APRIL 2020

River to Sea Transportation
Planning Organization (R2CTPO)
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FEASIBILITY STUDY FOR EXTENSION OF LEFT TURN LANES

Dunlawton Avenue at Clyde Morris Boulevard and Dunlawton Avenue at Nova Road

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April 2020

Final Report

Feasibility Study for Extension of Left Turn Lanes

On Dunlawton Avenue at Clyde Morris Boulevard & Dunlawton Avenue at Nova Road

Prepared for:

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Feasibility Study for Extension of Left Turn Lanes

on

Dunlawton Avenue at Clyde Morris Boulevard &
Dunlawton Avenue at Nova Road

Task Work Order TOF-VHB-03

Prepared for:

Prepared by:

Vanasse Hangen Brustlin, Inc.
Orlando, FL

April 2020

EXECUTIVE SUMMARY

This report presents the results of a feasibility analysis completed for the intersections of Dunlawton Avenue at Clyde Morris Boulevard and Dunlawton Avenue at Nova Road, located in the City of Port Orange, Volusia County, Florida. This report was prompted by an application by the City of Port Orange to evaluate the feasibility of construction of the following improvements along Dunlawton Avenue:

1. Extend the existing westbound left turn lane at Dunlawton Avenue at Clyde Morris Boulevard intersection, and
2. Extend the existing eastbound dual left turn lanes at Dunlawton Avenue at Nova Road intersection. Because of the presence of back to back left turn lanes along Dunlawton Avenue between Nova Road and S Swallow Drive (eastbound left turns at Dunlawton Avenue and Nova Road and westbound left turn lane at Dunlawton Avenue and S Swallow Drive), only the outside eastbound left turn lane at Dunlawton Avenue and Nova Road can be extended. As such, this study determined the feasibility of extending only the existing outside eastbound left turn lane at the intersection of Dunlawton Avenue and Nova Road.

The purpose of extending the left turn lanes is to reduce delays for turning vehicles and through vehicles by allowing increased stacking area to segregate vehicles departing Dunlawton Avenue from through traffic and to assist in maintaining the functional capacity of Dunlawton Avenue. Below are summaries of the improvements developed as part of this study:

Dunlawton Avenue at Clyde Morris Boulevard

- **Extend the existing westbound left turn by approximately 250 feet from the existing taper (see Figure 4 at the end of this report).**
- It is suggested to upgrade the existing lighting along Dunlawton Avenue to LED lighting and add eight additional LED light poles to meet the intersection retrofit criteria.
- Consider addressing the current ADA concerns at the time when the extension of left turn lane is constructed. Clear the vegetation growth that encroached into the sidewalks in the northeast and southeast corners of the study intersection.

- Consider providing sidewalk continuity on the westside of Clyde Morris Boulevard between Dunlawton Avenue and the driveway to Walgreens. This will help improve pedestrian and bicycle safety at the study intersection.
- Consider providing a Right Turn on Red Must Yield to U-Turn (R10-30) sign to mitigate the existing conflicts between the eastbound u-turn and southbound right turn movements.

The westbound left turn extension can be implemented at an approximate cost of $153,902 and yields a B/C ratio of 1.89, which indicates that the anticipated benefits outweigh the estimated costs for the proposed modifications.

Dunlawton Avenue at Nova Road:

- **Extend the existing outside eastbound left turn lane by approximately 286 feet from the existing taper (see Figure 5 at the end of this report).**
- It is suggested to upgrade the existing lighting along Dunlawton Avenue to LED lighting and add twelve additional light poles to meet the intersection retrofit criteria.
- Consider addressing the current ADA concerns at the time when the extension of left turn lane is constructed.
- Consider adding backplates to the traffic signal indications to improve visibility of the illuminated face of the signal.
- Consider improving the signing and pavement markings as shown in Figure 6 (see end of report). These improvements will help reduce driver confusion associated with the eastbound outside through lane along Clyde Morris Boulevard dropping as a right turn lane east of the study intersection.

The eastbound outside left turn extension can be implemented at an approximate cost of $196,481 and yields a B/C ratio of 2.96 which indicates that the anticipated benefits outweigh the estimated costs for this recommended alternative.

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INTRODUCTION

VHB, Inc. was retained to perform a feasibility analysis study for extension of existing left turn lanes at the intersections of Dunlawton Avenue at Clyde Morris Boulevard and Dunlawton Avenue at Nova Road, located in the City of Port Orange, Volusia County, Florida, as illustrated in Figure 1. This study was initiated by an application by the City of Port Orange to evaluate the feasibility of the below improvements at the study intersections:

1. Extend the existing westbound left turn lane at Dunlawton Avenue at Clyde Morris Boulevard intersection, and
2. Extend the existing eastbound dual left turn lanes at Dunlawton Avenue at Nova Road intersection. Because of the presence of back to back left turn lanes along Dunlawton Avenue between Nova Road and S Swallow Drive, only the outside eastbound left turn lane at Dunlawton Avenue and Nova Road can be extended.

As mentioned in the feasibility application, the intent of the proposed improvements is to allow for increased stacking area to segregate left turning vehicles departing Dunlawton Avenue from the through traffic and to assist in maintaining the functional capacity of Dunlawton Avenue. The objective of the above-mentioned improvements is to improve the traffic flow and roadway capacity, reduce delays for turning vehicles and through vehicles and reduce damage and maintenance cost for medians.

The analysis methods used in completing this study are consistent with the Manual on Uniform Traffic Control Devices (MUTCD), the Manual on Uniform Traffic Studies (MUTS), the Traffic Engineering Manual (TEM) and engineering judgment. The remainder of this report documents existing conditions, vehicle and pedestrian counts, qualitative assessment, crash analysis, intersection analysis, Benefit-Cost (B/C) analysis and recommendations. The analysis will particularly consider the benefits and feasibility of extending the left turn lanes at the study intersections as mentioned above.

This final report is revised based on the comments received from the City of Port Orange, Volusia County and R2CTPO on the draft report. The responses to comments are provided in **Appendix A-1.**

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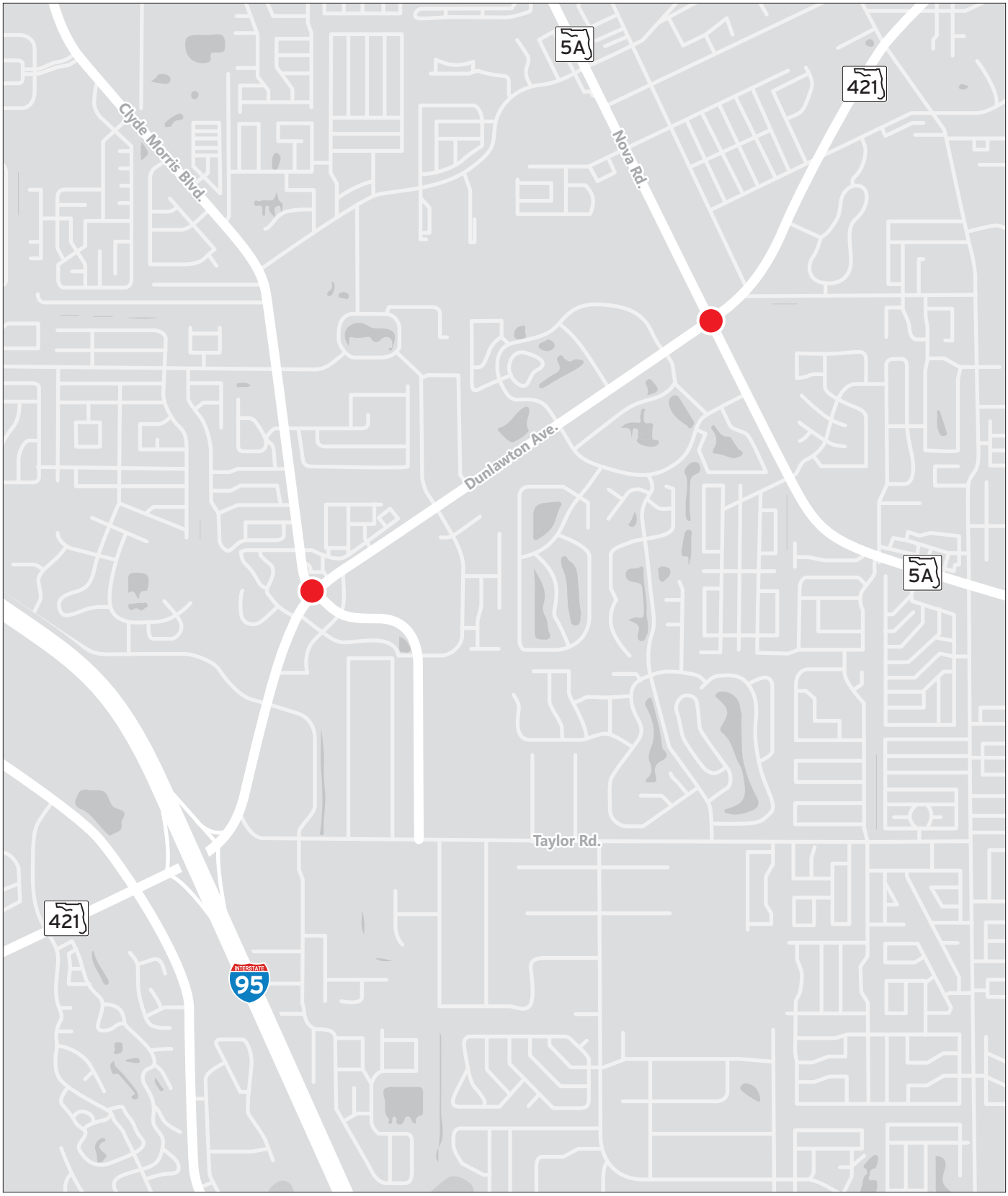

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Study Intersections

Figure 1

Project Location Map
Feasibility Study for Extension of Left Turn Lanes on Dunlawton Avenue at Clyde Morris Boulevard & Dunlawton Avenue at Nova Road

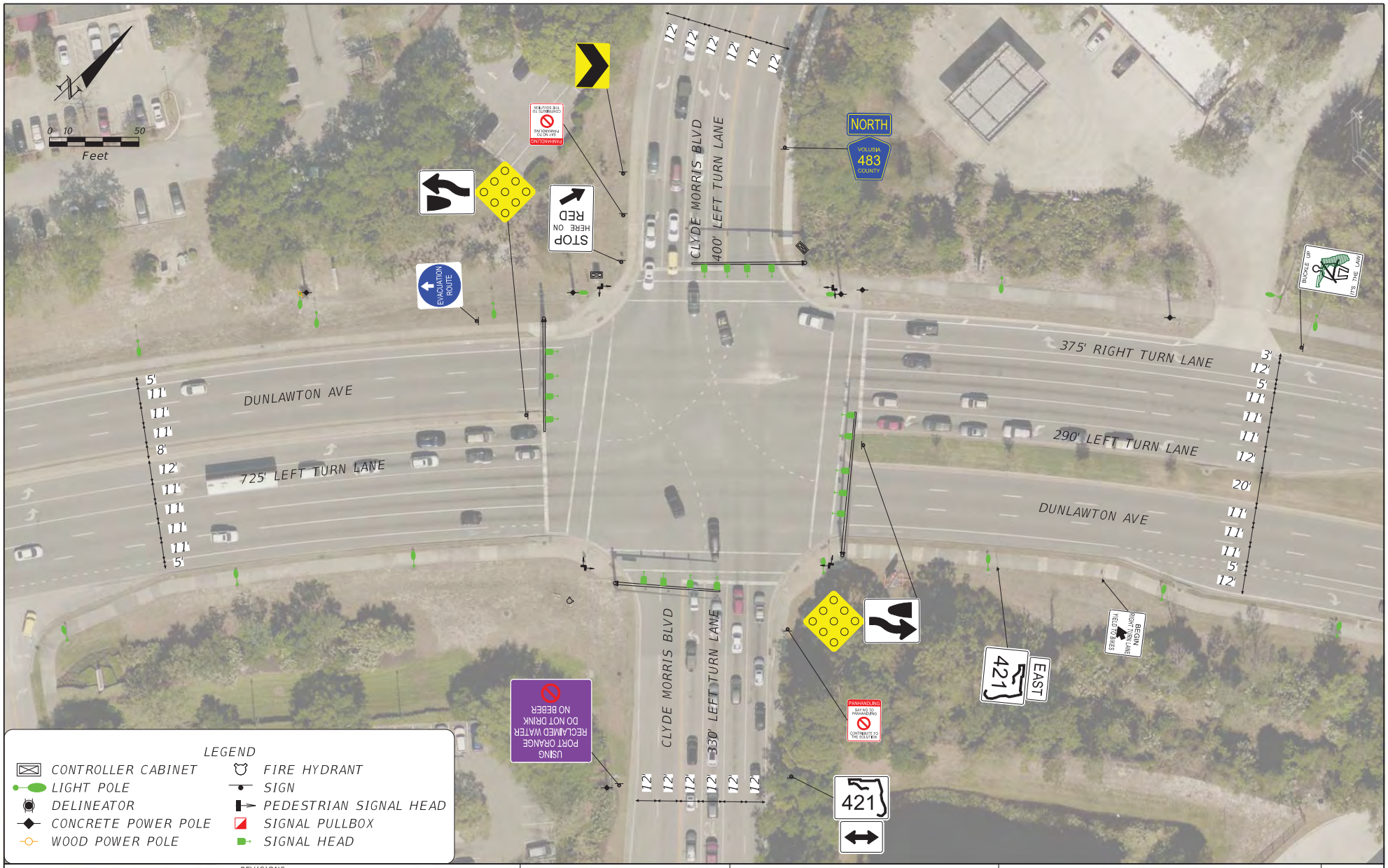
EXISTING CONDITIONS

Field Inventory

The intersections of Dunlawton Avenue at Clyde Morris Boulevard and Dunlawton Avenue at Nova Road are located in the City of Port Orange, Volusia County, Florida. The characteristics of the study intersections are presented in **Table 1. Figures 2** and **3**, depict the existing conditions including the general roadway geometry, pavement markings, land use, and intersection traffic control of the study intersections. The conditions stated in this report reflect conditions as observed on the date of the qualitative assessment.

Table 1: Field Inventory

Features	Dunlawton Avenue at Clyde Morris Boulevard	Dunlawton Avenue at Nova Road
Main Street	Dunlawton Avenue (east-west); six lane divided urban principal arterial	Dunlawton Avenue (east-west); six lane divided urban principal arterial
Minor Street	Clyde Morris Boulevard (north-south); four lane divided urban minor arterial	Nova Road (north-south); four lane divided urban principal arterial
Intersection Type	4-legged intersection	4-legged intersection
Number of Intersection Approach Lanes	Northbound – 2 left turn lanes, 1 through lane & 1 shared through/right turn lane Southbound – 2 left turn lanes, 1 through lane & 1 right turn lane Eastbound – 2 left turn lanes, 2 through lanes & 1 shared through/right turn lane Westbound – 1 left turn lane, 3 through lanes & 1 right turn lane	Northbound – 2 left turn lanes, 2 through lanes & 1 right turn lane Southbound – 2 left turn lanes, 2 through lanes & 1 right turn lane Eastbound – 2 left turn lanes, 3 through lanes & 1 right turn lane Westbound – 2 left turn lanes, 2 through lanes & 1 shared through/right turn lane
Traffic Control	Signal	Signal
Speed Limit	Dunlawton Avenue - 50 mph Clyde Morris Boulevard – 40/45 mph	Dunlawton Avenue – 45/50 mph Nova Road - 45 mph
Bicycle Lanes	Exclusive bicycle lanes are provided on Dunlawton Avenue in both directions Exclusive bicycle lanes or shoulder lanes that support bicycles are not provided on Clyde Morris Boulevard	Exclusive bicycle lanes are provided on Dunlawton Avenue (in both directions), west of Nova Road and terminate at the study intersection Exclusive bicycle lanes are provided on Nova Road in both directions
Sidewalks	Dunlawton Avenue – provided on both sides of the roadway Clyde Morris Boulevard (north leg) – provided on both sides of the roadway Clyde Morris Boulevard (south leg) – provided on eastside of the roadway; sidewalk is not provided on the westside between Dunlawton Avenue and the driveway to Walgreens but picks up after	Dunlawton Avenue – provided on both sides of the roadway Nova Road – provided on both sides of the roadway
Surrounding Development	Northwest: Residential & commercial Northeast: Gas station & commercial Southwest: Walgreens & Commercial Southeast: Gas station &Walmart Sweetwater Elementary School is located in the northeast corner of Clyde Morris Boulevard & Victoria Garden Boulevard. Spruce Creek High School is located near Clyde Morris Boulevard & Taylor Road intersection	Northwest: CVS Pharmacy Northeast: Bank of America & commercial (Park Place Plaza) Southwest: Firestone Auto Care & commercial Southeast: Burger King, Publix & commercial
Nearest Signalized intersections	Dunlawton Avenue & Victoria Garden Boulevard - 0.38 miles to the east Dunlawton Avenue & Yorktowne Boulevard - 0.33 miles to the west Clyde Morris Boulevard & Willow Run Boulevard - 0.62 miles to the north Clyde Morris Boulevard & Taylor Road - 0.85 miles to the south	Dunlawton Avenue & Spruce Creek Road - 0.89 miles to the east Dunlawton Avenue & Village Trail - 0.49 miles to the west Nova Road & Herbert Street - 0.77 miles to the north Nova Road & Village Trail – 0.2 miles to the south
Roadway Lighting	Streetlights - northwest & northeast quadrants of the intersection There is no lighting along Clyde Morris Boulevard at this intersection	Streetlights - northwest & northeast quadrants of the intersection



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	VOLUSIA	

CONDITION DIAGRAM DUNLAWTON AVE AT CLYDE MORRIS BLVD

FIGURE NO. 2

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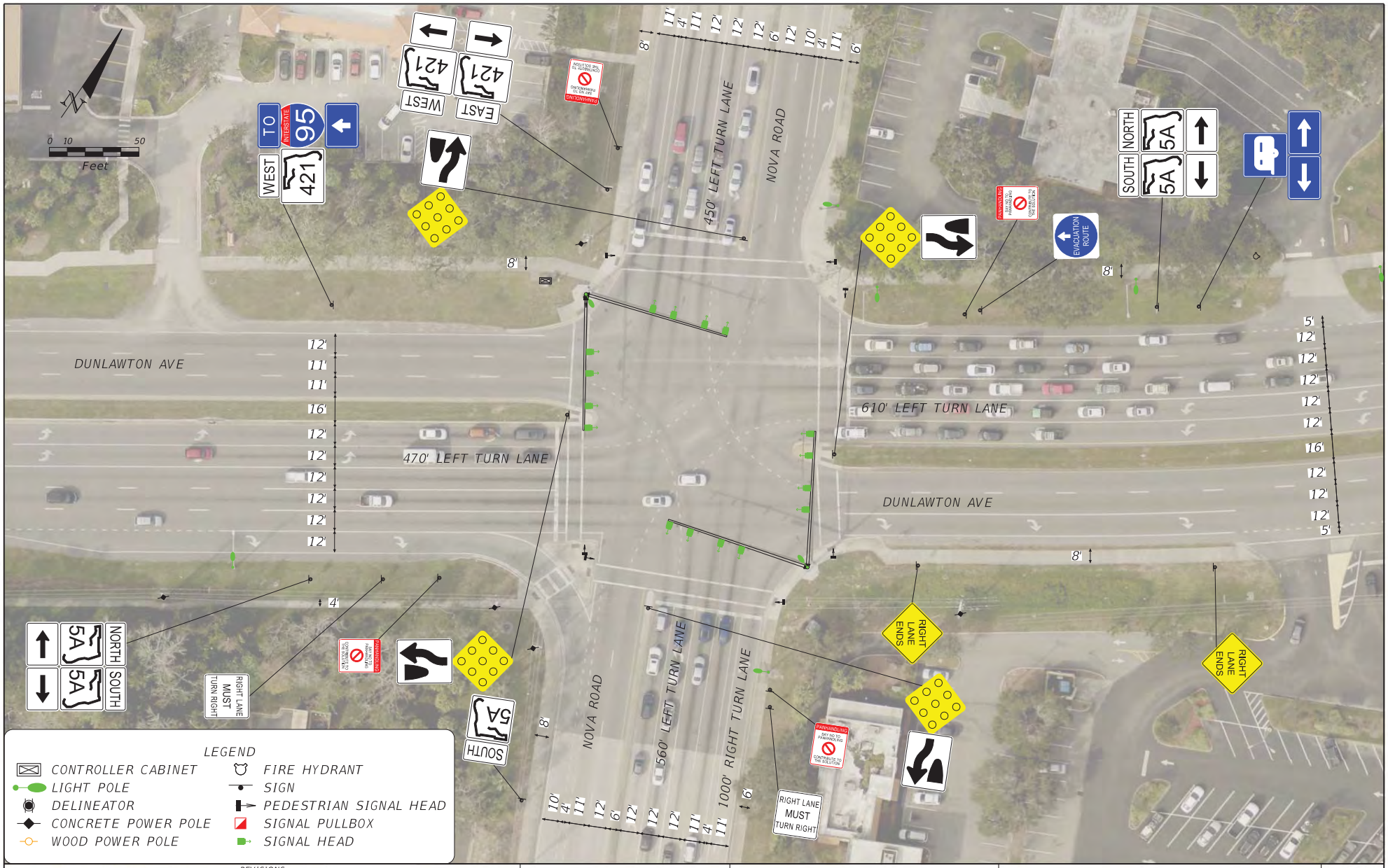

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	VOLUSIA	

CONDITION DIAGRAM DUNLAWTON AVE AT NOVA RD

FIGURE NO. 3

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Traffic Volume Data

A 24-hour volume traffic count was collected along Dunlawton Avenue between Clyde Morris Boulevard and Nova Road, on 01/14/2020, representing a typical commuter weekday. The 24-hour volume traffic count was supplemented with 8-hour intersection turning movement counts. The turning movement counts were collected between 7:00 AM – 9:00 AM and 12:00 PM – 6:00 PM at the study intersections (Dunlawton Avenue at Clyde Morris Boulevard & Dunlawton Avenue at Nova Road). These hours represent the highest eight hours obtained from the volume count. From this data, the AM, mid-day and PM peak traffic hours were found to occur from 7:30 AM to 8:30 AM, 12:00 PM to 1:00 PM and 4:30 PM to 5:30 PM for Dunlawton Avenue at Clyde Morris Boulevard intersection and from 7:30 AM to 8:30 AM, 1:00 PM to 2:00 PM and 4:30 PM to 5:30 PM for Dunlawton Avenue at Nova Road intersection. The overall peak hour for the intersections was found to occur during the PM peak hour. The turning movement counts revealed that traffic along Dunlawton Avenue peaks in the eastbound direction during AM conditions and peaks in the westbound direction during PM conditions. During mid-day conditions, traffic is equally distributed in both directions. The 24-hour volume count, 8-hour turning movement counts and pedestrian/bicycle counts are provided in **Appendix A-2**. The following table summarizes the distribution of turning movements at the study intersections.

Table 2: 8 Hour Turning Movement Percentages (All Vehicles)

Study Intersection	Movement	Northbound	Southbound	Eastbound	Westbound
Dunlawton Avenue at Clyde Morris Boulevard	Left-turn/U-turn	42.70%	28.10%	19.20%	6.20%
	Through	45.00%	31.60%	74.70%	80.90%
	Right-turn	12.30%	40.30%	6.10%	12.90%
Dunlawton Avenue at Nova Road	Left-turn/U-turn	33.20%	19.80%	21.50%	20.40%
	Through	55.60%	53.60%	63.70%	71.70%
	Right-turn	11.30%	26.60%	14.70%	7.90%

Crash Data

The latest available three years of crash data (from January 1, 2017 to December 31, 2019) at the study intersections were obtained from Signal Four Analytics. Raw crash data is included in **Appendix B**.

Dunlawton Avenue at Clyde Morris Boulevard - Crash Summary

As shown in **Table 3,** there were 126 crashes reported within the influence area of the Dunlawton Ave at Clyde Morris Blvd intersection. The crashes consisted of 62 rear end, 26 sideswipes, 5 angle, 8 left turn, 2 right turn, 2 off road, 3 pedestrian/bicyclist, and 18 other crashes. The crashes caused 37 injuries (from 36 crashes), and total property damage amounted to approximately $469,307. There were no fatalities. 110 of the crashes occurred in daylight conditions and 16 crashes occurred in dark or dusk conditions. Pavement condition was dry for 117 crashes, and wet for 9 crashes. In addition to the significant number of rear end crashes (which are typical at a signalized intersection), a significant number of sideswipe crashes were also observed at the study intersection. A clear pattern for sideswipe crashes at the study intersection cannot be determined, but the most likely reasons are unlawful/aggressive lane changes combined with speeding along Dunlawton Avenue.

Dunlawton Avenue at Nova Road - Crash Summary

As shown in **Table 4**, there were 120 crashes reported within the influence area of the Dunlawton Ave at Nova Rd intersection. The crashes consisted of 63 rear end, 20 sideswipes, 6 angle, 6 left turn, 3 right turn, 2 off road, 6 pedestrian/bicyclist, and 14 other crashes. The crashes caused 70 injuries (from 48 crashes), and total property damage amounted to approximately $646,875. There were no fatalities. 86 of the crashes occurred in daylight conditions and 34 crashes occurred in dark or dusk conditions. Pavement condition was dry for 109 crashes, and wet for 11 crashes. In addition to the significant number of rear end crashes (which are typical at a signalized intersection), a significant number of sideswipe crashes were also observed at the study intersection. A clear pattern for sideswipe crashes at the study intersection cannot be determined, but the most likely reasons are unlawful/aggressive lane changes combined with speeding along Dunlawton Avenue.

