

Traffic Impact Study for the Creekside Estates Project



Prepared for the County of Butte

Submitted by **W-Trans**

November 20, 2018



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Executive Summary

This report presents an analysis of the potential traffic impacts that would be associated with the proposed Creekside Estates, a residential subdivision with 46 single family homes. The project site is located on the south side of Durham-Dayton Highway, east of its intersection with Midway and is currently used as an orchard. A single access point on Durham-Dayton Highway would connect to Street A and serve all 46 residences. The proposed project would be expected to result in 434 new daily trips on average, including 34 trips during the morning peak hour and 46 trips during the evening peak hour.

Under Existing Conditions for the year 2018, all study intersections are currently operating acceptably at LOS C or better during both peak hours.

The Butte County Capital Improvement Program (CIP) Fiscal Years 2017 through 2026-27 includes the installation of a traffic signal at the intersection of Durham-Dayton Highway/Midway by the horizon year 2028. Under Future Conditions, and with the planned installation of a traffic signal at Durham-Dayton Highway/Midway, all study intersections are expected to operate acceptably at LOS A or B during both peak hours. The County of Butte should consider installing a roundabout at the intersection of Durham-Dayton Highway/Midway as an alternative to a traffic signal. A preliminary evaluation indicates that the intersection may be a good candidate for a roundabout.

Upon the addition of project-related traffic to existing volumes, all study intersections would be expected to continue operating acceptably at LOS C or better during both peak hours, and the project's short-term impact on operation would be considered less-than-significant.

Upon the addition of project-related traffic to the volumes anticipated for the year 2028, and with installation of a traffic signal or roundabout at Durham-Dayton Highway/Midway, all study intersections would be expected to operate at LOS A or B during both peak hours and the project's impact on long-term operation would be considered less-than-significant.

The project would provide a sidewalk along the entirety of its frontage with Durham-Dayton Highway; however, the project sidewalk would be disconnected from the surrounding pedestrian network. Because the project site is located within walking distance from the downtown core of Durham and the schools located west of Midway, it is recommended that the project provide a pedestrian path between the project site and Midway. Existing bicycle facilities along with those planned would provide adequate access for bicyclists. Existing transit service is adequate to accommodate the demand anticipated for the project.

As proposed in the site plan, on-site circulation would be expected to operate acceptably. Adequate sight distance is available along Durham-Dayton Highway at the project access to accommodate all turns. A left-turn lane would not be warranted on Durham-Dayton Highway at the project access point. Neither a right-turn lane, nor right-turn taper, would not be warranted at the project access point on Durham-Dayton Highway. Installation of any vegetation or signage at the project access point should be done in a manner that does not impede clear sight lines.



Introduction

Introduction

This report presents an analysis of the potential traffic impacts that would be associated with the proposed Creekside Estates, a residential subdivision with 46 single family homes. The project site is located in the community of Durham in unincorporated Butte County. The project would be located east of Midway and on the south side of Durham-Dayton Highway, with access being taken off Durham-Dayton Highway. The traffic study was completed in accordance with the criteria established by the County of Butte and is consistent with standard traffic engineering techniques. It is noted that a traffic study was completed for a residential project on this site in 2013, so data from that study was used in this update.

Prelude

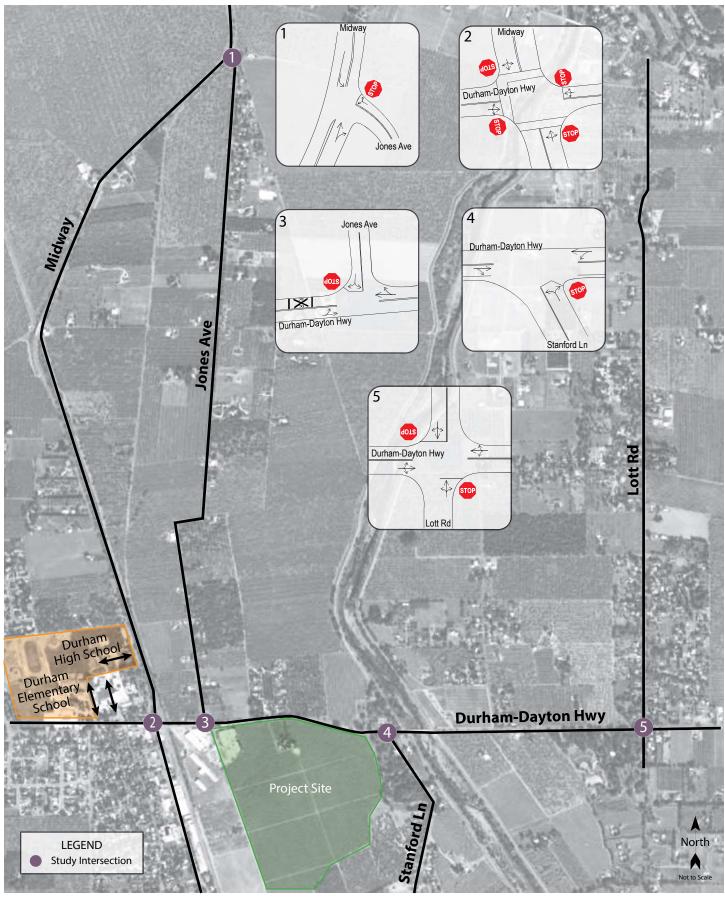
The purpose of a traffic impact study is to provide County of Butte staff and policy makers such as Planning Commissioners and Board of Supervisors members with data which they can use to make an informed decision regarding the potential traffic impacts of a proposed project, and any associated improvements which would be required to mitigate these impacts to a level of insignificance as defined by the County's General Plan or other policies. Impacts to vehicular traffic are typically evaluated by determining the number of trips the new use would be expected to generate, distributing the new trips to the surrounding street system based on existing travel patterns or anticipated travel patterns specific to the proposed project, then analyzing the impact the new traffic would be expected to have on critical intersections included in the study. Impacts are also reviewed for alternative modes, including pedestrians, bicyclists and transit users. Based on the conditions projected, appropriate mitigation measures can be determined that would reduce the traffic impacts of the project to levels which are less than significant.

Project Profile

The proposed project consists of 46 single family homes with a total development area of approximately 50 acres. The project site is located on the south side of Durham-Dayton Highway, east of the intersection with Midway, and is currently used as an orchard, though the trees would be removed to make room for the project, and occupied by an existing single family dwelling, which would remain. A single access point on Durham-Dayton Highway would serve all 46 residences.

The location of the project site is shown in Figure 1.





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Transportation Setting

Operational Analysis

Study Area and Periods

The study area consists of the following intersections and the project access point:

- 1. Midway/Jones Avenue
- 2. Durham-Dayton Highway/Midway
- 3. Durham-Dayton Highway/Jones Avenue
- 4. Durham-Dayton Highway/Stanford Lane
- 5. Durham-Dayton Highway/Lott Road

Conditions during the weekday a.m. and p.m. peak periods were evaluated. The weekday morning peak hour occurs between 7:00 and 9:00 a.m. and reflects conditions during the home to work or school commute, while the p.m. peak hour occurs between 4:00 and 6:00 p.m. and typically reflects the highest level of congestion during the homeward bound commute.

Study Intersections

Midway/Jones Avenue is a "tee" intersection with westbound Jones Avenue stop-controlled and both Midway approaches uncontrolled. The southbound approach on Midway includes a 75-foot left-turn lane.

Durham-Dayton Highway/Midway is an all-way stop intersection located within the town center of Durham, with single lane approaches. Crosswalks are located on three approaches to the intersection.

Durham-Dayton Highway/Jones Avenue is a "tee" intersection with Durham-Dayton Highway uncontrolled and the approach of Jones Avenue stop-controlled. Class II bicycle lanes are provided on both sides of Durham-Dayton Highway.

Durham-Dayton Highway/Stanford Lane is a "tee" intersection with Durham-Dayton Highway uncontrolled and the approach of Stanford Lane stop-controlled. Class II bicycle lanes are provided on both sides of Durham-Dayton Highway.

Durham-Dayton Highway/Lott Road is two-way stop-controlled on the Lott Road approaches. Class II bicycle lanes are provided on both sides of Durham-Dayton Highway.

The locations of the study intersections and the existing lane configurations and controls are shown in Figure 1.

Collision History

The collision history for the study area was reviewed to determine any trends or patterns that may indicate a safety issue. Collision rates were calculated based on records available from the California Highway Patrol as published in their *Statewide Integrated Traffic Records System* (SWITRS) reports. The most current five-year period available is from January 1, 2013 through December 31, 2017. As presented in Table 1, the calculated collision rates for the study intersections were compared to average collision rates for similar facilities statewide, as indicated in *2014 Collision Data on California State Highways*, California Department of Transportation (Caltrans).



The intersection of Durham-Dayton Highway/Lott Road had two reported collisions during the five-year study period, resulting in a calculated collision rate of 0.31 collisions per million vehicles entering (c/mve). Although the calculated collision rate is slightly above the statewide average for similar facilities, because only two collisions occurred over a five-year period and only one collision involved an injury, no remedial measures appear necessary. All other study intersections had calculated collision rates that were lower than the statewide average rate for similar facilities. The collision rate calculations are provided in Appendix A.

Tal	Table 1 – Collision Rates at the Study Intersections										
Study Intersection		Number of Collisions (2013-2017)	Calculated Collision Rate (c/mve)	Statewide Average Collision Rate (c/mve)							
1.	Midway/Jones Ave	1	0.08	0.16							
2.	Durham-Dayton Hwy/Midway	4	0.30	0.32							
3.	Durham-Dayton Hwy/Jones Ave	1	0.11	0.14							
4.	Durham-Dayton Hwy/Stanford Ln	1	0.12	0.16							
5.	Durham-Dayton Hwy/Lott Rd	2	0.31	0.23							

Note: c/mve = collisions per million vehicles entering; **Bold** indicates a calculated collision rate greater than the statewide average

Alternative Transportation Modes

Pedestrian Facilities

Pedestrian facilities include sidewalks, crosswalks, pedestrian signal phases, curb ramps, curb extensions, and various streetscape amenities such as lighting, benches, etc. Existing pedestrian facilities located within the study area are focused on Durham-Dayton Highway and Midway, as follows:

- **Durham-Dayton Highway** A continuous sidewalk is provided on Durham-Dayton Highway west of the intersection with Midway. Crosswalks are located on the north, south, and west legs at the Midway intersection where there are all-way stops which provide a controlled crossing for pedestrians.
- **Midway** Sidewalks extend south from the intersection with Durham-Dayton Highway on both sides of the road and to the north on the west side.

In general, the lack of continuous sidewalks in a rural area is typical. The distance a pedestrian will typically travel to reach a destination is generally half a mile and in a rural area few destinations are located within this threshold. However, the Creekside Estates site is located less than a half-mile from the core of Durham, near the intersection of Durham-Dayton Highway/Midway where there are commercial businesses and the post office. Durham Elementary School and High School are located on the north side of Durham-Dayton Highway, just west of the intersection with Midway. Given these uses in Durham, some pedestrian trips between the development and this downtown area of Durham are expected.

Bicycle Facilities

The Caltrans Highway Design Manual classifies bikeways into three categories.

Class I Multi-Use Path – a completely separated right-of-way for the exclusive use of bicycles and pedestrians
with cross flows of motorized traffic minimized.



- Class II Bike Lane a striped and signed lane for one-way bike travel on a street or highway.
- Class III Bike Route signing only for shared use with motor vehicles within the same travel lane on a street or highway.

In the project area, Class II bike lanes exist on Durham-Dayton Highway between Midway and Lott Road. Table 2 summarizes the existing and planned bicycle facilities in the project vicinity, as contained in the *Butte County Bicycle Plan*.

Table 2 – Bicycle Facility Summary										
Status Facility	Class	Length (miles)	Begin Point	End Point						
Existing										
Durham-Dayton Hwy	II	2.8	McAnarlin Ave	Esquon Rd						
Planned										
Jones Ave	III	2.2	Durham-Dayton Hwy	Midway						
Lott Rd	II	2.1	Durham-Dayton Hwy	Oroville Chico Hwy						
Midway	II	10.9	Durham-Dayton Hwy	Richvale Hwy						

Source: Source: 2011 Butte County Bicycle Plan, County of Butte, 2011

Transit Facilities

Transit service in Butte County is provided by B-Line (Butte Regional Transit) operated by the Butte County Association of Governments, which provides fixed-route bus service as well as flexible route paratransit for seniors and those with disabilities. The B-Line's bus Route 32 operates Monday through Friday and stops at the intersection of Durham-Dayton Highway/Midway. This route offers transit service to Chico, Biggs, and Gridley five days a week twice a day, once in the morning and once in the evening. Bike racks are available on all B-Line buses on a first come first served basis.



Capacity Analysis

Intersection Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

The study intersections were analyzed using methodologies published in the *Highway Capacity Manual* (HCM), Transportation Research Board, 2010. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle.

The intersection of Durham-Dayton Highway/Midway was analyzed using the "All-Way Stop-Controlled" Intersection methodology from the HCM, as the intersections are currently controlled with stop signs on all four approaches. This methodology evaluates delay for each approach based on turning movements, opposing and conflicting traffic volumes, and the number of lanes. Average vehicle delay is computed for the intersection as a whole, and is then related to a Level of Service.

The rest of the study intersections were analyzed using the "Two-Way Stop-Controlled" methodology, which determines a level of service for each minor turning movement by estimating the level of average delay in seconds per vehicle. Results are presented for individual movements together with the weighted overall average delay for the intersection. The ranges of delay associated with the various levels of service are indicated in Table 3.

Table	Table 3 – Intersection Level of Service Criteria									
LOS	Two-Way Stop-Controlled	All-Way Stop-Controlled								
Α	Delay of 0 to 10 seconds. Gaps in traffic are readily available for drivers exiting the minor street.	Delay of 0 to 10 seconds. Upon stopping, drivers are immediately able to proceed.								
В	Delay of 10 to 15 seconds. Gaps in traffic are somewhat less readily available than with LOS A, but no queuing occurs on the minor street.	Delay of 10 to 15 seconds. Drivers may wait for one or two vehicles to clear the intersection before proceeding from a stop.								
С	Delay of 15 to 25 seconds. Acceptable gaps in traffic are less frequent, and drivers may approach while another vehicle is already waiting to exit the side street.	Delay of 15 to 25 seconds. Drivers will enter a queue of one or two vehicles on the same approach, and wait for vehicle to clear from one or more approaches prior to entering the intersection.								
D	Delay of 25 to 35 seconds. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street.	Delay of 25 to 35 seconds. Queues of more than two vehicles are encountered on one or more approaches.								
E	Delay of 35 to 50 seconds. Few acceptable gaps in traffic are available, and longer queues may form on the side street.	Delay of 35 to 50 seconds. Longer queues are encountered on more than one approach to the intersection.								
F	Delay of more than 50 seconds. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting the side streets, creating long queues.	Delay of more than 50 seconds. Drivers enter long queues on all approaches.								

Reference: Highway Capacity Manual, Transportation Research Board, 2010



Traffic Operation Standards

The proposed project, along with all study intersections, is located within unincorporated Butte County. Therefore, traffic operation standards for the entire study area are based upon the County of Butte's policies, as contained in the *Butte County General Plan 2030*, policy CIR-P6.1:

The level of service for County-maintained roads within unincorporated areas of the county but outside municipalities' sphere of influences (SOI) shall be level of service (LOS) C or better during the PM peak hour. Within a municipality's SOI, the level of service shall meet the municipality's level of service policy.

None of the study intersections are located within a municipality's SOI, so the County's standard of LOS C was applied to all study intersections.

Existing Conditions

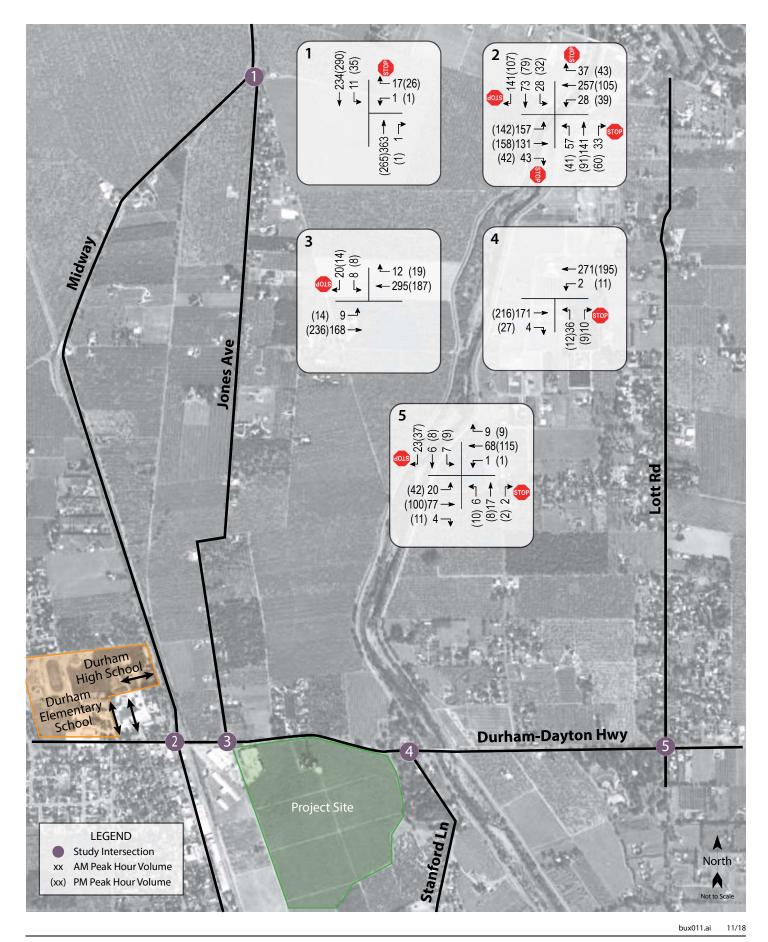
The Existing Conditions scenario provides an evaluation of current operation based on existing traffic volumes during the weekday a.m. and p.m. peak hours. This condition does not include project-generated traffic volumes. Rather than collecting new counts, volume data collected for a previously proposed version of the project in 2013 was factored up to reflect volumes indicative of 2018.

The Butte County Association of Governments (BCAG) has a gravity demand model that provides volume projections from a base year of 2006 to a future year of 2035 for the entire county. The model indicates that volumes in the project vicinity are expected to increase at a rate of 2.24 percent annually during the morning peak hour and 1.65 percent annually during the p.m. peak hour. Accounting for the five years of growth that has occurred since the 2013 analysis, growth factors of 1.11 and 1.08 were applied to the 2013 volumes to determine likely existing volumes. The BCAD volume data and growth factor calculations are contained in Appendix B.

Intersection Levels of Service

Under Existing Conditions for the year 2018, all study intersections are currently operating acceptably at LOS C or better during both peak hours. (All the stop-controlled approaches are operating at LOS B.) The existing traffic volumes are shown in Figure 2 and a summary of the intersection levels of service is contained in Table 4. Copies of the Level of Service Calculations for all evaluated scenarios are provided in Appendix C.





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Tal	Table 4 – Existing Peak Hour Intersection Levels of Service								
Stu	udy Intersection	Existing Conditions							
	Approach	AM Peak PM P		Peak					
		Delay	LOS	Delay	LOS				
1.	Midway/Jones Ave	0.5	Α	0.9	Α				
	Westbound Jones Ave Approach	10.6	В	10.0	В				
2.	Durham-Dayton Hwy/Midway	15.5	С	12.2	В				
3.	Durham-Dayton Hwy/Jones Ave	0.7	Α	0.7	Α				
	Southbound Jones Ave Approach	10.6	В	10.2	В				
4.	Durham-Dayton Hwy/Stanford Ln	1.1	Α	0.7	Α				
	Northbound Stanford Ln Approach	11.2	В	10.6	В				
5.	Durham-Dayton Hwy/Lott Rd	3.1	Α	3.1	Α				
	Northbound Lott Rd Approach	10.2	В	11.2	В				
	Southbound Lott Rd Approach	9.3	Α	9.9	Α				

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*

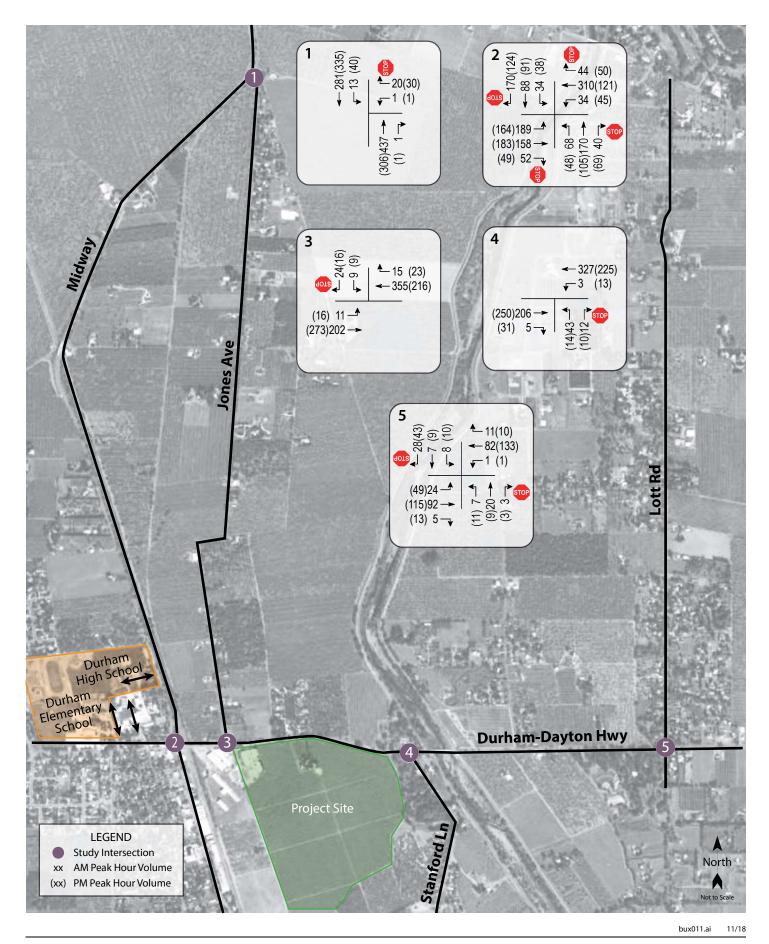
Future Conditions

The same growth rates used to factor up the 2013 counts for Existing Conditions were applied to determine volumes representative of the horizon year 2028 (15 years from collection of the counts and 10 years into the future). Based on the BCAG data, growth factors of 1.34 and 1.25 were applied to the morning and evening peak hours, respectively. As contained in the *Butte County Capital Improvement Program (CIP) Fiscal Years 2017 through 2026-27*, the intersection of Durham-Dayton Highway/Midway is planned to be signalized by the horizon year 2028, so levels of service at this intersection were analyzed with the planned improvement, in addition to its existing controls.

Intersection Levels of Service

Under Future Conditions, and with the planned installation of a traffic signal at Durham-Dayton Highway/Midway, all study intersections are expected to operate acceptably at LOS B or better during both peak hours. Future volumes are shown in Figure 3 and the resulting levels of service are summarized in Table 5.





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Tal	Table 5 – Future Peak Hour Intersection Levels of Service								
Stu	Study Intersection Future Conditions								
	Approach	AM F	Peak	eak					
		Delay	LOS	Delay	LOS				
1.	Midway/Jones Ave	0.5	Α	0.9	Α				
	Westbound Jones Ave Approach	11.2	В	10.3	В				
2.	Durham-Dayton Hwy/Midway	30.0	D	15.3	C				
	Traffic Signal	14.8	В	14.5	В				
	Roundabout	10.5	В	8.1	Α				
3.	Durham-Dayton Hwy/Jones Ave	0.8	Α	0.7	Α				
	Southbound Jones Ave Approach	11.3	В	10.6	В				
4.	Durham-Dayton Hwy/Stanford Ave	1.2	Α	0.7	Α				
	Northbound Stanford Ave Approach	12.1	В	11.2	В				
5.	Durham-Dayton Hwy/Lott Rd	3.2	Α	3.2	Α				
	Northbound Lott Rd Approach	10.6	В	11.7	В				
	Southbound Lott Rd Approach	9.5	Α	10.2	В				

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; **Bold** text indicates unacceptable operation; Shaded cells represent conditions with planned or recommended improvements

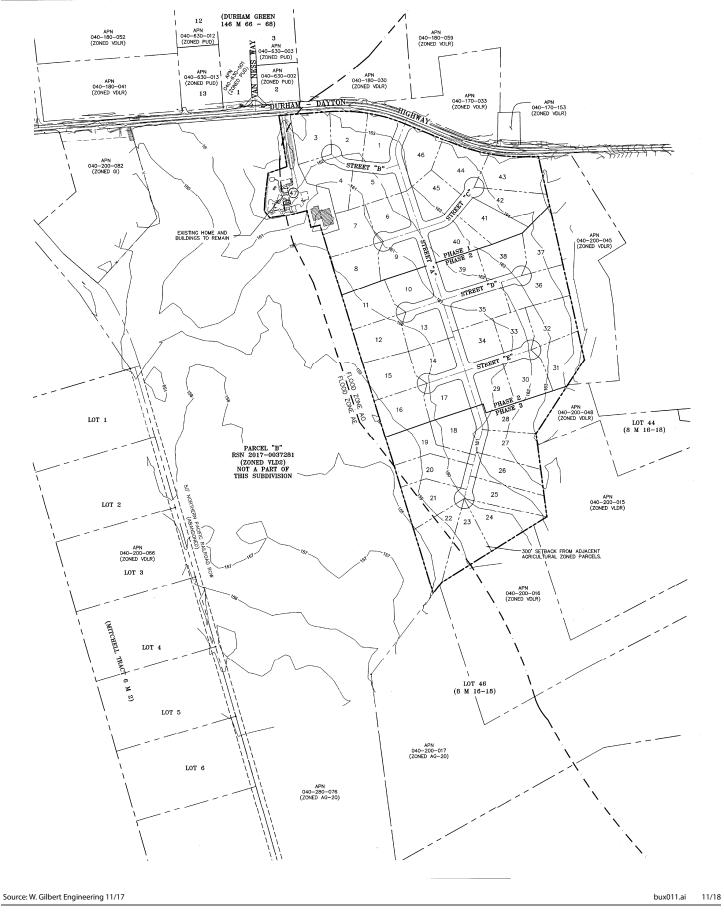
In addition to a traffic signal, the intersection of Durham-Dayton Highway/Midway was evaluated as a roundabout after a preliminary analysis indicated that the intersection may be a good candidate for such a facility based on geometry, right-of-way availability, rural setting, and traffic volumes. The CIP cost estimate for the planned traffic signal is \$450,000 and a single-lane roundabout may likely be similar in cost. For this reason, along with the safety benefits that roundabouts provide, it is recommended that the County explore the possibility of installing a roundabout as opposed to a traffic signal. As shown in Table 5 above, doing so would result in delays less than those expected upon signalization.

Project Description

The proposed project consists of 46 single family homes with a total development area of approximately 50 acres. The project site is located on the south side of Durham-Dayton Highway, east of its intersection with Midway and is currently used as an orchard, though the trees would be removed to make room for the project, and occupied by an existing single family dwelling, which would remain. As proposed, the project would be constructed in three phases; the first phase would include construction of 16 homes and project Streets A, B, and C, the second phase would extend Street A to the southeast, construct Street D, and add 19 more homes, and the third phase would extend Street A to the southwest and construct 11 more homes. A single access point on Durham-Dayton Highway would connect to Street A and serve all 46 residences.

The proposed project site plan is shown in Figure 4.







Trip Generation

The anticipated trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 10th Edition, 2017. Rates for "Single Family Detached Housing" (ITE LU #210) were applied. Based on this land use, the proposed project would be expected to result in 434 new daily trips on average, including 34 trips during the morning peak hour and 46 trips during the evening peak hour. It should be noted that the existing orchard that would be removed as part of the project is likely generating a nominal amount of traffic so any trip generation credits were ignored to provide conservative results. The anticipated trip generation for the proposed project is shown in Table 6.

