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34 Years

Hunt Club Development

Riverstone Retirement Community

Transportation Impact Study

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TRANSPORTATION IMPACT STUDY

Prepared For:

Prepared By:

NOVATECH
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario
K2M 1P6

May 2017

Novatech File: 117036
Ref No. R-2017-066

NOVATECH
Engineers, Planners & Landscape Architects

May 23rd, 2017

City of Ottawa,
Planning and Growth Management Branch
110 Laurier Ave. W., 4th Floor
Ottawa, Ontario K1P 1J1

Attention: **Mr. Wally Dubyk**
Project Manager, Infrastructure Approvals

Dear Mr. Dubyk:

Reference: **1026-1054 Hunt Club Road**
Transportation Impact Study
Our File No. 117036

We are pleased to submit the following Transportation Impact Study in support of Official Plan Amendment, Zoning By-law Amendment and Site Plan Control applications for 1026-1054 Hunt Club Road.

The structure and format of this report follows the 2006 City of Ottawa Transportation Impact Assessment (TIA) Guidelines for a Transportation Impact Study. A checklist of the documentation requirements as outlined in Appendix C of the TIA guidelines is attached overleaf.

A PDF version of this report and copies of the electronic software files are provided on the enclosed disk. Please call if you have any questions as you complete your review.

Yours truly,

NOVATECH

B. Byvelds

Brad Byvelds, P. Eng.
Project Coordinator | Transportation/Traffic

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

Documentation and Reporting Checklist

Report Context (Section 1.0)

Description of the development (include all of the following that are known at the time of the application):

- ✓ Municipal address;
- ✓ Location relative to major elements of the existing transportation system (e.g., the site is located in the southwest quadrant of the intersection of Main Street/ First Street, 600 meters from the Maple Street Rapid Transit Station);
- ✓ Existing land uses or permitted use provisions in the Official Plan, Zoning By-law, etc.;
- ✓ Proposed land uses and relevant planning regulations to be used in the analysis;
- ✓ Proposed development size (building size, number of residential units, etc.) and location on site;
- ✓ Estimated date of occupancy;
- ✓ Planned phasing of development;
- ✓ Proposed number of parking spaces (not relevant for Draft Plans of Subdivision); and
- ✓ Proposed access points and type of access (full turns, right-in/ right-out, turning restrictions, etc.
- ✓ Study area;
- ✓ Time periods and phasing; and
- ✓ Horizon years (include reference to phased development).

The TIS must include a key plan that shows the general location of the development in relation to the surrounding area. The TIS must also provide a draft site plan of a suitable scale that shows the general location of the development and the proposed access. If the proposed development/ redevelopment is to be constructed in phases, a description must be provided for each phase, identifying the proposed timing of implementation.

Existing Conditions (Section 2.0)

- ✓ Existing roads and ramps in the study area, including jurisdiction, classification, number of lanes, and posted speed limit;
- ✓ Existing intersections, indicating type of control, lane configurations, turning restrictions, and any other relevant data (e.g., extraordinary lane widths, grades, etc.);
- ✓ Existing access points to adjacent developments (both sides of all roads bordering the site);
- ✓ Existing transit system, including stations and stops;
- ✓ Existing on- and off-road bicycle facilities and pedestrian sidewalks and pathway networks;
- ✓ Existing system operations (V/C, LOS); and
- ✓ Major trip generators/ attractors within the Study Area should be indicated.

The TIS report must include: a context plan of a suitable scale that shows the general location of the development, the proposed access locations and the existing conditions in the surrounding area; figures documenting the existing travel demands by mode; and a summary of collisions for the effected study area roads. A photographic inventory of the transportation network elements in the vicinity of the proposed access points would be beneficial to staff in their review of the Consultant's report.

Demand Forecasting (Section 3.0)

- ✓ General background growth;
- ✓ Other study area developments;
- ✓ Changes to the study area road network;
- ✓ Future background system operations (V/C, LOS, queue lengths):
  - include figures documenting future background travel demands by mode for each horizon year
- ✓ Trip generation rates;
- ✓ Trip distribution and assignment:
  - include figures documenting forecasted site trip generation and assignment by mode; and
  - include figures documenting total future travel demands by mode for each horizon year.

Impact Analysis (Section 4.0-8.0)

- ✓ Total future system operations (V/C, LOS, queue lengths);
- ✓ Signal and auxiliary lane (device) warrants;
- ✓ Operational/ safety assessment (e.g., sight line assessment where grades are an issue);
- ✓ Storage analysis for closely spaced intersections;
- ✓ Pedestrian and bicycle network connections and continuity;
- ✓ On-site circulation and design;
- ✓ Potential for neighbourhood impacts; and
- ✓ TDM.

Mitigation Measures and Site Design Characteristics (Section 7.0, 8.0)

The TIS must identify all mitigation measures required to offset network impacts from the development. The CTS must also identify key site design features required to implement the Official Plan and Transportation Master Plan policies regarding site development.

The TIS must include all of the following, where they are required by the subject development:

- X Location and timing of proposed changes to existing traffic controls at intersections (e.g., new traffic signals, Stop signs, etc.);

- X Location and timing of new intersections, including proposed traffic control measures (e.g., traffic signals, etc.);
- ✓ Requirements for new auxiliary lanes;
- ✓ Mitigation measures required to offset impacts on the surface and Rapid Transit networks;
- ✓ New or modified elements of the bicycle and pedestrian networks;
- ✓ Community impact mitigation measures; and
- ✓ Proposed TDM features or programs to support the site development.

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EXECUTIVE SUMMARY

This Transportation Impact Study (TIS) has been prepared in support of Official Plan Amendment, Zoning By-law Amendment and Site Plan Control applications for 1026-1054 Hunt Club Road. The proposed development will consist of an eight-storey hotel on the eastern portion of the site and an eight-storey retirement home on the western portion of the subject site. The proposed retirement home will contain 145 units and the proposed hotel will contain 150 units.

The proposed development will be constructed in two phases, commencing with the retirement home. The proposed retirement home is anticipated to be built-out in 2019, while full build-out of the subject site is anticipated in 2021.

The proposed retirement home will contain a total of 22 parking spaces within an underground parking garage and 16 parking spaces above grade. The proposed hotel will contain a total of 121 parking spaces in an underground parking garage and 30 parking spaces above grade. Access to the development is proposed through two right-in right-out accesses on Hunt Club Road.

The study area for this report was confirmed with City staff and includes the proposed accesses as well as the following intersections:

- Hunt Club Road/Airport Parkway
- Hunt Club Road/McCarthy Road/Downpatrick Road

The selected time periods for the analysis are the weekday AM and PM peak hours, as they represent the 'worst case' combination of site generated traffic and adjacent street traffic. The study area will be analyzed for the existing, background and total traffic conditions.

Based on the results of the following analysis, the main conclusions and recommendation of this report are as follows:

- Critical movements at the Hunt Club Road/Airport Parkway intersection are operating with a LOS F during the weekday AM and PM peak hours. Signal timing optimization is not anticipated to yield an acceptable LOS. As the northbound and southbound through lanes on Airport Parkway are grade separated, there is limited opportunity to provide additional lanes to improve intersection operations and is beyond the scope of this report.

- During a site visit the 60m queue for the southbound left turn movement at the Hunt Club Road/McCarthy Road/Downpatrick Road intersection was confirmed. Consideration should be given to extending the southbound left turn lane at this intersection through line painting (existing road platform on McCarthy Road is approximately 13m). The 45m queue for the westbound left turn movement at the Hunt Club Road/Airport Parkway intersection was also confirmed. The extension of this westbound left turn lane is limited by the rail overpass. The queueing for all other turning movements at the study area intersection did not exceed the existing storage length during the site visits. The westbound through queue at the Hunt Club Road/Airport Parkway intersection extended through the upstream Hunt Club Road/Dazé Street/Bridle Path Drive intersection.

- Under the 2021 and 2026 background traffic conditions, critical movements at the Hunt Club Road/Airport Parkway intersection will continue to operate with a LOS F during the weekday AM and PM peak hours. The Hunt Club Road/McCarthy Road/Downpatrick Road

intersection will continue to operate with a LOS D or better during the weekday AM and PM peak hours.

- With the addition of site generated traffic in 2021 and 2026, the v/c ratios at the Hunt Club Road/Airport Parkway intersection are anticipated to increase slightly. It is noteworthy that the two-way traffic generated by the proposed development equates 7-8% of the existing eastbound traffic volumes on Hunt Club Road. Based on the foregoing, the proposed development will slightly increase traffic at the Hunt Club Road/Airport Parkway intersection.

- With the addition of site generated traffic in 2021 and 2026, the eastbound through movement at the Hunt Club Road/McCarthy Road/Downpatrick Road intersection is anticipated to operate with a LOS E during the PM peak hour. Traffic signal optimization is anticipated to reduce the critical v/c ratio to 0.80 (SBL).

- During the site visits conducted on May 11th and 12th, 2017 a maximum eastbound queue length of 150m and 180m was observed at the Hunt Club Road/Airport Parkway intersection during the AM and PM peak hours respectively. Typical eastbound queues at this intersection were observed at approximately 100m, which would just reach the eastern access. Traffic exiting the site may have to periodically rely on courtesy, particularly for the eastbound left turn movement onto the Airport Parkway northbound on-ramp.

- As the proposed accesses will be restricted to right-in right-out, additional U-turns are anticipated at the Hunt Club Road/McCarthy Road/Downpatrick Road and Hunt Club Road/Dazé Street/Bridle Path Drive intersections. The Hunt Club Road/Dazé Street/Bridle Path Drive intersection permits U-turns, and the eastbound left turn movement is a fully protected turning phase. The Hunt Club Road/McCarthy Road/Downpatrick Road intersection permits U-turns, and the westbound left turn movement is a permitted and protected left turn phase. Based on the foregoing, the additional U-turns will be accommodated in a safe and efficient manner.

- A review of the peak hour traffic volumes at the proposed accesses shows a combined 49 and 52 westbound right tuning vehicles during the weekday AM and PM peak hours respectively. The right turning volumes at the accesses don't meet the Ministry of Transportation Ontario (MTO) right turn lane criteria of 60vph or 10% of the adjacent through traffic. Based on the foregoing, a right turn lane is not recommended at the accesses.

- Pedestrian connections will be provided between the main and side building entrances and the proposed parking lot, as well as the existing sidewalk along Hunt Club Road. A landscaped amenity area will be provided on the south side of the retirement home.

- The proposed developments will be served by two right-in right-out accesses on Hunt Club Road. The western access will be 6.7m in width, and is located approximately 19m from the westerly property line. The eastern access will be 6.7m in width, and is located approximately 45m from the eastern property line/Airport Parkway right-of-way (ROW) limit. The two accesses are located approximately 55m apart, measured curb-to-curb. The proposed accesses adhere to the requirements of the City's Private approach by-law.

- On-site vehicle and bicycle parking will conform to the minimum requirements of the City's Zoning By-law (ZBL).

- Access to the proposed development will be located along an arterial roadway. As such, the proposed development is not anticipated to have a significant impact on the local and collector roads in the area.

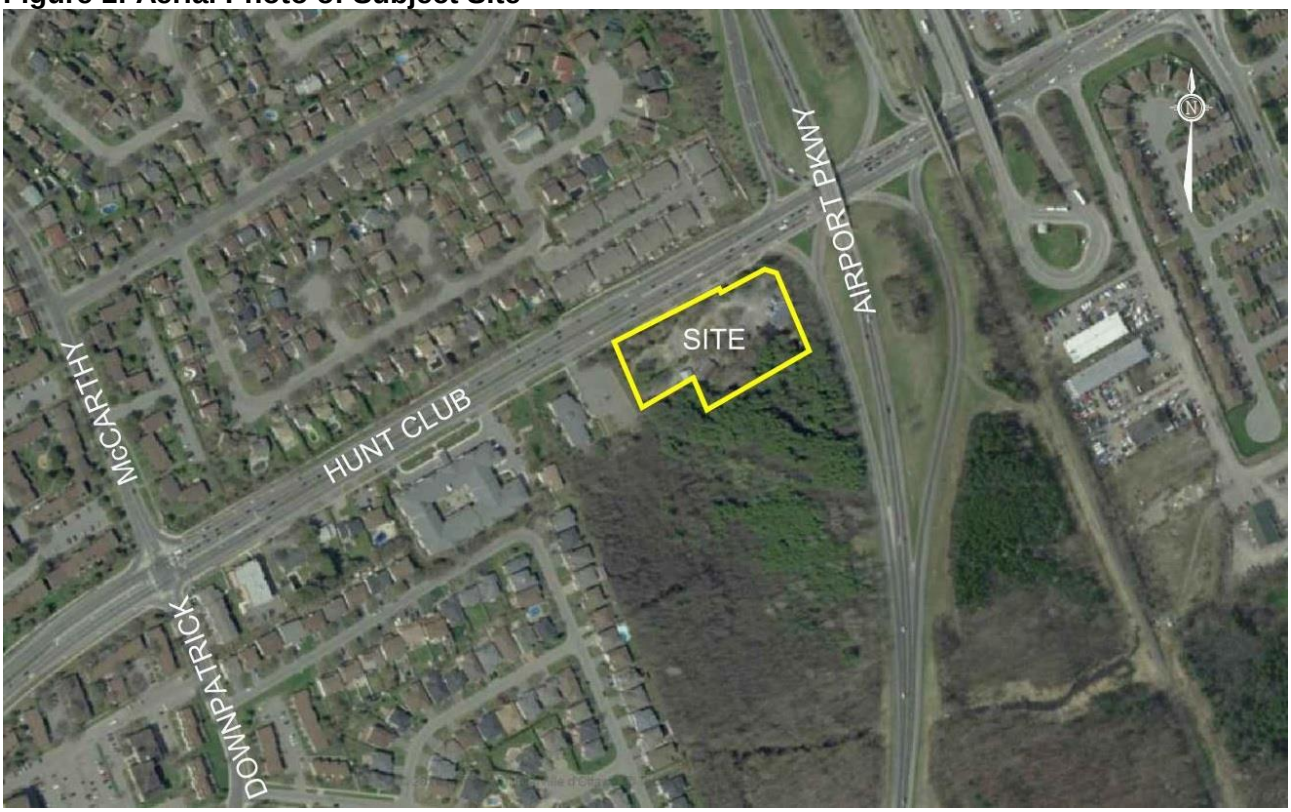
- The number of on-site parking spaces that will be provided meets the minimum requirements of the City's ZBL. Parking infiltration onto adjacent roadways is not anticipated.

- The proposed development conforms to the City's TDM initiatives by providing easy access to local pedestrian, bicycle and transit systems.

1.0 INTRODUCTION

This Transportation Impact Study (TIS) has been prepared in support of Official Plan Amendment, Zoning By-law Amendment and Site Plan Control applications for 1026-1054 Hunt Club Road. An aerial photo of the subject site is shown in **Figure 1**. A key plan is also provided in **Figure 2**.

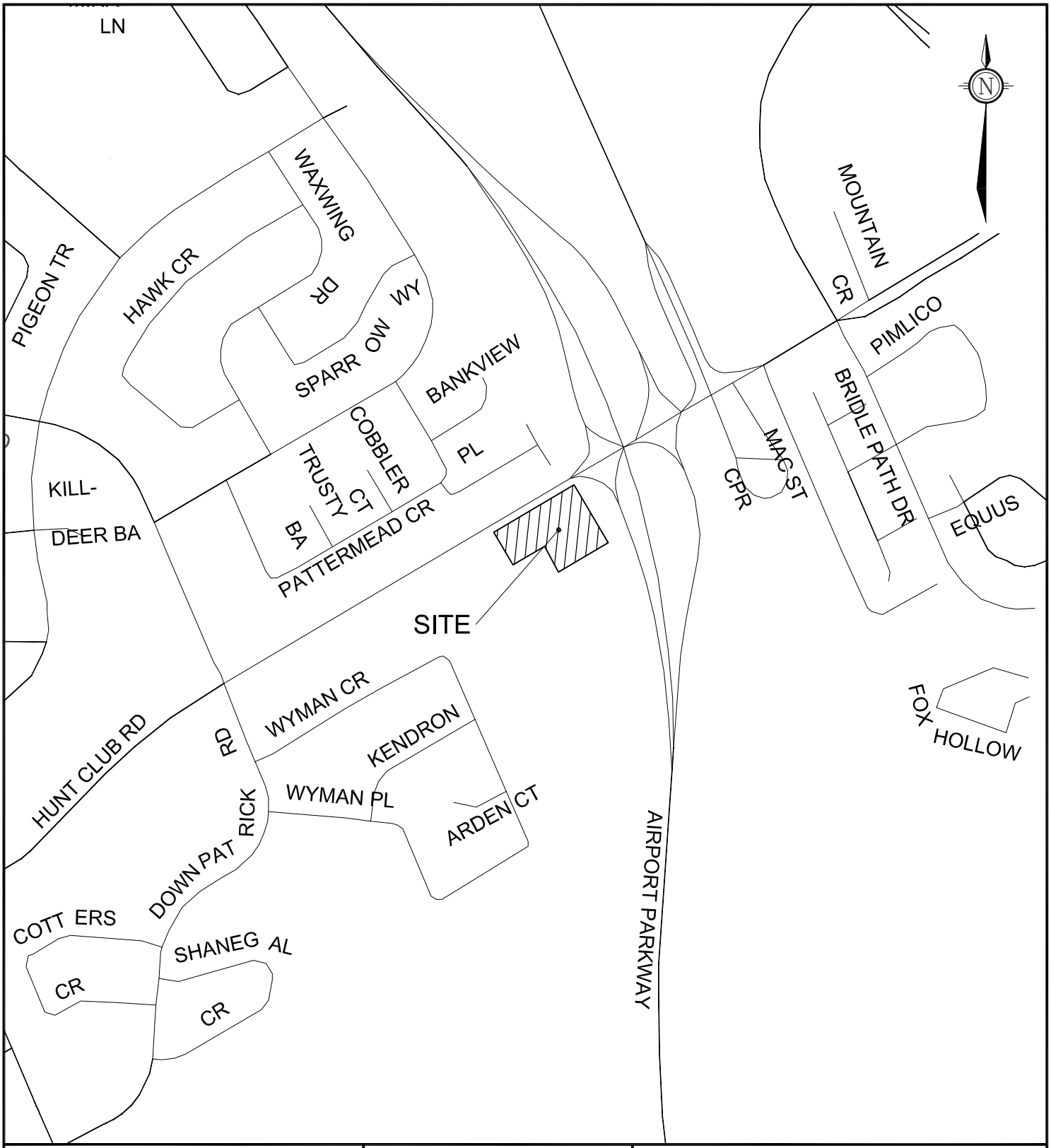
Figure 1: Aerial Photo of Subject Site



The 1026-1040 Hunt Club Road sites are currently zoned R1MM and are occupied by a one-storey detached dwelling, as well as a detached garage and shed. The 1050-1054 Hunt Club Road sites are currently zoned I1A and are occupied by a two-storey detached dwelling and a detached garage. The existing development is served by four right-in right-out accesses along Hunt Club Road.

The subject site is bound by the following:

- Hunt Club Road and residential development to the north;
- Vacant land/forest to the south;
- Airport Parkway to the east; and
- A church to the west.



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KEY PLAN

1026-1054 WEST HUNT CLUB ROAD

HUNT CLUB DEVELOPMENT

DATE	JOB	FIGURE
MAY 2017	117036	FIGURE 2

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1.1 Proposed Development

The proposed development will consist of an eight-storey hotel on the eastern portion of the site and an eight-storey retirement home on the western portion of the site. The proposed retirement home will contain 145 units and the proposed hotel will contain 150 units. The proposed site plan is shown in **Figure 3**.

The proposed development will be constructed in two phases, commencing with the retirement home. The proposed retirement home is anticipated to be built-out in 2019, while full build-out of the subject site is anticipated in 2021.

The proposed retirement home will contain a total of 22 parking spaces within an underground parking garage and 16 parking spaces above grade. The proposed hotel will contain a total of 121 parking spaces in an underground parking garage and 30 parking spaces above grade. Access to the development is proposed through two right-in right-out accesses on Hunt Club Road.

1.2 Analysis Methods

The types of analysis undertaken to assess the transportation impacts of the revised development are consistent with the requirements of the City of Ottawa *Transportation Impact Assessment (TIA) Guidelines*, published in October 2006.

Intersection capacity analysis has been completed using the software package Synchro 8.0. This software uses methodology from the *Highway Capacity Manual 2010* (HCM), published by the Transportation Research Board, to evaluate signalized and unsignalized intersections.

Intersection operating conditions are commonly described in terms of a Level of Service (LOS). LOS is a qualitative measurement of speed, freedom to manoeuvre, interruptions, comfort and convenience. Letters are assigned to six levels, with LOS 'A' representing optimal operating conditions and LOS 'F' representing failing operating conditions.

The City of Ottawa has adopted criteria that directly relate the LOS of a signalized intersection to a volume to capacity (v/c) ratio. Vehicle capacity is defined as the maximum number of vehicles that can pass a given point during a specified period under prevailing traffic conditions. The City's criteria are as follows:

LOS	v/c ratio
A	0 to 0.60
B	0.61 to 0.70
C	0.71 to 0.80
D	0.81 to 0.90
E	0.91 to 1.00
F	**>1.00**

The LOS for an unsignalized intersection is based on average control delay and is defined for individual movements. Control delay includes initial deceleration, queue move-up time, stopped

CENTERLINE OF HUNT CLUB ROAD (CALCULATED BY EDGE OF PAVEMENTS PER ANNEX 1)

HUNT CLUB ROAD

22.25m

22.25m

3.2m

EX CONC SIDEWALK

EX CONC SIDEWALK

EX CONC SIDEWALK

2.4m

0.7m

APPROXIMATE LOCATION OF ROW

DC

PROPOSED RETIREMENT HOME
FF=93.80
BSMT SLAB=90.70
USF=90.40

EXIT

EXIT

PROPOSED HOTEL
FF=93.20
BSMT SLAB=90.10
USF=89.80

LANDSCAPED AREA

LANDSCAPED AREA
REFER TO LANDSCAPING PLAN

EXIT

AIRPORT PARKWAY ONRAMP

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1026-1054 HUNT CLUB ROAD

PROPOSED SITE PLAN

SCALE 1 : 500 (0, 5m, 10m, 20m)

DATE MAY 2017 | JOB 117036 | FIGURE FIGURE 3

SHT11X17.DWG 279mmX432mm

time and final acceleration. The HCM presents the following criteria relating the LOS for individual movements to average control delay:

LOS	Delay (sec/veh)
A	<10
B	10 to 15
C	15 to 25
D	25 to 35
E	35 to 50
F	**>50**

In this study, movements at signalized and unsignalized intersections have been evaluated in terms of the LOS as defined in the foregoing tables. Mitigation measures in the form of additional lane capacity and/or signal adjustments have been identified for movements with LOS E.

This TIS has been prepared to provide an assessment of the development proposal. The methodologies used to analyze the transportation impacts of the proposed development are described as follows:

- An operational evaluation of the study area intersections under the existing, background and total traffic conditions for the weekday AM and PM peak hours;
- An assessment of provisions for non-auto travel modes, including integration with local transit service, and connections with the local pedestrian and bicycle networks;
- A review of the proposed on-site design;
- Evaluation of potential community concerns, including neighborhood infiltration and parking impacts; and
- An evaluation of conformance with Transportation Demand Management (TDM) principles.

