.0	1.5	3.0	3.0	1.5	2.0	2.0	1.5	2.0	
Lane Grp Cap (vph)	314	2508	780	349	2559	796	314	436	195	181	440	
v/s Ratio Prot	0.06	c0.20		c0.07	0.19		0.06	0.07		c0.07	0.04	
v/s Ratio Perm			0.08			0.04			c0.08			
v/c Ratio	0.65	0.40	0.15	0.67	0.37	0.07	0.68	0.53	0.69	0.72	0.32	
Uniform Delay, d1	52.6	19.2	16.7	52.0	18.2	15.4	52.8	49.4	50.4	52.2	47.0	
Progression Factor	1.00	1.00	1.00	0.88	0.77	1.39	1.07	1.32	1.34	1.00	1.00	
Incremental Delay, d2	3.5	0.5	0.4	3.5	0.4	0.2	4.5	0.6	7.6	11.5	0.2	
Delay (s)	56.1	19.7	17.1	49.1	14.3	21.4	61.1	65.9	75.0	63.7	47.1	
Level of Service	E	B	B	D	B	C	E	E	E	E	D	
Approach Delay (s)		24.4			21.2			66.3			53.0	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM 2000 Control Delay			32.7				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			21.5			
Intersection Capacity Utilization			55.7%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 2: Parkland Road & E. County Line Road

04/25/2019



Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations	↑↑↑↑	↗		↑↑↑↑		↗			
Traffic Volume (veh/h)	1082	123	0	1238	0	157			
Future Volume (Veh/h)	1082	123	0	1238	0	157			
Sign Control	Free			Free	Stop				
Grade	0%			0%	0%				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97			
Hourly flow rate (vph)	1115	127	0	1276	0	162			
Pedestrians									
Lane Width (ft)									
Walking Speed (ft/s)									
Percent Blockage									
Right turn flare (veh)									
Median type	None			None					
Median storage (veh)									
Upstream signal (ft)	790			791					
pX, platoon unblocked			0.89		0.94	0.89			
vC, conflicting volume			1115		1434	372			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol			712		385	0			
tC, single (s)			4.1		6.8	6.9			
tC, 2 stage (s)									
tF (s)			2.2		3.5	3.3			
p0 queue free %			100		100	83			
cM capacity (veh/h)			789		557	969			
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	372	372	372	127	319	319	319	319	162
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	127	0	0	0	0	162
cSH	1700	1700	1700	1700	1700	1700	1700	1700	969
Volume to Capacity	0.22	0.22	0.22	0.07	0.19	0.19	0.19	0.19	0.17
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	15
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.5
Lane LOS									A
Approach Delay (s)	0.0				0.0				9.5
Approach LOS									A
Intersection Summary									
Average Delay			0.6						
Intersection Capacity Utilization			37.3%		ICU Level of Service				A
Analysis Period (min)			15						

Queues

3: Chester Street/S. Chester Street & E. County Line Road

04/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	316	864	94	478	1081	101	316	302	439	373	332
v/c Ratio	0.73	0.75	0.19	0.66	0.55	0.52	0.39	0.84	0.88	0.33	0.47
Control Delay	51.0	50.2	9.6	50.1	34.4	43.1	42.6	66.5	70.0	31.8	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	50.2	9.6	50.1	34.4	43.1	42.6	66.5	70.0	31.8	6.9
Queue Length 50th (ft)	125	238	13	175	190	36	128	244	174	117	16
Queue Length 95th (ft)	172	289	50	#313	247	66	171	331	#314	148	81
Internal Link Dist (ft)		711			529		497			217	
Turn Bay Length (ft)	730			720		200			165		155
Base Capacity (vph)	447	1334	536	720	1970	208	1179	527	501	1356	793
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.65	0.18	0.66	0.55	0.49	0.27	0.57	0.88	0.28	0.42
























Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 3: Chester Street/S. Chester Street & E. County Line Road





















04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	307	838	91	464	814	235	98	307	293	426	362	322
Future Volume (vph)	307	838	91	464	814	235	98	307	293	426	362	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.5	6.5	5.0	6.5		5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6193		3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6193		3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	316	864	94	478	839	242	101	316	302	439	373	332
RTOR Reduction (vph)	0	0	73	0	40	0	0	0	0	0	0	207
Lane Group Flow (vph)	316	864	21	478	1041	0	101	316	302	439	373	125
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7		4
Permitted Phases			2						8			4
Actuated Green, G (s)	15.1	27.3	27.3	25.2	37.4		6.8	27.5	27.5	17.5	38.2	38.2
Effective Green, g (s)	15.1	27.3	27.3	25.2	37.4		6.8	27.5	27.5	17.5	38.2	38.2
Actuated g/C Ratio	0.13	0.23	0.23	0.21	0.31		0.06	0.23	0.23	0.15	0.32	0.32
Clearance Time (s)	5.0	6.5	6.5	5.0	6.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		1.5	1.5	1.5	2.0	1.5	1.5
Lane Grp Cap (vph)	431	1156	360	720	1930		194	811	362	500	1126	503
v/s Ratio Prot	0.09	c0.17		c0.14	0.17		0.03	0.09		c0.13	0.11	
v/s Ratio Perm			0.01						c0.19			0.08
v/c Ratio	0.73	0.75	0.06	0.66	0.54		0.52	0.39	0.83	0.88	0.33	0.25
Uniform Delay, d1	50.5	43.1	36.3	43.5	34.2		55.0	39.1	44.1	50.2	31.2	30.3
Progression Factor	0.81	1.08	1.00	1.00	1.00		0.61	1.08	1.10	1.00	1.00	1.00
Incremental Delay, d2	5.2	4.2	0.3	1.8	1.1		1.1	0.1	13.9	15.5	0.1	0.1
Delay (s)	46.3	50.6	36.6	45.3	35.3		34.9	42.5	62.3	65.7	31.2	30.4
Level of Service	D	D	D	D	D		C	D	E	E	C	C
Approach Delay (s)		48.5			38.3			49.7			44.2	
Approach LOS		D			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			44.3	HCM 2000 Level of Service				D				
HCM 2000 Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			120.0	Sum of lost time (s)				22.5				
Intersection Capacity Utilization			68.8%	ICU Level of Service				C				
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 4: Parkland Road & Westview Road

04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	90	62	84	67	81	50	60	39	44	37	4	23
Future Volume (vph)	90	62	84	67	81	50	60	39	44	37	4	23
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	94	65	88	70	84	52	63	41	46	39	4	24
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total (vph)	94	153	70	136	63	87	39	28				
Volume Left (vph)	94	0	70	0	63	0	39	0				
Volume Right (vph)	0	88	0	52	0	46	0	24				
Hadj (s)	0.53	-0.37	0.53	-0.23	0.53	-0.34	0.53	-0.57				
Departure Headway (s)	5.8	4.9	5.9	5.1	6.2	5.3	6.3	5.2				
Degree Utilization, x	0.15	0.21	0.11	0.19	0.11	0.13	0.07	0.04				
Capacity (veh/h)	587	698	584	673	546	630	531	637				
Control Delay (s)	8.7	8.0	8.4	8.1	8.8	7.9	8.6	7.2				
Approach Delay (s)	8.3		8.2		8.3		8.0					
Approach LOS	A		A		A		A					
Intersection Summary												
Delay			8.2									
Level of Service			A									
Intersection Capacity Utilization			32.3%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM 2010 AWSC

















4: Parkland Road & Westview Road

04/25/2019

Intersection												
Intersection Delay, s/veh	9.2											
Intersection LOS	A											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷		↶	↷	
Traffic Vol, veh/h	90	62	84	67	81	50	60	39	44	37	4	23
Future Vol, veh/h	90	62	84	67	81	50	60	39	44	37	4	23
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	94	65	88	70	84	52	63	41	46	39	4	24
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	2			2			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			2			2		
HCM Control Delay	9.3			9.2			9.3			9		
HCM LOS	A			A			A			A		
Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2				
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%				
Vol Thru, %	0%	47%	0%	42%	0%	62%	0%	15%				
Vol Right, %	0%	53%	0%	58%	0%	38%	0%	85%				
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop				
Traffic Vol by Lane	60	83	90	146	67	131	37	27				
LT Vol	60	0	90	0	67	0	37	0				
Through Vol	0	39	0	62	0	81	0	4				
RT Vol	0	44	0	84	0	50	0	23				
Lane Flow Rate	62	86	94	152	70	136	39	28				
Geometry Grp	7	7	7	7	7	7	7	7				
Degree of Util (X)	0.108	0.128	0.152	0.209	0.114	0.194	0.068	0.041				
Departure Headway (Hd)	6.229	5.35	5.845	4.936	5.885	5.112	6.342	5.235				
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
Cap	572	665	610	722	606	697	560	677				
Service Time	4.006	3.127	3.608	2.699	3.65	2.878	4.129	3.02				
HCM Lane V/C Ratio	0.108	0.129	0.154	0.211	0.116	0.195	0.07	0.041				
HCM Control Delay	9.8	8.9	9.7	9	9.4	9.1	9.6	8.2				
HCM Lane LOS	A	A	A	A	A	A	A	A				
HCM 95th-tile Q	0.4	0.4	0.5	0.8	0.4	0.7	0.2	0.1				

HCM Unsignalized Intersection Capacity Analysis
6: DSW Driveway/Site Entrance & Westview Road

04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	94	28	58	164	55	27	1	60	52	1	27
Future Volume (Veh/h)	25	94	28	58	164	55	27	1	60	52	1	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	102	30	63	178	60	29	1	65	57	1	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					257							
pX, platoon unblocked	0.99						0.99	0.99		0.99	0.99	0.99
vC, conflicting volume	238			132			534	535	117	570	520	208
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	223			132			523	523	117	559	508	192
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			96			93	100	93	85	100	97
cM capacity (veh/h)	1330			1453			421	425	935	384	433	839
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	159	301	95	87								
Volume Left	27	63	29	57								
Volume Right	30	60	65	29								
cSH	1330	1453	675	469								
Volume to Capacity	0.02	0.04	0.14	0.19								
Queue Length 95th (ft)	2	3	12	17								
Control Delay (s)	1.5	1.9	11.2	14.4								
Lane LOS	A	A	B	B								
Approach Delay (s)	1.5	1.9	11.2	14.4								
Approach LOS			B	B								
Intersection Summary												
Average Delay			4.9									
Intersection Capacity Utilization			37.5%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

7: Chester Street & Westview Road

04/25/2019


























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	95	117	48	41	248	51	435	267	679
v/c Ratio	0.51	0.48	0.34	0.28	0.16	0.39	0.73	0.16	0.33
Control Delay	59.4	27.5	57.9	55.6	0.2	61.3	51.2	25.8	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.4	27.5	57.9	55.6	0.2	61.3	51.2	25.8	3.0
Queue Length 50th (ft)	71	32	36	30	0	39	167	43	26
Queue Length 95th (ft)	122	88	74	66	0	81	210	110	116
Internal Link Dist (ft)		177		141			414		497
Turn Bay Length (ft)						150		225	
Base Capacity (vph)	309	353	191	201	1583	354	877	1680	2038
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.33	0.25	0.20	0.16	0.14	0.50	0.16	0.33

Intersection Summary

HCM Signalized Intersection Capacity Analysis
7: Chester Street & Westview Road

04/25/2019

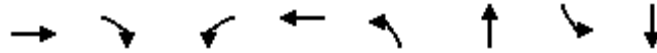
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	38	76	47	40	241	49	365	57	259	470	188
Future Volume (vph)	92	38	76	47	40	241	49	365	57	259	470	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	4.0	6.0	6.0		5.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		0.97	0.95	
Frt	1.00	0.90		1.00	1.00	0.85	1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1676		1770	1863	1583	1770	3467		3433	3388	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1676		1770	1863	1583	1770	3467		3433	3388	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	95	39	78	48	41	248	51	376	59	267	485	194
RTOR Reduction (vph)	0	65	0	0	0	0	0	12	0	0	23	0
Lane Group Flow (vph)	95	52	0	48	41	248	51	423	0	267	656	0
Turn Type	Split	NA		Split	NA	Free	Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						Free						
Actuated Green, G (s)	12.7	12.7		8.3	8.3	120.0	7.7	19.3		58.7	69.3	
Effective Green, g (s)	12.7	12.7		8.3	8.3	120.0	7.7	19.3		58.7	69.3	
Actuated g/C Ratio	0.11	0.11		0.07	0.07	1.00	0.06	0.16		0.49	0.58	
Clearance Time (s)	5.0	5.0		5.0	5.0		6.0	6.0		5.0	6.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.0	3.0		4.0	3.0	
Lane Grp Cap (vph)	187	177		122	128	1583	113	557		1679	1956	
v/s Ratio Prot	c0.05	0.03		c0.03	0.02		c0.03	c0.12		0.08	c0.19	
v/s Ratio Perm						0.16						
v/c Ratio	0.51	0.29		0.39	0.32	0.16	0.45	0.76		0.16	0.34	
Uniform Delay, d1	50.7	49.5		53.4	53.2	0.0	54.1	48.1		17.0	13.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.01	0.97		1.29	0.19	
Incremental Delay, d2	2.9	1.3		2.8	2.0	0.2	2.7	9.1		0.2	0.4	
Delay (s)	53.6	50.8		56.3	55.1	0.2	57.6	55.7		22.1	2.9	
Level of Service	D	D		E	E	A	E	E		C	A	
Approach Delay (s)		52.0			14.9			55.9			8.3	
Approach LOS		D			B			E			A	
Intersection Summary												
HCM 2000 Control Delay			25.8			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				22.0		
Intersection Capacity Utilization			49.1%			ICU Level of Service				A		
Analysis Period (min)			15									

c Critical Lane Group

Queues

8: S. Yosemite Street & Parkland Road

04/25/2019

























Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	148	171	66	123	224	529	62	534
v/c Ratio	0.67	0.50	0.48	0.58	0.37	0.18	0.12	0.21
Control Delay	64.1	11.7	63.5	28.2	12.5	16.3	6.1	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.1	11.7	63.5	28.2	12.5	16.3	6.1	7.8
Queue Length 50th (ft)	111	0	50	24	105	101	7	26
Queue Length 95th (ft)	172	61	94	83	173	140	m23	55
Internal Link Dist (ft)	116			330		519		654
Turn Bay Length (ft)			125		245		265	
Base Capacity (vph)	344	441	339	390	619	2971	708	2574
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.39	0.19	0.32	0.36	0.18	0.09	0.21

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
 8: S. Yosemite Street & Parkland Road

04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	38	157	61	29	84	206	440	47	57	366	125
Future Volume (vph)	98	38	157	61	29	84	206	440	47	57	366	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt		1.00	0.85	1.00	0.89		1.00	0.99		1.00	0.96	
Flt Protected		0.97	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1798	1583	1770	1656		1770	5012		1770	4891	
Flt Permitted		0.97	1.00	0.95	1.00		0.40	1.00		0.45	1.00	
Satd. Flow (perm)		1798	1583	1770	1656		751	5012		830	4891	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	107	41	171	66	32	91	224	478	51	62	398	136
RTOR Reduction (vph)	0	0	150	0	84	0	0	6	0	0	39	0
Lane Group Flow (vph)	0	148	21	66	39	0	224	523	0	62	495	0
Turn Type	Split	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases			4				6			2		
Actuated Green, G (s)		14.9	14.9	9.4	9.4		79.7	69.9		66.9	62.1	
Effective Green, g (s)		14.9	14.9	9.4	9.4		79.7	69.9		66.9	62.1	
Actuated g/C Ratio		0.12	0.12	0.08	0.08		0.66	0.58		0.56	0.52	
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)		2.5	2.5	2.5	2.5		1.5	3.0		1.5	3.0	
Lane Grp Cap (vph)		223	196	138	129		605	2919		500	2531	
v/s Ratio Prot		c0.08		c0.04	0.02		c0.04	0.10		0.00	0.10	
v/s Ratio Perm			0.01				c0.21			0.06		
v/c Ratio		0.66	0.11	0.48	0.30		0.37	0.18		0.12	0.20	
Uniform Delay, d1		50.2	46.7	53.0	52.2		8.0	11.7		12.2	15.5	
Progression Factor		1.00	1.00	1.00	1.00		1.26	1.29		0.61	0.51	
Incremental Delay, d2		6.5	0.2	1.9	1.0		0.1	0.1		0.0	0.2	
Delay (s)		56.7	46.8	54.8	53.2		10.2	15.2		7.5	8.1	
Level of Service		E	D	D	D		B	B		A	A	
Approach Delay (s)		51.4			53.8			13.7			8.0	
Approach LOS		D			D			B			A	
Intersection Summary												
HCM 2000 Control Delay			22.4				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			21.0		
Intersection Capacity Utilization			50.5%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group

Queues

9: S. Yosemite Street & Chester Street

04/25/2019















Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	504	133	614	427	80	549
v/c Ratio	0.79	0.45	0.26	0.36	0.13	0.15
Control Delay	72.9	65.2	9.6	1.9	9.6	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.9	65.2	9.6	1.9	9.6	8.2
Queue Length 50th (ft)	208	105	100	0	25	66
Queue Length 95th (ft)	269	174	148	40	52	91
Internal Link Dist (ft)	414		219			519
Turn Bay Length (ft)		160			245	
Base Capacity (vph)	1144	527	2335	1189	668	3695
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.25	0.26	0.36	0.12	0.15
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

9: S. Yosemite Street & Chester Street

04/25/2019

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	469	124	571	397	74	511
Future Volume (vph)	469	124	571	397	74	511
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.5	5.5	5.0	5.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1583	3539	1583	1770	5085
Flt Permitted	0.95	1.00	1.00	1.00	0.40	1.00
Satd. Flow (perm)	3433	1583	3539	1583	747	5085
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	504	133	614	427	80	549
RTOR Reduction (vph)	0	0	0	149	0	0
Lane Group Flow (vph)	504	133	614	278	80	549
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Actuated Green, G (s)	22.3	22.3	78.2	78.2	87.7	87.2
Effective Green, g (s)	22.3	22.3	78.2	78.2	87.7	87.2
Actuated g/C Ratio	0.19	0.19	0.65	0.65	0.73	0.73
Clearance Time (s)	5.0	5.0	5.5	5.5	5.0	5.5
Vehicle Extension (s)	2.0	2.0	3.0	3.0	1.5	3.0
Lane Grp Cap (vph)	637	294	2306	1031	580	3695
v/s Ratio Prot	c0.15		0.17		0.00	c0.11
v/s Ratio Perm		0.08		c0.18	0.10	
v/c Ratio	0.79	0.45	0.27	0.27	0.14	0.15
Uniform Delay, d1	46.6	43.4	8.8	8.8	6.0	5.0
Progression Factor	1.38	1.42	1.00	1.00	1.58	1.51
Incremental Delay, d2	6.0	0.4	0.3	0.6	0.0	0.1
Delay (s)	70.2	61.8	9.1	9.5	9.5	7.7
Level of Service	E	E	A	A	A	A
Approach Delay (s)	68.4		9.3			7.9
Approach LOS	E		A			A
Intersection Summary						
HCM 2000 Control Delay			25.2		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.38			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	15.5
Intersection Capacity Utilization			46.2%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Queues

1: S. Yosemite Street & E. County Line Road

04/25/2019




































Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	151	817	174	170	1843	118	244	202	94	99	422
v/c Ratio	0.61	0.28	0.18	0.64	0.62	0.12	0.76	0.52	0.55	0.69	0.81
Control Delay	73.6	16.2	2.9	66.1	20.3	7.4	69.1	60.0	66.9	86.3	40.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.6	16.2	2.9	66.1	20.3	7.4	69.1	60.0	66.9	86.3	40.9
Queue Length 50th (ft)	70	132	0	80	215	1	115	99	88	89	93
Queue Length 95th (ft)	106	191	39	119	436	m54	120	140	145	149	147
Internal Link Dist (ft)		465			710			451			207
Turn Bay Length (ft)	240			725			280				
Base Capacity (vph)	490	2944	989	367	2971	964	367	1011	452	189	1089
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.28	0.18	0.46	0.62	0.12	0.66	0.20	0.21	0.52	0.39

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
 1: S. Yosemite Street & E. County Line Road

04/25/2019







												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	 			 	
Traffic Volume (vph)	140	760	162	158	1714	110	227	188	87	92	176	217
Future Volume (vph)	140	760	162	158	1714	110	227	188	87	92	176	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92	0.92
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	1583	1770	3246	3246
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	1583	1770	3246	3246
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	151	817	174	170	1843	118	244	202	94	99	189	233
RTOR Reduction (vph)	0	0	73	0	0	39	0	0	0	0	205	0
Lane Group Flow (vph)	151	817	101	170	1843	79	244	202	94	99	217	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	NA
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	10.1	81.1	81.1	10.8	81.8	81.8	13.1	15.3	15.3	11.3	13.5	13.5
Effective Green, g (s)	10.1	81.1	81.1	10.8	81.8	81.8	13.1	15.3	15.3	11.3	13.5	13.5
Actuated g/C Ratio	0.07	0.58	0.58	0.08	0.58	0.58	0.09	0.11	0.11	0.08	0.10	0.10
Clearance Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.5	3.0	3.0	1.5	3.0	3.0	1.5	2.0	2.0	1.5	2.0	2.0
Lane Grp Cap (vph)	247	2945	917	264	2971	924	321	386	172	142	313	313
v/s Ratio Prot	0.04	0.16		c0.05	c0.36		c0.07	0.06		0.06	c0.07	
v/s Ratio Perm			0.06			0.05			0.06			
v/c Ratio	0.61	0.28	0.11	0.64	0.62	0.09	0.76	0.52	0.55	0.70	0.69	0.69
Uniform Delay, d1	63.0	14.8	13.2	62.7	19.0	12.7	61.9	58.9	59.1	62.7	61.2	61.2
Progression Factor	1.00	1.00	1.00	0.91	0.95	1.49	0.87	0.95	0.94	1.00	1.00	1.00
Incremental Delay, d2	3.1	0.2	0.2	3.3	0.8	0.1	9.1	0.6	1.9	11.4	5.3	5.3
Delay (s)	66.2	15.0	13.5	60.3	18.9	19.1	63.0	56.3	57.7	74.1	66.5	66.5
Level of Service	E	B	B	E	B	B	E	E	E	E	E	E
Approach Delay (s)		21.5			22.2			59.5			67.9	
Approach LOS		C			C			E			E	
Intersection Summary												
HCM 2000 Control Delay			32.2				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			21.5			
Intersection Capacity Utilization			73.5%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

2: Parkland Road & E. County Line Road

04/25/2019

										
Movement	EBT	EBR	WBL	WBT	NBL	NBR				
Lane Configurations	↑↑↑↑	↗		↑↑↑↑		↗				
Traffic Volume (veh/h)	865	75	0	1919	0	77				
Future Volume (Veh/h)	865	75	0	1919	0	77				
Sign Control	Free			Free		Stop				
Grade	0%			0%		0%				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				
Hourly flow rate (vph)	940	82	0	2086	0	84				
Pedestrians										
Lane Width (ft)										
Walking Speed (ft/s)										
Percent Blockage										
Right turn flare (veh)										
Median type	None			None						
Median storage (veh)										
Upstream signal (ft)	790			791						
pX, platoon unblocked			0.93		0.85		0.93			
vC, conflicting volume			940		1462		313			
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol			684		102		12			
tC, single (s)			4.1		6.8		6.9			
tC, 2 stage (s)										
tF (s)			2.2		3.5		3.3			
p0 queue free %			100		100		92			
cM capacity (veh/h)			845		757		994			
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	
Volume Total	313	313	313	82	522	522	522	522	84	
Volume Left	0	0	0	0	0	0	0	0	0	
Volume Right	0	0	0	82	0	0	0	0	84	
cSH	1700	1700	1700	1700	1700	1700	1700	1700	994	
Volume to Capacity	0.18	0.18	0.18	0.05	0.31	0.31	0.31	0.31	0.08	
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	7	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0	
Lane LOS										A
Approach Delay (s)	0.0				0.0				9.0	
Approach LOS										A
Intersection Summary										
Average Delay			0.2							
Intersection Capacity Utilization			31.1%		ICU Level of Service				A	
Analysis Period (min)			15							

Queues

3: Chester Street/S. Chester Street & E. County Line Road

04/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	203	706	70	372	1507	122	225	292	536	605	492
v/c Ratio	0.65	0.42	0.12	0.80	0.63	0.56	0.30	0.86	0.98	0.55	0.65
Control Delay	95.3	30.4	1.3	72.1	37.9	66.9	42.2	69.4	91.9	42.1	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	95.3	30.4	1.3	72.1	37.9	66.9	42.2	69.4	91.9	42.1	13.2
Queue Length 50th (ft)	101	193	1	171	312	59	78	202	~283	247	77
Queue Length 95th (ft)	144	259	7	223	413	93	103	261	#400	288	191
Internal Link Dist (ft)		711			529		497			217	
Turn Bay Length (ft)	730			720		200			165		155
Base Capacity (vph)	490	1678	590	539	2381	490	1011	452	547	1098	756
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.42	0.12	0.69	0.63	0.25	0.22	0.65	0.98	0.55	0.65

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.


































Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 3: Chester Street/S. Chester Street & E. County Line Road





















04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	 		 	 	
Traffic Volume (vph)	195	678	67	357	1324	123	117	216	280	515	581	472
Future Volume (vph)	195	678	67	357	1324	123	117	216	280	515	581	472
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.5	6.5	5.0	6.5		5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6326		3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6326		3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	203	706	70	372	1379	128	122	225	292	536	605	492
RTOR Reduction (vph)	0	0	47	0	9	0	0	0	0	0	0	265
Lane Group Flow (vph)	203	706	23	372	1498	0	122	225	292	536	605	227
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	12.6	46.2	46.2	18.9	52.5		8.9	30.1	30.1	22.3	43.5	43.5
Effective Green, g (s)	12.6	46.2	46.2	18.9	52.5		8.9	30.1	30.1	22.3	43.5	43.5
Actuated g/C Ratio	0.09	0.33	0.33	0.13	0.38		0.06	0.22	0.22	0.16	0.31	0.31
Clearance Time (s)	5.0	6.5	6.5	5.0	6.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		1.5	1.5	1.5	2.0	1.5	1.5
Lane Grp Cap (vph)	308	1678	522	463	2372		218	760	340	546	1099	491
v/s Ratio Prot	0.06	0.14		c0.11	c0.24		0.04	0.06		c0.16	0.17	
v/s Ratio Perm			0.01						c0.18			0.14
v/c Ratio	0.66	0.42	0.04	0.80	0.63		0.56	0.30	0.86	0.98	0.55	0.46
Uniform Delay, d1	61.6	36.5	31.9	58.7	35.8		63.6	46.1	52.9	58.6	40.1	38.8
Progression Factor	1.39	0.78	0.34	1.00	1.00		0.91	0.92	0.90	1.00	1.00	1.00
Incremental Delay, d2	3.8	0.8	0.2	9.2	1.3		1.7	0.1	17.5	33.6	0.3	0.3
Delay (s)	89.6	29.3	10.9	68.0	37.1		59.5	42.6	64.9	92.2	40.5	39.1
Level of Service	F	C	B	E	D		E	D	E	F	D	D
Approach Delay (s)		40.5			43.2			56.0			57.0	
Approach LOS		D			D			E			E	
Intersection Summary												
HCM 2000 Control Delay			48.7			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)		22.5				
Intersection Capacity Utilization			69.2%			ICU Level of Service		C				
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 4: Parkland Road & Westview Road

04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	36	24	61	77	45	24	35	23	30	33	8	17
Future Volume (vph)	36	24	61	77	45	24	35	23	30	33	8	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	39	26	66	84	49	26	38	25	33	36	9	18
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total (vph)	39	92	84	75	38	58	36	27				
Volume Left (vph)	39	0	84	0	38	0	36	0				
Volume Right (vph)	0	66	0	26	0	33	0	18				
Hadj (s)	0.53	-0.47	0.53	-0.21	0.53	-0.36	0.53	-0.43				
Departure Headway (s)	5.6	4.6	5.6	4.8	5.8	4.9	5.8	4.9				
Degree Utilization, x	0.06	0.12	0.13	0.10	0.06	0.08	0.06	0.04				
Capacity (veh/h)	624	751	623	718	590	693	583	696				
Control Delay (s)	7.8	7.0	8.2	7.2	8.0	7.1	8.0	6.9				
Approach Delay (s)	7.2		7.7		7.5		7.5					
Approach LOS	A		A		A		A					
Intersection Summary												
Delay			7.5									
Level of Service			A									
Intersection Capacity Utilization			26.2%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM 2010 AWSC

















4: Parkland Road & Westview Road

04/25/2019

Intersection												
Intersection Delay, s/veh	8.4											
Intersection LOS	A											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	36	24	61	77	45	24	35	23	30	33	8	17
Future Vol, veh/h	36	24	61	77	45	24	35	23	30	33	8	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	26	66	84	49	26	38	25	33	36	9	18
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	2			2			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			2			2		
HCM Control Delay	8.2			8.6			8.4			8.5		
HCM LOS	A			A			A			A		
Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2				
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%				
Vol Thru, %	0%	43%	0%	28%	0%	65%	0%	32%				
Vol Right, %	0%	57%	0%	72%	0%	35%	0%	68%				
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop				
Traffic Vol by Lane	35	53	36	85	77	69	33	25				
LT Vol	35	0	36	0	77	0	33	0				
Through Vol	0	23	0	24	0	45	0	8				
RT Vol	0	30	0	61	0	24	0	17				
Lane Flow Rate	38	58	39	92	84	75	36	27				
Geometry Grp	7	7	7	7	7	7	7	7				
Degree of Util (X)	0.062	0.079	0.061	0.118	0.13	0.101	0.058	0.037				
Departure Headway (Hd)	5.823	4.922	5.609	4.602	5.574	4.827	5.857	4.876				
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
Cap	615	728	639	779	644	743	611	733				
Service Time	3.556	2.655	3.34	2.333	3.302	2.555	3.594	2.612				
HCM Lane V/C Ratio	0.062	0.08	0.061	0.118	0.13	0.101	0.059	0.037				
HCM Control Delay	8.9	8.1	8.7	8	9.1	8.1	9	7.8				
HCM Lane LOS	A	A	A	A	A	A	A	A				
HCM 95th-tile Q	0.2	0.3	0.2	0.4	0.4	0.3	0.2	0.1				

HCM Unsignalized Intersection Capacity Analysis
6: DSW Driveway/Site Entrance & Westview Road

04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	59	14	43	113	16	23	0	49	41	0	21
Future Volume (Veh/h)	22	59	14	43	113	16	23	0	49	41	0	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	64	15	47	123	17	25	0	53	45	0	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					257							
pX, platoon unblocked												
vC, conflicting volume	140			79			368	354	72	398	352	132
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	140			79			368	354	72	398	352	132
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			97			95	100	95	91	100	97
cM capacity (veh/h)	1443			1519			553	545	991	513	545	918
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	103	187	78	68								
Volume Left	24	47	25	45								
Volume Right	15	17	53	23								
cSH	1443	1519	790	603								
Volume to Capacity	0.02	0.03	0.10	0.11								
Queue Length 95th (ft)	1	2	8	9								
Control Delay (s)	1.9	2.1	10.1	11.7								
Lane LOS	A	A	B	B								
Approach Delay (s)	1.9	2.1	10.1	11.7								
Approach LOS			B	B								
Intersection Summary												
Average Delay			4.9									
Intersection Capacity Utilization			26.3%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

7: Chester Street & Westview Road

04/25/2019


























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	83	75	35	30	230	28	377	244	826
v/c Ratio	0.37	0.30	0.17	0.14	0.15	0.17	0.53	0.22	0.46
Control Delay	32.6	18.8	29.5	28.9	0.2	27.3	29.1	24.3	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	18.8	29.5	28.9	0.2	27.3	29.1	24.3	12.2
Queue Length 50th (ft)	33	14	14	12	0	11	78	89	184
Queue Length 95th (ft)	71	48	38	34	0	24	111	102	308
Internal Link Dist (ft)		177		141			414		497
Turn Bay Length (ft)						150		225	
Base Capacity (vph)	252	279	379	399	1583	227	709	1123	1808
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.27	0.09	0.08	0.15	0.12	0.53	0.22	0.46

Intersection Summary

HCM Signalized Intersection Capacity Analysis

7: Chester Street & Westview Road

04/25/2019

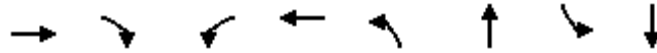
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	33	38	33	28	216	26	319	36	229	658	118
Future Volume (vph)	78	33	38	33	28	216	26	319	36	229	658	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	4.0	6.0	6.0		5.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		0.97	0.95	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1714		1770	1863	1583	1770	3486		3433	3458	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1714		1770	1863	1583	1770	3486		3433	3458	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	83	35	40	35	30	230	28	339	38	244	700	126
RTOR Reduction (vph)	0	35	0	0	0	0	0	12	0	0	15	0
Lane Group Flow (vph)	83	40	0	35	30	230	28	365	0	244	811	0
Turn Type	Split	NA		Split	NA	Free	Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						Free						
Actuated Green, G (s)	8.9	8.9		5.2	5.2	70.0	3.1	12.0		22.9	30.8	
Effective Green, g (s)	8.9	8.9		5.2	5.2	70.0	3.1	12.0		22.9	30.8	
Actuated g/C Ratio	0.13	0.13		0.07	0.07	1.00	0.04	0.17		0.33	0.44	
Clearance Time (s)	5.0	5.0		5.0	5.0		6.0	6.0		5.0	6.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.0	3.0		4.0	3.0	
Lane Grp Cap (vph)	225	217		131	138	1583	78	597		1123	1521	
v/s Ratio Prot	c0.05	0.02		0.02	0.02		0.02	0.10		c0.07	c0.23	
v/s Ratio Perm						c0.15						
v/c Ratio	0.37	0.18		0.27	0.22	0.15	0.36	0.61		0.22	0.53	
Uniform Delay, d1	28.0	27.3		30.6	30.5	0.0	32.5	26.8		17.1	14.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.88	1.09		1.25	0.83	
Incremental Delay, d2	1.4	0.6		1.5	1.1	0.2	2.7	4.4		0.4	1.1	
Delay (s)	29.4	27.9		32.1	31.6	0.2	31.4	33.7		21.6	13.1	
Level of Service	C	C		C	C	A	C	C		C	B	
Approach Delay (s)		28.7			7.2			33.6			15.0	
Approach LOS		C			A			C			B	
Intersection Summary												
HCM 2000 Control Delay			18.8			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			70.0			Sum of lost time (s)				22.0		
Intersection Capacity Utilization			51.3%			ICU Level of Service				A		
Analysis Period (min)			15									

c Critical Lane Group

Queues

8: S. Yosemite Street & Parkland Road

04/25/2019

























Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	86	117	50	113	126	525	41	496
v/c Ratio	0.41	0.32	0.28	0.45	0.22	0.19	0.08	0.20
Control Delay	33.7	2.9	32.2	15.1	3.8	4.3	9.1	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.7	2.9	32.2	15.1	3.8	4.3	9.1	11.8
Queue Length 50th (ft)	35	0	20	7	9	0	4	22
Queue Length 95th (ft)	71	7	48	48	19	7	33	103
Internal Link Dist (ft)	116			330		519		654
Turn Bay Length (ft)			125		245		265	
Base Capacity (vph)	385	498	379	423	569	2715	525	2456
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.23	0.13	0.27	0.22	0.19	0.08	0.20
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

8: S. Yosemite Street & Parkland Road

04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	25	108	46	16	88	116	456	27	38	406	51
Future Volume (vph)	54	25	108	46	16	88	116	456	27	38	406	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt		1.00	0.85	1.00	0.87		1.00	0.99		1.00	0.98	
Flt Protected		0.97	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1801	1583	1770	1625		1770	5043		1770	5001	
Flt Permitted		0.97	1.00	0.95	1.00		0.43	1.00		0.45	1.00	
Satd. Flow (perm)		1801	1583	1770	1625		794	5043		833	5001	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	27	117	50	17	96	126	496	29	41	441	55
RTOR Reduction (vph)	0	0	105	0	88	0	0	6	0	0	16	0
Lane Group Flow (vph)	0	86	12	50	25	0	126	519	0	41	480	0
Turn Type	Split	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases			4				6			2		
Actuated Green, G (s)		7.2	7.2	6.1	6.1		38.1	32.4		33.3	30.0	
Effective Green, g (s)		7.2	7.2	6.1	6.1		38.1	32.4		33.3	30.0	
Actuated g/C Ratio		0.10	0.10	0.09	0.09		0.54	0.46		0.48	0.43	
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)		2.5	2.5	2.5	2.5		1.5	3.0		1.5	3.0	
Lane Grp Cap (vph)		185	162	154	141		511	2334		440	2143	
v/s Ratio Prot		c0.05		c0.03	0.02		c0.02	0.10		0.00	0.10	
v/s Ratio Perm			0.01				c0.11			0.04		
v/c Ratio		0.46	0.07	0.32	0.18		0.25	0.22		0.09	0.22	
Uniform Delay, d1		29.6	28.4	30.0	29.6		7.9	11.3		9.8	12.6	
Progression Factor		1.00	1.00	1.00	1.00		0.38	0.34		1.02	0.86	
Incremental Delay, d2		1.3	0.1	0.9	0.4		0.1	0.2		0.0	0.2	
Delay (s)		30.9	28.5	30.9	30.1		3.1	4.1		10.1	11.1	
Level of Service		C	C	C	C		A	A		B	B	
Approach Delay (s)		29.5			30.3			3.9			11.0	
Approach LOS		C			C			A			B	
Intersection Summary												
HCM 2000 Control Delay			12.5				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.30									
Actuated Cycle Length (s)			70.0				Sum of lost time (s)			21.0		
Intersection Capacity Utilization			42.4%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group

Queues

9: S. Yosemite Street & Chester Street

04/25/2019















Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	700	92	559	359	55	554
v/c Ratio	0.79	0.23	0.32	0.38	0.34	0.18
Control Delay	44.1	34.4	13.5	3.2	27.8	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.1	34.4	13.5	3.2	27.8	7.7
Queue Length 50th (ft)	171	41	83	0	28	62
Queue Length 95th (ft)	206	74	132	49	26	20
Internal Link Dist (ft)	414		219			519
Turn Bay Length (ft)		160			245	
Base Capacity (vph)	911	420	1875	1007	161	3130
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.22	0.30	0.36	0.34	0.18
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

9: S. Yosemite Street & Chester Street

04/25/2019

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	644	85	514	330	51	510
Future Volume (vph)	644	85	514	330	51	510
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.5	5.5	5.0	5.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1583	3539	1583	1770	5085
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1583	3539	1583	1770	5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	700	92	559	359	55	554
RTOR Reduction (vph)	0	0	0	194	0	0
Lane Group Flow (vph)	700	92	559	165	55	554
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	18.0	18.0	32.1	32.1	4.4	41.5
Effective Green, g (s)	18.0	18.0	32.1	32.1	4.4	41.5
Actuated g/C Ratio	0.26	0.26	0.46	0.46	0.06	0.59
Clearance Time (s)	5.0	5.0	5.5	5.5	5.0	5.5
Vehicle Extension (s)	2.0	2.0	3.0	3.0	1.5	3.0
Lane Grp Cap (vph)	882	407	1622	725	111	3014
v/s Ratio Prot	c0.20		c0.16		c0.03	0.11
v/s Ratio Perm		0.06		0.10		
v/c Ratio	0.79	0.23	0.34	0.23	0.50	0.18
Uniform Delay, d1	24.3	20.5	12.2	11.5	31.7	6.5
Progression Factor	1.55	1.66	1.00	1.00	0.76	1.12
Incremental Delay, d2	4.3	0.1	0.6	0.7	1.3	0.1
Delay (s)	41.9	34.0	12.8	12.2	25.3	7.4
Level of Service	D	C	B	B	C	A
Approach Delay (s)	40.9		12.5			9.0
Approach LOS	D		B			A
Intersection Summary						
HCM 2000 Control Delay			21.3	HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.50			
Actuated Cycle Length (s)			70.0	Sum of lost time (s)		15.5
Intersection Capacity Utilization			49.7%	ICU Level of Service		A
Analysis Period (min)			15			
c Critical Lane Group						

Queues

1: S. Yosemite Street & E. County Line Road

04/25/2019




































Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	204	1223	241	235	1166	113	213	284	134	131	269
v/c Ratio	0.65	0.49	0.27	0.67	0.46	0.13	0.68	0.64	0.68	0.72	0.49
Control Delay	62.3	22.9	3.7	48.7	19.2	6.7	67.9	75.7	86.3	73.8	28.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.3	22.9	3.7	48.7	19.2	6.7	67.9	75.7	86.3	73.8	28.6
Queue Length 50th (ft)	79	226	0	63	285	31	87	123	111	100	56
Queue Length 95th (ft)	117	329	52	96	360	81	121	163	173	163	92
Internal Link Dist (ft)		465			710			451			207
Turn Bay Length (ft)	240			725			280				
Base Capacity (vph)	341	2494	899	364	2548	849	371	1150	514	236	1234
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.49	0.27	0.65	0.46	0.13	0.57	0.25	0.26	0.56	0.22

Intersection Summary

HCM Signalized Intersection Capacity Analysis

1: S. Yosemite Street & E. County Line Road

04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	 			 	
Traffic Volume (vph)	194	1162	229	223	1108	107	202	270	127	124	144	111
Future Volume (vph)	194	1162	229	223	1108	107	202	270	127	124	144	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	0.93
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	1583	1770	3308	3308
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	1583	1770	3308	3308
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	204	1223	241	235	1166	113	213	284	134	131	152	117
RTOR Reduction (vph)	0	0	123	0	0	56	0	0	0	0	101	0
Lane Group Flow (vph)	204	1223	118	235	1166	57	213	284	134	131	168	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	NA
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	11.0	58.9	58.9	12.2	60.1	60.1	11.0	15.1	15.1	12.3	16.4	16.4
Effective Green, g (s)	11.0	58.9	58.9	12.2	60.1	60.1	11.0	15.1	15.1	12.3	16.4	16.4
Actuated g/C Ratio	0.09	0.49	0.49	0.10	0.50	0.50	0.09	0.13	0.13	0.10	0.14	0.14
Clearance Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.5	3.0	3.0	1.5	3.0	3.0	1.5	2.0	2.0	1.5	2.0	2.0
Lane Grp Cap (vph)	314	2495	776	349	2546	792	314	445	199	181	452	452
v/s Ratio Prot	0.06	c0.24		c0.07	0.23		0.06	0.08		c0.07	0.05	0.05
v/s Ratio Perm			0.07			0.04			c0.08			
v/c Ratio	0.65	0.49	0.15	0.67	0.46	0.07	0.68	0.64	0.67	0.72	0.37	0.37
Uniform Delay, d1	52.6	20.5	16.8	52.0	19.4	15.5	52.8	49.9	50.1	52.2	47.1	47.1
Progression Factor	1.00	1.00	1.00	0.78	0.89	1.55	1.08	1.40	1.41	1.00	1.00	1.00
Incremental Delay, d2	3.5	0.7	0.4	3.5	0.5	0.2	4.4	2.2	6.7	11.5	0.2	0.2
Delay (s)	56.1	21.2	17.2	43.9	17.8	24.2	61.5	72.0	77.3	63.7	47.3	47.3
Level of Service	E	C	B	D	B	C	E	E	E	E	D	D
Approach Delay (s)		24.9			22.3			69.6			52.7	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM 2000 Control Delay			33.3				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			21.5		
Intersection Capacity Utilization			61.1%				ICU Level of Service			B		
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 2: Parkland Road & E. County Line Road

04/25/2019



Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations	↑↑↑↑	↗		↑↑↑↑		↗			
Traffic Volume (veh/h)	1320	123	0	1511	0	157			
Future Volume (Veh/h)	1320	123	0	1511	0	157			
Sign Control	Free			Free	Stop				
Grade	0%			0%	0%				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97			
Hourly flow rate (vph)	1361	127	0	1558	0	162			
Pedestrians									
Lane Width (ft)									
Walking Speed (ft/s)									
Percent Blockage									
Right turn flare (veh)									
Median type	None			None					
Median storage (veh)									
Upstream signal (ft)	790			791					
pX, platoon unblocked				0.85	0.92	0.85			
vC, conflicting volume				1361	1750	454			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol				812	322	0			
tC, single (s)				4.1	6.8	6.9			
tC, 2 stage (s)									
tF (s)				2.2	3.5	3.3			
p0 queue free %				100	100	82			
cM capacity (veh/h)				690	593	923			
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	454	454	454	127	390	390	390	390	162
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	127	0	0	0	0	162
cSH	1700	1700	1700	1700	1700	1700	1700	1700	923
Volume to Capacity	0.27	0.27	0.27	0.07	0.23	0.23	0.23	0.23	0.18
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	16
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7
Lane LOS									A
Approach Delay (s)	0.0				0.0				9.7
Approach LOS									A
Intersection Summary									
Average Delay				0.5					
Intersection Capacity Utilization				41.9%	ICU Level of Service				A
Analysis Period (min)				15					

Queues

3: Chester Street/S. Chester Street & E. County Line Road

04/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	316	1055	94	478	1266	101	316	302	439	373	332
v/c Ratio	0.73	0.82	0.18	0.66	0.60	0.55	0.39	0.84	1.06	0.36	0.49
Control Delay	47.3	50.9	9.3	50.1	34.3	45.6	42.5	66.5	109.8	33.6	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.3	50.9	9.3	50.1	34.3	45.6	42.5	66.5	109.8	33.6	7.5
Queue Length 50th (ft)	125	302	14	175	222	39	128	244	~210	123	20
Queue Length 95th (ft)	172	362	54	#313	301	66	171	331	#314	148	85
Internal Link Dist (ft)		711			529		497			217	
Turn Bay Length (ft)	730			720		200			165		155
Base Capacity (vph)	447	1335	536	720	2125	200	1179	527	416	1356	790
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.79	0.18	0.66	0.60	0.51	0.27	0.57	1.06	0.28	0.42

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.


































Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 3: Chester Street/S. Chester Street & E. County Line Road

04/25/2019





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	 		 	 	
Traffic Volume (vph)	307	1023	91	464	993	235	98	307	293	426	362	322
Future Volume (vph)	307	1023	91	464	993	235	98	307	293	426	362	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.5	6.5	5.0	6.5		5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6224		3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6224		3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	316	1055	94	478	1024	242	101	316	302	439	373	332
RTOR Reduction (vph)	0	0	70	0	32	0	0	0	0	0	0	210
Lane Group Flow (vph)	316	1055	24	478	1234	0	101	316	302	439	373	122
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	15.1	30.3	30.3	25.2	40.4		6.5	27.4	27.4	14.6	35.5	35.5
Effective Green, g (s)	15.1	30.3	30.3	25.2	40.4		6.5	27.4	27.4	14.6	35.5	35.5
Actuated g/C Ratio	0.13	0.25	0.25	0.21	0.34		0.05	0.23	0.23	0.12	0.30	0.30
Clearance Time (s)	5.0	6.5	6.5	5.0	6.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		1.5	1.5	1.5	2.0	1.5	1.5
Lane Grp Cap (vph)	431	1283	399	720	2095		185	808	361	417	1046	468
v/s Ratio Prot	0.09	c0.21		c0.14	0.20		0.03	0.09		c0.13	0.11	
v/s Ratio Perm			0.01						c0.19			0.08
v/c Ratio	0.73	0.82	0.06	0.66	0.59		0.55	0.39	0.84	1.05	0.36	0.26
Uniform Delay, d1	50.5	42.3	34.0	43.5	32.9		55.3	39.2	44.2	52.7	33.3	32.2
Progression Factor	0.75	1.07	1.00	1.00	1.00		0.63	1.08	1.10	1.00	1.00	1.00
Incremental Delay, d2	5.1	5.6	0.3	1.8	1.2		1.7	0.1	14.1	58.6	0.1	0.1
Delay (s)	42.8	50.9	34.3	45.3	34.2		36.6	42.6	62.5	111.3	33.3	32.3
Level of Service	D	D	C	D	C		D	D	E	F	C	C
Approach Delay (s)		48.1			37.2			50.1			63.0	
Approach LOS		D			D			D			E	
Intersection Summary												
HCM 2000 Control Delay			48.0			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			22.5			
Intersection Capacity Utilization			72.4%			ICU Level of Service			C			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

4: Parkland Road & Westview Road

04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	90	62	84	67	81	50	60	39	44	37	4	23
Future Volume (vph)	90	62	84	67	81	50	60	39	44	37	4	23
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	94	65	88	70	84	52	63	41	46	39	4	24
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total (vph)	94	153	70	136	63	87	39	28				
Volume Left (vph)	94	0	70	0	63	0	39	0				
Volume Right (vph)	0	88	0	52	0	46	0	24				
Hadj (s)	0.53	-0.37	0.53	-0.23	0.53	-0.34	0.53	-0.57				
Departure Headway (s)	5.8	4.9	5.9	5.1	6.2	5.3	6.3	5.2				
Degree Utilization, x	0.15	0.21	0.11	0.19	0.11	0.13	0.07	0.04				
Capacity (veh/h)	587	698	584	673	546	630	531	637				
Control Delay (s)	8.7	8.0	8.4	8.1	8.8	7.9	8.6	7.2				
Approach Delay (s)	8.3		8.2		8.3		8.0					
Approach LOS	A		A		A		A					
Intersection Summary												
Delay			8.2									
Level of Service			A									
Intersection Capacity Utilization			32.3%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM 2010 AWSC

















4: Parkland Road & Westview Road

04/25/2019

Intersection												
Intersection Delay, s/veh	9.2											
Intersection LOS	A											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷		↶	↷	
Traffic Vol, veh/h	90	62	84	67	81	50	60	39	44	37	4	23
Future Vol, veh/h	90	62	84	67	81	50	60	39	44	37	4	23
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	94	65	88	70	84	52	63	41	46	39	4	24
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	2			2			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			2			2		
HCM Control Delay	9.3			9.2			9.3			9		
HCM LOS	A			A			A			A		
Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2				
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%				
Vol Thru, %	0%	47%	0%	42%	0%	62%	0%	15%				
Vol Right, %	0%	53%	0%	58%	0%	38%	0%	85%				
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop				
Traffic Vol by Lane	60	83	90	146	67	131	37	27				
LT Vol	60	0	90	0	67	0	37	0				
Through Vol	0	39	0	62	0	81	0	4				
RT Vol	0	44	0	84	0	50	0	23				
Lane Flow Rate	62	86	94	152	70	136	39	28				
Geometry Grp	7	7	7	7	7	7	7	7				
Degree of Util (X)	0.108	0.128	0.152	0.209	0.114	0.194	0.068	0.041				
Departure Headway (Hd)	6.229	5.35	5.845	4.936	5.885	5.112	6.342	5.235				
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
Cap	572	665	610	722	606	697	560	677				
Service Time	4.006	3.127	3.608	2.699	3.65	2.878	4.129	3.02				
HCM Lane V/C Ratio	0.108	0.129	0.154	0.211	0.116	0.195	0.07	0.041				
HCM Control Delay	9.8	8.9	9.7	9	9.4	9.1	9.6	8.2				
HCM Lane LOS	A	A	A	A	A	A	A	A				
HCM 95th-tile Q	0.4	0.4	0.5	0.8	0.4	0.7	0.2	0.1				

HCM Unsignalized Intersection Capacity Analysis
6: DSW Driveway/Site Entrance & Westview Road

04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	94	28	58	164	55	27	1	60	52	1	27
Future Volume (Veh/h)	25	94	28	58	164	55	27	1	60	52	1	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	102	30	63	178	60	29	1	65	57	1	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					257							
pX, platoon unblocked	0.99						0.99	0.99		0.99	0.99	0.99
vC, conflicting volume	238			132			534	535	117	570	520	208
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	223			132			523	523	117	559	508	192
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			96			93	100	93	85	100	97
cM capacity (veh/h)	1330			1453			421	425	935	384	433	839
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	159	301	95	87								
Volume Left	27	63	29	57								
Volume Right	30	60	65	29								
cSH	1330	1453	675	469								
Volume to Capacity	0.02	0.04	0.14	0.19								
Queue Length 95th (ft)	2	3	12	17								
Control Delay (s)	1.5	1.9	11.2	14.4								
Lane LOS	A	A	B	B								
Approach Delay (s)	1.5	1.9	11.2	14.4								
Approach LOS			B	B								
Intersection Summary												
Average Delay			4.9									
Intersection Capacity Utilization			37.5%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

7: Chester Street & Westview Road
























04/25/2019



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	95	117	48	41	248	51	435	267	679
v/c Ratio	0.51	0.48	0.34	0.28	0.16	0.39	0.73	0.16	0.33
Control Delay	59.4	27.5	57.9	55.6	0.2	59.8	51.3	26.0	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.4	27.5	57.9	55.6	0.2	59.8	51.3	26.0	2.6
Queue Length 50th (ft)	71	32	36	30	0	38	167	44	1
Queue Length 95th (ft)	122	88	74	66	0	81	207	110	115
Internal Link Dist (ft)		177		141			414		497
Turn Bay Length (ft)						150		225	
Base Capacity (vph)	309	353	191	201	1583	354	877	1680	2038
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.33	0.25	0.20	0.16	0.14	0.50	0.16	0.33
Intersection Summary									

HCM Signalized Intersection Capacity Analysis
7: Chester Street & Westview Road

04/25/2019

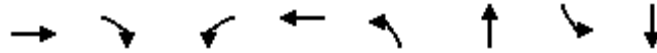
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	38	76	47	40	241	49	365	57	259	470	188
Future Volume (vph)	92	38	76	47	40	241	49	365	57	259	470	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	4.0	6.0	6.0		5.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		0.97	0.95	
Frt	1.00	0.90		1.00	1.00	0.85	1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1676		1770	1863	1583	1770	3467		3433	3388	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1676		1770	1863	1583	1770	3467		3433	3388	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	95	39	78	48	41	248	51	376	59	267	485	194
RTOR Reduction (vph)	0	65	0	0	0	0	0	12	0	0	23	0
Lane Group Flow (vph)	95	52	0	48	41	248	51	423	0	267	656	0
Turn Type	Split	NA		Split	NA	Free	Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						Free						
Actuated Green, G (s)	12.7	12.7		8.3	8.3	120.0	7.7	19.3		58.7	69.3	
Effective Green, g (s)	12.7	12.7		8.3	8.3	120.0	7.7	19.3		58.7	69.3	
Actuated g/C Ratio	0.11	0.11		0.07	0.07	1.00	0.06	0.16		0.49	0.58	
Clearance Time (s)	5.0	5.0		5.0	5.0		6.0	6.0		5.0	6.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.0	3.0		4.0	3.0	
Lane Grp Cap (vph)	187	177		122	128	1583	113	557		1679	1956	
v/s Ratio Prot	c0.05	0.03		c0.03	0.02		c0.03	c0.12		0.08	c0.19	
v/s Ratio Perm						0.16						
v/c Ratio	0.51	0.29		0.39	0.32	0.16	0.45	0.76		0.16	0.34	
Uniform Delay, d1	50.7	49.5		53.4	53.2	0.0	54.1	48.1		17.0	13.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.98	0.97		1.30	0.16	
Incremental Delay, d2	2.9	1.3		2.8	2.0	0.2	2.7	9.1		0.2	0.4	
Delay (s)	53.6	50.8		56.3	55.1	0.2	56.0	55.7		22.2	2.5	
Level of Service	D	D		E	E	A	E	E		C	A	
Approach Delay (s)		52.0			14.9			55.7			8.1	
Approach LOS		D			B			E			A	
Intersection Summary												
HCM 2000 Control Delay			25.6			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				22.0		
Intersection Capacity Utilization			49.1%			ICU Level of Service				A		
Analysis Period (min)			15									

c Critical Lane Group

Queues

8: S. Yosemite Street & Parkland Road

04/25/2019



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	148	171	66	123	224	635	62	621
v/c Ratio	0.67	0.50	0.48	0.58	0.40	0.21	0.13	0.24
Control Delay	64.1	11.7	63.5	28.2	10.3	14.2	6.5	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.1	11.7	63.5	28.2	10.3	14.2	6.5	8.8
Queue Length 50th (ft)	111	0	50	24	96	117	8	37
Queue Length 95th (ft)	172	61	94	83	139	161	m24	68
Internal Link Dist (ft)	116			330		519		654
Turn Bay Length (ft)			125		245		265	
Base Capacity (vph)	344	441	339	390	574	2976	668	2578
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.39	0.19	0.32	0.39	0.21	0.09	0.24

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

8: S. Yosemite Street & Parkland Road

04/25/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	38	157	61	29	84	206	537	47	57	446	125
Future Volume (vph)	98	38	157	61	29	84	206	537	47	57	446	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt		1.00	0.85	1.00	0.89		1.00	0.99		1.00	0.97	
Flt Protected		0.97	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1798	1583	1770	1656		1770	5024		1770	4918	
Flt Permitted		0.97	1.00	0.95	1.00		0.36	1.00		0.40	1.00	
Satd. Flow (perm)		1798	1583	1770	1656		672	5024		745	4918	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	107	41	171	66	32	91	224	584	51	62	485	136
RTOR Reduction (vph)	0	0	150	0	84	0	0	5	0	0	32	0
Lane Group Flow (vph)	0	148	21	66	39	0	224	630	0	62	589	0
Turn Type	Split	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases			4				6			2		
Actuated Green, G (s)		14.9	14.9	9.4	9.4		79.7	69.9		66.9	62.1	
Effective Green, g (s)		14.9	14.9	9.4	9.4		79.7	69.9		66.9	62.1	
Actuated g/C Ratio		0.12	0.12	0.08	0.08		0.66	0.58		0.56	0.52	
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)		2.5	2.5	2.5	2.5		1.5	3.0		1.5	3.0	
Lane Grp Cap (vph)		223	196	138	129		561	2926		456	2545	
v/s Ratio Prot		c0.08		c0.04	0.02		c0.04	0.13		0.01	0.12	
v/s Ratio Perm			0.01				c0.22			0.07		
v/c Ratio		0.66	0.11	0.48	0.30		0.40	0.22		0.14	0.23	
Uniform Delay, d1		50.2	46.7	53.0	52.2		8.1	12.0		12.2	15.9	
Progression Factor		1.00	1.00	1.00	1.00		0.96	1.09		0.64	0.54	
Incremental Delay, d2		6.5	0.2	1.9	1.0		0.2	0.2		0.0	0.2	
Delay (s)		56.7	46.8	54.8	53.2		8.0	13.2		7.8	8.8	
Level of Service		E	D	D	D		A	B		A	A	
Approach Delay (s)		51.4			53.8			11.8			8.7	
Approach LOS		D			D			B			A	
Intersection Summary												
HCM 2000 Control Delay			20.8				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			21.0		
Intersection Capacity Utilization			50.5%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group

Queues

9: S. Yosemite Street & Chester Street

04/25/2019



















Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	504	133	748	427	80	671
v/c Ratio	0.79	0.45	0.32	0.36	0.16	0.18
Control Delay	67.0	59.4	10.1	1.9	10.3	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.0	59.4	10.1	1.9	10.3	9.4
Queue Length 50th (ft)	185	93	127	0	24	76
Queue Length 95th (ft)	242	157	185	40	49	102
Internal Link Dist (ft)	414		219			519
Turn Bay Length (ft)		160			245	
Base Capacity (vph)	1144	527	2335	1189	589	3695
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.25	0.32	0.36	0.14	0.18
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

9: S. Yosemite Street & Chester Street

04/25/2019

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			  
Traffic Volume (vph)	469	124	696	397	74	624
Future Volume (vph)	469	124	696	397	74	624
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.5	5.5	5.0	5.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1583	3539	1583	1770	5085
Flt Permitted	0.95	1.00	1.00	1.00	0.34	1.00
Satd. Flow (perm)	3433	1583	3539	1583	634	5085
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	504	133	748	427	80	671
RTOR Reduction (vph)	0	0	0	149	0	0
Lane Group Flow (vph)	504	133	748	278	80	671
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Actuated Green, G (s)	22.3	22.3	78.2	78.2	87.7	87.2
Effective Green, g (s)	22.3	22.3	78.2	78.2	87.7	87.2
Actuated g/C Ratio	0.19	0.19	0.65	0.65	0.73	0.73
Clearance Time (s)	5.0	5.0	5.5	5.5	5.0	5.5
Vehicle Extension (s)	2.0	2.0	3.0	3.0	1.5	3.0
Lane Grp Cap (vph)	637	294	2306	1031	501	3695
v/s Ratio Prot	c0.15		c0.21		0.01	c0.13
v/s Ratio Perm		0.08		0.18	0.11	
v/c Ratio	0.79	0.45	0.32	0.27	0.16	0.18
Uniform Delay, d1	46.6	43.4	9.2	8.8	7.0	5.2
Progression Factor	1.25	1.28	1.00	1.00	1.62	1.69
Incremental Delay, d2	6.0	0.4	0.4	0.6	0.1	0.1
Delay (s)	64.2	56.0	9.6	9.5	11.4	8.8
Level of Service	E	E	A	A	B	A
Approach Delay (s)	62.5		9.6			9.1
Approach LOS	E		A			A
Intersection Summary						
HCM 2000 Control Delay			22.6		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.42			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	15.5
Intersection Capacity Utilization			49.7%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Queues

1: S. Yosemite Street & E. County Line Road

04/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	151	997	174	170	2248	118	244	246	94	99	463
v/c Ratio	0.61	0.36	0.18	0.64	0.79	0.13	0.76	0.51	0.44	0.69	0.82
Control Delay	73.6	19.1	3.2	67.2	28.9	9.4	68.5	57.5	59.0	86.3	48.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.6	19.1	3.2	67.2	28.9	9.4	68.5	57.5	59.0	86.3	48.3
Queue Length 50th (ft)	70	180	0	82	341	3	109	116	84	89	135
Queue Length 95th (ft)	106	253	41	m114	590	m45	121	165	146	149	188
Internal Link Dist (ft)		465			710			451			207
Turn Bay Length (ft)	240			725			280				
Base Capacity (vph)	490	2808	952	367	2836	924	367	1011	452	189	1065
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.36	0.18	0.46	0.79	0.13	0.66	0.24	0.21	0.52	0.43


































Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: S. Yosemite Street & E. County Line Road







04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	 			 	
Traffic Volume (vph)	140	927	162	158	2091	110	227	229	87	92	214	217
Future Volume (vph)	140	927	162	158	2091	110	227	229	87	92	214	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92	0.92
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	1583	1770	3272	3272
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	1583	1770	3272	3272
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	151	997	174	170	2248	118	244	246	94	99	230	233
RTOR Reduction (vph)	0	0	78	0	0	42	0	0	0	0	160	0
Lane Group Flow (vph)	151	997	96	170	2248	76	244	246	94	99	303	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	NA
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	10.1	77.4	77.4	10.8	78.1	78.1	13.1	19.0	19.0	11.3	17.2	17.2
Effective Green, g (s)	10.1	77.4	77.4	10.8	78.1	78.1	13.1	19.0	19.0	11.3	17.2	17.2
Actuated g/C Ratio	0.07	0.55	0.55	0.08	0.56	0.56	0.09	0.14	0.14	0.08	0.12	0.12
Clearance Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.5	3.0	3.0	1.5	3.0	3.0	1.5	2.0	2.0	1.5	2.0	2.0
Lane Grp Cap (vph)	247	2811	875	264	2836	883	321	480	214	142	401	401
v/s Ratio Prot	0.04	0.20		c0.05	c0.44		c0.07	0.07		0.06	c0.09	
v/s Ratio Perm			0.06			0.05			0.06			
v/c Ratio	0.61	0.35	0.11	0.64	0.79	0.09	0.76	0.51	0.44	0.70	0.76	0.76
Uniform Delay, d1	63.0	17.4	14.9	62.7	24.5	14.4	61.9	56.2	55.6	62.7	59.4	59.4
Progression Factor	1.00	1.00	1.00	0.93	1.03	1.70	0.86	0.96	0.96	1.00	1.00	1.00
Incremental Delay, d2	3.1	0.4	0.3	3.1	1.9	0.2	9.0	0.4	0.5	11.4	7.1	7.1
Delay (s)	66.2	17.8	15.2	61.6	27.1	24.5	62.4	54.6	54.0	74.1	66.4	66.4
Level of Service	E	B	B	E	C	C	E	D	D	E	E	E
Approach Delay (s)		22.9			29.3			57.7			67.8	
Approach LOS		C			C			E			E	
Intersection Summary												
HCM 2000 Control Delay			35.3									D
HCM 2000 Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			140.0								21.5	
Intersection Capacity Utilization			81.8%									D
ICU Level of Service												
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 2: Parkland Road & E. County Line Road

04/25/2019

										
Movement	EBT	EBR	WBL	WBT	NBL	NBR				
Lane Configurations	↑↑↑↑	↗		↑↑↑↑		↗				
Traffic Volume (veh/h)	1055	75	0	2342	0	77				
Future Volume (Veh/h)	1055	75	0	2342	0	77				
Sign Control	Free			Free		Stop				
Grade	0%			0%		0%				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				
Hourly flow rate (vph)	1147	82	0	2546	0	84				
Pedestrians										
Lane Width (ft)										
Walking Speed (ft/s)										
Percent Blockage										
Right turn flare (veh)										
Median type	None			None						
Median storage (veh)										
Upstream signal (ft)	790			791						
pX, platoon unblocked				0.90		0.82		0.90		
vC, conflicting volume				1147		1784		382		
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol				780		0		0		
tC, single (s)				4.1		6.8		6.9		
tC, 2 stage (s)										
tF (s)				2.2		3.5		3.3		
p0 queue free %				100		100		91		
cM capacity (veh/h)				751		839		977		
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	
Volume Total	382	382	382	82	636	636	636	636	84	
Volume Left	0	0	0	0	0	0	0	0	0	
Volume Right	0	0	0	82	0	0	0	0	84	
cSH	1700	1700	1700	1700	1700	1700	1700	1700	977	
Volume to Capacity	0.22	0.22	0.22	0.05	0.37	0.37	0.37	0.37	0.09	
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	7	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0	
Lane LOS									A	
Approach Delay (s)	0.0				0.0				9.0	
Approach LOS									A	
Intersection Summary										
Average Delay				0.2						
Intersection Capacity Utilization				37.3%		ICU Level of Service				A
Analysis Period (min)				15						

Queues

3: Chester Street/S. Chester Street & E. County Line Road

04/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	203	861	70	372	1811	122	225	292	536	605	492
v/c Ratio	0.65	0.49	0.11	0.80	0.73	0.56	0.30	0.86	1.09	0.58	0.67
Control Delay	94.8	27.9	0.6	72.1	39.4	67.4	42.0	69.2	123.1	44.0	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.8	27.9	0.6	72.1	39.4	67.4	42.0	69.2	123.1	44.0	13.7
Queue Length 50th (ft)	101	239	0	171	402	59	78	203	~283	247	77
Queue Length 95th (ft)	144	312	1	223	#556	93	104	262	#400	288	191
Internal Link Dist (ft)		711			529		497			217	
Turn Bay Length (ft)	730			720		200			165		155
Base Capacity (vph)	490	1762	614	539	2488	490	1011	452	490	1078	749
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.49	0.11	0.69	0.73	0.25	0.22	0.65	1.09	0.56	0.66

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.


































Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 3: Chester Street/S. Chester Street & E. County Line Road





















04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	 		 	 	
Traffic Volume (vph)	195	827	67	357	1616	123	117	216	280	515	581	472
Future Volume (vph)	195	827	67	357	1616	123	117	216	280	515	581	472
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.5	6.5	5.0	6.5		5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6340		3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6340		3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	203	861	70	372	1683	128	122	225	292	536	605	492
RTOR Reduction (vph)	0	0	46	0	7	0	0	0	0	0	0	272
Lane Group Flow (vph)	203	861	24	372	1804	0	122	225	292	536	605	220
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	12.6	48.6	48.6	18.9	54.9		8.9	30.0	30.0	20.0	41.1	41.1
Effective Green, g (s)	12.6	48.6	48.6	18.9	54.9		8.9	30.0	30.0	20.0	41.1	41.1
Actuated g/C Ratio	0.09	0.35	0.35	0.13	0.39		0.06	0.21	0.21	0.14	0.29	0.29
Clearance Time (s)	5.0	6.5	6.5	5.0	6.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		1.5	1.5	1.5	2.0	1.5	1.5
Lane Grp Cap (vph)	308	1765	549	463	2486		218	758	339	490	1038	464
v/s Ratio Prot	0.06	0.17		c0.11	c0.28		0.04	0.06		c0.16	0.17	
v/s Ratio Perm			0.02						c0.18			0.14
v/c Ratio	0.66	0.49	0.04	0.80	0.73		0.56	0.30	0.86	1.09	0.58	0.47
Uniform Delay, d1	61.6	35.9	30.3	58.7	36.2		63.6	46.1	53.0	60.0	42.1	40.6
Progression Factor	1.39	0.71	0.07	1.00	1.00		0.92	0.92	0.89	1.00	1.00	1.00
Incremental Delay, d2	3.7	0.9	0.1	9.2	1.9		1.7	0.1	18.1	68.6	0.5	0.3
Delay (s)	89.1	26.5	2.3	68.0	38.0		60.0	42.4	65.4	128.6	42.7	40.9
Level of Service	F	C	A	E	D		E	D	E	F	D	D
Approach Delay (s)		36.2			43.1			56.3			70.3	
Approach LOS		D			D			E			E	
Intersection Summary												
HCM 2000 Control Delay			51.2			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			22.5			
Intersection Capacity Utilization			73.4%			ICU Level of Service				D		
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 4: Parkland Road & Westview Road

04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	36	24	61	77	45	24	35	23	30	33	8	17
Future Volume (vph)	36	24	61	77	45	24	35	23	30	33	8	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	39	26	66	84	49	26	38	25	33	36	9	18
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total (vph)	39	92	84	75	38	58	36	27				
Volume Left (vph)	39	0	84	0	38	0	36	0				
Volume Right (vph)	0	66	0	26	0	33	0	18				
Hadj (s)	0.53	-0.47	0.53	-0.21	0.53	-0.36	0.53	-0.43				
Departure Headway (s)	5.6	4.6	5.6	4.8	5.8	4.9	5.8	4.9				
Degree Utilization, x	0.06	0.12	0.13	0.10	0.06	0.08	0.06	0.04				
Capacity (veh/h)	624	751	623	718	590	693	583	696				
Control Delay (s)	7.8	7.0	8.2	7.2	8.0	7.1	8.0	6.9				
Approach Delay (s)	7.2		7.7		7.5		7.5					
Approach LOS	A		A		A		A					
Intersection Summary												
Delay			7.5									
Level of Service			A									
Intersection Capacity Utilization			26.2%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM 2010 AWSC

















4: Parkland Road & Westview Road

04/25/2019

Intersection												
Intersection Delay, s/veh	8.4											
Intersection LOS	A											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷		↶	↷	
Traffic Vol, veh/h	36	24	61	77	45	24	35	23	30	33	8	17
Future Vol, veh/h	36	24	61	77	45	24	35	23	30	33	8	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	26	66	84	49	26	38	25	33	36	9	18
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	2			2			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			2			2		
HCM Control Delay	8.2			8.6			8.4			8.5		
HCM LOS	A			A			A			A		
Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2				
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%				
Vol Thru, %	0%	43%	0%	28%	0%	65%	0%	32%				
Vol Right, %	0%	57%	0%	72%	0%	35%	0%	68%				
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop				
Traffic Vol by Lane	35	53	36	85	77	69	33	25				
LT Vol	35	0	36	0	77	0	33	0				
Through Vol	0	23	0	24	0	45	0	8				
RT Vol	0	30	0	61	0	24	0	17				
Lane Flow Rate	38	58	39	92	84	75	36	27				
Geometry Grp	7	7	7	7	7	7	7	7				
Degree of Util (X)	0.062	0.079	0.061	0.118	0.13	0.101	0.058	0.037				
Departure Headway (Hd)	5.823	4.922	5.609	4.602	5.574	4.827	5.857	4.876				
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
Cap	615	728	639	779	644	743	611	733				
Service Time	3.556	2.655	3.34	2.333	3.302	2.555	3.594	2.612				
HCM Lane V/C Ratio	0.062	0.08	0.061	0.118	0.13	0.101	0.059	0.037				
HCM Control Delay	8.9	8.1	8.7	8	9.1	8.1	9	7.8				
HCM Lane LOS	A	A	A	A	A	A	A	A				
HCM 95th-tile Q	0.2	0.3	0.2	0.4	0.4	0.3	0.2	0.1				

HCM Unsignalized Intersection Capacity Analysis
6: DSW Driveway/Site Entrance & Westview Road

04/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	59	14	43	113	16	23	0	49	41	0	21
Future Volume (Veh/h)	22	59	14	43	113	16	23	0	49	41	0	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	64	15	47	123	17	25	0	53	45	0	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					257							
pX, platoon unblocked												
vC, conflicting volume	140			79			368	354	72	398	352	132
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	140			79			368	354	72	398	352	132
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			97			95	100	95	91	100	97
cM capacity (veh/h)	1443			1519			553	545	991	513	545	918
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	103	187	78	68								
Volume Left	24	47	25	45								
Volume Right	15	17	53	23								
cSH	1443	1519	790	603								
Volume to Capacity	0.02	0.03	0.10	0.11								
Queue Length 95th (ft)	1	2	8	9								
Control Delay (s)	1.9	2.1	10.1	11.7								
Lane LOS	A	A	B	B								
Approach Delay (s)	1.9	2.1	10.1	11.7								
Approach LOS			B	B								
Intersection Summary												
Average Delay			4.9									
Intersection Capacity Utilization			26.3%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

7: Chester Street & Westview Road

04/25/2019


























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	83	75	35	30	230	28	377	244	826
v/c Ratio	0.37	0.30	0.17	0.14	0.15	0.17	0.53	0.22	0.46
Control Delay	32.6	18.8	29.5	28.9	0.2	28.6	29.3	25.7	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	18.8	29.5	28.9	0.2	28.6	29.3	25.7	12.2
Queue Length 50th (ft)	33	14	14	12	0	10	77	89	40
Queue Length 95th (ft)	71	48	38	34	0	25	110	102	302
Internal Link Dist (ft)		177		141			414		497
Turn Bay Length (ft)						150		225	
Base Capacity (vph)	252	279	379	399	1583	227	709	1123	1808
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.27	0.09	0.08	0.15	0.12	0.53	0.22	0.46

Intersection Summary

HCM Signalized Intersection Capacity Analysis
7: Chester Street & Westview Road

04/25/2019

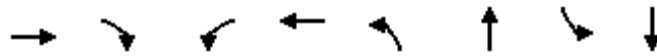
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	33	38	33	28	216	26	319	36	229	658	118
Future Volume (vph)	78	33	38	33	28	216	26	319	36	229	658	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	4.0	6.0	6.0		5.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		0.97	0.95	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1714		1770	1863	1583	1770	3486		3433	3458	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1714		1770	1863	1583	1770	3486		3433	3458	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	83	35	40	35	30	230	28	339	38	244	700	126
RTOR Reduction (vph)	0	35	0	0	0	0	0	12	0	0	15	0
Lane Group Flow (vph)	83	40	0	35	30	230	28	365	0	244	811	0
Turn Type	Split	NA		Split	NA	Free	Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						Free						
Actuated Green, G (s)	8.9	8.9		5.2	5.2	70.0	3.1	12.0		22.9	30.8	
Effective Green, g (s)	8.9	8.9		5.2	5.2	70.0	3.1	12.0		22.9	30.8	
Actuated g/C Ratio	0.13	0.13		0.07	0.07	1.00	0.04	0.17		0.33	0.44	
Clearance Time (s)	5.0	5.0		5.0	5.0		6.0	6.0		5.0	6.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.0	3.0		4.0	3.0	
Lane Grp Cap (vph)	225	217		131	138	1583	78	597		1123	1521	
v/s Ratio Prot	c0.05	0.02		0.02	0.02		0.02	0.10		c0.07	c0.23	
v/s Ratio Perm						c0.15						
v/c Ratio	0.37	0.18		0.27	0.22	0.15	0.36	0.61		0.22	0.53	
Uniform Delay, d1	28.0	27.3		30.6	30.5	0.0	32.5	26.8		17.1	14.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.93	1.10		1.32	0.83	
Incremental Delay, d2	1.4	0.6		1.5	1.1	0.2	2.7	4.4		0.4	1.1	
Delay (s)	29.4	27.9		32.1	31.6	0.2	32.8	33.9		22.9	13.0	
Level of Service	C	C		C	C	A	C	C		C	B	
Approach Delay (s)		28.7			7.2			33.8			15.2	
Approach LOS		C			A			C			B	
Intersection Summary												
HCM 2000 Control Delay			19.0			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			70.0			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			51.3%			ICU Level of Service			A			
Analysis Period (min)			15									

c Critical Lane Group

Queues

8: S. Yosemite Street & Parkland Road

04/25/2019



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	86	117	50	113	126	633	41	593
v/c Ratio	0.41	0.32	0.28	0.45	0.24	0.23	0.08	0.24
Control Delay	33.7	2.9	32.2	15.1	3.9	4.7	10.1	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.7	2.9	32.2	15.1	3.9	4.7	10.1	13.5
Queue Length 50th (ft)	35	0	20	7	7	0	4	41
Queue Length 95th (ft)	71	7	48	48	18	10	34	123
Internal Link Dist (ft)	116			330		519		654
Turn Bay Length (ft)			125		245		265	
Base Capacity (vph)	385	498	379	423	531	2717	485	2460
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.23	0.13	0.27	0.24	0.23	0.08	0.24

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 8: S. Yosemite Street & Parkland Road

04/25/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↗		↖	↑↑↑		↖	↑↑↑	
Traffic Volume (vph)	54	25	108	46	16	88	116	556	27	38	495	51
Future Volume (vph)	54	25	108	46	16	88	116	556	27	38	495	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt		1.00	0.85	1.00	0.87		1.00	0.99		1.00	0.99	
Flt Protected		0.97	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1801	1583	1770	1625		1770	5050		1770	5015	
Flt Permitted		0.97	1.00	0.95	1.00		0.39	1.00		0.40	1.00	
Satd. Flow (perm)		1801	1583	1770	1625		720	5050		746	5015	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	27	117	50	17	96	126	604	29	41	538	55
RTOR Reduction (vph)	0	0	105	0	88	0	0	5	0	0	13	0
Lane Group Flow (vph)	0	86	12	50	25	0	126	628	0	41	580	0
Turn Type	Split	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases			4				6			2		
Actuated Green, G (s)		7.2	7.2	6.1	6.1		38.1	32.4		33.3	30.0	
Effective Green, g (s)		7.2	7.2	6.1	6.1		38.1	32.4		33.3	30.0	
Actuated g/C Ratio		0.10	0.10	0.09	0.09		0.54	0.46		0.48	0.43	
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)		2.5	2.5	2.5	2.5		1.5	3.0		1.5	3.0	
Lane Grp Cap (vph)		185	162	154	141		477	2337		403	2149	
v/s Ratio Prot		c0.05		c0.03	0.02		c0.02	c0.12		0.00	0.12	
v/s Ratio Perm			0.01				0.12			0.04		
v/c Ratio		0.46	0.07	0.32	0.18		0.26	0.27		0.10	0.27	
Uniform Delay, d1		29.6	28.4	30.0	29.6		7.9	11.5		9.8	12.9	
Progression Factor		1.00	1.00	1.00	1.00		0.37	0.37		1.14	0.94	
Incremental Delay, d2		1.3	0.1	0.9	0.4		0.1	0.3		0.0	0.3	
Delay (s)		30.9	28.5	30.9	30.1		3.0	4.5		11.2	12.5	
Level of Service		C	C	C	C		A	A		B	B	
Approach Delay (s)		29.5			30.3			4.2			12.4	
Approach LOS		C			C			A			B	

Intersection Summary		
HCM 2000 Control Delay	12.5	HCM 2000 Level of Service B
HCM 2000 Volume to Capacity ratio	0.32	
Actuated Cycle Length (s)	70.0	Sum of lost time (s) 21.0
Intersection Capacity Utilization	42.4%	ICU Level of Service A
Analysis Period (min)	15	

c Critical Lane Group

Queues

9: S. Yosemite Street & Chester Street

04/25/2019















Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	700	92	682	359	55	676
v/c Ratio	0.82	0.23	0.39	0.37	0.35	0.22
Control Delay	45.8	35.6	13.3	2.9	25.5	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.8	35.6	13.3	2.9	25.5	5.7
Queue Length 50th (ft)	174	42	106	0	26	56
Queue Length 95th (ft)	207	74	147	44	36	11
Internal Link Dist (ft)	414		219			519
Turn Bay Length (ft)		160			245	
Base Capacity (vph)	885	408	1875	1007	155	3130
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.23	0.36	0.36	0.35	0.22
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

9: S. Yosemite Street & Chester Street

04/25/2019

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	644	85	627	330	51	622
Future Volume (vph)	644	85	627	330	51	622
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.5	5.5	5.0	5.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1583	3539	1583	1770	5085
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1583	3539	1583	1770	5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	700	92	682	359	55	676
RTOR Reduction (vph)	0	0	0	191	0	0
Lane Group Flow (vph)	700	92	682	168	55	676
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	17.5	17.5	32.8	32.8	4.2	42.0
Effective Green, g (s)	17.5	17.5	32.8	32.8	4.2	42.0
Actuated g/C Ratio	0.25	0.25	0.47	0.47	0.06	0.60
Clearance Time (s)	5.0	5.0	5.5	5.5	5.0	5.5
Vehicle Extension (s)	2.0	2.0	3.0	3.0	1.5	3.0
Lane Grp Cap (vph)	858	395	1658	741	106	3051
v/s Ratio Prot	c0.20		c0.19		c0.03	0.13
v/s Ratio Perm		0.06		0.11		
v/c Ratio	0.82	0.23	0.41	0.23	0.52	0.22
Uniform Delay, d1	24.7	20.9	12.2	11.1	31.9	6.5
Progression Factor	1.52	1.66	1.00	1.00	0.65	0.84
Incremental Delay, d2	5.3	0.1	0.8	0.7	1.8	0.2
Delay (s)	43.0	34.7	13.0	11.8	22.5	5.6
Level of Service	D	C	B	B	C	A
Approach Delay (s)	42.1		12.6			6.9
Approach LOS	D		B			A
Intersection Summary						
HCM 2000 Control Delay			20.1		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.55			
Actuated Cycle Length (s)			70.0		Sum of lost time (s)	15.5
Intersection Capacity Utilization			52.8%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

APPENDIX G
In-N-Out Burger Trip Generation Excerpts

fast food restaurants and was applied to both the p.m. and weekend trip generation results. This rate was applied as a deduction to the overall trips generated by the project.

Total Project Trip Generation

The expected trip generation potential for the proposed project during the weekday and weekend are indicated in Table 7 and Table 8 respectively with deductions taken for pass-by trips. The proposed project is expected to generate an average of 3,563 trips per weekday, including 318 during the p.m. peak hour and 395 during the weekend peak hour. After pass-by deductions are considered, the project would be expected to generate 2,672 new trips on a daily basis, including 238 during the p.m. peak hour and 296 during the weekend peak hour; these new trips represent the increase in traffic associated with the project compared to existing volumes. For comparative purposes only, the comparable ITE rate and resulting trips is also provided in Table 7 and Table 8. Net-new peak hour project trip turning movement volumes and total project trips at each project driveway are presented in Figure 6.

Table 7 – In-N-Out Burger Site Traffic Survey and Trip Rate Calculation (Weekday)

In-N-Out Location	Size (ksf)	Weekday Daily		PM Peak Hour (5:30-6:30 p.m.)					
		Rate (Calc'd)	Trips	Rate (Calc'd)	Trips	In	Out	% In	% Out
Survey Location									
1. 1159 Rengstorff Ave	3.10	817.74	2,535	71.94	223	110	113	49.3%	50.7%
2. 53 El Camino Real	2.97	997.31	2,962	93.94	279	141	138	50.5%	49.5%
3. 32060 Union Landing Blvd	3.16	997.78	3,153	85.44	270	137	133	50.7%	49.3%
Average Trip Generation	3.08	937.61	2,884	83.77	257.3	129.3	128.0	50.2%	49.8%
Project Trip Generation									
499 East Hamilton (Proposed)	3.80	937.61	3,563	83.77	318	160	158	50.2%	49.8%
<i>Pass-by (-25%)</i>			-891		-80	-40	-40		
Net Total Trip Generation			2,672		238	120	118		
Comparison Trip Generation									
<i>Fast-Food Restaurant w/Drive-Through Window (ITE LU #934)</i>	3.80	496.12	1,885	32.65	124	65	59	52%	48%

Note: ksf = 1,000 square feet

Table 8 – In-N-Out Burger Site Traffic Survey and Trip Rate Calculation (Weekend)

In-N-Out Location	Size (ksf)	Peak Hour	Weekend Peak Hour					
			Rate (Calc'd)	Trips	In	Out	% In	% Out
Survey Location								
1. 1159 Rengstorff Ave	3.10	12:45 – 1:45 p.m.	100.00	310	157	153	50.6%	49.4%
2. 53 El Camino Real	2.97	12:00 – 1:00 p.m.	114.48	340	171	169	50.3%	49.7%
3. 32060 Union Landing Blvd	3.16	12:45 – 1:45 p.m.	97.15	307	158	149	51.5%	48.5%
Average Trip Generation	3.08		103.88	319.0	162.0	157.0	50.8%	49.2%
Project Trip Generation								
499 East Hamilton (Proposed)	3.80		103.88	395	201	194	50.8%	49.2%
<i>Pass-by (-25%)</i>				-99	-50	-49		
Net Total Trip Generation				296	151	145		
Comparison Trip Generation								
<i>Fast-Food Restaurant w/Drive-Through Window (ITE LU #934)</i>	3.80		59.00	224	114	110	51%	49%

Note: ksf = 1,000 square feet

Trip Distribution

The Santa Clara County Travel Demand Model outputs were used to estimate trip distribution patterns within the study area by comparing relative traffic on major roadways and then applying manual adjustments based on knowledge of the area. The applied distribution assumptions and resulting trips are shown in Table 9.