Table 6 – Trip Generation Summary											
Land Use	Units	Daily		AM Peak Hour			F	PM Peak	Hour		
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	ln	Out
Proposed											
Single Family Detached Housing	46	9.44	434	0.74	34	9	25	0.99	46	29	17

Trip Distribution

The trip distribution was developed based on existing traffic patterns, volumes presented in the County's travel demand forecasting model, and the anticipated origins and destinations for residents of the project. As would be expected, the highest percentages were assigned to those roads connecting to Chico. Table 7 summarizes the distribution assumptions applied.

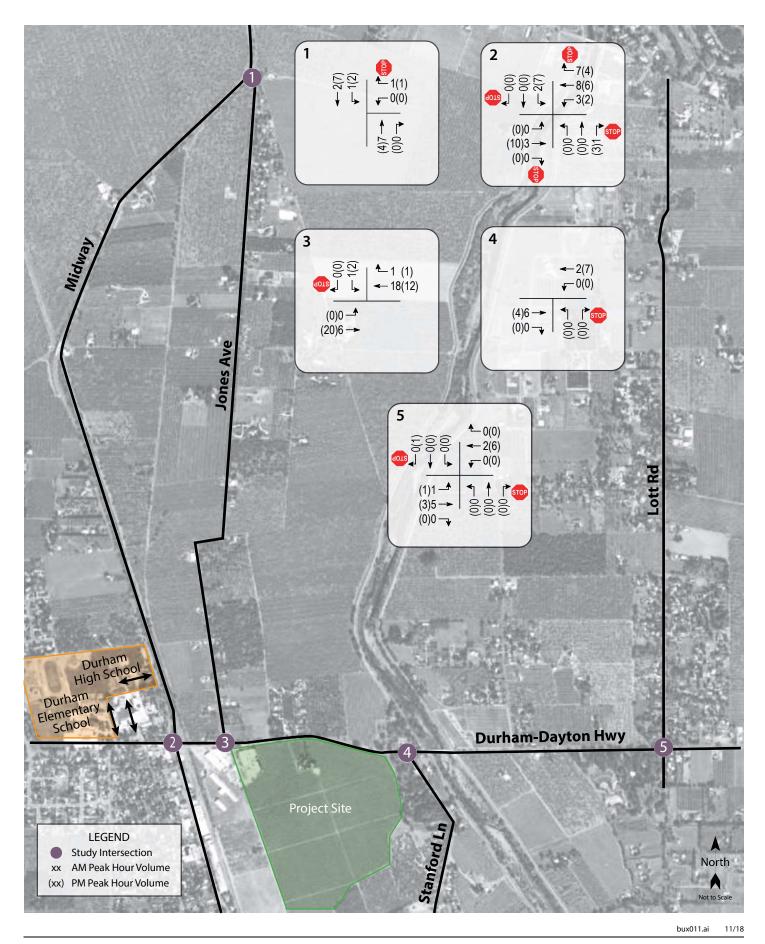
Table 7 – Trip Distribution Assumptions							
Route	Percent						
To/from West via Durham-Dayton Hwy	35%						
To/from North via Midway	25%						
To/from North via Jones Ave	5%						
To/From South via Midway	10%						
To/From North via Lott Rd	5%						
To/From East via Durham-Dayton Hwy	20%						
TOTAL	100%						

Intersection Operation

Existing plus Project Conditions

Upon the addition of project-generated traffic to existing volumes, all study intersections are expected to continue operating acceptably at LOS C or better during the a.m. and p.m. peak hours. The project traffic volumes are shown in Figure 5 and LOS results are summarized in Table 8.





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Tal	Table 8 – Existing and Existing plus Project Peak Hour Intersection Levels of Service										
Stu	udy Intersection	Ex	cisting (Condition	ıs	Ex	isting p	lus Proje	ct		
	Approach	AM F	Peak	PM F	Peak	AM F	Peak	PM F	'eak		
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		
1.	Midway/Jones Ave	0.5	Α	0.9	Α	0.5	Α	0.9	Α		
	Westbound Jones Ave Approach	10.6	В	10.0	В	10.6	В	10.0	В		
2.	Durham-Dayton Hwy/Midway	15.5	C	12.2	В	16.2	C	12.7	В		
3.	Durham-Dayton Hwy/Jones Ave	0.7	Α	0.7	Α	0.7	Α	0.7	Α		
	Southbound Jones Ave Approach	10.6	В	10.2	В	10.9	В	10.6	В		
4.	Durham-Dayton Hwy/Stanford Ave	1.1	Α	0.7	Α	1.1	Α	0.6	Α		
	Northbound Stanford Ave Approach	11.2	В	10.6	В	11.3	В	10.7	В		
5.	Durham-Dayton Hwy/Lott Rd	3.1	Α	3.1	Α	3.1	Α	3.0	Α		
	Northbound Lott Rd Approach	10.2	В	11.2	В	10.3	В	11.3	В		
	Southbound Lott Rd Approach	9.3	Α	9.9	Α	9.4	Α	9.9	Α		

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*

It should be noted that with the addition of project-related traffic volumes, average delay at the intersections of Durham-Dayton Highway with Stanford Lane and Lott Road decreases slightly during the p.m. peak hour. While this is counter-intuitive, this condition occurs when a project adds trips to movements that are currently underutilized or have delays that are below the intersection average, resulting in a better balance between approaches and lower overall average delay. The project would add traffic predominantly to the through and right-turn movements at the aforementioned intersections during the evening peak hour, and these movements have delays that are lower than the averages for the intersections as a whole, resulting in a slight reduction in the overall average delay. The conclusion could incorrectly be drawn that the project actually improves operation at these intersections based on this data alone; however, it is more appropriate to conclude that the project trips are expected to make use of excess capacity, so drivers will experience little, if any, change in conditions as a result of the project.

Finding – Upon the addition of project-related traffic to existing volumes, all study intersections would be expected to continue operating acceptably at LOS C or better during both peak hours, and the project's short-term impact on operation would be considered *less-than-significant*.

Future plus Project Conditions

Project-generated traffic was added to the traffic volumes obtained from the growth rates derived from the BCAG model to determine how the surrounding roadways would function under Future plus Project conditions. Upon the addition of project generated traffic, and with implementation of the planned traffic signal or roundabout at Durham-Dayton Highway/Midway, all study intersections would be expected to operate acceptably at LOS A or B during both peak hours; these results are summarized in Table 9.



Tal	Table 9 – Future and Future plus Project Peak Hour Intersection Levels of Service									
Study Intersection			uture C	ondition	s	F	ıture pl	us Projec	:t	
	Approach	AM F	Peak	PM P	eak	AM Peak		PM Peak		
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	
1.	Midway/Jones Ave	0.5	Α	0.9	Α	0.5	Α	0.9	Α	
	Westbound Jones Ave Approach	11.2	В	10.3	В	11.3	В	10.3	В	
2.	Durham-Dayton Hwy/Midway	30.0	D	15.3	C	33.6	D	16.1	C	
	Traffic Signal	14.8	В	14.5	В	14.9	В	14.6	В	
	Roundabout	10.5	В	8.1	Α	10.9	В	8.3	Α	
3.	Durham-Dayton Hwy/Jones Ave	0.8	Α	0.7	Α	0.8	Α	0.7	Α	
	Southbound Jones Ave Approach	11.3	В	10.6	В	11.5	В	11.0	В	
4.	Durham-Dayton Hwy/Stanford Ln	1.2	Α	0.7	Α	1.2	Α	0.7	Α	
	Northbound Stanford Ln Approach	12.1	В	11.2	В	12.2	В	11.2	В	
5.	Durham-Dayton Hwy/Lott Rd	3.2	Α	3.2	Α	3.1	Α	3.1	Α	
	Northbound Lott Rd Approach	10.6	В	11.7	В	10.6	В	11.8	В	
	Southbound Lott Rd Approach	9.5	Α	10.2	В	9.6	Α	10.2	В	

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; **Bold** text indicates unacceptable operation; Shaded cells represent conditions with planned or recommended improvements

Finding – Upon the addition of project-related traffic to the volumes anticipated for the year 2028, and with installation of a traffic signal or roundabout at Durham-Dayton Highway/Midway, all study intersections would be expected to operate at LOS A or B during both peak hours and the project's impact on long-term operation would be considered *less-than-significant*.

Recommendation – As mentioned earlier in this report, the County should explore the feasibility of installing a roundabout at Durham-Dayton Highway/Midway, instead of a traffic signal.



Alternative Transportation Modes

Pedestrian Facilities

Given the rural nature of the area surrounding the project site, the lack of sidewalks near the project is generally acceptable. However, because the project is located less than half a mile from the downtown area of Durham, where there are markets, the post office as well as the Elementary and High School, some residents including students may wish to walk from the development to the downtown area. Therefore, it is recommended that an all-weather pedestrian walkway or path be provided on the south side of Durham-Dayton Highway between the proposed terminus of the project sidewalk at the property boundary and the intersection with Midway. Crosswalks are already present at the intersection of Durham-Dayton Highway/Midway where there is an all-way Stop control. With these improvements, students walking to the Durham schools could take the following route:

- Walking along the south side of Durham-Dayton Highway on the recommended sidewalk/all-weather pathway to the intersection with Midway (approximately 2,500 feet).
- Crossing to the northwest corner of the Midway intersection using the all-way Stop controlled crossing.
- Walking along the north side of Durham-Dayton Highway on the existing sidewalk/asphalt pathways to Goodspeed Street or Putney Drive which access the Elementary and High Schools (approximately 1,000 feet).

Finding – The project would provide a sidewalk/all-weather pathway along the entirety of its frontage with Durham-Dayton Highway; however, the project sidewalk would be disconnected from the surrounding pedestrian network in the core of Durham.

Recommendation – Because the project site is located within walking distance from the downtown core of Durham and the schools located west of Midway, it is recommended that the project provide an all-weather pedestrian path on the south side of Durham-Dayton Highway between the project site and the intersection with Midway.

Bicycle Facilities

The existing bicycle lanes on Durham-Dayton Highway would provide adequate bicycle access for the development. The planned bicycle facilities in the area, including bicycle lanes on Midway and Lott Road as well as a future Class III bicycle route on Jones Avenue, will further improve bicycle access in the area of the development. No additional bicycle improvements are included or needed as part of this project proposal.

Finding – Existing bicycle facilities along with those planned would provide adequate access for bicyclists.

Transit

Existing transit routes are adequate to accommodate project-generated transit trips. The existing transit stop at Durham-Dayton Highway/Midway is located approximately 0.5 miles from the project site, which is considered an acceptable walking distance. Because the development falls within the half-mile threshold that is often used as an upper limit of transit accessibility, no changes to existing services are recommended.

Finding – Existing transit service is adequate to accommodate the demand anticipated for the project.



Access and Circulation

Site Access

Access to the project site would be provided via a new public Street A, which would connect to the south side of Durham-Dayton Highway approximately 0.5 miles east of Midway. Street A would extend straight back from the middle of a horizontal curve in the alignment of Durham-Dayton Highway and from there would bend to the southeast where it would provide access to project Streets B, C, D, and E which would run perpendicular to Street A. All proposed project streets would be equipped with curbs, gutters, and sidewalks.

Finding – As proposed in the site plan, on-site circulation would be expected to operate acceptably.

Sight Distance

Sight distance along Durham-Dayton Highway was evaluated based on sight distance criteria contained in the *Highway Design Manual* published by Caltrans. At intersections of public streets, a substantially clear line of sight should be maintained between the driver of a vehicle waiting at the crossroad and the driver of an approaching vehicle. The recommended sight distance at intersections is based on corner sight distance, which uses the approach travel speeds as the basis for determining the recommended sight distance. Table 10 summarizes the minimum sight distance requirements.

Table 10 – Intersection Sight Distance Criteria								
Speed	Public Road Major Approach Stopping Sight Distance	Public Road Minor Approach Corner Sight Distance	Private Road and Rural Driveway Stopping Sight Distance					
30 mph	200 feet	330 feet	200 feet					
35 mph	250 feet	385 feet	250 feet					
40 mph	300 feet	440 feet	300 feet					

Source: Highway Design Manual, 6th Edition, California Department of Transportation, 2017

The speed limit on the segment of Durham-Dayton Highway along the project frontage is 35 miles per hour. For a 35-mph design speed, a public road intersection should have a corner sight distance of at least 385 feet. Based on a review of field conditions, sight distance at the proposed access points extends more than 400 feet in both directions, which is adequate for the posted speed limit.

Finding – Adequate sight distance is available at the project intersection to accommodate all turns.

Recommendation – To ensure that adequate sight lines are retained, it is recommended that any vegetation planted along the project frontages is maintained such that it is less than three, or more than seven, feet in height.

Access Analysis

Left-Turn Lane Warrants

The need for a left-turn lanes on Durham-Dayton Highway at the project access point was evaluated based on criteria contained in the *Intersection Channelization Design Guide*, National Cooperative Highway Research Program (NCHRP) Report No. 279, Transportation Research Board, 1985, as well as an update of the methodology developed by the Washington State Department of Transportation and published in the *Method For Prioritizing*



Intersection Improvements, January 1997. The NCHRP report references a methodology developed by M. D. Harmelink that includes equations that can be applied to expected or actual traffic volumes in order to determine the need for a left-turn pocket based on safety issues. Based on our research and discussions with Caltrans staff, this methodology is consistent with the *Guidelines for Reconstruction of Intersections*, August 1985, which was referenced in Section 405.2, Left-turn Channelization, of previous editions of the Caltrans HDM, though this reference has been deleted from the most recent edition of this manual.

Based on Future plus Project volumes, which represents worst-case conditions, a left-turn lane would not be warranted during either of the weekday peak hours.

Finding – A left-turn lane would not be warranted on Durham-Dayton Highway at the project access point.

Right-Turn Lane Warrants

The need for a right-turn lane or taper was also evaluated and would consist of a lane installed to the right of the travel lane and would be a minimum of ten feet wide, plus a shoulder where not adjacent to a curb. A right-turn taper is a shoulder area that gets progressively wider as the motorist drives toward the intersection. Both improvements are meant to provide an area for motorists turning right to move out of the traffic lane without impeding through traffic.

The need for a right-turn lane or taper on Durham-Dayton Highway was evaluated under the same worst-case conditions that left-turn lane warrants were evaluated. Based on Future plus Project volumes, no additional facilities in the form of either a right-turn lane or right-turn taper would be warranted during either of the weekday peak hours.

The turn-lane analysis sheets are contained in Appendix D.

Finding – Neither a right-turn lane, nor right-turn taper, would not be warranted at the project access point on Durham-Dayton Highway.



Conclusions and Recommendations

Conclusions

- Under Existing Conditions, all study intersections currently operate at LOS C or better during both the a.m. and p.m. peak hours, meeting the applicable County of Butte LOS standards.
- With the projected future growth in regional traffic, all study intersections are expected to continue to operate acceptably at LOS C or better during both peak hours, except for Durham-Dayton Highway/Midway which would be expected to deteriorate to LOS D during the morning peak hour. Upon installation of the planned traffic signal identified in the County's CIP, the intersection would be expected to operate acceptably at LOS B during the morning peak hour.
- The proposed project is expected to generate an average of 434 new daily trips on average, of which 34 would occur during the a.m. peak hour and 46 would occur during the p.m. peak hour.
- With the addition of project-generated traffic to existing volumes, all study intersections are expected to continue to operate acceptably. Likewise, acceptable operations are expected under Future plus Project Conditions, assuming installation of a traffic signal at Durham-Dayton Highway/Midway.
- The project would provide a sidewalk along its frontage with Durham-Dayton Highway; however, the sidewalk would terminate at the project boundaries leaving the site isolated from the downtown area and the schools west of Midway.
- Existing Class II bicycle lanes are located on both sides of Durham-Dayton Highway in the study area. Proposed bicycle facilities are planned for Midway, Jones Avenue, and Lott Road. These existing and proposed facilities provide adequate access for bicyclists.
- The project site is served by one transit line connecting the area of Durham with several nearby cities. This transit line is expected to accommodate the demand generated by the proposed development.
- On-site circulation would be expected to operate acceptably and adequate sight distance is available at the proposed access point to accommodate all turns into and out of the site.
- No additional right- or left-turn channelization facilities would be warranted on Durham-Dayton Highway at the project access point.

Recommendations

- As part of the *Butte County Capital Improvement Program (CIP) Fiscal Years 2017 through 2026-27*, the County of Butte should consider installing a roundabout at the intersection of Durham-Dayton Highway/Midway as an alternative to a traffic signal. A preliminary evaluation indicates that the intersection may be a good candidate for a roundabout.
- It is suggested that an all-weather path or walkway be provided on the south side of Durham-Dayton Highway, connecting the proposed development with the existing crosswalk and sidewalks at the intersection with Midway which lead to the core area of Durham.
- Installation of any vegetation or signage at the project access point should be done in a manner that does not impede clear sight lines.



Study Participants and References

Study Participants

Principal in Charge Steve Weinberger, PE, PTOE

Assistant Engineer Cameron Nye, EIT

Editing/Formatting/Graphics Alex Scrobonia, Katia Wolfe **Report Review** Dalene J. Whitlock, PE, PTOE

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BUX011





Appendix A

Collision Rate Calculations



Intersection Collision Rate Calculations

Creekside Estates TIS

Intersection # 1: Midway & Jones Ave

Date of Count: Monday, May 21, 2018

Number of Collisions: 1 Number of Injuries: 1 Number of Fatalities: 0 ADT: 6900

Start Date: January 1, 2013 End Date: December 31, 2017

Number of Years: 5

Intersection Type: Tee

Control Type: Stop & Yield Controls

Area: Rural

collision rate = Number of Collisions x 1 Million
ADT x 365 Days per Year x Number of Years

collision rate = $\frac{1}{6,900} \times \frac{1,000,000}{365} \times \frac{5}{1}$

 Study Intersection Statewide Average*
 Collision Rate | Fatality Rate | Injury Rate |
 Injury Rate |

 0.08 c/mve | 0.0% | 100.0% |
 100.0% |

 0.16 c/mve | 1.7% |
 39.2% |

ADT = average daily total vehicles entering intersection c/mve = collisions per million vehicles entering intersection
* 2013 Collision Data on California State Highways, Caltrans

Intersection # 2: Durham-Dayton Hwy & Midway

Date of Count: Monday, May 21, 2018

Number of Collisions: 4 Number of Injuries: 2 Number of Fatalities: 0 ADT: 7400

Start Date: January 1, 2013 End Date: December 31, 2017

Number of Years: 5

Intersection Type: Four-Legged
Control Type: 4 Way Stop
Area: Suburban

collision rate = Number of Collisions x 1 Million

ADT x 365 Days per Year x Number of Years

collision rate = 4 x 1,000,000 7,400 x 365 x 5

 Study Intersection Statewide Average*
 Collision Rate | Fatality Rate | Injury Rate |
 Injury Rate |

 0.30 c/mve | 0.0% | 50.0% |
 50.0% |

 0.32 c/mve | 0.4% | 44.7% |
 44.7% |

ADT = average daily total vehicles entering intersection c/mve = collisions per million vehicles entering intersection
* 2013 Collision Data on California State Highways, Caltrans

Intersection Collision Rate Calculaions

Creekside Estates TIS

Intersection # 3: Durham-Dayton Hwy & Jones Ave

Date of Count: Monday, May 21, 2018

Number of Collisions: 1 Number of Injuries: 1 Number of Fatalities: 0 **ADT**: 4800

Start Date: January 1, 2013 End Date: December 31, 2017 Number of Years: 5

Intersection Type: Tee
Control Type: Stop & Yield Controls

Area: Suburban

Number of Collisions x 1 Million collision rate =

ADT x 365 Days per Year x Number of Years

 Study Intersection Statewide Average*
 Collision Rate | Fatality Rate | Injury Rate |
 Injury Rate |

 0.11 c/mve | 0.0% | 0.7% | 0.7% |
 100.0% |

 0.14 c/mve | 0.7% | 38.0% |

ADT = average daily total vehicles entering intersection c/mve = collisions per million vehicles entering intersection * 2013 Collision Data on California State Highways, Caltrans

Intersection # 4: Durham-Dayton Hwy & Stanford Ln

Date of Count: Monday, May 21, 2018

Number of Collisions: 1 Number of Injuries: 0 Number of Fatalities: 0

ADT: 4700
Start Date: January 1, 2013
End Date: December 31, 2017
Number of Years: 5

Intersection Type: Tee

Control Type: Stop & Yield Controls

Area: Rural

collision rate = Number of Collisions x 1 Million
ADT x 365 Days per Year x Number of Years

collision rate = $\frac{1}{4,700} \times \frac{1,000,000}{365} \times \frac{1}{x}$

ADT = average daily total vehicles entering intersection c/mve = collisions per million vehicles entering intersection
* 2013 Collision Data on California State Highways, Caltrans

Intersection Collision Rate Calculaions

Creekside Estates TIS

Intersection # 5: Durham-Dayton Hwy & Lott Rd

Date of Count: Monday, May 21, 2018

Number of Collisions: 2 Number of Injuries: 1
Number of Fatalities: 0 **ADT**: 3500

Start Date: January 1, 2013 End Date: December 31, 2017

Number of Years: 5

Intersection Type: Four-Legged
Control Type: Stop & Yield Controls
Area: Rural

collision rate = Number of Collisions x 1 Million
ADT x 365 Days per Year x Number of Years

Injury Rate 50.0%

ADT = average daily total vehicles entering intersection c/mve = collisions per million vehicles entering intersection * 2013 Collision Data on California State Highways, Caltrans

Appendix B

BCAG Volume Data and Growth Factor Calculations



Butte County Association of Governments - Regional Traffic Volume Forecasts (2035)