1.3 Analysis Parameters

The study area for this report was confirmed with City staff and includes the proposed accesses as well as the following intersections:

- Hunt Club Road/Airport Parkway
- Hunt Club Road/McCarthy Road/Downpatrick Road

The selected time periods for the analysis are the weekday AM and PM peak hours, as they represent the 'worst case' combination of site generated traffic and adjacent street traffic. The study area will be analyzed for the existing, background and total traffic conditions.

2.0 EXISTING CONDITIONS

2.1 Roadways

Hunt Club Road
Hunt Club Road is an arterial roadway that generally runs on an east-west alignment between Highway 417 in the east and Old Richmond Road in the west. It has a four-lane divided urban cross-section and has a posted speed limit of 60km/hr in the vicinity of the subject site. The City of Ottawa Official Plan (OP) identifies a 44.5m right-of-way (ROW) to be protected along Hunt Club Road between Prince of Wales Drive and Conroy Road. A road widening will be required as part of this application. A road widening of approximately 0.7m to 3.2m across the frontage of 1026-1040 Hunt Club Road is required for a ROW width of 22.25m from the centreline of the roadway. The approximate road widening is shown in on the Site Plan in **Figure 3**. The required widening will be defined by a legal surveyor.

Airport Parkway
Airport Parkway is an arterial roadway that generally runs on a north-south alignment between Heron Road/Bronson Avenue in the north to the Ottawa International Airport in the south. It has a two-lane undivided rural cross-section with gavel shoulders. Airport Parkway has posted speed limit of 80km/hr in the vicinity of the subject site.

McCarthy Road
McCarthy Road is a major collector roadway that generally runs on a north-south alignment between Walkley Road in the north and Hunt Club Road in the south. It has a two-lane undivided urban cross-section and a posted speed limit of 50km/hr in the vicinity of the subject site.

Downpatrick Road
Downpatrick Road is a local roadway that travels between Hunt Club Road in the north and Uplands Drive in the south. It has a two-lane undivided urban cross section and a posted speed limit of 40km/hr.

2.2 Intersections

Hunt Club Road/Airport Parkway

- Signalized intersection where the northbound and southbound through lanes on Airport Parkway are grade separated.
- Northbound approach – one left turn lane and one right turn lane.
- Southbound approach – dual left turn lanes and one right turn lane.
- Eastbound approach – one left turn lane and two through lanes. An Airport Parkway (southbound) on-ramp is located approximately 40m west of the stop bar.
- Westbound approach – one left turn lane and two through lanes. An Airport Parkway (northbound) on-ramp is located approximately 60m east of the stop bar.
- All pedestrian crossings at this intersection are visually enhanced through ladder crosswalk markings.

Figure 4: Hunt Club Road/Airport Parkway

Hunt Club Road/McCarthy Road/ Downpatrick Road

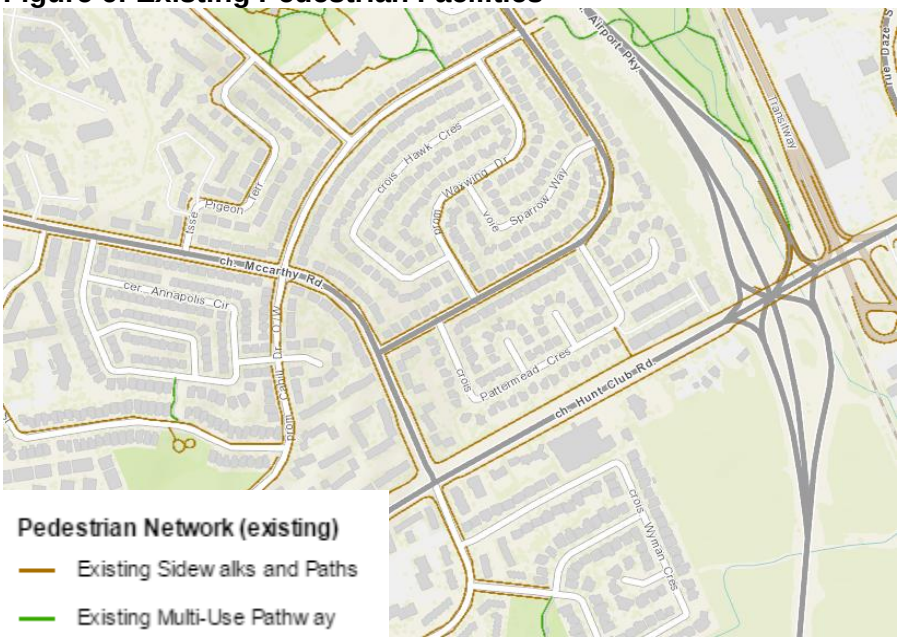
- Intersection is signalized.
- Northbound approach – one left turn lane and one through/right turn lane.
- Southbound approach – one left turn lane and one through lane with a right turn channel.
- Eastbound and westbound approaches – one left turn lane, two through lanes and one channelized right turn lane.
- All pedestrian crossings at this intersection are visually enhanced through ladder crosswalk markings.

Figure 5: Hunt Club Road/McCarthy Road/ Downpatrick Road

2.3 Pedestrian Facilities

Sidewalks are currently provided on both sides of Hunt Club Road, McCarthy Road and Downpatrick Road. An asphalt sidewalk is provided on the east side of the Airport Parkway northbound on-ramp, connecting to a north-south multi-use pathway (MUP). The pedestrian facilities in the area are shown in **Figure 6**.

Figure 6: Existing Pedestrian Facilities



2.4 Cycling Facilities

Hunt Club Road has bike lanes on both sides of the roadway in the vicinity of the subject site. A north-south MUP is provided adjacent to the Airport Parkway and the OC Transpo transitway to the east.

Hunt Club Road and Airport Parkway are classified as spine cycling routes in the City's Ultimate Cycling Network. McCarthy Road and Downpatrick Road are classified as local routes in the City's Ultimate Cycling Network. The City's Existing Cycling Network and Ultimate Cycling Network in the vicinity of the subject site are shown in **Figure 7** and **Figure 8** respectively.

Figure 7: Existing Cycling Network

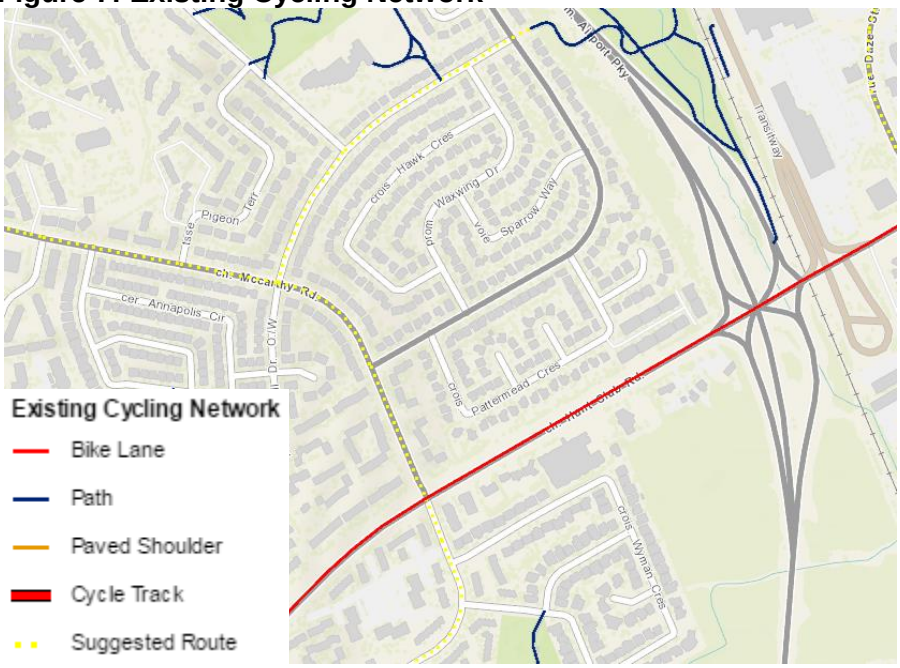
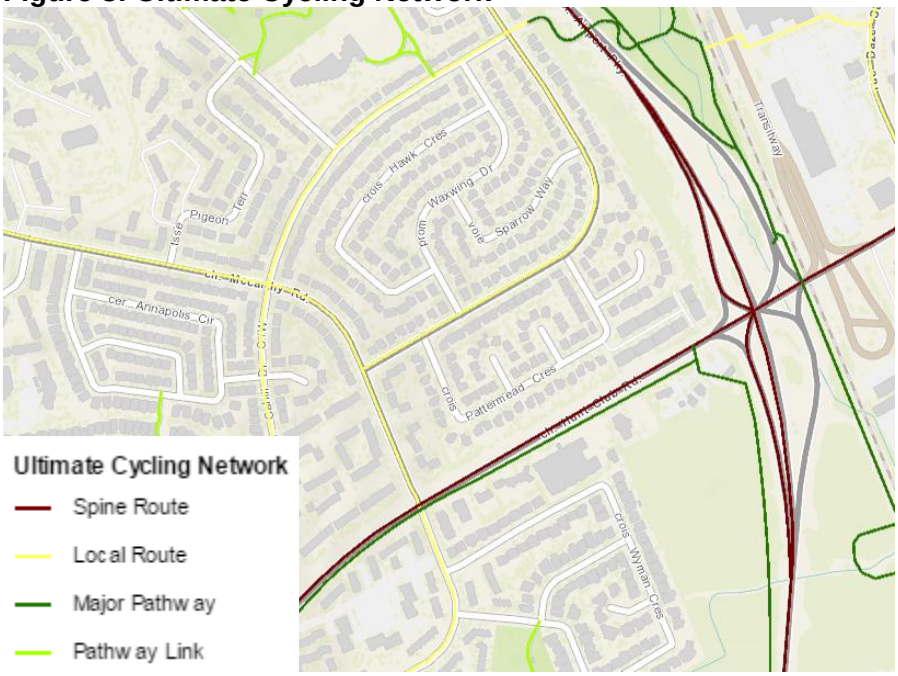


Figure 8: Ultimate Cycling Network



2.3 Transit Facilities

A copy of the 2015 OC Transpo system map for the study area is included in **Appendix A**. This report describes all existing transit facilities within a five-minute walk of the subject site, which equates to a distance of approximately 400m.

OC Transpo bus stops #8803 and #8641 are located along Hunt Club Road west of the subject site. These bus stops are located at a walking distance of approximately 180m and 320m from the subject site respectively. These bus stops provide service to OC Transpo routes 87, 97, 116, 146, 189, 199 and 640. The subject site is also located at a walking distance of approximately 580m from the South Keys Transit Station, which provides comprehensive transit coverage across the City of Ottawa. Route maps for the aforementioned transit routes as well as an area map for the South Keys Transit Station are provided in **Appendix A**.

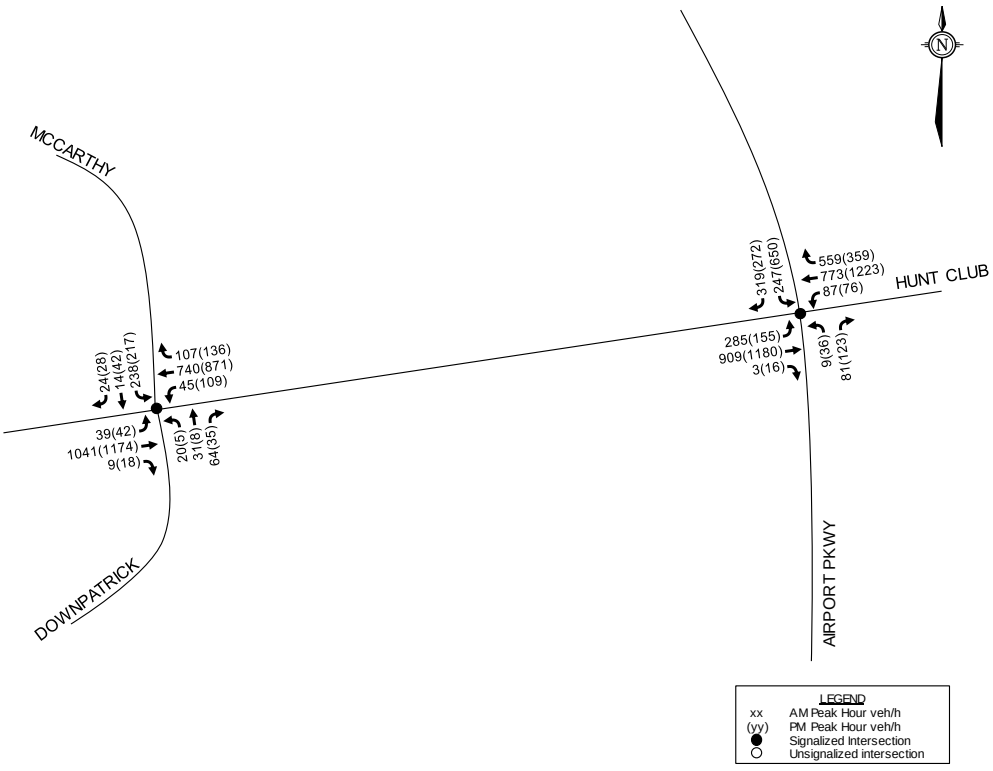
2.4 Existing Traffic Volumes

Weekday traffic counts completed by the City of Ottawa were used to determine the existing pedestrian and vehicular traffic volumes at the following intersections:

- Hunt Club Road/Airport Parkway August 11, 2015
- Hunt Club Road/McCarthy Road/Downpatrick Road June 13, 2014

Peak hour summary sheets of the above traffic counts are included in **Appendix B**. Existing weekday AM and PM peak hour traffic volumes at the study area intersections are shown in **Figure 9**.

Figure 9: Existing Traffic Volumes



2.5 Collision Records

Historical Collision data from the last three years was obtained from the City's Public Works and Service Department for the study area intersections. Copies of the collision summary reports are included in **Appendix C**.

The collision data has been evaluated to determine if there are any identifiable collision patterns. The Ottawa TIA Guidelines define a collision pattern as more than one collision involving similar directions or impact types. Further analysis may be warranted for the intersections with a pattern of six or more collisions for any one movement or a total of 33 or more collisions, over a three-year period.

The following table summarizes the number of collisions at each intersection and roadway segment from January 1, 2013 to December 31, 2015.

Table 1: Reported Collisions

Intersection/Street Segment	Number of Reported Collisions
Hunt Club Road/Airport Parkway	35
Hunt Club Road/McCarthy Road/Downpatrick Road	32
Hunt Club Road – McCarthy Road to Airport Parkway	13

Hunt Club Road/Airport Parkway

A total of 35 collisions occurred at the Hunt Club Road/Airport Parkway intersection within the last three years. Twenty-two of the collisions were rear-end impacts, four were angle impacts, four were sideswipe impacts, four were single vehicle/other impacts and one was a turning movement impact. Three of the total collisions caused personal injuries, but no fatalities occurred.

Eleven of the rear-end impacts occurred on the westbound approach, nine occurred on the eastbound approach and two occurred on the northbound approach. Sixteen of the twenty rear-end impacts on the eastbound and westbound approaches involved through travelling vehicles. Seventeen of the rear-end impacts occurred under favorable conditions (i.e. clear environment and dry conditions).

The Hunt Club Road/Airport Parkway intersection is a grade separated intersection, where Hunt Club Road travels under the Airport Parkway. Signal heads are provided on both sides of the intersection travelling eastbound to enhance sight lines under the overpass. Travelling westbound, prior to the intersection Hunt Club Road travels under a grade separated OC Transpo Transitway, as well as a rail overpass on the westbound approach to this intersection. Traffic signals ahead signage with amber flashers is provided prior to the transitway overpass. It is noteworthy that the east-west crossing distance for this intersection is approximately 50m stop-bar to stop-bar.

The number of rear-end impacts may be associated with the downgrade of the east/west approaches, sight lines of the signal heads due to the overpasses and the long intersection crossing distance.

Hunt Club Road/McCarthy Road/Downpatrick Road

A total of 32 collisions occurred at the Hunt Club Road/McCarthy Road/Downpatrick Road intersection within the last three years. Fourteen of the collisions were rear-end impacts, eleven were turning movement impacts, four were angle impacts and single vehicle/other impacts. Nine of the collisions caused personal injuries, but no fatalities occurred.

Six of the rear-end impacts occurred on the eastbound approach, six occurred on the westbound approach, one occurred on the northbound approach and one occurred on the southbound approach. Nine of the fourteen rear-end impacts occurred under favorable conditions (i.e. clear environment and dry conditions).

Five of the turning movement impacts involved westbound left turning vehicles, four involved eastbound left turning vehicles, one involved a southbound left turning vehicle and one involved eastbound and westbound left turning vehicles. Six of the eleven turning movement collisions occurred during favorable conditions (i.e. clear environment and dry conditions), suggesting environmental factors played a role in the turning movement collision history at this intersection.

The eastbound and westbound approaches to this intersection have clear sightlines and are not on a grade. Based on the foregoing, the rear-end impact history at this intersection is likely due to high traffic volumes and congestion during peak hours.

Hunt Club Road – McCarthy Road to Airport Parkway
A total of thirteen collisions occurred along Hunt Club Road between McCarthy Road and Airport Parkway within the last three years. Eight of the collisions were rear-end impacts, three were sideswipe impacts and two were single vehicle/other impacts. Two of the collisions caused personal injuries, but not fatalities occurred.

All of the rear-end impacts involved vehicles travelling eastbound. Five of the rear-end impacts occurred under favorable conditions (i.e. clear environment and dry conditions).

The high number of rear-end impacts along this stretch of Hunt Club Road may be associated with the down grade of the roadway, and high traffic volumes and congestion during peak hours.

3.0 TRAVEL DEMAND FORECASTING

3.1 Planned Network Changes

Roadway Projects
The City of Ottawa's 2013 TMP identifies the widening of Airport Parkway from two to four lanes between Brookfield Road and Hunt Club Road. This roadway project is identified in the TMP's affordable road network as a Phase 1 project (2014 to 2019). The 2013 TMP also identifies the widening of Airport Parkway between Hunt Club Road and MacDonald-Cartier International Airport. This roadway project is identified in the TMP's affordable road network as a Phase 3 project (2026 to 2031).

An Environmental Study Report (ESR) was prepared by Parsons for the Airport Parkway and Lester Road Widening in August 2016. The ESR provides an updated phasing for the widening of Airport Parkway. Phase 1 includes the widening of Airport Parkway from Brookfield Road to Hunt Club Road and is scheduled for implementation between 2020 and 2025. Phase 2 includes the widening of Lester Road from the Airport Parkway to Bank Street and is scheduled for implementation between 2026 and 2031. Phase 3 includes the widening of Airport Parkway from south of Hunt Club Road to Lester Road and is scheduled for implementation beyond 2031.

The ESR provides a functional design of the Airport Parkway widening from Brookfield Road to Lester Road. The ESR proposes a multi-use pathway along the west side of Airport Parkway,

crossing Hunt Club Road at the southbound Airport Parkway off-ramp. A cross-ride will be provided for the multi-use pathway at the Hunt Club Road/Airport Parkway intersection. The ESR also proposes to remove the southbound and westbound right turn channels to accommodate the multi-use pathway/cross-ride. Relevant excerpts from the Airport Parkway and Lester Road Widening ESR are provided in **Appendix D**.

The TMP also identifies the widening of Hunt Club Road from four to six lanes between Riverside Drive and Bank Street to address capacity deficiencies. This roadway project is identified in the TMP's ultimate network concept, but did not make the 2031 affordable network list.

Transit Projects

The City's TMP identifies the implementation of new bus lanes along Hunt Club Road between Albion Road and Uplands Drive and peak period bus lanes along Airport Parkway from Hunt Club Road to MacDonald-Cartier International Airport. The TMP also identifies the extension of the O-train from Greenboro Station to Bowesville Road, including new stations at Gladstone, Walkley, South Keys and Lietrim. These projects are identified in the TMP's 2031 affordable Rapid Transit and Transit Priority Network.

The implementation of the foregoing transit projects will make transit a more attractive mode of transportation in the vicinity of the subject site. This is anticipated to increase the transit modal share, and decrease the overall traffic volumes along Hunt Club Road and Airport Parkway.

Pedestrian/Cycling Projects

The City's Ottawa Cycling Plan and Ottawa Pedestrian Plan does not identify any future projects in the vicinity of the subject site. As identified above, a new multi-use pathway will be constructed along the west side of Airport Parkway as part of Phase 1 of the Airport Parkway widening.

3.2 General Background Growth and Other Planned Developments

Background growth along the area roadways has been reviewed and approved by City staff, and developed with consideration to the following:

- Snapshots from the City's TRANS long range regional model; and
- Historical traffic counts at the Hunt Club Road/Airport Parkway intersection;

A review of the City's TRANS long range regional model suggests Hunt Club Road will grow at a rate of 0.5% per year between 2011 and 2031. A review of historical traffic counts at the Hunt Club Road/Airport Parkway intersection suggests traffic volumes along Hunt Club Road grew at a rate of approximately 2% per year between 2013 and 2015. Maintaining the 2% growth per year through the horizon years is unreasonable due to the existing through capacity constraints along Hunt Club Road. Based on the foregoing, a background growth rate of 0.5% per year has been applied to the through traffic volumes along Hunt Club Road, consistent with the City's long range regional model.

Based on a review of the City's Development Application Search Tool, there are currently no applications for other developments in the area of the proposed development. Background traffic volumes for the 2021 build-out year and 2026 horizon year are shown in **Figure 10** and **11**.