Table 3: Dunlawton Avenue at Clyde Morris Boulevard – Crash Summary for Period between 01/01/2017 and 12/31/2019

Crash Type	2017	2018	2019	Total	Proportion
Rear End	23	22	17	**62**	49%
Head On	0	0	0	**0**	0%
Sideswipe	10	6	10	**26**	21%
Roll Over	0	0	0	**0**	0%
Angle	2	1	2	**5**	4%
Left Turn	3	2	3	**8**	6%
Right Turn	2	0	0	**2**	2%
Off Road	1	1	0	**2**	2%
Pedestrian & Bicycle	0	2	1	**3**	2%
Animal	0	0	0	**0**	0%
Other	5	7	6	**18**	14%
Total	**46**	**41**	**39**	**126**	100%
Crash Severity	**2017**	**2018**	**2019**	**Total**	**Proportion**
Fatality	0	0	0	**0**	0%
Injury	13	14	9	**36**	29%
Property Damage Only	33	27	30	**90**	71%
Total	**46**	**41**	**39**	**126**	100%
Pavement Condition	**2017**	**2018**	**2019**	**Total**	**Proportion**
Wet	3	4	2	**9**	7%
Dry	43	37	37	**117**	93%
Slippery	0	0	0	**0**	0%
Total	**46**	**41**	**39**	**126**	100%
Light Condition	**2017**	**2018**	**2019**	**Total**	**Proportion**
Daylight	42	31	37	**110**	87%
Dusk	0	3	0	**3**	2%
Dawn	0	1	0	**1**	1%
Dark	4	6	2	**12**	10%
Total	**46**	**41**	**39**	**126**	100%

Table 4: Dunlawton Avenue at Nova Road – Crash Summary for Period between 01/01/2017 and 12/31/2019

Crash Type	2017	2018	2019	Total	Proportion
Rear End	19	15	29	**63**	53%
Head On	0	0	0	**0**	0%
Sideswipe	5	4	11	**20**	17%
Roll Over	0	0	0	**0**	0%
Angle	2	2	2	**6**	5%
Left Turn	0	3	3	**6**	5%
Right Turn	2	1	0	**3**	3%
Off Road	2	0	0	**2**	2%
Pedestrian & Bicycle	4	0	2	**6**	5%
Animal	0	0	0	**0**	0%
Other	5	7	2	**14**	12%
Total	**39**	**32**	**49**	**120**	100%
Crash Severity	**2017**	**2018**	**2019**	**Total**	**Proportion**
Fatality	0	0	0	**0**	0%
Injury	17	11	20	**48**	40%
Property Damage Only	22	21	29	**72**	60%
Total	**39**	**32**	**49**	**120**	100%
Pavement Condition	**2017**	**2018**	**2019**	**Total**	**Proportion**
Wet	3	4	4	**11**	9%
Dry	36	28	45	**109**	91%
Slippery	0	0	0	**0**	0%
Total	**39**	**32**	**49**	**120**	100%
Light Condition	**2017**	**2018**	**2019**	**Total**	**Proportion**
Daylight	28	24	34	**86**	72%
Dusk	0	1	0	**1**	1%
Dawn	1	0	1	**2**	2%
Dark	10	7	14	**31**	26%
Total	**39**	**32**	**49**	**120**	100%

QUALITATIVE ASSESSMENT

A qualitative assessment (QA) was conducted at each study intersection in the field to evaluate the existing operating conditions occurring on a typical weekday, and to identify areas where improvements would be potentially beneficial to the overall safety and efficiency of the location. A registered professional engineer performed the QA during the AM and PM peak hour periods. The field observations are summarized in Tables 5 and 6 for the two study intersections.

Table 5: Qualitative Assessment: Dunlawton Avenue at Clyde Morris Boulevard

Feature	Observation
Observation Timings	7:00 to 9:00 AM and 4:00 to 6:00 PM (also during the school closing time for Sweetwater Elementary school, 3:00 to 4:00 PM)
Traffic	1. The flow of traffic on Dunlawton Avenue was heavier in the eastbound direction during AM peak hour and was heavier in the westbound direction during PM peak hour. Whereas, the flow of traffic on Clyde Morris Boulevard was heavier in the northbound direction during AM peak hour and was heavier in the southbound direction during PM peak hour. 2. During the observed peak hours, the intersection operated without residual queues or cycle failures. Queues on each approach cleared up within the allotted green phase of the signal operation. 3. Heavy eastbound right turn and westbound left turn movements were observed during AM peak hour (compared to other peak hours), most likely because of the Elementary and High schools located Clyde Morris Boulevard south of the study intersection. In one instance, a queue of around 12 vehicles was observed in the westbound left turn lane during AM peak hour but cleared up within one cycle. During AM peak hour, the eastbound queue was observed to back up approximately till Walgreens entrance (350 feet approximately). 4. In one instance during AM peak hour, the northbound approach queue on Clyde Morris Boulevard was observed to back up till Walmart entrance (350 feet) but cleared in one cycle. During PM peak hour, southbound approach queues were observed to back up approximately 400 feet. 5. During PM peak hour, it was observed that the westbound inside through lane queue backs up till the bidirectional median opening at Home Depot and prevented the westbound left turning vehicles access the left turn lane storage. It was observed that the westbound inside through lane was utilized more compared to the other through lanes. 6. During PM peak hour, the northbound approach queue on Clyde Morris Boulevard was observed to back up till Walmart entrance (1,150 feet) mostly during the school closing times. 7. A significant number of eastbound to westbound u-turns were observed in both AM and PM peak hours. A "Stop here on Red" sign is provided for the southbound right turn movement. However, in a few instances, the southbound right turning vehicles were observed not to yield to the eastbound u-turns.
Pedestrian/Bicycle	1. During PM peak hour, 10 pedestrians were observed to cross Dunlawton Avenue at the study intersection. 2. Sidewalks are present on both sides of Dunlawton Avenue. Sidewalks are present on both sides of Clyde Morris Boulevard, north of the study intersection. Sidewalks are present on eastside of Clyde Morris Boulevard, south of the study intersection. South of the study intersection, a sidewalk is not provided on the westside between Dunlawton Avenue and the driveway to Walgreens but picks up after. 3. Crosswalks are present on all legs of the study intersection. The crosswalks do not have special emphasis pavement markings. 4. The walk times provided appeared adequate for pedestrians to cross at a normal pace and within the allotted time. 5. Exclusive bike lanes are present on both sides of Dunlawton Avenue at the study intersection. Exclusive bike lanes or shoulder lanes that can support bicycles are not present on Clyde Morris Boulevard.
Pavement & Signage	Pavement markings and signage along Dunlawton Avenue and along Clyde Morris Boulevard are in good condition.
Roadway Lighting	1. The lighting along Dunlawton Avenue at Clyde Morris Boulevard is on existing Florida Power & Light Company (FPL) power poles. 2. The existing luminaires vary from 200W to 400 W High Pressure Sodium (HPS) mounted at 30-feet. 3. There is low level pedestrian HPS lighting along both sides of Dunlawton Avenue. 4. The Florida Design Manual (FDM) retrofit-lighting criteria is not being met with the existing lighting.
Americans with Disabilities Act (ADA) concerns	1. Truncated domes are provided at the study intersection. 2. All curb ramps must be reevaluated and realigned if needed, since some of the ramps are not aligned with the crosswalks. 3. Vegetation growth is observed to encroach into the sidewalks in the northeast and southeast corners of the study intersection.

Table 6: Qualitative Assessment: Dunlawton Avenue at Nova Road

Feature	Observation
Observation Timings	7:00 to 9:00 AM and 4:00 to 6:00 PM
Traffic	1. The flow of traffic on Dunlawton Avenue was heavier in the eastbound direction during AM peak hour and was heavier in the westbound direction during PM peak hour. Whereas, the flow of traffic on Nova Road was heavier in the northbound direction during AM peak hour and was heavier in the southbound direction during PM peak hour. 2. During the observed peak hours, the study intersection generally operated without residual queues or cycle failures. Queues on each approach cleared up within the allotted green phase of the signal operation. 3. Heavy eastbound left turn and westbound left turn movements were observed at the study intersection especially during the PM peak hour. In one instance, a queue of around 12 vehicles was observed in the westbound left turn lane during AM peak hour but cleared up within one cycle. 4. In one instance during AM peak hour, the northbound approach queues on Nova Road were observed to back up till Village Trial intersection. During PM peak hour, southbound approach queues were observed to back up approximately till Eagle Lake Trail. 5. During the AM and PM peak hour, it was observed that eastbound inside through lane queues back up till the S Swallow Drive median opening, preventing eastbound left turn vehicles access the eastbound left turn lane storage. 6. Just east of the study intersection, the outside eastbound through lane drops as a right only lane to Jackson Street. And because of this, few last minute lane changes were observed along the eastbound approach that impacted the traffic flow. 7. It was observed that vehicles using the outside eastbound left turn lane come very close to the curb extension located in the northeast corner of the study intersection.
Pedestrian/Bicycle	1. Very less pedestrian traffic activity was observed at the study intersection. 2. Sidewalks are present on both sides of Dunlawton Avenue and Nova Road intersection. 3. Crosswalks are present on all legs of the study intersection. The crosswalks do not have special emphasis pavement markings. 4. The walk times provided appeared adequate for pedestrians to cross at a normal pace and within the allotted time. 5. Exclusive bicycle lanes are present on both sides of Nova Road at the study intersection. 6. West of Nova Road, exclusive bicycle lanes are provided on Dunlawton Avenue (in both directions) that terminate at the study intersection. East of Nova Road, shoulder lanes that can support bicycles are provided in both directions but are not marked. 7. Pedestrian refuges that enhance pedestrian safety are provided on the east and west legs of the study intersection. 8. A channelized eastbound right turn lane is provided along Dunlawton Avenue.
Pavement & Signage	Pavement markings and signage along Dunlawton Avenue and along Nova Road are in good condition.
Roadway Lighting	1. The existing lighting along Dunlawton Avenue at Nova Road is on existing aluminum light poles on the north side of the road. 2. The existing luminaires are 400W HPS mounted at 40-feet. 3. The FDM retrofit-lighting criteria is not being met with the existing lighting.
Americans with Disabilities Act (ADA) concerns	1. Truncated domes are provided at the study intersection. The truncated dome appears to be worn out in the northwest corner. 2. All curb ramps must be reevaluated and realigned if needed, since some of the ramps are not aligned with the crosswalks. 3. The pedestrian push button sign is missing in the northeast and southeast corners of the intersection.

FEASIBILITY ANALYSIS

Background

The City of Port Orange submitted an application to perform a feasibility study to construct the following improvements along Dunlawton Avenue:

1. Extend the existing westbound left turn lane at Dunlawton Avenue at Clyde Morris Boulevard intersection, and
2. Extend the existing eastbound dual left turn lanes at Dunlawton Avenue at Nova Road intersection. Because of the presence of back to back left turn lanes along Dunlawton Avenue between Nova Road and S Swallow Drive (eastbound left turns at Dunlawton Avenue and Nova Road and westbound left turn lane at Dunlawton Avenue and S Swallow Drive), only the outside eastbound left turn lane at Dunlawton Avenue and Nova Road can be extended. As such, this study determined the feasibility of extending only the existing outside eastbound left turn lane at the intersection of Dunlawton Avenue and Nova Road.

The purpose of extending the left turn lanes is to reduce delays for turning vehicles and through vehicles by allowing increased stacking area to segregate vehicles departing Dunlawton Avenue from through traffic and to assist in maintaining the functional capacity of Dunlawton Avenue.

Methodology

The methodology for determining the feasibility of implementing the proposed improvements includes performing a comparison of before and after operating conditions at each study intersection utilizing traffic operation analysis software and preparing a B/C analysis for the proposed improvements.

Operational Analysis

The operational analysis was performed for the proposed alternative at each study intersection for before and after conditions. The before conditions assume that there is no change in intersection geometry and signal timings, whereas, the after conditions assume improvements under the proposed alternative.

The existing and improved operating conditions were determined using Synchro 10/SimTraffic simulation software. The signal timing information was provided by Volusia County. Table 7 summarizes the intersection delay and levels of service (LOS) at each study intersection for before and after conditions during the three peak periods. The SimTraffic simulation results were provided in **Appendix C**.

Table 7: Before and After Operational Analysis Results

Intersection	Approach	AM Peak Hour				Mid-Day				PM Peak Hour			
		Before		After		Before		After		Before		After	
		Delay (Sec.)	LOS	Delay (Sec.)	LOS	Delay (Sec.)	LOS	Delay (Sec.)	LOS	Delay (Sec.)	LOS	Delay (Sec.)	LOS
Dunlawton Avenue at Clyde Morris Boulevard	Eastbound	41.8	D	42.0	D	44.0	D	43.3	D	43.6	D	43.5	D
	Westbound	41.7	D	41.3	D	47.1	D	44.8	D	43.8	D	42.8	D
	Northbound	55.3	E	55.4	E	52.3	D	53.3	D	59.5	E	59.2	E
	Southbound	43.3	D	43.5	D	47.8	D	48.0	D	62.3	E	62.7	E
	Overall	**44.0**	**D**	**43.9**	**D**	**46.7**	**D**	**45.8**	**D**	**49.1**	**D**	**48.9**	**D**
Dunlawton Avenue at Nova Road	Eastbound	37.8	D	37.6	D	78.6	E	73.5	E	59.4	E	59.3	E
	Westbound	42.8	D	42.4	D	58.3	E	59.9	E	52.7	D	53.0	D
	Northbound	54.4	D	54.9	D	54.3	D	54.7	D	58.0	E	58.0	E
	Southbound	43.5	D	43.5	D	46.2	D	45.7	D	51.6	D	50.0	D
	Overall	**44.5**	**D**	**44.4**	**D**	**61.9**	**E**	**60.6**	**E**	**55.6**	**E**	**55.2**	**E**

Note: The results are based on average of 10 random seed SimTraffic Simulation runs

Site Assessments for Proposed Improvements

This section provides a brief assessment of the sites that can be considered before constructing the proposed improvements.

Dunlawton Avenue and Clyde Morris Boulevard

In order to extend the existing westbound left turn lane, the following elements will need to be accounted for.

- Extend the turn lane approximately 250 feet from the existing taper.
- Construct a new curb inlet connecting to existing drainage pipe.
- Underground utility conflicts are not anticipated.

Dunlawton Avenue and Nova Road

In order to extend the existing eastbound dual left turn lanes, the following elements will need to be accounted for.

- Extend the outside turn lane approximately 286 feet from the existing taper.
- Construct a new curb inlet near the proposed taper and connect it with new piping to existing drainage inlet approximately 170 feet to the north.
- Underground utility conflicts are not anticipated.
- Impacts to median irrigation is anticipated.

B/C Analysis

Crash reduction benefit as determined by a crash reduction factor (CRF) [from available sources including FHWA's Crash Modification Factor (CMF) Clearing House and Desktop Reference] is not available for extending a left turn lane along a major street, and therefore was not used in the B/C analysis. However, extending existing left turn lanes will likely reduce rear end crashes resulting from conflicts between vehicles waiting to turn left and following vehicles during peak hour periods when left turn traffic demand exceeds the existing storage capacity.

In addition, extending a left turn lane can also help reduce vehicular delay and crashes by allowing left turning vehicles to stack up in the designated lane and reducing the through queue. A B/C analysis was performed for the study intersections based on traffic operational benefits as described below.

Traffic Operational Benefits

To estimate the operational benefits of the proposed intersection improvements, SimTraffic simulation was used. The benefits are defined in terms of annualized cost savings associated with reductions in the following three measures of effectiveness (MOEs):

- Total Delay (Vehicle-Hours)
- Stops
- Fuel Consumption (Gallons)

The benefits were calculated for 300 days in a year for nine (9) hours per day (3 hours each for AM, Mid-day and PM peak periods) accounting for reduced benefits anticipated due to lower traffic volumes during the weekend. The value of delay time per hour ($18.12) and fuel cost ($2.28) were obtained from "The Mobility Data for Orlando" published by Texas A&M University. Stops were estimated to cost $0.014 each. Table 8 summarizes the unit value of each MOE in a tabular format along with its source.

Table 8: Unit Value of MOEs

MOE Values	Unit Value	Source
Stops ($)	0.014	Transyt 7F
Delay ($)	18.12	2019 Urban Mobility Report published by Texas A&M Transportation Institute (TTI)
Fuel ($/gal.)	2.28	2019 Urban Mobility Report published by TTI
Days per Year	300	Average days with observable AM, Mid & PM peaking characteristics

The estimated cost for the Dunlawton Avenue at Clyde Morris Boulevard intersection improvements is $153,902 (present day value) and it has a corresponding annualized cost amounting to $11,324. Table 9 summarizes the benefit cost analysis for the proposed improvements. The analysis yields a B/C ratio of 1.89.

The calculated B/C ratio indicates that the anticipated benefits outweigh the estimated costs for the proposed modifications, with benefits derived through reduced costs associated with lower delay, stops and fuel consumption.

Table 9: Dunlawton Avenue at Clyde Morris Boulevard - B/C Analysis Results

Benefit Period		**Measures of Effectiveness**		
		Total Stops	**Total Delay (veh-hrs)**	**Fuel Consumption (gal)**
AM Peak Hour	Existing	3,024	51.9	52.9
	Proposed	2,995	51.4	52.8
Mid Peak Hour	Existing	3,522	62.2	62.3
	Proposed	3,497	61.7	62.2
PM Peak Hour	Existing	3,719	69.9	68.0
	Proposed	3,707	69.7	67.7
Estimated Daily (AM + Mid + PM)	Existing	30,795	552.0	549.6
	Proposed	30,597	548.4	548.1
Estimated Daily Savings		198	3.6	1.5
Estimated Unit Cost		$0.014	$18.120	$2.280
Daily User Benefit by MOE		$2.772	$65.232	$3.420
Daily User Benefit Total		71.42		
Annual User Benefit		**$21,427.20**		
Total Annual Cost		**$11,324.41**		
Benefit Cost Ratio		**1.89**		

Note: Lighting improvement cost is not included in the B/C analysis

The estimated cost for the Dunlawton Avenue at Nova Road intersection improvements is $196,481 (present day value) and it has a corresponding annualized cost amounting to $14,457. Table 10 summarizes the benefit cost analysis for the proposed improvements. The analysis yields a B/C ratio of 2.96.

The calculated B/C ratio indicates that the anticipated benefits outweigh the estimated costs for the proposed modifications, with benefits derived through reduced costs associated with lower delay, stops and fuel consumption.

Table 10: Dunlawton Avenue at Nova Road - B/C Analysis Results

Benefit Period		**Measures of Effectiveness**		
		Total Stops	Total Delay (veh-hrs)	Fuel Consumption (gal)
AM Peak Hour	Existing	2,983	51.9	45.0
	Proposed	2,972	51.7	44.8
Mid Peak Hour	Existing	4,154	89.1	62.2
	Proposed	4,113	87.1	61.4
PM Peak Hour	Existing	4,054	82.4	61.5
	Proposed	4,011	82.2	61.3
Estimated Daily (AM + Mid + PM)	Existing	33,573	670.2	506.1
	Proposed	33,288	663.0	502.5
Estimated Daily Savings		285	7.2	3.6
Estimated Unit Cost		$0.014	$18.120	$2.280
Daily User Benefit by MOE		$3.990	$130.464	$8.208
Daily User Benefit Total		14.66		
Annual User Benefit		**$42,798.60**		
Total Annual Cost		**$14,457.45**		
Benefit Cost Ratio		**2.96**		

Note: Lighting improvement cost is not included in the B/C analysis

The final cost estimates for the proposed improvements at each intersection were determined in coordination with the City of Port Orange. Based on the input from the City, the following adjustments were made: 1) the costs for drainage swales in the median ($90,000) and engineering budget for the analyses and permitting services ($15,000) are included as part of the Contingency cost and 2) Maintenance Of Traffic (MOT) percentage is increased to 20%. The cost estimates can be found in **Appendix D**. Please note that the lighting improvement cost is not included in the B/C analysis. The service life for the modification is assumed 20 years and the interest rate used in the calculation of annualized costs is assumed 4%, which is a value frequently used by the Florida Department of Transportation (FDOT) in their benefit cost computations.

RECOMMENDATIONS

Based upon the crash analysis, qualitative assessment, field observations, intersection analysis, B/C analysis and engineering judgment, the following modifications are recommended to improve the safety and operation of the study intersections:

Dunlawton Avenue at Clyde Morris Boulevard

- **Extend the existing westbound left turn by approximately 250 feet from the existing taper (see Figure 4).**
- It is suggested to upgrade the existing lighting along Dunlawton Avenue to LED lighting and add eight additional LED light poles to meet the intersection retrofit criteria.
- Consider addressing the current ADA concerns at the time when the extension of left turn lane is constructed. Clear the vegetation growth that encroached into the sidewalks in the northeast and southeast corners of the study intersection.
- Consider providing sidewalk continuity on the westside of Clyde Morris Boulevard between Dunlawton Avenue and the driveway to Walgreens. This will help improve pedestrian and bicycle safety at the study intersection.
- Consider providing a Right Turn on Red Must Yield to U-Turn (R10-30) sign to mitigate the existing conflicts between the eastbound u-turn and southbound right turn movements.

This improvement is based on the input provided in the application for a feasibility study completed by the City of Port Orange. **This modification can be implemented at an approximate cost of $153,902 and yields a B/C ratio of 1.89, which indicates that the anticipated benefits outweigh the estimated costs for the proposed modifications.**

Dunlawton Avenue at Nova Road:

- **Extend the existing outside eastbound left turn lane by approximately 286 feet from the existing taper (see Figure 5).**
- It is suggested to upgrade the existing lighting along Dunlawton Avenue to LED lighting and add twelve additional light poles to meet the intersection retrofit criteria**.**

- Consider addressing the current ADA concerns at the time when the extension of left turn lane is constructed.
- Consider adding backplates to the traffic signal indications to improve visibility of the illuminated face of the signal.
- Consider improving the signing and pavement markings as shown in Figure 6. These improvements will help reduce driver confusion associated with the eastbound outside through lane along Clyde Morris Boulevard dropping as a right turn lane east of the study intersection.

This improvement is based on the input provided in the application for a feasibility study completed by the County. **These modifications can be implemented at an approximate cost of $196,481 and yields a B/C ratio of 2.96 which indicates that the anticipated benefits outweigh the estimated costs for this recommended alternative.**

FIGURE 4

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

VANASSE HANGEN BRUSTLIN, INC.
225. E. ROBINSON STREET
ORLANDO, FL 32801
CERTIFICATE OF AUTHORIZATION 3932

CITY OF PORT ORANGE

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 421	VOLUSIA	

IMPROVEMENT DIAGRAM

DUNLAWTON AVE. & CLYDE MORRIS BLVD.

SHEET NO. 1

$USER$ $DATE$ $TIME$ $MODELNAME$ $FILE$

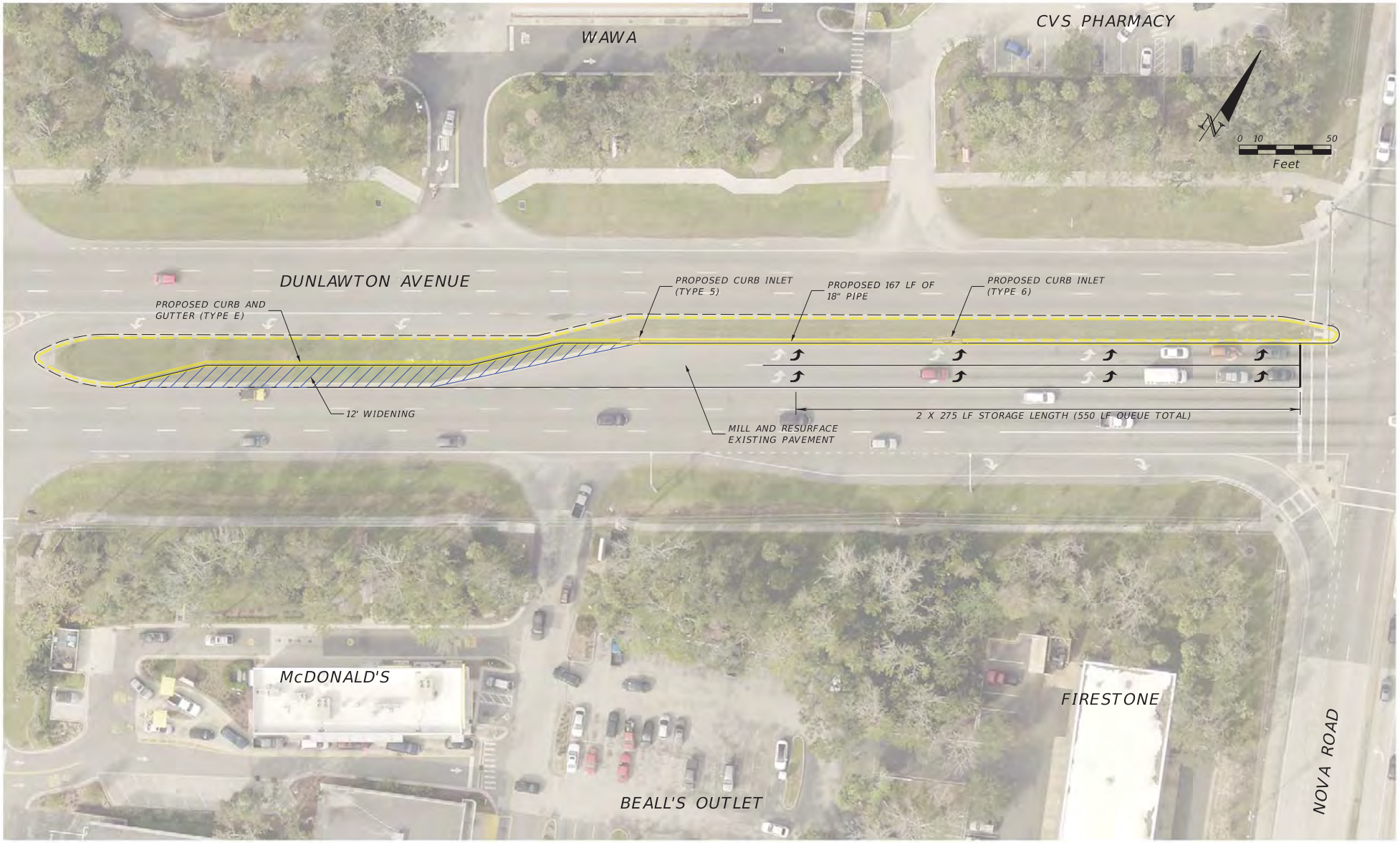


FIGURE 5

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

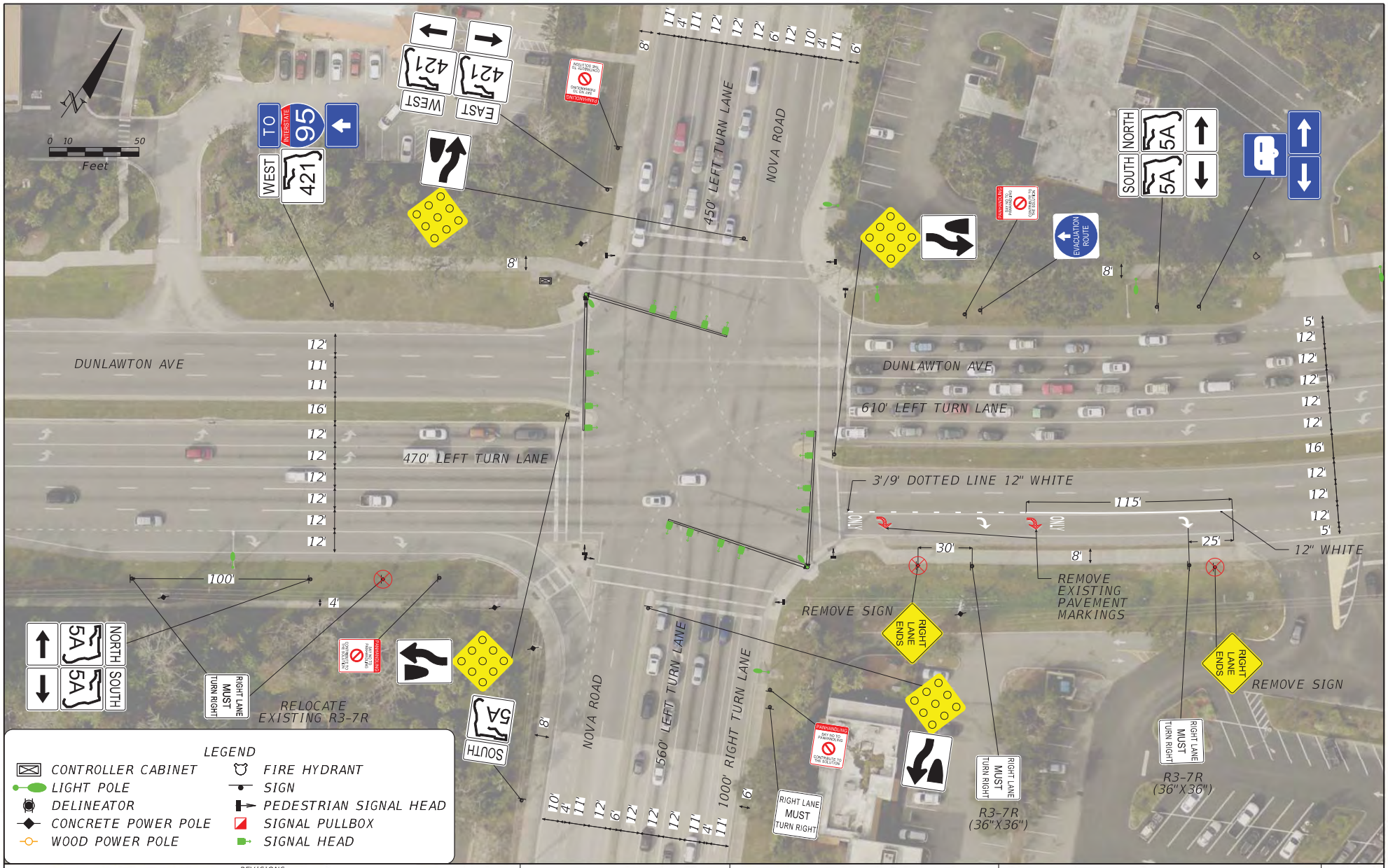
VANASSE HANGEN BRUSTLIN, INC.
225. E. ROBINSON STREET
ORLANDO, FL 32801
CERTIFICATE OF AUTHORIZATION 3932

CITY OF PORT ORANGE		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 421	VOLUSIA	

IMPROVEMENT DIAGRAM
DUNLAWTON AVE. & NOVA RD.