Information Prepared October 20, 2008

				2006 Traffic Volumes *		2035 Traffic Volume Forecast **			
SITE_ID	JURISDICTION	ROUTE	LOCATION	Average Daily Traffic Volume	Volume	AM Peak Hour Volume	Average Daily Traffic Volume	PM Peak Hour Volume	AM Peak Hour Volume
	City of Biggs	B ST W BIGGS GRIDLEY RD	E of 7TH ST S of BANNOCK ST	2,312	191	173	4,150		
	City of Biggs Butte County	AFTON RD	W of AGUA FRIAS RD	1,865 79	170 8	130 10	5,390 110	510 10	
	Butte County	AGUAS FRIAS RD	S of DURHAM DAYTON RD	815	86	94	1,300	140	
	Butte County	AGUAS FRIAS RD	S of NELSON RD	491	50	44	980	100	
	Butte County	CHICO RIVER RD	W of ALBERTON RD	1,311	136	127	1,900	180	160
	Butte County	COHASSET HWY	N of KEEFER RD	1,718	173	186	1,910	190	200
	Butte County	COLUSA HWY	W of HATCH RD	496	52	54	720	70	
	City of Chico	DAYTON RD	S of ARCHER AVE	6,709	585	550	17,600	1,440	1,460
	Butte County	DAYTON RD	N of HEGAN LN	3,533	342	336	3,890	410	
	Butte County	DUNSTONE DR	S of GRUBBS RD	195	25	20	200	30	
	Butte County		W of OROVILLE-CHICO HWY	2,215	198	257	2,810	240	300 1,920
	Butte County Butte County	DURHAM PENZ RD DURHAM PENZ RD	E of SR 99 E of SR 191	8,289 2,255	818 197	1,017 229	13,370 3,050	1,030 250	330
	Butte County	E GRIDLEY RD	At FEATHER RIVER BRIDGE	6,250	551	487	12,210	1,230	990
	Butte County	ENTLER AVE	E of MIDWAY	1,230	128	111	1,240		
	Butte County	FORBESTOWN RD	S of OLD OLIVE HWY	2,978	266	259	6,250	520	550
	Butte County	GARNER LN	N of SR 99	5,548	524	600	14,140		
	Butte County	HAMILTON CITY NORD	N of BENNETT RD	735	71	94	1,440	150	150
	Butte County	HEGAN LN	E of FIMPLE LN	3,583	346	283	4,580	390	360
	City of Chico	HICKS LN	N of EATON RD	3,239	311	308	17,680	1,640	1,540
	Butte County	HONEY RUN RD	W of CENTERVILLE RD	1,598	148	175	1,600	150	180
	Butte County	KEEFER RD	W of GARNER LN	1,109	109	102	1,250	130	
	Butte County	LARKIN RD	S of CHANDON AVE	2,672	250	218	4,550	440	370
	City of Oroville	LARKIN RD LOS VERJELES RD	S of SR 162 S of LA PORTE RD	4,098 996	358 83	311 84	7,500 1,020	670 90	
	Butte County Butte County		W of ALVERDA DR	7,210	573	461	12,880	1,000	
	Butte County	MERIDIAN RD	E of SR 99	1,145	112	119	1,150		120
	Butte County	MIDWAY RD	S of DURHAM DAYTON RD	4,549	433	370	6,910	640	610
	City of Chico	MIDWAY RD	S of E PARK AVE	16,545	1,399	1,307	31,840	3,030	2,380
	Butte County	MIDWAY RD	S of HEGAN LN	9,114	857	771	17,240	1,740	1,300
	Butte County	MIDWAY RD	N of NELSON SHIPPEE RD	1,511	151	133	1,770		160
	Butte County	MINERS RANCH RD	S of SR 162	2,777	242	208	4,740	440	480
	Butte County	OAKVALE AVE	S of SR 162	2,754	338	409	4,350	410	570
	Butte County	OPHIR RD	E of FEATHER RIVER BLVD	6,999	613	546	17,730	1,490	1,490
	Butte County	ORD FERRY RD ORD FERRY RD	W of RIVER RD W of AGUAS FRIAS RD	3,244	322	271	4,430 4,430	440 440	360 410
	Butte County Butte County	ORO-QUINCY HWY	At LAKE MADRONE BRIDGE	3,753 375	365 47	346 56	760	80	
	Butte County	ORO-BANGOR HWY	S of V-7 RD	1,949	196	197	3,670	360	330
	Butte County	ORO-BANGOR HWY	E of FOOTHILL BLVD	1,747	178	237	2,300	250	
	Butte County		N of SWEDES FLAT RD	2,036	186	162	2,040	190	
	City of Oroville	ORO-QUINCY HWY	E of FOOTHILL BLVD			297	4,270		
42		ONO-QUINCT TIVE		3,110	303				
	Butte County	PENNINGTON RD	S of W EVANS REIMER RD	3,116 253	24	23	450	40	
43 E	Butte County	PENNINGTON RD SKYLINE BLVD	S of W EVANS REIMER RD S of SR 162	253 1,261	24 118	23 117	450 1,270	40 120	120
43 E 44 E 45 E	Butte County Butte County	PENNINGTON RD SKYLINE BLVD SKYWAY	S of W EVANS REIMER RD S of SR 162 S of COUTOLENC RD	253 1,261 776	24 118 68	23 117 66	450 1,270 1,140	40 120 100	120 100
43 E 44 E 45 E 46 E	Butte County Butte County Butte County	PENNINGTON RD SKYLINE BLVD SKYWAY SKYWAY	S of W EVANS REIMER RD S of SR 162 S of COUTOLENC RD N of NIMSHEW RD	253 1,261 776 1,781	24 118 68 152	23 117 66 138	450 1,270 1,140 2,500	40 120 100 210	120 100 200
43 E 44 E 45 E 46 E 47 E	Butte County Butte County Butte County Butte County	PENNINGTON RD SKYLINE BLVD SKYWAY SKYWAY SKYWAY	S of W EVANS REIMER RD S of SR 162 S of COUTOLENC RD N of NIMSHEW RD S of POWELLTON RD	253 1,261 776 1,781 1,054	24 118 68 152 96	23 117 66 138 88	450 1,270 1,140 2,500 1,420	40 120 100 210 120	120 100 200 120
43 E 44 E 45 E 46 E 47 E	Butte County Butte County Butte County Butte County Butte County Butte County	PENNINGTON RD SKYLINE BLVD SKYWAY SKYWAY SKYWAY SKYWAY UPPER PALERMO RD	S of W EVANS REIMER RD S of SR 162 S of COUTOLENC RD N of NIMSHEW RD S of POWELLTON RD S of OPHIR RD/LOWER WYANDOTTE RD	253 1,261 776 1,781 1,054 3,904	24 118 68 152 96 311	23 117 66 138 88 378	450 1,270 1,140 2,500 1,420 4,860	40 120 100 210 120 380	120 100 200 120 480
43 E 44 E 45 E 46 E 47 E 48 E 49 E	Butte County	PENNINGTON RD SKYLINE BLVD SKYWAY SKYWAY SKYWAY UPPER PALERMO RD W SACRAMENTO AVE	S of W EVANS REIMER RD S of SR 162 S of COUTOLENC RD N of NIMSHEW RD S of POWELLTON RD S of OPHIR RD/LOWER WYANDOTTE RD W of MUIR AVE	253 1,261 776 1,781 1,054 3,904	24 118 68 152 96 311	23 117 66 138 88 378 78	450 1,270 1,140 2,500 1,420 4,860 970	40 120 100 210 120 380 110	120 100 200 120 480 80
43	Butte County City of Chico	PENNINGTON RD SKYLINE BLVD SKYWAY SKYWAY SKYWAY UPPER PALERMO RD W SACRAMENTO AVE BROADWAY	S of W EVANS REIMER RD S of SR 162 S of COUTOLENC RD N of NIMSHEW RD S of POWELLTON RD S of OPHIR RD/LOWER WYANDOTTE RD W of MUIR AVE N of SR 32 (8TH ST)	253 1,261 776 1,781 1,054 3,904 961 10,097	24 118 68 152 96 311 102 945	23 117 66 138 88 378 78 796	450 1,270 1,140 2,500 1,420 4,860 970 13,220	40 120 100 210 120 380 110 1,230	120 100 200 120 480 80 1,220
43	Butte County City of Chico City of Chico	PENNINGTON RD SKYLINE BLVD SKYWAY SKYWAY SKYWAY UPPER PALERMO RD W SACRAMENTO AVE BROADWAY BROADWAY	S of W EVANS REIMER RD S of SR 162 S of COUTOLENC RD N of NIMSHEW RD S of POWELLTON RD S of OPHIR RD/LOWER WYANDOTTE RD W of MUIR AVE N of SR 32 (8TH ST) S of 2ND ST	253 1,261 776 1,781 1,054 3,904 961 10,097 7,306	24 118 68 152 96 311 102 945 681	23 117 66 138 88 378 78 796	450 1,270 1,140 2,500 1,420 4,860 970 13,220 8,720	40 120 100 210 120 380 110 1,230	120 100 200 120 480 80 1,220 680
43 II 44 II 45 II 46 II 47 II 48 II 49 II 50 II 52 II 62 II	Butte County City of Chico	PENNINGTON RD SKYLINE BLVD SKYWAY SKYWAY SKYWAY UPPER PALERMO RD W SACRAMENTO AVE BROADWAY	S of W EVANS REIMER RD S of SR 162 S of COUTOLENC RD N of NIMSHEW RD S of POWELLTON RD S of OPHIR RD/LOWER WYANDOTTE RD W of MUIR AVE N of SR 32 (8TH ST)	253 1,261 776 1,781 1,054 3,904 961 10,097	24 118 68 152 96 311 102 945 681 1,159	23 117 66 138 88 378 78 796	450 1,270 1,140 2,500 1,420 4,860 970 13,220	40 120 100 210 120 380 110 1,230 950 2,060	120 100 200 120 480 80 1,220 680 1,700
43 II 44 II 45 II 46 II 47 II 48 II 49 II 50 50 51 00 51 52 00 53 00 53	Butte County City of Chico City of Chico City of Chico	PENNINGTON RD SKYLINE BLVD SKYWAY SKYWAY SKYWAY UPPER PALERMO RD W SACRAMENTO AVE BROADWAY BROADWAY BRUCE	S of W EVANS REIMER RD S of SR 162 S of COUTOLENC RD N of NIMSHEW RD S of POWELLTON RD S of OPHIR RD/LOWER WYANDOTTE RD W of MUIR AVE N of SR 32 (8TH ST) S of 2ND ST N of LAKEWEST DR	253 1,261 776 1,781 1,054 3,904 961 10,097 7,306 12,581	24 118 68 152 96 311 102 945 681	23 117 66 138 88 378 78 796 619	450 1,270 1,140 2,500 1,420 4,860 970 13,220 8,720 21,480	40 120 100 210 120 380 110 1,230 950 2,060 2,390	120 100 200 120 480 80 1,220 680 1,700 2,030
43	Butte County Butte County Butte County Butte County Butte County Butte County Gitty of Chico City of Chico City of Chico City of Chico City of Chico	PENNINGTON RD SKYLINE BLVD SKYWAY SKYWAY SKYWAY UPPER PALERMO RD W SACRAMENTO AVE BROADWAY BROADWAY BRUCE BRUCE RD BRUCE RD BRUCE RD	S of W EVANS REIMER RD S of SR 162 S of COUTOLENC RD N of NIMSHEW RD S of POWELLTON RD S of OPHIR RD/LOWER WYANDOTTE RD W of MUIR AVE N of SR 32 (8TH ST) S of 2ND ST N of LAKEWEST DR S of HUMBOLT RD	253 1,261 776 1,781 1,054 3,904 961 10,097 7,306 12,581 10,487	24 118 68 152 96 311 102 945 681 1,159 1,001 831	23 117 66 138 88 378 78 796 619 970 886	450 1,270 1,140 2,500 1,420 4,860 970 13,220 8,720 21,480 24,340	40 120 100 210 120 380 110 1,230 950 2,060 2,390 2,450	120 100 200 120 480 80 1,220 680 1,700 2,030 1,860 2,180
43	Butte County Butte County Butte County Butte County Butte County Butte County City of Chico	PENNINGTON RD SKYLINE BLVD SKYWAY SKYWAY SKYWAY UPPER PALERMO RD W SACRAMENTO AVE BROADWAY BROADWAY BRUCE BRUCE RD BRUCE RD BRUCE RD BRUCE RD COHASSET RD	S of W EVANS REIMER RD S of SR 162 S of COUTOLENC RD N of NIMSHEW RD S of POWELLTON RD S of OPHIR RD/LOWER WYANDOTTE RD W of MUIR AVE N of SR 32 (8TH ST) S of 2ND ST N of LAKEWEST DR S of HUMBOLT RD N of SKYWAY N of E 20TH ST N of EAST AVE	253 1,261 776 1,781 1,054 3,904 961 10,097 7,306 12,581 10,487 8,493 11,082	24 118 68 152 96 311 102 945 681 1,159 1,001 831 1,068	23 117 66 138 88 378 796 619 970 886 720 1,049	450 1,270 1,140 2,500 4,860 970 13,220 8,720 21,480 23,960 25,130 19,820	40 120 100 210 380 110 1,230 950 2,060 2,390 2,450 2,370 1,850	120 100 200 120 480 80 1,220 680 1,700 2,030 1,860 2,180 1,670
43	Butte County City of Chico	PENNINGTON RD SKYLINE BLVD SKYWAY SKYWAY SKYWAY UPPER PALERMO RD W SACRAMENTO AVE BROADWAY BROADWAY BRUCE BRUCE RD BRUCE RD BRUCE RD BRUCE RD COHASSET RD COHASSET RD	S of W EVANS REIMER RD S of SR 162 S of COUTOLENC RD N of NIMSHEW RD S of POWELLTON RD S of OPHIR RD/LOWER WYANDOTTE RD W of MUIR AVE N of SR 32 (8TH ST) S of 2ND ST N of LAKEWEST DR S of HUMBOLT RD N of SKYWAY N of E 20TH ST N of EAST AVE N of EAST AVE	253 1,261 776 1,781 1,054 3,904 961 10,097 7,306 12,581 10,487 8,493 11,082 17,728	24 118 68 152 96 311 102 945 681 1,159 1,001 831 1,068 1,498	23 117 66 138 88 378 796 619 970 886 720 1,049 1,379	450 1,270 1,140 2,500 4,860 970 13,220 8,720 21,480 24,340 24,340 25,130 19,820 18,310	40 120 100 210 380 110 1,230 950 2,060 2,390 2,450 2,370 1,850 2,030	120 100 200 120 480 80 1,220 680 1,700 2,030 1,860 2,180 1,670
43	Butte County City of Chico	PENNINGTON RD SKYLINE BLVD SKYWAY SKYWAY SKYWAY UPPER PALERMO RD W SACRAMENTO AVE BROADWAY BROADWAY BRUCE BRUCE RD BRUCE RD BRUCE RD BRUCE RD COHASSET RD COHASSET RD	S of W EVANS REIMER RD S of SR 162 S of COUTOLENC RD N of NIMSHEW RD S of POWELLTON RD S of OPHIR RD/LOWER WYANDOTTE RD W of MUIR AVE N of SR 32 (8TH ST) S of 2ND ST N of LAKEWEST DR S of HUMBOLT RD N of SKYWAY N of E 20TH ST N of EAST AVE N of EAST AVE S of EAST	253 1,261 776 1,781 1,054 3,904 961 10,097 7,306 12,581 10,487 8,493 11,082 17,728 11,033 24,961	24 118 68 152 96 311 102 945 681 1,159 1,001 831 1,068 1,498 1,228 2,097	23 117 66 138 88 378 796 619 970 886 720 1,049 1,379 1,162	450 1,270 1,140 2,500 1,420 4,860 970 13,220 8,720 21,480 24,340 25,130 19,820 18,310 31,880	40 120 100 210 380 110 1,230 950 2,060 2,390 2,450 1,850 2,030 2,780	120 100 200 120 480 80 1,220 680 1,700 2,030 1,860 2,180 1,670 1,780
43 II 44 II 45 II 46 II 47 II 48 II 49 II 50 II 52 II 53 II 55 II 65 II	Butte County City of Chico	PENNINGTON RD SKYLINE BLVD SKYWAY SKYWAY SKYWAY UPPER PALERMO RD W SACRAMENTO AVE BROADWAY BROADWAY BRUCE BRUCE RD BRUCE RD BRUCE RD BRUCE RD COHASSET RD COHASSET RD E 1ST AVE	S of W EVANS REIMER RD S of SR 162 S of COUTOLENC RD N of NIMSHEW RD S of POWELLTON RD S of POWELLTON RD W of MUIR AVE N of SR 32 (8TH ST) S of 2ND ST N of LAKEWEST DR S of HUMBOLT RD N of SKYWAY N of E 20TH ST N of EAST AVE N of EAST AVE S of EAST E of ESPLANADE	253 1,261 776 1,781 1,054 3,904 961 10,097 7,306 12,581 10,487 8,493 11,082 17,728 11,033 24,961 12,394	24 118 68 152 96 311 102 945 681 1,159 1,001 831 1,498 1,228 2,097	23 117 66 138 88 378 796 619 970 886 720 1,049 1,379 1,162 1,867	450 1,270 1,140 2,500 1,420 4,860 970 13,220 21,480 24,340 23,960 25,130 19,820 18,310 31,880 14,450	40 120 100 210 380 110 1,230 950 2,060 2,390 2,450 2,370 1,850 2,030 2,780	120 100 200 120 480 80 1,220 680 1,700 2,030 1,860 2,180 2,180 1,670 1,780
43 i 44 i 45 i 46 i 47 i 48 i 49 i 50 i 51 i 52 i 53 i 54 i 55 i 56 i 57 i 58 i 59 i 60 i 6	Butte County City of Chico	PENNINGTON RD SKYLINE BLVD SKYWAY SKYWAY SKYWAY UPPER PALERMO RD W SACRAMENTO AVE BROADWAY BROADWAY BRUCE BRUCE RD BRUCE RD BRUCE RD BRUCE RD COHASSET RD COHASSET RD	S of W EVANS REIMER RD S of SR 162 S of COUTOLENC RD N of NIMSHEW RD S of POWELLTON RD S of OPHIR RD/LOWER WYANDOTTE RD W of MUIR AVE N of SR 32 (8TH ST) S of 2ND ST N of LAKEWEST DR S of HUMBOLT RD N of SKYWAY N of E 20TH ST N of EAST AVE N of EAST AVE S of EAST	253 1,261 776 1,781 1,054 3,904 961 10,097 7,306 12,581 10,487 8,493 11,082 17,728 11,033 24,961	24 118 68 152 96 311 102 945 681 1,159 1,001 831 1,068 1,498 1,228 2,097	23 117 66 138 88 378 796 619 970 886 720 1,049 1,379 1,162	450 1,270 1,140 2,500 1,420 4,860 970 13,220 8,720 21,480 24,340 25,130 19,820 18,310 31,880	40 120 100 210 120 380 110 1,230 950 2,060 2,390 2,450 2,370 1,850 2,030 2,780 1,200	120 100 200 120 480 680 1,700 2,030 1,860 2,180 1,780 2,360 1,060 810

		AM Annual				PM Annual Growth
Segment	AM 2006	AM 2035	Growth Rate	PM 2006	PM 2035	Rate
*Midway S of Durham-Daton Hwy	370	610	2.24%	433	640	1.65%

^{*}Source is Butte County Association of Governments - Regional Traffic Volumes Forecasts (2035)

2013 to 2018 AM GROWTH FACTOR	1.112
2013 to 2018 PM GROWTH FACTOR	1.082
2013 to 2028 AM GROWTH FACTOR	1.336
2013 to 2028 PM GROWTH FACTOR	1.247

Appendix C

Intersection Level of Service Calculations



Intersection Level Of Service Report Intersection 1: Midway/Jones Ave

Control Type: Analysis Method: Analysis Period:

Two-way stop HCM 2010 15 minutes

Intersection Setup

_				_					
Jones Ave	puno	•	Right	12.00	0	100.00	00	0.00	8
Jones	Westbound	F	Left	12.00	0	100:00	35.00	0.0	2
vay	punoc		Thru	12.00	0	100.00	00	00	0
Midway	Southbound	L	Left	12.00	1	75.00	20.00	0.00	No
vay	puno		Right	12.00	0	100:00	00	00	0
Midway	Northbound	_	Thru	12.00	0	100:00	20.00	0.00	N
Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	Speed [mph]	Grade [%]	Crosswalk

0.02 10.44 B 0.08

0.00 13.19 B 0.08

0.00 0.00 0.00 0.00

0.01 A A 0.03 0.03

0.00 0.00 0.00 0.00

O.00 O.00

VVC, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS
95th-Percentile Queue Length [fit]
d_A, Approach Delay [s/veh]
Approach LOS
Approach LOS

Movement, Approach, & Intersection Results

Priority Scheme
Flared Lane
Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

13.2 B 0.002

Delay (sec / veh): Level Of Service: Volume to Capacity (v/c):

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

0.00

d_l, Intersection Delay [s/veh]

10.59

A 0.45 0.36

Stop

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	Ave Ave
	vewbiM
	vewbiM
Volumes	Name

																_
. Ave	15	1.1120	2.00	1.00	0	0	0	0	0	0	17	1.0000	1.0000	4	17	
Jones Ave	+	1.1120	2.00	1.00	0	0	0	0	0	0	+	1.0000	1.0000	0	-	
vay	210	1.1120	2.00	1.00	0	0	0	0	0	0	234	1.0000	1.0000	59	234	
Midway	10	1.1120	2.00	1.00	0	0	0	0	0	0	11	1.0000	1.0000	8	11	
vay	1	1.1120	2.00	1.00	0	0	0	0	0	0	-	1.0000	1.0000	0	-	
Midway	326	1.1120	2.00	1.00	0	0	0	0	0	0	363	1.0000	1.0000	91	363	
Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Dedestrian Volume [hed/h]

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Creekside Estates TIS AM Existing

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Creekside Estates TIS AM Existing

All-way stop HCM 2010 15 minutes Control Type: Analysis Method: Analysis Period:

Intersection 2: Durham-Dayton HwylMidway

Delay (sec / veh):

Level Of Service:

Volume to Capacity (v/c):

15.5 C 0.569

Intersection Setup

	Hwy			Right	12.00	0	100.00			
	Durham-Dayton Hwy	Westbound	+	Thru	12.00	0	100.00	35.00	0.00	8
	Durha	>		Left	12.00	0	100.00			
	- Hwy	_		Right	12.00	0	100.00			
	Durham-Dayton Hwy	Eastbound	+	Thru	12.00	0	100.00	25.00	0.00	Yes
	Durha			Left	12.00	0	100.00			
		P		Right	12.00	0	100.00			
	Midway	Southbound	+	Thru	12.00	0	100.00	35.00	00.00	Yes
		S		Left	12.00	0	100.00			
		P		Right	12.00	0	100.00			
	Midway	Northbound	+	Thru	12.00	0	100.00	25.00	0.00	Yes
		_		Left	12.00	0	100.00			
	Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	Speed [mph]	Grade [%]	Crosswalk
-										

3.33 83.18 16.39

3.56 88.96 17.05

2.06 51.40 13.62 B

2.05 51.30 14.12 B

95th-Percentle Queue Length (ref.)
95th-Percentle Queue Length (rif.)
Approach Delay (s/veh)
Approach LOS
Intersection Delay (s/veh)
Intersection LOS

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15.52

586

582

579

552

Capacity per Entry Lane [veh/h] Degree of Utilization, x

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

Lanes

Movement, Approach, & Intersection Results

NIBANO DO	22	52-	22	2
Volumes				
None	Michael	Adiabases	Outhorn Destant	Cushom Douges H

	Midway	Durh	Durham-Dayton Hwy	Hwy	Durh	Durham-Dayton Hwy	Hwy
51 127	25 66 127	141	118	38	25	231	33
1.1120 1.1120	1.1120 1.1120 1.1120 1.1120	1.1120	1.1120	1.1120	1.1120	1.1120	1.1120
2.00 2.00	2.00 2.00 2.00	2.00	2.00	2.00	2.00	2.00	2.00
1.00 1.00	1.00 1.00 1.00	1.00	1.00	1.00	1.00	1.00	1.00
0	0 0 0	0	0	0	0	0	0
0 0	0 0 0	0	0	0	0	0	0
0 0	0 0 0	0	0	0	0	0	0
0 0	0 0 0	0	0	0	0	0	0
0 0	0 0 0	0	0	0	0	0	0
0 0	0 0 0	0	0	0	0	0	0
57 141	28 73 141	157	131	43	28	257	37
1.0000 1.0000	1.0000 1.0000 1.0000 1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000 1.0000	1.0000 1.0000 1.0000 1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
14 35	7 18 35	39	33	Ε	7	64	6
141	28 73 141	157	131	43	28	257	37
0						c	

Creekside Estates TIS AM Existing W-Trans

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Creekside Estates TIS AM Existing

Intersection Level Of Service Report Intersection 3: Durham-Dayton Hwy/Jones Ave

Delay (sec / veh): Level Of Service: Volume to Capacity (v/c): Two-way stop HCM 2010 15 minutes Control Type: Analysis Method: Analysis Period:

Intersection Setup

_	_		_	_	_	_	_	_	_
ayton Hwy	punoc		Right	12.00	0	100.00	35.00	00.00	90
Durham-Dayton Hwy	Westbound	_	Thru	12.00	0	100:00	35.	0.0	2
ayton Hwy	puno		Thru	12.00	0	100:00	00	00	0
Durham-Dayton Hwy	Eastbound	T	Left	12.00	0	100.00	35.00	0.00	No
Ave	punoc		Right	12.00	0	100:00	00	01	0
Jones Ave	Southbound	F	Left	12.00	0	100:00	35.00	00:00	N
Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	Speed [mph]	Grade [%]	Crosswalk

A 00.00 0.00

A 0.00

0.00 A 0.49 12.28

0.01 7.89 A 0.49

0.03 10.11 B 0.13 3.28

0.01 11.96 B 0.13 3.28

Stop

Priority Scheme Flared Lane

12.0 B 0.015

Intersection Settings

Version 5.00-00

Generated with PTV VISTRO

2

Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS

0.00

A 0.72 0.40

10.64

95th-Percentile Queue Length [veh]
95th-Percentile Queue Length [ft]
d_A, Approach Delay [s/veh]

Ф

d_l, Intersection Delay [s/veh]

Intersection LOS Approach LOS

Crosswalk	ON.	ON	o Z
Volumes			

1.0000 1.1120 2.00 1.00 1.0000 1.1120 1.00 265 295 168 1.0000 1.0000 42 1.1120 1.00 168 151 1.0000 1.1120 1.00 1.0000 2.00 1.0000 1.1120 1.00 Pass-by Trips (vehh)]
Existing Site Adjustment Volume (vehh)]
Other Volume (vehh)]
Total Hourly Volume (vehh)] Heavy Vehicles Percentage [%] Base Volume Adjustment Factor In-Process Volume [veh/h] Site-Generated Trips [veh/h] Diverted Trips [veh/h] Total 15-Minute Volume [veh/h] Total Analysis Volume [veh/h] Base Volume Input [veh/h] Pedestrian Volume [ped/h] Other Adjustment Factor Peak Hour Factor Growth Rate

Creekside Estates TIS AM Existing

W-Trans

Intersection Level Of Service Report
Two-way stop Delay (sec / veh):
HOM 2010 Level Of Service:
15 minutes

Control Type: Analysis Method: Analysis Period:

Intersection Setup						
Name	Stanford Ln	ord Ln	Durham-Dayton Hwy	ayton Hwy	Durham-Dayton Hwy	syton Hwy
Approach	punoqupoN	punoc	Eastbound	puno	Westbound	puno
Lane Configuration	T	•	_		T	
Turning Movement	¥РП	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100:00	100:00	100.00	100:00	100:00	100.00
Speed [mph]	00.35	00	35.	35.00	35.00	00
Grade [%]	00'0	00	0.00	00	0.00	0
Crosswalk	oN	0	ON	0	N _O	

18.05 0.00 A 0.72

0.00 7.57 A 0.72 18.05

0.00 0.00 0.00

0.00 0.00 0.00

0.01 A 0.20 5.07

0.06 11.68 B 0.20 5.07

VVC, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS
95th-Percentile Queue Length [fit]
d_A, Approach Delay [s/veh]
Approach LOS
Approach LOS

Movement, Approach, & Intersection Results

Stop - Ves

Priority Scheme
Flared Lane
Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

11.7 B 0.063

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Intersection Settings Version 5.00-00

90.0

0.00 A 1.07

11.20

d_l, Intersection Delay [s/veh]

Name	Stanf	Stanford Ln	Durham-D	Durham-Dayton Hwy	Durham-D	Durham-Dayton Hwy
Base Volume Input [veh/h]	32	ō	154	4	2	244
Base Volume Adjustment Factor	1.1120	1.1120	1.1120	1.1120	1.1120	1.1120
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2:00	2:00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	10	171	4	2	271
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	e	43	-	-	89
Total Analysis Volume [veh/h]	36	10	171	4	2	271
Pedestrian Volume [ped/h]		0				

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Creekside Estates TIS AM Existing

Intersection Level Of Service Report
Two-way stop Delay (sec / veh):
HOM 2010 Level Of Service:
15 minutes Volume to Capadiy (vic): Control Type: Analysis Method: Analysis Period:

10.4 B 0.025

Intersection Setup

łwy			Right	12.00	0	100.00			
Durham-Dayton Hwy	Westbound	+	Thru	12.00	0	100.001	40.00	0.00	oN.
Durhar	8		Left	12.00	0	100.00			
Hwy			Right	12.00	0	100.00			
Durham-Dayton Hwy	Eastbound	+	Thru	12.00	0	100.00	40.00	0.00	No
Durha	Ш		Left	12.00	0	100.00			
	Б		Right	12.00	0	100.00			
Lott Rd	Southbound	+	Thru	12.00	0	100.00	35.00	00.00	No.
	S		Left	12.00	0	100.00			
	Б		Right	12.00	0	100.00			
Lott Rd	Northbound	+	Thru	12.00	0	100.00	35.00	00.00	No
	_		Left	12.00	0	100.00			
Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	Speed [mph]	Grade [%]	Crosswalk

	. 1	
		Volumes

Lott Red	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
Lott Rd	Hwy	8	1.1120	2.00	1.00	0	0	0	0	0	0	6	1.0000	1.0000	2	6	
Lott Rd	m-Daytor	61	1.1120	2.00	1.00	0	0	0	0	0	0	89	1.0000	1.0000	17	89	_
LOLI Fed LOLI Fed	Durha	1	1.1120	2.00	1.00	0	0	0	0	0	0	-	1.0000	1.0000	0	-	
Lett Red 5 15 2 6 5 21 7 1.0120 1.1120	Hwy	4	1.1120	2.00	1.00	0	0	0	0	0	0	4	1.0000	1.0000	1	4	
Lett Red 5 15 2 6 5 21 7 1.0120 1.1120	m-Dayton	69	1.1120	2.00	1.00	0	0	0	0	0	0	77	1.0000	1.0000	19	77	_
Lott Red 5 15 2 6 5 1.02 1.02 1.02 1.02 1.02 2.00 2.00 2.00 2.00 1.00 1.00 1.00 1.00 1.00 1.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Durha	18	1.1120	2.00	1.00	0	0	0	0	0	0	20	1.0000	1.0000	2	20	
Lott Rd 1.120		21	1.1120	2.00	1.00	0	0	0	0	0	0	23	1.0000	1.0000	9	23	
Lott R64 15 15 2 1.1120 1.1120 1.1120 2.00 2.00 2.00 0.0 0 0	Lott Rd	2	1.1120	2.00	1.00	0	0	0	0	0	0	9	1.0000	1.0000	2	9	_
Lott Rd 5 15 1.1120 1.1120 1 2.000 1.000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1.0000 1 1.0000 1 1.0000 1 2 4 6 4 7		9	1.1120	2.00	1.00	0	0	0	0	0	0	7	1.0000	1.0000	2	7	
1,1120 2,00 1,000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		2	1.1120	2.00	1.00	0	0	0	0	0	0	2	1.0000	1.0000	1	2	
	Lott Rd	15	1.1120	2.00	1.00	0	0	0	0	0	0	17	1.0000	1.0000	4	17	-
Name Base Volume Input (yehrh) Base Volume Input (yehrh) Base Volume Adjusiment Factor Heary Vehicles Percentage (%) Growth Rate In-Process Volume (yehrh) Site Generated Trips (yehrh) Dwented Trips (yehrh) Dwented Trips (yehrh) Dwented Trips (yehrh) Dass-by Trips (yehrh) Dwented Trips (yehrh) Dwented Trips (yehrh) Taki Hourly Volume (yehrh)		5	1.1120	2.00	1.00	0	0	0	0	0	0	9	1.0000	1.0000	2	9	
	Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Pedestrian Volume [ned/h]

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Creekside Estates TIS AM Existing

Creekside Estates TIS AM Existing

W-Trans

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Intersection Settings				
Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	oN	oN		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

0.00	0.00	4	0.16	4.06				
0.00	0.00	4	0.16	4.06	60.0	∢		
0.00	7.38	۷	0.16	4.06				
0.00	0.00	A	0.21	5.33				
00:00	0.00	4	0.21	5.33	1.46	4		
0.01	7.40	٧	0.21	5.33			1	
0.02	8.82	Α	0.13	3.24			3.11	
0.01	10.40	В	0.13	3.24	9.33	4		
0.01	10.10	В	0.13	3.24				
0.00	8.85	٧	0.11	2.73				
0.02	10.42	В	0.11	2.73	10.24	В		
0.01	10.19	В	0.11	2.73				
V/C, Movement V/C Ratio	d_M, Delay for Movement [s/veh]	MovementLOS	95th-Percentile Queue Length [veh]	95th-Percentile Queue Length [ft]	d_A, Approach Delay [s/veh]	Approach LOS	d_l, Intersection Delay [s/veh]	Intersection LOS