Figure 10: 2021 Background Traffic Volumes

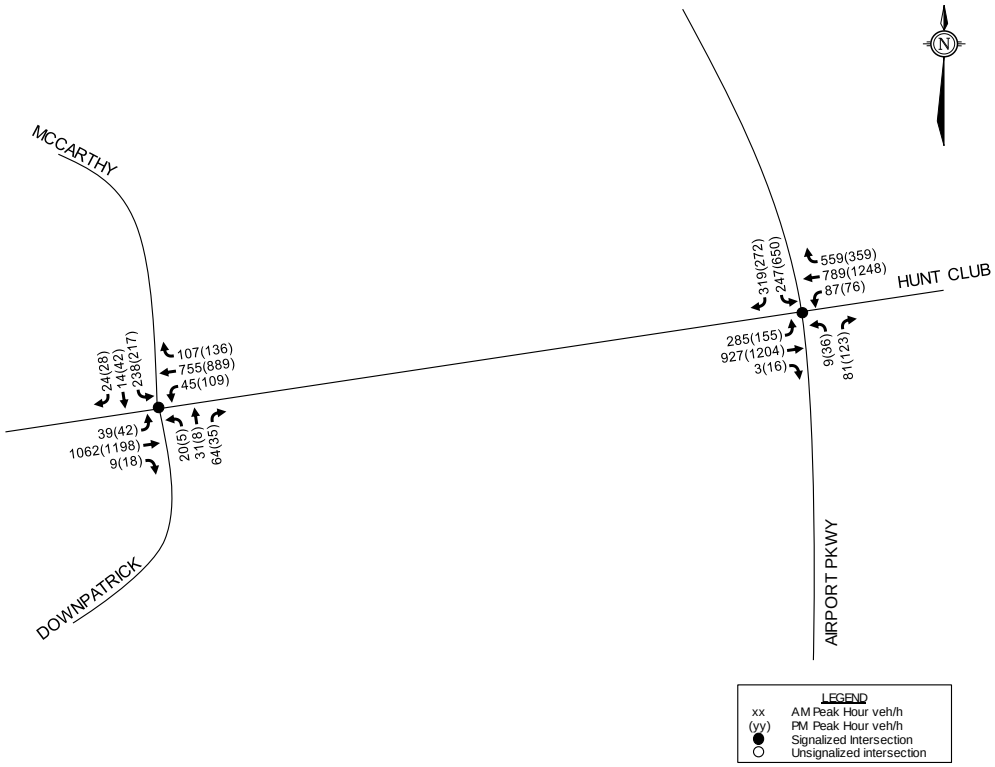
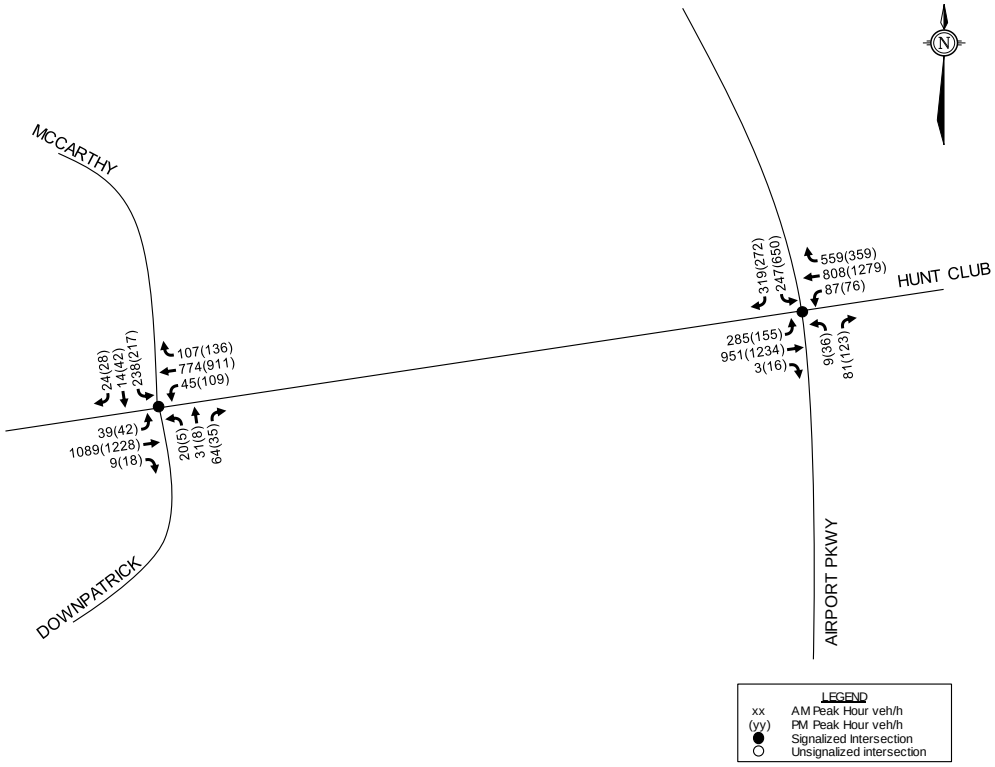


Figure 11: 2026 Background Traffic Volumes



3.4 Trip Generation

Trips generated by the proposed development have been estimated using the relevant peak hour rates identified in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition. The trips generated by the proposed development during the weekday AM and PM peak hours are outlined in the following table.

Table 2: ITE Trip Generation

Land Use	Code	Units/ GFA	AM Peak (vph[1])			PM Peak (vph)		
			In	Out	Total	In	Out	Total
Congregate Care Facility	253	145	5	4	9	13	12	25
Hotel	310	150	58	43	101	51	54	105
		Total	**63**	**47**	**110**	**64**	**66**	**130**

1. vph denotes vehicles per hour

The trip generation surveys compiled in the *ITE Trip Generation Manual* only record vehicle trips, and the sites surveyed are typically located in the suburban locations in the United States where non-auto modes of transportation typically have a modal share of 10% or less. For urban infill developments where multiple modes of transportation are readily available, it is considered good practice to express projected trip generation volumes in terms of person trips instead of vehicle trips.

Based on our review of available literature, a factor of 1.3 applied to ITE vehicle trip generation rates is considered to be a reasonable estimate of "person" trips, given typical auto occupancy in North America is approximately 1.15 and the typical modal share of non-auto person trips is approximately 10% (e.g. 70% Auto Driver, 10% Auto Passenger, 10% Transit, and 10% Non-motorized).

Table 3: Person Trip Generation

Land Use	In (vph)	Out (vph)	Total (vph)	Person Trip Factor	In (pph[1])	Out (pph)	Total (pph)
AM Peak							
Congregate Care Facility	5	4	9	x 1.30	6	5	11
Hotel	58	43	101	→	75	56	131
PM Peak							
Congregate Care Facility	13	12	25	x 1.30	17	15	32
Hotel	51	54	105	→	67	70	137

1. pph denotes persons per hour

The number of car trips that the hotel land use will generate has been estimated by categorizing the person trips by modal share. The modal shares are based on observed percentages in the *2011 TRANS O-D Survey Report* that are specific to the region referred to as the Hunt Club area.

The modal share values applied to the trips generated by the proposed development are based on all observed trips within the Hunt Club area, including those with an origin or destination beyond that area.

A full breakdown of the projected person trips by modal share and arrival/departure is shown in the following table.

Table 4: Site-Generated Trips by Modal Share

Travel Mode	Modal Share	AM Peak			PM Peak		
		In	Out	Total	In	Out	Total
Congregate Care Facility Person Trips		6	5	11	17	15	32
Auto Driver	**60%**	**4**	**3**	**7**	**11**	**9**	**20**
Auto Passenger	15%	1	1	2	3	3	6
Transit	20%	1	1	2	3	3	6
Non-Auto	5%	0	0	0	0	0	0
Hotel Person Trips		6	5	11	17	15	32
Auto Driver	**60%**	**45**	**34**	**79**	**41**	**42**	**83**
Auto Passenger	15%	12	9	21	10	11	21
Transit	20%	15	11	26	13	14	27
Non-Auto	5%	3	2	5	3	3	6

Based on the above calculations, the multi-modal trip generation characteristics of the proposed development can be summarized as follows:

- the proposed development is expected to generate a total of **86** and **103** vehicle trips during the weekday AM and PM peak hours respectively;
- the proposed development is expected to generate a total of **23** and **27** auto passenger trips during the weekday AM and PM peak hours respectively;
- the proposed development is expected to generate a total of **28** and **33** transit trips during the weekday AM and PM peak hours respectively;
- the proposed development is expected to generate a total of **5** and **6** non-motorized trips during the weekday AM and PM peak hours respectively.

3.5 Trip Distribution

The projected distribution of vehicular trips generated by the proposed development has been derived with appropriate consideration given to several key factors, including:

- the size and nature of the proposed development;
- existing traffic patterns;
- the location of the site accesses with respect to the adjacent roadway system; and
- the principles of logical trip routing.

The cardinal direction of all trips generated by the retirement home during the weekday AM and PM peak hours is summarized in the following table. It is noteworthy that the distribution of traffic generated by the hotel is anticipated be highly influenced by the sites proximity to the MacDonald-Cartier International Airport.

Table 5: Trip Distribution

Cardinal Direction	Retirement Home	Hotel
North	55%	15%
South	10%	55%
East	10%	15%
West	25%	15%

As the subject site will be restricted to right-in right-out access along Hunt Club Road, the following trip distribution assumptions have been made:

- Traffic to/from the north:
    - Traffic arriving will use Prince of Wales Drive, Riverside Drive, Airport Parkway and Bank Street to connect to Hunt Club Road.
        - Traffic arriving from Prince of Wales Drive and Riverside Drive will enter the study area from the west.
        - Traffic arriving from the Airport Parkway and Bank Street will enter the study area from the north/east and perform a U-turn at the Hunt Club Road/McCarthy Road/Downpatrick Road intersection.
    - Traffic departing will use Airport Parkway and Bank Street.
        - Traffic departing to Bank Street will exit the study area to the east.
- To/from the south:
    - Traffic arriving will use Uplands Drive and Downpatrick Road to connect to Hunt Club Road
        - Traffic arriving from Uplands Drive will enter the study area from the west.
    - Traffic departing will exit the study area to the south via Airport Parkway.
- To/from the west:
    - Traffic arriving will enter the study area from west via Hunt Club Road.
    - Traffic departing will exit the study area to the east and make a U-turn at the Hunt Club Road/Dazé Street/Bridle Path Drive intersection.
- To/from the east:
    - Traffic arriving will enter the study area from the east and make a U-turn at the Hunt Club Road/McCarthy Drive/Downpatrick Road intersection.
    - Traffic departing will exit the study area to the east via Hunt Club Road.

Traffic volumes generated by the subject site are shown in **Figure 12**. Total traffic volumes for the 2021 build-out year and 2026 horizon year are shown in **Figure 13** and **Figure 14**.

Figure 12: Site Generated Traffic Volumes

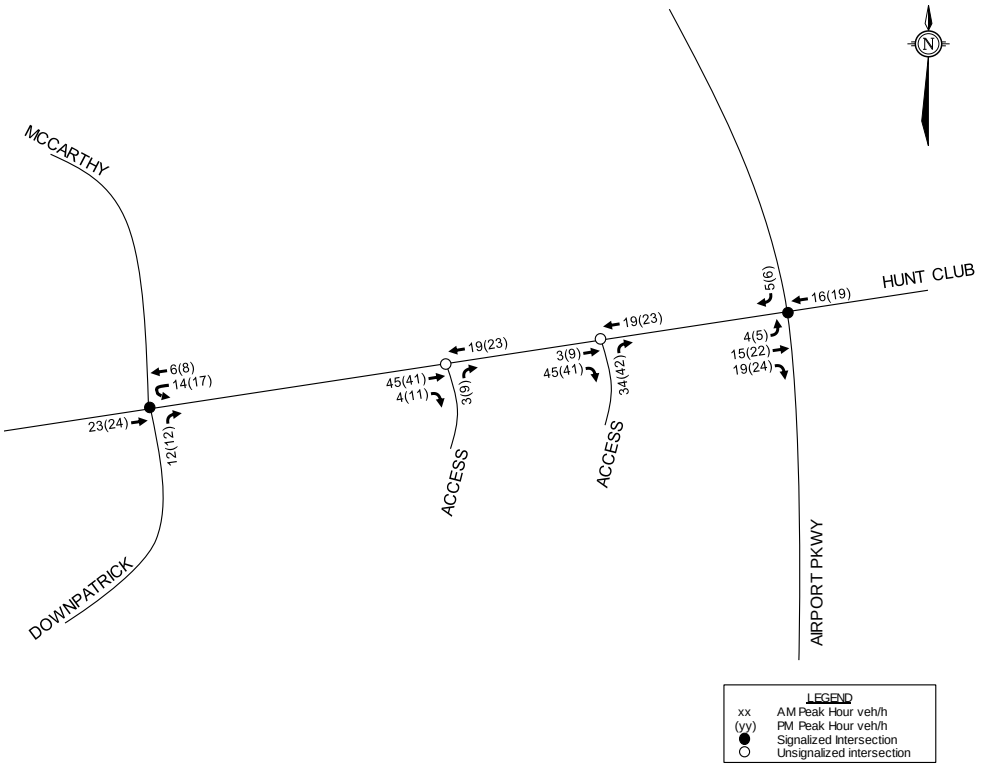


Figure 13: 2021 Total Traffic Volumes

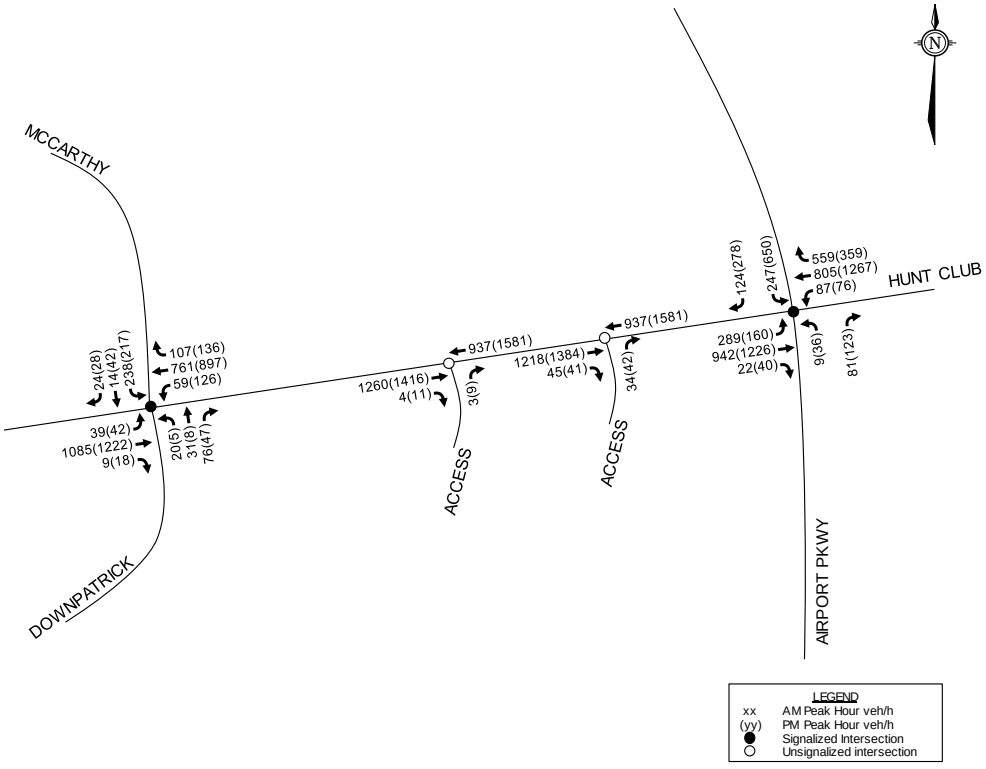
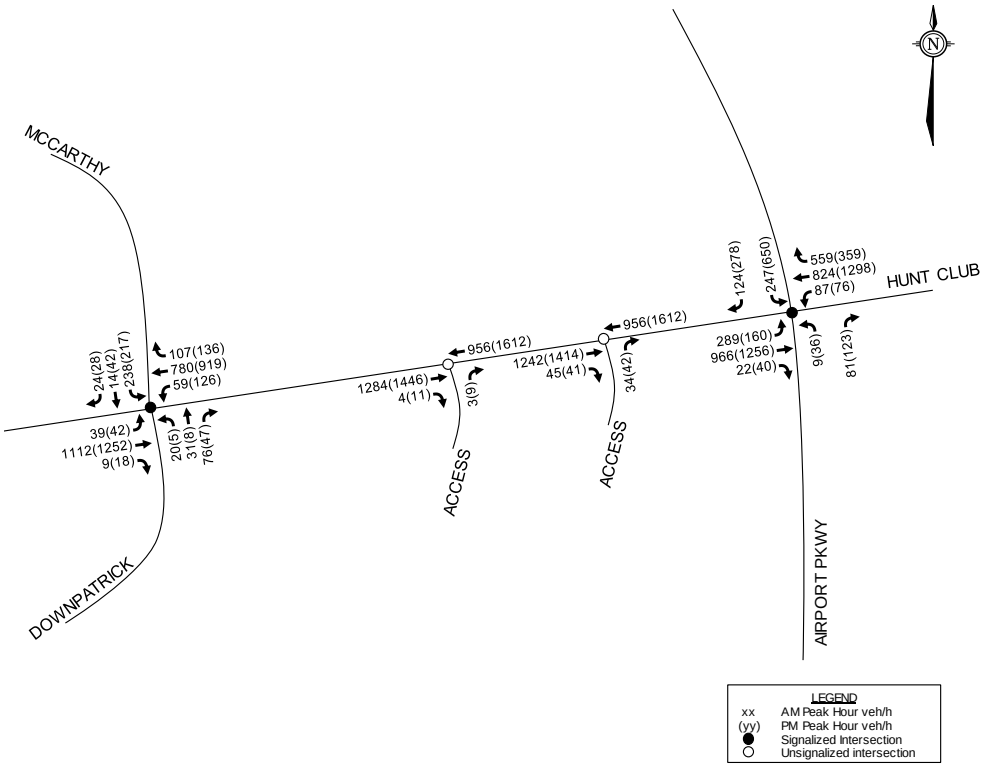


Figure 14: 2026 Total Traffic Volumes



4.0 INTERSECTION ANALYSIS

4.1 Existing Traffic

Intersection capacity analysis has been completed for the existing traffic conditions. The lane configurations at the study area intersections are based on the existing geometry as identified in **Section 2.1**.

The results of the analysis are summarized in the following table for the weekday AM and PM peak hours. Detailed reports are included in **Appendix E**.

Table 6: Intersection Analysis – Existing Traffic

Intersection	AM Peak			PM Peak		
	max. v/c or delay	LOS	Movement	max. v/c or delay	LOS	Movement
Hunt Club Road/McCarthy Road/Downpatrick Road[1]	0.80	C	SBL	0.85	D	EBT
Hunt Club Road/Airport Parkway[1]	**1.00**	**F**	**WBT/R**	**1.20**	**F**	**WBT/R**

1. Signalized Intersection

Based on the foregoing, critical movements at the Hunt Club Road/Airport Parkway intersection are operating with a LOS F during the weekday AM and PM peak hours. Signal timing optimization is not anticipated to yield an acceptable LOS. As the northbound and southbound through lanes on

Airport Parkway are grade separated, there is limited opportunity to provide additional lanes to improve intersection operations and is beyond the scope of this report.

The Hunt Club Road/McCarthy Road/Downpatrick Road intersection is currently operating with a LOS D or better during the weekday AM and PM peak hours.

The Synchro analysis suggests the following eastbound and westbound 95th percentile queue lengths along Hunt Club Road.

Hunt Club Road/McCarthy Road/Downpatrick Road

- Eastbound #135m (AM) #160m (PM)
- Westbound 75m (AM) 90m (PM)

Hunt Club Road/Airport Parkway

- Eastbound 150m (AM) #205m (PM)
- Westbound #300m (AM) #340m (PM)

# indicates that the volume for the 95th percentile cycle exceeds capacity. This traffic was simulated for two complete cycles of 95th percentile traffic to account for the effects of spillover between cycles.

The 95th percentile queue length for the southbound left turn movement at the Hunt Club Road/McCarthy Road/Downpatrick Road intersection is estimated at 55m to 60m during the weekday AM and PM peak hours. This queuing is anticipated to exceed the existing southbound left turn lane storage length of approximately 40m. The 95th percentile queue length for the westbound left turn movement at the Hunt Club Road/Airport Parkway intersection is estimated at 40m to 45m during the weekday AM and PM peak hours. This queuing is anticipated to exceed the existing westbound left turn lane storage length of approximately 20m. The 95th percentile queue lengths associated with all other turning movements does not exceed the existing storage length. It is noteworthy that the 95th percentile eastbound and westbound through queues are anticipated to block the left turn lanes at the Hunt Club Road/Airport Parkway intersection.

Site visits were performed on Thursday May 11th, 2017 (PM Peak Hour) and Friday May 12th, 2017 (AM Peak Hour) to confirm the results of the above analysis. The following queuing observations were made during the site visit:

Hunt Club Road/McCarthy Road/Downpatrick Road

- Eastbound 130m (AM) 100m (PM)
- Westbound 80m (AM) 90m (PM)

Hunt Club Road/Airport Parkway

- Eastbound 150m (AM) 180m (PM)
- Westbound 215m (AM) 340m (PM)

During the site visit the 60m queue for the southbound left turn movement at the Hunt Club Road/McCarthy Road/Downpatrick Road intersection was confirmed. Consideration should be given to extending the southbound left turn lane at this intersection through line painting (existing road platform on McCarthy Road is approximately 13m). The 45m queue for the westbound left turn movement at the Hunt Club Road/Airport Parkway intersection was also confirmed. The extension of this westbound left turn lane is limited by the rail overpass. The queueing for all other turning movements at the study area intersection did not exceed the existing storage length during

the site visits. The westbound through queue at the Hunt Club Road/Airport Parkway intersection extended through the upstream Hunt Club Road/Dazé Street/Bridle Path Drive intersection.

4.2 2021 Background Traffic

Intersection capacity analysis has been completed for the 2021 background traffic conditions. The lane configurations at the study area intersections are based on the existing geometry as identified in **Section 2.1**.

The results of the analysis are summarized in the following table for the weekday AM and PM peak hours. Detailed reports are included in **Appendix E**.

Table 7: Intersection Analysis – 2021 Background Traffic

Intersection	AM Peak			PM Peak		
	max. v/c or delay	LOS	Movement	max. v/c or delay	LOS	Movement
Hunt Club Road/McCarthy Road/Downpatrick Road[1]	0.80	C	SBL	0.86	D	EBT
Hunt Club Road/Airport Parkway[1]	**1.01**	**F**	**WBT/R**	**1.22**	**F**	**WBT/R**

1. Signalized Intersection

Based on the foregoing, critical movements at the Hunt Club Road/Airport Parkway intersection will continue to operate with a LOS F during the weekday AM and PM peak hours. As identified above, signal timing optimization is not anticipated to yield an acceptable LOS and there is limited opportunity to provide additional auxiliary lanes to improve intersection operations.

The Hunt Club Road/McCarthy Road/Downpatrick Road intersection will continue to operate with a LOS D or better during the weekday AM and PM peak hours.

4.3 2026 Background Traffic

Intersection capacity analysis has been completed for the 2026 background traffic conditions. The lane configurations at the study area intersections are based on the roadway geometry provided in the Airport Parkway and Lester Road Widening ESR. As the existing signal timing plan at the Hunt Club Road/Airport Parkway intersection includes a north-south pedestrian crossing phase, a new phase is not anticipated to be required for the proposed cross-ride. For the purposes of this analysis, the existing signal timing plan at the Hunt Club Road/Airport Parkway intersection was maintained.

The results of the analysis are summarized in the following table for the weekday AM and PM peak hours. Detailed reports are included in **Appendix E**.

Table 8: Intersection Analysis – 2026 Background Traffic

Intersection	AM Peak			PM Peak		
	max. v/c or delay	LOS	Movement	max. v/c or delay	LOS	Movement
Hunt Club Road/McCarthy Road/Downpatrick Road[1]	0.80	C	SBL	0.88	D	EBT
Hunt Club Road/Airport Parkway[1]	**1.03**	**F**	**WBT/R**	**1.24**	**F**	**WBT/R**

1. Signalized Intersection

Based on the foregoing, critical movements at the Hunt Club Road/Airport Parkway intersection will continue to operate with a LOS F during the weekday AM and PM peak hours. As identified above, signal timing optimization is not anticipated to yield an acceptable LOS and there is limited opportunity to provide additional auxiliary lanes to improve intersection operations.