SHEET NO. 2

$USER$ $DATE$ $TIME$ $MODELNAME$ $FILE$



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	VOLUSIA	

SIGNING AND PAVEMENT MARKING IMPROVEMENTS
DUNLAWTON AVENUE AT NOVA ROAD

FIGURE NO.
6

$USER$ $DATE$ $TIME$ $MODELNAME$ $FILE$

APPENDICES

APPENDIX A-1:

Reponses to Comments

Memorandum

To:	Colleen Nicoulin, AICP, RSP (R2CTPO) Tim Burman (City of Port Orange) Sean Castello, P.E. (Volusia County)	Date:	April 8, 2020
		Project #:	63308.03
From:	Keith Stimpson Juan Camacho Rajashekar Pemmanaboina Srinivas Kandala (VHB)	Re:	Dunlawton Avenue – Feasibility Study

Please see below for VHB's responses to the comments provided on the Dunlawton Avenue Turn Lane Improvements Feasibility Study.

City of Port Orange:

1. General Comment Report-Wide: Add description, graphics, and infrastructure to describe how Pedestrian Traffic will be maintained during construction for each turn lane. If ped traffic can be maintained by apparent means, label "PED MOT is APPARENT".
   The Comment is noted. Please note that this is a planning level feasibility study and this task is out of scope for this study.
2. General Comment Report-Wide: Strike out the phrase "Consider addressing the current ADA concerns" and replace with the descriptions, graphics, and estimates to bring the existing infrastructure into ADA compliance…a fundamental of LAP Projects.
   The Comment is noted. Please note that this is a planning level feasibility study and this task is out of scope for this study.
3. General Comment Report-Wide: Update Engineer's Opinion of Probable Cost for each turn lane based upon Local Agency's comments.
   The Comment is noted. The costs will be updated (if needed) as per the local agency's comments.
4. General Comment Report-Wide: Update Cost Benefit Ratios for each turn lane based upon Local Agency's comments.
   The Comment is noted. The B/C ratios will be updated (if needed) as per the local agency's comments.
5. PDF 10: Description of bicycle lanes at Nova should be "Dunlawton Ave (in both directions)" in lieu of "Clyde Morris Boulevard.
   The Comment is noted, and the text will be updated accordingly.

6. PDF 28-30:(Proposed turn lane extensions)
    a. All work is within 660 linear feet of the stop bar of the intersections; therefore, all construction must be done under nighttime lane closures adding to cost
    b. Substantial work is required to match new pavement edge to existing pavement edge. The adjacent lane must be closed to allow workmen to make up those joints, adding to cost.
    c. District 5 requires detailed locates of underground utilities. All utilities are covered within 660' of the stop bar of the intersections, Nighttime lane closures are required for detailed locates, adding to cost.
    d. All marking will require nighttime lane closures, adding to cost.
    e. Testing of marking retro reflectivity requires nighttime lane closures, adding to cost.
    Response to Comments 6a through 6e: All the comments are noted. At this phase, MOT is set as 10% of the construction costs which is standard for FDOT LRE estimates. We will increase to 20% to compensate for near intersection work. It will be noted that detailed MOT will be done during final design only and this task is out of scope for this study.
    f. Value engineer a uniform Superpave Asphalt Base SP-12.5 in lieu of combination Type B Stabilization, Optional Base Course, Group 09, Superpave Asphaltic Conc, Traffic C, and Asphaltic Concrete FC to potentially save expense.
    The comment is noted, and the cost estimate will be revised to reflect the use "Type B-12.5 only" during construction.

Volusia County:

1. Page 4 indicates that the speed limit on Dunlawton is 45 MPH, it's actually 50 MPH.
   The Comment is noted, and the speed limit will be updated to 50 MPH.
2. Page 4 Bicycle lanes are Dunlawton Ave only. Clyde Morris Blvd does not have bicycle lanes or shoulders to support them.
   The Comment is noted, and the text will be updated accordingly.
3. Page 13 comment #8 under the ped / bike section says Clyde Morris Blvd, its actually Dunlawton Ave.
   The Comment is noted, and the text will be updated accordingly

APPENDIX A-2:

Traffic Data

Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : January 14, 2020 | Start Time 00:00
Stop Date : January 14, 2020 | Stop Time 24:00
County : Volusia | Station Number 11
Equipment ID 130
Location : Dunlawton Ave Between Clyde Morris Blvd and Nova Rd (3000 Ft E of Clyde Morris Blvd)

14-Jan-20 **Northbound Volume**

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	30	7	12	6	4	6	10	28	106	186	161	194
30	23	11	2	11	6	9	24	45	143	178	154	193
45	12	10	7	1	6	15	24	58	224	163	145	187
00	11	5	6	4	2	15	32	76	224	174	176	188
Hr Total	**76**	**33**	**27**	**22**	**18**	**45**	**90**	**207**	**697**	**701**	**636**	**762**

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	180	179	195	164	181	214	180	153	132	100	52	67
30	176	159	191	213	201	185	176	155	109	84	53	46
45	204	189	186	208	197	202	209	129	97	81	49	31
00	171	190	219	252	212	205	162	136	92	76	42	31
Hr Total	**731**	**717**	**791**	**837**	**791**	**806**	**727**	**573**	**430**	**341**	**196**	**175**

24 Hour Total : 10,429
AM Peak Hour begins : 8:30 | AM Peak Volume : 812 | AM Peak Hour Factor : 0.91
PM Peak Hour begins : 15:15 | PM Peak Volume : 854 | PM PeaK Hour Factor : 0.85

14-Jan-20 **Southbound Volume**

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	25	11	8	3	9	6	23	46	84	166	173	138
30	24	8	3	2	3	12	16	37	122	170	173	183
45	14	12	6	3	4	9	30	60	158	144	146	162
00	17	7	4	5	6	12	39	98	181	160	147	162
Hr Total	**80**	**38**	**21**	**13**	**22**	**39**	**108**	**241**	**545**	**640**	**639**	**645**

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	204	187	226	191	197	205	236	234	133	114	61	28
30	185	187	180	200	206	226	251	181	130	116	69	30
45	198	201	220	253	228	207	208	189	157	66	57	30
00	175	211	185	210	195	186	230	154	149	62	44	30
Hr Total	**762**	**786**	**811**	**854**	**826**	**824**	**925**	**758**	**569**	**358**	**231**	**118**

24 Hour Total : 10,853
AM Peak Hour begins : 11:45 | AM Peak Volume : 749 | AM Peak Hour Factor : 0.92
PM Peak Hour begins : 18:00 | PM Peak Volume : 925 | PM PeaK Hour Factor : 0.92

14-Jan-20 **Total Volume for All Lanes**

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	55	18	20	9	13	12	33	74	190	352	334	332
30	47	19	5	13	9	21	40	82	265	348	327	376
45	26	22	13	4	10	24	54	118	382	307	291	349
00	28	12	10	9	8	27	71	174	405	334	323	350
Hr Total	**156**	**71**	**48**	**35**	**40**	**84**	**198**	**448**	**1,242**	**1,341**	**1,275**	**1,407**

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	384	366	421	355	378	419	416	387	265	214	113	95
30	361	346	371	413	407	411	427	336	239	200	122	76
45	402	390	406	461	425	409	417	318	254	147	106	61
00	346	401	404	462	407	391	392	290	241	138	86	61
Hr Total	**1,493**	**1,503**	**1,602**	**1,691**	**1,617**	**1,630**	**1,652**	**1,331**	**999**	**699**	**427**	**293**

24 Hour Total : 21,282
AM Peak Hour begins : 11:45 | AM Peak Volume : 1,497 | AM Peak Hour Factor : 0.93
PM Peak Hour begins : 15:15 | PM Peak Volume : 1,714 | PM PeaK Hour Factor : 0.93

Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

County Volusia **City** Port Orange

Intersection Clyde Morris Blvd **&** Dunlawton Ave

Date January 14, 2020 **All Vehicles**

VHB Project #: 63308.03

AM Peak Hour

Time Period	Clyde Morris Blvd Northbound Left	Through	Right	Clyde Morris Blvd Southbound Left	Through	Right	Dunlawton Ave Eastbound Left	Through	Right	Dunlawton Ave Westbound Left	Through	Right
7:00 AM - 7:15 AM	17	34	8	30	31	26	48	196	9	3	134	14
7:15 AM - 7:30 AM	28	49	14	42	44	54	57	336	14	8	199	24
7:30 AM - 7:45 AM	49	97	20	34	40	60	78	326	26	29	235	29
7:45 AM - 8:00 AM	64	101	27	46	58	78	101	283	38	33	227	46
8:00 AM - 8:15 AM	37	68	15	42	63	58	69	276	92	32	267	48
8:15 AM - 8:30 AM	38	68	10	29	65	60	82	281	45	25	231	40
8:30 AM - 8:45 AM	44	65	8	46	51	73	92	310	15	15	247	38
8:45 AM - 9:00 AM	31	52	9	57	45	64	58	346	18	17	288	43
TOTAL	308	534	111	326	397	473	585	2,354	257	162	1,828	282
Peak Hour 7:30 AM - 8:30 AM	**188**	**334**	**72**	**151**	**226**	**256**	**330**	**1,166**	**201**	**119**	**960**	**163**

Mid-day Peak Hour

Time Period	Clyde Morris Blvd Northbound Left	Through	Right	Clyde Morris Blvd Southbound Left	Through	Right	Dunlawton Ave Eastbound Left	Through	Right	Dunlawton Ave Westbound Left	Through	Right
12:00 PM - 12:15 PM	105	66	26	58	42	96	67	343	17	32	325	43
12:15 PM - 12:30 PM	45	72	17	60	49	83	93	311	28	24	313	53
12:30 PM - 12:45 PM	57	54	21	56	60	95	85	271	29	27	337	46
12:45 PM - 1:00 PM	39	49	19	60	43	89	96	349	35	25	328	62
1:00 PM - 1:15 PM	71	69	28	62	49	81	68	290	17	25	290	49
1:15 PM - 1:30 PM	68	77	19	66	45	63	70	359	18	19	344	56
1:30 PM - 1:45 PM	44	49	15	51	49	75	97	381	21	22	338	57
1:45 PM - 2:00 PM	64	59	22	71	65	91	109	306	28	34	288	46
TOTAL	493	495	167	484	402	673	685	2,610	193	208	2,563	412
Peak Hour 12:00 PM - 1:00 PM	**246**	**241**	**83**	**234**	**194**	**363**	**341**	**1,274**	**109**	**108**	**1,303**	**204**

PM Peak Hour

Time Period	Clyde Morris Blvd Northbound Left	Through	Right	Clyde Morris Blvd Southbound Left	Through	Right	Dunlawton Ave Eastbound Left	Through	Right	Dunlawton Ave Westbound Left	Through	Right
2:00 PM - 2:15 PM	54	36	21	48	66	86	82	374	23	29	351	60
2:15 PM - 2:30 PM	53	76	19	61	77	96	76	331	30	21	308	54
2:30 PM - 2:45 PM	90	77	18	51	61	87	83	320	28	33	339	54
2:45 PM - 3:00 PM	92	67	31	56	46	64	92	368	36	19	343	67
3:00 PM - 3:15 PM	71	54	12	54	45	71	77	300	18	33	312	58
3:15 PM - 3:30 PM	42	54	23	57	65	68	92	343	21	26	269	68
3:30 PM - 3:45 PM	123	99	31	62	69	81	89	313	16	24	407	70
3:45 PM - 4:00 PM	102	108	27	60	73	73	67	294	29	26	344	43
4:00 PM - 4:15 PM	89	82	22	56	88	88	59	280	18	19	314	55
4:15 PM - 4:30 PM	81	58	14	61	63	72	103	291	18	23	367	49
4:30 PM - 4:45 PM	51	52	12	55	80	77	88	364	29	24	407	56
4:45 PM - 5:00 PM	70	68	20	66	77	93	78	288	20	25	348	56
5:00 PM - 5:15 PM	76	79	15	53	91	128	74	288	10	14	342	46
5:15 PM - 5:30 PM	66	56	15	72	78	100	76	376	23	21	394	51
5:30 PM - 5:45 PM	85	63	13	66	93	98	94	324	25	20	315	43
5:45 PM - 6:00 PM	61	55	8	55	90	75	95	300	30	21	250	42
TOTAL	1,206	1,084	301	933	1,162	1,357	1,325	5,154	374	378	5,410	872
Peak Hour 4:30 PM - 5:30 PM	**263**	**255**	**62**	**246**	**326**	**398**	**316**	**1,316**	**82**	**84**	**1,491**	**209**

Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

County Volusia **City** Port Orange

Intersection Clyde Morris Blvd **&** Dunlawton Ave

Date January 14, 2020 **Trucks**

VHB Project #: 63308.03

AM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
7:00 AM - 7:15 AM	1	0	1	2	1	0	1	5	0	0	5	0
7:15 AM - 7:30 AM	1	1	1	1	2	3	0	5	1	0	9	2
7:30 AM - 7:45 AM	0	0	0	1	1	1	1	11	1	0	11	0
7:45 AM - 8:00 AM	0	0	0	1	1	5	2	6	1	1	5	1
8:00 AM - 8:15 AM	0	3	1	1	2	0	1	4	0	1	10	1
8:15 AM - 8:30 AM	1	3	0	2	0	2	0	11	1	1	10	1
8:30 AM - 8:45 AM	1	1	0	0	1	2	2	13	1	0	11	3
8:45 AM - 9:00 AM	2	2	0	0	1	0	1	10	1	0	3	0
TOTAL	6	10	3	8	9	13	8	65	6	3	64	8
Peak Hour												
7:30 AM - 8:30 AM	**1**	**6**	**1**	**5**	**4**	**8**	**4**	**32**	**3**	**3**	**36**	**3**
	1%	2%	1%	3%	2%	3%	1%	3%	1%	3%	4%	2%

Mid-day

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
12:00 PM - 12:15 PM	0	3	0	0	0	0	1	14	1	0	9	4
12:15 PM - 12:30 PM	1	0	0	1	0	0	2	7	2	0	8	0
12:30 PM - 12:45 PM	0	1	0	1	1	1	1	10	0	0	5	0
12:45 PM - 1:00 PM	1	0	0	0	0	0	1	7	1	1	12	0
1:00 PM - 1:15 PM	0	1	0	1	1	0	1	8	0	0	9	0
1:15 PM - 1:30 PM	1	1	0	2	2	1	2	13	1	1	4	1
1:30 PM - 1:45 PM	1	1	0	0	1	1	1	8	1	0	3	0
1:45 PM - 2:00 PM	1	0	0	1	2	2	2	7	0	1	5	3
TOTAL	5	7	0	6	7	5	11	74	6	3	55	8
Peak Hour												
12:00 PM - 1:00 PM	**2**	**4**	**0**	**2**	**1**	**1**	**5**	**38**	**4**	**1**	**34**	**4**
	1%	2%	0%	1%	1%	0%	1%	3%	4%	1%	3%	2%

PM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2:00 PM - 2:15 PM	2	1	0	1	4	0	0	6	2	0	11	0
2:15 PM - 2:30 PM	0	1	0	2	2	0	0	6	1	1	11	0
2:30 PM - 2:45 PM	2	1	0	0	1	0	1	8	1	1	11	0
2:45 PM - 3:00 PM	4	1	0	0	0	1	4	9	1	0	9	1
3:00 PM - 3:15 PM	0	0	0	0	1	0	0	8	0	0	7	0
3:15 PM - 3:30 PM	0	1	0	2	1	2	2	6	1	0	8	0
3:30 PM - 3:45 PM	0	2	0	0	2	0	2	2	1	2	5	0
3:45 PM - 4:00 PM	1	1	0	2	0	1	0	3	2	0	8	0
4:00 PM - 4:15 PM	0	1	0	0	0	2	0	7	0	0	4	0
4:15 PM - 4:30 PM	3	1	0	0	1	0	1	6	1	0	6	2
4:30 PM - 4:45 PM	1	2	0	0	1	1	1	5	2	0	3	0
4:45 PM - 5:00 PM	0	1	0	0	1	0	0	3	1	0	5	1
5:00 PM - 5:15 PM	0	1	1	0	0	1	3	3	0	0	3	0
5:15 PM - 5:30 PM	1	0	0	1	0	0	0	2	2	0	3	2
5:30 PM - 5:45 PM	1	0	0	0	0	0	2	1	2	0	3	0
5:45 PM - 6:00 PM	0	1	0	0	2	1	1	5	1	0	1	0
TOTAL	15	15	1	8	16	9	17	80	18	4	98	6
Peak Hour												
4:30 PM - 5:30 PM	**2**	**4**	**1**	**1**	**2**	**2**	**4**	**13**	**5**	**0**	**14**	**3**
	1%	2%	2%	0%	1%	1%	1%	1%	6%	0%	1%	1%

Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

County Volusia **City** Port Orange

Intersection Clyde Morris Blvd **&** Dunlawton Ave

Date January 14, 2020 **U-Turns & RTOR**

VHB Project #: 63308.03

AM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
7:00 AM - 7:15 AM	0	0	5	0	0	22	0	0	0	0	0	6
7:15 AM - 7:30 AM	0	0	4	0	0	28	5	0	0	0	0	4
7:30 AM - 7:45 AM	0	0	3	0	0	37	7	0	0	1	0	10
7:45 AM - 8:00 AM	0	0	3	0	0	34	3	0	3	1	0	18
8:00 AM - 8:15 AM	0	0	1	0	0	19	6	0	10	1	0	25
8:15 AM - 8:30 AM	0	0	3	0	0	16	9	0	4	1	0	10
8:30 AM - 8:45 AM	0	0	2	0	0	28	7	0	1	3	0	14
8:45 AM - 9:00 AM	0	0	2	0	0	35	4	0	1	1	0	10
TOTAL	0	0	23	0	0	219	41	0	19	8	0	97
Peak Hour												
7:30 AM - 8:30 AM	**0**	**0**	**10**	**0**	**0**	**106**	**25**	**0**	**17**	**4**	**0**	**63**

Mid-day

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
12:00 PM - 12:15 PM	0	0	4	0	0	24	10	0	1	7	0	18
12:15 PM - 12:30 PM	0	0	2	0	0	39	13	0	2	3	0	20
12:30 PM - 12:45 PM	0	0	5	0	0	34	13	0	5	7	0	20
12:45 PM - 1:00 PM	0	0	9	0	0	28	13	0	0	5	0	24
1:00 PM - 1:15 PM	0	0	3	0	0	18	8	0	0	7	0	22
1:15 PM - 1:30 PM	0	0	5	0	0	36	2	0	0	2	0	31
1:30 PM - 1:45 PM	0	0	1	0	0	16	19	0	0	0	0	21
1:45 PM - 2:00 PM	0	0	10	0	0	37	10	0	4	6	0	20
TOTAL	0	0	39	0	0	232	88	0	12	37	0	176
Peak Hour												
12:00 PM - 1:00 PM	**0**	**0**	**20**	**0**	**0**	**125**	**49**	**0**	**8**	**22**	**0**	**82**

PM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2:00 PM - 2:15 PM	0	0	4	0	0	40	10	0	8	10	0	17
2:15 PM - 2:30 PM	0	0	5	0	0	38	11	0	1	2	0	19
2:30 PM - 2:45 PM	0	0	1	0	0	44	12	0	1	4	0	23
2:45 PM - 3:00 PM	0	0	9	0	0	35	11	0	3	5	0	23
3:00 PM - 3:15 PM	0	0	2	0	0	38	9	0	2	3	0	23
3:15 PM - 3:30 PM	0	0	6	0	0	31	11	0	1	3	0	33
3:30 PM - 3:45 PM	0	0	5	0	0	22	13	0	0	2	0	15
3:45 PM - 4:00 PM	0	0	3	0	0	23	13	0	2	3	0	17
4:00 PM - 4:15 PM	0	0	5	0	0	24	5	0	3	3	0	22
4:15 PM - 4:30 PM	0	0	2	0	0	20	10	0	0	5	0	18
4:30 PM - 4:45 PM	0	0	2	1	0	36	13	0	0	3	0	20
4:45 PM - 5:00 PM	0	0	4	0	0	40	12	0	2	6	0	23
5:00 PM - 5:15 PM	0	0	6	0	0	47	16	0	1	3	0	19
5:15 PM - 5:30 PM	0	0	1	0	0	47	14	0	1	4	0	21
5:30 PM - 5:45 PM	0	0	6	0	0	43	15	0	2	2	0	25
5:45 PM - 6:00 PM	0	0	1	0	0	44	23	0	4	3	0	24
TOTAL	0	0	62	1	0	572	198	0	31	61	0	342
Peak Hour												
4:30 PM - 5:30 PM	**0**	**0**	**13**	**1**	**0**	**170**	**55**	**0**	**4**	**16**	**0**	**83**

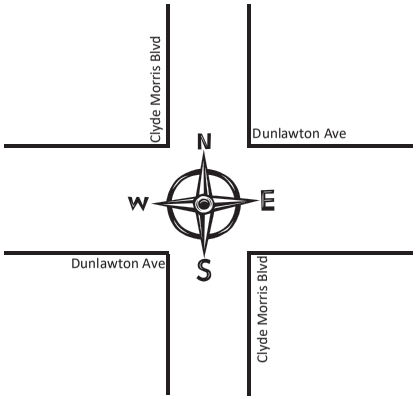
Pedestrian & Bicycle Summary

Project #: 63308.03 **NB/SB:** Clyde Morris Blvd

Date: 1/14/2020 **EB/WB:** Dunlawton Ave

		Hour								
		7:00 (1)	8:00 (2)	12:00 (3)	13:00 (4)	14:00 (5)	15:00 (6)	16:00 (7)	17:00 (8)	
Eastbound ▶	Bike	0	1	2	0	0	1	2	1	7
	Ped	0	0	1	0	2	0	0	2	5
Westbound ◀	Bike	0	0	1	1	2	0	2	2	8
	Ped	0	3	0	1	0	1	0	1	6

Hour	Southbound Ped ▼	Southbound Bike	Northbound Ped ▲	Northbound Bike
1 7:00	0	0	0	0
2 8:00	1	0	0	0
3 12:00	1	0	0	0
4 13:00	2	0	2	0
5 14:00	1	1	1	0
6 15:00	1	1	4	0
7 16:00	6	0	2	1
8 17:00	1	0	2	1
	13	2	11	2



Hour	Southbound Ped ▼	Southbound Bike	Northbound Ped ▲	Northbound Bike
1 7:00	0	0	0	0
2 8:00	1	0	2	0
3 12:00	0	0	2	1
4 13:00	0	0	2	0
5 14:00	4	0	0	0
6 15:00	0	0	4	0
7 16:00	1	0	4	0
8 17:00	1	0	0	0
	7	0	14	1

		7:00 (1)	8:00 (2)	12:00 (3)	13:00 (4)	14:00 (5)	15:00 (6)	16:00 (7)	17:00 (8)	
Eastbound ▶	Bike	0	0	0	0	1	0	0	0	1
	Ped	0	1	0	0	0	0	3	3	7
Westbound ◀	Bike	0	0	0	0	1	0	1	0	2
	Ped	0	0	0	2	1	4	1	2	10