W-Trans

Delay (sec / veh): Level Of Service: Volume to Capacity (v/c): Intersection Level Of Service Report Intersection 1: Midway/Jones Ave

Two-way stop HCM 2010 15 minutes

13.4 B 0.002

Intersection Setup

Control Type: Analysis Method: Analysis Period:

	_	_	_	_	$\overline{}$	_		_	_	_
	Jones Ave	punoc		Right	12.00	0	100.00	35.00	00.00	No
	Jone	Westbound	F	Left	12.00	0	100:00	32	0.0	z
	vay	puno		Thru	12.00	0	100.00	00	0	
	Midway	Southbound	r	Left	12.00	1	75.00	20.00	0.00	No
	Midway	Northbound		Right	12.00	0	100.00	00	01	0
			_	Thru	12.00	0	100.00	20.00	00:00	No
dano compo	Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	Speed [mph]	Grade [%]	Crosswalk

Volumes

_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
Jones Ave	24	1.0820	2.00	1.00	0	0	0	0	0	0	26	1.0000	1.0000	7	26	
Jones	-	1.0820	2.00	1.00	0	0	0	0	0	0	+	1.0000	1.0000	0	1	
/ay	268	1.0820	2.00	1.00	0	0	0	0	0	0	290	1.0000	1.0000	73	290	
Midway	32	1.0820	2.00	1.00	0	0	0	0	0	0	35	1.0000	1.0000	6	35	0
vay	-	1.0820	2:00	1.00	0	0	0	0	0	0	-	1.0000	1.0000	0	1	
Midway	245	1.0820	2.00	1.00	0	0	0	0	0	0	265	1.0000	1.0000	99	265	0
Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Pedestrian Volume [ped/h]

W-Trans

Creekside Estates TIS PM Existing

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Stop No o No Free Free Priority Scheme Flared Lane Storage Area (veh) Two-Stege Gap Acceptance Number of Storage Spaces in Median Intersection Settings

V/C, Movement V/C Ratio d_M, Delay for Movement [sveh] Movement LOS 95th-Percentile Queue Length [rt] 95th-Percentile Queue Length [rt]	0.00 0.00 A 0.00 0.00	0.00 0.00 0.00 0.00	0.03 7.85 A 0.08	0.00 0.00 0.00 0.00	0.00 13.43 B 0.11 2.79
d_A, Approach Delay [s/veh]	0.	0.00	Ö	0.85	9.97
Approach LOS		٧	,	ď	
d_l, Intersection Delay [s/veh]			Ö	0.88	
Intersection LOS					

Intersection 2: Durham-Dayton HwylMidway

Delay (sec / veh):

Level Of Service:

Volume to Capacity (v/c): All-way stop HCM 2010 15 minutes

Intersection Setup

Control Type: Analysis Method: Analysis Period:

Name		Midway			Midway		Durha	Durham-Dayton Hwy	Hwy	Durha	Durham-Dayton Hwy	Hwy
Approach	_	Northbound	P	S	Southbound	P		Eastbound		_	Westbound	_
Lane Configuration		+			+			+			+	
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.001	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]		25.00			35.00			25.00			35.00	
Grade [%]		00.00			0.00			0.00			0.00	
Crosswalk		Yes			Yes			Yes			8	

1.21 30.22 10.90

2.99 74.84 14.14

1.47 36.66 11.27 B

1.28 31.88 11.13

В

95th-Percentle Queue Length (ref.)
95th-Percentle Queue Length (rif.)
Approach Delay (s/veh)
Approach LOS
Intersection Delay (s/veh)
Intersection LOS

B

m

12.22

641 0.29

661

652

633

Capacity per Entry Lane [veh/h] Degree of Utilization, x

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

Lanes

12.2 B 0.518

Movement, Approach, & Intersection Results

	2
	8

_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
- Hwy	9	1.0820	2.00	1.00	0	0	0	0	0	0	43	1.0000	1.0000	Ξ	43	
Durham-Dayton Hwy	97	1.0820	2.00	1.00	0	0	0	0	0	0	105	1.0000	1.0000	26	105	0
Durha	36	1.0820	2.00	1.00	0	0	0	0	0	0	39	1.0000	1.0000	10	39	
Hwy	38	1.0820	2.00	1.00	0	0	0	0	0	0	42	1.0000	1.0000	11	42	
Durham-Dayton Hwy	146	1.0820	2.00	1.00	0	0	0	0	0	0	158	1.0000	1.0000	40	158	0
Durha	131	1.0820	2.00	1.00	0	0	0	0	0	0	142	1.0000	1.0000	36	142	
	66	1.0820	2.00	1.00	0	0	0	0	0	0	107	1.0000	1.0000	27	107	
Midway	73	1.0820	2.00	1.00	0	0	0	0	0	0	79	1.0000	1.0000	20	19	0 0
	30	1.0820	2.00	1.00	0	0	0	0	0	0	32	1.0000	1.0000	8	32	
	55	1.0820	2.00	1.00	0	0	0	0	0	0	09	1.0000	1.0000	15	09	
Midway	26	1.0820	2.00	1.00	0	0	0	0	0	0	91	1.0000	1.0000	23	91	
	38	1.0820	2.00	1.00	0	0	0	0	0	0	41	1.0000	1.0000	10	41	
Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Pedestrian Volume [ped/h]

W-Trans

Creekside Estates TIS PM Existing

Intersection Level Of Service Report
Two-way stop Delay (sec / veh):
HOM 2010 Level Of Service:
15 minutes

Intersection Setup

Control Type: Analysis Method: Analysis Period:

_	_		_	_	_	_	_	_	_
Durham-Dayton Hwy	Westbound		Right	12.00	0	100.00	35.00	00.00	8
Durham-D	West		Thru	12.00	0	100.00	32	0.	2
Durham-Dayton Hwy	Eastbound		Thru	12.00	0	100:00	35.00	00:00	No
Durham-D	Eastb	1	Left	12.00	0	100.00	32	0.0	Z
Jones Ave	Southbound		Right	12.00	0	100.00	35.00	00:00	No
sauor	lynoS	T	Left	12.00	0	100.00	32.)'0	Z
Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	[lydw] peedS	Grade [%]	Crosswalk

0.00 0.00

0.00 0.00

0.00 A 0.67 16.73

0.01 7.66 A 0.67 16.73

0.02 9.42 A 0.10

0.01 11.68 B 0.10 2.40

VVC, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS
95th-Percentile Queue Length [fit]
d_A, Approach Delay [s/veh]
Approach LOS
Approach LOS

Movement, Approach, & Intersection Results

Stop

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Priority Scheme
Flared Lane
Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

11.7 B 0.014

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Intersection Settings Version 5.00-00

0.00

A 0.70 0.43

10.24

d_l, Intersection Delay [s/veh]

omeN	aud	ave ave	Durham-Dayton Hwy	Adon Hwy	G-medan-C	Durham-Dayton Hwy
Manie	2000	S AVE	Dallalla	ayton riwy	Dallalla	ayton i wy
Base Volume Input [veh/h]	7	13	13	218	173	18
Base Volume Adjustment Factor	1.0820	1.0820	1.0820	1.0820	1.0820	1.0820
Heavy Vehicles Percentage [%]	2.00	2:00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	89	14	14	236	187	19
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	4	4	29	47	2
Total Analysis Volume [veh/h]	89	41	41	236	187	19
Pedestrian Volume [ped/h]		0				0

W-Trans

Creekside Estates TIS PM Existing

W-Trans

W-Trans 6

Creekside Estates TIS PM Existing

Intersection Level Of Service Report
Two-way stop Delay (sec / veh):
HOM 2010 Level Of Service:
15 minutes Volume to Capadity (v/c):

11.5 B 0.021

Intersection Setup

Control Type: Analysis Method: Analysis Period:

med section cetab						
Name	Stanfe	Stanford Ln	Durham-D	Durham-Dayton Hwy	Durham-Dayton Hwy	ayton Hwy
Approach	North	Northbound	Eastb	Eastbound	Westbound	puno
Lane Configuration	F	F	_		T	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	32	35.00	32	35.00	35.00	00
Grade [%]	0.0	0.00	0.0	00:00	0.00	00
Crosswalk	z	No	z	No	Ž	No

	9		-	and the second	-	Annahum I kena
Name	Stant	Stanford Ln	Durham-D	Durham-Dayton Hwy	Durham-D	Durham-Dayton Hwy
Base Volume Input [veh/h]	11	80	200	25	10	180
Base Volume Adjustment Factor	1.0820	1.0820	1.0820	1.0820	1.0820	1.0820
Heavy Vehicles Percentage [%]	2.00	2:00	2.00	2.00	2.00	2:00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	6	216	27	11	195
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	က	2	25	7	က	49
Total Analysis Volume [veh/h]	12	6	216	27	11	195
Pedestrian Volume [ped/h]		0				0

W-Trans

Creekside Estates TIS PM Existing

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Intersection Settings			
Priority Scheme	Stop	Free	Free
Flared Lane	Yes		
Storage Area [veh]	1	0	0
Two-Stage Gap Acceptance	oN N		
Number of Storage Spaces in Median	0	0	0

Results
Intersection
Approach, &
Novement,

V/C, Movement V/C Ratio	0.02	0.01	0.00	00:00	0.01	00:00
d_M, Delay for Movement [s/veh]	11.46	9.53	0.00	00.00	7.74	0.00
MovementLOS	æ	∢	٧	٧	٧	٧
95th-Percentile Queue Length [veh]	0.07	0:02	00:00	00.00	0.55	0.55
95th-Percentile Queue Length [ft]	1.63	1.63	0.00	00.00	13.77	13.77
d_A, Approach Delay [s/veh]	10	10.63	0.0	0.00	0.41	11
Approach LOS		В	,	_	4	٧
d_l, Intersection Delay [s/veh]			00	99:0		
Intersection LOS						

Creekside Estates TIS PM Existing

W-Trans

Intersection Evel Of Service Report
Intersection 5: Durham-Dayton HwylLott Rd
Delay (sec / veh):
Level Of Service:
Volume to Capacity (v/c): Two-way stop HCM 2010 15 minutes

Intersection Setup

Control Type: Analysis Method: Analysis Period:

mersection cetup												
Name		Lott Rd			Lott Rd		Durha	Durham-Dayton Hwy	Hwy	Durha	Durham-Dayton Hwy	Hwy
Approach	_	Northbound	_	Š	Southbound		Ш	Eastbound		>	Westbound	
Lane Configuration		+			+			+			+	
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.001	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]		35.00			35.00			40.00			40.00	
Grade [%]		0.00			0.00			0.00			0.00	
Crosswalk		No			9N			No			No	

A 0.28 6.91

0.00 0.00 7.44 0.00 A A A 0.28 0.28 6.91 6.91

A 0.35 8.74

0.01 11.53 B 0.22 5.47 9.87

95h-Percentile Queue Length (veh)
95h-Percentile Queue Length (if)
d_A. Approach Delay (s/veh)
Approach LOS

d_I, Intersection Delay [s/veh] Intersection LOS

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS

3.07 ω

Free

Free

Stop No o No

Stop ୍ ଥ

Priority Scheme
Flared Lane
Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

11.5 B 0.014

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Intersection Settings Version 5.00-00

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	_	_	_		_	_	_	_	_	_	_	_	_	_	_	_
Hwy -	80	1.0820	2.00	1.00	0	0	0	0	0	0	6	1.0000	1.0000	2	6	
Durham-Dayton Hwy	106	1.0820	2.00	1.00	0	0	0	0	0	0	115	1.0000	1.0000	59	115	0
Durha	1	1.0820	2.00	1.00	0	0	0	0	0	0	-	1.0000	1.0000	0	1	
Hwy	10	1.0820	2.00	1.00	0	0	0	0	0	0	11	1.0000	1.0000	е	11	
Durham-Dayton Hwy	92	1.0820	2.00	1.00	0	0	0	0	0	0	100	1.0000	1.0000	25	100	0
Durha	39	1.0820	2.00	1.00	0	0	0	0	0	0	42	1.0000	1.0000	11	42	
	34	1.0820	2.00	1.00	0	0	0	0	0	0	37	1.0000	1.0000	6	37	
Lott Rd	7	1.0820	2.00	1.00	0	0	0	0	0	0	8	1.0000	1.0000	2	8	0
	8	1.0820	2.00	1.00	0	0	0	0	0	0	6	1.0000	1.0000	2	6	
	2	1.0820	2.00	1.00	0	0	0	0	0	0	2	1.0000	1.0000	1	2	
Lott Rd	7	1.0820	2.00	1.00	0	0	0	0	0	0	80	1.0000	1.0000	2	8	0
	6	1.0820	2.00	1.00	0	0	0	0	0	0	10	1.0000	1.0000	8	10	
Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Pedestrian Volume [ped/h]

W-Trans

Creekside Estates TIS PM Existing

W-Trans

W-Trans

Creekside Estates TIS PM Existing

Intersection Level Of Service Report Intersection 1: Midway/Jones Ave

Two-way stop HCM 2010 15 minutes

Intersection Setup

Control Type: Analysis Method: Analysis Period:

_	_		_	_	_	_	_	_	_
Jones Ave	Westbound	L	Right	12.00	0	100.00	35.00	00.00	8
Jone	West	⊦	Left	12.00	0	100.00	32	0.0	z
vay	puno		Thru	12.00	0	100.00	00	0	
Midway	Southbound	F	Left	12.00	-	75.00	20.00	0.00	N
vay	puno		Right	12.00	0	100:00	00	0	
Midway	Northbound	+	Thru	12.00	0	100.00	20.00	00:00	N _O
Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	Speed [mph]	Grade [%]	Crosswalk

0.03 11.03 B 0.11 2.71

0.00 14.76 B 0.11 2.71

0.00 0.00 0.00

0.01 A A 0.04 0.08

0.00 0.00 0.00

0.00 0.00

95th-Percentile Queue Length [veh]
95th-Percentile Queue Length [ft]
d_A, Approach Delay [s/veh]

d_l, Intersection Delay [s/veh]

Approach LOS Intersection LOS

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS

Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

Priority Scheme Flared Lane

14.8 B 0.003

Delay (sec / veh): Level Of Service: Volume to Capacity (v/c):

Intersection Settings Version 5.00-00

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0.00

11.21

A 0.45 0.36

Stop

9

Crosswalk	ON	oN	No.
Volumes			
Ni	The state of the s		and annual

1.0000 1.0000 2.00 8. 1.0000 1.0000 1.34 281 1.0000 1.0000 70 210 1.0000 2.00 1.34 281 1.0000 1.0000 9 1.0000 1.0000 2.00 1.34 1.0000 1.0000 1.0000 1.0000 1.34 437 Pass-by Trips (vehh)]
Existing Site Adjustment Volume (vehh)]
Other Volume (vehh)]
Total Hourly Volume (vehh)] Heavy Vehicles Percentage [%] Base Volume Adjustment Factor In-Process Volume [veh/h] Site-Generated Trips [veh/h] Diverted Trips [veh/h] Total 15-Minute Volume [veh/h] Total Analysis Volume [veh/h] Base Volume Input [veh/h] Pedestrian Volume [ped/h] Other Adjustment Factor Peak Hour Factor Growth Rate

W-Trans

Creekside Estates TIS AM Future

Intersection 2: Durham-Dayton HwylMidway

Delay (sec / veh):

Level Of Service:

Volume to Capacity (v/c): All-way stop HCM 2010 15 minutes

Intersection Setup

Control Type: Analysis Method: Analysis Period:

									:			
		Midway			Midway		Durha	Durham-Dayton Hwy	Hwy.	Durha	Durham-Dayton Hwy	Hwy
	_	Northbound	п	S	Southbound	o o		Eastbound	_	_	Westbound	
Lane Configuration		+			+			+			+	
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.001	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.001	100.00
Speed [mph]		25.00			35.00			25.00			35.00	
		0.00			0.00			0.00			0.00	
Crosswalk		Yes			Yes			Yes			N _o	

7.44 185.99 33.97

8.05 201.24 36.83

4.11 102.63 22.16 C

4.01 100.21 22.67 C

95th-Percentie Queue Length (veh)
95th-Percentie Queue Length (fit)
Approach Delay (s/veh)
Approach LOS
Intersection Delay (s/veh)
Intersection Delay (s/veh)

۵

29.96

485

484

473

454

Capacity per Entry Lane [veh/h] Degree of Utilization, x

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

Lanes

30.0 D 0.826

Movement, Approach, & Intersection Results

		ı

Hwy	33	1.0000	2.00	1.34	0	0	0	0	0	0	4	1.0000	1.0000	11	4	
Durham-Dayton Hwy	231	1.0000	2:00	1.34	0	0	0	0	0	0	310	1.0000	1.0000	78	310	0
Durha	25	1.0000	2.00	1.34	0	0	0	0	0	0	34	1.0000	1.0000	6	34	
Hwy	39	1.0000	2.00	1.34	0	0	0	0	0	0	52	1.0000	1.0000	13	52	
Durham-Dayton Hwy	118	1.0000	2.00	1.34	0	0	0	0	0	0	158	1.0000	1.0000	40	158	0
Durha	141	1.0000	2.00	1.34	0	0	0	0	0	0	189	1.0000	1.0000	47	189	
	127	1.0000	2.00	1.34	0	0	0	0	0	0	170	1.0000	1.0000	43	170	
Midway	99	1.0000	2.00	1.34	0	0	0	0	0	0	88	1.0000	1.0000	22	88	0
	25	1.0000	2.00	1.34	0	0	0	0	0	0	34	1.0000	1.0000	6	34	
	30	1.0000	2.00	1.34	0	0	0	0	0	0	40	1.0000	1.0000	10	40	
Midway	127	1.0000	2.00	1.34	0	0	0	0	0	0	170	1.0000	1.0000	43	170	0
	51	1.0000	2.00	1.34	0	0	0	0	0	0	89	1.0000	1.0000	17	89	
Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Pedestrian Volume [ped/h]

W-Trans

Creekside Estates TIS AM Future

W-Trans

W-Trans

Creekside Estates TIS AM Future

Signalized HCM 2010 15 minutes

Intersection Level Of Service Report
Intersection 2: Durham-Dayton Hwy/IMIdway
Delay (sec / veh):
Level Of Service:
Volume to Capacity (v/c):

14.8 B 0.540

Intersection Setup

Control Type: Analysis Method: Analysis Period:

Midway Durham-Dayton Hwy Durham-Dayton Hwy	Toothoung T	EastDoulld	+ + +	Left Thru Right Left Thru Right Left Thru Right	12.00 12.00 12.00 12.00 12.00 12.00 12.00 12.00 12.00	0 0 0 0 0 0 0 0	100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00	35.00 25.00 35.00	00.0 00.0 00.0
Michael	Morthbound	Moltilboaina	+	eft Thru Right	12.00 12.00 12.00	0 0	00.00 100.00 100.00	25.00	0.00
omeN	homen	Approaci	Lane Configuration	Turning Movement Lef	Lane Width [ft] 12.0	No. of Lanes in Pocket 0	Pocket Length [ft] 100.	Speed [mph]	Grade [%]

Permiss Permiss

Permiss Permiss Permiss Permiss Permiss Permiss Permiss

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Control Type Lost time [s]

Phasing & Timing

Signal group Auxiliary Signal Groups

Lead / Lag

60 Time of Day Pattern Isolated Fully actuated

Located in CBD
Signal Coordination Group
Cycle Length [s]
Coordination Type
Actuation Type

Generated with PTV VISTRO

Intersection Settings

Version 5.00-00

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LeadGreen SingleBand 0.00

Offset Reference Permissive Mode

Offset [s]

30 3.0 1.0 14 3.0

1.0 30 3.0 4 3.0

> 3.0 1.0 3.0

3.0 1.0 19

30

Minimum Green [s]
Maximum Green [s]
Amber [s]

19

3.0

All reu ,
Split [s]
Vehicle Extension [s]
Walk [s]

30

Crosswalk	Yes	Yes	Yes	Yes
Volumes				

Name		Midway			Midway		Durha	Durham-Dayton Hwy	Hwy	Durha	Durham-Dayton Hwy	Hwy
Base Volume Input [veh/h]	51	127	30	25	99	127	141	118	39	25	231	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	89	170	40	34	88	170	189	158	52	34	310	4
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	43	10	6	22	43	47	40	13	6	78	11
Total Analysis Volume [veh/h]	89	170	40	34	88	170	189	158	52	34	310	4
Presence of On-Street Parking	No		No	oN No		No	No		No No	No		oN N
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

1.00 1.00 1.00

1.00

1.00 1.00 1.00

1.00 1.00 1.00 1.00 1.00

I, Upstream Filtering Factor

Exclusive Pedestrian Phase

Detector Location [ft] Detector Length [ft] 0 0

Pedestrian Signal Group
Pedestrian Walk [s]
Pedestrian Clearance [s]

o N

No 2:0 No No

11, Start-Up Lost Time [s]
12, Clearance Lost Time [s]

Rest In Walk

Minimum Recall
Maximum Recall
Pedestrian Recall

2 2 2

2.0 2.0

9

9

10

W-Trans

W-Trans

W-Trans

Creekside Estates TIS AM Future (Signal)

W-Trans

Creekside Estates TIS AM Future (Signal)

Generated with PTV VISTRO
Version 5.00-00
Lane Group Calculations

O	09	4.00	2.00	2.00	24	0.40	0.22	1762	778	13.52	0.11	1.00	0.50	0.00	1.00	1.00
O	09	4.00	2.00	2.00	24	0.40	0.36	1106	536	17.36	0.15	1.00	2.91	0.00	1.00	1.00
O	09	4.00	2.00	2.00	28	0.46	0.18	1634	822	10.52	0.50	1.00	1.20	0.00	1.00	1.00
O	09	4.00	2.00	2.00	28	0.46	0.17	1639	832	10.27	0.50	1.00	1.08	0.00	1.00	1.00
Lane Group	C, Cycle Length [s]	L, Total Lost Time per Cycle [s]	11_p, Permitted Start-Up Lost Time [s]	I2, Clearance Lost Time [s]	g_i, Effective Green Time [s]	g / C, Green / Cycle	(v / s)_i Volume / Saturation Flow Rate	s, saturation flow rate [veh/h]	c, Capacity [veh/h]	d1, Uniform Delay [s]	k, delay calibration	I, Upstream Filtering Factor	d2, Incremental Delay [s]	d3, Initial Queue Delay [s]	Rp, platoon ratio	PF, progression factor

	0:20	14.01	8	No	3.47	86.85	6.25	156.32
	0.74	20.26	0	Yes	5.23	130.67	8.98	224.40
	0.36	11.72	В	Yes	2.34	58.50	4.21	105.30
	0.33	11.35	В	No	2.32	57.98	4.17	104.36
Lane Group Results	X, volume / capacity	d, Delay for Lane Group [s/veh]	Lane Group LOS	Critical Lane Group	50th-Percentile Queue Length [veh]	50th-Percentile Queue Length [ft]	95th-Percentile Queue Length [veh]	95th-Percentile Queue Length [ft]

Generated with PTV VISTRO
Version 5.00-00

Movement, Approach, & Intersection Results

-	movement, Approach, a microscion results	54153											
<u> </u>	d_M. Delay for Movement [sveh] 11.35 11.35 11.35 11.72 11.72 11.72 20.26 20.26 20.26 14.01 14.01 14.01	11.35	11.35	11.35	11.72	11.72	11.72	20.26	20.26	20.26	14.01	14.01	14.01
_	MovementLOS	В	В	В	В	В	В	О	Э	O	В	В	В
<u> </u>	d_A, Approach Delay [s/veh]		11.35			11.72			20.26			14.01	
<u></u>	Approach LOS		В			ш			O			Ф	
Ш	d_I, Intersection Delay [s/veh]						14	14.81					
_	Intersection LOS							В					
_	Intersection V/C						9.0	0.540					

Sequence

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	-		-					
	-	-	-					
4	8	-	-			П		
7	9		-		S		ø	
King 1	Ring 2	Ring 3	Ring 4	SG: 2 19s	SG: 102 15s	SG: 6 19s	SG: 106 15s	

Creekside Estates TIS AM Future (Signal)

W-Trans

W-Trans

Creekside Estates TIS AM Future (Signal)

W-Trans

Intersection Level Of Service Report Intersection 2: Durham-Dayton Hwy/Midway Delay (sec / veh): Level Of Senvice: Roundabout HCM 2010 15 minutes

10.5 B

4 4

육 52

170

386 88 88

389 196 170 170

Exiting Flow Rate [veh/h]
Demand Flow Rate [veh/h]
Adjusted Demand Flow Rate [veh/h] 68

Number of Conflicting Circulating Lanes Circulating Flow Rate [veh/h]

Intersection Settings Version 5.00-00

Generated with PTV VISTRO

1 436 366 310 310

1 159 124 189 158 189 158

No 4.00 No 3.00 1130.00 0.00100 0.98 396 732 1.00

No 4.00 No 3.00 1130.00 0.00100 0.98 284 767 1.00 1.00

B (coefficient) HV Adjustment Factor Entry Flow Rate [veh/h] Pedestrian Impedance

A (intercept)

Capacity of Entry and Bypass Lanes [veh/h

Capacity per Entry Lane [veh/h]

X, volume / capacity

User-Defined Critical Headway [s]
Overwrite Calculated Follow-Up Time
User-Defined Follow-Up Time [s]

Overwrite Calculated Critical Headway

Lanes

81.99 13.50

B 3.28

2.13 53.16 8.68

1.94 48.53 10.23

1.71 42.83 9.43

95th-Percentile Queue Length [veh] 95th-Percentile Queue Length [ft]

Approach Delay [s/veh]

Approach LOS Intersection Delay [s/veh] Intersection LOS

Movement, Approach, & Intersection Results

10.54 B

0.54

Intersection Setup

Control Type: Analysis Method: Analysis Period:

Durham-Dayton Hwy Durham-Dayton Hwy	Eastbound Westbound	+	Left Thru Right Left Thru Right	12.00 12.00 12.00 12.00 12.00 12.00	0 0 0 0 0	100.00 100.00 100.00 100.00 100.00 100.00	25.00 35.00	00.0 00.0	say.
Midway	Southbound	+	Left Thru Right	12.00 12.00 12.00	0 0	00.00 100.00 100.00	35.00	0.00	30/
Midway	Northbound	+	Left Thru Right	12.00 12.00 12.00	0 0	100.00 100.00 100.00 1	25.00	00.00	200
Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	Speed [mph]	Grade [%]	Alemagas

Hwy	33	1.0000	2.00	1.34	0	0	0	0	0	0	4	1.0000	1.0000	11	4	
Durham-Dayton Hwy	231	1.0000	2:00	1.34	0	0	0	0	0	0	310	1.0000	1.0000	78	310	0
Durha	25	1.0000	2:00	1.34	0	0	0	0	0	0	34	1.0000	1.0000	6	34	
Hwy	39	1.0000	2.00	1.34	0	0	0	0	0	0	25	1.0000	1.0000	13	52	
Durham-Dayton Hwy	118	1.0000	2:00	1.34	0	0	0	0	0	0	158	1.0000	1.0000	40	158	0
Durha	141	1.0000	2.00	1.34	0	0	0	0	0	0	189	1.0000	1.0000	47	189	
	127	1.0000	2.00	1.34	0	0	0	0	0	0	170	1.0000	1.0000	43	170	
Midway	99	1.0000	2.00	1.34	0	0	0	0	0	0	88	1.0000	1.0000	22	88	0
	25	1.0000	2.00	1.34	0	0	0	0	0	0	34	1.0000	1.0000	6	34	
	30	1.0000	2.00	1.34	0	0	0	0	0	0	40	1.0000	1.0000	10	40	
Midway	127	1.0000	2.00	1.34	0	0	0	0	0	0	170	1.0000	1.0000	43	170	0
	51	1.0000	2.00	1.34	0	0	0	0	0	0	89	1.0000	1.0000	17	89	
Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Pedestrian Volume [ped/h]

W-Trans

Creekside Estates TIS AM Future (Roundabout)

W-Trans

Creekside Estates TIS AM Future (Roundabout)