The Hunt Club Road/McCarthy Road/Downpatrick Road intersection will continue to operate with a LOS D or better during the weekday AM and PM peak hours.

4.4 2021 Total Traffic

Intersection capacity analysis has been completed for the 2021 total traffic conditions. The results of the analysis are summarized in the following table for the weekday AM and PM peak hours. Detailed reports are included in **Appendix E**.

Table 9: Intersection Analysis – 2021 Total Traffic

Intersection	AM Peak			PM Peak		
	max. v/c or delay	LOS	Movement	max. v/c or delay	LOS	Movement
Hunt Club Road/McCarthy Road/Downpatrick Road[1]	0.81	C	SBL	**0.95**	**E**	**EBT**
Hunt Club Road/Airport Parkway[1]	**1.03**	**F**	**WBT/R**	**1.23**	**F**	**WBT/R**
Hunt Club Road/Access (west)[2]	10 sec	B	NB	10 sec	B	NB
Hunt Club Road/Access (east)[2]	15 sec	C	NB	17 sec	C	NB

1. Signalized Intersection
2. Unsignalized Intersection

With the addition of site generated traffic, the v/c ratios at the Hunt Club Road/Airport Parkway intersection are anticipated to increase slightly. It is noteworthy that the two-way traffic generated by the proposed development equates to 7-8% of the existing eastbound traffic volumes on Hunt Club Road. Based on the foregoing, the proposed development will slightly increase traffic at the Hunt Club Road/Airport Parkway intersection.

With the addition of site generated traffic, the eastbound through movement at the Hunt Club Road/McCarthy Road/Downpatrick Road intersection is anticipated to operate with a LOS E during

the PM peak hour. Traffic signal optimization is anticipated to reduce the critical v/c ratio to 0.80 (SBL).

Both accesses are anticipated to operate with a LOS C during the weekday AM and PM peak hours. The Synchro analysis identifies a 95th percentile eastbound through queue length of 160m and 240m at the Hunt Club Road/Airport Parkway intersection during the AM and PM peak hour respectively. This suggests vehicles will occasionally queue past both accesses during peak hours. During the site visits conducted on May 11th and 12th, 2017 a maximum eastbound queue length of 150m and 180m was observed at the Hunt Club Road/Airport Parkway intersection during the AM and PM peak hours respectively. Typical eastbound queues at this intersection were observed at approximately 100m, which would just reach the eastern access. Traffic exiting the site may have to periodically rely on courtesy, particularly for the eastbound left turn movement onto the Airport Parkway northbound on-ramp.

As the proposed accesses will be restricted to right-in right-out, additional U-turns are anticipated at the Hunt Club Road/McCarthy Road/Downpatrick Road and Hunt Club Road/Dazé Street/Bridle Path Drive intersections. The Hunt Club Road/Dazé Street/Bridle Path Drive intersection permits U-turns, and the eastbound left turn movement is a fully protected turning phase. The Hunt Club Road/McCarthy Road/Downpatrick Road intersection permits U-turns, and the westbound left turn movement is a permitted and protected left turn phase. Based on the foregoing, the additional U-turns will be accommodated in a safe and efficient manner.

A review of the peak hour traffic volumes at the proposed accesses shows a combined 49 and 52 eastbound right turning vehicles during the weekday AM and PM peak hours respectively. The right turning volumes at the accesses don't meet the Ministry of Transportation Ontario (MTO) right turn lane criteria of 60vph or 10% of the adjacent through traffic. Based on the foregoing, a right turn lane is not recommended at the accesses.

4.5 2026 Total Traffic

Intersection capacity analysis has been completed for the 2026 total traffic conditions. The PM peak hour signal timing plan at the Hunt Club Road/McCarthy Road/Downpatrick Road intersection has been optimized to reflect optimal intersection operations. The results of the analysis are summarized in the following table for the weekday AM and PM peak hours. Detailed reports are included in **Appendix E**.

Table 10: Intersection Analysis – 2026 Total Traffic

Intersection	AM Peak			PM Peak		
	max. v/c or delay	LOS	Movement	max. v/c or delay	LOS	Movement
Hunt Club Road/McCarthy Road/Downpatrick Road[1]	0.83	C	EBT	0.80	C	SBL
Hunt Club Road/Airport Parkway[1]	**1.05**	**F**	**WBT/R**	**1.26**	**F**	**WBT/R**
Hunt Club Road/Access (west)[2]	10 sec	B	NB	10 sec	B	NB
Hunt Club Road/Access (east)[2]	15 sec	C	NB	17 sec	C	NB

1. Signalized Intersection
2. Unsignalized Intersection

With the addition of site generated traffic, the v/c ratios at the signalized intersections on Hunt Club Road are anticipated to increase slightly. The proposed development will slightly increase traffic volumes along Hunt Club Road.

Both accesses are anticipated to operate with a LOS C during the weekday AM and PM peak hours.

5.0 PROVISIONS FOR NON-AUTO MODES

Pedestrian connections will be provided between the main and side building entrances and the proposed parking lot, as well as the existing sidewalk along Hunt Club Road. A landscaped amenity area will be provided on the south side of the retirement home.

OC Transpo bus stops #8803 and #8641 are located along Hunt Club Road west of the subject site. These bus stops are located at a walking distance of approximately 180m and 320m from the subject site respectively. These bus stops provide service to OC Transpo routes 87, 97, 116, 146, 189, 199 and 640. The subject site is also located at a walking distance of approximately 580m from the South Keys Transit Station, which provides comprehensive transit coverage across the City of Ottawa.

6.0 ON-SITE DESIGN

This section of the report provides a review of the on-site design in terms of vehicle access and on-site parking.

6.1 Proposed Access

The proposed developments will be served by two right-in right-out accesses on Hunt Club Road. The western access will be 6.7m in width, and is located approximately 19m from the westerly property line. The eastern access will be 6.7m in width, and is located approximately 45m from the eastern property line/Airport Parkway right-of-way (ROW) limit. The two accesses are located approximately 55m apart, measured curb-to-curb.

The City of Ottawa's Private Approach By-law identifies a minimum distance of 3m between any private approach and the nearest property line, and based on the proposed development, 30m between any private approach and the nearest intersecting street line, and 30m between a two-way private approach and any other private approach to the same property. Based on the foregoing, the proposed accesses adhere to the requirements of the City's Private approach by-law.

6.2 Parking

The subject site is located in Area C of Schedule 1A to the City of Ottawa's Zoning By-law (ZBL) and is within 600m of the South Key's Transit Station. Since the proposed development is located within 600m of a rapid transit station, the ZBL identifies the minimum requirements of a residential building should be calculated using rates for Area X. The ZBL identifies the following parking rates associated with the proposed development.

Retirement Home

- 0.25 spaces per dwelling unit
- 1 space per 100m^2 of GFA used for medical, health or personal service

Hotel

- 1 per guest unit

Based on the foregoing, the ZBL identifies a requirement of 38 parking spaces for the retirement home and 150 parking spaces for the hotel. A total of 38 parking spaces will be provided for the retirement home (16 above grade and 22 in an underground parking garage). A total of 151 parking spaces will be provided for the hotel (30 at grade and 121 in an underground parking garage).

The City of Ottawa's ZBL identifies the following bicycle parking rates associated with the proposed development.

Retirement Home

- 0.25 spaces per dwelling unit

Hotel

- 1 per 1000 m^2 of GFA

Based on the foregoing, the ZBL identifies a requirement of 36 bicycle parking spaces for the retirement home. A total of 36 bicycle parking spaces will be provided for the retirement home. A Total of 21 bicycle parking spaces will be provided in the underground parking garage and 15 exterior bicycle parking spaces will be provided in the northeast corner of the retirement home. Based on a hotel GFA of 7,500m^2, the ZBL identifies a requirement of 8 bicycle parking spaces for the hotel. A total of 8 bicycle parking spaces will be provided for the hotel. The bicycle parking for the hotel will be located near the east side of the retirement home.

7.0 COMMUNITY IMPACTS

Access to the proposed development will be located along an arterial roadway. As such, the proposed development is not anticipated to have any impact on the local and collector roads in the area.

The number of on-site parking spaces that will be provided meets the minimum requirements of the City's ZBL. Parking infiltration onto adjacent roadways is not anticipated.

8.0 TRANSPORTATION DEMAND MANAGEMENT

The City of Ottawa has developed a comprehensive Transportation Demand Management (TDM) strategy as part of its efforts to reduce automobile dependency. TDM measures can reduce transportation infrastructure requirements by encouraging people to change their travel mode, timing or destination.

The proposed development conforms to the City's TDM initiatives by providing easy access to local pedestrian, bicycle and transit systems as outlined in **Section 5.0**.

9.0 CONCLUSIONS AND RECOMMENDATIONS

The main conclusions of this report are summarized as follows:

- Critical movements at the Hunt Club Road/Airport Parkway intersection are operating with a LOS F during the weekday AM and PM peak hours. Signal timing optimization is not anticipated to yield an acceptable LOS. As the northbound and southbound through lanes on Airport Parkway are grade separated, there is limited opportunity to provide additional lanes to improve intersection operations and is beyond the scope of this report.

- During a site visit the 60m queue for the southbound left turn movement at the Hunt Club Road/McCarthy Road/Downpatrick Road intersection was confirmed. Consideration should be given to extending the southbound left turn lane at this intersection through line painting (existing road platform on McCarthy Road is approximately 13m). The 45m queue for the westbound left turn movement at the Hunt Club Road/Airport Parkway intersection was also confirmed. The extension of this westbound left turn lane is limited by the rail overpass. The queueing for all other turning movements at the study area intersection did not exceed the existing storage length during the site visits. The westbound through queue at the Hunt Club Road/Airport Parkway intersection extended through the upstream Hunt Club Road/Dazé Street/Bridle Path Drive intersection.

- Under the 2021 and 2026 background traffic conditions, critical movements at the Hunt Club Road/Airport Parkway intersection will continue to operate with a LOS F during the weekday AM and PM peak hours. The Hunt Club Road/McCarthy Road/Downpatrick Road intersection will continue to operate with a LOS D or better during the weekday AM and PM peak hours.

- With the addition of site generated traffic in 2021 and 2026, the v/c ratios at the Hunt Club Road/Airport Parkway intersection are anticipated to increase slightly. It is noteworthy that the two-way traffic generated by the proposed development equates 7-8% of the existing eastbound traffic volumes on Hunt Club Road. Based on the foregoing, the proposed development will slightly increase traffic at the Hunt Club Road/Airport Parkway intersection.

- With the addition of site generated traffic in 2021 and 2026, the eastbound through movement at the Hunt Club Road/McCarthy Road/Downpatrick Road intersection is anticipated to operate with a LOS E during the PM peak hour. Traffic signal optimization is anticipated to reduce the critical v/c ratio to 0.80 (SBL).

- During the site visits conducted on May 11th and 12th, 2017 a maximum eastbound queue length of 150m and 180m was observed at the Hunt Club Road/Airport Parkway intersection during the AM and PM peak hours respectively. Typical eastbound queues at this intersection were observed at approximately 100m, which would just reach the eastern access. Traffic exiting the site may have to periodically rely on courtesy, particularly for the eastbound left turn movement onto the Airport Parkway northbound on-ramp.

- As the proposed accesses will be restricted to right-in right-out, additional U-turns are anticipated at the Hunt Club Road/McCarthy Road/Downpatrick Road and Hunt Club Road/Dazé Street/Bridle Path Drive intersections. The Hunt Club Road/Dazé Street/Bridle Path Drive intersection permits U-turns, and the eastbound left turn movement is a fully protected turning phase. The Hunt Club Road/McCarthy Road/Downpatrick Road intersection permits U-turns, and the westbound left turn movement is a permitted and protected left turn phase. Based on the foregoing, the additional U-turns will be accommodated in a safe and efficient manner.

- A review of the peak hour traffic volumes at the proposed accesses shows a combined 49 and 52 westbound right tuning vehicles during the weekday AM and PM peak hours respectively. The right turning volumes at the accesses don't meet the Ministry of Transportation Ontario (MTO) right turn lane criteria of 60vph or 10% of the adjacent through traffic. Based on the foregoing, a right turn lane is not recommended at the accesses.

- Pedestrian connections will be provided between the main and side building entrances and the proposed parking lot, as well as the existing sidewalk along Hunt Club Road. A landscaped amenity area will be provided on the south side of the retirement home.

- The proposed developments will be served by two right-in right-out accesses on Hunt Club Road. The western access will be 6.7m in width, and is located approximately 19m from the westerly property line. The eastern access will be 6.7m in width, and is located approximately 45m from the eastern property line/Airport Parkway right-of-way (ROW) limit. The two accesses are located approximately 55m apart, measured curb-to-curb. The proposed accesses adhere to the requirements of the City's Private approach by-law.

- On-site vehicle and bicycle parking will conform to the minimum requirements of the City's Zoning By-law (ZBL).

- Access to the proposed development will be located along an arterial roadway. As such, the proposed development is not anticipated to have a significant impact on the local and collector roads in the area.

- The number of on-site parking spaces that will be provided meets the minimum requirements of the City's ZBL. Parking infiltration onto adjacent roadways is not anticipated.

- The proposed development conforms to the City's TDM initiatives by providing easy access to local pedestrian, bicycle and transit systems.

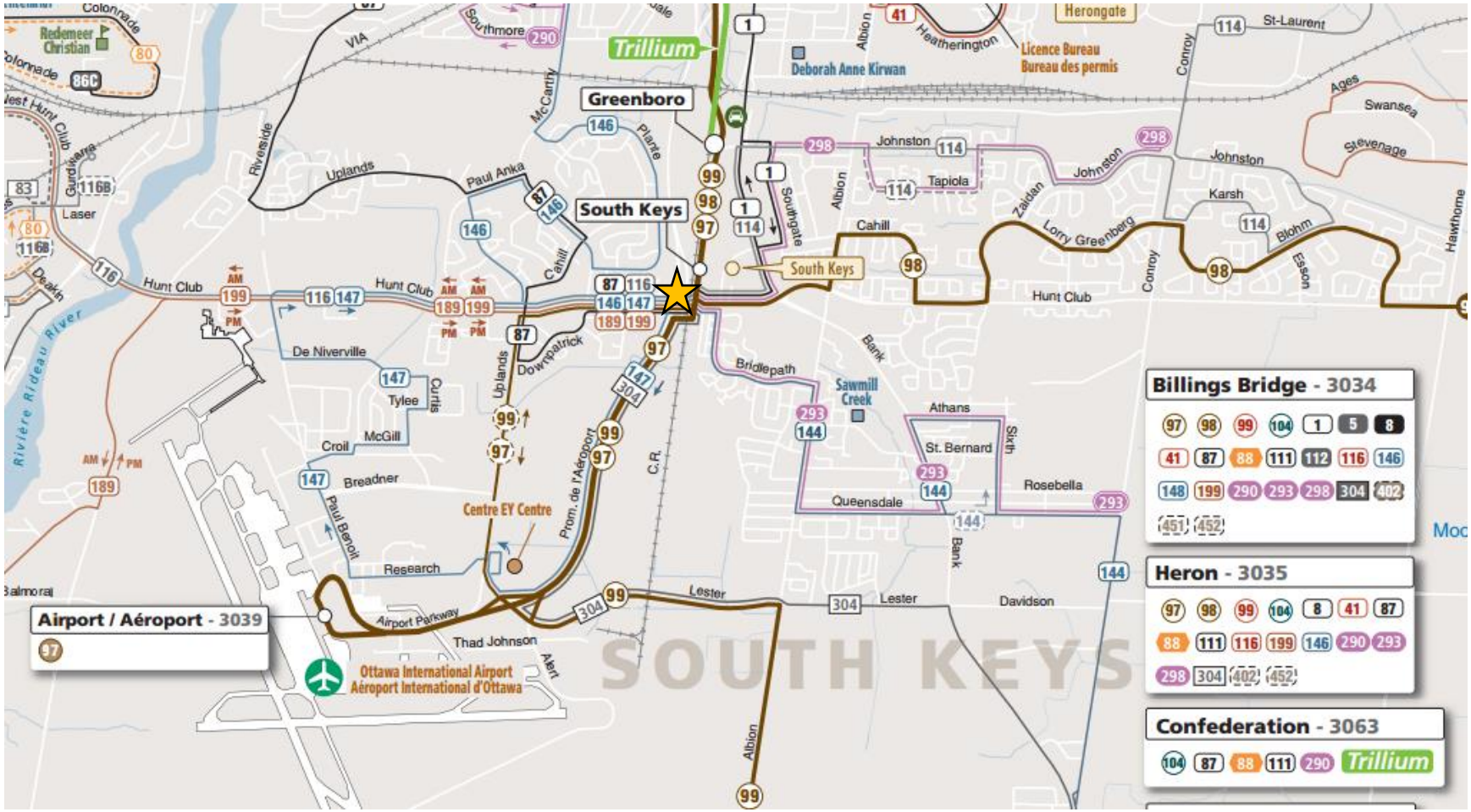
NOVATECH

Prepared by:

Brad Byvelds, P. Eng.
Project Coordinator | Transportation/Traffic

APPENDIX A

Existing Transit Facilities



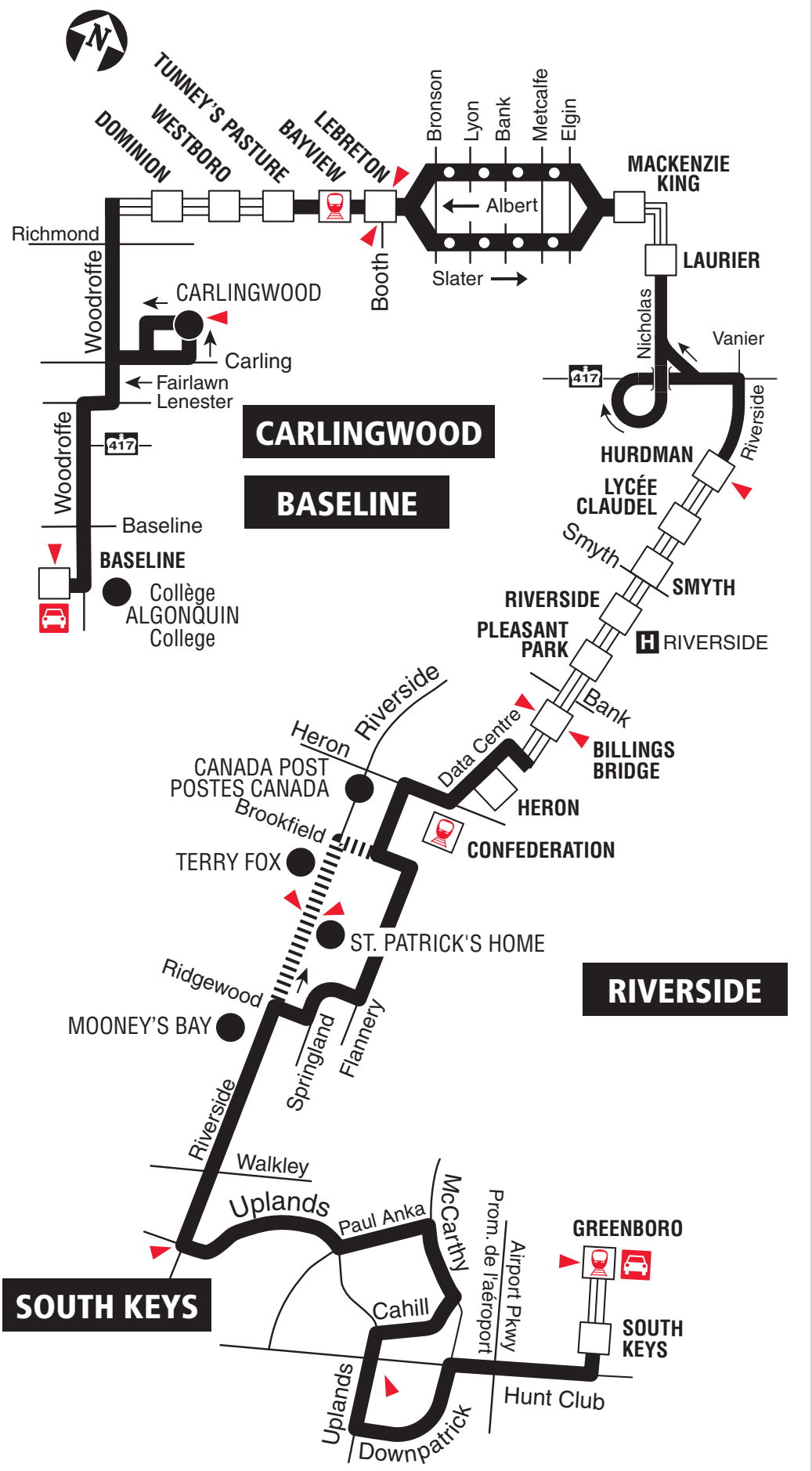
★ SUBJECT SITE

Transpo

87 CARLINGWOOD BASELINE / SOUTH KEYS

7 days a week / 7 jours par semaine

All day service
Service toute la journée



Legend • *Légende*

- Transitway & Station
- O-Train Connection / *Correspondance avec l'O-Train*
- Park & Ride / *Parc-o-Bus*
- Selected trips / *Trajets sélectionnés*
- Timepoint / *Heures de passage*

2016.09

Information / Renseignement.....**613-741-4390**

Customer Relations
Service à la clientèle **613-842-3600**

Lost and Found / Objets perdus **613-563-4011**

Schedule / Horaire.....**613-560-1000**

Text / Texto **560560**

plus your four digit bus stop number / *plus* votre numéro d'arrêt à quatre chiffres