Table 9 – Trip Distribution Assumptions

Route	Percent	Daily Trips	PM Trips	Weekend Trips
To/From the north via Winchester Blvd	8 %	214	19	24
To/From the north via Almarida Dr	2 %	53	5	6
To/From the west via Hamilton Ave	10 %	267	24	30
To/From the south via Winchester Blvd	5 %	134	12	15
To/From the east via Hamilton Ave	20 %	534	48	59
To/From the north via Bascom Ave	15 %	401	36	44
To/From the south via Bascom Ave	15 %	401	36	44
To/From the south via Central Ave	3 %	80	7	9
To/From the south via Salmar Ave	2 %	54	4	6
To/From the north via SR 17	14 %	374	33	41
To/From the south via SR 17	6 %	160	14	18
TOTAL	100 %	2,672	238	296

APPENDIX H

Total Future Conditions Synchro Reports

Queues

1: S. Yosemite Street & E. County Line Road

04/26/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	204	1017	241	235	913	113	268	236	134	134	241
v/c Ratio	0.65	0.41	0.27	0.67	0.36	0.13	0.75	0.54	0.69	0.73	0.48
Control Delay	62.3	21.6	3.7	52.6	15.5	6.0	69.1	67.9	83.0	74.3	26.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.3	21.6	3.7	52.6	15.5	6.0	69.1	67.9	83.0	74.3	26.7
Queue Length 50th (ft)	79	179	0	58	199	30	98	99	110	102	46
Queue Length 95th (ft)	117	264	52	86	269	80	#152	137	176	166	80
Internal Link Dist (ft)		465			710			451			207
Turn Bay Length (ft)	240			725			280				
Base Capacity (vph)	341	2503	901	364	2556	852	385	1150	514	236	1224
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.41	0.27	0.65	0.36	0.13	0.70	0.21	0.26	0.57	0.20


































Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

1: S. Yosemite Street & E. County Line Road

04/26/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	 			 	
Traffic Volume (vph)	194	966	229	223	867	107	255	224	127	127	118	111
Future Volume (vph)	194	966	229	223	867	107	255	224	127	127	118	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	0.93
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	1583	1770	3281	3281
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	1583	1770	3281	3281
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	204	1017	241	235	913	113	268	236	134	134	124	117
RTOR Reduction (vph)	0	0	122	0	0	56	0	0	0	0	103	0
Lane Group Flow (vph)	204	1017	119	235	913	57	268	236	134	134	138	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	NA
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	11.0	59.1	59.1	12.2	60.3	60.3	12.5	14.8	14.8	12.4	14.7	14.7
Effective Green, g (s)	11.0	59.1	59.1	12.2	60.3	60.3	12.5	14.8	14.8	12.4	14.7	14.7
Actuated g/C Ratio	0.09	0.49	0.49	0.10	0.50	0.50	0.10	0.12	0.12	0.10	0.12	0.12
Clearance Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.5	3.0	3.0	1.5	3.0	3.0	1.5	2.0	2.0	1.5	2.0	2.0
Lane Grp Cap (vph)	314	2504	779	349	2555	795	357	436	195	182	401	401
v/s Ratio Prot	0.06	c0.20		c0.07	0.18		c0.08	0.07		0.08	0.04	
v/s Ratio Perm			0.07			0.04			c0.08			
v/c Ratio	0.65	0.41	0.15	0.67	0.36	0.07	0.75	0.54	0.69	0.74	0.34	0.34
Uniform Delay, d1	52.6	19.3	16.7	52.0	18.1	15.4	52.2	49.4	50.4	52.2	48.2	48.2
Progression Factor	1.00	1.00	1.00	0.85	0.76	1.39	1.07	1.30	1.31	1.00	1.00	1.00
Incremental Delay, d2	3.5	0.5	0.4	3.6	0.3	0.2	7.5	0.7	7.6	12.5	0.2	0.2
Delay (s)	56.1	19.8	17.1	47.7	14.2	21.5	63.3	65.0	73.6	64.7	48.4	48.4
Level of Service	E	B	B	D	B	C	E	E	E	E	D	D
Approach Delay (s)		24.4			21.1			66.1			54.2	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM 2000 Control Delay			33.4				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			21.5		
Intersection Capacity Utilization			57.0%				ICU Level of Service			B		
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

2: Parkland Road & E. County Line Road

04/26/2019

	→	↘	↙	←	↖	↗					
Movement	EBT	EBR	WBL	WBT	NBL	NBR					
Lane Configurations	↑↑↑	↗		↑↑↑		↗					
Traffic Volume (veh/h)	1040	182	0	1197	0	207					
Future Volume (Veh/h)	1040	182	0	1197	0	207					
Sign Control	Free			Free		Stop					
Grade	0%			0%		0%					
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97					
Hourly flow rate (vph)	1072	188	0	1234	0	213					
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type	None			None							
Median storage (veh)											
Upstream signal (ft)	790			791							
pX, platoon unblocked				0.90	0.94	0.90					
vC, conflicting volume				1072	1380	357					
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol				677	402	0					
tC, single (s)				4.1	6.8	6.9					
tC, 2 stage (s)											
tF (s)				2.2	3.5	3.3					
p0 queue free %				100	100	78					
cM capacity (veh/h)				816	542	972					
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1		
Volume Total	357	357	357	188	308	308	308	308	213		
Volume Left	0	0	0	0	0	0	0	0	0		
Volume Right	0	0	0	188	0	0	0	0	213		
cSH	1700	1700	1700	1700	1700	1700	1700	1700	972		
Volume to Capacity	0.21	0.21	0.21	0.11	0.18	0.18	0.18	0.18	0.22		
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	21		
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7		
Lane LOS									A		
Approach Delay (s)	0.0			0.0						9.7	
Approach LOS									A		
Intersection Summary											
Average Delay				0.8							
Intersection Capacity Utilization				39.6%	ICU Level of Service						A
Analysis Period (min)				15							

Queues

3: Chester Street/S. Chester Street & E. County Line Road

04/26/2019


























Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	316	872	94	540	1039	101	332	312	439	391	332
v/c Ratio	0.74	0.75	0.19	0.76	0.53	0.53	0.40	0.84	0.90	0.34	0.46
Control Delay	52.0	50.0	9.0	53.9	33.9	43.4	41.9	65.9	74.3	31.7	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.0	50.0	9.0	53.9	33.9	43.4	41.9	65.9	74.3	31.7	6.6
Queue Length 50th (ft)	124	239	12	204	181	35	135	252	176	123	15
Queue Length 95th (ft)	173	290	47	#378	236	65	178	340	#314	153	78
Internal Link Dist (ft)		711			529		497			217	
Turn Bay Length (ft)	730			720		200			165		155
Base Capacity (vph)	442	1334	536	709	1968	206	1179	527	486	1356	794
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.65	0.18	0.76	0.53	0.49	0.28	0.59	0.90	0.29	0.42

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 3: Chester Street/S. Chester Street & E. County Line Road





















04/26/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	307	846	91	524	773	235	98	322	303	426	379	322
Future Volume (vph)	307	846	91	524	773	235	98	322	303	426	379	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.5	6.5	5.0	6.5		5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6184		3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6184		3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	316	872	94	540	797	242	101	332	312	439	391	332
RTOR Reduction (vph)	0	0	72	0	42	0	0	0	0	0	0	207
Lane Group Flow (vph)	316	872	22	540	997	0	101	332	312	439	391	125
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	NA	4
Permitted Phases			2						8			4
Actuated Green, G (s)	14.9	27.5	27.5	24.8	37.4		6.7	28.2	28.2	17.0	38.5	38.5
Effective Green, g (s)	14.9	27.5	27.5	24.8	37.4		6.7	28.2	28.2	17.0	38.5	38.5
Actuated g/C Ratio	0.12	0.23	0.23	0.21	0.31		0.06	0.23	0.23	0.14	0.32	0.32
Clearance Time (s)	5.0	6.5	6.5	5.0	6.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		1.5	1.5	1.5	2.0	1.5	1.5
Lane Grp Cap (vph)	426	1165	362	709	1927		191	831	372	486	1135	507
v/s Ratio Prot	0.09	c0.17		c0.16	0.16		0.03	0.09		c0.13	0.11	
v/s Ratio Perm			0.01						c0.20			0.08
v/c Ratio	0.74	0.75	0.06	0.76	0.52		0.53	0.40	0.84	0.90	0.34	0.25
Uniform Delay, d1	50.7	43.0	36.1	44.8	33.9		55.1	38.8	43.7	50.7	31.1	30.1
Progression Factor	0.82	1.07	1.00	1.00	1.00		0.61	1.08	1.09	1.00	1.00	1.00
Incremental Delay, d2	5.8	4.2	0.3	4.4	1.0		1.2	0.1	13.9	19.6	0.1	0.1
Delay (s)	47.4	50.3	36.4	49.2	34.9		35.0	41.9	61.7	70.3	31.2	30.1
Level of Service	D	D	D	D	C		D	D	E	E	C	C
Approach Delay (s)		48.6			39.8			49.2			45.6	
Approach LOS		D			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			45.0			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			22.5			
Intersection Capacity Utilization			71.1%			ICU Level of Service			C			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 4: Parkland Road & Westview Road

04/26/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	90	62	84	143	81	100	60	39	65	96	4	23
Future Volume (vph)	90	62	84	143	81	100	60	39	65	96	4	23
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	94	65	88	149	84	104	63	41	68	100	4	24
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total (vph)	94	153	149	188	63	109	100	28				
Volume Left (vph)	94	0	149	0	63	0	100	0				
Volume Right (vph)	0	88	0	104	0	68	0	24				
Hadj (s)	0.53	-0.37	0.53	-0.35	0.53	-0.40	0.53	-0.57				
Departure Headway (s)	6.3	5.4	6.2	5.3	6.7	5.8	6.8	5.7				
Degree Utilization, x	0.17	0.23	0.26	0.28	0.12	0.17	0.19	0.04				
Capacity (veh/h)	539	632	555	646	504	582	498	587				
Control Delay (s)	9.4	8.9	10.2	9.2	9.4	8.8	10.1	7.7				
Approach Delay (s)	9.1		9.6		9.0		9.6					
Approach LOS	A		A		A		A					
Intersection Summary												
Delay			9.3									
Level of Service			A									
Intersection Capacity Utilization			38.3%		ICU Level of Service			A				
Analysis Period (min)			15									

HCM 2010 AWSC

4: Parkland Road & Westview Road

04/26/2019

Intersection	
Intersection Delay, s/veh	10.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↵		↵	↵		↵	↵		↵	↵	
Traffic Vol, veh/h	90	62	84	143	81	100	60	39	65	96	4	23
Future Vol, veh/h	90	62	84	143	81	100	60	39	65	96	4	23
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	94	65	88	149	84	104	63	41	68	100	4	24
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

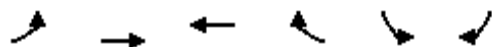
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	10.1	10.7	10.1	10.8
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	38%	0%	42%	0%	45%	0%	15%
Vol Right, %	0%	62%	0%	58%	0%	55%	0%	85%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	60	104	90	146	143	181	96	27
LT Vol	60	0	90	0	143	0	96	0
Through Vol	0	39	0	62	0	81	0	4
RT Vol	0	65	0	84	0	100	0	23
Lane Flow Rate	62	108	94	152	149	189	100	28
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.119	0.177	0.168	0.233	0.261	0.284	0.191	0.045
Departure Headway (Hd)	6.831	5.88	6.437	5.524	6.313	5.417	6.889	5.777
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	525	610	558	649	569	664	521	619
Service Time	4.57	3.619	4.172	3.259	4.046	3.15	4.632	3.519
HCM Lane V/C Ratio	0.118	0.177	0.168	0.234	0.262	0.285	0.192	0.045
HCM Control Delay	10.5	9.9	10.5	9.9	11.3	10.3	11.3	8.8
HCM Lane LOS	B	A	B	A	B	B	B	A
HCM 95th-tile Q	0.4	0.6	0.6	0.9	1	1.2	0.7	0.1

HCM Unsignalized Intersection Capacity Analysis

5: Westview Road & Future Site Entrance

















04/26/2019



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↔		↕	
Traffic Volume (veh/h)	94	133	202	117	62	142
Future Volume (Veh/h)	94	133	202	117	62	142
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	102	145	220	127	67	154
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			405			
pX, platoon unblocked						
vC, conflicting volume	347				632	284
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	347				632	284
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	92				84	80
cM capacity (veh/h)	1212				407	755
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	247	347	221			
Volume Left	102	0	67			
Volume Right	0	127	154			
cSH	1212	1700	600			
Volume to Capacity	0.08	0.20	0.37			
Queue Length 95th (ft)	7	0	42			
Control Delay (s)	3.8	0.0	14.5			
Lane LOS	A		B			
Approach Delay (s)	3.8	0.0	14.5			
Approach LOS			B			
Intersection Summary						
Average Delay			5.1			
Intersection Capacity Utilization			52.1%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
6: DSW Driveway/Site Entrance & Westview Road

04/26/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	156	28	58	281	28	27	1	60	27	1	11
Future Volume (Veh/h)	11	156	28	58	281	28	27	1	60	27	1	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	170	30	63	305	30	29	1	65	29	1	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					257							
pX, platoon unblocked	0.98						0.98	0.98		0.98	0.98	0.98
vC, conflicting volume	335			200			668	670	185	720	670	320
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	317			200			655	657	185	709	657	302
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			95			92	100	92	90	100	98
cM capacity (veh/h)	1224			1372			351	358	857	304	358	727
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	212	398	95	42								
Volume Left	12	63	29	29								
Volume Right	30	30	65	12								
cSH	1224	1372	589	366								
Volume to Capacity	0.01	0.05	0.16	0.11								
Queue Length 95th (ft)	1	4	14	10								
Control Delay (s)	0.5	1.6	12.3	16.1								
Lane LOS	A	A	B	C								
Approach Delay (s)	0.5	1.6	12.3	16.1								
Approach LOS			B	C								
Intersection Summary												
Average Delay			3.5									
Intersection Capacity Utilization			45.4%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

7: Chester Street & Westview Road

04/26/2019


























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	121	130	48	45	248	60	435	267	758
v/c Ratio	0.57	0.48	0.34	0.30	0.16	0.43	0.74	0.16	0.39
Control Delay	59.2	27.3	57.9	56.4	0.2	62.6	51.7	28.8	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.2	27.3	57.9	56.4	0.2	62.6	51.7	28.8	3.7
Queue Length 50th (ft)	90	39	36	33	0	46	167	49	84
Queue Length 95th (ft)	145	96	74	70	0	91	211	m118	124
Internal Link Dist (ft)		177		141			414		497
Turn Bay Length (ft)						150		225	
Base Capacity (vph)	309	355	191	201	1583	354	877	1632	1968
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.37	0.25	0.22	0.16	0.17	0.50	0.16	0.39

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
7: Chester Street & Westview Road

04/26/2019

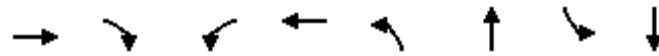
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	41	85	47	44	241	58	365	57	259	470	265
Future Volume (vph)	117	41	85	47	44	241	58	365	57	259	470	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	4.0	6.0	6.0		5.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		0.97	0.95	
Frt	1.00	0.90		1.00	1.00	0.85	1.00	0.98		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1674		1770	1863	1583	1770	3467		3433	3348	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1674		1770	1863	1583	1770	3467		3433	3348	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	121	42	88	48	45	248	60	376	59	267	485	273
RTOR Reduction (vph)	0	67	0	0	0	0	0	12	0	0	43	0
Lane Group Flow (vph)	121	63	0	48	45	248	60	423	0	267	715	0
Turn Type	Split	NA		Split	NA	Free	Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						Free						
Actuated Green, G (s)	14.6	14.6		8.3	8.3	120.0	8.3	19.0		57.1	66.8	
Effective Green, g (s)	14.6	14.6		8.3	8.3	120.0	8.3	19.0		57.1	66.8	
Actuated g/C Ratio	0.12	0.12		0.07	0.07	1.00	0.07	0.16		0.48	0.56	
Clearance Time (s)	5.0	5.0		5.0	5.0		6.0	6.0		5.0	6.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.0	3.0		4.0	3.0	
Lane Grp Cap (vph)	215	203		122	128	1583	122	548		1633	1863	
v/s Ratio Prot	c0.07	0.04		c0.03	0.02		c0.03	c0.12		0.08	c0.21	
v/s Ratio Perm						0.16						
v/c Ratio	0.56	0.31		0.39	0.35	0.16	0.49	0.77		0.16	0.38	
Uniform Delay, d1	49.7	48.1		53.4	53.3	0.0	53.8	48.4		17.9	15.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.03	0.97		1.36	0.22	
Incremental Delay, d2	4.1	1.2		2.8	2.3	0.2	3.0	9.8		0.2	0.5	
Delay (s)	53.7	49.3		56.3	55.6	0.2	58.2	56.6		24.6	3.8	
Level of Service	D	D		E	E	A	E	E		C	A	
Approach Delay (s)	51.4				15.4		56.8				9.2	
Approach LOS	D				B		E				A	
Intersection Summary												
HCM 2000 Control Delay	26.4		HCM 2000 Level of Service				C					
HCM 2000 Volume to Capacity ratio	0.49											
Actuated Cycle Length (s)	120.0		Sum of lost time (s)				22.0					
Intersection Capacity Utilization	55.5%		ICU Level of Service				B					
Analysis Period (min)	15											

c Critical Lane Group

Queues

8: S. Yosemite Street & Parkland Road

04/26/2019



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	147	171	66	141	224	530	73	588
v/c Ratio	0.67	0.50	0.48	0.59	0.38	0.18	0.14	0.23
Control Delay	64.1	11.7	63.7	23.7	12.5	16.3	6.6	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.1	11.7	63.7	23.7	12.5	16.3	6.6	8.0
Queue Length 50th (ft)	111	0	50	16	105	101	10	29
Queue Length 95th (ft)	170	61	94	78	173	141	m28	61
Internal Link Dist (ft)	116			330		519		654
Turn Bay Length (ft)			125		245		265	
Base Capacity (vph)	343	441	339	408	593	2961	707	2550
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.39	0.19	0.35	0.38	0.18	0.10	0.23























Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

8: S. Yosemite Street & Parkland Road

04/26/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	28	157	61	19	110	206	440	48	67	366	175
Future Volume (vph)	108	28	157	61	19	110	206	440	48	67	366	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt		1.00	0.85	1.00	0.87		1.00	0.99		1.00	0.95	
Flt Protected		0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1791	1583	1770	1625		1770	5010		1770	4839	
Flt Permitted		0.96	1.00	0.95	1.00		0.38	1.00		0.44	1.00	
Satd. Flow (perm)		1791	1583	1770	1625		701	5010		829	4839	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	117	30	171	66	21	120	224	478	52	73	398	190
RTOR Reduction (vph)	0	0	150	0	111	0	0	6	0	0	54	0
Lane Group Flow (vph)	0	147	21	66	30	0	224	524	0	73	534	0
Turn Type	Split	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases			4				6			2		
Actuated Green, G (s)		14.8	14.8	9.4	9.4		79.8	69.8		66.9	61.9	
Effective Green, g (s)		14.8	14.8	9.4	9.4		79.8	69.8		66.9	61.9	
Actuated g/C Ratio		0.12	0.12	0.08	0.08		0.66	0.58		0.56	0.52	
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)		2.5	2.5	2.5	2.5		1.5	3.0		1.5	3.0	
Lane Grp Cap (vph)		220	195	138	127		581	2914		501	2496	
v/s Ratio Prot		c0.08		c0.04	0.02		c0.04	0.10		0.01	0.11	
v/s Ratio Perm			0.01				c0.22			0.08		
v/c Ratio		0.67	0.11	0.48	0.24		0.39	0.18		0.15	0.21	
Uniform Delay, d1		50.3	46.7	53.0	51.9		8.0	11.7		12.3	15.8	
Progression Factor		1.00	1.00	1.00	1.00		1.24	1.28		0.65	0.53	
Incremental Delay, d2		6.7	0.2	1.9	0.7		0.2	0.1		0.0	0.2	
Delay (s)		57.0	46.9	54.8	52.7		10.1	15.2		8.1	8.6	
Level of Service		E	D	D	D		B	B		A	A	
Approach Delay (s)		51.6			53.4			13.7			8.5	
Approach LOS		D			D			B			A	
Intersection Summary												
HCM 2000 Control Delay			22.4				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			21.0		
Intersection Capacity Utilization			55.8%				ICU Level of Service			B		
Analysis Period (min)			15									

c Critical Lane Group

Queues

9: S. Yosemite Street & Chester Street

04/26/2019



















Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	514	133	615	437	80	549
v/c Ratio	0.79	0.45	0.26	0.37	0.14	0.15
Control Delay	72.2	63.8	9.8	1.9	9.3	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.2	63.8	9.8	1.9	9.3	8.2
Queue Length 50th (ft)	217	108	101	0	25	63
Queue Length 95th (ft)	273	174	150	41	50	89
Internal Link Dist (ft)	414		219			519
Turn Bay Length (ft)		160			245	
Base Capacity (vph)	1144	527	2324	1189	664	3679
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.25	0.26	0.37	0.12	0.15
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

9: S. Yosemite Street & Chester Street

04/26/2019

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			  
Traffic Volume (vph)	478	124	572	406	74	511
Future Volume (vph)	478	124	572	406	74	511
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.5	5.5	5.0	5.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1583	3539	1583	1770	5085
Flt Permitted	0.95	1.00	1.00	1.00	0.40	1.00
Satd. Flow (perm)	3433	1583	3539	1583	745	5085
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	514	133	615	437	80	549
RTOR Reduction (vph)	0	0	0	154	0	0
Lane Group Flow (vph)	514	133	615	283	80	549
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Actuated Green, G (s)	22.7	22.7	77.8	77.8	87.3	86.8
Effective Green, g (s)	22.7	22.7	77.8	77.8	87.3	86.8
Actuated g/C Ratio	0.19	0.19	0.65	0.65	0.73	0.72
Clearance Time (s)	5.0	5.0	5.5	5.5	5.0	5.5
Vehicle Extension (s)	2.0	2.0	3.0	3.0	1.5	3.0
Lane Grp Cap (vph)	649	299	2294	1026	576	3678
v/s Ratio Prot	c0.15		0.17		0.00	c0.11
v/s Ratio Perm		0.08		c0.18	0.10	
v/c Ratio	0.79	0.44	0.27	0.28	0.14	0.15
Uniform Delay, d1	46.4	43.1	9.0	9.0	6.2	5.1
Progression Factor	1.37	1.40	1.00	1.00	1.50	1.48
Incremental Delay, d2	5.9	0.4	0.3	0.7	0.0	0.1
Delay (s)	69.4	60.6	9.3	9.7	9.3	7.7
Level of Service	E	E	A	A	A	A
Approach Delay (s)	67.6		9.5			7.9
Approach LOS	E		A			A
Intersection Summary						
HCM 2000 Control Delay			25.2		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.39			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	15.5
Intersection Capacity Utilization			46.5%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Queues

1: S. Yosemite Street & E. County Line Road

04/26/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	151	829	174	170	1806	118	290	204	94	102	422
v/c Ratio	0.61	0.29	0.18	0.64	0.62	0.12	0.84	0.50	0.52	0.70	0.81
Control Delay	73.6	16.6	2.9	66.9	20.2	7.3	75.3	58.9	64.6	86.9	40.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.6	16.6	2.9	66.9	20.2	7.3	75.3	58.9	64.6	86.9	40.9
Queue Length 50th (ft)	70	138	0	80	214	1	137	97	86	92	93
Queue Length 95th (ft)	106	194	39	119	424	m53	#188	140	145	152	147
Internal Link Dist (ft)		465			710			451			207
Turn Bay Length (ft)	240			725			280				
Base Capacity (vph)	490	2907	979	367	2934	953	367	1011	452	189	1089
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.29	0.18	0.46	0.62	0.12	0.79	0.20	0.21	0.54	0.39

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.


































Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: S. Yosemite Street & E. County Line Road

04/26/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	 			 	
Traffic Volume (vph)	140	771	162	158	1680	110	270	190	87	95	176	217
Future Volume (vph)	140	771	162	158	1680	110	270	190	87	95	176	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92	0.92
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	1583	1770	3246	3246
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	1583	1770	3246	3246
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	151	829	174	170	1806	118	290	204	94	102	189	233
RTOR Reduction (vph)	0	0	74	0	0	40	0	0	0	0	205	0
Lane Group Flow (vph)	151	829	100	170	1806	78	290	204	94	102	217	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	NA
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	10.1	80.1	80.1	10.8	80.8	80.8	14.1	16.1	16.1	11.5	13.5	13.5
Effective Green, g (s)	10.1	80.1	80.1	10.8	80.8	80.8	14.1	16.1	16.1	11.5	13.5	13.5
Actuated g/C Ratio	0.07	0.57	0.57	0.08	0.58	0.58	0.10	0.12	0.12	0.08	0.10	0.10
Clearance Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.5	3.0	3.0	1.5	3.0	3.0	1.5	2.0	2.0	1.5	2.0	2.0
Lane Grp Cap (vph)	247	2909	905	264	2934	913	345	406	182	145	313	313
v/s Ratio Prot	0.04	0.16		c0.05	c0.36		c0.08	0.06		0.06	c0.07	
v/s Ratio Perm			0.06			0.05			c0.06			
v/c Ratio	0.61	0.28	0.11	0.64	0.62	0.09	0.84	0.50	0.52	0.70	0.69	0.69
Uniform Delay, d1	63.0	15.3	13.7	62.7	19.4	13.2	61.8	58.2	58.3	62.6	61.2	61.2
Progression Factor	1.00	1.00	1.00	0.92	0.93	1.46	0.88	0.95	0.94	1.00	1.00	1.00
Incremental Delay, d2	3.1	0.2	0.2	3.3	0.8	0.2	15.8	0.4	1.0	11.9	5.3	5.3
Delay (s)	66.2	15.6	13.9	61.0	19.0	19.3	70.4	55.4	55.9	74.5	66.5	66.5
Level of Service	E	B	B	E	B	B	E	E	E	E	E	E
Approach Delay (s)		21.9			22.4			62.9			68.1	
Approach LOS		C			C			E			E	
Intersection Summary												
HCM 2000 Control Delay			33.2				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)		21.5			
Intersection Capacity Utilization			74.1%				ICU Level of Service		D			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

2: Parkland Road & E. County Line Road

04/26/2019

	→	↘	↙	←	↖	↗				
Movement	EBT	EBR	WBL	WBT	NBL	NBR				
Lane Configurations	↑↑↑	↗		↑↑↑		↗				
Traffic Volume (veh/h)	831	123	0	1885	0	117				
Future Volume (Veh/h)	831	123	0	1885	0	117				
Sign Control	Free			Free		Stop				
Grade	0%			0%		0%				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				
Hourly flow rate (vph)	903	134	0	2049	0	127				
Pedestrians										
Lane Width (ft)										
Walking Speed (ft/s)										
Percent Blockage										
Right turn flare (veh)										
Median type	None			None						
Median storage (veh)										
Upstream signal (ft)	790			791						
pX, platoon unblocked				0.93		0.86	0.93			
vC, conflicting volume				903		1415	301			
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol				651		87	6			
tC, single (s)				4.1		6.8	6.9			
tC, 2 stage (s)										
tF (s)				2.2		3.5	3.3			
p0 queue free %				100		100	87			
cM capacity (veh/h)				871		776	1004			
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	
Volume Total	301	301	301	134	512	512	512	512	127	
Volume Left	0	0	0	0	0	0	0	0	0	
Volume Right	0	0	0	134	0	0	0	0	127	
cSH	1700	1700	1700	1700	1700	1700	1700	1700	1004	
Volume to Capacity	0.18	0.18	0.18	0.08	0.30	0.30	0.30	0.30	0.13	
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	11	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.1	
Lane LOS									A	
Approach Delay (s)	0.0				0.0				9.1	
Approach LOS									A	
Intersection Summary										
Average Delay				0.4						
Intersection Capacity Utilization				30.6%		ICU Level of Service			A	
Analysis Period (min)				15						

Queues

3: Chester Street/S. Chester Street & E. County Line Road

04/26/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	203	713	70	425	1472	122	235	298	536	621	492
v/c Ratio	0.65	0.45	0.12	0.84	0.63	0.56	0.31	0.87	0.96	0.55	0.64
Control Delay	94.3	32.6	1.5	72.8	38.3	66.1	42.6	70.4	87.1	41.7	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.3	32.6	1.5	72.8	38.3	66.1	42.6	70.4	87.1	41.7	12.9
Queue Length 50th (ft)	101	200	4	194	305	58	82	208	~283	254	76
Queue Length 95th (ft)	144	262	7	255	402	92	109	269	#400	296	191
Internal Link Dist (ft)		711			529		497			217	
Turn Bay Length (ft)	730			720		200			165		155
Base Capacity (vph)	490	1581	561	548	2342	490	1011	452	558	1120	764
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.45	0.12	0.78	0.63	0.25	0.23	0.66	0.96	0.55	0.64

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 3: Chester Street/S. Chester Street & E. County Line Road

04/26/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	684	67	408	1290	123	117	226	286	515	596	472
Future Volume (vph)	195	684	67	408	1290	123	117	226	286	515	596	472
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.5	6.5	5.0	6.5		5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6324		3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6324		3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	203	712	70	425	1344	128	122	235	298	536	621	492
RTOR Reduction (vph)	0	0	48	0	9	0	0	0	0	0	0	263
Lane Group Flow (vph)	203	713	22	425	1463	0	122	235	298	536	621	229
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	NA	4
Permitted Phases			2						8			4
Actuated Green, G (s)	12.6	43.6	43.6	20.7	51.7		8.9	30.4	30.4	22.8	44.3	44.3
Effective Green, g (s)	12.6	43.6	43.6	20.7	51.7		8.9	30.4	30.4	22.8	44.3	44.3
Actuated g/C Ratio	0.09	0.31	0.31	0.15	0.37		0.06	0.22	0.22	0.16	0.32	0.32
Clearance Time (s)	5.0	6.5	6.5	5.0	6.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		1.5	1.5	1.5	2.0	1.5	1.5
Lane Grp Cap (vph)	308	1583	492	507	2335		218	768	343	559	1119	500
v/s Ratio Prot	0.06	0.14		c0.12	c0.23		0.04	0.07		c0.16	0.18	
v/s Ratio Perm			0.01						c0.19			0.14
v/c Ratio	0.66	0.45	0.04	0.84	0.63		0.56	0.31	0.87	0.96	0.55	0.46
Uniform Delay, d1	61.6	38.6	33.7	58.0	36.2		63.6	46.0	52.9	58.1	39.7	38.2
Progression Factor	1.38	0.80	0.41	1.00	1.00		0.90	0.93	0.91	1.00	1.00	1.00
Incremental Delay, d2	3.8	0.9	0.2	11.1	1.3		1.7	0.1	18.6	27.5	0.3	0.2
Delay (s)	88.6	31.6	13.8	69.1	37.5		58.7	43.0	66.6	85.6	40.0	38.5
Level of Service	F	C	B	E	D		E	D	E	F	D	D
Approach Delay (s)		42.1			44.6			56.7			54.4	
Approach LOS		D			D			E			D	
Intersection Summary												
HCM 2000 Control Delay			48.7				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			22.5			
Intersection Capacity Utilization			68.7%			ICU Level of Service			C			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 4: Parkland Road & Westview Road

04/26/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	36	24	61	138	45	64	35	23	47	81	8	17
Future Volume (vph)	36	24	61	138	45	64	35	23	47	81	8	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	39	26	66	150	49	70	38	25	51	88	9	18
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total (vph)	39	92	150	119	38	76	88	27				
Volume Left (vph)	39	0	150	0	38	0	88	0				
Volume Right (vph)	0	66	0	70	0	51	0	18				
Hadj (s)	0.53	-0.47	0.53	-0.38	0.53	-0.44	0.53	-0.43				
Departure Headway (s)	5.9	4.9	5.8	4.9	6.2	5.2	6.2	5.2				
Degree Utilization, x	0.06	0.13	0.24	0.16	0.07	0.11	0.15	0.04				
Capacity (veh/h)	572	690	596	705	551	648	551	648				
Control Delay (s)	8.2	7.5	9.4	7.6	8.4	7.6	9.0	7.2				
Approach Delay (s)	7.7		8.6		7.9		8.6					
Approach LOS	A		A		A		A					
Intersection Summary												
Delay			8.3									
Level of Service			A									
Intersection Capacity Utilization			32.1%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM 2010 AWSC

4: Parkland Road & Westview Road

04/26/2019

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷		↶	↷	
Traffic Vol, veh/h	36	24	61	138	45	64	35	23	47	81	8	17
Future Vol, veh/h	36	24	61	138	45	64	35	23	47	81	8	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	26	66	150	49	70	38	25	51	88	9	18
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

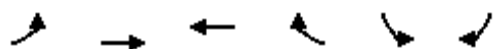
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	8.6	9.6	8.9	9.7
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	33%	0%	28%	0%	41%	0%	32%
Vol Right, %	0%	67%	0%	72%	0%	59%	0%	68%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	35	70	36	85	138	109	81	25
LT Vol	35	0	36	0	138	0	81	0
Through Vol	0	23	0	24	0	45	0	8
RT Vol	0	47	0	61	0	64	0	17
Lane Flow Rate	38	76	39	92	150	118	88	27
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.065	0.11	0.065	0.127	0.242	0.161	0.151	0.039
Departure Headway (Hd)	6.185	5.207	5.959	4.949	5.798	4.882	6.171	5.187
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	576	682	598	719	617	730	578	685
Service Time	3.96	2.981	3.729	2.719	3.558	2.641	3.946	2.961
HCM Lane V/C Ratio	0.066	0.111	0.065	0.128	0.243	0.162	0.152	0.039
HCM Control Delay	9.4	8.6	9.1	8.4	10.4	8.6	10.1	8.2
HCM Lane LOS	A	A	A	A	B	A	B	A
HCM 95th-tile Q	0.2	0.4	0.2	0.4	0.9	0.6	0.5	0.1

HCM Unsignalized Intersection Capacity Analysis

5: Westview Road & Future Site Entrance

















04/26/2019



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	75	85	141	93	50	117
Future Volume (Veh/h)	75	85	141	93	50	117
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	82	92	153	101	54	127
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			405			
pX, platoon unblocked						
vC, conflicting volume	254				460	204
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	254				460	204
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				90	85
cM capacity (veh/h)	1311				525	837
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	174	254	181			
Volume Left	82	0	54			
Volume Right	0	101	127			
cSH	1311	1700	711			
Volume to Capacity	0.06	0.15	0.25			
Queue Length 95th (ft)	5	0	25			
Control Delay (s)	4.0	0.0	11.8			
Lane LOS	A		B			
Approach Delay (s)	4.0	0.0	11.8			
Approach LOS			B			
Intersection Summary						
Average Delay			4.6			
Intersection Capacity Utilization		41.7%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
6: DSW Driveway/Site Entrance & Westview Road

04/26/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	109	14	43	206	0	23	0	49	16	0	5
Future Volume (Veh/h)	12	109	14	43	206	0	23	0	49	16	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	118	15	47	224	0	25	0	53	17	0	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					257							
pX, platoon unblocked												
vC, conflicting volume	224			133			474	470	126	522	477	224
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	224			133			474	470	126	522	477	224
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			95	100	94	96	100	99
cM capacity (veh/h)	1345			1452			481	471	925	424	467	815
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	146	271	78	22								
Volume Left	13	47	25	17								
Volume Right	15	0	53	5								
cSH	1345	1452	714	476								
Volume to Capacity	0.01	0.03	0.11	0.05								
Queue Length 95th (ft)	1	3	9	4								
Control Delay (s)	0.8	1.5	10.7	12.9								
Lane LOS	A	A	B	B								
Approach Delay (s)	0.8	1.5	10.7	12.9								
Approach LOS			B	B								
Intersection Summary												
Average Delay			3.2									
Intersection Capacity Utilization			33.0%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

7: Chester Street & Westview Road

04/26/2019



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	100	85	35	33	230	36	377	244	896
v/c Ratio	0.44	0.32	0.17	0.16	0.15	0.20	0.53	0.22	0.50
Control Delay	34.0	18.2	29.5	29.2	0.2	27.5	29.7	23.5	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	18.2	29.5	29.2	0.2	27.5	29.7	23.5	13.7
Queue Length 50th (ft)	40	14	14	13	0	14	79	85	213
Queue Length 95th (ft)	83	52	38	36	0	29	111	m95	#260
Internal Link Dist (ft)		177		141			414		497
Turn Bay Length (ft)						150		225	
Base Capacity (vph)	252	284	379	399	1583	227	709	1111	1779
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.30	0.09	0.08	0.15	0.16	0.53	0.22	0.50

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
























Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

7: Chester Street & Westview Road

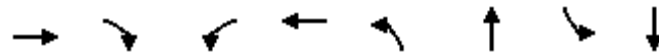
04/26/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	35	45	33	31	216	34	319	36	229	658	184
Future Volume (vph)	94	35	45	33	31	216	34	319	36	229	658	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	4.0	6.0	6.0		5.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		0.97	0.95	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1705		1770	1863	1583	1770	3486		3433	3423	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1705		1770	1863	1583	1770	3486		3433	3423	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	100	37	48	35	33	230	36	339	38	244	700	196
RTOR Reduction (vph)	0	42	0	0	0	0	0	12	0	0	26	0
Lane Group Flow (vph)	100	43	0	35	33	230	36	365	0	244	870	0
Turn Type	Split	NA		Split	NA	Free	Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						Free						
Actuated Green, G (s)	9.1	9.1		5.2	5.2	70.0	3.3	12.0		22.7	30.4	
Effective Green, g (s)	9.1	9.1		5.2	5.2	70.0	3.3	12.0		22.7	30.4	
Actuated g/C Ratio	0.13	0.13		0.07	0.07	1.00	0.05	0.17		0.32	0.43	
Clearance Time (s)	5.0	5.0		5.0	5.0		6.0	6.0		5.0	6.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.0	3.0		4.0	3.0	
Lane Grp Cap (vph)	230	221		131	138	1583	83	597		1113	1486	
v/s Ratio Prot	c0.06	0.03		0.02	0.02		0.02	0.10		c0.07	c0.25	
v/s Ratio Perm						c0.15						
v/c Ratio	0.43	0.20		0.27	0.24	0.15	0.43	0.61		0.22	0.59	
Uniform Delay, d1	28.1	27.2		30.6	30.5	0.0	32.4	26.8		17.2	15.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.88	1.12		1.20	0.86	
Incremental Delay, d2	1.8	0.6		1.5	1.2	0.2	3.4	4.4		0.4	1.4	
Delay (s)	29.9	27.8		32.1	31.8	0.2	31.9	34.3		20.9	14.3	
Level of Service	C	C		C	C	A	C	C		C	B	
Approach Delay (s)		28.9			7.4			34.1			15.8	
Approach LOS		C			A			C			B	
Intersection Summary												
HCM 2000 Control Delay			19.5			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			70.0			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			54.3%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

Queues

8: S. Yosemite Street & Parkland Road

04/26/2019

























Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	85	117	50	125	126	526	50	542
v/c Ratio	0.41	0.32	0.28	0.47	0.23	0.19	0.09	0.22
Control Delay	33.7	2.9	32.2	13.5	3.9	4.2	8.9	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.7	2.9	32.2	13.5	3.9	4.2	8.9	11.2
Queue Length 50th (ft)	35	0	20	4	8	0	5	23
Queue Length 95th (ft)	71	7	48	46	19	6	36	105
Internal Link Dist (ft)	116			330		519		654
Turn Bay Length (ft)			125		245		265	
Base Capacity (vph)	384	498	379	434	550	2705	528	2450
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.23	0.13	0.29	0.23	0.19	0.09	0.22

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 8: S. Yosemite Street & Parkland Road

04/26/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	17	108	46	8	107	116	456	28	46	406	93
Future Volume (vph)	62	17	108	46	8	107	116	456	28	46	406	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt		1.00	0.85	1.00	0.86		1.00	0.99		1.00	0.97	
Flt Protected		0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1792	1583	1770	1603		1770	5042		1770	4943	
Flt Permitted		0.96	1.00	0.95	1.00		0.41	1.00		0.45	1.00	
Satd. Flow (perm)		1792	1583	1770	1603		760	5042		832	4943	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	67	18	117	50	9	116	126	496	30	50	441	101
RTOR Reduction (vph)	0	0	105	0	106	0	0	6	0	0	38	0
Lane Group Flow (vph)	0	85	12	50	19	0	126	520	0	50	504	0
Turn Type	Split	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases			4				6			2		
Actuated Green, G (s)		7.2	7.2	6.1	6.1		38.0	32.3		33.4	30.0	
Effective Green, g (s)		7.2	7.2	6.1	6.1		38.0	32.3		33.4	30.0	
Actuated g/C Ratio		0.10	0.10	0.09	0.09		0.54	0.46		0.48	0.43	
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)		2.5	2.5	2.5	2.5		1.5	3.0		1.5	3.0	
Lane Grp Cap (vph)		184	162	154	139		494	2326		442	2118	
v/s Ratio Prot		c0.05		c0.03	0.01		c0.02	0.10		0.01	0.10	
v/s Ratio Perm			0.01				c0.12			0.05		
v/c Ratio		0.46	0.07	0.32	0.14		0.26	0.22		0.11	0.24	
Uniform Delay, d1		29.6	28.4	30.0	29.5		7.9	11.3		9.8	12.7	
Progression Factor		1.00	1.00	1.00	1.00		0.37	0.34		1.02	0.86	
Incremental Delay, d2		1.3	0.1	0.9	0.3		0.1	0.2		0.0	0.3	
Delay (s)		30.9	28.5	30.9	29.8		3.1	4.0		10.1	11.2	
Level of Service		C	C	C	C		A	A		B	B	
Approach Delay (s)		29.5			30.2			3.8			11.1	
Approach LOS		C			C			A			B	
Intersection Summary												
HCM 2000 Control Delay			12.5				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.31									
Actuated Cycle Length (s)			70.0				Sum of lost time (s)			21.0		
Intersection Capacity Utilization			42.4%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group

Queues

9: S. Yosemite Street & Chester Street

04/26/2019



















Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	708	92	560	367	55	554
v/c Ratio	0.80	0.22	0.33	0.38	0.34	0.18
Control Delay	44.0	34.3	13.6	3.3	28.1	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.0	34.3	13.6	3.3	28.1	7.4
Queue Length 50th (ft)	170	40	84	0	28	60
Queue Length 95th (ft)	208	74	132	49	27	21
Internal Link Dist (ft)	414		219			519
Turn Bay Length (ft)		160			245	
Base Capacity (vph)	916	422	1871	1010	161	3126
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.22	0.30	0.36	0.34	0.18
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

9: S. Yosemite Street & Chester Street

04/26/2019

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			  
Traffic Volume (vph)	651	85	515	338	51	510
Future Volume (vph)	651	85	515	338	51	510
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.5	5.5	5.0	5.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1583	3539	1583	1770	5085
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1583	3539	1583	1770	5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	708	92	560	367	55	554
RTOR Reduction (vph)	0	0	0	199	0	0
Lane Group Flow (vph)	708	92	560	168	55	554
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	18.1	18.1	32.0	32.0	4.4	41.4
Effective Green, g (s)	18.1	18.1	32.0	32.0	4.4	41.4
Actuated g/C Ratio	0.26	0.26	0.46	0.46	0.06	0.59
Clearance Time (s)	5.0	5.0	5.5	5.5	5.0	5.5
Vehicle Extension (s)	2.0	2.0	3.0	3.0	1.5	3.0
Lane Grp Cap (vph)	887	409	1617	723	111	3007
v/s Ratio Prot	c0.21		c0.16		c0.03	0.11
v/s Ratio Perm		0.06		0.11		
v/c Ratio	0.80	0.22	0.35	0.23	0.50	0.18
Uniform Delay, d1	24.2	20.4	12.3	11.5	31.7	6.6
Progression Factor	1.55	1.67	1.00	1.00	0.77	1.06
Incremental Delay, d2	4.3	0.1	0.6	0.8	1.3	0.1
Delay (s)	42.0	34.1	12.8	12.3	25.6	7.1
Level of Service	D	C	B	B	C	A
Approach Delay (s)	41.1		12.6			8.8
Approach LOS	D		B			A
Intersection Summary						
HCM 2000 Control Delay			21.4		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.51			
Actuated Cycle Length (s)			70.0		Sum of lost time (s)	15.5
Intersection Capacity Utilization			49.9%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Queues