Intersection Level Of Service Report
Two-way stop Delay (sec / veh):
HOM 2010 Level Of Service:
15 minutes Control Type: Analysis Method: Analysis Period:

13.0 B 0.019

Intersection Setup

							0			
	ayton Hwy	puno		Right	12.00	0	100.00	00	00	٥
	Durham-Dayton Hwy	Westbound	_	Thru	12.00	0	100:00	35.00	00:00	N N
	ayton Hwy	puno		Thru	12.00	0	100.00	00	0.00	No
	Durham-Dayton Hwy	Eastbound	T	Left	12.00	0	100.00	35.00	0.0	Ž
	Jones Ave	punoc		Right	12.00	0	100:00	35.00	00	No
	Jones	Southbound	F	Left	12.00	0	100:00	35.	00:00	Ž
da no como como	Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	Speed [mph]	Grade [%]	Crosswalk

0.00 0.00

0.00 0.00

0.00 A 0.65 16.29

0.01 8.06 A 0.65 16.29

0.04 10.62 B B 0.17 4.31

0.02 13.04 B 0.17 4.31

VVC, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS
95th-Percentile Queue Length [fit]
d_A, Approach Delay [s/veh]
Approach LOS
Approach LOS

Movement, Approach, & Intersection Results

Stop

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Priority Scheme
Flared Lane
Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

0.00

0.42 A 0.75

11.28

d_l, Intersection Delay [s/veh]

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	1
	3
	-
	4
	3

	anol.	Jones Ave	Durham-D	Durham-Dayton Hwy	Durham-D	Durham-Dayton Hwy
	7	18	0 0	151	265	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	2.00	2.00	2.00	2.00	2.00	2.00
	1.34	1.34	1.34	1.34	1.34	45.1
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
	0	0	0	0	0	0
	6	24	11	202	355	15
	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	2	9	3	51	88	4
	6	24	11	202	355	15
		0				0

W-Trans

Creekside Estates TIS AM Future

W-Trans

W-Trans 6

Creekside Estates TIS AM Future

Intersection Level Of Service Report
Two-way stop Delay (sec / veh):
HOM 2010 Level Of Service:
15 minutes

Intersection Setup

Control Type: Analysis Method: Analysis Period:

Stanford Ln	d Ln	Durham-Dayton Hwy	ayton Hwy	Durham-Dayton Hwy	ayton Hwy
Northb	puno	Eastb	puno	West	puno
┡				•	_
Left	Right	Thru	Right	Left	Thru
12.00	12.00	12.00	12.00	12.00	12.00
0	0	0	0	0	0
100.00	100.00	100.00	100.00	100.00	100.00
35.0	00	35.	00	35	00
0.0	0	0.0	00	0.0	00
N		Ž	0	z	No
	Northbo 12.00 0 1100.00 35.00 Northbo	Northbound 35.00 0.00 No	Right T 12.00 11 100.00 10 100.00 100 100 100 100	Right Thru Eastbound E	Northbound Eastbound Right Thru Right L 12.00 12.00 135.00 1100.00 1

A 0.95 23.86

0.00 7.65 A A 0.95 23.86

0.00 0.00 0.00

0.00 A 0.00 0.00

0.01 9.86 A 0.28 7.02

0.09 12.72 B 0.28 7.02

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS

Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

Stop - 일

Priority Scheme Flared Lane

12.7 B 0.086

Intersection Settings

Version 5.00-00

Generated with PTV VISTRO

4 T.15 0.00

12.10

95th-Percentile Queue Length [veh]
95th-Percentile Queue Length [ft]
d_A, Approach Delay [s/veh]

Ф

d_l, Intersection Delay [s/veh]

Intersection LOS Approach LOS

ш

Volumes	Crosswalk	ON	No	No
	Volumes			
		i		
		o de la constantina	100000000000000000000000000000000000000	2017

1.0000 1.0000 2.00 1.3 1.0000 1.0000 1.34 1.0000 1.0000 1.34 206 1.0000 52 52 206 1.0000 154 1.0000 1.0000 2.00 1.34 1.0000 1.0000 1.34 Pass-by Trips (vehh)]
Existing Site Adjustment Volume (vehh)]
Other Volume (vehh)]
Total Hourly Volume (vehh)] Base Volume Adjustment Factor in-Process Volume [veh/h]
Site-Generated Trips [veh/h]
Diverted Trips [veh/h] Heavy Vehicles Percentage [%] Total 15-Minute Volume [veh/h] Total Analysis Volume [veh/h] Base Volume Input [veh/h] Pedestrian Volume [ped/h] Other Adjustment Factor Peak Hour Factor Growth Rate

Creekside Estates TIS AM Future

W-Trans

Control Type: Analysis Method: Analysis Period:

Intersection Evel Of Service Report
Intersection 5: Durham-Dayton HwylLott Rd
Delay (sec / veh):
Level Of Service:
Volume to Capacity (v/c): Two-way stop HCM 2010 15 minutes

10.8 B 0.031

Intersection Setup

-												
Name		Lott Rd			Lott Rd		Durha	Durham-Dayton Hwy	Hwy	Durha	Durham-Dayton Hwy	Hwy
Approach	_	Northbound	D.	S	Southbound	п		Eastbound		۸	Westbound	1
Lane Configuration		+			+			+			+	
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]		35.00			35.00			40.00			40.00	
Grade [%]		0.00			0.00			0.00			0.00	
Crosswalk		8 N			8			8			2	

0.20 5.02

0.00 0.00 7.41 0.00 A A A 0.20 0.20 5.02 5.02

A 0.26

ω

d_I, Intersection Delay [s/veh] Intersection LOS

 V/C, Movement V/C Ratio
 0.01
 0.03
 0.00
 0.01
 0.01
 0.03
 0.02
 0.00

 d_M, Delay for Movement (s/veh)
 10.63
 10.77
 8.99
 10.51
 10.73
 8.94
 7.44
 0.00

 BSh-Percentit Comment LOS
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Movement, Approach, & Intersection Results

Free

Free

Stop No o No

Stop ୍ ଥ

Priority Scheme
Flared Lane
Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

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	1

Name		Lott Rd			Lott Rd		Durhe	Durham-Dayton Hwy	Hwy -	Durha	Durham-Dayton Hwy	Hwy
Base Volume Input [veh/h]	5	15	2	9	2	21	18	69	4	-	61	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	20	3	8	7	28	24	82	2	-	82	£
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	2	1	2	2	7	9	23	-	0	21	က
Total Analysis Volume [veh/h]	7	20	3	80	7	28	24	92	2	-	82	1
Pedestrian Volume [ped/h]		0			0			0			0	

Creekside Estates TIS AM Future

W-Trans

W-Trans

W-Trans

Creekside Estates TIS AM Future

Intersection Level Of Service Report Intersection 1: Midway/Jones Ave

Control Type: Analysis Method: Analysis Period:

Two-way stop HCM 2010 15 minutes

Intersection Setup

	Michael	Michael	^6	souch	Ave
INIDWA	_	MDIM	ay	Jones Ave	Ave
Northbound	pu	Southbound	pund	Westbound	puno
.		F		F	•
Thru	Right	Left	Thru	Left	Right
12.00	12.00	12.00	12.00	12.00	12.00
0	0	1	0	0	0
100.00	100.00	75.00	100.00	100.00	100.00
20.00	0	90.00	0	35.00	00
00:00		00.00		00:00	00
No		No		9N	

0.04 B 0.14 3.41

0.00 14.67 B 0.14 3.41

0.00 0.00 0.00

0.03 A A 0.10 2.47

0.00 A 0.00 0.00 0.00 0.00

0.00 0.00

95th-Percentile Queue Length [veh]
95th-Percentile Queue Length [ft]
d_A, Approach Delay [s/veh]

d_I, Intersection Delay [s/veh]

Approach LOS Intersection LOS

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS

Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

Priority Scheme Flared Lane

14.7 B 0.003

Delay (sec / veh): Level Of Service: Volume to Capacity (v/c):

Intersection Settings Version 5.00-00

Generated with PTV VISTRO

10.28

A 0.89 0.85

0.00

Stop

9

Crosswalk	ON	No	N _O
Volumes			
owell	Michael	Midwa	ove accol

1.0000 1.0000 2.00 1.25 1.0000 1.0000 2.00 335 1.0000 1.0000 84 268 1.0000 2.00 1.25 335 1.0000 32 1.0000 2.00 1.25 9 4 1.0000 1.0000 2.00 1.25 1.0000 1.0000 1.25 306 306 Pass-by Trips (vehh)]
Existing Site Adjustment Volume (vehh)]
Other Volume (vehh)]
Total Hourly Volume (vehh)] Base Volume Adjustment Factor Heavy Vehicles Percentage [%] In-Process Volume [veh/h] Site-Generated Trips [veh/h] Diverted Trips [veh/h] Total 15-Minute Volume [veh/h] Total Analysis Volume [veh/h] Base Volume Input [veh/h] Other Adjustment Factor Peak Hour Factor Growth Rate

Pedestrian Volume [ped/h]

Creekside Estates TIS PM Future

W-Trans

W-Trans

W-Trans

Creekside Estates TIS PM Future

Intersection 2: Durham-Dayton HwylMidway

Delay (sec / veh):

Level Of Service:

Volume to Capacity (v/c): All-way stop HCM 2010 15 minutes

Intersection Setup

Control Type: Analysis Method: Analysis Period:

Midway Midway Durham-Dayton Hwy Park	Hwy			Right	12.00	0	100.00				
Midway Midway Durham-Daylon Hwy Midway Durham-Daylon Hwy Eastbound	m-Dayton	/estbound	+	Thru	12.00	0	100.001	35.00	0.00	8	
Midway Midway Durham-Dayton	Durha	s		Left	12.00	0	100.00				
Midway Midway Midway Midway	Hwy			Right	12.00	0	100.00				
Midway Midway Midway Midway	m-Daytor	astbound	+	Thru	12.00	0	100.00	25.00	0.00	Yes	
Midwey Midwey Midwey	Durha	ш		Left	12.00	0	100.00				
Midway Northbound				Right	12.00	0	100.00				
Midway Northbound	Midway	outhboun	+	Thru	12.00	0	100.00	35.00	0.00	Yes	
Midway Northbound Northbound		S		Left	12.00	0	100.00				
12.00 0 100.000				Right	12.00	0	100.00				
12.00 0 100.000	Midway	orthboun	+	Thru	12.00	0	100.00	25.00	0.00	Yes	
ution nent rtj rocket lffj		z		Left	12.00	0	100.00				
Name Approach Lane Configura Turning Moven Lane Width [No. of Lanes in F Pocket Length Speed (impl Grosel (i	Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	Speed [mph]	Grade [%]	Crosswalk	

1.69 42.31 12.70

4.69 117.29 19.04

2.11 52.75 13.43 B

1.80 44.93 13.05 B

95th-Percentie Queue Length (veh)
95th-Percentie Queue Length (fit)
Approach Delay (s/veh)
Approach LOS
Intersection Delay (s/veh)
Intersection Delay (s/veh)

B

ပ

15.25

585

612

596

578 0.38

Capacity per Entry Lane [veh/h] Degree of Utilization, x

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

Lanes

15.3 C 0.647

Movement, Approach, & Intersection Results

Hwy	40	1.0000	2.00	1.25	0	0	0	0	0	0	20	1.0000	1.0000	13	20	
Durham-Dayton Hwy	97	1.0000	2.00	1.25	0	0	0	0	0	0	121	1.0000	1.0000	30	121	0
Durha	36	1.0000	2.00	1.25	0	0	0	0	0	0	45	1.0000	1.0000	11	45	
Hwy	39	1.0000	2.00	1.25	0	0	0	0	0	0	49	1.0000	1.0000	12	49	
Durham-Dayton Hwy	146	1.0000	2:00	1.25	0	0	0	0	0	0	183	1.0000	1.0000	46	183	0
Durha	131	1.0000	2:00	1.25	0	0	0	0	0	0	164	1.0000	1.0000	41	164	
	66	1.0000	2.00	1.25	0	0	0	0	0	0	124	1.0000	1.0000	31	124	
Midway	73	1.0000	2.00	1.25	0	0	0	0	0	0	91	1.0000	1.0000	23	91	0
	30	1.0000	2.00	1.25	0	0	0	0	0	0	38	1.0000	1.0000	10	38	
	55	1.0000	2.00	1.25	0	0	0	0	0	0	69	1.0000	1.0000	17	69	
Midway	22	1.0000	2.00	1.25	0	0	0	0	0	0	105	1.0000	1.0000	26	105	0
	38	1.0000	2.00	1.25	0	0	0	0	0	0	48	1.0000	1.0000	12	48	
Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Pedestrian Volume [ped/h]

Creekside Estates TIS PM Future

W-Trans

Intersection Level Of Service Report
Intersection 2: Durham-Dayton Hwy/IMIdway
Delay (sec / veh):
Level Of Service:
Volume to Capacity (v/c): Signalized HCM 2010 15 minutes

Intersection Setup

Control Type: Analysis Method: Analysis Period:

	Midway			Midway		Durha	Durham-Dayton Hwy	Hwy	Durh	Durham-Dayton Hwy	1 Hwy
	Northbound	рı	S	Southbound			Eastbound			Westbound	
	+			+			+			+	
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
0	0	0	0	0	0	0	0	0	0	0	0
100.00	100.00	100.00	100.00	100.001	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	25.00			35.00			25.00			35.00	
	0.00			0.00			0.00			0.00	
	Yes			Yes			Yes			Yes	

Permiss

Permiss Permiss

Permiss Permiss Permiss Permiss Permiss

Permiss Permiss

Control Type Lost time [s]

Phasing & Timing

Signal group Auxiliary Signal Groups

Lead / Lag

60 Time of Day Pattern Isolated Fully actuated

Located in CBD
Signal Coordination Group
Cycle Length [s]
Coordination Type
Actuation Type

14.5 B 0.434

Generated with PTV VISTRO

Intersection Settings

Version 5.00-00

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LeadGreen SingleBand 0.0

> Offset Reference Permissive Mode

Offset [s]

0.00

3.0 1.0 14 3.0

1.0 3.0 4 3.0

30

30

3.0 1.0 3.0

3.0 1.0 19

30

Minimum Green [s]
Maximum Green [s]
Amber [s]

30

19

3.0

All reu ,
Split [s]
Vehicle Extension [s]
Walk [s]
''aara'

Crosswalk	Yes	Yes	Yes	Yes
Volumes				
Mana	Mark Access			

Hwy	40	1.0000	2.00	1.25	0	0	0	0	0	0	0	20	1.0000	1.0000	13	20	°N	0	0		
Durham-Dayton Hwy	97	1.0000	2.00	1.25	0	0	0	0	0	0	0	121	1.0000	1.0000	30	121		0	0	0	0
Durha	36	1.0000	2.00	1.25	0	0	0	0	0	0	0	45	1.0000	1.0000	11	45	No	0	0		
Hwy	39	1.0000	2.00	1.25	0	0	0	0	0	0	0	49	1.0000	1.0000	12	49	9 N	0	0		
Durham-Dayton Hwy	146	1.0000	2.00	1.25	0	0	0	0	0	0	0	183	1.0000	1.0000	46	183		0	0	0	0
Durha	131	1.0000	2.00	1.25	0	0	0	0	0	0	0	164	1.0000	1.0000	41	164	oN N	0	0		
	66	1.0000	2.00	1.25	0	0	0	0	0	0	0	124	1.0000	1.0000	31	124	No	0	0		
Midway	73	1.0000	2.00	1.25	0	0	0	0	0	0	0	91	1.0000	1.0000	23	91		0	0	0	0
	30	1.0000	2.00	1.25	0	0	0	0	0	0	0	38	1.0000	1.0000	10	38	oN.	0	0		
	55	1.0000	2.00	1.25	0	0	0	0	0	0	0	69	1.0000	1.0000	17	69	No	0	0		
Midway	248	1.0000	2.00	1.25	0	0	0	0	0	0	0	105	1.0000	1.0000	26	105		0	0	0	c
	38	1.0000	2.00	1.25	0	0	0	0	0	0	0	48	1.0000	1.0000	12	48	No	0	0		
Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Right-Turn on Red Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Presence of On-Street Parking	On-Street Parking Maneuver Rate [/h]	Local Bus Stopping Rate [/h]	Pedestrian Volume [ped/h]	Bicycle Volume [bicycles/h]

1.00 1.00 1.00

1.00

1.00 1.00 1.00

1.00 1.00 1.00 1.00 1.00

I, Upstream Filtering Factor

Exclusive Pedestrian Phase

Detector Location [ft] Detector Length [ft] 0 0

Pedestrian Signal Group
Pedestrian Walk [s]
Pedestrian Clearance [s]

o N

No 2:0 No No

11, Start-Up Lost Time [s]
12, Clearance Lost Time [s]

Minimum Recall
Maximum Recall
Pedestrian Recall

2 2 2

2.0 2.0

9

10

Pedestrian Clearance [s]

Rest In Walk

9

Creekside Estates TIS PM Future (Signal)

W-Trans

Creekside Estates TIS PM Future (Signal)

W-Trans

W-Trans

Lane Group Calculations

O	09	4.00	2.00	2:00	19	0.32	0.14	1590	572	16.05	0.11	1.00	0.41	00:00	1.00	1.00
O	09	4.00	2.00	2.00	19	0.32	0.28	1421	532	19.74	0.11	1.00	2.10	00:00	1.00	1.00
O	09	4.00	2.00	2.00	33	0.55	0.15	1633	971	7.06	0.50	1.00	0.65	0.00	1.00	1.00
O	09	4.00	2.00	2.00	33	0.55	0.14	1613	964	6.88	0:20	1.00	0.56	0.00	1.00	1.00
Lane Group	C, Cycle Length [s]	L, Total Lost Time per Cycle [s]	11_p, Permitted Start-Up Lost Time [s]	I2, Clearance Lost Time [s]	g_i, Effective Green Time [s]	g / C, Green / Cycle	(v / s)_i Volume / Saturation Flow Rate	s, saturation flow rate [veh/h]	c, Capacity [veh/h]	d1, Uniform Delay [s]	k, delay calibration	I, Upstream Filtering Factor	d2, Incremental Delay [s]	d3, Initial Queue Delay [s]	Rp, platoon ratio	PF, progression factor

_	_	_	_	_	_	_	_
0.38	16.46	В	No	2.11	52.63	3.79	94.74
0.74	21.84	O	Yes	5.17	129.17	8.89	222.36
0.26	7.71	A	Yes	1.47	36.84	2.65	66.31
0.23	7.44	A	No	1.37	34.36	2.47	61.85
X, volume / capacity	d, Delay for Lane Group [s/veh]	Lane Group LOS	Critical Lane Group	50th-Percentile Queue Length [veh]	50th-Percentile Queue Length [ft]	95th-Percentile Queue Length [veh]	95th-Percentile Queue Length [ft]
	0.23 0.26 0.74	0.23 0.26 0.74 7.44 7.71 2184	0.23 0.26 0.74 7.44 7.71 21.84 A A C	0.23 0.26 0.74 7,44 7,71 21.84 A A C No Yes Yes	0.23 0.26 0.74 0.74 7.71 2.184 0.74 0.77 0.771 0	023 026 074	023 0.26 0.74 7.44 7.71 2.184 A A C No Yes Yes 1.37 1.47 5.17 34.36 38.84 129.17 2.47 2.65 889

Generated with PTV VISTRO
Version 5.00-00

Movement, Approach, & Intersection Results	suits											
d_M. Delay for Movement [s/veh] 7.44 7.44 7.71 7.71 7.71 21.84 21.84 21.84 16.46 16.46 16.46 16.46	7.44	7.44	7.44	7.71	7.71	7.71	21.84	21.84	21.84	16.46	16.46	16.46
MovementLOS	٧	٧	٧	٧	٧	٧	О	О	O	В	В	В
d_A, Approach Delay [s/veh]		7.44			7.71			21.84			16.46	
Approach LOS		4			4			O			ш	
d_I, Intersection Delay [s/veh]						14	14.54					
Intersection LOS							m					
Intersection V/C						7.0	0.434					

Sequence

	-		-	*******			
1	-	,	-			ľ	
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,	-	,	٠			ı	
,	-	,		415	M 15s	418	108 15s
,	-	,	٠	SG. 4	SG: 104	SG: 8 41s	SG: 10
,	٠	'	٠				
,	'	,	٠				
4	8	٠					
2	9		-		g		ø
Ring 1	Ring 2	Ring 3	Ring 4	SG: 2 19s	SG: 102 15s	SG: 6 19s	SG: 106 15s

Creekside Estates TIS PM Future (Signal)

W-Trans

W-Trans

Creekside Estates TIS PM Future (Signal)

W-Trans

Intersection Level Of Service Report Intersection 2: Durham-Dayton Hwy/Midway Delay (sec / veh): Level Of Senvice:

Roundabout HCM 2010 15 minutes

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Intersection Setup

Control Type: Analysis Method: Analysis Period:

20

164

124

38 69

1 323 274 121 121

1 139 183 183

1 218 172 91 91

Number of Conflicting Circulating Lanes
Circulating Flow Rate (veh.fn)
Exiting Flow Rate (veh.fn)
Demand Flow Rate (veh.fn)
Adjusted Demand Flow Rate (veh.fn)
Adjusted Demand Flow Rate (veh.fn)

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

No 4.00 No 3.00 1130.00 0.00100 0.98 221 818

B (coefficient) HV Adjustment Factor Entry Flow Rate [veh/h] Pedestrian Impedance

A (intercept)

Capacity of Entry and Bypass Lanes [veh/h

Capacity per Entry Lane [veh/h]

X, volume / capacity

User-Defined Critical Headway [s]
Overwrite Calculated Follow-Up Time
User-Defined Follow-Up Time [s]

Overwrite Calculated Critical Headway

Lanes

27.25

7.48

8.06 A

4 P

A 2.16 54.10 8.87

1.17 29.33 7.06

> 1.24 8.31

95th-Percentile Queue Length [veh] 95th-Percentile Queue Length [ft]

Approach Delay [s/veh]

Approach LOS Intersection Delay [s/veh] Intersection LOS

Movement, Approach, & Intersection Results

1.00 0.27

	Hwy			Right	12.00	0	100.00			
	Durham-Dayton Hwy	Westbound	+	Thru	12.00	0	100.00	35.00	0.00	Yes
	Durha	۸		Left	12.00	0	100.00			
	Hwy -	_		Right	12.00	0	100.00			
	Durham-Dayton Hwy	Eastbound	+	Thru	12.00	0	100.00	25.00	0.00	Yes
	Durha	_		Left	12.00	0	100.00			
		р		Right	12.00	0	100.00			
	Midway	Southbound	+	Thru	12.00	0	100.00	35.00	00.00	Yes
		S		Left	12.00	0	100.00			
		q		Right	12.00	0	100.00			
	Midway	Northbound	+	Thru	12.00	0	100.00	25.00	0.00	Yes
		_		Left	12.00	0	100.00			
_	Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	Speed [mph]	Grade [%]	Crosswalk
		-		_	╙	_		_	_	

Crosswalk	Yes	Yes	Yes	Yes
Volumes				

Hwy	40	1.0000	2.00	1.25	0	0	0	0	0	0	20	1.0000	1.0000	13	20	
Durham-Dayton Hwy	97	1.0000	2.00	1.25	0	0	0	0	0	0	121	1.0000	1.0000	30	121	
Durha	36	1.0000	2.00	1.25	0	0	0	0	0	0	45	1.0000	1.0000	11	45	
Hwy	39	1.0000	2.00	1.25	0	0	0	0	0	0	49	1.0000	1.0000	12	49	
Durham-Dayton Hwy	146	1.0000	2.00	1.25	0	0	0	0	0	0	183	1.0000	1.0000	46	183	c
Durha	131	1.0000	2.00	1.25	0	0	0	0	0	0	164	1.0000	1.0000	41	164	
	66	1.0000	2.00	1.25	0	0	0	0	0	0	124	1.0000	1.0000	31	124	
Midway	73	1.0000	2.00	1.25	0	0	0	0	0	0	91	1.0000	1.0000	23	91	
	30	1.0000	2.00	1.25	0	0	0	0	0	0	38	1.0000	1.0000	10	38	
	22	1.0000	2.00	1.25	0	0	0	0	0	0	69	1.0000	1.0000	17	69	
Midway	84	1.0000	2.00	1.25	0	0	0	0	0	0	105	1.0000	1.0000	26	105	c
	38	1.0000	2.00	1.25	0	0	0	0	0	0	48	1.0000	1.0000	12	48	
Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Dodestrian Volume [ned/h]

Creekside Estates TIS PM Future (Roundabout)

W-Trans

W-Trans

W-Trans

Creekside Estates TIS PM Future (Roundabout)

Intersection Level Of Service Report
Two-way stop Delay (sec / veh):
HOM 2010 Level Of Service:
15 minutes

Intersection Setup

Control Type: Analysis Method: Analysis Period:

	_	_		_	_	_		_		
	Durham-Dayton Hwy	Westbound		Right	12.00	0	100.00	35.00	00.00	No
	Durham-D	West		Thru	12.00	0	100.00	32	0.	2
	syton Hwy	punc		Thru	12.00	0	100.00	00	00	0
	Durham-Dayton Hwy	Eastbound	T	Left	12.00	0	100.00	35.00	00:00	9N
	Ave	punoc		Right	12.00	0	100.00	00	01	0
	Jones Ave	Southbound	F	Left	12.00	0	100:00	35.00	00:00	No
mersection cetab	Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	Speed [mph]	Grade [%]	Crosswalk

0.00 0.00

0.00 0.00

0.00 A 0.83 20.73

0.01 7.74 A 0.83 20.73

0.02 9.65 A 0.12 2.93

0.02 12.40 B 0.12 2.93

VVC, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS
95th-Percentile Queue Length [fit]
d_A, Approach Delay [s/veh]
Approach LOS
Approach LOS

Movement, Approach, & Intersection Results

Stop

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Priority Scheme
Flared Lane
Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

12.4 B 0.018

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

0.00

A 0.71 0.43

10.64

d_l, Intersection Delay [s/veh]

	į
	1
	3
	-
	4
	3

Name	Jone	Jones Ave	Durham-D	Durham-Dayton Hwy	Durham-D	Durham-Dayton Hwy
Base Volume Input [veh/h]	7	13	13	218	173	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2:00	2.00	2:00	2.00	2.00
Growth Rate	1.25	1.25	1.25	1.25	1.25	1.25
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	16	16	273	216	23
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	4	4	89	54	9
Total Analysis Volume [veh/h]	6	16	16	273	216	23
Pedestrian Volume [ped/h]		0		0		0

W-Trans

Creekside Estates TIS PM Future

W-Trans

W-Trans 6

Creekside Estates TIS PM Future

Intersection Level Of Service Report
Two-way stop Delay (sec / veh):
HOM 2010 Level Of Service:
15 minutes

12.1 B 0.027

Intersection Setup

Control Type: Analysis Method: Analysis Period:

Name	Stanford Ln	ırd Ln	Durham-Dayton Hwy	ayton Hwy	Durham-Dayton Hwy	ayton Hwy
Approach	Northbound	puno	Eastbound	puno	Mestbound	puno
Lane Configuration	F	•	_		1	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100:00	100:00	100.00	100.00	100.00
Speed [mph]	35.	35.00	35.	35.00	32.	35.00
Grade [%]	00:00	00	0.00	00	00:00	00
Crosswalk	ž	No	Ž	No	2	No.