Hour

73 23

Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

County Volusia **City** Port Orange

Intersection Nova Rd **&** Dunlawton Ave

Date January 14, 2020 **All Vehicles**

VHB Project #: 63308.03

AM Peak Hour

	Nova Rd			Nova Rd			Dunlawton Ave			Dunlawton Ave		
	Northbound			Southbound			Eastbound			Westbound		
Time Period	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
7:00 AM - 7:15 AM	57	105	8	24	91	34	26	132	30	15	99	17
7:15 AM - 7:30 AM	70	137	26	32	79	51	55	197	49	18	168	16
7:30 AM - 7:45 AM	76	208	27	34	113	58	74	191	43	23	155	23
7:45 AM - 8:00 AM	83	183	32	54	98	66	52	253	63	31	188	19
8:00 AM - 8:15 AM	82	145	18	29	102	58	52	221	35	29	193	22
8:15 AM - 8:30 AM	100	120	29	38	117	75	64	206	41	24	156	17
8:30 AM - 8:45 AM	76	96	27	40	89	63	64	255	45	34	180	28
8:45 AM - 9:00 AM	70	129	31	35	121	46	50	226	47	37	220	26
TOTAL	614	1,123	198	286	810	451	437	1,681	353	211	1,359	168
Peak Hour												
7:30 AM - 8:30 AM	**341**	**656**	**106**	**155**	**430**	**257**	**242**	**871**	**182**	**107**	**692**	**81**

Mid-day Peak Hour

	Nova Rd			Nova Rd			Dunlawton Ave			Dunlawton Ave		
	Northbound			Southbound			Eastbound			Westbound		
Time Period	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
12:00 PM - 12:15 PM	84	97	39	44	143	62	81	260	45	83	236	24
12:15 PM - 12:30 PM	100	108	30	54	160	60	98	220	71	71	207	10
12:30 PM - 12:45 PM	91	102	26	54	118	53	85	246	54	73	231	11
12:45 PM - 1:00 PM	81	107	37	47	146	79	66	214	53	65	181	14
1:00 PM - 1:15 PM	82	134	28	58	126	76	105	267	58	62	225	12
1:15 PM - 1:30 PM	67	123	29	41	119	68	110	298	64	86	243	22
1:30 PM - 1:45 PM	88	163	29	65	146	100	81	244	54	73	185	25
1:45 PM - 2:00 PM	108	128	26	65	125	68	98	268	70	74	252	16
TOTAL	701	962	244	428	1,083	566	724	2,017	469	587	1,760	134
Peak Hour												
1:00 PM - 2:00 PM	**345**	**548**	**112**	**229**	**516**	**312**	**394**	**1,077**	**246**	**295**	**905**	**75**

PM Peak Hour

	Nova Rd			Nova Rd			Dunlawton Ave			Dunlawton Ave		
	Northbound			Southbound			Eastbound			Westbound		
Time Period	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2:00 PM - 2:15 PM	76	148	42	63	144	82	87	238	48	66	203	34
2:15 PM - 2:30 PM	87	148	30	48	151	78	98	256	50	76	211	28
2:30 PM - 2:45 PM	64	141	20	42	124	81	94	275	62	59	248	26
2:45 PM - 3:00 PM	73	138	31	65	139	77	89	273	77	70	204	25
3:00 PM - 3:15 PM	86	163	34	65	169	89	92	224	74	68	220	37
3:15 PM - 3:30 PM	80	116	25	55	132	63	100	263	60	70	180	31
3:30 PM - 3:45 PM	74	130	31	57	154	77	81	286	69	43	230	32
3:45 PM - 4:00 PM	85	147	36	74	174	81	82	274	65	61	178	21
4:00 PM - 4:15 PM	73	134	22	65	188	70	114	238	51	76	213	14
4:15 PM - 4:30 PM	87	124	28	60	144	64	87	290	64	67	230	12
4:30 PM - 4:45 PM	94	135	19	80	168	82	101	272	69	64	186	11
4:45 PM - 5:00 PM	68	133	22	55	200	86	98	247	66	65	190	7
5:00 PM - 5:15 PM	75	125	24	55	192	60	100	247	71	71	272	45
5:15 PM - 5:30 PM	90	134	24	67	179	86	88	274	62	67	250	26
5:30 PM - 5:45 PM	63	151	24	60	228	77	80	221	45	63	213	27
5:45 PM - 6:00 PM	69	138	15	44	141	71	87	230	46	66	144	33
TOTAL	1,244	2,205	427	955	2,627	1,224	1,478	4,108	979	1,052	3,372	409
Peak Hour												
4:30 PM - 5:30 PM	**327**	**527**	**89**	**257**	**739**	**314**	**387**	**1,040**	**268**	**267**	**898**	**89**

Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

County Volusia **City** Port Orange

Intersection Nova Rd **&** Dunlawton Ave

Date January 14, 2020 **Trucks**

VHB Project #: 63308.03

AM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
7:00 AM - 7:15 AM	4	1	0	2	5	2	0	1	2	0	6	0
7:15 AM - 7:30 AM	0	3	1	0	4	0	2	6	3	0	3	0
7:30 AM - 7:45 AM	6	2	0	2	3	1	3	9	1	0	7	0
7:45 AM - 8:00 AM	3	1	0	1	1	0	1	5	0	0	6	0
8:00 AM - 8:15 AM	5	0	0	0	6	3	3	3	0	1	10	1
8:15 AM - 8:30 AM	3	7	1	2	4	4	1	9	1	0	6	1
8:30 AM - 8:45 AM	3	1	0	1	5	0	3	9	2	0	5	0
8:45 AM - 9:00 AM	1	3	1	0	7	0	1	4	0	0	9	0
TOTAL	25	18	3	8	35	10	14	46	9	1	52	2
Peak Hour												
7:30 AM - 8:30 AM	**17**	**10**	**1**	**5**	**14**	**8**	**8**	**26**	**2**	**1**	**29**	**2**
	5%	2%	1%	3%	3%	3%	3%	3%	1%	1%	4%	2%

Mid-day

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
12:00 PM - 12:15 PM	4	2	1	1	5	2	2	4	0	1	6	2
12:15 PM - 12:30 PM	0	5	2	2	2	1	5	6	0	1	4	0
12:30 PM - 12:45 PM	2	3	1	3	1	1	2	9	1	1	3	0
12:45 PM - 1:00 PM	1	6	0	1	2	1	0	8	0	0	2	2
1:00 PM - 1:15 PM	5	0	0	0	2	0	4	3	1	0	8	0
1:15 PM - 1:30 PM	0	2	0	1	0	2	2	8	0	0	4	1
1:30 PM - 1:45 PM	2	3	0	1	2	3	1	5	0	1	3	2
1:45 PM - 2:00 PM	2	3	0	1	5	1	1	5	1	0	3	0
TOTAL	16	24	4	10	19	11	17	48	3	4	33	7
Peak Hour												
1:00 PM - 2:00 PM	**9**	**8**	**0**	**3**	**9**	**6**	**8**	**21**	**2**	**1**	**18**	**3**
	3%	1%	0%	1%	2%	2%	2%	2%	1%	0%	2%	4%

PM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2:00 PM - 2:15 PM	3	3	0	3	2	1	2	4	0	2	4	0
2:15 PM - 2:30 PM	4	9	1	0	1	1	3	4	0	1	4	0
2:30 PM - 2:45 PM	3	3	0	3	2	0	2	10	2	0	5	0
2:45 PM - 3:00 PM	0	4	0	2	1	0	0	6	0	1	3	0
3:00 PM - 3:15 PM	3	8	1	1	2	1	2	5	2	0	6	2
3:15 PM - 3:30 PM	0	2	1	1	2	2	3	5	0	1	5	1
3:30 PM - 3:45 PM	2	2	0	0	2	0	1	5	0	0	4	0
3:45 PM - 4:00 PM	3	6	2	1	5	2	3	2	1	1	3	0
4:00 PM - 4:15 PM	2	4	0	0	1	2	3	6	0	1	7	1
4:15 PM - 4:30 PM	3	4	1	0	2	1	2	4	0	0	4	0
4:30 PM - 4:45 PM	1	1	0	1	1	1	0	4	0	0	1	0
4:45 PM - 5:00 PM	5	4	0	0	2	1	0	4	0	0	2	0
5:00 PM - 5:15 PM	3	0	0	0	2	1	0	3	1	1	6	0
5:15 PM - 5:30 PM	0	2	1	0	0	0	0	4	0	0	2	0
5:30 PM - 5:45 PM	2	1	0	0	1	0	0	0	0	0	2	0
5:45 PM - 6:00 PM	3	2	0	0	1	0	0	4	0	0	1	0
TOTAL	37	55	7	12	27	13	21	70	6	8	59	4
Peak Hour												
4:30 PM - 5:30 PM	**9**	**7**	**1**	**1**	**5**	**3**	**0**	**15**	**1**	**1**	**11**	**0**
	3%	1%	1%	0%	1%	1%	0%	1%	0%	0%	1%	0%

Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

County	Volusia	**City**	Port Orange
Intersection	Nova Rd	**&**	Dunlawton Ave
Date	January 14, 2020		**U-Turns & RTOR**
		VHB Project #:	63308.03

AM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
7:00 AM - 7:15 AM	0	0	3	0	0	14	6	0	8	5	0	7
7:15 AM - 7:30 AM	0	0	11	4	0	40	4	0	5	5	0	0
7:30 AM - 7:45 AM	0	0	7	0	0	21	4	0	16	5	0	5
7:45 AM - 8:00 AM	0	0	9	0	0	34	4	0	23	6	0	0
8:00 AM - 8:15 AM	1	0	10	0	0	36	1	0	8	10	0	1
8:15 AM - 8:30 AM	0	0	7	2	0	21	6	0	13	4	0	4
8:30 AM - 8:45 AM	1	0	8	0	0	41	6	0	11	8	0	2
8:45 AM - 9:00 AM	0	0	10	1	0	33	6	0	23	14	0	6
TOTAL	2	0	65	7	0	240	37	0	107	57	0	25
Peak Hour												
8:00 AM - 9:00 AM	**2**	**0**	**35**	**3**	**0**	**131**	**19**	**0**	**55**	**36**	**0**	**13**

Mid-day

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
12:00 PM - 12:15 PM	0	0	10	0	0	18	6	0	22	19	0	2
12:15 PM - 12:30 PM	1	0	9	1	0	7	5	0	26	20	0	0
12:30 PM - 12:45 PM	0	0	6	2	0	4	5	0	22	22	0	1
12:45 PM - 1:00 PM	2	0	7	0	0	14	7	0	33	10	0	0
1:00 PM - 1:15 PM	0	0	13	1	0	4	9	0	32	18	0	1
1:15 PM - 1:30 PM	2	0	13	1	0	13	8	0	27	17	0	1
1:30 PM - 1:45 PM	1	0	12	2	0	12	8	0	22	15	0	0
1:45 PM - 2:00 PM	2	0	14	0	0	12	10	0	36	22	0	3
TOTAL	8	0	84	7	0	84	58	0	220	143	0	8
Peak Hour												
1:00 PM - 2:00 PM	**5**	**0**	**52**	**4**	**0**	**41**	**35**	**0**	**117**	**72**	**0**	**5**

PM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2:00 PM - 2:15 PM	0	0	12	1	0	38	3	0	23	15	0	3
2:15 PM - 2:30 PM	3	0	10	0	0	35	1	0	28	22	0	3
2:30 PM - 2:45 PM	2	0	8	0	0	27	4	0	33	11	0	7
2:45 PM - 3:00 PM	0	0	15	0	0	32	7	0	44	16	0	3
3:00 PM - 3:15 PM	0	0	5	0	0	32	8	0	43	15	0	3
3:15 PM - 3:30 PM	2	0	3	0	0	24	4	0	37	22	0	1
3:30 PM - 3:45 PM	1	0	7	0	0	37	9	0	38	9	0	6
3:45 PM - 4:00 PM	1	0	5	1	0	32	5	0	41	13	0	2
4:00 PM - 4:15 PM	1	0	3	0	0	20	9	0	25	19	0	1
4:15 PM - 4:30 PM	2	0	4	0	0	20	5	0	32	12	0	2
4:30 PM - 4:45 PM	3	0	3	0	0	36	5	0	42	17	0	5
4:45 PM - 5:00 PM	1	0	5	0	0	27	7	0	38	15	0	4
5:00 PM - 5:15 PM	1	0	6	2	0	16	6	0	27	20	0	5
5:15 PM - 5:30 PM	1	0	8	5	0	46	5	0	30	16	0	6
5:30 PM - 5:45 PM	1	0	11	3	0	32	3	0	10	20	0	0
5:45 PM - 6:00 PM	0	0	3	2	0	32	7	0	14	21	0	6
TOTAL	19	0	108	14	0	486	88	0	505	263	0	57
Peak Hour												
4:30 PM - 5:30 PM	**6**	**0**	**22**	**7**	**0**	**125**	**23**	**0**	**137**	**68**	**0**	**20**

Pedestrian & Bicycle Summary

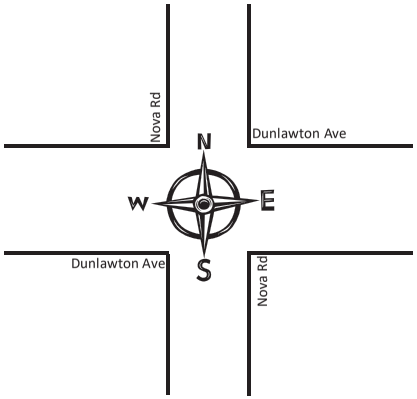
Project #: 63308.03
Date: 1/14/2020

NB/SB: Nova Rd
EB/WB: Dunlawton Ave

Hour

		7:00 (1)	8:00 (2)	12:00 (3)	13:00 (4)	14:00 (5)	15:00 (6)	16:00 (7)	17:00 (8)	
Eastbound ▶	Bike	0	0	0	1	0	0	0	0	1
	Ped	0	0	0	0	0	0	0	1	1
Westbound ◀	Bike	0	0	0	0	0	0	0	0	0
	Ped	0	1	0	1	1	0	1	0	4

Hour	Southbound Ped ▼	Southbound Bike ▼	Northbound Ped ▲	Northbound Bike ▲
1 7:00	0	0	0	1
2 8:00	1	0	0	2
3 12:00	0	0	0	0
4 13:00	1	1	1	2
5 14:00	2	0	0	1
6 15:00	0	3	0	3
7 16:00	2	3	0	0
8 17:00	1	4	1	1
	7	11	2	10



Hour	Southbound Ped ▼	Southbound Bike ▼	Northbound Ped ▲	Northbound Bike ▲
1 7:00	0	0	0	0
2 8:00	0	0	0	0
3 12:00	0	0	0	0
4 13:00	0	0	3	0
5 14:00	0	0	0	0
6 15:00	2	0	3	0
7 16:00	1	0	0	0
8 17:00	0	0	0	0
	3	0	6	0

		7:00 (1)	8:00 (2)	12:00 (3)	13:00 (4)	14:00 (5)	15:00 (6)	16:00 (7)	17:00 (8)	
Eastbound ▶	Bike	1	1	0	1	0	1	1	0	5
	Ped	0	0	0	1	0	0	2	0	3
Westbound ◀	Bike	1	0	0	0	0	2	0	0	3
	Ped	0	0	0	0	2	0	0	1	3

Hour

29 **30**

APPENDIX B:

Crash Data

Dunlawton Avenue at Clyde Morris Boulevard - Crash Data Summary (1/1/2017 -12/31/2019)

No.	Crash ID	Date	Day	Time	Crash Type	Crash Severity	Fatalities	Injuries	Property Damage	Day/Night	Wet/Dry
1	86751942	7/11/2017	Tuesday	3:25 PM	Rear End	Injury	0	1	$2,000	Daylight	Dry
2	87739506	4/22/2019	Monday	12:11 PM	Sideswipe	Injury	0	1	$3,000	Daylight	Dry
3	86396353	2/10/2017	Friday	10:33 AM	Sideswipe	Property Damage Only	0	0	$1,000	Daylight	Dry
4	86751518	7/9/2017	Sunday	12:00 PM	Other	Property Damage Only	0	0	$2,000	Daylight	Dry
5	87739365	11/30/2019	Saturday	7:22 PM	Left Turn	Injury	0	1	$2,000	Dark - Lighted	Dry
6	86751898	8/14/2017	Monday	10:37 AM	Rear End	Property Damage Only	0	0	$2,100	Daylight	Dry
7	87739032	3/25/2019	Monday	4:00 PM	Rear End	Injury	0	1	$500	Daylight	Dry
8	87509777	11/22/2017	Wednesday	7:43 AM	Sideswipe	Property Damage Only	0	0	$3,000	Daylight	Wet
9	86396443	4/14/2017	Friday	12:39 PM	Unknown	Property Damage Only	0	0	$3,500	Daylight	Dry
10	87740049	8/1/2019	Thursday	2:16 PM	Rear End	Injury	0	1	$1,000	Daylight	Dry
11	87510615	8/22/2018	Wednesday	3:58 PM	Rear End	Property Damage Only	0	0	$3,500	Daylight	Dry
12	86395781	11/14/2017	Tuesday	2:26 PM	Left Turn	Property Damage Only	0	0	$3,000	Daylight	Dry
13	87740468	11/24/2019	Sunday	5:45 PM	Other	Property Damage Only	0	0	$750	Daylight	Dry
14	86752047	11/9/2017	Thursday	12:37 PM	Rear End	Injury	0	1	$4,000	Daylight	Dry
15	87738420	2/23/2019	Saturday	8:45 AM	Sideswipe	Property Damage Only	0	0	$1,900	Daylight	Dry
16	87739371	6/6/2019	Thursday	5:50 PM	Other	Property Damage Only	0	0	$6,500	Daylight	Dry
17	86396155	2/20/2017	Monday	6:13 PM	Sideswipe	Property Damage Only	0	0	$2,000	Dark - Lighted	Dry
18	87740611	11/5/2019	Tuesday	4:25 PM	Rear End	Property Damage Only	0	0	$7,000	Daylight	Wet
19	87739254	4/2/2019	Tuesday	1:50 PM	Rear End	Property Damage Only	0	0	$10,000	Daylight	Dry
20	87510139	9/14/2018	Friday	5:59 AM	Other	Property Damage Only	0	0	$10,001	Dark - Not Lighted	Dry
21	86752231	12/4/2017	Monday	11:57 AM	Angle	Injury	0	1	$10,000	Daylight	Dry
22	87509782	3/16/2018	Friday	12:24 PM	Rear End	Property Damage Only	0	0	$1,000	Daylight	Dry
23	86751541	10/2/2017	Monday	5:35 PM	Sideswipe	Property Damage Only	0	0	$1,500	Daylight	Dry
24	87740420	10/3/2019	Thursday	12:13 PM	Sideswipe	Property Damage Only	0	0	$4,000	Daylight	Dry
25	87739867	9/9/2019	Monday	3:26 PM	Pedestrian	Injury	0	1	$50	Daylight	Dry
26	87510439	5/21/2018	Monday	3:14 PM	Rear End	Property Damage Only	0	0	$1,000	Daylight	Wet
27	86752080	2/11/2018	Sunday	6:58 PM	Unknown	Property Damage Only	0	0	$600	Dark - Lighted	Dry
28	86751503	7/31/2018	Tuesday	12:12 PM	Rear End	Property Damage Only	0	0	$5,000	Daylight	Dry
29	87739625	5/22/2019	Wednesday	2:20 PM	Rear End	Property Damage Only	0	0	$4,000	Daylight	Dry
30	87739925	7/4/2019	Thursday	1:50 PM	Sideswipe	Property Damage Only	0	0	$6,000	Daylight	Dry
31	87509789	1/21/2018	Sunday	12:50 PM	Rear End	Property Damage Only	0	0	$3,000	Daylight	Dry
32	87739634	6/6/2019	Thursday	11:56 AM	Sideswipe	Property Damage Only	0	0	$1,500	Daylight	Dry
33	87510203	4/5/2018	Thursday	10:58 AM	Rear End	Property Damage Only	0	0	$7,200	Daylight	Dry
34	86396277	2/6/2017	Monday	4:09 PM	Other	Property Damage Only	0	0	$3,000	Daylight	Dry
35	87740098	10/25/2019	Friday	11:57 AM	Rear End	Property Damage Only	0	0	$2,600	Daylight	Dry
36	86396416	4/13/2017	Thursday	7:49 AM	Rear End	Injury	0	1	$800	Daylight	Dry
37	87739246	4/6/2019	Saturday	3:19 PM	Rear End	Injury	0	1	$200	Daylight	Dry
38	87509973	6/14/2018	Thursday	6:34 PM	Left Turn	Property Damage Only	0	0	$9,000	Dusk	Wet
39	86396281	1/14/2018	Sunday	11:42 AM	Unknown	Property Damage Only	0	0	$2,000	Daylight	Dry
40	86396185	1/25/2017	Wednesday	1:59 PM	Rear End	Property Damage Only	0	0	$300	Daylight	Dry
41	86751462	5/10/2017	Wednesday	3:09 PM	Right Turn	Property Damage Only	0	0	$5,000	Daylight	Dry
42	86751460	6/20/2017	Tuesday	11:59 AM	Rear End	Property Damage Only	0	0	$15,000	Daylight	Dry
43	87510091	8/24/2018	Friday	6:57 AM	Rear End	Property Damage Only	0	0	$1,500	Daylight	Dry
44	87510421	2/3/2019	Sunday	9:00 AM	Other	Injury	0	1	$30,000	Daylight	Dry
45	86751727	10/20/2017	Friday	6:08 AM	Off Road	Property Damage Only	0	0	$904	Dark - Not Lighted	Dry
46	87739485	5/1/2019	Wednesday	5:30 PM	Rear End	Property Damage Only	0	0	$3,500	Daylight	Dry
47	86396437	4/13/2017	Thursday	4:16 PM	Rear End	Property Damage Only	0	0	$3,700	Daylight	Dry
48	87739708	4/23/2019	Tuesday	3:01 PM	Sideswipe	Property Damage Only	0	0	$1,000	Daylight	Dry
49	86396515	3/1/2017	Wednesday	9:50 AM	Sideswipe	Property Damage Only	0	0	$3,001	Daylight	Dry
50	87738964	12/17/2018	Monday	12:02 PM	Sideswipe	Property Damage Only	0	0	$1,000	Daylight	Dry
51	87510634	7/23/2018	Monday	4:38 PM	Sideswipe	Property Damage Only	0	0	$2,000	Daylight	Wet
52	86752325	9/28/2017	Thursday	6:12 PM	Rear End	Injury	0	1	$0	Daylight	Dry
53	87510632	7/24/2018	Tuesday	7:31 AM	Rear End	Property Damage Only	0	0	$1,000	Daylight	Dry
54	86751973	1/27/2018	Saturday	11:35 AM	Rear End	Injury	0	1	$4,000	Daylight	Dry
55	86752035	2/26/2018	Monday	10:50 AM	Sideswipe	Property Damage Only	0	0	$0	Daylight	Dry
56	86751859	6/16/2017	Friday	10:25 AM	Rear End	Injury	0	1	$6,000	Daylight	Dry
57	86396279	2/9/2017	Thursday	2:33 PM	Angle	Injury	0	1	$4,500	Daylight	Dry
58	87739420	4/26/2019	Friday	6:41 PM	Other	Property Damage Only	0	0	$5,000	Daylight	Dry
59	86752133	3/1/2018	Thursday	11:45 AM	Sideswipe	Property Damage Only	0	0	$450	Daylight	Dry
60	87738668	10/4/2018	Thursday	9:08 AM	Sideswipe	Property Damage Only	0	0	$2,000	Daylight	Dry
61	87739427	3/1/2019	Friday	3:38 PM	Rear End	Property Damage Only	0	0	$1,500	Daylight	Dry
62	87740370	11/22/2019	Friday	8:54 AM	Sideswipe	Property Damage Only	0	0	$6,000	Daylight	Dry
63	87739308	2/14/2019	Thursday	3:32 PM	Rear End	Property Damage Only	0	0	$5,000	Daylight	Dry
64	87510389	4/20/2018	Friday	9:30 AM	Rear End	Property Damage Only	0	0	$3,100	Daylight	Dry
65	87510107	2/5/2018	Monday	12:45 PM	Off Road	Injury	0	1	$10,100	Daylight	Dry
66	87740288	10/1/2019	Tuesday	10:42 AM	Rear End	Injury	0	1	$400	Daylight	Dry
67	86752353	8/9/2018	Thursday	2:39 PM	Rear End	Injury	0	1	$4,000	Daylight	Dry
68	87510560	9/23/2018	Sunday	2:40 PM	Other	Property Damage Only	0	0	$1,500	Daylight	Dry
69	87738809	12/6/2018	Thursday	12:50 PM	Rear End	Injury	0	2	$2,000	Daylight	Dry
70	87739567	5/6/2019	Monday	1:46 PM	Sideswipe	Property Damage Only	0	0	$500	Daylight	Dry
71	86396317	2/2/2017	Thursday	8:35 AM	Rear End	Injury	0	2	$1,200	Daylight	Dry
72	87738455	9/10/2018	Monday	6:48 AM	Rear End	Injury	0	1	$2,500	Dusk	Dry
73	87510149	2/26/2018	Monday	3:58 PM	Rear End	Property Damage Only	0	0	$1,500	Daylight	Dry
74	86396456	3/31/2017	Friday	11:45 PM	Rear End	Property Damage Only	0	0	$2,000	Dark - Lighted	Dry
75	86752405	6/21/2018	Thursday	11:20 AM	Rear End	Injury	0	1	$10,000	Daylight	Dry
76	86752330	10/3/2017	Tuesday	4:05 PM	Rear End	Injury	0	1	$7,000	Daylight	Dry
77	87739015	12/17/2018	Monday	4:20 PM	Rear End	Injury	0	1	$5,000	Daylight	Dry
78	86751618	3/28/2017	Tuesday	3:01 PM	Rear End	Property Damage Only	0	0	$5,000	Daylight	Dry
79	87739874	7/4/2019	Thursday	2:30 PM	Sideswipe	Property Damage Only	0	0	$5,000	Daylight	Dry
80	86751994	7/10/2017	Monday	12:14 PM	Rear End	Injury	0	1	$2,500	Daylight	Dry
81	87740372	11/26/2019	Tuesday	12:31 PM	Sideswipe	Property Damage Only	0	0	$1,000	Daylight	Dry
82	86396094	3/21/2017	Tuesday	6:41 PM	Rear End	Injury	0	2	$45,000	Daylight	Dry

Dunlawton Avenue at Clyde Morris Boulevard - Crash Data Summary (1/1/2017 -12/31/2019)