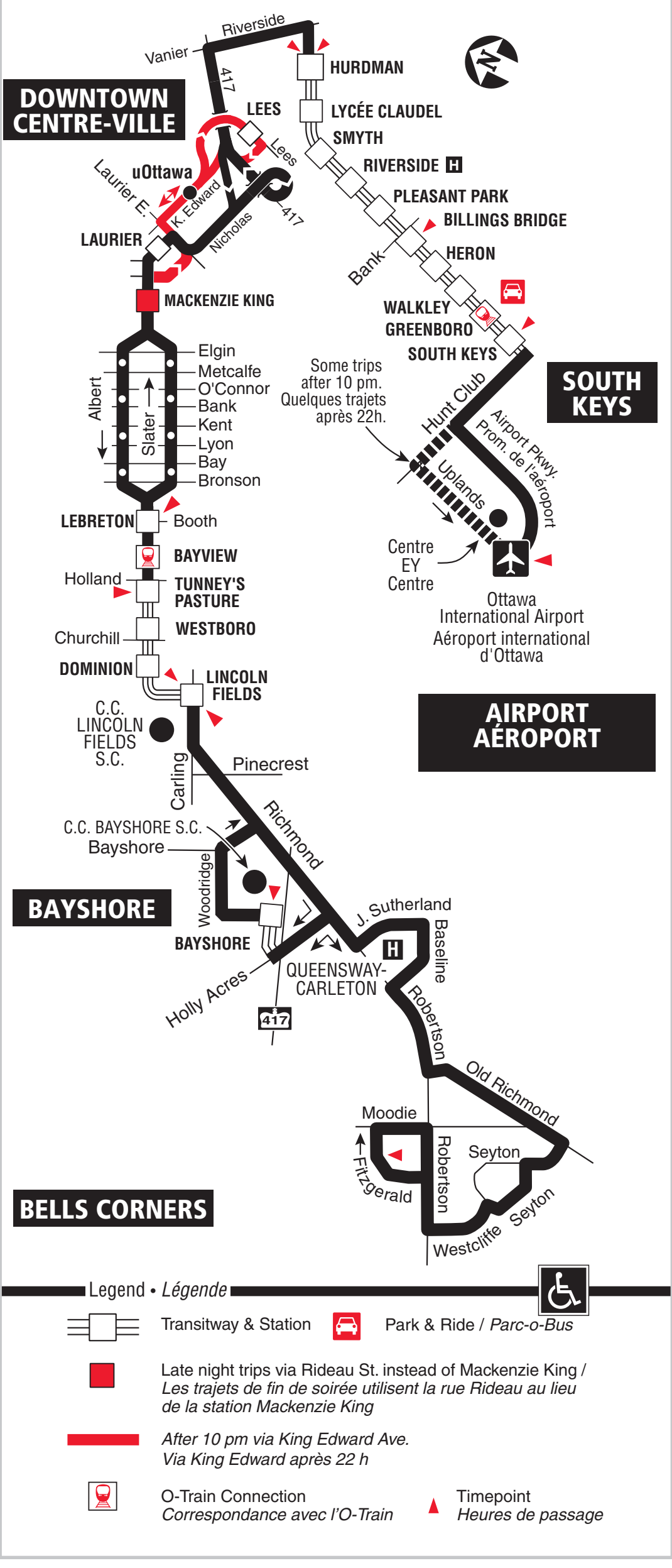
Effective / En vigueur Sept. 4 sept. 2016

Transpo

97 AIRPORT/AÉROPORT

BAYSHORE
BELLS CORNERS

7 days a week / 7 jours par semaine
All day service
Service toute la journée



Legend • *Légende*

- Transitway & Station
- Park & Ride / *Parc-o-Bus*
- Late night trips via Rideau St. instead of Mackenzie King / *Les trajets de fin de soirée utilisent la rue Rideau au lieu de la station Mackenzie King*
- *After 10 pm via King Edward Ave. Via King Edward après 22 h*
- O-Train Connection / *Correspondance avec l'O-Train*
- Timepoint / *Heures de passage*

2016.09

Information / Renseignement.....**613-741-4390**

Customer Relations
Service à la clientèle **613-842-3600**

Lost and Found / Objets perdus **613-563-4011**

Schedule / Horaire.....**613-560-1000**

Text / Texto **560560**

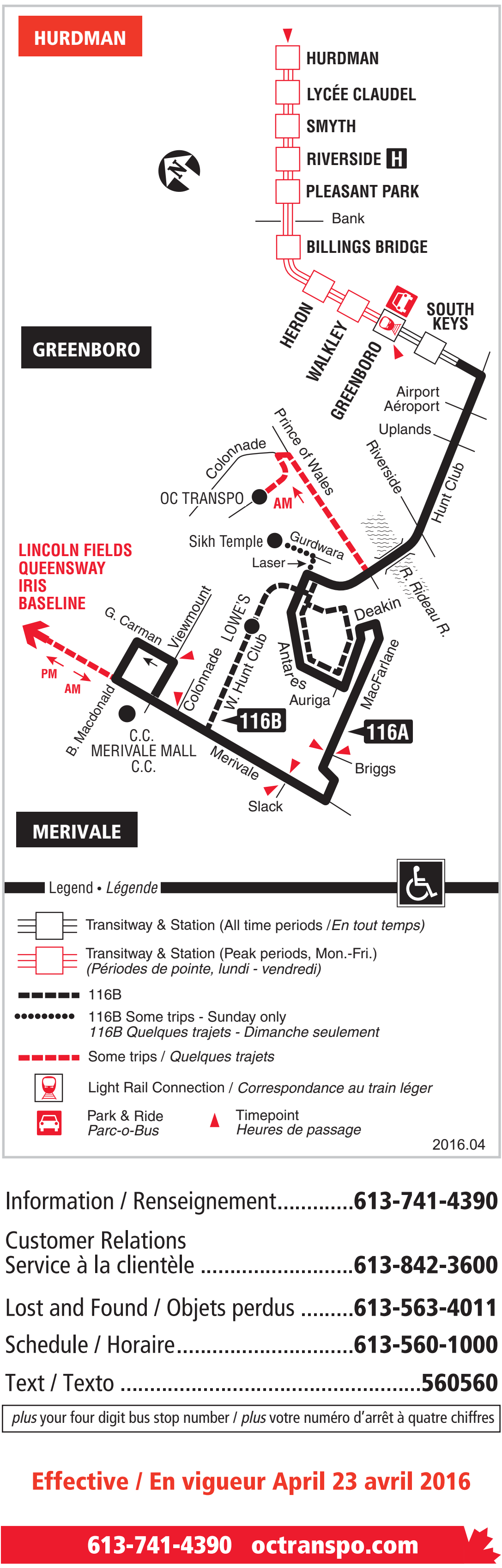
plus your four digit bus stop number / *plus* votre numéro d'arrêt à quatre chiffres

Effective / En vigueur Sept. 4 sept. 2016

OC Transpo

116 GREENBORO HURDMAN / MERIVALE

7 days a week / 7 jours par semaine
No weekend evening service
Aucun service en soirée les fins de semaine



Legend • *Légende*

- Transitway & Station (All time periods / *En tout temps)*
- Transitway & Station (Peak periods, Mon.-Fri.) *(Périodes de pointe, lundi - vendredi)*
- 116B
- 116B Some trips - Sunday only *116B Quelques trajets - Dimanche seulement*
- Some trips / *Quelques trajets*
- Light Rail Connection / *Correspondance au train léger*
- Park & Ride *Parc-o-Bus*
- Timepoint *Heures de passage*

2016.04

Information / Renseignement.....**613-741-4390**

Customer Relations
Service à la clientèle **613-842-3600**

Lost and Found / Objets perdus **613-563-4011**

Schedule / Horaire.....**613-560-1000**

Text / Texto **560560**

plus your four digit bus stop number / *plus* votre numéro d'arrêt à quatre chiffres

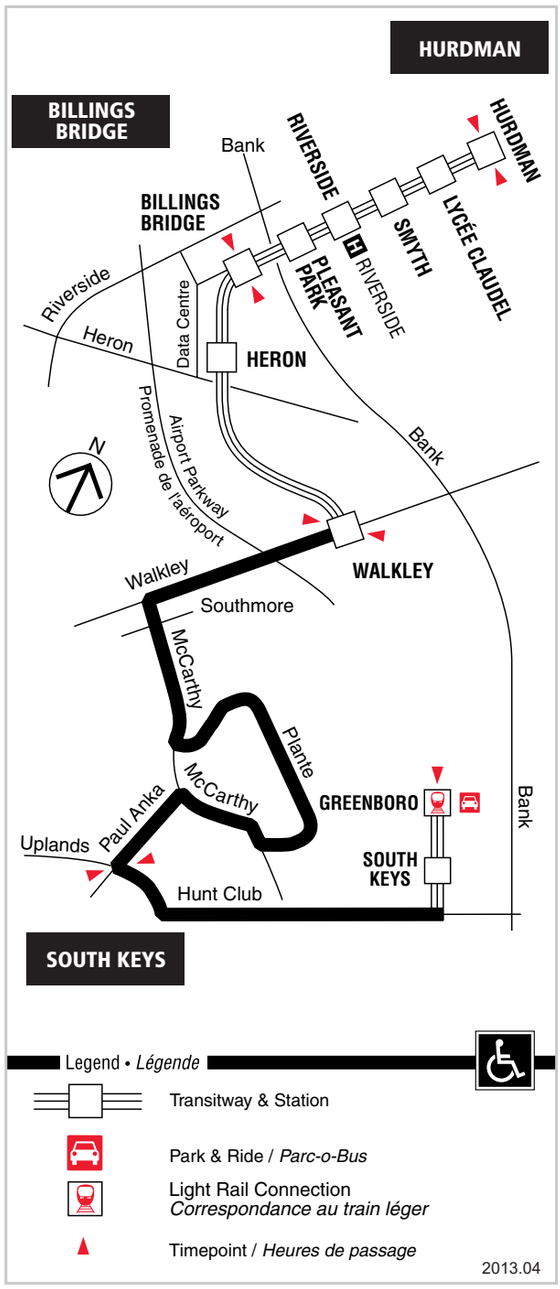
Effective / En vigueur April 23 avril 2016

RD MAP 146(june2005)_RD MAP 018(june2005).qxd 2013-Oct-30 12:23 PM Page 1

Transpo

146 BILLINGS BRIDGE, HURDMAN / SOUTH KEYS

7 days a week / 7 jours par semaine
All day service
Service toute la journée



Information / Renseignement.....**613-741-4390**

Customer Relations
Service à la clientèle **613-842-3600**

Lost and Found / Objets perdus **613-563-4011**

Schedule / Horaire.....**613-560-1000**

Text / Texto **560560**

plus your four digit bus stop number / *plus* votre numéro d'arrêt à quatre chiffres

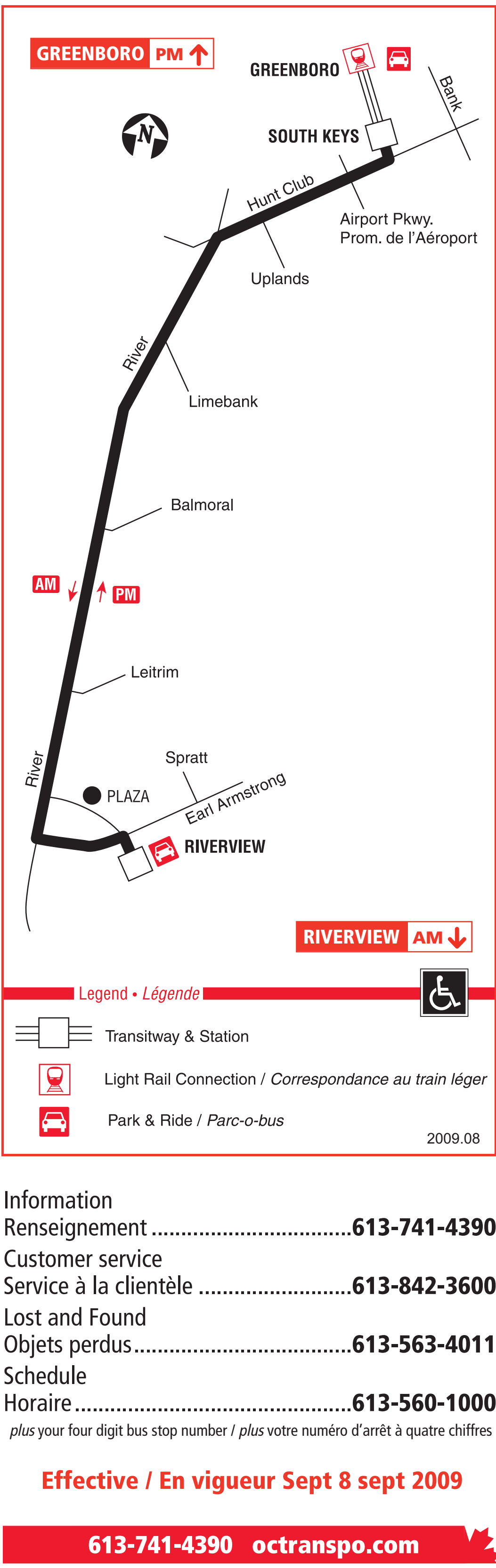
Effective / En vigueur June 26 juin 2005

613-741-4390 octranspo.com

189 RIVERVIEW / GREENBORO

Monday to Friday / Lundi au vendredi

Peak periods only
Périodes de pointe seulement



Information
Renseignement 613-741-4390
Customer service
Service à la clientèle 613-842-3600
Lost and Found
Objets perdus.....613-563-4011
Schedule
Horaire 613-560-1000

plus your four digit bus stop number / *plus* votre numéro d'arrêt à quatre chiffres

Effective / En vigueur Sept 8 sept 2009

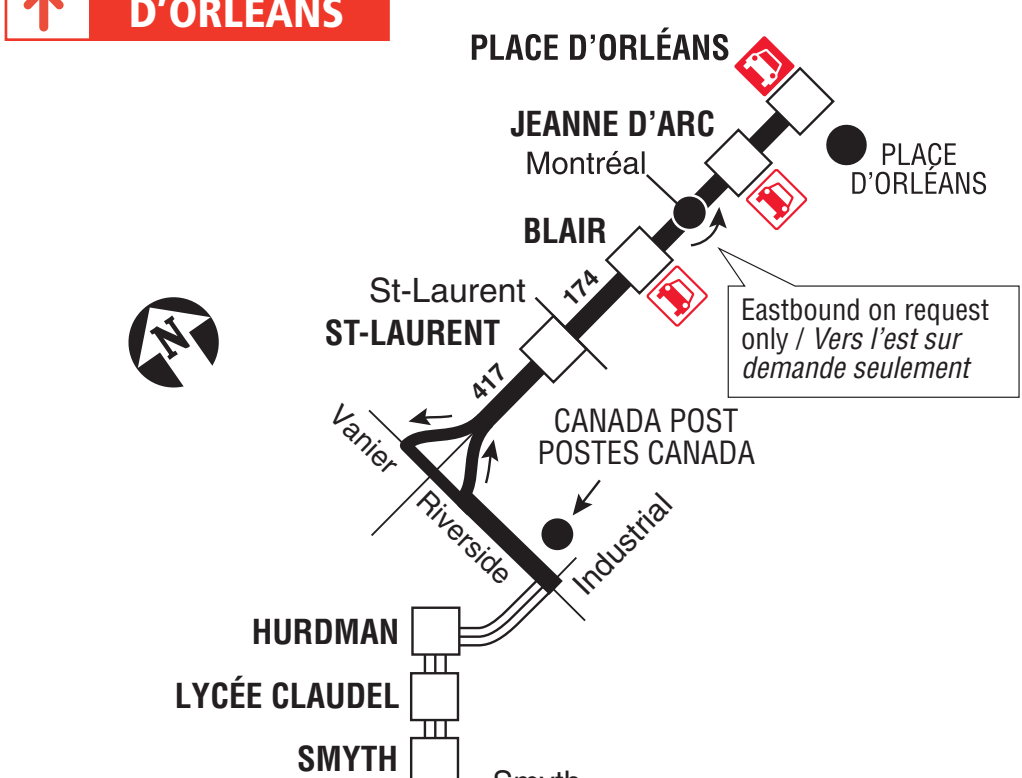
Transpo

199 BARRHAVEN / PLACE D'ORLÉANS

Monday to Friday / Lundi au vendredi

Peak periods only
Périodes de pointe seulement

PM ↑ PLACE D'ORLÉANS



AM ↓ BARRHAVEN

Legend • *Légende*

- Transitway & Station
- O-Train connection
  Correspondance avec l'O-Train
- Park & Ride / *Parc-o-bus*

2015.08

Information / Renseignement.....**613-741-4390**

Customer Relations
Service à la clientèle **613-842-3600**

Lost and Found / Objets perdus **613-563-4011**

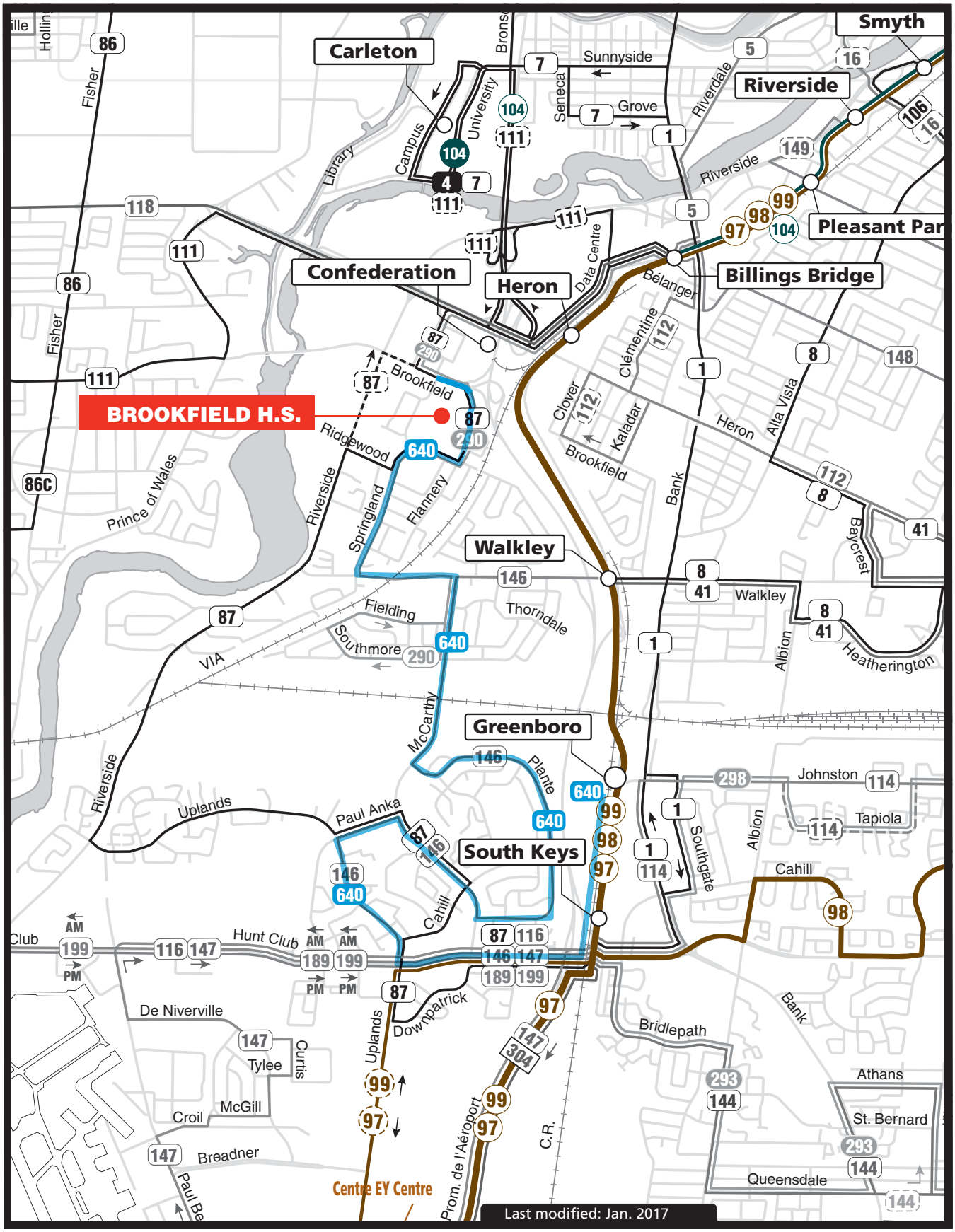
Schedule / Horaire.....**613-560-1000**

Text / Texto **560560**

plus your four digit bus stop number / *plus* votre numéro d'arrêt à quatre chiffres

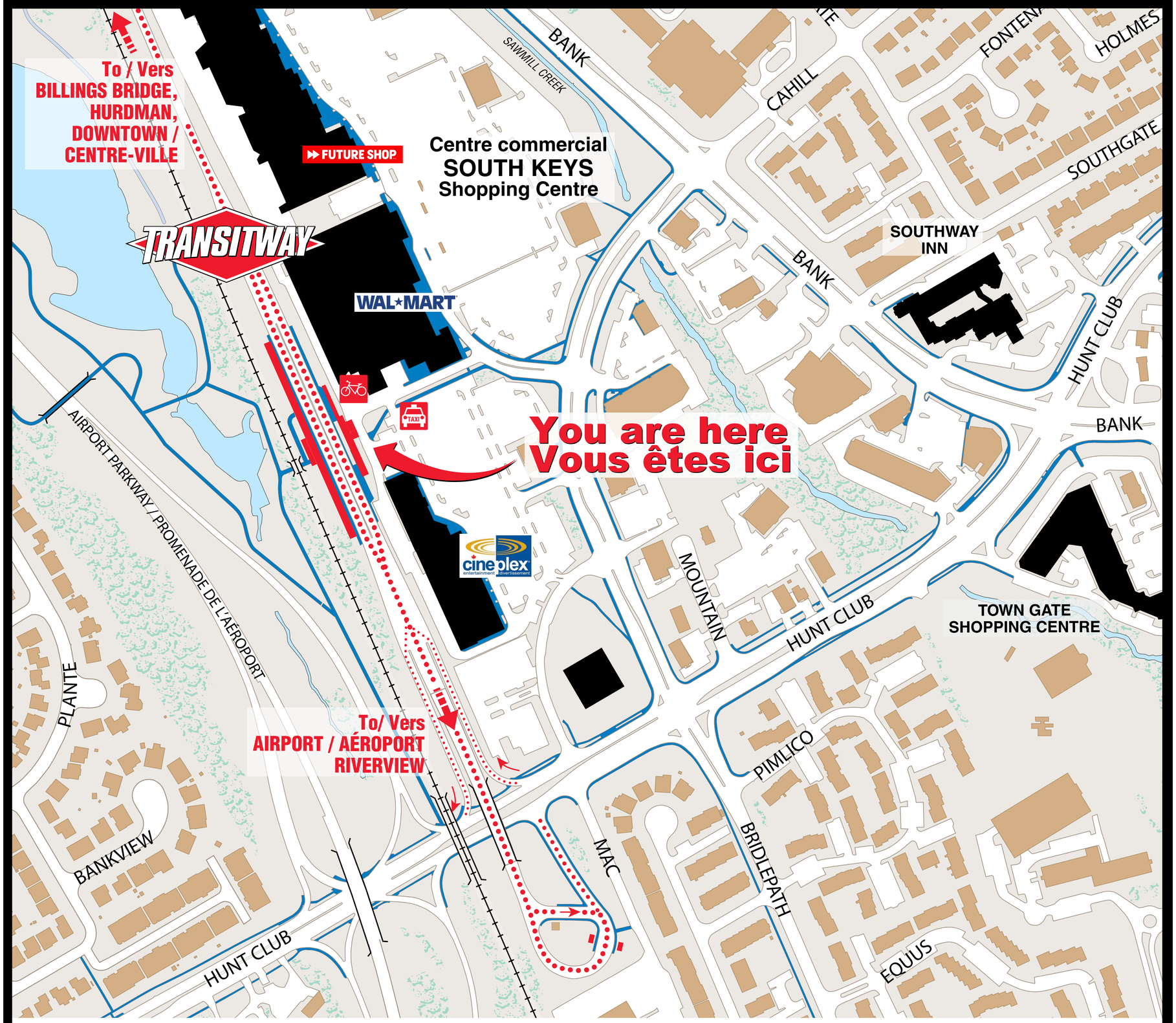
Effective / En vigueur Sept. 8 sept. 2015

613-741-4390 octranspo.com


BROOKFIELD H.S.
Carleton
Confederation
Heron
Billings Bridge
Riverside
Smyth
Pleasant Par
Walkley
Greenboro
South Keys
Centre EY Centre
Last modified: Jan. 2017