0.00 A 0.68 17.02

0.01 7.84 A 0.68

0.00 0.00 0.00

0.00 0.00 0.00

0.01 A A 0.08 2.10

0.03 12.14 B 0.08

VVC, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS
95th-Percentile Queue Length [fit]
d_A, Approach Delay [s/veh]
Approach LOS
Approach LOS

d_l, Intersection Delay [s/veh]

Movement, Approach, & Intersection Results

Priority Scheme
Flared Lane
Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

Stop - 2 0.43

A 0.68 00.00

No		0
ON		
Crosswalk	Volumes	

	Stanford Ln	ord Ln	Durham-D	Durham-Dayton Hwy	Durham-D	Durham-Dayton Hwy
Base Volume Input [veh/h]	11	8	200	25	10	180
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.25	1.25	1.25	1.25	1.25	1.25
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	10	250	31	13	225
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	3	63	8	3	99
Total Analysis Volume [veh/h]	14	10	250	31	13	225
Pedestrian Volume [ped/h]						

Creekside Estates TIS PM Future W-Trans 7

Intersection Evel Of Service Report
Intersection 5: Durham-Dayton HwylLott Rd
Delay (sec / veh):
Level Of Service:
Volume to Capacity (v/c): Two-way stop HCM 2010 15 minutes Control Type: Analysis Method: Analysis Period:

Intersection Setup

			Ī									
	Ľ	Lott Rd			Lott Rd		Durha	Durham-Dayton Hwy	Hwy ،	Durha	Durham-Dayton Hwy	Hwy
	Non	Northbound		Ø	Southbound	п	ш	Eastbound		_	Westbound	
_	•	+			+			+			+	
	. Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
	0	0	0	0	0	0	0	0	0	0	0	0
	100.001	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	69	35.00			35.00			40.00			40.00	
		0.00			0.00			0.00			0.00	
		No			No			No			No	

A 0.33 8.20

0.00 0.00 7.47 0.00 A A A 0.33 0.33

A 0.42 10.49

2.10

3.15 ω

0.05 0.03 0.00 9.37 7.59 0.00 A A A A 0.27 0.42 0.42 0.42 6.64 10.49 10.49 1

0.02 12.07 B 0.27 6.64

0.02 0.02 0.00 0.02 12.15 11.91 11.80 1 18 B A B B O.13 0.13 0.13 0.27 1 11.66 1 11.66

95h-Percentile Queue Length (veh)
95h-Percentile Queue Length (if)
d_A. Approach Delay (s/veh)
Approach LOS

d_I, Intersection Delay [s/veh] Intersection LOS

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS

Free

Free

Stop No o No

Stop ۰ 2

Priority Scheme
Flared Lane
Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

12.1 B 0.021

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

_		_	$\overline{}$		$\overline{}$	_	_	_	_	_	_	_	_	_	_	_
Hwy ر	8	1.0000	2.00	1.25	0	0	0	0	0	0	10	1.0000	1.0000	က	10	
Durham-Dayton Hwy	106	1.0000	2.00	1.25	0	0	0	0	0	0	133	1.0000	1.0000	33	133	0
Durha	1	1.0000	2.00	1.25	0	0	0	0	0	0	-	1.0000	1.0000	0	1	
Hwy	10	1.0000	2.00	1.25	0	0	0	0	0	0	13	1.0000	1.0000	8	13	
Durham-Dayton Hwy	95	1.0000	2.00	1.25	0	0	0	0	0	0	115	1.0000	1.0000	59	115	0
Durha	39	1.0000	2.00	1.25	0	0	0	0	0	0	49	1.0000	1.0000	12	49	
	34	1.0000	2.00	1.25	0	0	0	0	0	0	43	1.0000	1.0000	11	43	
Lott Rd	7	1.0000	2.00	1.25	0	0	0	0	0	0	6	1.0000	1.0000	2	6	0
	8	1.0000	2.00	1.25	0	0	0	0	0	0	10	1.0000	1.0000	е	10	
	2	1.0000	2.00	1.25	0	0	0	0	0	0	9	1.0000	1.0000	1	3	
Lott Rd	7	1.0000	2.00	1.25	0	0	0	0	0	0	6	1.0000	1.0000	2	6	0
	6	1.0000	2.00	1.25	0	0	0	0	0	0	11	1.0000	1.0000	е	11	
Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Pedestrian Volume [ped/h]

W-Trans

Creekside Estates TIS PM Future

Intersection Level Of Service Report Intersection 1: Midway/Jones Ave Control Type: Analysis Method: Analysis Period:

Two-way stop HCM 2010 15 minutes

13.3 B 0.002

Delay (sec / veh): Level Of Service: Volume to Capacity (v/c):

Intersection Setup

_	_		_	_	_	_	_	_	_
Jones Ave	puno	•	Right	12.00	0	100:00	00	00	8
Jones	Westbound	⊢	Left	12.00	0	100.00	35.00	00:00	2
vay	punoc		Thru	12.00	0	100.00	00	00	0
Midway	Southbound	L	Left	12.00	1	75.00	50.00	0.00	No
vay	puno	•	Right	12.00	0	100.00	00	01	0
Midway	Northbound	_	Thru	12.00	0	100.00	20.00	0.00	No
Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	Speed [mph]	Grade [%]	Crosswalk

0.03 10.49 B 0.09

0.00 13.33 B 0.09

0.00 0.00 0.00 0.00

0.01 8.06 A 0.03

0.00 0.00 0.00 0.00

0.00 0.00

VVC, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS
95th-Percentile Queue Length [fit]
d_A, Approach Delay [s/veh]
Approach LOS
Approach LOS

Movement, Approach, & Intersection Results

Priority Scheme
Flared Lane
Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

10.64

0.39 A 0.47

0.00

d_l, Intersection Delay [s/veh]

Stop

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$\overline{}$			$\overline{}$		_		_			$\overline{}$		_	_		_	Г
Jones Ave	15	1.1120	2.00	1.00	0	-	0	0	0	0	18	1.0000	1.0000	2	18	
Jone	-	1.1120	2.00	1.00	0	0	0	0	0	0	-	1.0000	1.0000	0	1	
/ay	210	1.1120	2.00	1.00	0	2	0	0	0	0	236	1.0000	1.0000	59	236	
Midway	10	1.1120	2.00	1.00	0	-	0	0	0	0	12	1.0000	1.0000	3	12	0
vay	-	1.1120	2.00	1.00	0	0	0	0	0	0	-	1.0000	1.0000	0	1	
Midway	326	1.1120	2.00	1.00	0	7	0	0	0	0	370	1.0000	1.0000	93	370	0
Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Pedestrian Volume [bed/h]

Creekside Estates TIS AM Existing + Project

W-Trans

Creekside Estates TIS AM Existing + Project

W-Trans

Intersection 2: Durham-Dayton Hwy/Midway
Delay (sec / veh):
Level Of Service:
Volume to Capacity (v/c): All-way stop HCM 2010 15 minutes

Intersection Setup

Control Type: Analysis Method: Analysis Period:

ı	_		_		_	_		_		
	n Hwy	p		Right	12.00	0	100.00			
	Durham-Dayton Hwy	Westbound	+	Thru	12.00	0	100.00	35.00	0.00	S
	Durha	>		Left	12.00	0	100.00			
	Hwy			Right	12.00	0	100.00			
	Durham-Dayton Hwy	Eastbound	+	Thru	12.00	0	100.00	25.00	0.00	Yes
	Durha	Ш		Left	12.00	0	100.00			
				Right	12.00	0	100.00			
	Midway	Southbound	+	Thru	12.00	0	100.00	35.00	0.00	Yes
		S		Left	12.00	0	100.00			
		_		Right	12.00	0	100.00			
	Midway	Northbound	+	Thru	12.00	0	100.00	25.00	0.00	Yes
		z		Left	12.00	0	100.00			
	Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	Speed [mph]	Grade [%]	Crosswalk

3.76 94.06 17.56

3.72 93.05 17.66

2.14 53.57 14.01 B

2.12 53.01 14.47 B

95th-Percentie Queue Length (veh)
95th-Percentie Queue Length (fit)
Approach Delay (s/veh)
Approach LOS
Intersection Delay (s/veh)
Intersection Delay (s/veh)

O

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16.21

0.59 581

574

568

543

Capacity per Entry Lane [veh/h] Degree of Utilization, x

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

Lanes

16.2 C 0.585

Movement, Approach, & Intersection Results

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Hwy	33	1.1120	2.00	1.00	0	7	0	0	0	0	4	1.0000	1.0000	11	44	
Durham-Dayton Hwy	231	1.1120	2.00	1.00	0	80	0	0	0	0	265	1.0000	1.0000	99	265	0
Durha	25	1.1120	2:00	1.00	0	е	0	0	0	0	31	1.0000	1.0000	8	31	
Hwy	39	1.1120	2.00	1.00	0	0	0	0	0	0	43	1.0000	1.0000	11	43	
Durham-Dayton Hwy	118	1.1120	2:00	1.00	0	е	0	0	0	0	134	1.0000	1.0000	34	134	0
Durha	141	1.1120	2.00	1.00	0	0	0	0	0	0	157	1.0000	1.0000	39	157	
	127	1.1120	2.00	1.00	0	0	0	0	0	0	141	1.0000	1.0000	35	141	
Midway	99	1.1120	2.00	1.00	0	0	0	0	0	0	73	1.0000	1.0000	18	73	0
	25	1.1120	2.00	1.00	0	2	0	0	0	0	30	1.0000	1.0000	8	30	
	30	1.1120	2.00	1.00	0	-	0	0	0	0	34	1.0000	1.0000	6	34	
Midway	127	1.1120	2.00	1.00	0	0	0	0	0	0	141	1.0000	1.0000	35	141	0
	51	1.1120	2.00	1.00	0	0	0	0	0	0	22	1.0000	1.0000	14	22	
Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Pedestrian Volume [ped/h]

Creekside Estates TIS AM Existing + Project

W-Trans

Creekside Estates TIS AM Existing + Project

W-Trans

Intersection Level Of Service Report
Two-way stop Delay (sec / veh):
HOM 2010 Level Of Service:
15 minutes

Control Type: Analysis Method: Analysis Period:

Intersection Setup						
Name	Jone	Jones Ave	Durham-Dayton Hwy	ayton Hwy	Durham-D	Durham-Dayton Hwy
Approach	South	Southbound	Eastbound	puno	West	Westbound
Lane Configuration	+	L	+		-	•
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100:00	100.00	100.00	100.00	100.00	100:00
Speed [mph]	32	35.00	35.	35.00	35	35.00
Grade [%]	0.0	00:00	00'0	00	0.00	00
Crosswalk	z	No	Ž	No	_	No

0.00 0.00

0.00 0.00

0.00 A 0.52 13.01

0.01 7.94 A 0.52 13.01

0.03 10.26 B 0.14 3.54

0.02 12.21 B 0.14 3.54

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS

Stop

ວ 2

Priority Scheme
Flared Lane
Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

12.2 B 0.017

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

0.00

A 0.72 0.39

10.86

95th-Percentie Queue Length (ref)
95th-Percentie Queue Length (rt)
d_A. Approach Delay [siveh]
Approach LOS

d_I, Intersection Delay [s/veh] Intersection LOS

Name	Jone	Jones Ave	Durham-D	Durham-Dayton Hwy	Durham-D	Durham-Dayton Hwy
Base Volume Input [veh/h]	7	18	80	151	265	=
Base Volume Adjustment Factor	1.1120	1.1120	1.1120	1.1120	1.1120	1.1120
Heavy Vehicles Percentage [%]	2.00	2:00	2.00	2.00	2:00	2:00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-	0	0	9	18	-
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	20	6	174	313	13
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	5	2	44	78	က
Total Analysis Volume [veh/h]	6	20	o	174	313	13
Pedestrian Volume [ped/h]						0

W-Trans

Creekside Estates TIS AM Existing + Project

Intersection Level Of Service Report
Two-way stop Delay (sec / veh):
HOM 2010 Level Of Service:
15 minutes

Intersection Setup

Control Type: Analysis Method: Analysis Period:

A 0.73

0.00 7.59 A 0.73 18.33

0.00 0.00

0.00 0.00 0.00

0.01 A A 0.21 5.13

0.06 11.76 B 0.21 5.13

95th-Percentie Queue Length (veh)
95th-Percentie Queue Length (it)
d_A. Approach Delay (siveh)
Approach LOS

d_I, Intersection Delay [s/veh] Intersection LOS

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio

Priority Scheme
Flared Lane
Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

11.8 B 0.064

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

Stop - 8 90.0

A 1.06 0.00

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	Durham-Dayton Hwy	2 244	1.1120 1.1120	2.00 2.00	1.00 1.00	0 0	0 2	0 0	0 0	0 0	0 0	2 273	1.0000 1.0000	1.0000 1.0000	1 68	2 273	0
	Durham-Dayton Hwy	154 4	1.1120 1.1120	2.00 2.00	1.00 1.00	0	0 9	0 0	0	0 0	0 0	177 4	1.0000 1.0000	1.0000 1.0000	4	177 4	U
	Stanford Ln	6	1.1120	2:00	1.00	0	0	0	0	0	0	10	1.0000	1.0000	8	10	
	ĮŞ.	32	1.1120	2.00	1.00	0	0	0	0	0 [h/r	0	36	1.0000	1.0000	6	36	
000	Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [velvh]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Padastrian Volume [ned/h]

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Creekside Estates TIS AM Existing + Project

W-Trans

W-Trans

Creekside Estates TIS AM Existing + Project

Intersection Evel Of Service Report
Intersection 5: Durham-Dayton HwylLott Rd
Delay (sec / veh):
Level Of Service:
Volume to Capacity (v/c): Two-way stop HCM 2010 15 minutes Control Type: Analysis Method: Analysis Period:

Intersection Setup

J												
Name		Lott Rd			Lott Rd		Durha	Durham-Dayton Hwy	Hwy	Durha	Durham-Dayton Hwy	Hwy
Approach	_	Northbound		S	Southbound	9		Eastbound		۸	Westbound	
Lane Configuration		+			+			+			+	
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]		35.00			35.00			40.00			40.00	
Grade [%]		0.00			0.00			0.00			0.00	
Crosswalk		o N			8			N _o			No No	

A 0.17

A 0.23

0.02 0.01 0.00 8.83 7.40 0.00 A A A 0.13 0.23 0.23 3.27 5.68 5.68

 V/I.C, Movement V/C Ratio
 0.01
 0.03
 0.00
 0.01
 0.01
 0.00

 d_M. Delay for Movement (sveh)
 10.27
 10.49
 8.88
 10.47
 10.47
 8.82

 Movement LOS
 B
 B
 A
 B
 B
 A

 95th-Percentile Queue Length (rel)
 0.11
 0.11
 0.11
 0.13
 0.13
 0.13

 GAA Approach Delay (siveh)
 10.31
 A
 B
 3.27
 3.27
 3.27

Movement, Approach, & Intersection Results

0.00 0.00 7.39 0.00 A A A 0.17 0.17

Free

Free

Stop No o No

Stop 2

Priority Scheme
Flared Lane
Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

10.5 B 0.025

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

4.19 4.19 0.09

3.05 ω

d_I, Intersection Delay [s/veh] Intersection LOS

1.1120 1.1120 1.1120 2.00 2.00 2.00 2.00	1.1120 2.00 1.00 1.00 0 0 0 0 0 0 0 0 0 0 0 0 0	1.1120 2.00 1.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1,1120 2,00 1,100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1.1120 2.00 1.00 1.00 0 0 0 0 0 0 0 0 0 0 0 0 0
2.00 2.00 1.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				
				
1,000 1,000 1,000 0,000	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1.00 0 0 0 0 0 0 0 0 0 0 1.0000 1.0000	1,000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1,00 0 0 0 0 0 0 0 0 0 0 0	-	1.0		
0 0 0 0 0		0 0 0 0 0 17 17 17 10000 1.0000.1	0 0 0 0 0 0 1,0000 1,0000	0 0 0 0 0 0 0 0 1.0000 1 4
In-Process Volume (veh/h) Sile-Caenarated Trips (veh/h) Deverted Trips (veh/h) Pass-by Trips (veh/h) Existing Site Adjustment Volume (veh/h) Other Volume (veh/h)	In-Process Volume [veh/h] Site-Generated Trips (veh/h) Deverted Trips (veh/h) Pass-by Trips (veh/h) Existing Site Adjustment Volume (veh/h) Other Volume [veh/h) Tdati Hourly Volume [veh/h]	In-Process Volume (vehth) Site-Generated Trips (vehth) Diverted Trips (vehth) Pass-by Trips (vehth) Chistry Site Adjustment Volume (vehth) Total Hourly Volume (vehth) Peak Hour Factor	In-Process Volume (vehth) Site-Generated Trips (vehth) Diverted Trips (vehth) Pass-by Trips (vehth) Cher Volume (vehth) Tdal Hourly Volume (vehth) Tdal Hourly Volume (vehth) Peak Hour Factor Other Adjustment Factor	In-Process Volume (vehth) Site-Generated Trips (vehth) Pass-by Trips (vehth) Pass-by Trips (vehth) Total Houry Volume (vehth) Total Houry Volume (vehth) Peak Hour Factor Other Adjustment Factor Other Adjustment Factor Total 15-Minute Volume (vehth)
0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1,0000 1,0000 1,0000	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000
	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 6 17 2 7 1,0000 1,0000 1,0000	0 0 0 0 0 0 0 0 0 0 0 0 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000	0 0 0 0 0 0 0 0 0 0 0 0 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000
0 0 0 0 0	0 0 0 0 0 0 0 0 6 17 2 7	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 6 17 2 7 1,0000 1,0000 1,0000 1,0000 1,0000	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0
	6 17 2 7 6	6 17 2 7 6 1.0000 1.0000 1.0000 1.0000	6 17 2 7 6 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000	6 17 2 7 6 1,0000

Creekside Estates TIS AM Existing + Project

W-Trans

W-Trans

W-Trans

Creekside Estates TIS AM Existing + Project

Intersection Level Of Service Report Intersection 1: Midway/Jones Ave

Two-way stop HCM 2010 15 minutes

Intersection Setup

Control Type: Analysis Method: Analysis Period:

_	_		_	_	_	_	_	_	_
. Ave	puno	•	Right	12.00	0	100:00	35.00	00	8
Jones Ave	Westbound	F	Left	12.00	0	100.00	35.	0.00	2
vay	punoc	ļ	Thru	12.00	0	100.00	00	00	0
Midway	Southbound	L	Left	12.00	1	75.00	50.00	0.00	N
vay	puno		Right	12.00	0	100.00	00	00	0
Midway	Northbound	_	Thru	12.00	0	100.00	50.00	00:00	No
Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	Speed [mph]	Grade [%]	Crosswalk

0.04 9.87 A 0.12

0.00 13.62 B 0.12 2.91

0.00 0.00 0.00

0.03 A A 0.09

0.00 A 0.00 0.00 0.00 0.00

A 00.00

95th-Percentile Queue Length [veh]
95th-Percentile Queue Length [ft]
d_A, Approach Delay [s/veh]

d_l, Intersection Delay [s/veh]

Approach LOS Intersection LOS

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS

Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

Priority Scheme Flared Lane

13.6 B 0.002

Delay (sec / veh): Level Of Service: Volume to Capacity (v/c):

Intersection Settings Version 5.00-00

Generated with PTV VISTRO

Stop

9

2.91

10.00

A 0.90 0.87

0.00

02		Jones Ave
ON.		Midway
ON.		Midway
Crosswalk	Volumes	Name
_		

1.0820 1.0000 2.00 1.00 1.0000 1.0820 1.00 297 1.0000 74 268 1.0820 2.00 1.00 297 1.0000 32 1.0820 2.00 1.00 1.0000 1.0820 2.00 1.00 269 1.0000 1.0000 67 1.0820 1.00 269 Pass-by Trips (vehh)]
Existing Site Adjustment Volume (vehh)]
Other Volume (vehh)]
Total Hourly Volume (vehh)] Base Volume Adjustment Factor Heavy Vehicles Percentage [%] in-Process Volume [veh/h]
Site-Generated Trips [veh/h]
Diverted Trips [veh/h] Total 15-Minute Volume [veh/h] Total Analysis Volume [veh/h] Base Volume Input [veh/h] Pedestrian Volume [ped/h] Other Adjustment Factor Peak Hour Factor Growth Rate

Creekside Estates TIS PM Existing + Project

W-Trans

Creekside Estates TIS PM Existing + Project

Intersection 2: Durham-Dayton HwylMidway

Delay (sec / veh):

Level Of Service:

Volume to Capacity (v/c): All-way stop HCM 2010 15 minutes Control Type: Analysis Method: Analysis Period:

Intersection Setup

_				_	_	_	_	_	_
Hwy -	_		Right	12.00	0	100.00			
Durham-Dayton Hwy	Westbound	+	Thru	12.00	0	100.00	35.00	00:00	N _o
Durha	>		Left	12.00	0	100.00			
Hwy			Right	12.00	0	100.00			
Durham-Dayton Hwy	Eastbound	+	Thru	12.00	0	100.00	25.00	00:00	Yes
Durha	Ш		Left	12.00	0	100.00			
	_		Right	12.00	0	100.00			
Midway	Southbound	+	Thru	12.00	0	100.00	35.00	00.00	Yes
	Š		Left	12.00	0	100.00			
			Right	12.00	0	100.00			
Midway	Northbound	+	Thru	12.00	0	100.00	25.00	00.00	Yes
	z		Left	12.00	0	100.00			
Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	Speed [mph]	Grade [%]	Crosswalk

1.34 33.60 11.28

3.25 81.18 14.84

1.58 39.54 11.66

1.34 33.40 m

95th-Percentie Queue Length (veh)
95th-Percentie Queue Length (fit)
Approach Delay (s/veh)
Approach LOS
Intersection Delay (s/veh)
Intersection Delay (s/veh)

B

m

B

12.68

633

652

639

622

Capacity per Entry Lane [veh/h] Degree of Utilization, x

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

Lanes

12.7 B 0.541

Movement, Approach, & Intersection Results

		č
		٩
	•	

Hwy	40	1.0820	2.00	1.00	0	4	0	0	0	0	47	1.0000	1.0000	12	47	
Durham-Dayton Hwy	97	1.0820	2.00	1.00	0	9	0	0	0	0	111	1.0000	1.0000	28	111	0
Durha	36	1.0820	2:00	1.00	0	2	0	0	0	0	41	1.0000	1.0000	10	41	
Hwy	39	1.0820	2.00	1.00	0	0	0	0	0	0	42	1.0000	1.0000	11	42	
Durham-Dayton Hwy	146	1.0820	2.00	1.00	0	10	0	0	0	0	168	1.0000	1.0000	42	168	0
Durha	131	1.0820	2:00	1.00	0	0	0	0	0	0	142	1.0000	1.0000	36	142	
	66	1.0820	2.00	1.00	0	0	0	0	0	0	107	1.0000	1.0000	27	107	
Midway	73	1.0820	2.00	1.00	0	0	0	0	0	0	62	1.0000	1.0000	20	62	0
	30	1.0820	2.00	1.00	0	7	0	0	0	0	39	1.0000	1.0000	10	39	
	55	1.0820	2.00	1.00	0	8	0	0	0	0	63	1.0000	1.0000	16	63	
Midway	22	1.0820	2.00	1.00	0	0	0	0	0	0	91	1.0000	1.0000	23	91	0
	38	1.0820	2.00	1.00	0	0	0	0	0	0	41	1.0000	1.0000	10	41	
Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Pedestrian Volume [ped/h]

Creekside Estates TIS PM Existing + Project

W-Trans

Intersection Level Of Service Report
Two-way stop Delay (sec/ veh):
HOM 2010
Volume to Capacity (v/c):

12.0 B 0.019

Intersection Setup

Control Type: Analysis Method: Analysis Period:

Right 12.00 0 Durham-Dayton Hwy Westbound 35.00 0.0 S Thru 12.00 Thru 12.00 0 Durham-Dayton Hwy Eastbound 35.00 0.0 % Left 12.00 0 Right 12.00 0 Jones Ave Southbound 35.00 0.00 N F Left 12.00 0 Turning Movement
Lane Width [ft]
No. of Lanes in Pocket Lane Configuration Pocket Length [ft] Speed [mph] Grade [%] Approach Crosswalk Name

O:00 0.00

A 0.00

0.00 A 0.75 18.64

0.01 7.69 A 0.75 18.64

0.02 9.53 A 0.11 2.78

0.02 12.01 B 0.11 2.78

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS

Stop

Priority Scheme Flared Lane

Intersection Settings Version 5.00-00

Generated with PTV VISTRO

ວ 2

Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

0.00

A 0.70 0.40

10.56

95th-Percentile Queue Length (veh)
95th-Percentile Queue Length (tit)
d_A, Approach Delay (s/veh)
Approach LOS

d_l, Intersection Delay [s/veh]

Intersection LOS

В

Volumes

Name	Jone	Jones Ave	Durham-D	Durham-Dayton Hwy	Durham-D	Durham-Dayton Hwy
Base Volume Input [veh/h]	7	13	13	218	173	18
Base Volume Adjustment Factor	1.0820	1.0820	1.0820	1.0820	1.0820	1.0820
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1:00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	0	20	12	-
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	14	14	256	199	20
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	4	4	64	90	2
Total Analysis Volume [veh/h]	10	14	14	256	199	20
Pedestrian Volume [ped/h]						0

Creekside Estates TIS PM Existing + Project

W-Trans

Creekside Estates TIS PM Existing + Project

W-Trans

Intersection Level Of Service Report
Two-way stop Delay (sec / veh):
HOM 2010 Level Of Service:
15 minutes Volume to Capadity (vic): Control Type: Analysis Method: Analysis Period:

11.6 B 0.022

Intersection Setup

iliter section setup						
Name	Stanfe	Stanford Ln	Durham-Dayton Hwy	ayton Hwy	Durham-Dayton Hwy	ayton Hwy
Approach	North	Northbound	Eastbound	puno	Mestbound	puno
Lane Configuration	Ε-	L	_		1	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100:00	100.00	100.00	100.00	100.00	100:00
Speed [mph]	32	35.00	35.	35.00	35.00	00
Grade [%]	0.0	0.00	00'0	00	00:00	00
Crosswalk	z	No	Ž	No	2	9

Name	Stant	Stanford Ln	Durham-D	Durham-Dayton Hwy	Durham-D	Durham-Dayton Hwy
Base Volume Input [veh/h]	11	80	200	25	10	180
Base Volume Adjustment Factor	1.0820	1.0820	1.0820	1.0820	1.0820	1.0820
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2:00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	4	0	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	6	220	27	11	202
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	2	55	7	က	51
Total Analysis Volume [veh/h]	12	6	220	27	11	202
Pedestrian Volume [ped/h]		0		0		0

W-Trans

Creekside Estates TIS PM Existing + Project

W-Trans 7

Generated with PTV VISTRO

Version 5.00-00

Free Free Stop - Ves Priority Scheme Flared Lane Storage Area [veh] Two-Stage Cap Acceptance Number of Storage Spaces in Median Intersection Settings

Results	
& Intersection	
Movement, Approach, &	

V/C, Movement V/C Ratio	0.02	0.01	0.00	00.00	0.01	00:00
d_M, Delay for Movement [s/veh]	11.56	9:55	0.00	00.00	7.75	00:00
MovementLOS	В	٧	٧	٧	٧	٧
95th-Percentile Queue Length [veh]	0.07	0:02	00:00	00.00	0.58	0.58
95th-Percentile Queue Length [ft]	1.65	1.65	0.00	00.00	14.39	14.39
d_A, Approach Delay [s/veh]	10	10.70	0.0	0.00	0,0	0.40
Approach LOS		В	4	,	1	Ф
d_l, Intersection Delay [s/veh]			9:0	0.64		
Intersection LOS			ш	m		



Intersection Evel Of Service Report
Intersection 5: Durham-Dayton HwylLott Rd
Delay (sec / veh):
Level Of Service:
Volume to Capacity (v/c): Two-way stop HCM 2010 15 minutes

Intersection Setup

Control Type: Analysis Method: Analysis Period:

L												
Name		Lott Rd			Lott Rd		Durha	Durham-Dayton Hwy	Hwy	Durha	Durham-Dayton Hwy	Hwy
Approach	z	Northbound	_	Š	Southbound	D.	3	Eastbound		>	Westbound	
Lane Configuration		+			+			+			+	
Turning Movement	Teft	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]		35.00			35.00			40.00			40.00	
Grade [%]		00.00			00.00			0.00			0.00	
Crosswalk		No			No			No			No	