No.	Crash ID	Date	Day	Time	Crash Type	Crash Severity	Fatalities	Injuries	Property Damage	Day/Night	Wet/Dry
83	86752383	2/28/2018	Wednesday	5:20 PM	Rear End	Property Damage Only	0	0	$2,500	Daylight	Dry
84	86751474	11/27/2017	Monday	3:42 PM	Other	Property Damage Only	0	0	$1,500	Daylight	Dry
85	86752398	2/9/2018	Friday	3:10 PM	Rear End	Property Damage Only	0	0	$600	Daylight	Dry
86	87740160	9/21/2019	Saturday	8:31 PM	Other	Property Damage Only	0	0	$7,000	Dark - Lighted	Dry
87	87510426	12/10/2018	Monday	5:55 PM	Rear End	Injury	0	1	$4,000	Dark - Lighted	Dry
88	87509942	2/23/2018	Friday	11:42 AM	Other	Property Damage Only	0	0	$2,000	Daylight	Dry
89	86751655	8/16/2017	Wednesday	7:31 AM	Rear End	Property Damage Only	0	0	$3,000	Daylight	Dry
90	87510585	4/30/2019	Tuesday	5:00 PM	Rear End	Property Damage Only	0	0	$1,001	Daylight	Dry
91	87510263	3/3/2018	Saturday	6:35 AM	Angle	Injury	0	0	$7,000	Dawn	Dry
92	86752168	9/5/2017	Tuesday	7:50 AM	Sideswipe	Property Damage Only	0	0	$2,500	Daylight	Dry
93	86751463	5/10/2017	Wednesday	11:56 AM	Left Turn	Property Damage Only	0	0	$4,500	Daylight	Dry
94	87739479	3/7/2019	Thursday	2:24 PM	Angle	Injury	0	2	$3,000	Daylight	Dry
95	86751839	12/2/2017	Saturday	3:33 PM	Other	Property Damage Only	0	0	$600	Daylight	Dry
96	86751749	10/19/2017	Thursday	10:25 PM	Sideswipe	Property Damage Only	0	0	$700	Dark - Lighted	Dry
97	87739786	5/3/2019	Friday	3:18 PM	Rear End	Property Damage Only	0	0	$3,000	Daylight	Dry
98	87739825	8/28/2019	Wednesday	9:04 AM	Rear End	Property Damage Only	0	0	$5,000	Daylight	Dry
99	87739866	7/15/2019	Monday	3:36 PM	Rear End	Property Damage Only	0	0	$1,500	Daylight	Dry
100	87510192	3/1/2018	Thursday	5:54 AM	Bicycle	Injury	0	0	$0	Dark - Lighted	Dry
101	87510271	8/21/2018	Tuesday	12:03 PM	Bicycle	Injury	0	0	$200	Daylight	Dry
102	87510623	12/19/2018	Wednesday	7:20 PM	Other	Property Damage Only	0	0	$1,300	Dark - Lighted	Dry
103	87738846	4/25/2019	Thursday	11:52 AM	Rear End	Property Damage Only	0	0	$2,200	Daylight	Dry
104	87739538	5/30/2019	Thursday	3:01 PM	Angle	Property Damage Only	0	0	$2,000	Daylight	Dry
105	86752121	8/18/2017	Friday	6:07 PM	Rear End	Property Damage Only	0	0	$700	Daylight	Wet
106	86751477	5/17/2018	Thursday	3:46 PM	Rear End	Injury	0	1	$9,000	Daylight	Wet
107	86396172	1/25/2017	Wednesday	1:34 PM	Sideswipe	Property Damage Only	0	0	$4,000	Daylight	Dry
108	87510145	9/30/2018	Sunday	10:54 AM	Rear End	Injury	0	1	$250	Daylight	Dry
109	87739379	2/26/2019	Tuesday	2:06 PM	Left Turn	Property Damage Only	0	0	$6,000	Daylight	Dry
110	87510564	12/15/2018	Saturday	5:41 PM	Unknown	Property Damage Only	0	0	$3,500	Dusk	Dry
111	86752381	12/8/2018	Saturday	7:25 PM	Left Turn	Property Damage Only	0	0	$1,000	Dark - Lighted	Dry
112	86751605	3/27/2017	Monday	12:51 PM	Rear End	Property Damage Only	0	0	$7,000	Daylight	Dry
113	86396461	2/15/2017	Wednesday	3:47 PM	Rear End	Property Damage Only	0	0	$2,500	Daylight	Dry
114	86396325	2/7/2017	Tuesday	10:25 AM	Sideswipe	Property Damage Only	0	0	$1,500	Daylight	Dry
115	87740162	12/13/2019	Friday	1:11 PM	Other	Property Damage Only	0	0	$4,000	Daylight	Wet
116	86751660	8/5/2017	Saturday	1:00 PM	Rear End	Property Damage Only	0	0	$3,500	Daylight	Dry
118	86752039	11/24/2017	Friday	6:31 PM	Sideswipe	Property Damage Only	0	0	$3,500	Daylight	Dry
119	86396544	5/9/2017	Tuesday	2:54 PM	Rear End	Property Damage Only	0	0	$4,500	Daylight	Dry
120	86396321	2/6/2017	Monday	3:07 PM	Rear End	Property Damage Only	0	0	$1,400	Daylight	Dry
121	87739623	4/20/2019	Saturday	4:45 PM	Left Turn	Property Damage Only	0	0	$4,000	Daylight	Dry
122	86751565	10/18/2017	Wednesday	4:40 PM	Rear End	Injury	0	1	$200	Daylight	Wet
123	86751848	6/13/2018	Wednesday	2:34 PM	Rear End	Property Damage Only	0	0	$2,500	Daylight	Dry
124	87739773	6/24/2019	Monday	1:49 PM	Rear End	Property Damage Only	0	0	$900	Daylight	Dry
125	87510355	4/2/2018	Monday	6:25 PM	Sideswipe	Injury	0	0	$1,000	Daylight	Dry
126	86751958	6/30/2017	Friday	8:14 AM	Right Turn	Injury	0	2	$10,400	Daylight	Dry

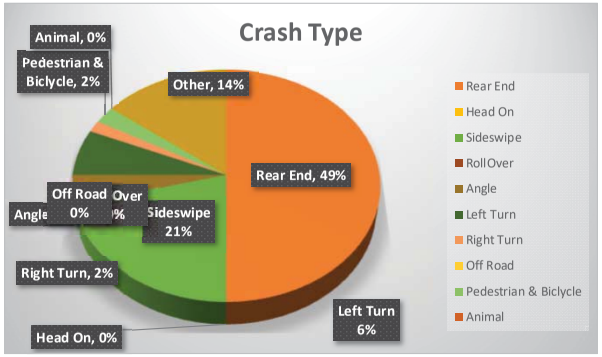
Dunlawton Avenue at Clyde Morris Boulevard - Crash Data Summary (1/1/2017 -12/31/2019)

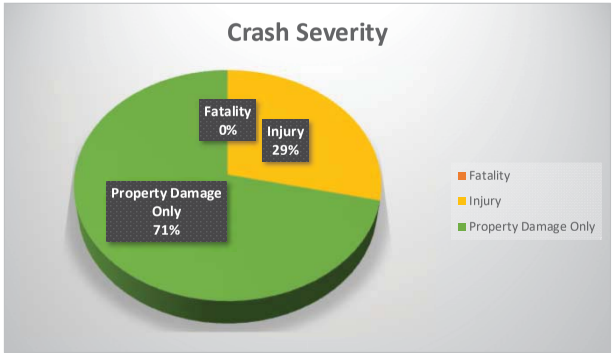
Crash Type	2017	2018	2019	Total	Proportion
Rear End	23	22	17	**62**	49%
Head On	0	0	0	**0**	0%
Sideswipe	10	6	10	**26**	21%
RollOver	0	0	0	**0**	0%
Angle	2	1	2	**5**	4%
Left Turn	3	2	3	**8**	6%
Right Turn	2	0	0	**2**	2%
Off Road	1	1	0	**2**	2%
Pedestrian & Biclycle	0	2	1	**3**	2%
Animal	0	0	0	**0**	0%
Other	5	7	6	**18**	14%
Total	**46**	**41**	**39**	**126**	100%

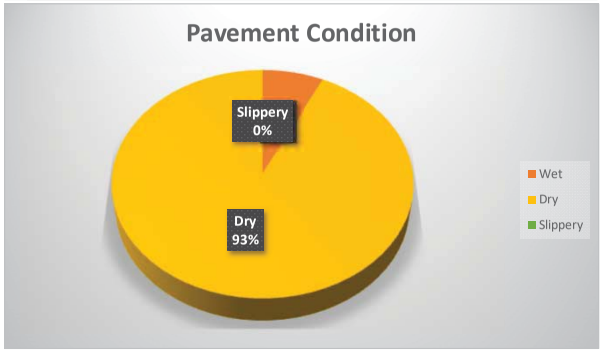
Crash Severity	2017	2018	2019	Total	Proportion
Fatality	0	0	0	**0**	0%
Injury	13	14	9	**36**	29%
Property Damage Only	33	27	30	**90**	71%
Total	**46**	**41**	**39**	**126**	100%

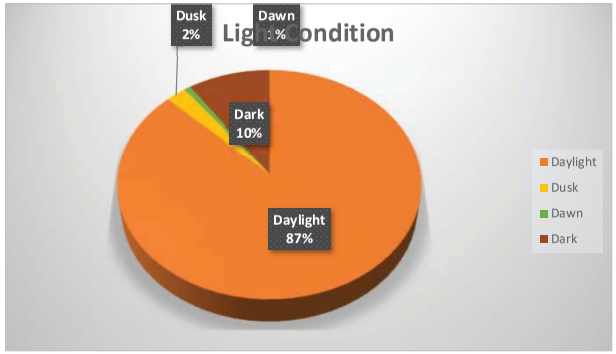
Pavement Condition	2017	2018	2019	Total	Proportion
Wet	3	4	2	**9**	7%
Dry	43	37	37	**117**	93%
Slippery	0	0	0	**0**	0%
Total	**46**	**41**	**39**	**126**	100%

Light Condition	2017	2018	2019	Total	Proportion
Daylight	42	31	37	**110**	87%
Dusk	0	3	0	**3**	2%
Dawn	0	1	0	**1**	1%
Dark	4	6	2	**12**	10%
Total	**46**	**41**	**39**	**126**	100%









Dunlawton Avenue at Nova Road - Crash Data Summary (1/1/2017 - 12/31/2019)

No.	Crash ID	Date	Day	Time	Crash Type	Crash Severity	Fatalities	Injuries	Property Damage	Day/Night	Wet/Dry
1	87740090	8/6/2019	Tuesday	7:45 AM	Rear End	Property Damage Only	0	0	$5,000	Daylight	Dry
2	87738443	10/9/2018	Tuesday	9:35 AM	Sideswipe	Property Damage Only	0	0	$3,000	Daylight	Dry
3	86396565	3/8/2017	Wednesday	1:43 PM	Off Road	Property Damage Only	0	0	$1,000	Daylight	Dry
4	87738517	3/19/2019	Tuesday	12:02 AM	Rear End	Injury	0	10	$47,000	Dark - Lighted	Dry
5	87739568	5/7/2019	Tuesday	12:58 PM	Sideswipe	Property Damage Only	0	0	$400	Daylight	Dry
6	87509997	6/26/2018	Tuesday	4:06 PM	Sideswipe	Property Damage Only	0	0	$8,000	Daylight	Dry
7	87509792	4/15/2018	Sunday	5:50 PM	Right Turn	Injury	0	2	$20,000	Daylight	Dry
8	87509909	1/22/2018	Monday	6:14 AM	Angle	Injury	0	2	$16,000	Dark - Lighted	Dry
9	87510181	4/7/2019	Sunday	11:15 AM	Rear End	Injury	0	1	$600	Daylight	Dry
10	86751944	8/26/2017	Saturday	9:50 PM	Rear End	Injury	0	1	$800	Dark - Lighted	Dry
11	87740214	9/11/2019	Wednesday	10:39 AM	Sideswipe	Property Damage Only	0	0	$5,000	Daylight	Dry
12	87739706	5/6/2019	Monday	12:28 PM	Rear End	Injury	0	3	$8,500	Daylight	Dry
13	86396464	2/21/2017	Tuesday	11:12 AM	Rear End	Property Damage Only	0	0	$2,000	Daylight	Dry
14	86751446	3/31/2017	Friday	10:16 AM	Rear End	Property Damage Only	0	0	$1,750	Daylight	Dry
15	87739153	1/25/2019	Friday	9:48 AM	Rear End	Property Damage Only	0	0	$1,000	Daylight	Dry
16	87740732	11/25/2019	Monday	6:28 PM	Sideswipe	Property Damage Only	0	0	$5,000	Dark - Unknown Lighting	Dry
17	86396341	2/1/2017	Wednesday	11:27 AM	Bicycle	Injury	0	1	$250	Daylight	Dry
18	87739817	7/8/2019	Monday	8:28 AM	Other	Property Damage Only	0	0	$2,500	Daylight	Dry
19	87739004	12/16/2018	Sunday	4:22 PM	Rear End	Property Damage Only	0	0	$1,500	Daylight	Dry
20	86752092	3/12/2018	Monday	10:01 PM	Unknown	Property Damage Only	0	0	$7,000	Dark - Not Lighted	Wet
21	87738949	7/27/2019	Saturday	3:45 PM	Rear End	Property Damage Only	0	0	$3,000	Daylight	Dry
22	86395975	8/26/2017	Saturday	6:15 PM	Rear End	Property Damage Only	0	0	$100	Daylight	Dry
23	86752350	10/9/2017	Monday	1:44 PM	Rear End	Injury	0	1	$2,500	Daylight	Dry
24	87739718	10/10/2019	Thursday	8:35 PM	Left Turn	Injury	0	2	$8,500	Dark - Lighted	Wet
25	86395667	4/2/2017	Sunday	9:06 PM	Pedestrian	Injury	0	1	$500	Dark - Lighted	Dry
26	86396492	4/17/2017	Monday	9:33 PM	Angle	Injury	0	1	$12,000	Dark - Lighted	Dry
27	87510160	7/28/2018	Saturday	7:04 PM	Rear End	Injury	0	1	$2,500	Dusk	Dry
28	87510206	2/24/2018	Saturday	11:45 PM	Sideswipe	Property Damage Only	0	0	$400	Dark - Lighted	Dry
29	87510501	9/11/2018	Tuesday	9:45 PM	Left Turn	Injury	0	2	$18,000	Dark - Lighted	Dry
30	87740180	8/29/2019	Thursday	4:13 PM	Sideswipe	Property Damage Only	0	0	$9,000	Daylight	Dry
31	87739713	12/30/2019	Monday	6:00 PM	Rear End	Injury	0	1	$4,000	Dawn	Dry
32	83634457	6/4/2019	Tuesday	8:02 AM	Rear End	Property Damage Only	0	0	$1,000	Daylight	Dry
33	86751672	4/5/2017	Wednesday	4:11 PM	Bicycle	Injury	0	1	$100	Daylight	Dry
34	87739378	4/9/2019	Tuesday	11:40 AM	Sideswipe	Property Damage Only	0	0	$7,000	Daylight	Dry
35	87510620	8/31/2018	Friday	1:11 AM	Rear End	Property Damage Only	0	0	$2,000	Daylight	Dry
36	87739894	9/5/2019	Thursday	4:45 PM	Rear End	Injury	0	1	$8,000	Daylight	Dry
37	86751907	7/5/2017	Wednesday	11:50 AM	Rear End	Injury	0	1	$50	Daylight	Dry
38	87510072	5/24/2018	Thursday	9:43 PM	Rear End	Injury	0	1	$0	Dark - Lighted	Dry
39	87510123	10/3/2018	Wednesday	5:42 PM	Rear End	Property Damage Only	0	0	$2,500	Daylight	Wet
40	87740384	10/3/2019	Thursday	7:37 PM	Rear End	Property Damage Only	0	0	$1,300	Dark - Lighted	Dry
41	87738624	2/10/2019	Sunday	10:27 AM	Sideswipe	Property Damage Only	0	0	$1,000	Daylight	Dry
42	86752118	7/26/2017	Wednesday	10:20 PM	Rear End	Property Damage Only	0	0	$1,000	Dark - Lighted	Dry
43	87739385	9/12/2019	Thursday	3:18 PM	Other	Injury	0	1	$300	Daylight	Dry
44	86396302	1/30/2017	Monday	10:59 AM	Other	Property Damage Only	0	0	$5,000	Daylight	Dry
45	87509799	11/22/2017	Wednesday	12:45 PM	Unknown	Injury	0	1	$20,250	Daylight	Dry
46	87510094	8/25/2018	Saturday	11:30 AM	Rear End	Injury	0	1	$5,000	Daylight	Dry
47	86396530	11/11/2017	Saturday	2:06 PM	Rear End	Injury	0	1	$4,000	Daylight	Dry
48	87509780	1/25/2018	Thursday	11:57 AM	Other	Property Damage Only	0	0	$1,300	Daylight	Dry
49	87739878	7/11/2019	Thursday	2:57 PM	Rear End	Property Damage Only	0	0	$1,000	Daylight	Dry
50	87738675	10/12/2018	Friday	2:08 PM	Angle	Property Damage Only	0	0	$20,000	Daylight	Dry
51	86751764	7/25/2017	Tuesday	8:50 PM	Rear End	Property Damage Only	0	0	$2,500	Dark - Lighted	Dry
52	87739759	8/24/2019	Saturday	10:45 PM	Rear End	Property Damage Only	0	0	$10,000	Dark - Lighted	Dry
53	87738926	12/6/2018	Thursday	3:33 PM	Other	Property Damage Only	0	0	$6,000	Daylight	Dry
54	86752347	10/13/2017	Friday	10:29 AM	Rear End	Injury	0	1	$2,000	Daylight	Dry
55	87739084	2/27/2019	Wednesday	11:00 AM	Rear End	Property Damage Only	0	0	$1,000	Daylight	Dry
56	87740079	7/27/2019	Saturday	9:15 PM	Left Turn	Injury	0	2	$45,000	Dark - Lighted	Dry
57	87740342	10/1/2019	Tuesday	12:14 PM	Sideswipe	Property Damage Only	0	0	$4,500	Daylight	Dry
58	87740177	12/21/2019	Saturday	7:55 PM	Bicycle	Injury	0	1	$2,800	Dark - Lighted	Wet
59	86751981	7/18/2017	Tuesday	2:30 PM	Sideswipe	Property Damage Only	0	0	$1,300	Daylight	Dry
60	87738641	4/27/2019	Saturday	5:45 PM	Rear End	Property Damage Only	0	0	$1,000	Daylight	Dry
61	87739052	6/19/2019	Wednesday	12:23 PM	Sideswipe	Property Damage Only	0	0	$5,000	Daylight	Dry
62	87739622	6/5/2019	Wednesday	10:47 AM	Rear End	Injury	0	1	$4,000	Daylight	Dry
63	87510346	7/11/2018	Wednesday	12:16 PM	Rear End	Property Damage Only	0	0	$1,500	Daylight	Dry
64	87509828	7/25/2018	Wednesday	9:02 PM	Rear End	Injury	0	1	$13,000	Dark - Lighted	Dry
65	86396453	2/17/2017	Friday	8:26 AM	Unknown	Injury	0	2	$15,300	Daylight	Dry
66	87510233	5/11/2019	Saturday	8:36 PM	Sideswipe	Property Damage Only	0	0	$1,000	Dark - Not Lighted	Dry
67	87740010	9/1/2019	Sunday	3:18 PM	Rear End	Injury	0	1	$1,600	Daylight	Dry
68	87510404	5/18/2018	Friday	3:06 PM	Rear End	Property Damage Only	0	0	$1,100	Daylight	Wet
69	87740559	11/15/2019	Friday	3:51 PM	Sideswipe	Property Damage Only	0	0	$4,000	Daylight	Dry
70	86396365	2/13/2017	Monday	2:02 PM	Rear End	Property Damage Only	0	0	$1,000	Daylight	Dry
71	86396194	4/26/2017	Wednesday	9:55 PM	Sideswipe	Injury	0	2	$13,000	Dawn	Dry

Dunlawton Avenue at Nova Road - Crash Data Summary (1/1/2017 - 12/31/2019)

No.	Crash ID	Date	Day	Time	Crash Type	Crash Severity	Fatalities	Injuries	Property Damage	Day/Night	Wet/Dry
72	87740115	8/12/2019	Monday	4:50 PM	Rear End	Property Damage Only	0	0	$1,000	Daylight	Dry
73	87738980	3/14/2019	Thursday	7:55 PM	Rear End	Injury	0	1	$4,000	Dark - Lighted	Dry
74	87739049	3/2/2019	Saturday	3:27 PM	Rear End	Property Damage Only	0	0	$4,000	Daylight	Dry
75	87510000	9/19/2018	Wednesday	4:33 PM	Rear End	Property Damage Only	0	0	$400	Daylight	Dry
76	87740201	8/29/2019	Thursday	1:28 PM	Angle	Property Damage Only	0	0	$6,000	Daylight	Dry
77	87739549	4/12/2019	Friday	2:43 PM	Sideswipe	Property Damage Only	0	0	$10,000	Daylight	Dry
78	87510348	4/16/2018	Monday	11:51 AM	Rear End	Property Damage Only	0	0	$5,000	Daylight	Dry
79	87509847	12/6/2017	Wednesday	10:13 AM	Sideswipe	Property Damage Only	0	0	$500	Daylight	Dry
80	87510319	5/12/2018	Saturday	10:10 AM	Unknown	Property Damage Only	0	0	$2,000	Daylight	Dry
81	86396605	8/22/2017	Tuesday	1:47 PM	Sideswipe	Property Damage Only	0	0	$5,000	Daylight	Dry
82	87509815	5/10/2018	Thursday	6:30 PM	Rear End	Injury	0	1	$9,000	Daylight	Dry
83	87740260	8/26/2019	Monday	8:35 PM	Rear End	Property Damage Only	0	0	$900	Dark - Lighted	Dry
84	87740146	8/26/2019	Monday	8:23 AM	Rear End	Property Damage Only	0	0	$1,000	Daylight	Dry
85	86752185	10/15/2017	Sunday	7:40 PM	Other	Property Damage Only	0	0	$1,500	Dark - Lighted	Dry
86	87739454	3/7/2019	Thursday	12:24 PM	Rear End	Injury	0	1	$3,000	Daylight	Dry
87	87738460	9/10/2018	Monday	7:14 PM	Sideswipe	Property Damage Only	0	0	$1,600	Daylight	Dry
88	86396316	2/1/2017	Wednesday	12:28 PM	Right Turn	Property Damage Only	0	0	$2,500	Daylight	Dry
89	87740368	11/21/2019	Thursday	4:18 PM	Rear End	Injury	0	1	$100	Daylight	Dry
90	86751731	10/5/2017	Thursday	6:11 PM	Rear End	Property Damage Only	0	0	$10,000	Dark - Lighted	Wet
91	87739805	8/16/2019	Friday	4:01 PM	Rear End	Injury	0	1	$5,000	Daylight	Dry
92	86752090	1/9/2018	Tuesday	9:06 AM	Unknown	Property Damage Only	0	0	$1,000	Daylight	Dry
93	86396235	1/19/2017	Thursday	2:10 PM	Rear End	Property Damage Only	0	0	$800	Daylight	Dry
94	87738780	10/23/2018	Tuesday	9:12 PM	Rear End	Property Damage Only	0	0	$2,575	Dark - Lighted	Wet
95	87740028	7/7/2019	Sunday	10:59 PM	Bicycle	Injury	0	1	$0	Dark - Lighted	Dry
96	87510027	10/15/2018	Monday	5:55 PM	Left Turn	Injury	0	2	$14,000	Daylight	Dry
97	86396557	11/11/2017	Saturday	9:45 AM	Rear End	Injury	0	1	$3,000	Daylight	Wet
98	86396324	2/3/2017	Friday	1:58 PM	Sideswipe	Property Damage Only	0	0	$1,500	Daylight	Dry
99	87740602	10/25/2019	Friday	9:32 PM	Rear End	Property Damage Only	0	0	$1,300	Dark - Lighted	Dry
100	86752299	11/28/2017	Tuesday	11:19 AM	Bicycle	Injury	0	1	$100	Daylight	Dry
101	87739375	8/14/2019	Wednesday	4:32 PM	Rear End	Property Damage Only	0	0	$2,000	Daylight	Wet
102	87739014	12/17/2018	Monday	12:44 PM	Rear End	Property Damage Only	0	0	$4,500	Daylight	Dry
103	87740641	11/14/2019	Thursday	10:23 AM	Rear End	Property Damage Only	0	0	$2,600	Daylight	Dry
104	86751472	7/24/2017	Monday	2:31 AM	Off Road	Property Damage Only	0	0	$5,000	Dark - Lighted	Dry
105	87740196	9/9/2019	Monday	12:30 PM	Rear End	Injury	0	1	$350	Daylight	Dry
106	87509773	11/21/2017	Tuesday	12:45 PM	Rear End	Property Damage Only	0	0	$4,000	Daylight	Wet
107	85812973	2/4/2017	Saturday	10:19 PM	Rear End	Injury	0	1	$2,300	Dark - Lighted	Dry
108	87509963	3/15/2018	Thursday	2:05 PM	Unknown	Property Damage Only	0	0	$1,500	Daylight	Dry
109	87738570	9/24/2018	Monday	7:23 AM	Rear End	Injury	0	1	$3,500	Daylight	Dry
110	86752301	2/26/2018	Monday	9:58 AM	Other	Property Damage Only	0	0	$4,000	Daylight	Dry
111	86396200	1/13/2017	Friday	9:46 AM	Right Turn	Property Damage Only	0	0	$2,500	Daylight	Dry
112	87740817	11/28/2019	Thursday	5:20 AM	Angle	Injury	0	1	$16,300	Dark - Lighted	Wet
113	86751923	6/19/2017	Monday	7:49 AM	Unknown	Injury	0	3	$28,000	Daylight	Dry
114	86751837	11/3/2017	Friday	10:34 PM	Angle	Injury	0	1	$10,000	Dark - Lighted	Dry
115	87738642	5/3/2019	Friday	11:34 PM	Left Turn	Injury	0	1	$4,000	Dark - Lighted	Dry
116	87739462	3/20/2019	Wednesday	11:28 AM	Rear End	Injury	0	1	$10,000	Daylight	Dry
118	87510518	6/29/2018	Friday	12:50 PM	Left Turn	Injury	0	2	$30,000	Daylight	Dry
119	86751489	3/28/2017	Tuesday	7:59 AM	Rear End	Property Damage Only	0	0	$5,000	Daylight	Dry
120	86396250	1/19/2017	Thursday	3:28 PM	Rear End	Property Damage Only	0	0	$350	Daylight	Dry