1: S. Yosemite Street & E. County Line Road

04/26/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	204	1238	241	235	1123	113	268	287	134	134	269
v/c Ratio	0.65	0.50	0.27	0.67	0.44	0.13	0.78	0.65	0.68	0.73	0.51
Control Delay	62.3	23.1	3.7	48.2	18.9	6.6	72.3	74.6	84.7	74.3	29.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.3	23.1	3.7	48.2	18.9	6.6	72.3	74.6	84.7	74.3	29.3
Queue Length 50th (ft)	79	230	0	62	270	31	113	124	111	102	57
Queue Length 95th (ft)	117	334	52	94	347	84	#151	163	172	166	92
Internal Link Dist (ft)		465			710			451			207
Turn Bay Length (ft)	240			725			280				
Base Capacity (vph)	341	2489	898	364	2542	848	371	1150	514	236	1234
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.50	0.27	0.65	0.44	0.13	0.72	0.25	0.26	0.57	0.22


































Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

1: S. Yosemite Street & E. County Line Road

04/26/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	 			 	
Traffic Volume (vph)	194	1176	229	223	1067	107	255	273	127	127	144	111
Future Volume (vph)	194	1176	229	223	1067	107	255	273	127	127	144	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	0.93
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	1583	1770	3308	3308
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	1583	1770	3308	3308
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	204	1238	241	235	1123	113	268	287	134	134	152	117
RTOR Reduction (vph)	0	0	123	0	0	57	0	0	0	0	102	0
Lane Group Flow (vph)	204	1238	118	235	1123	57	268	287	134	134	167	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	NA
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	11.0	58.8	58.8	12.2	60.0	60.0	12.0	15.1	15.1	12.4	15.5	15.5
Effective Green, g (s)	11.0	58.8	58.8	12.2	60.0	60.0	12.0	15.1	15.1	12.4	15.5	15.5
Actuated g/C Ratio	0.09	0.49	0.49	0.10	0.50	0.50	0.10	0.13	0.13	0.10	0.13	0.13
Clearance Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.5	3.0	3.0	1.5	3.0	3.0	1.5	2.0	2.0	1.5	2.0	2.0
Lane Grp Cap (vph)	314	2491	775	349	2542	791	343	445	199	182	427	427
v/s Ratio Prot	0.06	c0.24		c0.07	0.22		c0.08	0.08		0.08	0.05	0.05
v/s Ratio Perm			0.07			0.04			c0.08			
v/c Ratio	0.65	0.50	0.15	0.67	0.44	0.07	0.78	0.64	0.67	0.74	0.39	0.39
Uniform Delay, d1	52.6	20.6	16.9	52.0	19.3	15.6	52.7	49.9	50.1	52.2	47.9	47.9
Progression Factor	1.00	1.00	1.00	0.76	0.88	1.54	1.07	1.37	1.38	1.00	1.00	1.00
Incremental Delay, d2	3.5	0.7	0.4	3.5	0.5	0.2	10.0	2.4	6.7	12.5	0.2	0.2
Delay (s)	56.1	21.3	17.3	43.3	17.4	24.1	66.4	70.9	75.8	64.7	48.1	48.1
Level of Service	E	C	B	D	B	C	E	E	E	E	D	D
Approach Delay (s)		25.0			22.1			70.1			53.6	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM 2000 Control Delay			34.0				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		21.5			
Intersection Capacity Utilization			61.8%				ICU Level of Service		B			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

2: Parkland Road & E. County Line Road

04/26/2019

	→	↘	↙	←	↖	↗				
Movement	EBT	EBR	WBL	WBT	NBL	NBR				
Lane Configurations	↑↑↑	↗		↑↑↑		↗				
Traffic Volume (veh/h)	1278	182	0	1470	0	207				
Future Volume (Veh/h)	1278	182	0	1470	0	207				
Sign Control	Free			Free		Stop				
Grade	0%			0%		0%				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				
Hourly flow rate (vph)	1318	188	0	1515	0	213				
Pedestrians										
Lane Width (ft)										
Walking Speed (ft/s)										
Percent Blockage										
Right turn flare (veh)										
Median type	None			None						
Median storage (veh)										
Upstream signal (ft)	790			791						
pX, platoon unblocked				0.85	0.91	0.85				
vC, conflicting volume				1318	1697	439				
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol				768	324	0				
tC, single (s)				4.1	6.8	6.9				
tC, 2 stage (s)										
tF (s)				2.2	3.5	3.3				
p0 queue free %				100	100	77				
cM capacity (veh/h)				717	589	925				
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	
Volume Total	439	439	439	188	379	379	379	379	213	
Volume Left	0	0	0	0	0	0	0	0	0	
Volume Right	0	0	0	188	0	0	0	0	213	
cSH	1700	1700	1700	1700	1700	1700	1700	1700	925	
Volume to Capacity	0.26	0.26	0.26	0.11	0.22	0.22	0.22	0.22	0.23	
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	22	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.1	
Lane LOS									B	
Approach Delay (s)	0.0			0.0						10.1
Approach LOS									B	
Intersection Summary										
Average Delay				0.7						
Intersection Capacity Utilization				44.2%	ICU Level of Service				A	
Analysis Period (min)				15						

Queues

3: Chester Street/S. Chester Street & E. County Line Road

04/26/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	316	1063	94	540	1223	101	332	312	439	391	332
v/c Ratio	0.74	0.83	0.18	0.76	0.58	0.55	0.40	0.84	1.08	0.37	0.49
Control Delay	48.4	51.3	8.9	53.9	34.0	45.5	41.9	65.9	116.9	33.5	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.4	51.3	8.9	53.9	34.0	45.5	41.9	65.9	116.9	33.5	7.3
Queue Length 50th (ft)	124	305	13	204	215	38	135	252	~210	128	19
Queue Length 95th (ft)	173	364	51	#378	288	65	178	340	#314	153	83
Internal Link Dist (ft)		711			529		497			217	
Turn Bay Length (ft)	730			720		200			165		155
Base Capacity (vph)	442	1334	536	709	2111	200	1179	527	407	1356	791
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.80	0.18	0.76	0.58	0.51	0.28	0.59	1.08	0.29	0.42

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 3: Chester Street/S. Chester Street & E. County Line Road





















04/26/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	307	1031	91	524	952	235	98	322	303	426	379	322
Future Volume (vph)	307	1031	91	524	952	235	98	322	303	426	379	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.5	6.5	5.0	6.5		5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6218		3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6218		3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	316	1063	94	540	981	242	101	332	312	439	391	332
RTOR Reduction (vph)	0	0	70	0	33	0	0	0	0	0	0	209
Lane Group Flow (vph)	316	1063	24	540	1190	0	101	332	312	439	391	123
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	NA	4
Permitted Phases			2						8			4
Actuated Green, G (s)	14.9	30.2	30.2	24.8	40.1		6.5	28.2	28.2	14.3	36.0	36.0
Effective Green, g (s)	14.9	30.2	30.2	24.8	40.1		6.5	28.2	28.2	14.3	36.0	36.0
Actuated g/C Ratio	0.12	0.25	0.25	0.21	0.33		0.05	0.23	0.23	0.12	0.30	0.30
Clearance Time (s)	5.0	6.5	6.5	5.0	6.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		1.5	1.5	1.5	2.0	1.5	1.5
Lane Grp Cap (vph)	426	1279	398	709	2077		185	831	372	409	1061	474
v/s Ratio Prot	0.09	c0.21		c0.16	0.19		0.03	0.09		c0.13	0.11	
v/s Ratio Perm			0.01						c0.20			0.08
v/c Ratio	0.74	0.83	0.06	0.76	0.57		0.55	0.40	0.84	1.07	0.37	0.26
Uniform Delay, d1	50.7	42.5	34.1	44.8	32.9		55.3	38.8	43.7	52.9	33.1	31.9
Progression Factor	0.76	1.07	1.00	1.00	1.00		0.63	1.08	1.09	1.00	1.00	1.00
Incremental Delay, d2	5.6	5.9	0.3	4.4	1.2		1.7	0.1	13.9	65.5	0.1	0.1
Delay (s)	43.9	51.4	34.4	49.2	34.1		36.6	41.9	61.7	118.3	33.1	32.0
Level of Service	D	D	C	D	C		D	D	E	F	C	C
Approach Delay (s)		48.7			38.7			49.4			65.0	
Approach LOS		D			D			D			E	
Intersection Summary												
HCM 2000 Control Delay			49.1			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			22.5			
Intersection Capacity Utilization			74.7%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 4: Parkland Road & Westview Road

04/26/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	90	62	84	143	81	100	60	39	65	96	4	23
Future Volume (vph)	90	62	84	143	81	100	60	39	65	96	4	23
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	94	65	88	149	84	104	63	41	68	100	4	24
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total (vph)	94	153	149	188	63	109	100	28				
Volume Left (vph)	94	0	149	0	63	0	100	0				
Volume Right (vph)	0	88	0	104	0	68	0	24				
Hadj (s)	0.53	-0.37	0.53	-0.35	0.53	-0.40	0.53	-0.57				
Departure Headway (s)	6.3	5.4	6.2	5.3	6.7	5.8	6.8	5.7				
Degree Utilization, x	0.17	0.23	0.26	0.28	0.12	0.17	0.19	0.04				
Capacity (veh/h)	539	632	555	646	504	582	498	587				
Control Delay (s)	9.4	8.9	10.2	9.2	9.4	8.8	10.1	7.7				
Approach Delay (s)	9.1		9.6		9.0		9.6					
Approach LOS	A		A		A		A					
Intersection Summary												
Delay			9.3									
Level of Service			A									
Intersection Capacity Utilization			38.3%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM 2010 AWSC

4: Parkland Road & Westview Road

04/26/2019

Intersection	
Intersection Delay, s/veh	10.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷		↶	↷	
Traffic Vol, veh/h	90	62	84	143	81	100	60	39	65	96	4	23
Future Vol, veh/h	90	62	84	143	81	100	60	39	65	96	4	23
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	94	65	88	149	84	104	63	41	68	100	4	24
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

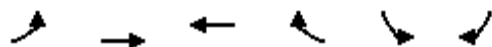
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	10.1	10.7	10.1	10.8
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	38%	0%	42%	0%	45%	0%	15%
Vol Right, %	0%	62%	0%	58%	0%	55%	0%	85%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	60	104	90	146	143	181	96	27
LT Vol	60	0	90	0	143	0	96	0
Through Vol	0	39	0	62	0	81	0	4
RT Vol	0	65	0	84	0	100	0	23
Lane Flow Rate	62	108	94	152	149	189	100	28
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.119	0.177	0.168	0.233	0.261	0.284	0.191	0.045
Departure Headway (Hd)	6.831	5.88	6.437	5.524	6.313	5.417	6.889	5.777
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	525	610	558	649	569	664	521	619
Service Time	4.57	3.619	4.172	3.259	4.046	3.15	4.632	3.519
HCM Lane V/C Ratio	0.118	0.177	0.168	0.234	0.262	0.285	0.192	0.045
HCM Control Delay	10.5	9.9	10.5	9.9	11.3	10.3	11.3	8.8
HCM Lane LOS	B	A	B	A	B	B	B	A
HCM 95th-tile Q	0.4	0.6	0.6	0.9	1	1.2	0.7	0.1

HCM Unsignalized Intersection Capacity Analysis

5: Westview Road & Future Site Entrance

















04/26/2019



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	94	133	202	117	62	142
Future Volume (Veh/h)	94	133	202	117	62	142
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	102	145	220	127	67	154
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)	405					
pX, platoon unblocked						
vC, conflicting volume	347			632	284	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	347			632	284	
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	92			84	80	
cM capacity (veh/h)	1212			407	755	
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	247	347	221			
Volume Left	102	0	67			
Volume Right	0	127	154			
cSH	1212	1700	600			
Volume to Capacity	0.08	0.20	0.37			
Queue Length 95th (ft)	7	0	42			
Control Delay (s)	3.8	0.0	14.5			
Lane LOS	A		B			
Approach Delay (s)	3.8	0.0	14.5			
Approach LOS			B			
Intersection Summary						
Average Delay			5.1			
Intersection Capacity Utilization			52.1%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
6: DSW Driveway/Site Entrance & Westview Road

04/26/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	156	28	58	281	28	27	1	60	27	1	11
Future Volume (Veh/h)	11	156	28	58	281	28	27	1	60	27	1	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	170	30	63	305	30	29	1	65	29	1	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					257							
pX, platoon unblocked	0.98						0.98	0.98		0.98	0.98	0.98
vC, conflicting volume	335			200			668	670	185	720	670	320
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	317			200			655	657	185	709	657	302
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			95			92	100	92	90	100	98
cM capacity (veh/h)	1224			1372			351	358	857	304	358	727
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	212	398	95	42								
Volume Left	12	63	29	29								
Volume Right	30	30	65	12								
cSH	1224	1372	589	366								
Volume to Capacity	0.01	0.05	0.16	0.11								
Queue Length 95th (ft)	1	4	14	10								
Control Delay (s)	0.5	1.6	12.3	16.1								
Lane LOS	A	A	B	C								
Approach Delay (s)	0.5	1.6	12.3	16.1								
Approach LOS			B	C								
Intersection Summary												
Average Delay			3.5									
Intersection Capacity Utilization			45.4%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

7: Chester Street & Westview Road

04/26/2019


























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	121	130	48	45	248	60	435	267	758
v/c Ratio	0.57	0.48	0.34	0.30	0.16	0.43	0.74	0.16	0.39
Control Delay	59.2	27.3	57.9	56.4	0.2	61.1	51.7	29.0	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.2	27.3	57.9	56.4	0.2	61.1	51.7	29.0	3.3
Queue Length 50th (ft)	90	39	36	33	0	45	167	50	0
Queue Length 95th (ft)	145	96	74	70	0	91	207	m118	123
Internal Link Dist (ft)		177		141			414		497
Turn Bay Length (ft)						150		225	
Base Capacity (vph)	309	355	191	201	1583	354	877	1632	1968
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.37	0.25	0.22	0.16	0.17	0.50	0.16	0.39

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
7: Chester Street & Westview Road

04/26/2019

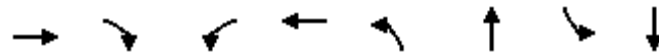
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	41	85	47	44	241	58	365	57	259	470	265
Future Volume (vph)	117	41	85	47	44	241	58	365	57	259	470	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	4.0	6.0	6.0		5.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		0.97	0.95	
Frt	1.00	0.90		1.00	1.00	0.85	1.00	0.98		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1674		1770	1863	1583	1770	3467		3433	3348	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1674		1770	1863	1583	1770	3467		3433	3348	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	121	42	88	48	45	248	60	376	59	267	485	273
RTOR Reduction (vph)	0	67	0	0	0	0	0	12	0	0	43	0
Lane Group Flow (vph)	121	63	0	48	45	248	60	423	0	267	715	0
Turn Type	Split	NA		Split	NA	Free	Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						Free						
Actuated Green, G (s)	14.6	14.6		8.3	8.3	120.0	8.3	19.0		57.1	66.8	
Effective Green, g (s)	14.6	14.6		8.3	8.3	120.0	8.3	19.0		57.1	66.8	
Actuated g/C Ratio	0.12	0.12		0.07	0.07	1.00	0.07	0.16		0.48	0.56	
Clearance Time (s)	5.0	5.0		5.0	5.0		6.0	6.0		5.0	6.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.0	3.0		4.0	3.0	
Lane Grp Cap (vph)	215	203		122	128	1583	122	548		1633	1863	
v/s Ratio Prot	c0.07	0.04		c0.03	0.02		c0.03	c0.12		0.08	c0.21	
v/s Ratio Perm						0.16						
v/c Ratio	0.56	0.31		0.39	0.35	0.16	0.49	0.77		0.16	0.38	
Uniform Delay, d1	49.7	48.1		53.4	53.3	0.0	53.8	48.4		17.9	15.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.97		1.37	0.19	
Incremental Delay, d2	4.1	1.2		2.8	2.3	0.2	3.0	9.8		0.2	0.5	
Delay (s)	53.7	49.3		56.3	55.6	0.2	56.7	56.6		24.7	3.3	
Level of Service	D	D		E	E	A	E	E		C	A	
Approach Delay (s)		51.4			15.4			56.6			8.9	
Approach LOS		D			B			E			A	
Intersection Summary												
HCM 2000 Control Delay			26.2			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				22.0		
Intersection Capacity Utilization			55.5%			ICU Level of Service				B		
Analysis Period (min)			15									

c Critical Lane Group

Queues

8: S. Yosemite Street & Parkland Road

04/26/2019



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	147	171	66	141	224	636	73	675
v/c Ratio	0.67	0.50	0.48	0.59	0.41	0.21	0.15	0.26
Control Delay	64.1	11.7	63.7	23.7	10.2	14.0	6.9	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.1	11.7	63.7	23.7	10.2	14.0	6.9	9.1
Queue Length 50th (ft)	111	0	50	16	77	116	10	41
Queue Length 95th (ft)	170	61	94	78	127	161	m29	77
Internal Link Dist (ft)	116			330		519		654
Turn Bay Length (ft)			125		245		265	
Base Capacity (vph)	343	441	339	408	552	2969	666	2555
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.39	0.19	0.35	0.41	0.21	0.11	0.26

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
 8: S. Yosemite Street & Parkland Road

04/26/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗	↖	↗		↖	↑↑↑		↖	↑↑↑	
Traffic Volume (vph)	108	28	157	61	19	110	206	537	48	67	446	175
Future Volume (vph)	108	28	157	61	19	110	206	537	48	67	446	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt		1.00	0.85	1.00	0.87		1.00	0.99		1.00	0.96	
Flt Protected		0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1791	1583	1770	1625		1770	5023		1770	4871	
Flt Permitted		0.96	1.00	0.95	1.00		0.34	1.00		0.40	1.00	
Satd. Flow (perm)		1791	1583	1770	1625		626	5023		744	4871	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	117	30	171	66	21	120	224	584	52	73	485	190
RTOR Reduction (vph)	0	0	150	0	111	0	0	5	0	0	45	0
Lane Group Flow (vph)	0	147	21	66	30	0	224	631	0	73	630	0
Turn Type	Split	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases			4				6			2		
Actuated Green, G (s)		14.8	14.8	9.4	9.4		79.8	69.8		66.8	61.8	
Effective Green, g (s)		14.8	14.8	9.4	9.4		79.8	69.8		66.8	61.8	
Actuated g/C Ratio		0.12	0.12	0.08	0.08		0.66	0.58		0.56	0.51	
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)		2.5	2.5	2.5	2.5		1.5	3.0		1.5	3.0	
Lane Grp Cap (vph)		220	195	138	127		540	2921		456	2508	
v/s Ratio Prot		c0.08		c0.04	0.02		c0.04	0.13		0.01	0.13	
v/s Ratio Perm			0.01				c0.23			0.08		
v/c Ratio		0.67	0.11	0.48	0.24		0.41	0.22		0.16	0.25	
Uniform Delay, d1		50.3	46.7	53.0	51.9		8.1	12.0		12.3	16.2	
Progression Factor		1.00	1.00	1.00	1.00		0.93	1.07		0.67	0.56	
Incremental Delay, d2		6.7	0.2	1.9	0.7		0.2	0.2		0.1	0.2	
Delay (s)		57.0	46.9	54.8	52.7		7.7	13.0		8.3	9.3	
Level of Service		E	D	D	D		A	B		A	A	
Approach Delay (s)		51.6			53.4			11.6			9.2	
Approach LOS		D			D			B			A	

Intersection Summary		
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.47	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 21.0
Intersection Capacity Utilization	56.7%	ICU Level of Service B
Analysis Period (min)	15	

c Critical Lane Group

Queues

9: S. Yosemite Street & Chester Street

04/26/2019



















Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	514	133	749	437	80	671
v/c Ratio	0.79	0.45	0.32	0.37	0.16	0.18
Control Delay	70.1	62.1	10.3	1.9	10.2	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.1	62.1	10.3	1.9	10.2	9.3
Queue Length 50th (ft)	196	97	128	0	23	73
Queue Length 95th (ft)	265	169	187	41	47	99
Internal Link Dist (ft)	414		219			519
Turn Bay Length (ft)		160			245	
Base Capacity (vph)	1144	527	2324	1189	585	3679
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.25	0.32	0.37	0.14	0.18
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

9: S. Yosemite Street & Chester Street

04/26/2019

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			  
Traffic Volume (vph)	478	124	697	406	74	624
Future Volume (vph)	478	124	697	406	74	624
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.5	5.5	5.0	5.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1583	3539	1583	1770	5085
Flt Permitted	0.95	1.00	1.00	1.00	0.34	1.00
Satd. Flow (perm)	3433	1583	3539	1583	632	5085
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	514	133	749	437	80	671
RTOR Reduction (vph)	0	0	0	154	0	0
Lane Group Flow (vph)	514	133	749	283	80	671
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Actuated Green, G (s)	22.7	22.7	77.8	77.8	87.3	86.8
Effective Green, g (s)	22.7	22.7	77.8	77.8	87.3	86.8
Actuated g/C Ratio	0.19	0.19	0.65	0.65	0.73	0.72
Clearance Time (s)	5.0	5.0	5.5	5.5	5.0	5.5
Vehicle Extension (s)	2.0	2.0	3.0	3.0	1.5	3.0
Lane Grp Cap (vph)	649	299	2294	1026	497	3678
v/s Ratio Prot	c0.15		c0.21		0.01	c0.13
v/s Ratio Perm		0.08		0.18	0.11	
v/c Ratio	0.79	0.44	0.33	0.28	0.16	0.18
Uniform Delay, d1	46.4	43.1	9.4	9.0	7.2	5.3
Progression Factor	1.32	1.36	1.00	1.00	1.56	1.64
Incremental Delay, d2	5.9	0.4	0.4	0.7	0.1	0.1
Delay (s)	67.3	59.0	9.8	9.7	11.3	8.8
Level of Service	E	E	A	A	B	A
Approach Delay (s)	65.6		9.8			9.0
Approach LOS	E		A			A
Intersection Summary						
HCM 2000 Control Delay			23.5		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.43			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	15.5
Intersection Capacity Utilization			50.0%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Queues

1: S. Yosemite Street & E. County Line Road

04/26/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	151	1009	174	170	2212	118	290	248	94	102	463
v/c Ratio	0.61	0.36	0.18	0.64	0.79	0.13	0.84	0.49	0.42	0.70	0.82
Control Delay	73.6	19.6	3.2	67.7	29.0	9.4	74.6	56.2	57.6	86.9	48.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.6	19.6	3.2	67.7	29.0	9.4	74.6	56.2	57.6	86.9	48.3
Queue Length 50th (ft)	70	187	0	82	335	3	135	116	83	92	135
Queue Length 95th (ft)	106	257	41	m115	577	m46	#190	165	145	152	188
Internal Link Dist (ft)		465			710			451			207
Turn Bay Length (ft)	240			725			280				
Base Capacity (vph)	490	2772	942	367	2799	913	367	1011	452	189	1065
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.36	0.18	0.46	0.79	0.13	0.79	0.25	0.21	0.54	0.43

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.


































Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: S. Yosemite Street & E. County Line Road

04/26/2019

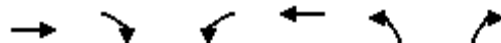
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	 			 	
Traffic Volume (vph)	140	938	162	158	2057	110	270	231	87	95	214	217
Future Volume (vph)	140	938	162	158	2057	110	270	231	87	95	214	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92	0.92
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	1583	1770	3272	3272
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	1583	1770	3272	3272
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	151	1009	174	170	2212	118	290	248	94	102	230	233
RTOR Reduction (vph)	0	0	79	0	0	42	0	0	0	0	160	0
Lane Group Flow (vph)	151	1009	95	170	2212	76	290	248	94	102	303	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	NA
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	10.1	76.3	76.3	10.8	77.0	77.0	14.1	19.9	19.9	11.5	17.3	17.3
Effective Green, g (s)	10.1	76.3	76.3	10.8	77.0	77.0	14.1	19.9	19.9	11.5	17.3	17.3
Actuated g/C Ratio	0.07	0.54	0.54	0.08	0.55	0.55	0.10	0.14	0.14	0.08	0.12	0.12
Clearance Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.5	3.0	3.0	1.5	3.0	3.0	1.5	2.0	2.0	1.5	2.0	2.0
Lane Grp Cap (vph)	247	2771	862	264	2796	870	345	503	225	145	404	404
v/s Ratio Prot	0.04	0.20		c0.05	c0.43		c0.08	c0.07		0.06	c0.09	
v/s Ratio Perm			0.06			0.05			0.06			
v/c Ratio	0.61	0.36	0.11	0.64	0.79	0.09	0.84	0.49	0.42	0.70	0.75	0.75
Uniform Delay, d1	63.0	18.1	15.4	62.7	25.1	14.9	61.8	55.4	54.8	62.6	59.3	59.3
Progression Factor	1.00	1.00	1.00	0.94	1.02	1.69	0.87	0.96	0.96	1.00	1.00	1.00
Incremental Delay, d2	3.1	0.4	0.3	3.2	1.9	0.2	15.8	0.3	0.5	11.9	6.8	6.8
Delay (s)	66.2	18.5	15.7	62.1	27.5	25.3	69.8	53.4	52.8	74.5	66.1	66.1
Level of Service	E	B	B	E	C	C	E	D	D	E	E	E
Approach Delay (s)		23.5			29.7			60.8			67.6	
Approach LOS		C			C			E			E	
Intersection Summary												
HCM 2000 Control Delay			36.2				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)				21.5	
Intersection Capacity Utilization			82.4%				ICU Level of Service				E	
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

2: Parkland Road & E. County Line Road

04/26/2019



Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations	↑↑↑	↗		↑↑↑		↗			
Traffic Volume (veh/h)	1021	123	0	2308	0	117			
Future Volume (Veh/h)	1021	123	0	2308	0	117			
Sign Control	Free			Free	Stop				
Grade	0%			0%	0%				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	1110	134	0	2509	0	127			
Pedestrians									
Lane Width (ft)									
Walking Speed (ft/s)									
Percent Blockage									
Right turn flare (veh)									
Median type	None			None					
Median storage (veh)									
Upstream signal (ft)	790			791					
pX, platoon unblocked			0.90		0.83	0.90			
vC, conflicting volume			1110		1737	370			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol			739		0	0			
tC, single (s)			4.1		6.8	6.9			
tC, 2 stage (s)									
tF (s)			2.2		3.5	3.3			
p0 queue free %			100		100	87			
cM capacity (veh/h)			778		844	977			
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	370	370	370	134	627	627	627	627	127
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	134	0	0	0	0	127
cSH	1700	1700	1700	1700	1700	1700	1700	1700	977
Volume to Capacity	0.22	0.22	0.22	0.08	0.37	0.37	0.37	0.37	0.13
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	11
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.2
Lane LOS									A
Approach Delay (s)	0.0				0.0				9.2
Approach LOS									A
Intersection Summary									
Average Delay				0.3					
Intersection Capacity Utilization				36.8%	ICU Level of Service				A
Analysis Period (min)				15					

Queues

3: Chester Street/S. Chester Street & E. County Line Road

04/26/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	203	868	70	425	1776	122	235	298	536	621	492
v/c Ratio	0.65	0.52	0.12	0.84	0.72	0.56	0.31	0.87	1.09	0.59	0.66
Control Delay	93.9	29.9	0.7	72.8	39.4	66.8	42.6	70.3	123.1	44.0	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	93.9	29.9	0.7	72.8	39.4	66.8	42.6	70.3	123.1	44.0	13.5
Queue Length 50th (ft)	101	249	0	194	394	58	83	209	~283	254	76
Queue Length 95th (ft)	144	314	1	255	#536	92	109	270	#400	296	191
Internal Link Dist (ft)		711			529		497			217	
Turn Bay Length (ft)	730			720		200			165		155
Base Capacity (vph)	490	1682	591	548	2470	490	1011	452	490	1083	751
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.52	0.12	0.78	0.72	0.25	0.23	0.66	1.09	0.57	0.66

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.


































Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 3: Chester Street/S. Chester Street & E. County Line Road





















04/26/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	 		 	 	
Traffic Volume (vph)	195	833	67	408	1582	123	117	226	286	515	596	472
Future Volume (vph)	195	833	67	408	1582	123	117	226	286	515	596	472
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.5	6.5	5.0	6.5		5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6339		3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6339		3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	203	868	70	425	1648	128	122	235	298	536	621	492
RTOR Reduction (vph)	0	0	47	0	7	0	0	0	0	0	0	271
Lane Group Flow (vph)	203	868	23	425	1769	0	122	235	298	536	621	221
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	12.6	46.4	46.4	20.7	54.5		8.9	30.4	30.4	20.0	41.5	41.5
Effective Green, g (s)	12.6	46.4	46.4	20.7	54.5		8.9	30.4	30.4	20.0	41.5	41.5
Actuated g/C Ratio	0.09	0.33	0.33	0.15	0.39		0.06	0.22	0.22	0.14	0.30	0.30
Clearance Time (s)	5.0	6.5	6.5	5.0	6.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		1.5	1.5	1.5	2.0	1.5	1.5
Lane Grp Cap (vph)	308	1685	524	507	2467		218	768	343	490	1049	469
v/s Ratio Prot	0.06	0.17		c0.12	c0.28		0.04	0.07		c0.16	0.18	
v/s Ratio Perm			0.01						c0.19			0.14
v/c Ratio	0.66	0.52	0.04	0.84	0.72		0.56	0.31	0.87	1.09	0.59	0.47
Uniform Delay, d1	61.6	37.7	31.8	58.0	36.2		63.6	46.0	52.9	60.0	42.0	40.3
Progression Factor	1.37	0.73	0.11	1.00	1.00		0.91	0.93	0.91	1.00	1.00	1.00
Incremental Delay, d2	3.7	1.1	0.2	11.1	1.8		1.7	0.1	18.6	68.6	0.6	0.3
Delay (s)	88.3	28.5	3.6	69.1	38.0		59.3	42.9	66.6	128.6	42.6	40.6
Level of Service	F	C	A	E	D		E	D	E	F	D	D
Approach Delay (s)		37.6			44.0			56.8			70.0	
Approach LOS		D			D			E			E	
Intersection Summary												
HCM 2000 Control Delay			51.8			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			22.5			
Intersection Capacity Utilization			73.0%			ICU Level of Service			C			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
4: Parkland Road & Westview Road

04/26/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	36	24	61	138	45	64	35	23	47	81	8	17
Future Volume (vph)	36	24	61	138	45	64	35	23	47	81	8	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	39	26	66	150	49	70	38	25	51	88	9	18
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total (vph)	39	92	150	119	38	76	88	27				
Volume Left (vph)	39	0	150	0	38	0	88	0				
Volume Right (vph)	0	66	0	70	0	51	0	18				
Hadj (s)	0.53	-0.47	0.53	-0.38	0.53	-0.44	0.53	-0.43				
Departure Headway (s)	5.9	4.9	5.8	4.9	6.2	5.2	6.2	5.2				
Degree Utilization, x	0.06	0.13	0.24	0.16	0.07	0.11	0.15	0.04				
Capacity (veh/h)	572	690	596	705	551	648	551	648				
Control Delay (s)	8.2	7.5	9.4	7.6	8.4	7.6	9.0	7.2				
Approach Delay (s)	7.7		8.6		7.9		8.6					
Approach LOS	A		A		A		A					
Intersection Summary												
Delay			8.3									
Level of Service			A									
Intersection Capacity Utilization			32.1%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM 2010 AWSC

4: Parkland Road & Westview Road

04/26/2019

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷		↶	↷	
Traffic Vol, veh/h	36	24	61	138	45	64	35	23	47	81	8	17
Future Vol, veh/h	36	24	61	138	45	64	35	23	47	81	8	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	26	66	150	49	70	38	25	51	88	9	18
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

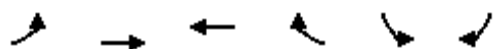
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	8.6	9.6	8.9	9.7
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	33%	0%	28%	0%	41%	0%	32%
Vol Right, %	0%	67%	0%	72%	0%	59%	0%	68%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	35	70	36	85	138	109	81	25
LT Vol	35	0	36	0	138	0	81	0
Through Vol	0	23	0	24	0	45	0	8
RT Vol	0	47	0	61	0	64	0	17
Lane Flow Rate	38	76	39	92	150	118	88	27
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.065	0.11	0.065	0.127	0.242	0.161	0.151	0.039
Departure Headway (Hd)	6.185	5.207	5.959	4.949	5.798	4.882	6.171	5.187
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	576	682	598	719	617	730	578	685
Service Time	3.96	2.981	3.729	2.719	3.558	2.641	3.946	2.961
HCM Lane V/C Ratio	0.066	0.111	0.065	0.128	0.243	0.162	0.152	0.039
HCM Control Delay	9.4	8.6	9.1	8.4	10.4	8.6	10.1	8.2
HCM Lane LOS	A	A	A	A	B	A	B	A
HCM 95th-tile Q	0.2	0.4	0.2	0.4	0.9	0.6	0.5	0.1

HCM Unsignalized Intersection Capacity Analysis

5: Westview Road & Future Site Entrance

















04/26/2019



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	75	85	141	93	50	117
Future Volume (Veh/h)	75	85	141	93	50	117
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	82	92	153	101	54	127
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			405			
pX, platoon unblocked						
vC, conflicting volume	254				460	204
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	254				460	204
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				90	85
cM capacity (veh/h)	1311				525	837
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	174	254	181			
Volume Left	82	0	54			
Volume Right	0	101	127			
cSH	1311	1700	711			
Volume to Capacity	0.06	0.15	0.25			
Queue Length 95th (ft)	5	0	25			
Control Delay (s)	4.0	0.0	11.8			
Lane LOS	A		B			
Approach Delay (s)	4.0	0.0	11.8			
Approach LOS			B			
Intersection Summary						
Average Delay			4.6			
Intersection Capacity Utilization			41.7%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
6: DSW Driveway/Site Entrance & Westview Road

04/26/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	109	14	43	206	0	23	0	49	16	0	5
Future Volume (Veh/h)	12	109	14	43	206	0	23	0	49	16	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	118	15	47	224	0	25	0	53	17	0	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					257							
pX, platoon unblocked												
vC, conflicting volume	224			133			474	470	126	522	477	224
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	224			133			474	470	126	522	477	224
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			95	100	94	96	100	99
cM capacity (veh/h)	1345			1452			481	471	925	424	467	815
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	146	271	78	22								
Volume Left	13	47	25	17								
Volume Right	15	0	53	5								
cSH	1345	1452	714	476								
Volume to Capacity	0.01	0.03	0.11	0.05								
Queue Length 95th (ft)	1	3	9	4								
Control Delay (s)	0.8	1.5	10.7	12.9								
Lane LOS	A	A	B	B								
Approach Delay (s)	0.8	1.5	10.7	12.9								
Approach LOS			B	B								
Intersection Summary												
Average Delay			3.2									
Intersection Capacity Utilization			33.0%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

7: Chester Street & Westview Road

04/26/2019



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	100	85	35	33	230	36	377	244	896
v/c Ratio	0.44	0.32	0.17	0.16	0.15	0.20	0.53	0.22	0.50
Control Delay	34.0	18.2	29.5	29.2	0.2	27.9	29.2	25.1	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	18.2	29.5	29.2	0.2	27.9	29.2	25.1	13.6
Queue Length 50th (ft)	40	14	14	13	0	13	78	85	212
Queue Length 95th (ft)	83	52	38	36	0	29	110	m95	#260
Internal Link Dist (ft)		177		141			414		497
Turn Bay Length (ft)						150		225	
Base Capacity (vph)	252	284	379	399	1583	227	709	1111	1779
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.30	0.09	0.08	0.15	0.16	0.53	0.22	0.50

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
























Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

7: Chester Street & Westview Road

04/26/2019

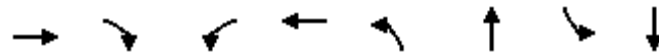
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	35	45	33	31	216	34	319	36	229	658	184
Future Volume (vph)	94	35	45	33	31	216	34	319	36	229	658	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	4.0	6.0	6.0		5.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		0.97	0.95	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1705		1770	1863	1583	1770	3486		3433	3423	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1705		1770	1863	1583	1770	3486		3433	3423	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	100	37	48	35	33	230	36	339	38	244	700	196
RTOR Reduction (vph)	0	42	0	0	0	0	0	12	0	0	26	0
Lane Group Flow (vph)	100	43	0	35	33	230	36	365	0	244	870	0
Turn Type	Split	NA		Split	NA	Free	Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						Free						
Actuated Green, G (s)	9.1	9.1		5.2	5.2	70.0	3.3	12.0		22.7	30.4	
Effective Green, g (s)	9.1	9.1		5.2	5.2	70.0	3.3	12.0		22.7	30.4	
Actuated g/C Ratio	0.13	0.13		0.07	0.07	1.00	0.05	0.17		0.32	0.43	
Clearance Time (s)	5.0	5.0		5.0	5.0		6.0	6.0		5.0	6.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.0	3.0		4.0	3.0	
Lane Grp Cap (vph)	230	221		131	138	1583	83	597		1113	1486	
v/s Ratio Prot	c0.06	0.03		0.02	0.02		0.02	0.10		c0.07	c0.25	
v/s Ratio Perm						c0.15						
v/c Ratio	0.43	0.20		0.27	0.24	0.15	0.43	0.61		0.22	0.59	
Uniform Delay, d1	28.1	27.2		30.6	30.5	0.0	32.4	26.8		17.2	15.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.89	1.10		1.28	0.86	
Incremental Delay, d2	1.8	0.6		1.5	1.2	0.2	3.4	4.4		0.4	1.4	
Delay (s)	29.9	27.8		32.1	31.8	0.2	32.3	33.8		22.4	14.2	
Level of Service	C	C		C	C	A	C	C		C	B	
Approach Delay (s)		28.9			7.4			33.7			16.0	
Approach LOS		C			A			C			B	
Intersection Summary												
HCM 2000 Control Delay			19.5			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			70.0			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			54.3%			ICU Level of Service			A			
Analysis Period (min)			15									

c Critical Lane Group

Queues

8: S. Yosemite Street & Parkland Road

04/26/2019



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	85	117	50	125	126	634	50	639
v/c Ratio	0.41	0.32	0.28	0.47	0.25	0.23	0.10	0.26
Control Delay	33.7	2.9	32.2	13.5	3.9	4.7	10.1	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.7	2.9	32.2	13.5	3.9	4.7	10.1	13.4
Queue Length 50th (ft)	35	0	20	4	7	0	8	53
Queue Length 95th (ft)	71	7	48	46	18	10	39	126
Internal Link Dist (ft)	116			330		519		654
Turn Bay Length (ft)			125		245		265	
Base Capacity (vph)	384	498	379	434	515	2710	487	2451
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.23	0.13	0.29	0.24	0.23	0.10	0.26

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 8: S. Yosemite Street & Parkland Road

04/26/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↗		↖	↑↑↑		↖	↑↑↑	
Traffic Volume (vph)	62	17	108	46	8	107	116	556	28	46	495	93
Future Volume (vph)	62	17	108	46	8	107	116	556	28	46	495	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt		1.00	0.85	1.00	0.86		1.00	0.99		1.00	0.98	
Flt Protected		0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1792	1583	1770	1603		1770	5049		1770	4965	
Flt Permitted		0.96	1.00	0.95	1.00		0.37	1.00		0.40	1.00	
Satd. Flow (perm)		1792	1583	1770	1603		689	5049		745	4965	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	67	18	117	50	9	116	126	604	30	50	538	101
RTOR Reduction (vph)	0	0	105	0	106	0	0	5	0	0	28	0
Lane Group Flow (vph)	0	85	12	50	19	0	126	629	0	50	611	0
Turn Type	Split	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases			4				6			2		
Actuated Green, G (s)		7.2	7.2	6.1	6.1		38.0	32.3		33.4	30.0	
Effective Green, g (s)		7.2	7.2	6.1	6.1		38.0	32.3		33.4	30.0	
Actuated g/C Ratio		0.10	0.10	0.09	0.09		0.54	0.46		0.48	0.43	
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)		2.5	2.5	2.5	2.5		1.5	3.0		1.5	3.0	
Lane Grp Cap (vph)		184	162	154	139		462	2329		405	2127	
v/s Ratio Prot		c0.05		c0.03	0.01		c0.02	0.12		0.01	0.12	
v/s Ratio Perm			0.01				c0.13			0.05		
v/c Ratio		0.46	0.07	0.32	0.14		0.27	0.27		0.12	0.29	
Uniform Delay, d1		29.6	28.4	30.0	29.5		7.9	11.6		9.8	13.0	
Progression Factor		1.00	1.00	1.00	1.00		0.37	0.36		1.15	0.97	
Incremental Delay, d2		1.3	0.1	0.9	0.3		0.1	0.3		0.0	0.3	
Delay (s)		30.9	28.5	30.9	29.8		3.0	4.5		11.4	13.0	
Level of Service		C	C	C	C		A	A		B	B	
Approach Delay (s)		29.5			30.2			4.2			12.9	
Approach LOS		C			C			A			B	

Intersection Summary

HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues

9: S. Yosemite Street & Chester Street

04/26/2019



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	708	92	683	367	55	676
v/c Ratio	0.82	0.23	0.39	0.38	0.35	0.22
Control Delay	45.7	35.7	13.5	3.0	25.3	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.7	35.7	13.5	3.0	25.3	5.4
Queue Length 50th (ft)	167	39	107	0	26	47
Queue Length 95th (ft)	#212	74	148	44	34	12
Internal Link Dist (ft)	414		219			519
Turn Bay Length (ft)		160			245	
Base Capacity (vph)	890	410	1871	1010	156	3126
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.22	0.37	0.36	0.35	0.22

Intersection Summary













95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

9: S. Yosemite Street & Chester Street

04/26/2019

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	651	85	628	338	51	622
Future Volume (vph)	651	85	628	338	51	622
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.5	5.5	5.0	5.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1583	3539	1583	1770	5085
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1583	3539	1583	1770	5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	708	92	683	367	55	676
RTOR Reduction (vph)	0	0	0	196	0	0
Lane Group Flow (vph)	708	92	683	171	55	676
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	17.6	17.6	32.7	32.7	4.2	41.9
Effective Green, g (s)	17.6	17.6	32.7	32.7	4.2	41.9
Actuated g/C Ratio	0.25	0.25	0.47	0.47	0.06	0.60
Clearance Time (s)	5.0	5.0	5.5	5.5	5.0	5.5
Vehicle Extension (s)	2.0	2.0	3.0	3.0	1.5	3.0
Lane Grp Cap (vph)	863	398	1653	739	106	3043
v/s Ratio Prot	c0.21		c0.19		c0.03	0.13
v/s Ratio Perm		0.06		0.11		
v/c Ratio	0.82	0.23	0.41	0.23	0.52	0.22
Uniform Delay, d1	24.7	20.8	12.3	11.1	31.9	6.5
Progression Factor	1.53	1.67	1.00	1.00	0.65	0.78
Incremental Delay, d2	5.4	0.1	0.8	0.7	1.8	0.2
Delay (s)	43.2	34.8	13.1	11.9	22.4	5.3
Level of Service	D	C	B	B	C	A
Approach Delay (s)	42.3		12.7			6.6
Approach LOS	D		B			A
Intersection Summary						
HCM 2000 Control Delay			20.1		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.55			
Actuated Cycle Length (s)			70.0		Sum of lost time (s)	15.5
Intersection Capacity Utilization			53.0%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						