Area map
Carte des environs

SOUTH KEYS



Taxi pickup / Point d'attente de taxi

Bike Rack / Support à vélo

Bus only / Autobus seulement

Walking Paths-sidewalks
Sentiers piétonnier et trottoirs

0 100 200 300 m

0 1 2 3

Minutes of walking - minutes de marche

© OC Transpo 2014

APPENDIX B

Traffic Count and Signal Timing Data

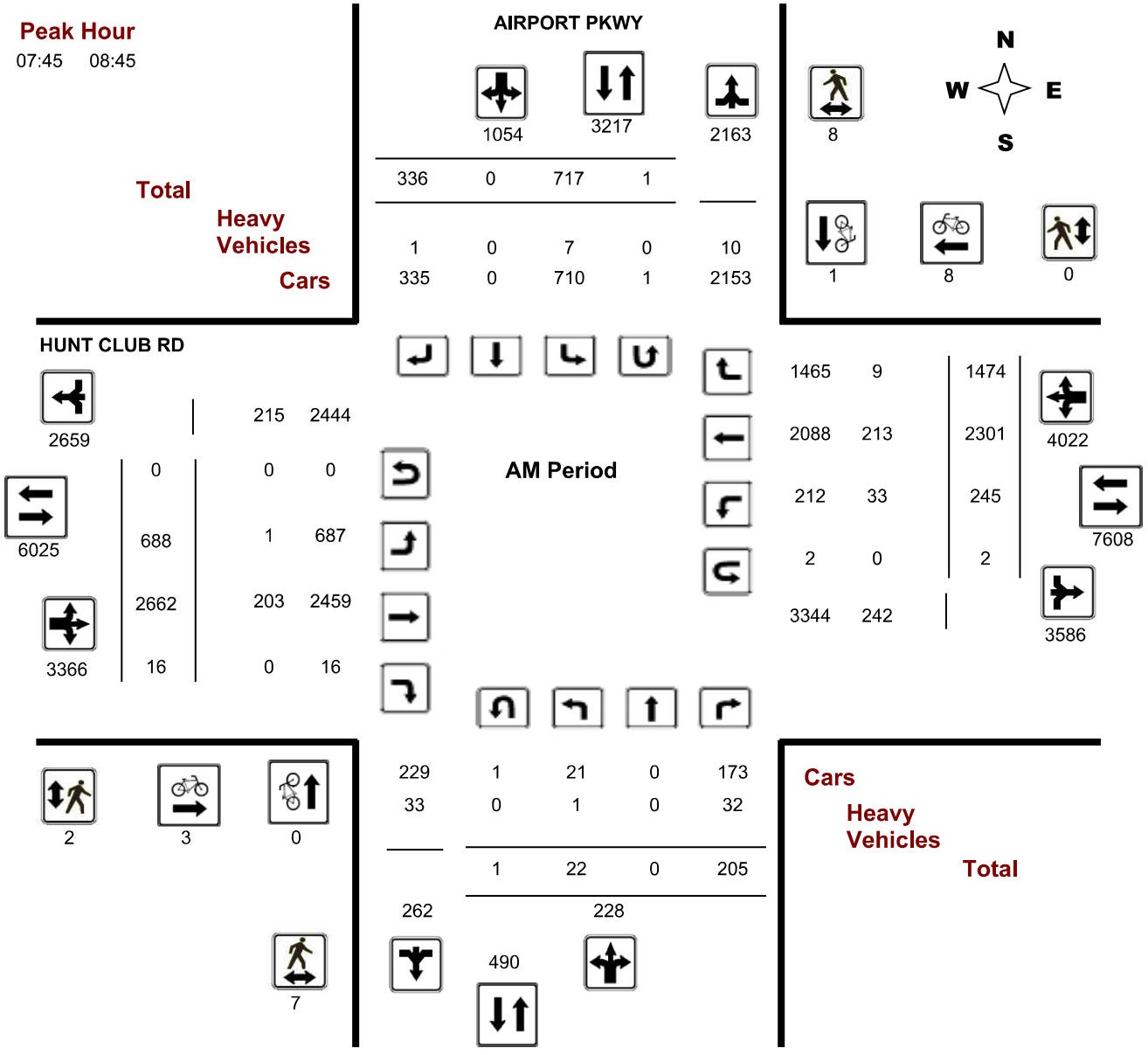
Transportation Services - Traffic Services

Turning Movement Count - AM Period Diagram

AIRPORT PKWY @ HUNT CLUB RD

Survey Date: Tuesday, August 11, 2015 **WO#:** 35229

Start Time: 07:00 **Device:** Miovision



Comments :

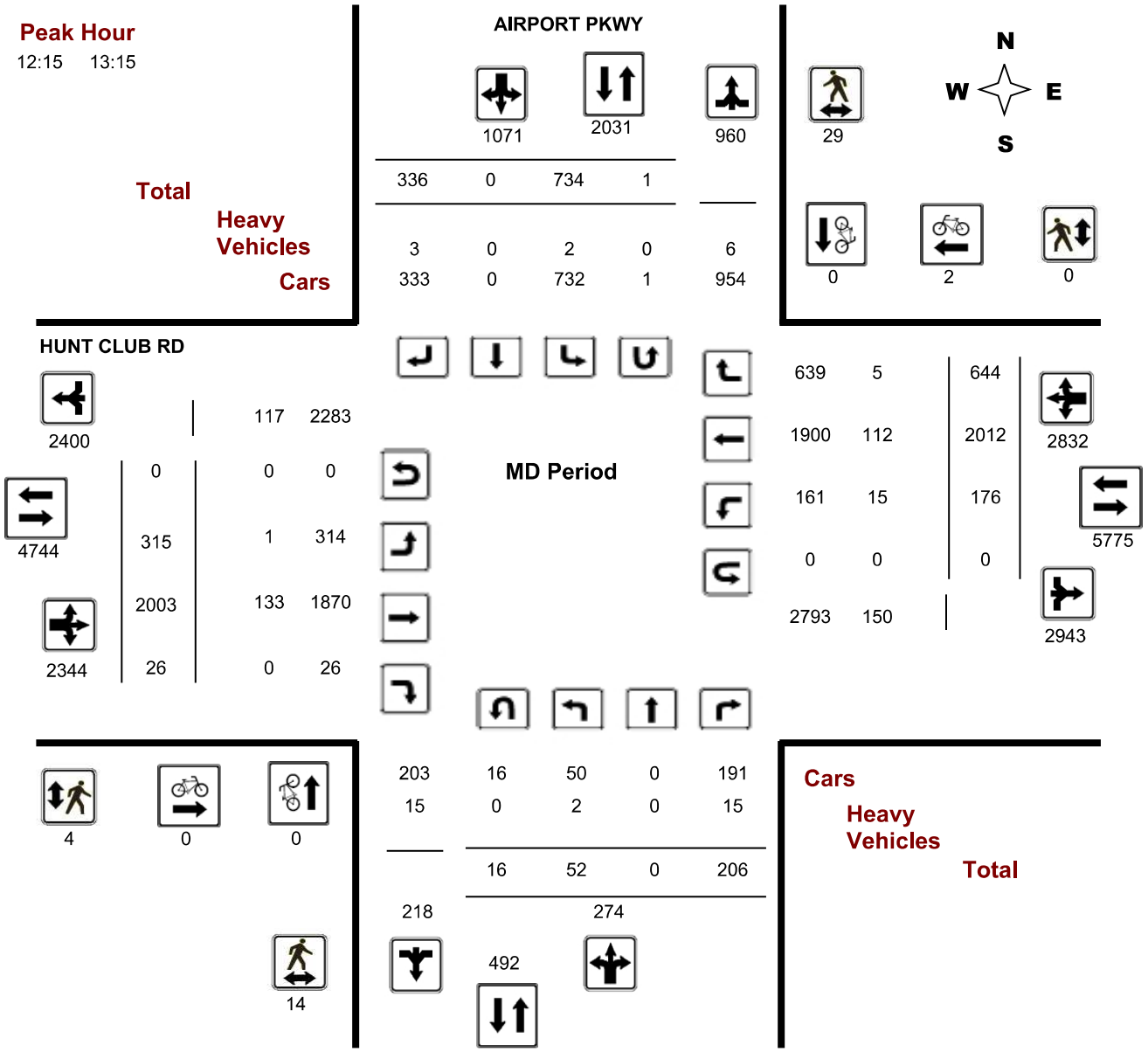
Transportation Services - Traffic Services

Turning Movement Count - MD Period Diagram

AIRPORT PKWY @ HUNT CLUB RD

Survey Date: Tuesday, August 11, 2015 **WO#:** 35229

Start Time: 07:00 **Device:** Miovision



Comments :

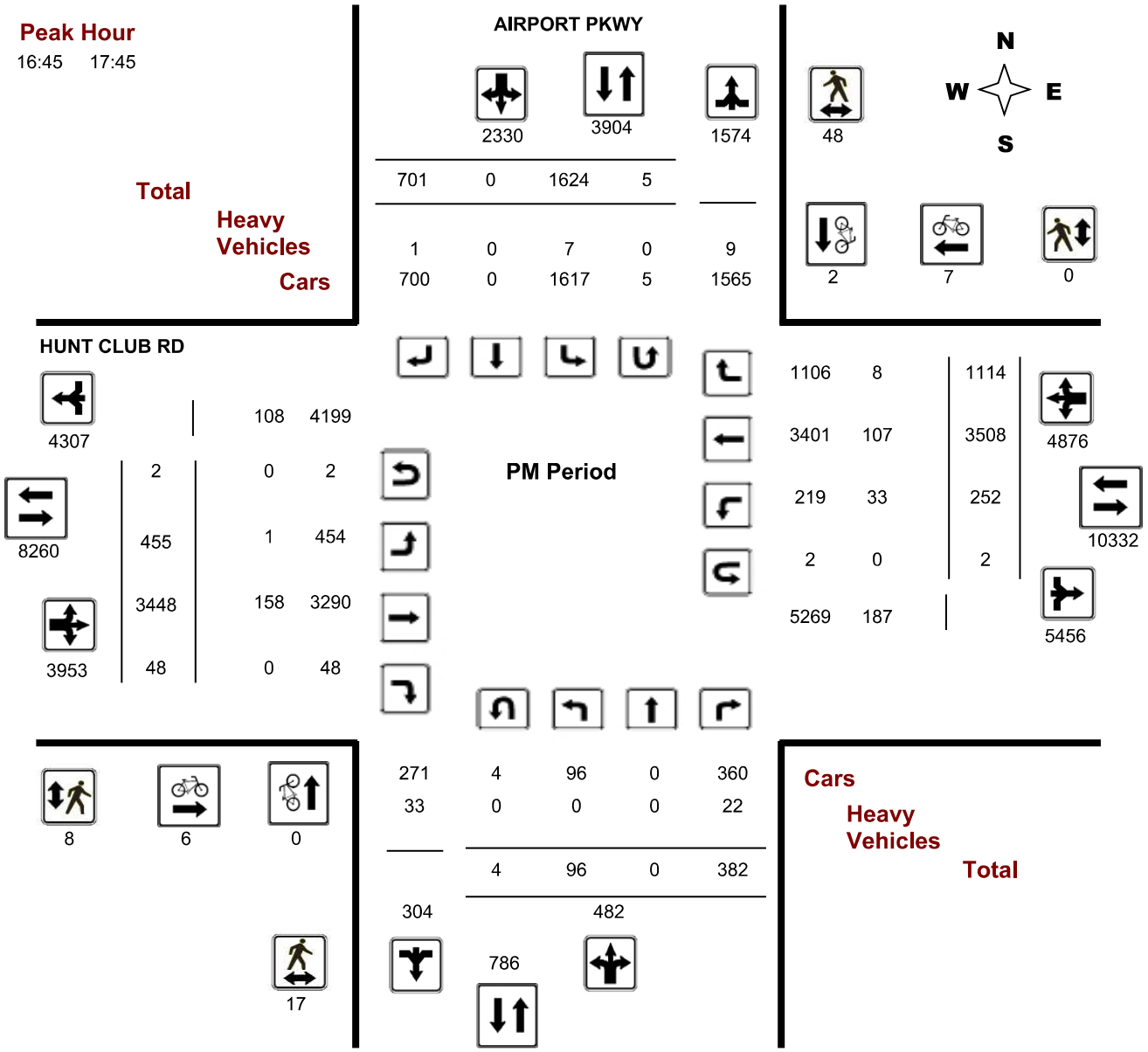
Transportation Services - Traffic Services

Turning Movement Count - PM Period Diagram

AIRPORT PKWY @ HUNT CLUB RD

Survey Date: Tuesday, August 11, 2015 **WO#:** 35229

Start Time: 07:00 **Device:** Miovision



Comments :

Transportation Services - Traffic Services

W.O. 35229

Turning Movement Count - 15 Minute Summary Report

AIRPORT PKWY @ HUNT CLUB RD

Survey Date: Tuesday, August 11, 2015

Total Observed U-Turns

Northbound: 21 Southbound: 7

Eastbound: 2 Westbound: 4

		AIRPORT PKWY									HUNT CLUB RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	0	13	**13**	46	0	24	**70**	**83**	43	199	2	**244**	18	179	117	**314**	**558**	**641**
07:15	07:30	0	0	18	**18**	51	0	22	**74**	**92**	40	198	4	**242**	27	200	120	**347**	**589**	**681**
07:30	07:45	0	0	12	**12**	48	0	29	**77**	**89**	68	222	1	**291**	21	176	166	**363**	**654**	**743**
07:45	08:00	0	0	13	**13**	55	0	29	**84**	**97**	83	239	0	**322**	24	185	167	**376**	**698**	**795**
08:00	08:15	3	0	15	**18**	54	0	22	**76**	**94**	60	220	1	**281**	18	194	132	**344**	**625**	**719**
08:15	08:30	2	0	30	**32**	61	0	37	**98**	**130**	72	230	1	**303**	26	179	126	**331**	**634**	**764**
08:30	08:45	4	0	23	**27**	77	0	31	**108**	**135**	70	220	1	**291**	19	215	134	**368**	**659**	**794**
08:45	09:00	2	0	24	**27**	72	0	29	**101**	**128**	70	245	1	**316**	18	183	125	**327**	**643**	**771**
09:00	09:15	4	0	16	**20**	66	0	20	**86**	**106**	48	233	1	**282**	19	216	106	**341**	**623**	**729**
09:15	09:30	0	0	14	**14**	59	0	35	**94**	**108**	47	228	3	**278**	15	203	79	**297**	**575**	**683**
09:30	09:45	3	0	14	**17**	56	0	26	**82**	**99**	38	200	1	**239**	21	192	109	**322**	**561**	**660**
09:45	10:00	4	0	13	**17**	72	0	32	**104**	**121**	49	228	0	**277**	19	179	93	**292**	**569**	**690**
11:30	11:45	4	0	31	**35**	81	0	38	**119**	**154**	46	270	0	**316**	10	250	67	**327**	**643**	**797**
11:45	12:00	5	0	21	**27**	92	0	37	**130**	**157**	44	277	5	**326**	21	256	88	**365**	**691**	**848**
12:00	12:15	3	0	26	**29**	108	0	40	**148**	**177**	52	247	7	**306**	19	217	71	**307**	**613**	**790**
12:15	12:30	11	0	32	**48**	101	0	41	**142**	**190**	46	216	2	**264**	24	299	77	**400**	**664**	**854**
12:30	12:45	7	0	23	**30**	86	0	30	**116**	**146**	20	263	2	**285**	27	260	107	**394**	**679**	**825**
12:45	13:00	7	0	23	**35**	86	0	46	**132**	**167**	35	247	5	**287**	20	256	90	**366**	**653**	**820**
13:00	13:15	4	0	26	**30**	98	0	52	**150**	**180**	36	239	4	**279**	28	256	81	**365**	**644**	**824**
13:15	13:30	11	0	24	**40**	82	0	52	**134**	**174**	36	244	1	**281**	27	218	63	**308**	**589**	**763**
15:00	15:15	4	0	33	**37**	111	0	51	**165**	**202**	34	224	3	**261**	19	271	106	**396**	**657**	**859**
15:15	15:30	4	0	14	**18**	127	0	54	**181**	**199**	39	269	3	**311**	17	260	88	**367**	**678**	**877**
15:30	15:45	9	0	47	**58**	118	0	43	**161**	**219**	40	278	5	**323**	21	295	106	**422**	**745**	**964**
15:45	16:00	12	0	23	**35**	81	0	48	**129**	**164**	54	305	5	**365**	27	311	92	**430**	**795**	**959**
16:00	16:15	9	0	42	**51**	77	0	36	**113**	**164**	36	320	6	**362**	15	275	101	**391**	**753**	**917**
16:15	16:30	6	0	42	**49**	168	0	63	**231**	**280**	19	309	1	**329**	25	326	77	**428**	**757**	**1037**
16:30	16:45	6	0	36	**42**	125	0	62	**188**	**230**	40	328	7	**376**	27	281	88	**396**	**772**	**1002**
16:45	17:00	14	0	31	**45**	132	0	58	**190**	**235**	37	307	3	**347**	20	330	79	**429**	**776**	**1011**
17:00	17:15	5	0	37	**42**	167	0	71	**238**	**280**	39	283	6	**328**	18	306	81	**405**	**733**	**1013**
17:15	17:30	5	0	27	**33**	171	0	73	**244**	**277**	40	300	5	**345**	21	309	101	**431**	**776**	**1053**
17:30	17:45	12	0	28	**40**	180	0	70	**250**	**290**	39	290	2	**331**	17	278	98	**393**	**724**	**1014**
17:45	18:00	10	0	22	**32**	167	0	72	**240**	**272**	38	235	2	**275**	25	266	97	**388**	**663**	**935**
TOTAL:		170	0	793	**984**	3075	0	1373	**4455**	**5439**	1458	8113	90	**9663**	673	7821	3232	**11730**	**21393**	**26832**

Note: U-Turns are included in Totals.

Comment:

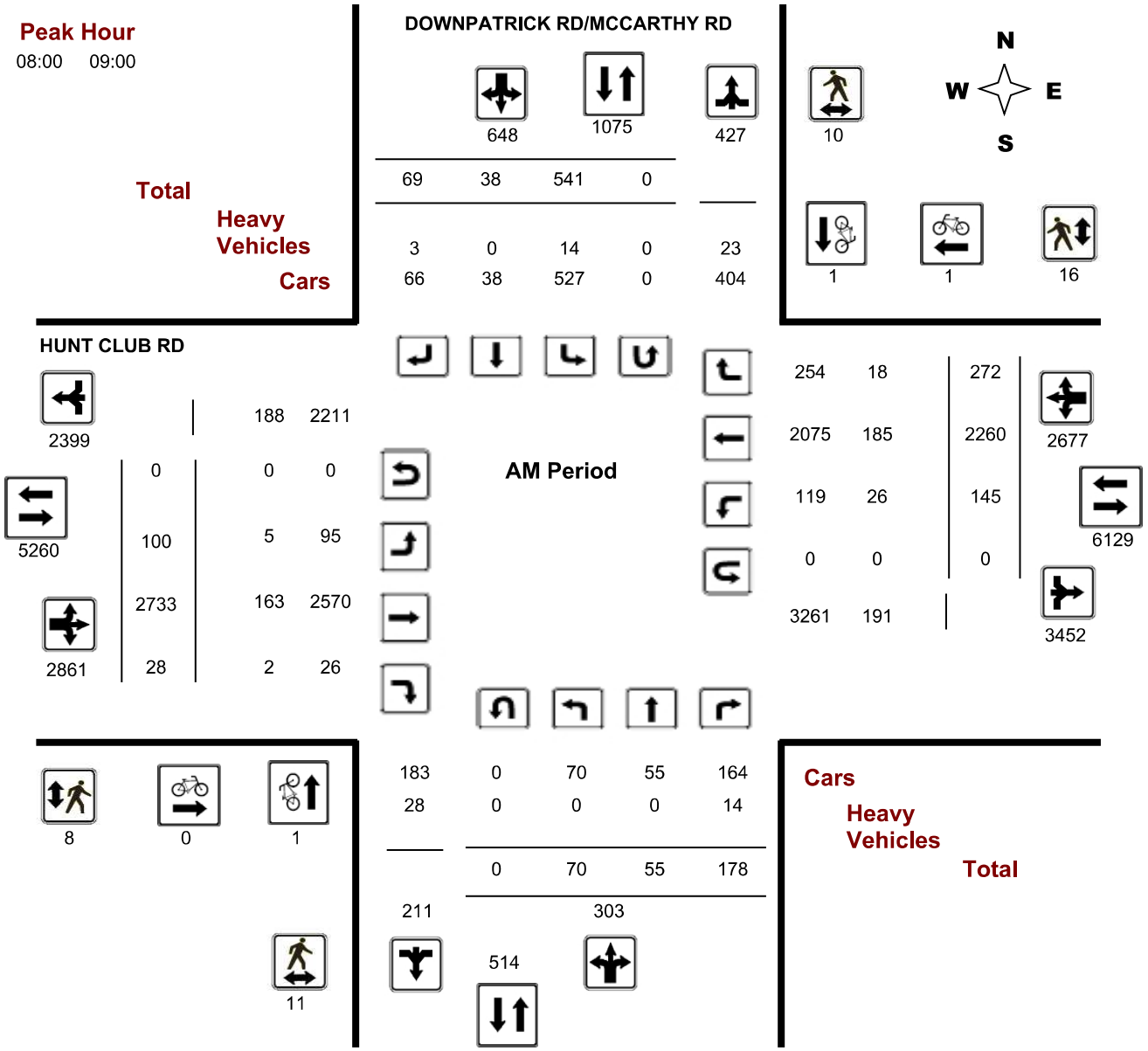
Transportation Services - Traffic Services

Turning Movement Count - AM Period Diagram

HUNT CLUB RD @ DOWNPATRICK RD/MCCARTHY RD

Survey Date: Friday, June 13, 2014
Start Time: 07:00

WO#: 1029
Device: Jamar Technologies, Inc



Comments :