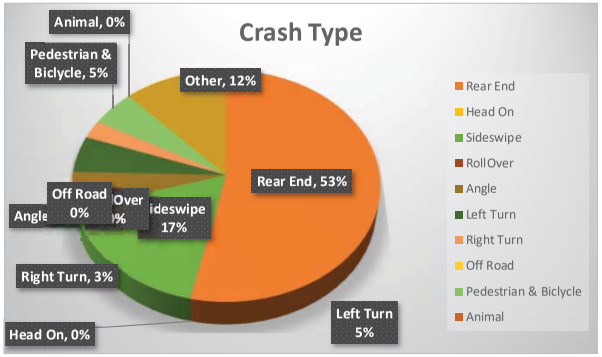
Dunlawton Avenue at Nova Road - Crash Data Summary (1/1/2017 - 12/31/2019)

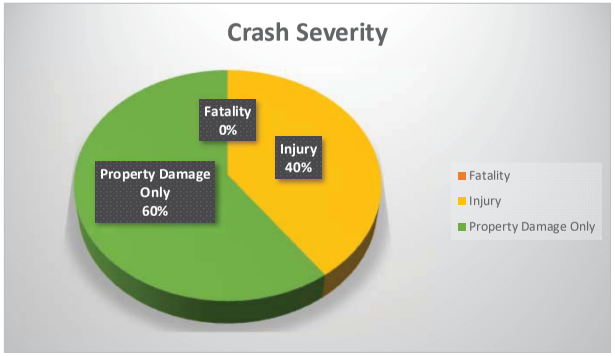
Crash Type	2017	2018	2019	Total	Proportion
Rear End	19	15	29	**63**	53%
Head On	0	0	0	**0**	0%
Sideswipe	5	4	11	**20**	17%
RollOver	0	0	0	**0**	0%
Angle	2	2	2	**6**	5%
Left Turn	0	3	3	**6**	5%
Right Turn	2	1	0	**3**	3%
Off Road	2	0	0	**2**	2%
Pedestrian & Biclycle	4	0	2	**6**	5%
Animal	0	0	0	**0**	0%
Other	5	7	2	**14**	12%
Total	**39**	**32**	**49**	**120**	100%

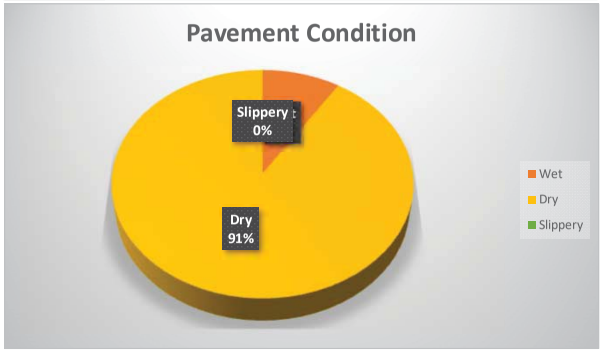
Crash Severity	2017	2018	2019	Total	Proportion
Fatality	0	0	0	**0**	0%
Injury	17	11	20	**48**	40%
Property Damage Only	22	21	29	**72**	60%
Total	**39**	**32**	**49**	**120**	100%

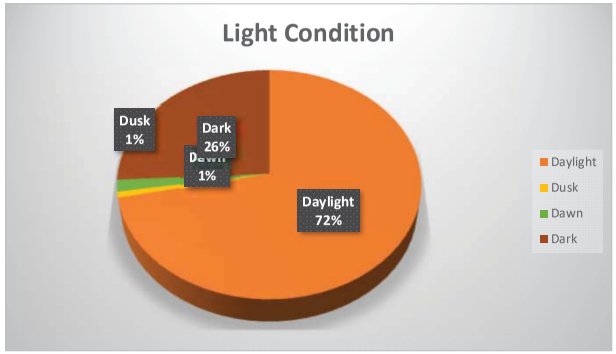
Pavement Condition	2017	2018	2019	Total	Proportion
Wet	3	4	4	**11**	9%
Dry	36	28	45	**109**	91%
Slippery	0	0	0	**0**	0%
Total	**39**	**32**	**49**	**120**	100%

Light Condition	2017	2018	2019	Total	Proportion
Daylight	28	24	34	**86**	72%
Dusk	0	1	0	**1**	1%
Dawn	1	0	1	**2**	2%
Dark	10	7	14	**31**	26%
Total	**39**	**32**	**49**	**120**	100%









APPENDIX C:

Traffic Operational Analysis Output
And
Signal Timing Sheets

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:45	6:45	6:45	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	8388	8383	8335	8128	8237	8187	8287
Vehs Exited	8379	8382	8373	8155	8279	8197	8285
Starting Vehs	279	237	280	301	284	253	279
Ending Vehs	288	238	242	274	242	243	281
Denied Entry Before	3	1	0	0	0	1	0
Denied Entry After	5	2	1	2	1	1	3
Travel Distance (mi)	6104	6119	6092	5921	6049	5994	6048
Travel Time (hr)	275.1	274.1	273.7	262.3	268.7	266.7	271.5
Total Delay (hr)	118.3	116.9	117.2	110.7	113.8	113.0	116.4
Total Stops	6118	6101	6143	5868	6007	5908	6080
Fuel Used (gal)	212.6	212.3	211.8	205.7	210.1	207.1	210.5

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	8366	8318	8141	8279
Vehs Exited	8332	8360	8178	8291
Starting Vehs	247	283	286	274
Ending Vehs	281	241	249	259
Denied Entry Before	2	2	1	0
Denied Entry After	1	2	1	0
Travel Distance (mi)	6065	6062	5954	6041
Travel Time (hr)	269.1	270.9	263.6	269.6
Total Delay (hr)	113.5	115.3	110.8	114.6
Total Stops	6001	5991	5842	6007
Fuel Used (gal)	210.5	210.3	206.6	209.8

Interval #0 Information Seeding

Start Time	6:45
End Time	7:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	8388	8383	8335	8128	8237	8187	8287
Vehs Exited	8379	8382	8373	8155	8279	8197	8285
Starting Vehs	279	237	280	301	284	253	279
Ending Vehs	288	238	242	274	242	243	281
Denied Entry Before	3	1	0	0	0	1	0
Denied Entry After	5	2	1	2	1	1	3
Travel Distance (mi)	6104	6119	6092	5921	6049	5994	6048
Travel Time (hr)	275.1	274.1	273.7	262.3	268.7	266.7	271.5
Total Delay (hr)	118.3	116.9	117.2	110.7	113.8	113.0	116.4
Total Stops	6118	6101	6143	5868	6007	5908	6080
Fuel Used (gal)	212.6	212.3	211.8	205.7	210.1	207.1	210.5

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	8366	8318	8141	8279
Vehs Exited	8332	8360	8178	8291
Starting Vehs	247	283	286	274
Ending Vehs	281	241	249	259
Denied Entry Before	2	2	1	0
Denied Entry After	1	2	1	0
Travel Distance (mi)	6065	6062	5954	6041
Travel Time (hr)	269.1	270.9	263.6	269.6
Total Delay (hr)	113.5	115.3	110.8	114.6
Total Stops	6001	5991	5842	6007
Fuel Used (gal)	210.5	210.3	206.6	209.8

3: Clyde Morris Blvd & Dunlawton Ave Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.3	0.1	0.3	0.2	0.9
Denied Del/Veh (s)	0.6	0.3	2.0	1.0	0.8
Total Delay (hr)	20.1	14.6	9.5	7.7	51.9
Total Del/Veh (s)	41.8	41.7	55.3	43.3	44.0
Stop Delay (hr)	15.5	11.3	8.4	6.7	41.9
Stop Del/Veh (s)	32.2	32.5	48.6	37.6	35.5
Total Stops	1147	835	530	512	3024
Stop/Veh	0.66	0.66	0.85	0.80	0.71
Travel Dist (mi)	490.9	870.0	110.0	142.1	1613.0
Travel Time (hr)	31.1	32.7	12.9	11.6	88.2
Avg Speed (mph)	16	27	9	12	18
Fuel Used (gal)	16.4	25.2	5.4	5.9	52.9
Fuel Eff. (mpg)	29.9	34.5	20.5	24.0	30.5
HC Emissions (g)	190	408	44	76	718
CO Emissions (g)	7712	11116	1961	3204	23993
NOx Emissions (g)	625	1574	133	230	2563
Vehicles Entered	1708	1232	606	627	4173
Vehicles Exited	1692	1225	614	631	4162
Hourly Exit Rate	1692	1225	614	631	4162
Input Volume	1697	1242	594	633	4166
% of Volume	100	99	103	100	100
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0
Density (ft/veh)	246	571	305	420	398
Occupancy (veh)	31	33	13	11	87

6: Nova Rd & Dunlawton Ave Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.2	0.1	0.3	0.4	1.0
Denied Del/Veh (s)	0.6	0.4	1.0	1.6	0.8
Total Delay (hr)	13.9	10.7	17.1	10.2	51.9
Total Del/Veh (s)	37.8	42.8	54.4	43.5	44.5
Stop Delay (hr)	11.2	8.9	14.4	8.7	43.3
Stop Del/Veh (s)	30.5	35.9	45.8	37.1	37.1
Total Stops	757	622	935	669	2983
Stop/Veh	0.57	0.69	0.83	0.79	0.71
Travel Dist (mi)	632.3	262.4	218.7	169.7	1283.1
Travel Time (hr)	28.7	16.9	22.8	14.9	83.2
Avg Speed (mph)	22	16	10	12	16
Fuel Used (gal)	18.3	9.0	10.0	7.7	45.0
Fuel Eff. (mpg)	34.6	29.0	21.8	22.1	28.5
HC Emissions (g)	231	116	114	108	569
CO Emissions (g)	6422	3830	4638	4625	19516
NOx Emissions (g)	905	398	323	308	1933
Vehicles Entered	1294	885	1104	823	4106
Vehicles Exited	1297	874	1111	831	4113
Hourly Exit Rate	1297	874	1111	831	4113
Input Volume	1295	880	1103	842	4120
% of Volume	100	99	101	99	100
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0
Density (ft/veh)	544	465	232	373	412
Occupancy (veh)	28	17	22	15	82

Total Network Performance

Denied Delay (hr)	1.9
Denied Del/Veh (s)	0.8
Total Delay (hr)	112.7
Total Del/Veh (s)	47.5
Stop Delay (hr)	85.4
Stop Del/Veh (s)	36.0
Total Stops	6007
Stop/Veh	0.70
Travel Dist (mi)	6040.9
Travel Time (hr)	269.6
Avg Speed (mph)	23
Fuel Used (gal)	209.8
Fuel Eff. (mpg)	28.8
HC Emissions (g)	3000
CO Emissions (g)	95523
NOx Emissions (g)	10559
Vehicles Entered	8279
Vehicles Exited	8291
Hourly Exit Rate	8291
Input Volume	16572
% of Volume	50
Denied Entry Before	0
Denied Entry After	0
Density (ft/veh)	257
Occupancy (veh)	268

Intersection: 3: Clyde Morris Blvd & Dunlawton Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	T	T	T	R	L	L
Maximum Queue (ft)	234	277	416	397	381	276	308	310	304	103	183	201
Average Queue (ft)	139	171	271	264	243	111	195	205	181	32	81	133
95th Queue (ft)	220	242	378	369	351	206	276	289	269	72	175	190
Link Distance (ft)			1515	1515	1515		3718	3718	3718			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	630	630				250				330	380	380
Storage Blk Time (%)						0	2		0			
Queuing Penalty (veh)						0	2		0			

Intersection: 3: Clyde Morris Blvd & Dunlawton Ave

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	TR	L	L	T	R
Maximum Queue (ft)	288	258	152	219	332	170
Average Queue (ft)	181	149	53	108	174	76
95th Queue (ft)	261	236	131	178	282	138
Link Distance (ft)	957				1194	1194
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		660	330	330		
Storage Blk Time (%)					0	
Queuing Penalty (veh)					1	

Intersection: 6: Nova Rd & Dunlawton Ave

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB
Directions Served	L	L	T	T	T	R	L	L	T	T	TR	L
Maximum Queue (ft)	192	218	286	290	250	29	125	152	293	267	228	304
Average Queue (ft)	108	129	183	182	150	1	34	80	197	178	129	168
95th Queue (ft)	179	197	262	260	236	29	95	140	273	254	217	262
Link Distance (ft)			2584	2584	2584				1559	1559	1559	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	400	400				250	430	430				480
Storage Blk Time (%)					0							
Queuing Penalty (veh)					0							

Intersection: 6: Nova Rd & Dunlawton Ave

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	L	T	T	R	L	L	T	T	R
Maximum Queue (ft)	337	372	365	80	166	213	300	262	135
Average Queue (ft)	205	250	242	35	54	111	184	157	52
95th Queue (ft)	290	341	336	66	142	180	267	243	97
Link Distance (ft)		1043	1043	1043			1082	1082	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	480				380	380			850
Storage Blk Time (%)									
Queuing Penalty (veh)									

Network Summary

Network wide Queuing Penalty: 4

Intersection: 3: Clyde Morris Blvd & Dunlawton Ave

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	EBL	WBT	SBL	NBT	WBL	EBT	NBL	SBT
Maximum Green (s)	26.1	42.9	14.7	45.0	16.1	52.9	20.1	40.0
Minimum Green (s)	5.0	15.0	5.0	10.0	5.0	15.0	5.0	10.0
Recall	None	C-Max	None	None	None	C-Max	None	None
Avg. Green (s)	25.6	54.3	13.0	35.9	16.5	64.2	17.1	33.0
g/C Ratio	-0.01	NA	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	12	0	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0	0	0
Cycles Maxed Out (%)	12	100	43	14	19	100	23	14
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 6: Nova Rd & Dunlawton Ave

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	EBL	WBT	SBL	NBT	WBL	EBT	NBL	SBT
Maximum Green (s)	19.5	53.5	12.1	42.2	9.6	63.5	20.5	34.2
Minimum Green (s)	5.0	15.0	5.0	15.0	5.0	15.0	5.0	15.0
Recall	None	C-Max	None	Max	None	C-Max	None	Max
Avg. Green (s)	17.3	55.6	12.3	42.6	9.7	64.0	20.2	34.5
g/C Ratio	-0.01	NA	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	18	0	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0	0	0
Cycles Maxed Out (%)	39	100	86	100	82	100	86	100
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	11:45	11:45	11:45	11:45	11:45	11:45	11:45
End Time	1:00	1:00	1:00	1:00	1:00	1:00	1:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	9738	9784	9955	9604	9592	9650	9701
Vehs Exited	9715	9801	9946	9604	9599	9615	9740
Starting Vehs	362	337	354	380	330	295	343
Ending Vehs	385	320	363	380	323	330	304
Denied Entry Before	3	1	4	1	5	3	5
Denied Entry After	0	1	0	1	2	4	2
Travel Distance (mi)	7216	7301	7401	7138	7165	7184	7257
Travel Time (hr)	361.5	343.9	358.6	346.6	338.3	335.5	347.4
Total Delay (hr)	176.3	156.4	168.7	164.1	154.6	151.1	161.3
Total Stops	7972	7642	7790	7477	7379	7364	7498
Fuel Used (gal)	258.6	256.4	263.9	254.0	251.7	251.3	255.9

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	11:45	11:45	11:45	11:45
End Time	1:00	1:00	1:00	1:00
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	9910	9780	9795	9750
Vehs Exited	9814	9797	9831	9746
Starting Vehs	322	368	353	344
Ending Vehs	418	351	317	348
Denied Entry Before	0	2	5	1
Denied Entry After	1	2	3	0
Travel Distance (mi)	7330	7301	7287	7258
Travel Time (hr)	362.1	372.3	346.2	351.2
Total Delay (hr)	174.2	185.1	158.7	165.1
Total Stops	7881	8115	7656	7676
Fuel Used (gal)	262.0	263.7	256.9	257.4

Interval #0 Information Seeding

Start Time	11:45
End Time	12:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	12:00
End Time	1:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	9738	9784	9955	9604	9592	9650	9701
Vehs Exited	9715	9801	9946	9604	9599	9615	9740
Starting Vehs	362	337	354	380	330	295	343
Ending Vehs	385	320	363	380	323	330	304
Denied Entry Before	3	1	4	1	5	3	5
Denied Entry After	0	1	0	1	2	4	2
Travel Distance (mi)	7216	7301	7401	7138	7165	7184	7257
Travel Time (hr)	361.5	343.9	358.6	346.6	338.3	335.5	347.4
Total Delay (hr)	176.3	156.4	168.7	164.1	154.6	151.1	161.3
Total Stops	7972	7642	7790	7477	7379	7364	7498
Fuel Used (gal)	258.6	256.4	263.9	254.0	251.7	251.3	255.9

Interval #1 Information Recording

Start Time	12:00
End Time	1:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	9910	9780	9795	9750
Vehs Exited	9814	9797	9831	9746
Starting Vehs	322	368	353	344
Ending Vehs	418	351	317	348
Denied Entry Before	0	2	5	1
Denied Entry After	1	2	3	0
Travel Distance (mi)	7330	7301	7287	7258
Travel Time (hr)	362.1	372.3	346.2	351.2
Total Delay (hr)	174.2	185.1	158.7	165.1
Total Stops	7881	8115	7656	7676
Fuel Used (gal)	262.0	263.7	256.9	257.4

3: Clyde Morris Blvd & Dunlawton Ave Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.3	0.1	0.4	0.3	1.1
Denied Del/Veh (s)	0.6	0.3	2.4	1.2	0.8
Total Delay (hr)	21.5	21.5	8.4	10.7	62.2
Total Del/Veh (s)	44.0	47.1	52.3	47.8	46.7
Stop Delay (hr)	16.5	16.0	7.5	9.4	49.4
Stop Del/Veh (s)	33.7	35.1	46.5	41.9	37.1
Total Stops	1185	1151	503	683	3522
Stop/Veh	0.67	0.70	0.87	0.85	0.73
Travel Dist (mi)	497.4	1130.0	103.9	179.1	1910.4
Travel Time (hr)	32.5	44.9	11.7	15.8	104.9
Avg Speed (mph)	15	25	9	12	18
Fuel Used (gal)	16.8	32.9	5.0	7.6	62.3
Fuel Eff. (mpg)	29.7	34.3	20.7	23.6	30.7
HC Emissions (g)	206	463	35	56	760
CO Emissions (g)	7844	13278	1819	3352	26292
NOx Emissions (g)	661	1851	115	197	2824
Vehicles Entered	1732	1599	572	790	4693
Vehicles Exited	1734	1585	565	792	4676
Hourly Exit Rate	1734	1585	565	792	4676
Input Volume	1724	1615	570	791	4700
% of Volume	101	98	99	100	99
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0
Density (ft/veh)	235	415	338	308	335
Occupancy (veh)	32	45	11	16	104

6: Nova Rd & Dunlawton Ave Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.3	0.2	0.3	0.5	1.3
Denied Del/Veh (s)	0.6	0.7	1.1	1.6	0.9
Total Delay (hr)	38.5	21.1	15.5	13.9	89.1
Total Del/Veh (s)	78.6	58.3	54.3	46.2	61.9
Stop Delay (hr)	32.6	17.8	13.4	11.9	75.8
Stop Del/Veh (s)	66.6	49.2	46.8	39.6	52.6
Total Stops	1406	1053	840	855	4154
Stop/Veh	0.80	0.81	0.82	0.79	0.80
Travel Dist (mi)	836.4	378.8	198.7	219.0	1632.8
Travel Time (hr)	58.2	30.3	20.7	20.0	129.2
Avg Speed (mph)	14	13	10	11	13
Fuel Used (gal)	29.1	14.1	9.3	9.7	62.2
Fuel Eff. (mpg)	28.8	26.9	21.4	22.5	26.3
HC Emissions (g)	272	109	82	94	557
CO Emissions (g)	8591	4527	4023	4824	21965
NOx Emissions (g)	1054	415	256	293	2018
Vehicles Entered	1716	1275	1003	1063	5057
Vehicles Exited	1704	1272	1016	1066	5058
Hourly Exit Rate	1704	1272	1016	1066	5058
Input Volume	1717	1275	1005	1057	5054
% of Volume	99	100	101	101	100
Denied Entry Before	0	0	1	0	1
Denied Entry After	0	0	0	0	0
Density (ft/veh)	268	260	255	277	265
Occupancy (veh)	58	30	20	20	128

Total Network Performance

Denied Delay (hr)	2.4
Denied Del/Veh (s)	0.9
Total Delay (hr)	162.7
Total Del/Veh (s)	58.0
Stop Delay (hr)	125.4
Stop Del/Veh (s)	44.7
Total Stops	7676
Stop/Veh	0.76
Travel Dist (mi)	7257.8
Travel Time (hr)	351.2
Avg Speed (mph)	21
Fuel Used (gal)	257.4
Fuel Eff. (mpg)	28.2
HC Emissions (g)	2982
CO Emissions (g)	104109
NOx Emissions (g)	11126
Vehicles Entered	9750
Vehicles Exited	9746
Hourly Exit Rate	9746
Input Volume	19508
% of Volume	50
Denied Entry Before	1
Denied Entry After	0
Density (ft/veh)	197
Occupancy (veh)	349

Intersection: 3: Clyde Morris Blvd & Dunlawton Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	T	T	T	R	L	L
Maximum Queue (ft)	261	292	418	426	382	299	415	415	423	300	201	234
Average Queue (ft)	153	183	291	278	248	135	279	293	272	56	111	152
95th Queue (ft)	234	261	400	387	361	284	388	397	387	179	199	216
Link Distance (ft)			1515	1515	1515		3718	3718	3718			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	630	630				250				330	380	380
Storage Blk Time (%)						1	13		2	0		
Queuing Penalty (veh)						3	14		5	0		

Intersection: 3: Clyde Morris Blvd & Dunlawton Ave

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	TR	L	L	T	R
Maximum Queue (ft)	221	199	200	227	286	277
Average Queue (ft)	140	103	109	148	155	144
95th Queue (ft)	209	191	195	205	252	248
Link Distance (ft)	957				1194	1194
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		660	330	330		
Storage Blk Time (%)					0	
Queuing Penalty (veh)					0	

Intersection: 6: Nova Rd & Dunlawton Ave

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB
Directions Served	L	L	T	T	T	R	L	L	T	T	TR	L
Maximum Queue (ft)	396	416	692	683	368	299	263	290	347	331	306	273
Average Queue (ft)	314	334	398	373	231	30	154	183	244	229	196	178
95th Queue (ft)	476	500	831	766	330	176	250	273	323	310	294	271
Link Distance (ft)			2584	2584	2584				1559	1559	1559	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	400	400				250	430	430				480
Storage Blk Time (%)	7	22	0		6							
Queuing Penalty (veh)	26	79	0		15							

Intersection: 6: Nova Rd & Dunlawton Ave

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	L	T	T	R	L	L	T	T	R
Maximum Queue (ft)	320	305	282	87	201	236	319	290	162
Average Queue (ft)	214	187	176	39	114	157	198	175	74
95th Queue (ft)	303	272	260	71	200	217	283	261	133
Link Distance (ft)		1043	1043	1043			1082	1082	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	480				380	380			850
Storage Blk Time (%)									
Queuing Penalty (veh)									

Network Summary

Network wide Queuing Penalty: 142

Intersection: 3: Clyde Morris Blvd & Dunlawton Ave

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	EBL	WBT	SBL	NBT	WBL	EBT	NBL	SBT
Maximum Green (s)	20.1	46.9	14.7	47.0	10.1	56.9	21.1	41.0
Minimum Green (s)	5.0	15.0	5.0	10.0	5.0	15.0	5.0	10.0
Recall	None	C-Max	None	None	None	C-Max	None	None
Avg. Green (s)	23.8	54.5	14.6	35.8	13.9	64.9	18.4	33.1
g/C Ratio	-0.01	NA	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	15	0	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0	0	0
Cycles Maxed Out (%)	30	100	86	18	36	100	36	18
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 6: Nova Rd & Dunlawton Ave

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	EBL	WBT	SBL	NBT	WBL	EBT	NBL	SBT
Maximum Green (s)	18.5	46.5	13.1	49.2	15.6	49.5	18.5	44.2
Minimum Green (s)	5.0	15.0	5.0	15.0	5.0	15.0	5.0	15.0
Recall	None	C-Max	None	Max	None	C-Max	None	Max
Avg. Green (s)	18.5	46.5	13.1	49.2	15.5	49.6	18.4	44.3
g/C Ratio	NA	NA	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0	0	0
Cycles Maxed Out (%)	95	100	96	100	95	100	91	100
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:45	4:45	4:45	4:45	4:45	4:45	4:45
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	10288	10449	10265	10233	10112	10273	10227
Vehs Exited	10305	10496	10321	10266	10191	10317	10233
Starting Vehs	386	406	418	405	421	399	384
Ending Vehs	369	359	362	372	342	355	378
Denied Entry Before	3	0	1	1	3	2	1
Denied Entry After	1	3	1	4	3	2	3
Travel Distance (mi)	7716	7826	7640	7647	7600	7646	7654
Travel Time (hr)	358.1	374.7	369.1	365.9	356.9	358.9	367.5
Total Delay (hr)	161.1	174.3	173.1	170.3	162.2	162.9	171.4
Total Stops	7608	7961	7983	7849	7601	7673	7821
Fuel Used (gal)	268.0	274.1	268.9	267.9	263.9	265.7	268.3

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:45	4:45	4:45	4:45
End Time	6:00	6:00	6:00	6:00
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	10200	10165	10268	10247
Vehs Exited	10218	10198	10339	10288
Starting Vehs	386	377	402	396
Ending Vehs	368	344	331	359
Denied Entry Before	1	2	3	0
Denied Entry After	3	2	2	0
Travel Distance (mi)	7602	7585	7682	7660
Travel Time (hr)	357.9	362.5	360.6	363.2
Total Delay (hr)	162.9	167.9	163.3	166.9
Total Stops	7710	7802	7733	7773
Fuel Used (gal)	265.5	266.4	267.6	267.6

Interval #0 Information Seeding

Start Time	4:45
End Time	5:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	10288	10449	10265	10233	10112	10273	10227
Vehs Exited	10305	10496	10321	10266	10191	10317	10233
Starting Vehs	386	406	418	405	421	399	384
Ending Vehs	369	359	362	372	342	355	378
Denied Entry Before	3	0	1	1	3	2	1
Denied Entry After	1	3	1	4	3	2	3
Travel Distance (mi)	7716	7826	7640	7647	7600	7646	7654
Travel Time (hr)	358.1	374.7	369.1	365.9	356.9	358.9	367.5
Total Delay (hr)	161.1	174.3	173.1	170.3	162.2	162.9	171.4
Total Stops	7608	7961	7983	7849	7601	7673	7821
Fuel Used (gal)	268.0	274.1	268.9	267.9	263.9	265.7	268.3