A 0.29 7.30

0.00 0.00 7.44 0.00 A A A 0.29 0.29 7.30 7.30

A 0.36 9.05

| 0.04 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

0.01 11.64 11.64 B B 0.23 5.63 9.93

0.02 0.01 0.00 0.01 1.160 11.50 9.02 11.32 9.02 11.32 9.01 0.10 0.10 0.23 2.62 2.62 5.63 11.30

95th-Percentile Queue Length (veh)
95th-Percentile Queue Length (ft)
d_A, Approach Delay (s/veh)
Approach LOS

d_I, Intersection Delay [s/veh] Intersection LOS

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS

3.04 ω

Free

Free

Stop No o No

Stop 2

Priority Scheme
Flared Lane
Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

11.6 B 0.014

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

CIOSSWAIR	ON	ON	ON	ON
Volumes				

_	_	_	_		_	_	_	_	_		_		_	_		_
Hwy	8	1.0820	2.00	1.00	0	0	0	0	0	0	6	1.0000	1.0000	2	6	
Durham-Dayton Hwy	106	1.0820	2.00	1.00	0	9	0	0	0	0	121	1.0000	1.0000	30	121	c
Durha	1	1.0820	2.00	1.00	0	0	0	0	0	0	1	1.0000	1.0000	0	-	
Hwy .	10	1.0820	2.00	1.00	0	0	0	0	0	0	11	1.0000	1.0000	3	11	
Durham-Dayton Hwy	92	1.0820	2.00	1.00	0	9	0	0	0	0	103	1.0000	1.0000	26	103	c
Durha	39	1.0820	2.00	1.00	0	-	0	0	0	0	43	1.0000	1.0000	11	43	
	34	1.0820	2.00	1.00	0	1	0	0	0	0	38	1.0000	1.0000	10	38	
Lott Rd	7	1.0820	2.00	1.00	0	0	0	0	0	0	8	1.0000	1.0000	2	80	c
	8	1.0820	2.00	1.00	0	0	0	0	0	0	6	1.0000	1.0000	2	6	
	2	1.0820	2.00	1.00	0	0	0	0	0	0	2	1.0000	1.0000	1	2	
Lott Rd	7	1.0820	2.00	1.00	0	0	0	0	0	0	8	1.0000	1.0000	2	80	C
	6	1.0820	2.00	1.00	0	0	0	0	0	0	10	1.0000	1.0000	8	10	
Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Pedestrian Volume fred/h1

Creekside Estates TIS PM Existing + Project

W-Trans

Intersection Level Of Service Report Intersection 1: Midway/Jones Ave Control Type: Analysis Method: Analysis Period:

Two-way stop HCM 2010 15 minutes

Delay (sec / veh): Level Of Service: Volume to Capacity (v/c):

14.9 B 0.003

Intersection Setup

Г				Г	$\overline{}$		$\overline{}$		Г
Jones Ave	Westbound	t	Right	12.00	0	100:00	35.00	0.00	No.
Jone	Westt	⊢	Left	12.00	0	100:00	32	0.0	z
ay	puno		Thru	12.00	0	100.00	00	0	
Midway	Southbound	L	Left	12.00	1	75.00	20.00	0.00	oN
/ay	puno		Right	12.00	0	100.00	00	0	
Midway	Northbound	.	Thru	12.00	0	100.00	90.00	0.00	No
Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	Speed [mph]	Grade [%]	Crosswalk

0.03 11.10 B 0.11 2.87

0.00 14.92 B 0.11 2.87

0.00 0.00 0.00 0.00

0.01 A 0.04 0.95

0.00 0.00 0.00 0.00

0.00 0.00

VVC, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS
95th-Percentile Queue Length [fit]
d_A, Approach Delay [s/veh]
Approach LOS
Approach LOS

Movement, Approach, & Intersection Results

Priority Scheme
Flared Lane
Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

11.27

A 0.48 0.39

0.00

d_l, Intersection Delay [s/veh]

Stop

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Volumes

$\overline{}$	$\overline{}$		$\overline{}$		$\overline{}$	$\overline{}$		$\overline{}$	$\overline{}$	_		$\overline{}$			Г	Г
Jones Ave	15	1.0000	2.00	1.34	0	1	0	0	0	0	21	1.0000	1.0000	2	21	
Jone	1	1.0000	2.00	1.34	0	0	0	0	0	0	+	1.0000	1.0000	0	+	
/ay	210	1.0000	2.00	1.34	0	2	0	0	0	0	283	1.0000	1.0000	7.1	283	
Midway	10	1.0000	2.00	1.34	0	-	0	0	0	0	14	1.0000	1.0000	4	14	0
vay	1	1.0000	2.00	1.34	0	0	0	0	0	0	1	1.0000	1.0000	0	-	
Midway	326	1.0000	2.00	1.34	0	7	0	0	0	0	444	1.0000	1.0000	111	444	0
Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Pedestrian Volume [ped/h]

Creekside Estates TIS AM Future + Project

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Creekside Estates TIS AM Future + Project

Intersection Level Of Service Report
Intersection 2: Durham-Dayton HwylMidway
Delay (sec / veh):
Level Of Service:
Volume to Capacity (v/c): All-way stop HCM 2010 15 minutes

Intersection Setup

Control Type: Analysis Method: Analysis Period:

Left Thru Right 12.00 12.00 0 Durham-Dayton Hwy Westbound 35.00 0.00 No Left Thru Right 12.00 12.00 Durham-Dayton Hwy Eastbound 25.00 0.00 Yes 0 Left Thru Right 12.00 12.00 0 Midway Southbound 35.00 0.00 Yes 0 Left Thru Right 12.00 12.00 Midway 25.00 0.00 Yes Turning Movement Lane Width [ft] No. of Lanes in Pocket Lane Configuration Pocket Length [ft] Speed [mph] Grade [%] Approach Crosswalk Name

8.67 216.70 40.35

8.64 216.05 40.67

4.38 109.38 23.61 C

4.23 105.82 23.98 C

Approach Delay [s/veh]
Approach LOS
Intersection Delay [s/veh]
Intersection LOS

ш

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33.57

477 0.85

472

461

0.63

Capacity per Entry Lane [veh/h]

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

Lanes

33.6 D 0.851

Degree of Utilization, x

Movement, Approach, & Intersection Results 95th-Percentile Queue Length [veh] 95th-Percentile Queue Length [ft]

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Hwy	33	1.0000	2.00	1.34	0	7	0	0	0	0	51	1.0000	1.0000	13	51	
Durham-Dayton Hwy	231	1.0000	2.00	1.34	0	8	0	0	0	0	318	1.0000	1.0000	80	318	0
Durha	25	1.0000	2.00	1.34	0	е	0	0	0	0	37	1.0000	1.0000	6	37	
Hwy	39	1.0000	2.00	1.34	0	0	0	0	0	0	25	1.0000	1.0000	13	25	
Durham-Dayton Hwy	118	1.0000	2:00	1.34	0	е	0	0	0	0	161	1.0000	1.0000	40	161	0
Durha	141	1.0000	2.00	1.34	0	0	0	0	0	0	189	1.0000	1.0000	47	189	
	127	1.0000	2.00	1.34	0	0	0	0	0	0	170	1.0000	1.0000	43	170	
Midway	99	1.0000	2.00	1.34	0	0	0	0	0	0	88	1.0000	1.0000	22	88	0
	25	1.0000	2.00	1.34	0	2	0	0	0	0	36	1.0000	1.0000	6	36	
	30	1.0000	2.00	1.34	0	1	0	0	0	0	41	1.0000	1.0000	10	41	
Midway	127	1.0000	2.00	1.34	0	0	0	0	0	0	170	1.0000	1.0000	43	170	0
	51	1.0000	2.00	1.34	0	0	0	0	0	0	89	1.0000	1.0000	17	89	
Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Pedestrian Volume [ped/h]

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Creekside Estates TIS AM Future + Project

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Creekside Estates TIS AM Future + Project

Signalized HCM 2010 15 minutes Control Type: Analysis Method: Analysis Period:

14.9 B 0.540 Intersection Level Of Service Report
Intersection 2: Durham-Dayton Hwy/Midway
Delay (sec / veh):
Level Of Service:
Volume to Capacity (v/c):

60
Time of Day Pattern Isolated
Fully actuated
0.0
LeadGreen
SingleBand
0.00

Located in CBD
Signal Coordination Group
Cycle Length (s)
Coordination Type
Actuation Type
Offset (s)
Offset Reference
Permissive Mode

Lost time [s]

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

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Intersection Setup

Durham-Dayton Hwy Durham-Dayton Hwy	Eastbound Westbound	+	Left Thru Right Left Thru Right	12.00 12.00 12.00 12.00 12.00 12.00	0 0 0 0 0	100.00 100.00 100.00 100.00 100.00 100.00	25.00 35.00	00:00	so/
Midway	Southbound	+	Left Thru Right	12.00 12.00 12.00	0 0	00.00 100.00 100.00	35.00	0.00	Nes.
Midway	Northbound	+	Left Thru Right	12.00 12.00 12.00 1	0 0	100.00 100.00 100.00 1	25.00	0.00	soX
Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	Speed [mph]	Grade [%]	Alexysacro

_	_	_	_	_		_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
33	1.0000	2.00	1.34	0	7	0	0	0	0	0	51	1.0000	1.0000	13	51	8	0	0		
231	1.0000	2.00	1.34	0	80	0	0	0	0	0	318	1.0000	1.0000	80	318		0	0	0	0
25	1.0000	2.00	1.34	0	е	0	0	0	0	0	37	1.0000	1.0000	6	37	_S	0	0		
33	1.0000	2.00	1.34	0	0	0	0	0	0	0	25	1.0000	1.0000	13	25	2	0	0		
118	1.0000	2.00	1.34	0	е	0	0	0	0	0	161	1.0000	1.0000	40	161		0	0	0	0
141	1.0000	2.00	1.34	0	0	0	0	0	0	0	189		1.0000	47	189	°N	0	0		
127	1.0000	2.00	1.34	0	0	0	0	0	0	0	170	1.0000	1.0000	43	170	oN.	0	0		
99	1.0000	2.00	1.34	0	0	0	0	0	0	0	88	1.0000	1.0000	22	88		0	0	0	0
25	1.0000	2.00	1.34	0	2	0	0	0	0	0	36	1.0000	1.0000	6	36	ž	0	0		
30	1.0000	2.00	1.34	0	-	0	0	0	0	0	41	1.0000	1.0000	10	41	9 N	0	0		
127	1.0000	2.00	1.34	0	0	0	0	0	0	0	170	1.0000	1.0000	43	170		0	0	0	0
51	1.0000	2.00	1.34	0	0	0	0	0	0	0	89	1.0000	1.0000	17	89	oN N	0	0		
Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Right-Turn on Red Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Presence of On-Street Parking	On-Street Parking Maneuver Rate [/h]	Local Bus Stopping Rate [/h]	Pedestrian Volume [ped/h]	Bicycle Volume [bicycles/h]
	51 127 30 25 66 127 141 118 39 25 231	51 127 30 25 66 127 141 118 39 25 231	51 127 30 25 66 127 141 118 39 25 231 1,0000 1,0	51 127 30 25 66 127 141 118 39 25 231	1127 30 25 66 127 141 118 39 25 231 110 1000 10000	51 127 30 25 66 127 141 118 39 25 231 110	51 127 30 25 66 127 141 118 39 25 231 120 100000 100000 100000 100000 100000 100000 100000 100000 1000000 10000000 10000	61 127 30 25 66 127 141 118 39 25 231 10000 <td>51 127 30 25 66 127 141 118 39 25 231 1,0000 1,0</td> <td>51 127 30 25 66 127 141 118 39 25 23 1,0000 1,00</td> <td>51 127 30 25 66 127 141 118 39 25 23 1,0000 1,00</td> <td>51 127 30 25 66 127 141 118 39 25 23 1,0000 1,00</td> <td>51 127 30 25 66 127 141 118 39 25 23 1,0000 1,00</td> <td> 127 30 25 66 127 414 118 39 25 231 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 134 134 134 134 134 134 134 134 134 134 135 135 135 135 135 135 135 136 0</td> <td>51 127 30 25 66 127 141 118 39 25 231 1,0000 1,0</td> <td>51 127 30 25 66 127 141 118 39 25 23 1,0000 1,00</td> <td>51 127 30 25 66 127 141 118 39 25 23 1,0000 1,00</td> <td>51 127 30 25 66 127 141 118 39 25 23 <th< td=""><td>51 127 30 25 66 127 141 118 39 25 231 1,0000 1,0</td><td> 127 30 25 66 127 414 118 39 25 231 10000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 130 0 0 0 0 0 0 0 0 0 </td></th<></td>	51 127 30 25 66 127 141 118 39 25 231 1,0000 1,0	51 127 30 25 66 127 141 118 39 25 23 1,0000 1,00	51 127 30 25 66 127 141 118 39 25 23 1,0000 1,00	51 127 30 25 66 127 141 118 39 25 23 1,0000 1,00	51 127 30 25 66 127 141 118 39 25 23 1,0000 1,00	127 30 25 66 127 414 118 39 25 231 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 134 134 134 134 134 134 134 134 134 134 135 135 135 135 135 135 135 136 0	51 127 30 25 66 127 141 118 39 25 231 1,0000 1,0	51 127 30 25 66 127 141 118 39 25 23 1,0000 1,00	51 127 30 25 66 127 141 118 39 25 23 1,0000 1,00	51 127 30 25 66 127 141 118 39 25 23 <th< td=""><td>51 127 30 25 66 127 141 118 39 25 231 1,0000 1,0</td><td> 127 30 25 66 127 414 118 39 25 231 10000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 130 0 0 0 0 0 0 0 0 0 </td></th<>	51 127 30 25 66 127 141 118 39 25 231 1,0000 1,0	127 30 25 66 127 414 118 39 25 231 10000 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 130 0 0 0 0 0 0 0 0 0

Creekside Estates TIS AM Future + Project (Signal)

W-Trans

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Phasing & Timing												
Control Type	Permiss	Permiss	Permiss									
Signal group	0	2	0	0	9	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-			-		-		-
Minimum Green [s]	0	2	0	0	2	0	0	2	0	0	2	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	19	0	0	19	0	0	41	0	0	41	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	2	0	0	2	0	0	2	0	0	2	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		§			9N			oN N			oN N	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		õ			Ŷ.			°N			o _N	
Maximum Recall		§.			9N			oN N			9N	
Pedestrian Recall		õ			Ŷ.			oN N			oN N	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Prase 0 Pedestrian Walk (s) 0 Pedestrian Clearance (s) 0	Exclusive Pedestrian Phase		
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Creekside Estates TIS AM Future + Project (Signal)



Lane Group Calculations

Movement, Approach, & Intersection Results

Generated with PTV VISTRO

Version 5.00-00

0	09	4.00	2.00	2.00	24	0.40	0.23	1754	992	13.93	0.11	1.00	0.57	0.00	1.00	1.00
0	09	4.00	2.00	2.00	24	0.40	0.36	1119	535	17.51	0.15	1.00	2.96	00:00	1.00	1.00
၁	09	4.00	2.00	2.00	28	0.47	0.18	1631	829	10.31	0.50	1.00	1.19	00.00	1.00	1.00
O	09	4.00	2.00	2.00	28	0.47	0.17	1635	839	10.06	0.50	1.00	1.07	0.00	1.00	1.00
Lane Group	C, Cycle Length [s]	L, Total Lost Time per Cycle [s]	11_p, Permitted Start-Up Lost Time [s]	I2, Clearance Lost Time [s]	g_i, Effective Green Time [s]	g / C, Green / Cycle	(v / s)_i Volume / Saturation Flow Rate	s, saturation flow rate [veh/h]	c, Capacity [veh/h]	d1, Uniform Delay [s]	k, delay calibration	I, Upstream Filtering Factor	d2, Incremental Delay [s]	d3, Initial Queue Delay [s]	Rp, platoon ratio	PF, progression factor

	_	_	_	_	_	_	_	_
	0.53	14.50	В	No	3.72	93.04	6.70	167.47
	0.75	20.47	၁	Yes	5.26	131.59	9.03	225.66
	0.35	11.49	В	Yes	2.33	58.24	4.19	104.83
	0.33	11.13	8	No	2.30	57.55	4.14	103.59
Laile Group Resuits	X, volume / capacity	d, Delay for Lane Group [s/veh]	Lane Group LOS	Critical Lane Group	50th-Percentile Queue Length [veh]	50th-Percentile Queue Length [ft]	95th-Percentile Queue Length [veh]	95th-Percentile Queue Length [ft]

 d_A, Delay for Movement [siveh]
 11.13
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 ∞ Ring 1 2 Ring 2 6 Ring 3 -Ring 4 -Sequence G: 2 19s

G:8 41s

G:4 418

Creekside Estates TIS AM Future + Project (Signal)

W-Trans

W-Trans

W-Trans

Creekside Estates TIS AM Future + Project (Signal)

Intersection Level Of Service Report Intersection 2: Durham-Dayton Hwy/Midway Delay (sec / veh): Level Of Senvice:

Roundabout HCM 2010 15 minutes

Control Type: Analysis Method: Analysis Period:

51

52

170

36 14 14

1 366 318 318

164 128 189 161 189 161

1 431 88 88 88

394 201 170 170

Exiting Flow Rate [veh/h]
Demand Flow Rate [veh/h]
Adjusted Demand Flow Rate [veh/h] 68

Number of Conflicting Circulating Lanes Circulating Flow Rate [veh/h]

10.9 B

Intersection Settings Version 5.00-00

Generated with PTV VISTRO

No 4.00 No 3.00 1130.00 0.00100 0.98 415 732 1.00

No 4.00 No 3.00 1130.00 0.00100 0.98 285 763 1.00 1.00 748

B (coefficient) HV Adjustment Factor Entry Flow Rate [veh/h] Pedestrian Impedance

A (intercept)

Capacity of Entry and Bypass Lanes [veh/h

Capacity per Entry Lane [veh/h]

X, volume / capacity

User-Defined Critical Headway [s]
Overwrite Calculated Follow-Up Time
User-Defined Follow-Up Time [s]

Overwrite Calculated Critical Headway

Lanes

89.72 14.21

B 3.59

A 2.17 54.28 8.80

B 2.00 49.93 10.46

> 1.74 9.53

95th-Percentile Queue Length [veh] 95th-Percentile Queue Length [ft]

Approach Delay [s/veh]

Approach LOS Intersection Delay [s/veh] Intersection LOS

Movement, Approach, & Intersection Results

10.89 m

0.57

Intersection Setup												
Name		Midway			Midway		Durha	Durham-Dayton Hwy	Hwy	Durha	Durham-Dayton Hwy	Hwy
Approach	Z	Northbound	_	S	Southbound			Eastbound		>	Westbound	
Lane Configuration		+			+			+			+	
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]		25.00			35.00			25.00			35.00	
Grade [%]		0.00			0.00			00:00			0.00	
Crosswalk		Yes			Yes			Yes			Yes	

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_	_	_	_	_	_		_	_	_	_	_	_	_	_	_	_
Hwy	33	1.0000	2.00	1.34	0	7	0	0	0	0	51	1.0000	1.0000	13	51	
Durham-Dayton Hwy	231	1.0000	2.00	1.34	0	80	0	0	0	0	318	1.0000	1.0000	80	318	0
Durha	25	1.0000	2:00	1.34	0	е	0	0	0	0	37	1.0000	1.0000	6	37	
Hwy	39	1.0000	2.00	1.34	0	0	0	0	0	0	52	1.0000	1.0000	13	52	
Durham-Dayton Hwy	118	1.0000	2.00	1.34	0	е	0	0	0	0	161	1.0000	1.0000	40	161	0
Durha	141	1.0000	2:00	1.34	0	0	0	0	0	0	189	1.0000	1.0000	47	189	
	127	1.0000	2.00	1.34	0	0	0	0	0	0	170	1.0000	1.0000	43	170	
Midway	99	1.0000	2.00	1.34	0	0	0	0	0	0	88	1.0000	1.0000	22	88	0
	25	1.0000	2.00	1.34	0	2	0	0	0	0	36	1.0000	1.0000	6	36	
	30	1.0000	2.00	1.34	0	-	0	0	0	0	41	1.0000	1.0000	10	41	
Midway	127	1.0000	2.00	1.34	0	0	0	0	0	0	170	1.0000	1.0000	43	170	0
	51	1.0000	2.00	1.34	0	0	0	0	0	0	89	1.0000	1.0000	17	89	
Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Pedestrian Volume [ped/h]

W-Trans

Creekside Estates TIS AM Future + Project (Roundabout)

Intersection Level Of Service Report
Two-way stop Delay (sec / veh):
HOM 2010 Level Of Service:
15 minutes Volume to Capadity (v/c): Control Type: Analysis Method: Analysis Period:

13.3 B 0.022

Intersection Setup

	_	_		_	_	_	_	_	_	_
	Durham-Dayton Hwy	Westbound		Right	12.00	0	100.00	35.00	0.00	No
	Durham-D	West	_	Thru	12.00	0	100.00	32	0.0	
	ayton Hwy	Eastbound		Thru	12.00	0	100.00	35.00	0.00	No
	Durham-Dayton Hwy	Eastb	1	Left	12.00	0	100.00	32	0.0	Z
	Jones Ave	punoc		Right	12.00	0	100.00	35.00	0.00	No
	sauor	punoquinos	†	Left	12.00	0	100.00	32.	0.0	Z
linei secuoli setup	Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	Speed [mph]	Grade [%]	Crosswalk

						:
Name	Jones	Jones Ave	Durham-Dayton Hwy	ayton Hwy	Durham-Dayton Hwy	ayton Hwy
Base Volume Input [veh/h]	7	18	8	151	265	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2:00	2.00	2.00	2.00	2.00
Growth Rate	1.34	1.34	1.34	1.34	1.34	1.34
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-	0	0	9	18	-
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	24	11	208	373	16
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	က	9	3	52	93	4
Total Analysis Volume [veh/h]	10	24	11	208	373	16
Pedestrian Volume [ped/h]		0			0	

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Creekside Estates TIS AM Future + Project

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Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	o _Z		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	o _N		
Number of Storage Spaces in Median	0	0	0

	Movement, Approach, & Intersection Results	nlts					
	V/C, Movement V/C Ratio	0.02	0.04	0.01	00:00	0.00	0.00
	d_M, Delay for Movement [s/veh]	13.34	10.78	8.11	0.00	0.00	0.00
	MovementLOS	a	Ф	۷	A	∢	A
	95th-Percentile Queue Length [veh]	0.18	0.18	69:0	69.0	0.00	00:00
	95th-Percentile Queue Length [ft]	4.62	4.62	17.18	17.18	0.00	0.00
	d_A, Approach Delay [s/veh]	11	11.54	0.41	-	0	00:00
_	Approach LOS		В	٧		′	d
	d_l, Intersection Delay [s/veh]			0.75	2		
	Intersection LOS						

Creekside Estates TIS AM Future + Project

W-Trans

Intersection Level Of Service Report
Two-way stop Dally (sec/ veh):
HOM 2010
Volume to Capacity (v/c): Control Type: Analysis Method: Analysis Period:

Intersection Setup

days company						
Name	Stanfo	Stanford Ln	Durham-Dayton Hwy	ayton Hwy	Durham-Dayton Hwy	syton Hwy
Approach	Northbound	punoc	Eastbound	puno	Westbound	puno
Lane Configuration	F	t			T	_
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100:00	100.00	100.00	100:00	100:00	100.00
Speed [mph]	35.	35.00	35.00	00	35.00	00
Grade [%]	0.0	0.00	0.00	00	0.00	01
Crosswalk	Ž	No	No	0	N _O	0

24.21 A 0.97

0.00 7.67 A 0.97 24.21

0.00 0.00 0.00

0.00 A 0.00 0.00

0.01 A 0.28

0.09 12.81 B 0.28 7.11

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS

Stop

Priority Scheme Flared Lane

12.8 B 0.087

Intersection Settings

Version 5.00-00

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Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

4 T.15 0.00

12.18

95th-Percentile Queue Length [veh]
95th-Percentile Queue Length [ft]
d_A, Approach Delay [s/veh]

Ф

d_l, Intersection Delay [s/veh]

Intersection LOS Approach LOS

ω

9		Durham-Dayton Hw
o _N		vwH notved-merting
o _N		Stanford Ln
Crosswalk	Volumes	Name
_	Volt	

1.0000 329 1.0000 1.0000 82 2.00 8. 329 1.0000 1.0000 1.34 2.00 1.0000 212 1.0000 1.0000 53 53 154 1.0000 2.00 1.34 1.0000 1.0000 1.34 1.0000 32 1.34 Pass-by Trips (vehh)]
Existing Site Adjustment Volume (vehh)]
Other Volume (vehh)]
Total Hourly Volume (vehh)] Base Volume Adjustment Factor in-Process Volume [veh/h]
Site-Generated Trips [veh/h]
Diverted Trips [veh/h] Heavy Vehicles Percentage [%] Total 15-Minute Volume [veh/h] Total Analysis Volume [veh/h] Base Volume Input [veh/h] Pedestrian Volume [ped/h] Other Adjustment Factor Peak Hour Factor Growth Rate

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Intersection Evel Of Service Report
Intersection 5: Durham-Dayton HwylLott Rd
Delay (sec / veh):
Level Of Service:
Volume to Capacity (v/c): Two-way stop HCM 2010 15 minutes Control Type: Analysis Method: Analysis Period:

Intersection Setup

L												
Name		Lott Rd			Lott Rd		Durha	Durham-Dayton Hwy	Hwy	Durha	Durham-Dayton Hwy	Hwy
Approach	z	Northbound	_	Š	Southbound	D.	3	Eastbound		>	Westbound	
Lane Configuration		+			+			+			+	
Turning Movement	Teft	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]		35.00			35.00			40.00			40.00	
Grade [%]		00.00			00.00			0.00			0.00	
Crosswalk		No			No			No			No	

A 0.21

0.00 0.00 7.42 0.00 A A A 0.21 0.21 5.16 5.16

A 0.28

3.12 ω

d_I, Intersection Delay [s/veh] Intersection LOS

 V/C, Movement V/C Ratio
 0.01
 0.03
 0.00
 0.01
 0.01
 0.03
 0.00
 0.01
 0.01
 0.03
 0.00
 0.01
 0.01
 0.03
 0.00
 0.01
 0.03
 0.02
 0.00

 d_M. Delay for Movement LOS
 B
 B
 A
 B
 B
 A
 A
 A

 95th-Percentile Queue Length [rtl]
 0.14
 0.14
 0.14
 0.14
 0.16
 0.16
 0.16
 0.16
 0.28
 0.28

 95th-Percentile Queue Length [rtl]
 3.51
 3.51
 3.51
 4.08
 4.08
 4.08
 6.38
 6.33
 6.93

 d_A Approach Delay [siveh]
 110.63
 B
 B
 A
 A
 A
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Movement, Approach, & Intersection Results

Free

Free

Stop No o No

Stop ۰ 2

Priority Scheme
Flared Lane
Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

10.8 B 0.031

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Intersection Settings Version 5.00-00

Crosswalk	o _N	o _N	o _Z	o N
Volumes				
Namo	10 10	10 #0	Durbam Daydon Listy	will appropriate live

		Lott Rd			Lott Rd		Durha	Durham-Dayton Hwy	Hwy -	Durhi	Durham-Dayton Hwy	Hwy
Base Volume Input [veh/h]	2	15	2	9	2	21	18	69	4	-	61	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	-	5	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	7	20	က	8	7	28	25	46	2	-	84	11
	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	2	2	-	2	2	7	9	24	-	0	21	е
	7	20	8	8	2	28	25	46	2	1	84	11
		0			0			0			0	

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Creekside Estates TIS AM Future + Project

Intersection Level Of Service Report Intersection 1: Midway/Jones Ave

Two-way stop HCM 2010 15 minutes

Intersection Setup

Control Type: Analysis Method: Analysis Period:

_	_		_	_	_	_	_	_	_
Jones Ave	Westbound	L	Right	12.00	0	100:00	35.00	00:00	No
Jone	West	F	Left	12.00	0	100.00	35	0	Z
vay	punoc		Thru	12.00	0	100:00	00	00	0
Midway	Southbound	r	Left	12.00	1	75.00	20.00	0.00	No
vay	puno		Right	12.00	0	100.00	00	01	0
Midway	Northbound	_	Thru	12.00	0	100.00	20.00	0.00	No
Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	Speed [mph]	Grade [%]	Crosswalk

0.04 10.17 B 0.14 3.54

0.00 14.89 B 0.14 3.54

0.00 0.00 0.00 0.00

0.03 7.98 A 0.10

0.00 0.00 0.00 0.00

0.00 0.00

VVC, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS
95th-Percentile Queue Length [fit]
d_A, Approach Delay [s/veh]
Approach LOS
Approach LOS

Movement, Approach, & Intersection Results

Priority Scheme
Flared Lane
Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

14.9 B 0.003

Delay (sec / veh): Level Of Service: Volume to Capacity (v/c):

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

10.32

A 0.92 0.87

0.00

d_l, Intersection Delay [s/veh]

Stop

୍ ଥ

Volumes

Г				$\overline{}$				$\overline{}$		$\overline{}$					_	Г
Jones Ave	24	1.0000	2.00	1.25	0	-	0	0	0	0	31	1.0000	1.0000	8	31	
Jone	-	1.0000	2.00	1.25	0	0	0	0	0	0	+	1.0000	1.0000	0	1	
/ay	268	1.0000	2:00	1.25	0	7	0	0	0	0	342	1.0000	1.0000	98	342	
Midway	32	1.0000	2.00	1.25	0	2	0	0	0	0	42	1.0000	1.0000	11	42	
vay	-	1.0000	2.00	1.25	0	0	0	0	0	0	-	1.0000	1.0000	0	1	
Midway	245	1.0000	2.00	1.25	0	4	0	0	0	0	310	1.0000	1.0000	78	310	
Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Dodostrian Volume food/h1

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Intersection 2: Durham-Dayton Hwy/Midway
Delay (sec / veh):
Level Of Service:
Volume to Capacity (v/c): All-way stop HCM 2010 15 minutes

Intersection Setup

Control Type: Analysis Method: Analysis Period:

		_		$\overline{}$	_		_		
n Hwy	P		Right	12.00	0	100.00			
Durham-Dayton Hwy	Westbound	+	Thru	12.00	0	100.00	35.00	0.00	o N
Durha	-		Left	12.00	0	100.00			
Hwy			Right	12.00	0	100.00			
Durham-Dayton Hwy	Eastbound	+	Thru	12.00	0	100.00	25.00	0.00	Yes
Durha	ш		Left	12.00	0	100.00			
			Right	12.00	0	100.00			
Midway	Southbound	+	Thru	12.00	0	100.00	35.00	00.00	Yes
	Š		Left	12.00	0	100.00			
	_		Right	12.00	0	100.00			
Midway	Northbound	+	Thru	12.00	0	100.00	25.00	0.00	Yes
	z		Teft	12.00	0	100.00			
Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	Speed [mph]	Grade [%]	Crosswalk
		<u> </u>		$ldsymbol{ld}}}}}}$	_	oxdot		L	

1.89 47.20 13.31

5.15 128.86 20.54

2.29 57.22 14.07

1.90 47.38 13.49 B

95th-Percentie Queue Length (veh)
95th-Percentile Queue Length (fit)
Approach Delay (s/veh)
Approach LOS
Intersection Delay (s/veh)
Intersection Delay (s/veh)

m

ပ

B

16.15

575 0.40

601

583

566

Capacity per Entry Lane [veh/h] Degree of Utilization, x

Generated with PTV VISTRO

Intersection Settings Version 5.00-00

Lanes

16.1 C 0.675

Movement, Approach, & Intersection Results

Crosswalk	Yes	Yes	Yes	No
Volumes				

_	_		_	_	_	_				_	_	_	_	_		_
Hwy -	40	1.0000	2.00	1.25	0	4	0	0	0	0	攻	1.0000	1.0000	4	沒	
Durham-Dayton Hwy	26	1.0000	2.00	1.25	0	9	0	0	0	0	127	1.0000	1.0000	32	127	-
Durha	36	1.0000	2:00	1.25	0	2	0	0	0	0	47	1.0000	1.0000	12	47	
Hwy .	38	1.0000	2.00	1.25	0	0	0	0	0	0	49	1.0000	1.0000	12	49	
Durham-Dayton Hwy	146	1.0000	2.00	1.25	0	10	0	0	0	0	193	1.0000	1.0000	48	193	 -
Durha	131	1.0000	2.00	1.25	0	0	0	0	0	0	164	1.0000	1.0000	41	164	
	66	1.0000	2.00	1.25	0	0	0	0	0	0	124	1.0000	1.0000	31	124	
Midway	73	1.0000	2.00	1.25	0	0	0	0	0	0	91	1.0000	1.0000	23	91	 -
	30	1.0000	2.00	1.25	0	7	0	0	0	0	45	1.0000	1.0000	11	45	
	55	1.0000	2.00	1.25	0	3	0	0	0	0	72	1.0000	1.0000	18	72	
Midway	28	1.0000	2.00	1.25	0	0	0	0	0	0	105	1.0000	1.0000	26	105	 -
	38	1.0000	2.00	1.25	0	0	0	0	0	0	48	1.0000	1.0000	12	48	
Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Padastrian Volume Inad/h1

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Creekside Estates TIS PM Future + Project

Intersection Level Of Service Report
Intersection 2: Durham-Dayton Hwy/IMIdway
Delay (sec / veh):
Level Of Service:
Volume to Capacity (v/c): Signalized HCM 2010 15 minutes Control Type: Analysis Method: Analysis Period:

Intersection Setup

data constant		Michael			Michael		Š	Control Control	1	di	Cotton Day	, Const
vame		Midway			Midway		Durna	im-Daytor	L My	Durna	ım-Dayton	ıwy
Approach	_	Northbound	d	S	Southbound	d		Eastbound		>	Westbound	
Lane Configuration		+			+			+			+	
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.001	100.00	100.00	100.00	100.00	100.00	100.001	100.00
Speed [mph]		25.00			35.00			25.00			35.00	
Grade [%]		0.00			0.00			0.00			0.00	
Crosswalk		Yes			Yes			Yes			Yes	

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Control Type

Phasing & Timing

Signal group Auxiliary Signal Groups

Lead / Lag

60 Time of Day Pattern Isolated Fully actuated

Located in CBD
Signal Coordination Group
Cycle Length [s]
Coordination Type
Actuation Type

14.6 B 0.447

Generated with PTV VISTRO

Intersection Settings

Version 5.00-00

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LeadGreen SingleBand 0.00

Offset Reference Permissive Mode

Offset [s]

Lost time [s]

0.0

30 3.0 1.0 14 3.0

1.0 30 3.0 4 3.0

> 3.0 1.0 3.0

3.0 1.0 19

30

Minimum Green [s]
Maximum Green [s]
Amber [s]

19

3.0

All reu ,
Split [s]
Vehicle Extension [s]
Walk [s]

30

40	_	1.0000	2.00	1.25	0	4	0	0	0	0	0	25	1.0000	1.0000	14	75	No No	0	0		
	97	1.0000	2.00	1.25	0	9	0	0	0	0	0	127	1.0000	1.0000	32	127		0	0	0	0
DullallFDaytoll liwy	36	1.0000	2.00	1.25	0	2	0	0	0	0	0	47	1.0000	1.0000	12	47	9N	0	0		
έχ	39	1.0000	2.00	1.25	0	0	0	0	0	0	0	49	1.0000	1.0000	12	49	9	0	0		
Durnam-Dayton Hwy	146	1.0000	2.00	1.25	0	10	0	0	0	0	0	193	1.0000	1.0000	48	193		0	0	0	0
Durns	131	1.0000	2.00	1.25	0	0	0	0	0	0	0	164	1.0000	1.0000	41	164	No	0	0		
	66	1.0000	2.00	1.25	0	0	0	0	0	0	0	124	1.0000	1.0000	31	124	No	0	0		
Midway	73	1.0000	2.00	1.25	0	0	0	0	0	0	0	91	1.0000	1.0000	23	91		0	0	0	0
	30	1.0000	2.00	1.25	0	7	0	0	0	0	0	45	1.0000	1.0000	11	45	oN No	0	0		
	55	1.0000	2.00	1.25	0	3	0	0	0	0	0	72	1.0000	1.0000	18	72	No	0	0		
Midway	26	1.0000	2.00	1.25	0	0	0	0	0	0	0	105	1.0000	1.0000	56	105		0	0	0	0
	38	1.0000	2.00	1.25	0	0	0	0	0	0	0	48	1.0000	1.0000	12	48	No	0	0		
Name	Base Volume Input [veh/h]	Base Volume Adjustment Factor	Heavy Vehicles Percentage [%]	Growth Rate	In-Process Volume [veh/h]	Site-Generated Trips [veh/h]	Diverted Trips [veh/h]	Pass-by Trips [veh/h]	Existing Site Adjustment Volume [veh/h]	Other Volume [veh/h]	Right-Turn on Red Volume [veh/h]	Total Hourly Volume [veh/h]	Peak Hour Factor	Other Adjustment Factor	Total 15-Minute Volume [veh/h]	Total Analysis Volume [veh/h]	Presence of On-Street Parking	On-Street Parking Maneuver Rate [/h]	Local Bus Stopping Rate [/h]	Pedestrian Volume [ped/h]	Bicycle Volume [bicycles/h]
_	-	\vdash	_	\vdash	\vdash	-	\vdash	-	\vdash	\vdash	\vdash	-	-	\vdash	_	\vdash	_	-	-	-	_

1.00 1.00 1.00

1.00

1.00 1.00 1.00

1.00 1.00 1.00 1.00 1.00

I, Upstream Filtering Factor

Exclusive Pedestrian Phase

Detector Location [ft] Detector Length [ft] 0 0

Pedestrian Signal Group
Pedestrian Walk [s]
Pedestrian Clearance [s]

o N

No 2:0 No No

S S S S S S

11, Start-Up Lost Time [s]
12, Clearance Lost Time [s]

Rest In Walk

Minimum Recall
Maximum Recall
Pedestrian Recall

9

9

9

Creekside Estates TIS PM Future + Project (Signal)

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Creekside Estates TIS PM Future + Project (Signal)

W-Trans

Lane Group Calculations

O	09	4.00	2.00	2.00	19	0.32	0.14	1582	582	15.81	0.11	1.00	0.43	0.00	1.00	1.00
O	09	4.00	2.00	2.00	19	0.32	0.29	1419	541	19.49	0.11	1.00	2.11	00'0	1.00	1.00
O	09	4.00	2.00	2.00	33	0.54	0.16	1618	951	7.34	0:20	1.00	0.71	0.00	1.00	1.00
O	09	4.00	2.00	2.00	33	0.54	0.14	1614	951	7.14	0.50	1.00	0.58	0.00	1.00	1.00
Lane Group	C, Cycle Length [s]	L, Total Lost Time per Cycle [s]	I1_p, Permitted Start-Up Lost Time [s]	12, Clearance Lost Time [s]	g_i, Effective Green Time [s]	g / C, Green / Cycle	(v / s)_i Volume / Saturation Flow Rate	s, saturation flow rate [veh/h]	c, Capacity [veh/h]	d1, Uniform Delay [s]	k, delay calibration	I, Upstream Fittering Factor	d2, Incremental Delay [s]	d3, Initial Queue Delay [s]	Rp, platoon ratio	PF, progression factor

	_	_	_	_	_	_	_	
	0.39	16.24	В	No	2.21	55.14	3.97	99.26
	0.75	21.61	0	Yes	5.28	132.00	9.05	226.21
	0.27	8.05	٧	Yes	1.57	39.16	2.82	70.49
	0.24	7.73	٧	No	1.43	35.80	2.58	64.45
Lane Group Results	X, volume / capacity	d, Delay for Lane Group [s/veh]	Lane Group LOS	Critical Lane Group	50th-Percentile Queue Length [veh]	50th-Percentile Queue Length [ft]	95th-Percentile Queue Length [veh]	95th-Percentile Queue Length [ft]

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Version 5.00-00
Movement, Approach, & Intersection

MOVELLIEUR, Approach, & Illersection results	enne											
d_M, Delay for Movement [s/veh]	7.73 7.73 7.73	7.73	7.73	8.05	8.05		21.61	21.61	8.05 21.61 21.61 21.61 16.24 16.24 16.24	16.24	16.24	16.24
MovementLOS	٧	٧	٧	٧	٧	٧	Э	О	О	В	В	В
d_A, Approach Delay [s/veh]		7.73			8.05			21.61			16.24	
Approach LOS		٧			٧			O			В	
d_I, Intersection Delay [s/veh]						14	14.57					
Intersection LOS							m					
Intersection V/C						0.4	0.447					

Sequence

,	,	,			3333		300
,	1	,					
,	1	,					
	-	-	-				
	-	-	-				
	-	-					
	-	-					
,	-	,					
,	١	,					
	-						
,	,	,		415	4 15s	418	8 15s
,	,	,		SG: 4	SG: 104	SG: 8 41s	SG: 108
,	١	,					
,	,	,					
4	8	,					
2	9		-		S		.2
Ring 1	Ring 2	Ring 3	Ring 4	G: 2 19s	G: 102 15s	G: 6 19s	G: 106 15

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Creekside Estates TIS PM Future + Project (Signal)

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Intersection Level Of Service Report Intersection 2: Durham-Dayton Hwy/Midway

Roundabout HCM 2010 15 minutes

Control Type: Analysis Method: Analysis Period:

5 2

49

193

164

45 72

48

Exiting Flow Rate [veh/h]
Demand Flow Rate [veh/h]
Adjusted Demand Flow Rate [veh/h]

226 179 91 91

243 105 105

Number of Conflicting Circulating Lanes
Circulating Flow Rate [veh/h]

8.3 A

Delay (sec / veh): Level Of Service:

Intersection Settings

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124 124

187

8 N 8

ટ

8

Overwrite Calculated Critical Headway User-Defined Critical Headway [s]
Overwrite Calculated Follow-Up Time
User-Defined Follow-Up Time [s]

Lanes

323 274 127 127

3.00 1130.00 0.00100

4.00 No 3.00 11130.00 0.001100 0.98 230 750

4.00 No 3.00 1130.00

96.0 233 1.00 0.28

0.00100 0.98 415 938 1.00

802

0.44

0.29

1.00 0.31

Capacity of Entry and Bypass Lanes [veh/h

Entry Flow Rate [veh/h] HV Adjustment Factor

B (coefficient) A (intercept)

736

Capacity per Entry Lane [veh/h]

X, volume / capacity

Pedestrian Impedance

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh] 95th-Percentile Queue Length [ft]

29.32

1.17 7.69

A 2.29 57.29 9.19

1.23 30.80

1.30

7.24

8.57

Approach Delay [s/veh]

Intersection Delay [s/veh]

Intersection LOS Approach LOS

8.30

	Michael	f		Milahama		2	100		1	2	
Midway		+		Midway		Durna	Durnam-Dayton Hwy	L My	Durna	Durnam-Dayton Hwy	Hwy
Northbound			S	Southbound	_	ш	Eastbound		>	Westbound	_
+				+			+			+	
Left Thru Right	ᆲ		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
12.00 12.00 12.00	00		12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
0 0 0	0		0	0	0	0	0	0	0	0	0
100.00 100.00 100.00	00.0		100.001	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
25.00				35.00			25.00			35.00	
0.00		-		00.00			0.00			0.00	
Yes				Yes			Yes			Yes	

Volumes	Crosswalk	Yes	Yes	Yes	Yes
	Volumes				
	owell	Na Charles	10000	Cotton Cotton	Cotton Cotton

1.0000 1.0000 1.0000 1.25 2.00 2.00 0 2 1.0000 1.25 1.0000 1.0000 127 127 32 1.0000 2.00 1.25 1.0000 1.0000 36 1.0000 1.0000 1.0000 1.0000 2.00 1.25 49 12 6 1.0000 2.00 1.25 0 0 0 193 193 146 10 48 1.0000 1.0000 2.00 1.25 0 0 0 2 164 131 2.00 0 0 0 124 1.0000 1.0000 1.0000 1.0000 1.0000 1.25 66 124 1.0000 2.00 1.25 23 1.0000 1.0000 2.00 1.25 45 30 0 0 0 4 1.0000 1.0000 2.00 1.25 18 1.0000 1.0000 2.00 1.25 0 0 0 105 105 26 1.0000 0 0 0 1.0000 1.0000 2.00 48 38 12 Pass-by Trips [veh/h]
Existing Site Adjustment Volume [veh/h]
Other Volume [veh/h] Base Volume Adjustment Factor Heavy Vehicles Percentage [%] Total 15-Minute Volume [veh/h] Total Analysis Volume [veh/h] In-Process Volume [veh/h] Site-Generated Trips [veh/h] Total Hourly Volume [veh/h] Base Volume Input [veh/h] Pedestrian Volume [ped/h] Other Adjustment Factor Diverted Trips [veh/h] Peak Hour Factor Growth Rate

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PM Future + Project (Roundabout)

Creekside Estates TIS

Intersection Level Of Service Report Intersection 3: Durham-Dayton Hwy/Jones Ave

Two-way stop HCM 2010 15 minutes Control Type: Analysis Method: Analysis Period:

Intersection Setup

	Durham-Dayton Hwy	puno		Right	12.00	0	100.00	35.00	0.00	No
	Durham-D	Mestbound	_	Thru	12.00	0	100.00	32	0.0	z
	ayton Hwy	puno		Thru	12.00	0	100.00	35.00	00	No
	Durham-Dayton Hwy	Eastbound	T	Left	12.00	0	100.00	35.	0.00	Ž
	Jones Ave	punoc		Right	12.00	0	100:00	35.00	00	No
	Jones	Southbound	F	Left	12.00	0	100:00	35.	00:00	Ž
-	Name	Approach	Lane Configuration	Turning Movement	Lane Width [ft]	No. of Lanes in Pocket	Pocket Length [ft]	Speed [mph]	Grade [%]	Crosswalk

A 00.00 0.00

A 0.00

0.00 A 0.92 22.91

0.01 A A 0.92 22.91

0.02 9.76 A 0.13 3.36

0.02 12.77 B 0.13 3.36

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS

Stop

Priority Scheme Flared Lane

12.8 B 0.023

Delay (sec / veh): Level Of Service: Volume to Capacity (v/c):

Intersection Settings Version 5.00-00

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2

Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

0.00

A 0.72 0.40

10.99

95th-Percentile Queue Length [veh]
95th-Percentile Queue Length [ft]
d_A, Approach Delay [s/veh]

ш

d_l, Intersection Delay [s/veh]

Intersection LOS Approach LOS

Volumes			
Crosswalk	ON.	No	9
ower a	000	2000	2000

1.0000 1.0000 2.00 1.25 Dayton Hwy 1.0000 1.0000 57 1.0000 2.00 228 293 1.0000 1.0000 73 1.0000 218 20 293 1.0000 1.0000 2.00 16 1.0000 1.0000 2.00 1.25 1.0000 1.0000 1.25 Pass-by Trips (vehh)]
Existing Site Adjustment Volume (vehh)]
Other Volume (vehh)]
Total Hourly Volume (vehh)] Base Volume Adjustment Factor in-Process Volume [veh/h]
Site-Generated Trips [veh/h]
Diverted Trips [veh/h] Heavy Vehicles Percentage [%] Total 15-Minute Volume [veh/h] Total Analysis Volume [veh/h] Base Volume Input [veh/h] Pedestrian Volume [ped/h] Other Adjustment Factor Peak Hour Factor Growth Rate

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Intersection 4: Durham-Dayton Hwy/Stanford Ln
Delay (sec / veh):
Level Of Service:
Volume to Capacity (v/c): Two-way stop HCM 2010 15 minutes

Intersection Setup

Control Type: Analysis Method: Analysis Period:

Northbound
H
Left
12.00
100.00
35.00
00'0
No

A 0.71

0.01 7.85 A 0.71

0.00 0.00 0.00

0.00 A 0.00 0.00

0.01 A A 0.09 0.09

0.03 B B 0.09

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS

Stop

Priority Scheme Flared Lane

12.2 B 0.028

Intersection Settings Version 5.00-00

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Storage Area [veh]
Two-Stage Gap Acceptance
Number of Storage Spaces in Median

0.42

0.00 A 0.67

11.23

95th-Percentile Queue Length [veh]
95th-Percentile Queue Length [ft]
d_A, Approach Delay [s/veh]

В

d_l, Intersection Delay [s/veh]

Intersection LOS Approach LOS

Closswalk	ON.	o _N	00
Volumes			

232 1.0000 1.0000 58 1.0000 2.00 1.25 232 180 1.0000 1.0000 2.00 1.0000 1.0000 0 254 1.0000 1.0000 64 64 254 200 1.0000 2.00 1.25 1.0000 1.0000 2.00 1.25 1.0000 1.0000 2.00 Pass-by Trips (vehh)]
Existing Site Adjustment Volume (vehh)]
Other Volume (vehh)]
Total Hourly Volume (vehh)] Base Volume Adjustment Factor In-Process Volume [veh/h] Site-Generated Trips [veh/h] Diverted Trips [veh/h] Heavy Vehicles Percentage [%] Total 15-Minute Volume [veh/h] Total Analysis Volume [veh/h] Base Volume Input [veh/h] Pedestrian Volume [ped/h] Other Adjustment Factor Peak Hour Factor Growth Rate

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Intersection Level Of Service Report
Intersection 5: Durham-Dayfon HwylLott Rd
Delay (sec / veh):
Level Of Service:
Volume to Capacity (v/c): Two-way stop HCM 2010 15 minutes Control Type: Analysis Method: Analysis Period:

Intersection Setup

Name		Lott Rd			Lott Rd		Durha	Durham-Dayton Hwy	Hwy	Durha	Durham-Dayton Hwy	Hwy
Approach	_	Northbound		S	Southbound			Eastbound		_	Westbound	_
Lane Configuration		+			+			+			+	
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.001	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]		35.00			35.00			40.00			40.00	
Grade [%]		0.00			0.00			0.00			0.00	
Crosswalk		2			8			8			8	

A 0.34 8.61 8.61 A 0.34

7.48 A 0.34 8.61

0.02 12.19 B 0.27 6.82

0.02 0.02 12.30 12.02 B B B 0.13 0.13 3.24 3.24 11.78

95th-Percentile Queue Length [veh] 95th-Percentile Queue Length [ft] d_A, Approach Delay [s/veh] d_I, Intersection Delay [s/veh]

Intersection LOS

Approach LOS

Movement, Approach, & Intersection Results V/C, Movement V/C Ratio
d_M, Delay for Movement [s/veh]
Movement LOS

Two-Stage Gap Acceptance Number of Storage Spaces in Median

Storage Area [veh]

Priority Scheme

Intersection Settings

Version 5.00-00

Flared Lane

12.3 B 0.021

6.82 3.24

0.00 0.02 9.17 11.92 A B 0.13 0.27

0.43

0.00

0.03

9.42

0.05

2.10

3.12 ш

В

Free

Free

Stop ୍ ଥ

Stop 2

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Crosswalk	No	No	No	No
Volumes				
Name	off Bd	loff Bd	Durham-Dayton Hwy	Durham-Dayton Hwy

1.0000 1.0000 1.0000 1.0000 1.0000 2.00 2.00 1.25 1.25 139 139 2.00 1.0000 1.0000 1.25 1.0000 1.0000 1.0000 1.0000 2.00 1.25 1.0000 2.00 118 1.25 0 0 0 118 95 30 1.0000 1.0000 2.00 1.25 20 39 0 0 0 1.0000 2.00 1.0000 1.0000 1.0000 1.0000 1.0000 1.25 44 1.0000 2.00 1.25 1.0000 1.25 2.00 1.0000 2.00 2.00 1.25 1.0000 1.25 1.0000 2.00 1.0000 Pass-by Trips (veh/h)
Existing Site Adjustment Volume [veh/h]
Other Volume [veh/h] Base Volume Adjustment Factor Heavy Vehicles Percentage [%] Total 15-Minute Volume [veh/h] In-Process Volume [veh/h]
Site-Generated Trips [veh/h] Total Analysis Volume [veh/h] Base Volume Input [veh/h] Total Hourly Volume [veh/h] Pedestrian Volume [ped/h] Other Adjustment Factor Diverted Trips [veh/h] Peak Hour Factor Growth Rate

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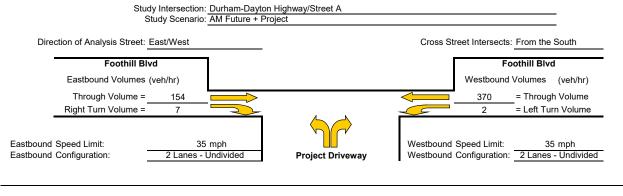
10

Appendix D

Turn Lane Warrants



Turn Lane Warrant Analysis - Tee Intersections



Eastbound Right Turn Lane Warrants

1. Check for right turn volume criteria

Thresholds not met, continue to next step

Check advance volume threshold criteria for turn lane
 Advancing Volume Threshold AV = 997.6
 Advancing Volume Va = 161
 If AV<Va then warrant is met No

Right Turn Lane Warranted: NO

Eastbound Right Turn Taper Warrants (evaluate if right turn lane is unwarranted)

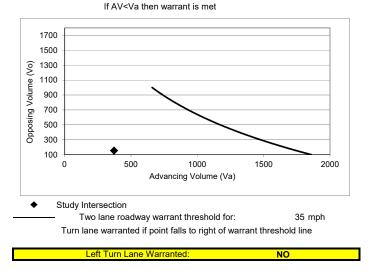
1. Check taper volume criteria

NOT WARRANTED - Less than 20 vehicles

Right Turn Taper Warranted: NO

Westbound Left Turn Lane Warrants

Percentage Left Turns %lt 0.5 % Advancing Volume Threshold AV 1747 veh/hr

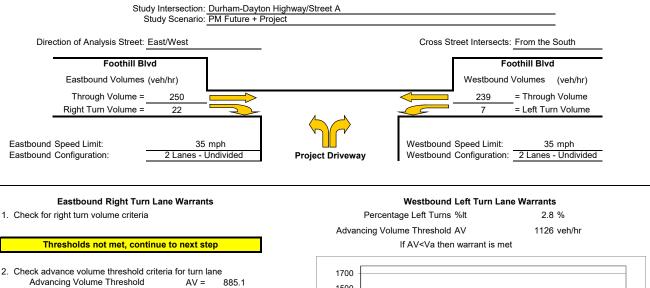


Methodology based on Washington State Transportation Center Research Report Method For Prioritizing Intersection Improvements, January 1997. The right turn lane and taper analysis is based on work conducted by Cottrell in 1981.

The left turn lane analysis is based on work conducted by M.D. Harmelink in 1967, and modified by Kikuchi and Chakroborty in 1991.

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Turn Lane Warrant Analysis - Tee Intersections



Eastbound Right Turn Taper Warrants (evaluate if right turn lane is unwarranted)

Advancing Volume

If AV<Va then warrant is met

1. Check taper volume criteria

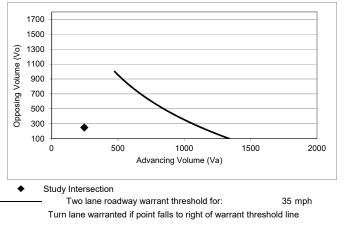
Thresholds not met, continue to next step

Va =

272

No

Right Turn Taper Warranted: NO



Methodology based on Washington State Transportation Center Research Report Method For Prioritizing Intersection Improvements, January 1997. The right turn lane and taper analysis is based on work conducted by Cottrell in 1981.

The left turn lane analysis is based on work conducted by M.D. Harmelink in 1967, and modified by Kikuchi and Chakroborty in 1991.

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