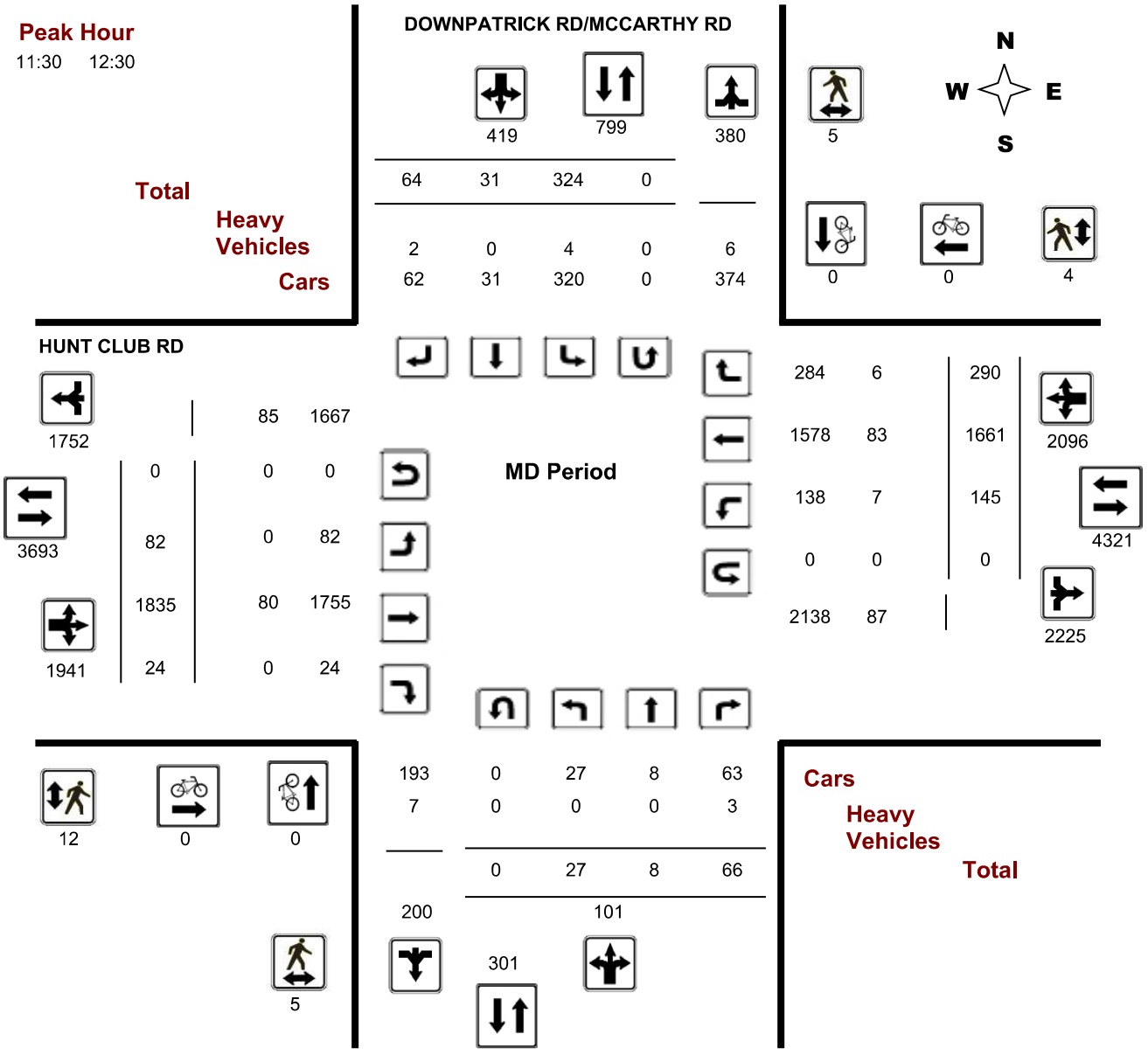
Transportation Services - Traffic Services

Turning Movement Count - MD Period Diagram

HUNT CLUB RD @ DOWNPATRICK RD/MCCARTHY RD

Survey Date: Friday, June 13, 2014
Start Time: 07:00

WO#: 1029
Device: Jamar Technologies, Inc



Comments :

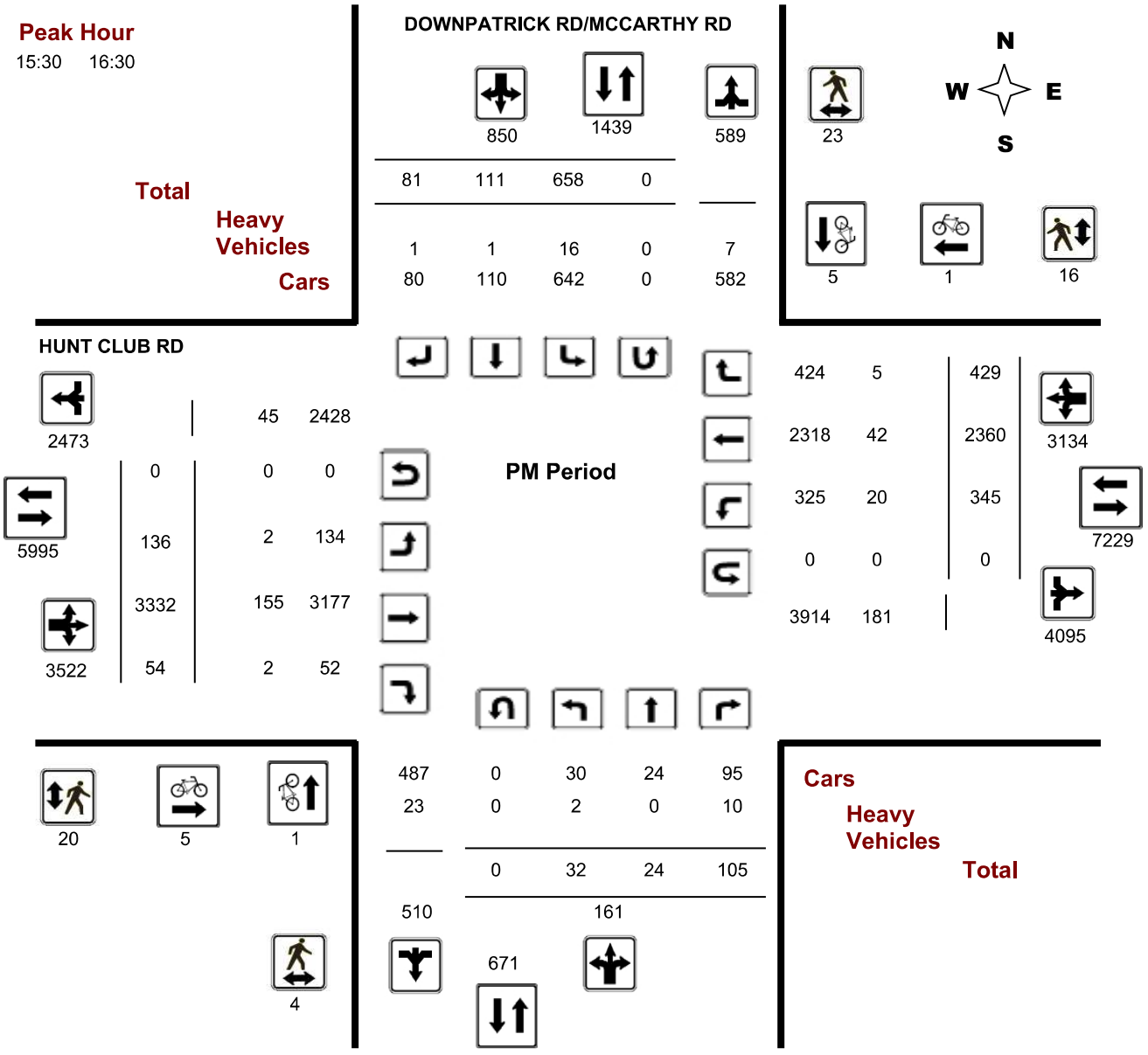
Transportation Services - Traffic Services

Turning Movement Count - PM Period Diagram

HUNT CLUB RD @ DOWNPATRICK RD/MCCARTHY RD

Survey Date: Friday, June 13, 2014
Start Time: 07:00

WO#: 1029
Device: Jamar Technologies, Inc



Comments :

Transportation Services - Traffic Services

W.O. 1029

Turning Movement Count - 15 Minute Summary Report

HUNT CLUB RD @ DOWNPATRICK RD/MCCARTHY RD

Survey Date: Friday, June 13, 2014

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

		DOWNPATRICK RD/MCCARTHY RD									HUNT CLUB RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	12	0	17	**29**	32	1	2	**35**	**64**	6	180	2	**188**	15	253	19	**287**	**475**	**539**
07:15	07:30	6	5	15	**26**	26	12	4	**42**	**68**	7	173	3	**183**	9	168	17	**194**	**377**	**445**
07:30	07:45	9	4	24	**37**	33	2	4	**39**	**76**	5	245	2	**252**	8	202	16	**226**	**478**	**554**
07:45	08:00	6	3	16	**25**	45	2	7	**54**	**79**	5	279	2	**286**	12	189	24	**225**	**511**	**590**
08:00	08:15	3	4	20	**27**	51	6	8	**65**	**92**	5	287	3	**295**	9	161	23	**193**	**488**	**580**
08:15	08:30	6	9	11	**26**	65	1	3	**69**	**95**	16	254	1	**271**	12	194	32	**238**	**509**	**604**
08:30	08:45	6	8	19	**33**	60	1	6	**67**	**100**	8	237	2	**247**	13	205	33	**251**	**498**	**598**
08:45	09:00	5	10	14	**29**	62	6	7	**75**	**104**	10	263	3	**276**	11	180	19	**210**	**486**	**590**
09:00	09:15	2	2	10	**14**	48	4	9	**61**	**75**	10	233	2	**245**	9	192	23	**224**	**469**	**544**
09:15	09:30	2	3	16	**21**	47	1	7	**55**	**76**	12	200	4	**216**	15	160	17	**192**	**408**	**484**
09:30	09:45	5	4	6	**15**	32	1	7	**40**	**55**	7	205	3	**215**	11	173	26	**210**	**425**	**480**
09:45	10:00	8	3	10	**21**	40	1	5	**46**	**67**	9	177	1	**187**	21	183	23	**227**	**414**	**481**
11:30	11:45	7	0	6	**13**	49	1	8	**58**	**71**	7	292	4	**303**	10	179	26	**215**	**518**	**589**
11:45	12:00	1	1	7	**9**	34	3	8	**45**	**54**	18	272	5	**295**	14	248	39	**301**	**596**	**650**
12:00	12:15	5	3	6	**14**	43	2	13	**58**	**72**	9	252	0	**261**	17	194	39	**250**	**511**	**583**
12:15	12:30	2	0	13	**15**	37	2	4	**43**	**58**	9	200	2	**211**	15	242	43	**300**	**511**	**569**
12:30	12:45	2	0	5	**7**	46	0	2	**48**	**55**	3	189	1	**193**	17	216	31	**264**	**457**	**512**
12:45	13:00	1	2	14	**17**	34	7	7	**48**	**65**	17	184	3	**204**	20	185	29	**234**	**438**	**503**
13:00	13:15	5	1	3	**9**	36	11	15	**62**	**71**	9	259	3	**271**	24	167	44	**235**	**506**	**577**
13:15	13:30	4	1	12	**17**	45	5	7	**57**	**74**	10	187	6	**203**	28	230	39	**297**	**500**	**574**
15:00	15:15	4	2	3	**9**	52	6	8	**66**	**75**	9	244	4	**257**	15	166	23	**204**	**461**	**536**
15:15	15:30	1	3	7	**11**	62	6	12	**80**	**91**	10	304	3	**317**	20	195	43	**258**	**575**	**666**
15:30	15:45	1	0	11	**12**	66	10	2	**78**	**90**	12	302	4	**318**	31	212	32	**275**	**593**	**683**
15:45	16:00	2	2	12	**16**	50	13	8	**71**	**87**	15	281	2	**298**	35	232	30	**297**	**595**	**682**
16:00	16:15	0	4	8	**12**	55	8	8	**71**	**83**	6	279	6	**291**	20	202	36	**258**	**549**	**632**
16:15	16:30	2	2	4	**8**	46	11	10	**67**	**75**	9	312	6	**327**	23	225	38	**286**	**613**	**688**
16:30	16:45	0	1	8	**9**	60	15	5	**80**	**89**	19	273	6	**298**	44	167	29	**240**	**538**	**627**
16:45	17:00	3	2	8	**13**	54	11	4	**69**	**82**	11	271	6	**288**	29	214	31	**274**	**562**	**644**
17:00	17:15	3	2	4	**9**	46	7	11	**64**	**73**	10	294	4	**308**	35	186	51	**272**	**580**	**653**
17:15	17:30	6	3	16	**25**	56	10	4	**70**	**95**	10	280	3	**293**	27	206	54	**287**	**580**	**675**
17:30	17:45	5	2	10	**17**	52	7	4	**63**	**80**	13	254	3	**270**	33	203	33	**269**	**539**	**619**
17:45	18:00	5	1	14	**20**	59	7	5	**71**	**91**	12	238	7	**257**	33	152	29	**214**	**471**	**562**
TOTAL:		129	87	349	**565**	1523	180	214	**1917**	**2482**	318	7900	106	**8324**	635	6281	991	**7907**	**16231**	**18713**

Note: U-Turns are included in Totals.

Comment:

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Operations Unit

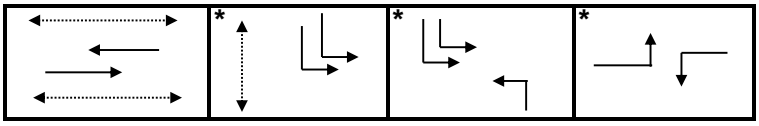
Intersection:	***Main:*** Hunt Club	***Side:*** Airport Parkway	
Controller:	**MS-3200**	**TSD:**	5729
Author:	Jon Pach	**Date:**	03-Apr-17

Existing Timing Plans†

	Plan						**Ped Minimum Time**		
	AM Peak 1	**Off Peak** 2	**PM Peak** 3	**PM Heavy** 43	**Night** 4	**Weekend** 5	***Walk***	***DW***	***A+R***
Cycle	130	130	130	130	130	130			
Offset	1	1	1	98	X	1			
EB Thru	50	55	53	65	55	58	31	9	3.7+3.6
WB Thru	50	55	53	65	55	58	31	9	3.7+3.6
NS Ped	30	30	30	30	30	30	7	15	3.7+3.6
SBLT (fp)	48	50	49	47	50	49	-	-	3.7+3.6
NBLT (fp)	18	20	19	17	20	19	-	-	3.7+3.6
WBLT (fp)	32	25	28	18	25	23	-	-	3.7+3.6
EBLT (fp)	32	25	28	18	25	23	-	-	3.7+3.6

Phasing Sequence‡

Plans: All



Schedule

Weekday

Time	Plan
0:15	4
6:30	1
9:30	2
15:00	3
16:00	43
17:45	3
18:30	2
22:30	4

Saturday

Time	Plan
0:15	4
8:00	5
21:00	4

Sunday

Time	Plan
0:15	4
8:30	2
11:00	5
21:00	4

Notes

†: Time for each direction includes amber and all red intervals

‡: Start of first phase should be used as reference point for offset

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

Pedestrian signal

Cost is $56.50 ($50 + HST)

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Operations Unit

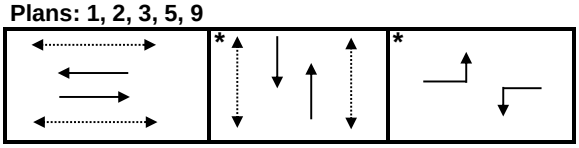
Intersection:	***Main:*** Hunt Club	***Side:*** McCarthy / Downpatrick	
Controller:	**MS-3200**	**TSD:**	5436
Author:	Jon Pach	**Date:**	03-Apr-17

Existing Timing Plans†

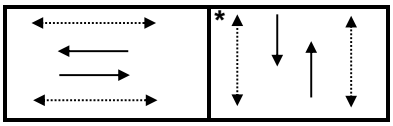
	Plan					**Ped Minimum Time**		
	AM Peak 1	**Off Peak** 2	**PM Peak** 3	**Evening** 4	**Weekend** 5	***Walk***	***DW***	***A+R***
Cycle	80	80	80	65	80			
Offset	11	62	11	0	0			
EB Thru	35	35	35	31	35	13	7	3.7+2.0
WB Thru	35	35	35	31	35	13	7	3.7+2.0
NB Thru	34	34	34	34	34	7	19	3.3+4.0
SB Thru	34	34	34	34	34	7	19	3.7+3.1
EB Left	11	11	11	-	11	-	-	3.7+1.9
WB Left	11	11	11	-	11	-	-	3.7+1.9

Phasing Sequence‡

Plans: 1, 2, 3, 5, 9



Plans: 4



Schedule

Weekday

Time	Plan
0:10	4
6:30	1
9:30	2
15:00	3
18:30	2
22:30	4

Saturday

Time	Plan
0:10	4
8:00	5
21:00	4

Sunday

Time	Plan
0:25	4
8:30	2
11:00	5
21:00	4

Notes

†: Time for each direction includes amber and all red intervals

‡: Start of first phase should be used as reference point for offset

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄·····► *Pedestrian signal*

Cost is $56.50 ($50 + HST)

APPENDIX C

Collision Records

Collision Main Detail Summary

OnTRAC Reporting System

FROM: 2013-01-01 TO: 2014-01-01

AIRPORT PKWY & HUNT CLUB RD

Former Municipality: **Ottawa** Traffic Control: **Traffic signal** Number of Collisions: **9**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
1	2013-02-27	We	17:00	Clear	Dusk	Angle	P.D. only	V1 S	Loose snow	Turning left	Pick-up truck	Other motor vehicle	0
								V2 W	Loose snow	Turning left	Automobile, station	Other motor vehicle	
2	2013-03-13	We	08:41	Clear	Daylight	Single vehicle	Non-fatal	V1 E	Dry	Going ahead	Automobile, station	Snowbank / drift	0
3	2013-05-06	Mo	08:10	Clear	Daylight	Rear end	P.D. only	V1 W	Dry	Going ahead	Automobile, station	Other motor vehicle	0
								V2 W	Dry	Stopped	Pick-up truck	Other motor vehicle	
4	2013-05-09	Thu	17:25	Clear	Daylight	Rear end	P.D. only	V1 W	Dry	Going ahead	Truck - tank	Other motor vehicle	0
								V2 W	Dry	Slowing or	Automobile, station	Other motor vehicle	
5	2013-07-12	Fri	09:07	Clear	Daylight	Rear end	Non-fatal	V1 E	Dry	Turning left	Motorcycle	Other motor vehicle	0
								V2 E	Dry	Turning left	Automobile, station	Other motor vehicle	
6	2013-07-29	Mo	18:14	Clear	Daylight	Rear end	P.D. only	V1 W	Dry	Going ahead	Delivery van	Other motor vehicle	0
								V2 W	Dry	Slowing or	Automobile, station	Other motor vehicle	
7	2013-08-02	Fri	14:59	Clear	Daylight	Rear end	P.D. only	V1 E	Dry	Slowing or	Passenger van	Other motor vehicle	0
								V2 E	Dry	Stopped	Truck - closed	Other motor vehicle	
8	2013-08-28	We	05:55	Clear	Dawn	Angle	P.D. only	V1 N	Dry	Going ahead	Automobile, station	Other motor vehicle	0
								V2 E	Dry	Going ahead	Automobile, station	Other motor vehicle	
9	2013-12-10	Tue	10:50	Snow	Daylight	Rear end	P.D. only	V1 W	Slush	Slowing or	Delivery van	Skidding/Sliding	0
								V2 W	Wet	Stopped	Automobile, station	Other motor vehicle	

DOWNPATRICK RD & HUNT CLUB RD

Former Municipality: **Ottawa** Traffic Control: **Traffic signal** Number of Collisions: **9**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
10	2013-01-05	Sat	16:30	Clear	Daylight	Turning	P.D. only	V1 E	Dry	Turning left	Automobile, station	Other motor vehicle	0
								V2 W	Dry	Going ahead	Pick-up truck	Other motor vehicle	
11	2013-01-26	Sat	22:32	Clear	Dark	Turning	P.D. only	V1 W	Dry	Turning left	Automobile, station	Other motor vehicle	0
								V2 E	Dry	Going ahead	Automobile, station	Other motor vehicle	

(Note: Time of Day = "00:00" represents unknown collision time

12	2013-02-20	We	08:57	Snow	Daylight	Rear end	P.D. only	V1	W	Wet	Turning right	Automobile, station	Other motor vehicle	0
								V2	W	Wet	Turning right	Automobile, station	Other motor vehicle	
13	2013-03-25	Mo	16:09	Clear	Daylight	Angle	Non-fatal	V1	E	Dry	Going ahead	Pick-up truck	Other motor vehicle	0
								V2	S	Dry	Going ahead	Automobile, station	Other motor vehicle	
14	2013-08-10	Sat	09:18	Clear	Daylight	Rear end	P.D. only	V1	W	Dry	Slowing or	Automobile, station	Other motor vehicle	0
								V2	W	Dry	Stopped	Pick-up truck	Other motor vehicle	
15	2013-09-18	We	08:25	Clear	Daylight	Rear end	P.D. only	V1	W	Dry	Going ahead	Pick-up truck	Other motor vehicle	0
								V2	W	Dry	Stopped	Automobile, station	Other motor vehicle	
16	2013-10-04	Fri	19:01	Clear	Dark	Rear end	P.D. only	V1	E	Dry	Slowing or	Automobile, station	Other motor vehicle	0
								V2	E	Dry	Stopped	Pick-up truck	Other motor vehicle	
								V3	E	Dry	Stopped	Automobile, station	Other motor vehicle	
17	2013-11-12	Tue	11:00	Clear	Daylight	Rear end	Non-fatal	V1	W	Dry	Going ahead	Automobile, station	Other motor vehicle	0
								V2	W	Dry	Slowing or	Automobile, station	Other motor vehicle	
18	2013-12-28	Sat	20:08	Clear	Dark	Turning	P.D. only	V1	W	Wet	Turning left	Snow plow	Other motor vehicle	0
								V2	E	Wet	Turning left	Automobile, station	Other motor vehicle	

HUNT CLUB RD, AIRPORT PKWY OVERPASS to RAMP 35

Former Municipality: **Ottawa** Traffic Control: **No control** Number of Collisions: **1**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
19	2013-03-28	Thu	20:29	Clear	Dark	Sideswipe	P.D. only	V1 W	Dry	Going ahead	Ambulance	Other motor vehicle	0
								V2 W	Dry	Stopped	Pick-up truck	Other motor vehicle	

HUNT CLUB RD, DOWNPATRICK RD to HUNT CLUB RD RAMP 36

Former Municipality: **Ottawa** Traffic Control: **No control** Number of Collisions: **2**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
20	2013-05-01	We	17:48	Clear	Daylight	Rear end	Non-fatal	V1 E	Dry	Going ahead	Automobile, station	Other motor vehicle	0
								V2 E	Dry	Stopped	Automobile, station	Other motor vehicle	
								V3 E	Dry	Stopped	Automobile, station	Other motor vehicle	
21	2013-07-02	Tue	15:33	Clear	Daylight	Rear end	P.D. only	V1 E	Dry	Going ahead	Automobile, station	Other motor vehicle	0
								V2 E	Dry	Stopped	Pick-up truck	Other motor vehicle	
								V3 E	Dry	Stopped	Pick-up truck	Other motor vehicle	

(Note: Time of Day = "00:00" represents unknown collision time

HUNT CLUB RD & HUNT CLUB RD RAMP 36

Former Municipality: **Ottawa** Traffic Control: **Stop sign** Number of Collisions: **4**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
22	2013-01-08	Tue	19:30	Clear	Dark	Angle	P.D. only	V1 S	Wet	Turning right	Automobile, station	Other motor vehicle	0
								V2 W	Wet	Going ahead	Tow truck	Other motor vehicle	
23	2013-01-31	Thu	22:20	Clear	Dark	Rear end	P.D. only	V1 S	Dry	Turning right	Passenger van	Other motor vehicle	0
								V2 S	Dry	Turning right	Automobile, station	Other motor vehicle	
24	2013-04-14	Sun	14:30	Clear	Daylight	Rear end	P.D. only	V1 S	Dry	Turning right	Pick-up truck	Other motor vehicle	0
								V2 S	Dry	Turning right	Automobile, station	Other motor vehicle	
25	2013-04-29	Mo	09:48	Clear	Daylight	Sideswipe	Non-fatal	V1 E	Dry	Merging	Automobile, station	Cyclist	0
								V2 E	Dry	Going ahead	Bicycle	Other motor vehicle	