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	10200	10165	10268	10247
Vehs Exited	10218	10198	10339	10288
Starting Vehs	386	377	402	396
Ending Vehs	368	344	331	359
Denied Entry Before	1	2	3	0
Denied Entry After	3	2	2	0
Travel Distance (mi)	7602	7585	7682	7660
Travel Time (hr)	357.9	362.5	360.6	363.2
Total Delay (hr)	162.9	167.9	163.3	166.9
Total Stops	7710	7802	7733	7773
Fuel Used (gal)	265.5	266.4	267.6	267.6

3: Clyde Morris Blvd & Dunlawton Ave Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.3	0.1	0.4	0.3	1.1
Denied Del/Veh (s)	0.6	0.3	2.3	1.1	0.8
Total Delay (hr)	21.2	21.9	9.9	16.9	69.9
Total Del/Veh (s)	43.6	43.8	59.5	62.3	49.1
Stop Delay (hr)	16.5	15.6	8.8	14.5	55.4
Stop Del/Veh (s)	33.8	31.2	53.3	53.5	38.9
Total Stops	1131	1164	529	895	3719
Stop/Veh	0.65	0.65	0.89	0.92	0.73
Travel Dist (mi)	498.7	1248.2	104.8	215.3	2067.1
Travel Time (hr)	32.1	47.8	13.2	22.9	115.9
Avg Speed (mph)	16	26	8	10	18
Fuel Used (gal)	16.9	35.7	5.4	9.9	68.0
Fuel Eff. (mpg)	30.0	34.9	19.4	21.8	30.6
HC Emissions (g)	142	286	41	70	538
CO Emissions (g)	6571	10689	1927	3871	23058
NOx Emissions (g)	528	1494	127	234	2383
Vehicles Entered	1735	1766	577	950	5028
Vehicles Exited	1731	1767	575	948	5021
Hourly Exit Rate	1731	1767	575	948	5021
Input Volume	1714	1784	580	970	5048
% of Volume	101	99	99	98	99
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0
Density (ft/veh)	238	390	299	211	303
Occupancy (veh)	32	48	13	23	115

6: Nova Rd & Dunlawton Ave Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.3	0.2	0.3	0.5	1.3
Denied Del/Veh (s)	0.6	0.6	1.2	1.4	0.9
Total Delay (hr)	28.7	18.5	15.6	19.6	82.4
Total Del/Veh (s)	59.4	52.7	58.0	51.6	55.6
Stop Delay (hr)	23.6	15.5	13.6	16.2	68.8
Stop Del/Veh (s)	48.9	43.9	50.4	42.8	46.4
Total Stops	1211	962	796	1085	4054
Stop/Veh	0.70	0.76	0.82	0.79	0.76
Travel Dist (mi)	858.1	371.4	185.4	273.4	1688.4
Travel Time (hr)	48.8	27.5	20.5	27.0	123.8
Avg Speed (mph)	18	14	9	10	14
Fuel Used (gal)	27.0	13.3	9.0	12.3	61.5
Fuel Eff. (mpg)	31.8	27.9	20.7	22.3	27.4
HC Emissions (g)	191	89	85	89	455
CO Emissions (g)	6821	4151	3964	5160	20095
NOx Emissions (g)	896	368	256	296	1817
Vehicles Entered	1703	1251	938	1327	5219
Vehicles Exited	1689	1243	944	1333	5209
Hourly Exit Rate	1689	1243	944	1333	5209
Input Volume	1695	1254	943	1310	5202
% of Volume	100	99	100	102	100
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0
Density (ft/veh)	330	286	258	204	281
Occupancy (veh)	49	27	20	26	122

Total Network Performance

Denied Delay (hr)	2.4
Denied Del/Veh (s)	0.8
Total Delay (hr)	164.5
Total Del/Veh (s)	55.6
Stop Delay (hr)	124.5
Stop Del/Veh (s)	42.1
Total Stops	7773
Stop/Veh	0.73
Travel Dist (mi)	7659.9
Travel Time (hr)	363.2
Avg Speed (mph)	21
Fuel Used (gal)	267.6
Fuel Eff. (mpg)	28.6
HC Emissions (g)	2313
CO Emissions (g)	93439
NOx Emissions (g)	9663
Vehicles Entered	10247
Vehicles Exited	10288
Hourly Exit Rate	10288
Input Volume	20500
% of Volume	50
Denied Entry Before	0
Denied Entry After	0
Density (ft/veh)	192
Occupancy (veh)	361

Intersection: 3: Clyde Morris Blvd & Dunlawton Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	T	T	T	R	L	L
Maximum Queue (ft)	246	287	393	380	367	299	419	436	437	351	218	260
Average Queue (ft)	159	189	281	267	235	110	297	317	298	74	124	164
95th Queue (ft)	239	264	379	363	339	260	406	419	407	257	212	232
Link Distance (ft)			1515	1515	1515		3718	3718	3718			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	630	630				250				330	380	380
Storage Blk Time (%)						0	15		5	0		
Queuing Penalty (veh)						0	13		9	0		

Intersection: 3: Clyde Morris Blvd & Dunlawton Ave

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	TR	L	L	T	R
Maximum Queue (ft)	240	213	212	366	575	352
Average Queue (ft)	149	114	114	194	318	182
95th Queue (ft)	219	204	204	345	540	306
Link Distance (ft)	957				1194	1194
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		660	330	330		
Storage Blk Time (%)					12	
Queuing Penalty (veh)					31	

Intersection: 6: Nova Rd & Dunlawton Ave

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB
Directions Served	L	L	T	T	T	R	L	L	T	T	TR	L
Maximum Queue (ft)	333	359	383	405	374	300	208	239	347	331	301	282
Average Queue (ft)	223	243	258	267	248	53	116	151	245	230	201	175
95th Queue (ft)	342	360	350	359	343	242	199	216	324	311	285	258
Link Distance (ft)			2670	2670	2670				1559	1559	1559	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	400	400				250	430	430				480
Storage Blk Time (%)	0	1	0		8	0						
Queuing Penalty (veh)	1	2	0		20	0						

Intersection: 6: Nova Rd & Dunlawton Ave

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	L	T	T	R	L	L	T	T	R
Maximum Queue (ft)	308	302	284	78	229	323	427	402	197
Average Queue (ft)	210	197	181	31	130	174	293	273	81
95th Queue (ft)	288	278	264	62	220	268	405	378	155
Link Distance (ft)		1043	1043	1043			1082	1082	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	480				380	380			850
Storage Blk Time (%)						0	1		
Queuing Penalty (veh)						0	4		

Network Summary

Network wide Queuing Penalty: 81

Intersection: 3: Clyde Morris Blvd & Dunlawton Ave

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	EBL	WBT	SBL	NBT	WBL	EBT	NBL	SBT
Maximum Green (s)	20.1	64.9	20.7	33.0	13.1	71.9	21.1	33.0
Minimum Green (s)	5.0	15.0	5.0	10.0	5.0	15.0	5.0	10.0
Recall	None	C-Max	None	None	None	C-Max	None	None
Avg. Green (s)	20.2	65.4	18.6	34.5	11.9	74.4	19.3	34.2
g/C Ratio	NA	NA	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0	0	0
Cycles Maxed Out (%)	81	100	43	86	40	100	48	86
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 6: Nova Rd & Dunlawton Ave

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	EBL	WBT	SBL	NBT	WBL	EBT	NBL	SBT
Maximum Green (s)	20.5	51.5	18.1	47.2	25.6	46.5	19.5	46.2
Minimum Green (s)	5.0	15.0	5.0	15.0	5.0	15.0	5.0	15.0
Recall	None	C-Max	None	Max	None	C-Max	None	Max
Avg. Green (s)	20.4	51.6	17.6	47.7	21.9	50.2	19.3	46.4
g/C Ratio	NA	NA	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0	0	0
Cycles Maxed Out (%)	95	100	82	100	29	100	91	100
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:45	6:45	6:45	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	8164	8162	8366	8168	8344	8075	8292
Vehs Exited	8146	8171	8404	8211	8344	8130	8296
Starting Vehs	265	266	287	315	269	285	263
Ending Vehs	283	257	249	272	269	230	259
Denied Entry Before	1	2	1	3	2	1	1
Denied Entry After	1	3	0	2	1	3	3
Travel Distance (mi)	5951	5999	6137	6004	6097	5902	6066
Travel Time (hr)	263.6	265.0	275.2	264.6	273.0	264.4	270.4
Total Delay (hr)	111.1	111.4	117.6	111.1	116.4	112.9	114.7
Total Stops	5913	5879	6204	5919	6044	5839	5923
Fuel Used (gal)	206.1	207.6	212.9	207.4	211.2	204.9	210.1

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	8280	8216	8259	8232
Vehs Exited	8273	8227	8278	8248
Starting Vehs	285	247	271	275
Ending Vehs	292	236	252	262
Denied Entry Before	2	0	2	0
Denied Entry After	3	1	0	0
Travel Distance (mi)	6033	6015	6027	6023
Travel Time (hr)	268.9	270.8	270.0	268.6
Total Delay (hr)	114.1	116.8	115.1	114.1
Total Stops	5948	6038	6055	5977
Fuel Used (gal)	210.2	210.1	210.1	209.1

Interval #0 Information Seeding

Start Time	6:45
End Time	7:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	8164	8162	8366	8168	8344	8075	8292
Vehs Exited	8146	8171	8404	8211	8344	8130	8296
Starting Vehs	265	266	287	315	269	285	263
Ending Vehs	283	257	249	272	269	230	259
Denied Entry Before	1	2	1	3	2	1	1
Denied Entry After	1	3	0	2	1	3	3
Travel Distance (mi)	5951	5999	6137	6004	6097	5902	6066
Travel Time (hr)	263.6	265.0	275.2	264.6	273.0	264.4	270.4
Total Delay (hr)	111.1	111.4	117.6	111.1	116.4	112.9	114.7
Total Stops	5913	5879	6204	5919	6044	5839	5923
Fuel Used (gal)	206.1	207.6	212.9	207.4	211.2	204.9	210.1

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	8280	8216	8259	8232
Vehs Exited	8273	8227	8278	8248
Starting Vehs	285	247	271	275
Ending Vehs	292	236	252	262
Denied Entry Before	2	0	2	0
Denied Entry After	3	1	0	0
Travel Distance (mi)	6033	6015	6027	6023
Travel Time (hr)	268.9	270.8	270.0	268.6
Total Delay (hr)	114.1	116.8	115.1	114.1
Total Stops	5948	6038	6055	5977
Fuel Used (gal)	210.2	210.1	210.1	209.1

3: Clyde Morris Blvd & Dunlawton Ave Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.3	0.1	0.3	0.2	0.9
Denied Del/Veh (s)	0.6	0.3	2.0	1.0	0.8
Total Delay (hr)	20.1	14.6	9.1	7.6	51.4
Total Del/Veh (s)	42.0	41.3	55.4	43.5	43.9
Stop Delay (hr)	15.5	11.4	8.0	6.6	41.4
Stop Del/Veh (s)	32.3	32.2	48.8	37.9	35.4
Total Stops	1144	837	509	505	2995
Stop/Veh	0.66	0.66	0.86	0.80	0.71
Travel Dist (mi)	488.5	878.4	105.1	138.6	1610.7
Travel Time (hr)	31.0	32.8	12.3	11.4	87.5
Avg Speed (mph)	16	27	9	12	19
Fuel Used (gal)	16.4	25.5	5.2	5.8	52.8
Fuel Eff. (mpg)	29.8	34.5	20.4	23.9	30.5
HC Emissions (g)	182	419	44	75	720
CO Emissions (g)	7601	11435	1953	3143	24132
NOx Emissions (g)	610	1605	130	227	2572
Vehicles Entered	1702	1242	578	612	4134
Vehicles Exited	1685	1233	586	620	4124
Hourly Exit Rate	1685	1233	586	620	4124
Input Volume	1697	1242	594	633	4166
% of Volume	99	99	99	98	99
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0
Density (ft/veh)	247	568	319	427	401
Occupancy (veh)	31	33	12	11	87

6: Nova Rd & Dunlawton Ave Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.2	0.1	0.3	0.4	1.0
Denied Del/Veh (s)	0.5	0.4	1.0	1.6	0.8
Total Delay (hr)	13.9	10.6	17.1	10.2	51.7
Total Del/Veh (s)	37.6	42.4	54.9	43.5	44.4
Stop Delay (hr)	11.2	8.8	14.7	8.7	43.6
Stop Del/Veh (s)	30.5	35.6	46.3	37.2	37.2
Total Stops	764	621	928	659	2972
Stop/Veh	0.58	0.69	0.82	0.79	0.71
Travel Dist (mi)	634.2	262.2	221.0	170.4	1287.8
Travel Time (hr)	28.7	16.8	23.2	14.9	83.6
Avg Speed (mph)	22	16	10	12	16
Fuel Used (gal)	17.9	9.0	10.2	7.7	44.8
Fuel Eff. (mpg)	34.5	29.1	21.7	22.2	28.4
HC Emissions (g)	226	128	120	105	579
CO Emissions (g)	6410	4043	4746	4570	19768
NOx Emissions (g)	894	428	335	302	1959
Vehicles Entered	1301	884	1116	826	4127
Vehicles Exited	1300	875	1125	833	4133
Hourly Exit Rate	1300	875	1125	833	4133
Input Volume	1295	880	1103	842	4120
% of Volume	100	99	102	99	100
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0
Density (ft/veh)	544	468	227	372	410
Occupancy (veh)	28	17	23	15	83

Total Network Performance

Denied Delay (hr)	1.9
Denied Del/Veh (s)	0.8
Total Delay (hr)	112.3
Total Del/Veh (s)	47.5
Stop Delay (hr)	85.2
Stop Del/Veh (s)	36.1
Total Stops	5977
Stop/Veh	0.70
Travel Dist (mi)	6023.0
Travel Time (hr)	268.6
Avg Speed (mph)	23
Fuel Used (gal)	209.1
Fuel Eff. (mpg)	28.8
HC Emissions (g)	2998
CO Emissions (g)	95427
NOx Emissions (g)	10548
Vehicles Entered	8232
Vehicles Exited	8248
Hourly Exit Rate	8248
Input Volume	16572
% of Volume	50
Denied Entry Before	0
Denied Entry After	0
Density (ft/veh)	258
Occupancy (veh)	267

Intersection: 3: Clyde Morris Blvd & Dunlawton Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	T	T	T	R	L	L
Maximum Queue (ft)	250	278	401	395	387	228	310	314	293	96	157	194
Average Queue (ft)	136	174	271	261	246	107	197	208	186	32	67	123
95th Queue (ft)	228	249	373	362	354	189	278	289	274	68	153	184
Link Distance (ft)			1515	1515	1515		3718	3718	3718			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	630	630				450				330	380	380
Storage Blk Time (%)									0			
Queuing Penalty (veh)									0			

Intersection: 3: Clyde Morris Blvd & Dunlawton Ave

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	TR	L	L	T	R
Maximum Queue (ft)	278	253	158	197	311	169
Average Queue (ft)	183	145	54	109	166	72
95th Queue (ft)	260	239	133	170	281	133
Link Distance (ft)	957				1194	1194
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		660	330	330		
Storage Blk Time (%)					0	
Queuing Penalty (veh)					1	

Intersection: 6: Nova Rd & Dunlawton Ave

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB
Directions Served	L	L	T	T	T	R	L	L	T	T	TR	L
Maximum Queue (ft)	189	202	273	280	262	29	135	171	289	261	212	297
Average Queue (ft)	107	126	182	183	155	1	31	80	192	171	122	175
95th Queue (ft)	177	184	259	259	245	29	87	140	265	241	209	269
Link Distance (ft)			2584	2584	2584				1559	1559	1559	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	600	600				250	430	430				480
Storage Blk Time (%)					0							
Queuing Penalty (veh)					1							

Intersection: 6: Nova Rd & Dunlawton Ave

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	L	T	T	R	L	L	T	T	R
Maximum Queue (ft)	329	361	357	77	172	204	297	267	147
Average Queue (ft)	211	240	234	35	64	113	188	160	57
95th Queue (ft)	303	336	331	63	155	184	266	242	104
Link Distance (ft)		1043	1043	1043			1082	1082	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	480				380	380			850
Storage Blk Time (%)									
Queuing Penalty (veh)									

Network Summary

Network wide Queuing Penalty: 1

Intersection: 3: Clyde Morris Blvd & Dunlawton Ave

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	EBL	WBT	SBL	NBT	WBL	EBT	NBL	SBT
Maximum Green (s)	26.1	42.9	14.7	45.0	16.1	52.9	20.1	40.0
Minimum Green (s)	5.0	15.0	5.0	10.0	5.0	15.0	5.0	10.0
Recall	None	C-Max	None	None	None	C-Max	None	None
Avg. Green (s)	25.1	55.9	12.9	34.8	17.1	64.8	15.8	32.3
g/C Ratio	-0.01	NA	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	8	0	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0	0	0
Cycles Maxed Out (%)	8	100	48	9	14	100	13	9
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 6: Nova Rd & Dunlawton Ave

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	EBL	WBT	SBL	NBT	WBL	EBT	NBL	SBT
Maximum Green (s)	19.5	53.5	12.1	42.2	9.6	63.5	20.5	34.2
Minimum Green (s)	5.0	15.0	5.0	15.0	5.0	15.0	5.0	15.0
Recall	None	C-Max	None	Max	None	C-Max	None	Max
Avg. Green (s)	17.6	55.4	12.3	44.4	9.6	64.2	20.2	34.4
g/C Ratio	-0.01	NA	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	18	0	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0	0	0
Cycles Maxed Out (%)	39	100	86	100	82	100	86	100
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	11:45	11:45	11:45	11:45	11:45	11:45	11:45
End Time	1:00	1:00	1:00	1:00	1:00	1:00	1:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	9696	9869	9687	9736	9671	9830	9895
Vehs Exited	9688	9797	9737	9742	9697	9808	9873
Starting Vehs	340	300	370	356	358	352	339
Ending Vehs	348	372	320	350	332	374	361
Denied Entry Before	5	3	2	1	1	2	1
Denied Entry After	2	3	4	1	2	1	5
Travel Distance (mi)	7252	7309	7212	7289	7212	7294	7330
Travel Time (hr)	331.8	348.5	344.9	343.0	346.9	351.7	355.3
Total Delay (hr)	146.0	160.8	159.7	156.6	162.1	164.5	166.7
Total Stops	7329	7567	7485	7422	7507	7564	7659
Fuel Used (gal)	252.8	257.1	255.0	255.8	254.9	257.5	259.2

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	11:45	11:45	11:45	11:45
End Time	1:00	1:00	1:00	1:00
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	9673	9667	9721	9744
Vehs Exited	9636	9671	9707	9737
Starting Vehs	350	347	322	342
Ending Vehs	387	343	336	352
Denied Entry Before	4	2	2	1
Denied Entry After	2	0	2	0
Travel Distance (mi)	7167	7188	7221	7247
Travel Time (hr)	351.9	350.1	355.2	347.9
Total Delay (hr)	167.9	165.8	169.6	162.0
Total Stops	7620	7505	7705	7537
Fuel Used (gal)	256.0	256.3	258.2	256.3

Interval #0 Information Seeding

Start Time	11:45
End Time	12:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	12:00
End Time	1:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	9696	9869	9687	9736	9671	9830	9895
Vehs Exited	9688	9797	9737	9742	9697	9808	9873
Starting Vehs	340	300	370	356	358	352	339
Ending Vehs	348	372	320	350	332	374	361
Denied Entry Before	5	3	2	1	1	2	1
Denied Entry After	2	3	4	1	2	1	5
Travel Distance (mi)	7252	7309	7212	7289	7212	7294	7330
Travel Time (hr)	331.8	348.5	344.9	343.0	346.9	351.7	355.3
Total Delay (hr)	146.0	160.8	159.7	156.6	162.1	164.5	166.7
Total Stops	7329	7567	7485	7422	7507	7564	7659
Fuel Used (gal)	252.8	257.1	255.0	255.8	254.9	257.5	259.2

Interval #1 Information Recording

Start Time	12:00
End Time	1:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	9673	9667	9721	9744
Vehs Exited	9636	9671	9707	9737
Starting Vehs	350	347	322	342
Ending Vehs	387	343	336	352
Denied Entry Before	4	2	2	1
Denied Entry After	2	0	2	0
Travel Distance (mi)	7167	7188	7221	7247
Travel Time (hr)	351.9	350.1	355.2	347.9
Total Delay (hr)	167.9	165.8	169.6	162.0
Total Stops	7620	7505	7705	7537
Fuel Used (gal)	256.0	256.3	258.2	256.3

3: Clyde Morris Blvd & Dunlawton Ave Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.3	0.1	0.4	0.3	1.1
Denied Del/Veh (s)	0.6	0.3	2.4	1.2	0.8
Total Delay (hr)	21.5	20.8	8.9	10.6	61.7
Total Del/Veh (s)	43.3	44.8	53.3	48.0	45.8
Stop Delay (hr)	16.1	15.4	7.9	9.3	48.7
Stop Del/Veh (s)	33.0	33.1	47.4	42.2	36.4
Total Stops	1169	1136	517	675	3497
Stop/Veh	0.66	0.68	0.86	0.85	0.73
Travel Dist (mi)	497.3	1149.9	106.4	175.9	1929.5
Travel Time (hr)	32.1	44.7	12.2	15.5	104.5
Avg Speed (mph)	16	26	9	12	19
Fuel Used (gal)	16.2	33.3	5.2	7.5	62.2
Fuel Eff. (mpg)	29.8	34.5	20.5	23.4	30.8
HC Emissions (g)	195	473	38	61	767
CO Emissions (g)	7685	13566	1886	3438	26575
NOx Emissions (g)	637	1888	122	209	2856
Vehicles Entered	1729	1626	586	775	4716
Vehicles Exited	1728	1631	588	778	4725
Hourly Exit Rate	1728	1631	588	778	4725
Input Volume	1724	1615	570	791	4700
% of Volume	100	101	103	98	101
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0
Density (ft/veh)	238	417	323	313	336
Occupancy (veh)	32	45	12	15	103

6: Nova Rd & Dunlawton Ave Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.3	0.2	0.3	0.5	1.3
Denied Del/Veh (s)	0.6	0.7	1.1	1.6	0.9
Total Delay (hr)	36.2	21.9	15.5	13.7	87.1
Total Del/Veh (s)	73.5	59.9	54.7	45.7	60.6
Stop Delay (hr)	31.0	18.5	13.4	11.7	74.6
Stop Del/Veh (s)	63.0	50.8	47.3	39.0	51.8
Total Stops	1364	1072	832	845	4113
Stop/Veh	0.73	0.82	0.82	0.78	0.78
Travel Dist (mi)	838.2	381.1	196.5	217.7	1633.5
Travel Time (hr)	55.9	31.1	20.7	19.7	127.3
Avg Speed (mph)	15	12	10	11	13
Fuel Used (gal)	28.3	14.3	9.2	9.6	61.4
Fuel Eff. (mpg)	29.6	26.6	21.4	22.6	26.6
HC Emissions (g)	257	116	83	92	549
CO Emissions (g)	8111	4670	3955	4808	21544
NOx Emissions (g)	1029	432	254	291	2005
Vehicles Entered	1720	1283	994	1057	5054
Vehicles Exited	1705	1277	1001	1059	5042
Hourly Exit Rate	1705	1277	1001	1059	5042
Input Volume	1717	1275	1005	1057	5054
% of Volume	99	100	100	100	100
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0
Density (ft/veh)	279	253	256	281	269
Occupancy (veh)	56	31	20	19	126

Total Network Performance

Denied Delay (hr)	2.4
Denied Del/Veh (s)	0.9
Total Delay (hr)	159.6
Total Del/Veh (s)	57.0
Stop Delay (hr)	123.4
Stop Del/Veh (s)	44.0
Total Stops	7537
Stop/Veh	0.75
Travel Dist (mi)	7247.4
Travel Time (hr)	347.9
Avg Speed (mph)	21
Fuel Used (gal)	256.3
Fuel Eff. (mpg)	28.3
HC Emissions (g)	2940
CO Emissions (g)	103077
NOx Emissions (g)	11029
Vehicles Entered	9744
Vehicles Exited	9737
Hourly Exit Rate	9737
Input Volume	19508
% of Volume	50
Denied Entry Before	1
Denied Entry After	0
Density (ft/veh)	199
Occupancy (veh)	346

Intersection: 3: Clyde Morris Blvd & Dunlawton Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	T	T	T	R	L	L
Maximum Queue (ft)	269	300	418	422	392	213	393	414	402	320	215	245
Average Queue (ft)	150	182	284	275	247	103	276	289	273	59	111	154
95th Queue (ft)	240	263	392	386	361	192	374	392	381	195	202	217
Link Distance (ft)			1515	1515	1515		3718	3718	3718			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	630	630				450				330	380	380
Storage Blk Time (%)							0		2			
Queuing Penalty (veh)							0		5			

Intersection: 3: Clyde Morris Blvd & Dunlawton Ave

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	TR	L	L	T	R
Maximum Queue (ft)	230	194	198	228	278	303
Average Queue (ft)	139	105	109	150	152	146
95th Queue (ft)	208	187	199	216	250	251
Link Distance (ft)	957				1194	1194
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		660	330	330		
Storage Blk Time (%)					0	
Queuing Penalty (veh)					0	

Intersection: 6: Nova Rd & Dunlawton Ave

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB
Directions Served	L	L	T	T	T	R	L	L	T	T	TR	L
Maximum Queue (ft)	522	539	427	399	361	299	272	306	361	339	306	300
Average Queue (ft)	312	328	248	248	223	31	167	196	241	229	198	184
95th Queue (ft)	531	548	373	356	320	179	270	299	328	312	286	273
Link Distance (ft)			2584	2584	2584				1559	1559	1559	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	600	600				250	430	430				480
Storage Blk Time (%)	0	1			5							
Queuing Penalty (veh)	0	3			11							

Intersection: 6: Nova Rd & Dunlawton Ave

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	L	T	T	R	L	L	T	T	R
Maximum Queue (ft)	334	300	277	86	206	234	310	284	180
Average Queue (ft)	218	183	176	36	114	153	197	174	76
95th Queue (ft)	302	271	259	69	203	222	287	263	142
Link Distance (ft)		1043	1043	1043			1082	1082	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	480				380	380			850
Storage Blk Time (%)							0		
Queuing Penalty (veh)							0		

Network Summary

Network wide Queuing Penalty: 20

Intersection: 3: Clyde Morris Blvd & Dunlawton Ave

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	EBL	WBT	SBL	NBT	WBL	EBT	NBL	SBT
Maximum Green (s)	20.1	46.9	14.7	47.0	10.1	56.9	21.1	41.0
Minimum Green (s)	5.0	15.0	5.0	10.0	5.0	15.0	5.0	10.0
Recall	None	C-Max	None	None	None	C-Max	None	None
Avg. Green (s)	24.1	54.8	14.4	35.6	14.1	65.4	19.6	32.6
g/C Ratio	-0.01	NA	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	18	0	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0	0	0
Cycles Maxed Out (%)	29	100	86	18	32	100	38	18
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 6: Nova Rd & Dunlawton Ave

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	EBL	WBT	SBL	NBT	WBL	EBT	NBL	SBT
Maximum Green (s)	18.5	46.5	13.1	49.2	15.6	49.5	18.5	44.2
Minimum Green (s)	5.0	15.0	5.0	15.0	5.0	15.0	5.0	15.0
Recall	None	C-Max	None	Max	None	C-Max	None	Max
Avg. Green (s)	18.5	46.5	13.0	49.3	15.6	49.5	18.5	44.2
g/C Ratio	NA	NA	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0	0	0
Cycles Maxed Out (%)	95	100	96	100	95	100	96	100
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:45	4:45	4:45	4:45	4:45	4:45	4:45
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	10182	10389	10378	10153	10121	10221	10145
Vehs Exited	10250	10412	10423	10239	10179	10223	10169
Starting Vehs	432	396	374	438	382	379	404
Ending Vehs	364	373	329	352	324	377	380
Denied Entry Before	2	1	4	1	2	2	1
Denied Entry After	4	3	0	4	4	2	2
Travel Distance (mi)	7554	7702	7774	7599	7626	7585	7602
Travel Time (hr)	360.6	365.7	372.1	358.4	356.9	358.2	365.7
Total Delay (hr)	166.3	168.3	172.6	163.9	162.1	163.9	171.0
Total Stops	7708	7788	7957	7615	7612	7708	7770
Fuel Used (gal)	265.5	269.0	272.9	265.6	266.3	265.1	267.1

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:45	4:45	4:45	4:45
End Time	6:00	6:00	6:00	6:00
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	10255	10131	10361	10236
Vehs Exited	10259	10139	10327	10263
Starting Vehs	372	396	377	396
Ending Vehs	368	388	411	367
Denied Entry Before	1	1	2	0
Denied Entry After	4	1	2	0
Travel Distance (mi)	7650	7541	7655	7629
Travel Time (hr)	360.9	359.0	367.5	362.5
Total Delay (hr)	165.1	165.7	171.0	167.0
Total Stops	7672	7701	7909	7744
Fuel Used (gal)	267.5	264.1	269.5	267.2

Interval #0 Information Seeding

Start Time	4:45
End Time	5:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	10182	10389	10378	10153	10121	10221	10145
Vehs Exited	10250	10412	10423	10239	10179	10223	10169
Starting Vehs	432	396	374	438	382	379	404
Ending Vehs	364	373	329	352	324	377	380
Denied Entry Before	2	1	4	1	2	2	1
Denied Entry After	4	3	0	4	4	2	2
Travel Distance (mi)	7554	7702	7774	7599	7626	7585	7602
Travel Time (hr)	360.6	365.7	372.1	358.4	356.9	358.2	365.7
Total Delay (hr)	166.3	168.3	172.6	163.9	162.1	163.9	171.0
Total Stops	7708	7788	7957	7615	7612	7708	7770
Fuel Used (gal)	265.5	269.0	272.9	265.6	266.3	265.1	267.1

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	10255	10131	10361	10236
Vehs Exited	10259	10139	10327	10263
Starting Vehs	372	396	377	396
Ending Vehs	368	388	411	367
Denied Entry Before	1	1	2	0
Denied Entry After	4	1	2	0
Travel Distance (mi)	7650	7541	7655	7629
Travel Time (hr)	360.9	359.0	367.5	362.5
Total Delay (hr)	165.1	165.7	171.0	167.0
Total Stops	7672	7701	7909	7744
Fuel Used (gal)	267.5	264.1	269.5	267.2

3: Clyde Morris Blvd & Dunlawton Ave Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.3	0.1	0.4	0.3	1.1
Denied Del/Veh (s)	0.6	0.2	2.4	1.1	0.8
Total Delay (hr)	20.9	21.2	9.9	17.7	69.7
Total Del/Veh (s)	43.5	42.8	59.2	62.7	48.9
Stop Delay (hr)	16.1	15.1	8.9	16.0	56.1
Stop Del/Veh (s)	33.7	30.4	53.0	56.7	39.4
Total Stops	1117	1129	529	932	3707
Stop/Veh	0.65	0.63	0.88	0.94	0.73
Travel Dist (mi)	490.7	1235.9	106.2	224.2	2057.0
Travel Time (hr)	31.5	46.7	13.3	24.9	116.4
Avg Speed (mph)	16	27	8	9	18
Fuel Used (gal)	16.4	35.4	5.5	10.5	67.7
Fuel Eff. (mpg)	29.9	34.9	19.4	21.4	30.4
HC Emissions (g)	141	283	44	64	533
CO Emissions (g)	6619	10740	2005	3845	23209
NOx Emissions (g)	522	1484	136	224	2365
Vehicles Entered	1708	1750	586	989	5033
Vehicles Exited	1703	1750	581	985	5019
Hourly Exit Rate	1703	1750	581	985	5019
Input Volume	1714	1784	580	970	5048
% of Volume	99	98	100	102	99
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0
Density (ft/veh)	242	399	297	195	302
Occupancy (veh)	31	47	13	25	115

6: Nova Rd & Dunlawton Ave Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.3	0.2	0.3	0.5	1.3
Denied Del/Veh (s)	0.6	0.6	1.1	1.4	0.9
Total Delay (hr)	28.3	18.6	15.8	19.4	82.2
Total Del/Veh (s)	59.3	53.0	58.0	50.0	55.2
Stop Delay (hr)	23.6	15.5	13.7	15.5	68.3
Stop Del/Veh (s)	49.3	44.2	50.4	41.3	46.3
Total Stops	1191	959	808	1053	4011
Stop/Veh	0.69	0.76	0.82	0.78	0.75
Travel Dist (mi)	851.5	371.1	188.0	269.9	1680.4
Travel Time (hr)	48.4	27.6	20.8	26.0	122.7
Avg Speed (mph)	18	14	9	11	14
Fuel Used (gal)	26.8	13.3	9.1	12.2	61.3
Fuel Eff. (mpg)	31.8	27.9	20.7	22.6	27.5
HC Emissions (g)	179	95	81	94	449
CO Emissions (g)	6687	4242	3879	5192	20000
NOx Emissions (g)	870	379	248	304	1801
Vehicles Entered	1691	1251	950	1311	5203
Vehicles Exited	1671	1243	958	1314	5186
Hourly Exit Rate	1671	1243	958	1314	5186
Input Volume	1695	1254	943	1310	5202
% of Volume	99	99	102	100	100
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0
Density (ft/veh)	333	285	255	212	284
Occupancy (veh)	48	27	20	26	121

Total Network Performance

Denied Delay (hr)	2.4
Denied Del/Veh (s)	0.8
Total Delay (hr)	164.6
Total Del/Veh (s)	55.8
Stop Delay (hr)	124.7
Stop Del/Veh (s)	42.2
Total Stops	7744
Stop/Veh	0.73
Travel Dist (mi)	7628.8
Travel Time (hr)	362.5
Avg Speed (mph)	21
Fuel Used (gal)	267.2
Fuel Eff. (mpg)	28.5
HC Emissions (g)	2314
CO Emissions (g)	93744
NOx Emissions (g)	9650
Vehicles Entered	10236
Vehicles Exited	10263
Hourly Exit Rate	10263
Input Volume	20500
% of Volume	50
Denied Entry Before	0
Denied Entry After	0
Density (ft/veh)	192
Occupancy (veh)	360

Intersection: 3: Clyde Morris Blvd & Dunlawton Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	T	T	T	R	L	L
Maximum Queue (ft)	247	273	415	401	380	166	414	439	428	357	217	242
Average Queue (ft)	151	181	277	265	234	77	290	309	288	67	130	166
95th Queue (ft)	236	260	382	368	341	144	395	415	402	233	212	231
Link Distance (ft)			1515	1515	1515		3718	3718	3718			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	630	630				450				330	380	380
Storage Blk Time (%)							0		4			
Queuing Penalty (veh)							0		8			

Intersection: 3: Clyde Morris Blvd & Dunlawton Ave

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	TR	L	L	T	R
Maximum Queue (ft)	247	214	228	380	659	380
Average Queue (ft)	147	109	121	210	344	193
95th Queue (ft)	217	199	211	374	594	327
Link Distance (ft)	957				1194	1194
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		660	330	330		
Storage Blk Time (%)				0	16	
Queuing Penalty (veh)				0	40	

Intersection: 6: Nova Rd & Dunlawton Ave

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB
Directions Served	L	L	T	T	T	R	L	L	T	T	TR	L
Maximum Queue (ft)	367	381	356	364	385	300	208	239	358	336	304	298
Average Queue (ft)	221	236	255	257	238	48	118	151	244	230	201	177
95th Queue (ft)	355	370	345	351	342	229	196	215	328	312	287	259
Link Distance (ft)			2670	2670	2670				1559	1559	1559	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	600	600				250	430	430				480
Storage Blk Time (%)					7							
Queuing Penalty (veh)					18							

Intersection: 6: Nova Rd & Dunlawton Ave

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	L	T	T	R	L	L	T	T	R
Maximum Queue (ft)	321	310	301	80	212	349	431	412	159
Average Queue (ft)	213	196	189	33	122	167	287	266	71
95th Queue (ft)	298	289	282	63	204	259	397	374	130
Link Distance (ft)		1043	1043	1043			1082	1082	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	480				380	380			850
Storage Blk Time (%)						0	2		
Queuing Penalty (veh)						0	4		

Network Summary

Network wide Queuing Penalty: 70

Intersection: 3: Clyde Morris Blvd & Dunlawton Ave

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	EBL	WBT	SBL	NBT	WBL	EBT	NBL	SBT
Maximum Green (s)	20.1	64.9	20.7	33.0	13.1	71.9	21.1	33.0
Minimum Green (s)	5.0	15.0	5.0	10.0	5.0	15.0	5.0	10.0
Recall	None	C-Max	None	None	None	C-Max	None	None
Avg. Green (s)	19.8	65.6	18.5	34.7	11.8	74.5	19.4	34.2
g/C Ratio	NA	NA	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0	0	0
Cycles Maxed Out (%)	76	100	38	90	45	100	52	90
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 6: Nova Rd & Dunlawton Ave

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	EBL	WBT	SBL	NBT	WBL	EBT	NBL	SBT
Maximum Green (s)	20.5	51.5	18.1	47.2	25.6	46.5	19.5	46.2
Minimum Green (s)	5.0	15.0	5.0	15.0	5.0	15.0	5.0	15.0
Recall	None	C-Max	None	Max	None	C-Max	None	Max
Avg. Green (s)	20.4	51.6	17.7	47.6	21.5	50.6	19.3	46.4
g/C Ratio	NA	NA	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0	0	0
Cycles Maxed Out (%)	95	100	77	100	24	100	86	100
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION - DISTRICT FIVE
Signal Retiming - Volusia County

Volusia County
FLORIDA

Designed By:	AC
Date:	6/7/2017
Checked By:	AZ
Date:	6/7/2017

Section	79230000	Mile Post	1.060	Node	6
Sig ID	191	Controller	Econolite ASC/3	System ID	60
Maj. Street	SR 421 (Dunlawton Ave)	Orientation	E-W	SOP	10
Min. Street	Clyde Morris Blvd (CR 483)	Orientation	N-S		

Pedestrians

Movement # (Controller Phase Ø)	1	2	3	4	5	6	7	8	Notes
Direction	EBL	WB	SBL	NB	WBL	EB	NBL	SB	
Speed Limit (mph)	50	50	45	40	50	50	40	45	
Vehicle Traversed Width	155	140	140	160	155	140	125	160	
Approach Grades	-0.2%	-0.1%	-1.3%	-2.0%	-0.1%	-0.2%	-2.0%	-1.3%	
Ped-X (curb to curb)		95		130		99		121	
Crossing Time		28		38		29		35	
Ped-X (button to curb)		16		16		16		15	
Ped-X (button to far curb)		111		146		115		136	
Crossing Time (to far curb)		37		49		39		46	

Controller Timings (seconds)

Movement # (Controller Phase Ø)	1	2	3	4	5	6	7	8	Notes
Direction	EBL	WB	SBL	NB	WBL	EB	NBL	SB	
Turn Type	Prot		Prot		Prot		Prot		
Min Green	5	15	5	10	5	15	5	10	
Ext	4.0	4.0	3.0	4.0	4.0	4.0	3.0	4.0	
Yellow	5.1	5.1	4.9	4.9	5.1	5.1	4.6	4.9	
All Red	3.8	2.0	3.4	2.1	3.8	2.0	3.0	2.1	
Max I	25	50	25	30	25	50	25	30	
Max II	32	50	29	55	28	58	32	53	
Walk		7		7		7		7	
Flashing Don't Walk		28		38		29		35	
Min Splits	14.0	43.0	14.0	52.0	14.0	44.0	13.0	49.0	
Detector Memory									
Det. Cross Switch.									
Recall		Min				Min			
CNA									
Coord Phase		Yes				Yes			

Coordination Timings (seconds)

Plan	Pattern	C-O-S	Splits								Cycle Length	Offset	Seq
AM	1		35	50	23	52	25	60	28	47	160	68	
MD	2		29	54	23	54	19	64	29	48	160	78	
PM	3		29	72	29	40	22	79	29	40	170	126	

Notes:

1) Offset referenced to end of main street green

2) Use Float force-offs

3) Use Inhibit Max termination during coordination

4) Ped recall on phases 2 & 6 for all patterns during coordination

All Patterns

Ring-1	1	2	3	4
Ring-2	5	6	7	8

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION - DISTRICT FIVE
Signal Retiming - Volusia County

Volusia County
FLORIDA

Designed By:	AC
Date:	5/24/2017
Checked By:	AZ
Date:	5/24/2017

Section	79230000	Mile Post	2.362	Node	9
Sig ID	152	Controller	Econolite ASC/3	System ID	60
Maj. Street	SR 421 (Dunlawton Ave)	Orientation	E-W	SOP	10
Min. Street	SR 5A (Nova Rd)	Orientation	N-S		

Pedestrians

Movement # (Controller Phase Ø)	1	2	3	4	5	6	7	8	Notes
Direction	EBL	WB	SBL	NB	WBL	EB	NBL	SB	
Speed Limit (mph)	45	45	45	45	45	45	45	45	
Vehicle Traversed Width	150	145	165	175	146	140	150	175	
Approach Grades	0.0%	0.2%	-0.5%	-0.8%	0.2%	0.0%	-0.8%	-0.5%	
Ped-X (curb to curb)		104		135		102		127	
Crossing Time		30		39		30		37	
Ped-X (button to curb)		14		12		8		10	
Ped-X (button to far curb)		118		147		110		137	
Crossing Time (to far curb)		40		49		37		46	

Controller Timings (seconds)

Movement # (Controller Phase Ø)	1	2	3	4	5	6	7	8	Notes
Direction	EBL	WB	SBL	NB	WBL	EB	NBL	SB	
Turn Type	Prot		Prot		Prot		Prot		
Min Green	5	15	5	15	5	15	5	15	
Ext	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Yellow	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	
All Red	3.7	3.7	4.1	2.0	3.6	3.7	3.7	2.0	
Max I	25	50	25	40	25	50	25	40	
Max II	41	90	25	48	41	90	25	48	
Walk		7		7		7		7	
Flashing Don't Walk		30		39		30		37	
Min Splits	14.0	46.0	14.0	53.0	14.0	46.0	14.0	51.0	
Detector Memory									
Det. Cross Switch.									
Recall		Min				Min			
CNA									
Coord Phase		Yes				Yes			

Coordination Timings (seconds)

Plan	Pattern	C-O-S	Splits								Cycle Length	Offset	Seq
AM	1		28	62	21	49	18	72	29	41	160	159	
MD	2		27	55	22	56	24	58	27	51	160	149	
PM	3		29	60	27	54	34	55	28	53	170	120	

Notes:

1) Offset referenced to end of main street green
2) Use Float force-offs
3) Use Inhibit Max termination during coordination
4) Ped recall on phases 2 & 6 for all patterns during coordination

Patterns 1 & 3

Ring-1	1	2	3	4
Ring-2	5	6	7	8

Pattern 2

Ring-1	2	1	3	4
Ring-2	5	6	7	8

Time of Day Plan

Designed By:	AC
Date:	5/24/2017
Checked By:	AZ
Date:	5/24/2017

Section:	79230000 & 79190000
Corridor:	SR 421
From:	Williamson Blvd
To:	Nova Rd (SR 5A)

ALL SEASON PLAN

Day	Plan	Time		Pattern (C/S/O)	Cycle Length
Monday Thru Friday	FREE	0:00	6:00	-	FREE
	AM	6:00	9:30	1	160
	MIDDAY	9:30	14:00	2	160
	PM	14:00	18:30	3	170
	MIDDAY	18:30	19:30	2	160
	FREE	19:30	0:00	-	FREE
Saturday	FREE	0:00	9:00	-	FREE
	MIDDAY	9:00	21:00	2	160
	FREE	21:00	0:00	-	FREE
Sunday	FREE	0:00	8:30	-	FREE
	MIDDAY	8:30	21:00	2	160
	FREE	21:00	0:00	-	FREE

Use this Time of Day for Nova Road and Village Trail

APPENDIX D:

Cost Estimates

ENGINEER'S ESTIMATE

FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT 5

FINANCIAL PROJECT ID # :	111111-1-11-11
PROJECT DESCRIPTION:	Dunlawton Avenue at Clyde Morris Boulevard Westbound Left Turn Lane Improvements
PAY ITEM SPEC YEAR:	January 2020
SUBMITTAL TYPE:	Engineers Estimate
COUNTY:	Volusia
DATE:	March 2, 2020
ENGINEERING CONSULTANT FIRM:	VHB
CONTACT NAME:	Keith Stimpson
PHONE NUMBER:	407-982-4482
FILE VERSION:	EE_07-22_Rev26
PAGE NUMBER:	1 of 1

COMPONENT GROUPS

100 - STRUCTURES	*NOT USED*		
200 - ROADWAY			$33,224.51
300 - SIGNING & PAVEMENT MARKINGS			$454.85
400 - LIGHTING	*NOT USED*		
500 - SIGNALIZATION	*NOT USED*		
550 - ITS	*NOT USED*		
600 - LANDSCAPE / PERIPHERALS	*NOT USED*		
700 - UTILITIES	*NOT USED*		
800 - ARCHITECTURAL	*NOT USED*		
900 - MASS TRANSIT	*NOT USED*		
1000 - INVALID & OTHER ITEMS	*NOT USED*		
	COMPONENT SUB-TOTAL		$33,679.36
(102-1) MOT (Maintenance of Traffic)		20%	$6,735.87
	SUB-TOTAL		$40,415.24
(101-1) MOB (Mobilization)		10%	$4,041.52
	SUB-TOTAL		$44,456.76
PU (Project Unknowns)		10%	$4,445.68
	SUB-TOTAL		$48,902.44
(999-25) Initial Contingency (Do Not Bid)			$105,000.00
	PROJECT GRAND TOTAL		**$153,902.44**

NOTES:

The costs provided by the City of Port Orange for drainage swales in the median ($90,000) and engineering budget for the analyses and permitting services ($15,000) are included in the Contingency.

MOT percentage is increased to 20% based on input from the City of Port Orange.

ENGINEER'S ESTIMATE

FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT 5

FINANCIAL PROJECT ID:	111111-1-11-11
FILE VERSION:	EE_07-22_Rev26
PAGE NUMBER:	

200-Roadway

PAY ITEM #	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
0101 1	MOBILIZATION	LS	10%	See Summary Sheet	
0102 1	MAINTENANCE OF TRAFFIC	LS	20%	See Summary Sheet	
0999 25	INITIAL CONTINGENCY AMOUNT, DO NOT BID	LS		$105,000.00	
0110 1 1	CLEARING & GRUBBING	AC	0.146	$10,477.67	$1,526.60
0110 4 10	REMOVAL OF EXIST CONC	SY	63	$18.56	$1,169.28
0160 4	TYPE B STABILIZATION	SY	340	$5.00	$1,700.00
0285709	OPTIONAL BASE,BASE GROUP 09	SY	267	$20.40	$5,446.80
0327 70 1	MILLING EXIST ASPH PAVT, 1" AVG DEPTH	SY	351	$2.04	$716.04
0334 1 13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	TN	44	$93.86	$4,135.00
0337 7 82	ASPH CONC FC,TRAFFIC C,FC-9.5,PG 76-22	TN	34	$147.45	$5,011.83
0425 1331	INLETS, CURB, TYPE P-3, <10'	EA	1	$8,765.13	$8,765.13
0520 1 7	CONCRETE CURB & GUTTER, TYPE E	LF	252	$18.24	$4,596.48
0570 1 2	PERFORMANCE TURF, SOD	SY	56	$2.81	$157.36
200-Roadway		**COMPONENT TOTAL**			**$33,224.51**

ENGINEER'S ESTIMATE

FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT 5

FINANCIAL PROJECT ID:	111111-1-11-11
FILE VERSION:	EE_07-22_Rev26
PAGE NUMBER:	

300-Signing & Pavement Markings

PAY ITEM #	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
0706 1 1	RAISED PAVMT MARK, TYPE B W/O FINAL SURF	EA	21	$3.31	$69.51
0710 11101	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	GM	0.059	$1,010.31	$59.61
0710 11125	PAINTED PAVT MARK,STD,WHITE,SOLID,24"	LF	46	$1.31	$60.26
0710 11131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	GM	0.02	$493.37	$9.87
0710 11170	PAINTED PAVT MARK,STD,WHITE, ARROWS	EA	5	$31.75	$158.75
0710 11201	PAINTED PAVT MARK,STD,YELLOW,SOLID,6"	GM	0.092	$1,052.76	$96.85
300-Signing & Pavement Markings		**COMPONENT TOTAL**			**$454.85**

ENGINEER'S ESTIMATE

FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT 5

FINANCIAL PROJECT ID # :	111111-1-11-11
PROJECT DESCRIPTION:	Dunlawton Avenue at Nova Road Eastbound Left Turn Lane Improvements
PAY ITEM SPEC YEAR:	January 2020
SUBMITTAL TYPE:	Engineers Estimate
COUNTY:	Volusia
DATE:	March 2, 2020
ENGINEERING CONSULTANT FIRM:	VHB
CONTACT NAME:	Keith Stimpson
PHONE NUMBER:	407-982-4482
FILE VERSION:	EE_07-22_Rev26
PAGE NUMBER:	1 of 1

COMPONENT GROUPS

100 - STRUCTURES	*NOT USED*		
200 - ROADWAY			$62,277.17
300 - SIGNING & PAVEMENT MARKINGS			$726.60
400 - LIGHTING	*NOT USED*		
500 - SIGNALIZATION	*NOT USED*		
550 - ITS	*NOT USED*		
600 - LANDSCAPE / PERIPHERALS	*NOT USED*		
700 - UTILITIES	*NOT USED*		
800 - ARCHITECTURAL	*NOT USED*		
900 - MASS TRANSIT	*NOT USED*		
1000 - INVALID & OTHER ITEMS	*NOT USED*		
	COMPONENT SUB-TOTAL		$63,003.78
(102-1) MOT (Maintenance of Traffic)		20%	$12,600.76
	SUB-TOTAL		$75,604.53
(101-1) MOB (Mobilization)		10%	$7,560.45
	SUB-TOTAL		$83,164.99
PU (Project Unknowns)		10%	$8,316.50
	SUB-TOTAL		$91,481.49
(999-25) Initial Contingency (Do Not Bid)			$105,000.00
	PROJECT GRAND TOTAL		**$196,481.49**

NOTES:

The costs provided by the City of Port Orange for drainage swales in the median ($90,000) and engineering budget for the analyses and permitting servives ($15,000) are included in the Contingency

MOT percentage is increased to 20% based on input from the City of Port Orange.

ENGINEER'S ESTIMATE

FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT 5

FINANCIAL PROJECT ID:	111111-1-11-11
FILE VERSION:	EE_07-22_Rev26
PAGE NUMBER:	

200-Roadway

PAY ITEM #	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
0101 1	MOBILIZATION	LS	10%	See Summary Sheet	
0102 1	MAINTENANCE OF TRAFFIC	LS	20%	See Summary Sheet	
0999 25	INITIAL CONTINGENCY AMOUNT, DO NOT BID	LS		$105,000.00	
0110 1 1	CLEARING & GRUBBING	AC	0.102	$10,477.67	$1,072.91
0110 4 10	REMOVAL OF EXIST CONC	SY	117	$18.56	$2,171.52
0160 4	TYPE B STABILIZATION	SY	421	$5.00	$2,105.00
0285709	OPTIONAL BASE,BASE GROUP 09	SY	287	$20.40	$5,854.80
0327 70 1	MILLING EXIST ASPH PAVT, 1" AVG DEPTH	SY	1113	$2.04	$2,270.52
0334 1 13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	TN	47	$93.86	$4,444.74
0337 7 82	ASPH CONC FC,TRAFFIC C,FC-9.5,PG 76-22	TN	77	$147.45	$11,353.65
0425 1351	INLETS, CURB, TYPE P-5, <10'	EA	1	$5,333.02	$5,333.02
0425 1361	INLETS, CURB, TYPE P-6, <10'	EA	1	$5,785.56	$5,785.56
0430174118	PIPE CULV, OPT MATL, ROUND,18"SD	LF	167	$77.31	$12,910.77
0520 1 7	CONCRETE CURB & GUTTER, TYPE E	LF	468	$18.24	$8,536.32
0570 1 2	PERFORMANCE TURF, SOD	SY	156	$2.81	$438.36
200-Roadway		**COMPONENT TOTAL**			**$62,277.17**

ENGINEER'S ESTIMATE

FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT 5

FINANCIAL PROJECT ID:	111111-1-11-11
FILE VERSION:	EE_07-22_Rev26
PAGE NUMBER:	

300-Signing & Pavement Markings

PAY ITEM #	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
0706 1 1	RAISED PAVMT MARK, TYPE B W/O FINAL SURF	EA	42	$3.31	$139.02
0710 11101	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	GM	0.158	$1,010.31	$159.63
0710 11125	PAINTED PAVT MARK,STD,WHITE,SOLID,24"	LF	24	$1.31	$31.44
0710 11131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	GM	0.02	$493.37	$9.87
0710 11170	PAINTED PAVT MARK,STD,WHITE, ARROWS	EA	8	$31.75	$254.00
0710 11201	PAINTED PAVT MARK,STD,YELLOW,SOLID,6"	GM	0.126	$1,052.76	$132.65
300-Signing & Pavement Markings		**COMPONENT TOTAL**			**$726.60**