(Note: Time of Day = "00:00" represents unknown collision time

City Operations - Transportation Services

Collision Details Report - Public Version

From: January 1, 2014 **To:** December 31, 2015

Location: AIRPORT PKWY @ HUNT CLUB RD

Traffic Control: Traffic signal **Total Collisions:** 26

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jan-11, Sat,08:40	Freezing Rain	Rear end	P.D. only	Ice	North	Slowing or stopping	Automobile, station wagon	Skidding/sliding	
					North	Stopped	Passenger van	Other motor vehicle	
2014-Jan-23, Thu,18:30	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	
					East	Turning left	Pick-up truck	Other motor vehicle	
2014-Jan-24, Fri,07:42	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2014-Mar-03, Mon,18:20	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Feb-23, Sun,09:03	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Pick-up truck	Other motor vehicle	

2014-Apr-29, Tue,08:10	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Pick-up truck	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2014-May-24, Sat,15:20	Clear	Rear end	P.D. only	Dry	East	Turning right	Pick-up truck	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2014-Jun-23, Mon,13:00	Clear	Rear end	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2014-Jun-20, Fri,12:00	Clear	Rear end	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2014-Jun-30, Mon,17:04	Clear	Sideswipe	Non-fatal injury	Dry	West	Overtaking	Municipal transit bus	Cyclist
					West	Going ahead	Bicycle	Other motor vehicle
2014-Aug-10, Sun,20:32	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Passenger van	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2014-Aug-11, Mon,08:15	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
					West	Turning left	Municipal transit bus	Other motor vehicle

2014-Sep-14, Sun,17:28	Clear	Rear end	P.D. only	Loose sand or gravel	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2014-Nov-01, Sat,12:35	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Slowing or stopping	Pick-up truck	Other motor vehicle
2015-Feb-04, Wed,17:10	Snow	Rear end	P.D. only	Slush	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2015-Jan-26, Mon,14:35	Clear	Rear end	P.D. only	Dry	West	Changing lanes	Unknown	Other motor vehicle
					West	Stopped	Passenger van	Other motor vehicle
2015-Feb-17, Tue,17:19	Clear	SMV other	P.D. only	Dry	West	Going ahead	Unknown	Pole (utility, power)
2015-Feb-07, Sat,21:14	Snow	Turning movement	P.D. only	Loose snow	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jan-04, Sun,03:14	Freezing Rain	Sideswipe	P.D. only	Slush	West	Slowing or stopping	Pick-up truck	Skidding/sliding
					West	Slowing or stopping	Pick-up truck	Other motor vehicle
2015-Feb-27, Fri,00:49	Snow	Other	P.D. only	Loose snow	West	Reversing	Construction equipment	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle

2015-Sep-22, Tue,16:45	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2015-Aug-23, Sun,20:00	Clear	Angle	P.D. only	Dry	North	Unknown	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Pick-up truck	Other motor vehicle
2015-Dec-23, Wed,15:23	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2015-Dec-21, Mon,00:20	Clear	Angle	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2015-Dec-28, Mon,15:59	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2015-Dec-24, Thu,02:19	Clear	SMV other	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Curb

Location: HUNT CLUB RD @ DOWNPATRICK RD/MCCARTHY RD

Traffic Control: Traffic signal **Total Collisions:** 23

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jan-03, Fri,17:15	Clear	Rear end	P.D. only	Ice	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	

					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2014-Jan-02, Thu,19:44	Clear	Turning movement	Non-fatal injury	Ice	East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Mar-23, Sun,08:15	Clear	Angle	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2014-Apr-04, Fri,07:39	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Apr-30, Wed,11:30	Rain	Rear end	P.D. only	Wet	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2014-May-02, Fri,20:35	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Jul-02, Wed,15:58	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Pick-up truck	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2014-Jun-12, Thu,15:06	Clear	Turning movement	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle

					West	Turning left	Passenger van	Other motor vehicle	
2014-Sep-03, Wed,07:32	Clear	SMV other	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Ran off road	
2014-Oct-16, Thu,19:32	Rain	Rear end	P.D. only	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Pick-up truck	Other motor vehicle	
2014-Feb-03, Mon,16:26	Clear	SMV other	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Pedestrian	1
2015-May-01, Fri,19:10	Clear	Angle	Non-fatal injury	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Sep-22, Tue,09:40	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2015-Feb-04, Wed,12:37	Snow	Rear end	P.D. only	Wet	South	Slowing or stopping	Pick-up truck	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Feb-23, Mon,15:50	Clear	SMV other	Non-fatal injury	Dry	South	Turning left	Passenger van	Pedestrian	1
2015-Feb-26, Thu,19:29	Clear	Rear end	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	
					North	Turning left	Automobile, station wagon	Other motor vehicle	

2015-Feb-28, Sat,18:15	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Oct-27, Tue,09:19	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Turning left	Pick-up truck	Other motor vehicle
2015-Aug-28, Fri,11:37	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle
					West	Going ahead	Passenger van	Other motor vehicle
2015-Jun-25, Thu,14:55	Clear	Rear end	P.D. only	Dry	West	Stopped	Automobile, station wagon	Other motor vehicle
					West	Turning left	Truck - tractor	Other motor vehicle
2015-Dec-13, Sun,10:34	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Dec-30, Wed,18:06	Clear	Turning movement	Non-fatal injury	Slush	East	Turning left	Pick-up truck	Other motor vehicle
					West	Going ahead	Passenger van	Other motor vehicle
2015-Dec-30, Wed,18:16	Snow	Turning movement	P.D. only	Slush	East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle

Location: HUNT CLUB RD btwn MCCARTHY RD & RAMP

Traffic Control: No control

Total Collisions: 11

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jan-08, Wed,16:17	Clear	Rear end	P.D. only	Wet	East	Going ahead	Pick-up truck	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Passenger van	Other motor vehicle	
2014-Mar-25, Tue,05:56	Clear	SMV other	P.D. only	Dry	East	Going ahead	Pick-up truck	Animal - wild	
2014-Dec-12, Fri,14:06	Clear	Rear end	P.D. only	Slush	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Pick-up truck	Other motor vehicle	
2015-May-01, Fri,17:01	Clear	Rear end	P.D. only	Wet	East	Slowing or stopping	Pick-up truck	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Pick-up truck	Other motor vehicle	
2015-Aug-22, Sat,14:00	Clear	Sideswipe	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Jul-02, Thu,16:07	Clear	SMV other	Non-fatal injury	Dry	East	Going ahead	Motorcycle	Skidding/sliding	
2015-Jun-11, Thu,09:00	Clear	Sideswipe	P.D. only	Dry	West	Overtaking	Bicycle	Other motor vehicle	
					West	Turning right	Automobile, station wagon	Cyclist	

2015-Aug-07, Fri,12:54	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Jun-10, Wed,19:53	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Truck and trailer	Other motor vehicle	
					West	Going ahead	Pick-up truck	Other motor vehicle	
2015-Nov-18, Wed,07:45	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	
					East	Slowing or stopping	Pick-up truck	Other motor vehicle	
					East	Slowing or stopping	Pick-up truck	Other motor vehicle	
2015-Nov-18, Wed,08:10	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	

Location: HUNT CLUB RD/AIRPORT PKWY/HUNT CLUB RD RAMP 53

Traffic Control: Stop sign **Total Collisions:** 5

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Mar-11, Tue,12:00	Clear	Rear end	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2014-Aug-22, Fri,18:05	Clear	Angle	Non-fatal injury	Dry	South	Turning right	Passenger van	Cyclist	
					East	Going ahead	Bicycle	Other motor vehicle	

2014-Oct-17, Fri,08:30	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2015-Jul-01, Wed,13:40	Clear	SMV unattended vehicle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Unattended vehicle
2015-Nov-24, Tue,13:20	Clear	Rear end	P.D. only	Dry	South	Turning right	Pick-up truck	Other motor vehicle
					South	Turning right	Pick-up truck	Other motor vehicle

APPENDIX D

Relevant Excerpts from Airport Parkway and Lester Road Widening ESR

Airport Parkway & Lester Road Widening
Environmental Assessment Study

Environmental Study Report

Prepared for:

110 Laurier Avenue West, Ottawa, Ontario, K1P 1J1, Canada

Prepared by:

PARSONS

100-1223 Michael Street, Ottawa, Ontario, K1J 7T2, Canada

30 August 2016

- Spring sweeping of the roads and pathways;
- Ditch cleanouts;
- Snow and ice removal in winter;
- Landscaping maintenance including grass cutting, tree pruning in the summer; and
- Replacement of any landscape materials.

6.7 Project Phasing

As outlined in the City's Transportation Master Plan, the widening of the two corridors and new arterial connection to Uplands Drive is to be completed in phases and corresponded to transportation priority as follows:

Phase 1: Airport Parkway from Brookfield Road to Hunt Club Road. This phase also includes a new southbound off-ramp to Walkley Road and modifications to Walkley Road from the Airport Parkway to McCarthy Road. Phase 1 is scheduled for implementation between 2020 and 2025.

Phase 2: Lester Road from the Airport Parkway to Bank Street. Phase 2 is scheduled for implementation between 2026 and 2031.

Phase 3: Airport Parkway from south of Hunt Club Road to Lester Road and includes the new structure over Hunt Club Road and a new Arterial Link to Uplands Drive. Phase 3 is scheduled for implementation beyond 2031.

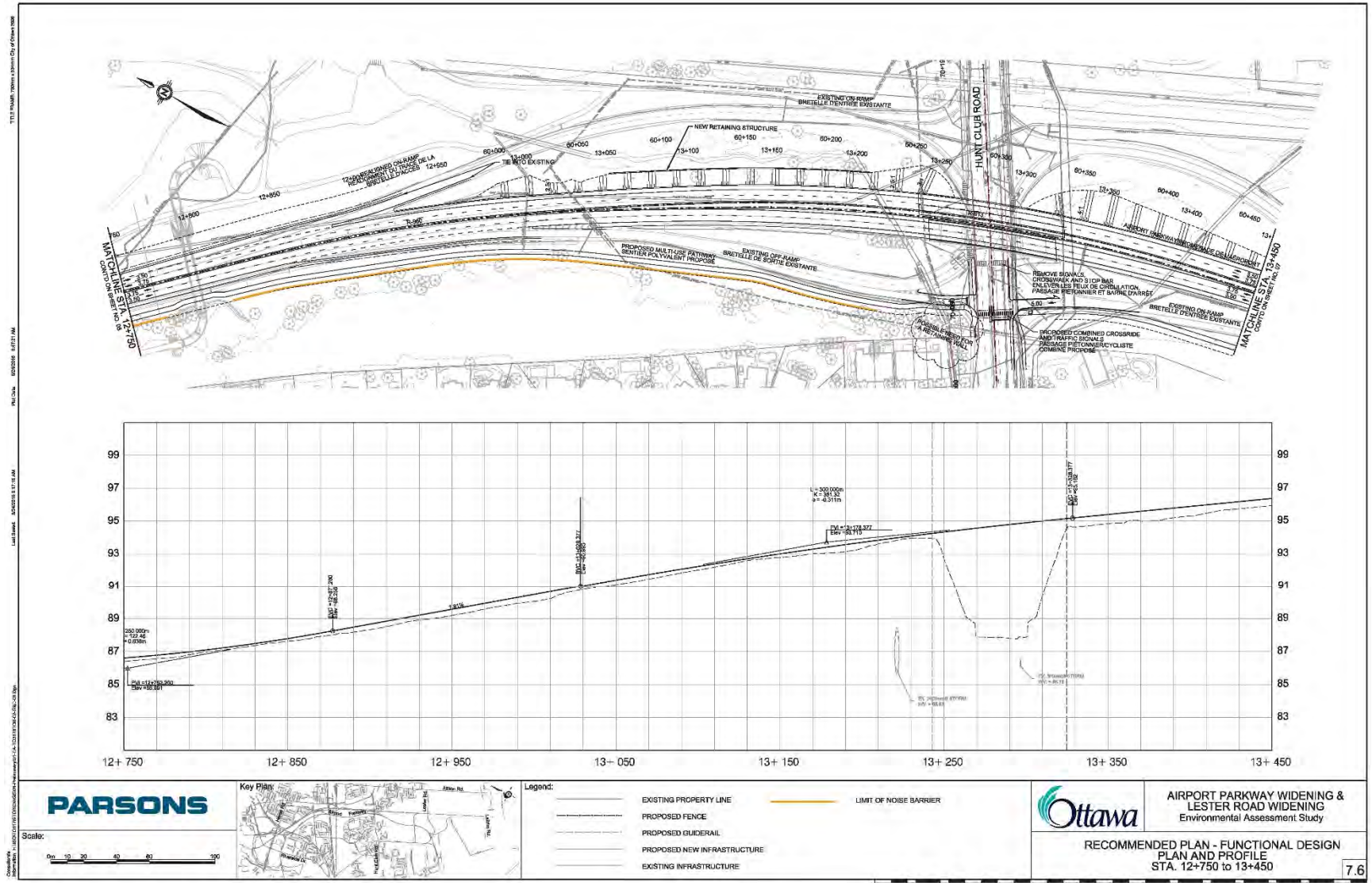
6.8 Project Staging

There will be an opportunity to stage the project during each phase of construction. Staging to the project will be beneficial in maintaining the best possible level of service during construction, including traffic flow to the Ottawa Macdonald-Cartier International Airport which is a priority as well as for emergency vehicles. This will include staging activities across the corridor (cross-section staging), or sections/portions along the corridor (component staging).

Although specific plans to stage the project will not be determined until the end of detailed design and beginning of construction, it is useful to present staging opportunities in general terms in this environmental assessment study so that potential effects can be assessed. Key aspects of the staging plan are expected to include:

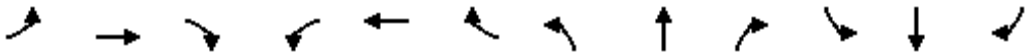
- Where proposed lanes are added next to existing lanes, construction staging in multiple phases will be required to allow continuous traffic flow during construction.
- Areas where there is a large median between proposed and existing lanes can be constructed in a single phase without causing traffic impacts up to the connection points at either end.
- Haul roads may be required in certain areas to bring construction materials to the site without interfering with active traffic lanes. Wherever possible, these haul roads would ideally become the proposed travel lanes at the completion of the work, however this may not be possible in all locations.
- Selective, short duration closures of segments of the Airport Parkway may be required to implement changes at intersections and off-ramps.

Figure 7-6: Recommended Plan, Airport Parkway - Station 12+750 to 13+450 (Hunt Club Road)



APPENDIX E

Synchro Analysis Reports

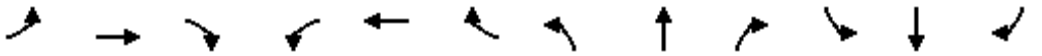


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	1041	9	45	740	107	20	31	64	238	14	24
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	80.0		80.0	60.0		90.0	20.0		0.0	30.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			40.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.96	1.00		0.96	0.99	0.99		0.99	0.98	
Frt			0.850			0.850		0.899			0.905	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1629	3226	1430	1449	3167	1430	1710	1515	0	1660	1561	0
Flt Permitted	0.276			0.142			0.730			0.690		
Satd. Flow (perm)	471	3226	1370	216	3167	1372	1296	1515	0	1198	1561	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			135			135		70			26	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		449.6			604.3			161.0			195.6	
Travel Time (s)		27.0			36.3			14.5			17.6	
Confl. Peds. (#/hr)	10		11	11		10	16		8	8		16
Confl. Bikes (#/hr)						1			1			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	6%	7%	18%	8%	7%	0%	0%	8%	3%	0%	4%
Adj. Flow (vph)	42	1132	10	49	804	116	22	34	70	259	15	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	1132	10	49	804	116	22	104	0	259	41	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	10.6	29.7	29.7	10.6	29.7	29.7	33.3	33.3		32.8	32.8	
Total Split (s)	11.0	35.0	35.0	11.0	35.0	35.0	34.0	34.0		34.0	34.0	
Total Split (%)	13.8%	43.8%	43.8%	13.8%	43.8%	43.8%	42.5%	42.5%		42.5%	42.5%	
Maximum Green (s)	5.4	29.3	29.3	5.4	29.3	29.3	26.7	26.7		27.2	27.2	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.7	3.7	
All-Red Time (s)	1.9	2.0	2.0	1.9	2.0	2.0	4.0	4.0		3.1	3.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.7	5.7	5.6	5.7	5.7	7.3	7.3		6.8	6.8	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	Max	Max	None	None		None	None	
Walk Time (s)		13.0	13.0		13.0	13.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		7.0	7.0		7.0	7.0	19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		5	5		5	5	5	5		5	5	
Act Effct Green (s)	42.6	38.8	38.8	42.7	38.9	38.9	21.1	21.1		21.6	21.6	
Actuated g/C Ratio	0.53	0.48	0.48	0.53	0.49	0.49	0.26	0.26		0.27	0.27	
v/c Ratio	0.12	0.72	0.01	0.24	0.52	0.16	0.06	0.23		0.80	0.09	
Control Delay	10.3	23.5	0.0	12.3	18.4	3.2	19.9	9.8		45.4	10.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	10.3	23.5	0.0	12.3	18.4	3.2	19.9	9.8		45.4	10.9	
LOS	B	C	A	B	B	A	B	A		D	B	
Approach Delay		22.9			16.2			11.5			40.7	
Approach LOS		C			B			B			D	
Queue Length 50th (m)	2.8	84.2	0.0	3.3	51.6	0.0	2.6	4.0		37.9	1.7	
Queue Length 95th (m)	8.2	#135.5	0.0	9.2	77.0	8.1	7.5	14.3		60.8	8.2	
Internal Link Dist (m)		425.6			580.3			137.0			171.6	
Turn Bay Length (m)	80.0		80.0	60.0		90.0	20.0			30.0		
Base Capacity (vph)	337	1565	734	208	1538	736	432	552		407	547	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.12	0.72	0.01	0.24	0.52	0.16	0.05	0.19		0.64	0.07	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 11 (14%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 21.9		Intersection LOS: C	
Intersection Capacity Utilization 70.7%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Downpatrick Road/McCarthy Road & Hunt Club Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	285	909	3	87	773	559	9	0	81	247	0	119
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	150.0		0.0	30.0		0.0	0.0		30.0	0.0		0.0
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (m)	15.0			20.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		0.99					0.99
Frt					0.937				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1710	3167	0	1513	3002	0	1629	0	1319	3285	0	1530
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1708	3167	0	1509	3002	0	1617	0	1319	3285	0	1508
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					149				159			129
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		604.3			311.4			576.1			450.7	
Travel Time (s)		36.3			18.7			41.5			32.5	
Confl. Peds. (#/hr)	8		7	7		8	2					2
Confl. Bikes (#/hr)			3			8						1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	8%	0%	13%	9%	1%	5%	0%	16%	1%	0%	0%
Adj. Flow (vph)	310	988	3	95	840	608	10	0	88	268	0	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	310	991	0	95	1448	0	10	0	88	268	0	129
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1		1	1		1
Detector Template	Left	Thru		Left	Thru		Left		Right	Left		Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0		2.0	2.0		2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0		2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type	Prot	NA		Prot	NA		Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		8			4		
Permitted Phases							8		8	4		4
Detector Phase	5	2		1	6		8		8	4		4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0		5.0	5.0		5.0
Minimum Split (s)	12.3	47.3		12.3	47.3		12.3		12.3	29.3		29.3
Total Split (s)	32.0	50.0		32.0	50.0		18.0		18.0	48.0		48.0
Total Split (%)	24.6%	38.5%		24.6%	38.5%		13.8%		13.8%	36.9%		36.9%
Maximum Green (s)	24.7	42.7		24.7	42.7		10.7		10.7	40.7		40.7
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7		3.7	3.7		3.7
All-Red Time (s)	3.6	3.6		3.6	3.6		3.6		3.6	3.6		3.6

Lane Group	ø7
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	7
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	29.3
Total Split (s)	30.0
Total Split (%)	23%
Maximum Green (s)	22.7
Yellow Time (s)	3.7
All-Red Time (s)	3.6

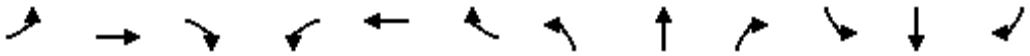
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	7.3	7.3		7.3	7.3		7.3		7.3	7.3		7.3
Lead/Lag	Lead	Lag		Lead	Lag		Lag		Lag			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0		3.0
Recall Mode	None	C-Max		None	C-Max		None		None	None		None
Walk Time (s)		31.0			31.0							
Flash Dont Walk (s)		9.0			9.0							
Pedestrian Calls (#/hr)		2			2							
Act Effct Green (s)	29.5	75.3		13.5	59.3		13.5		13.5	19.4		19.4
Actuated g/C Ratio	0.23	0.58		0.10	0.46		0.10		0.10	0.15		0.15
v/c Ratio	0.80	0.54		0.61	1.00		0.06		0.32	0.55		0.39
Control Delay	63.6	20.8		71.1	55.5		54.7		3.0	54.2		9.9
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	63.6	20.8		71.1	55.5		54.7		3.0	54.2		9.9
LOS	E	C		E	E		D		A	D		A
Approach Delay		31.0			56.5							
Approach LOS		C			E							
Queue Length 50th (m)	77.7	76.6		24.9	184.7		2.4		0.0	36.1		0.0
Queue Length 95th (m)	#129.1	149.9		42.1	#298.5		8.7		0.0	41.3		15.2
Internal Link Dist (m)		580.3			287.4			552.1			426.7	
Turn Bay Length (m)	150.0			30.0					30.0			
Base Capacity (vph)	388	1833		287	1450		176		284	1028		560
Starvation Cap Reductn	0	0		0	0		0		0	0		0
Spillback Cap Reductn	0	0		0	0		0		0	0		0
Storage Cap Reductn	0	0		0	0		0		0	0		0
Reduced v/c Ratio	0.80	0.54		0.33	1.00		0.06		0.31	0.26		0.23

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 1 (1%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 43.1		Intersection LOS: D	
Intersection Capacity Utilization 84.2%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Airport Parkway & Hunt Club Road

Lane Group	ø7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	2
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



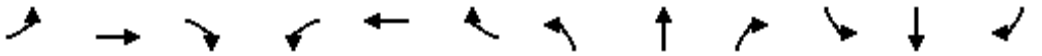
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	1174	18	109	871	136	5	8	35	217	42	28
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	80.0		80.0	60.0		90.0	20.0		0.0	30.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			40.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.97			0.93	0.98	0.98		0.99	0.99	
Frt			0.850			0.850		0.879			0.941	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1644	3257	1515	1613	3353	1515	1613	1432	0	1676	1655	0
Flt Permitted	0.234			0.105			0.708			0.726		
Satd. Flow (perm)	402	3257	1465	178	3353	1415	1182	1432	0	1263	1655	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			135			148		38			30	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		449.6			604.3			161.0			195.6	
Travel Time (s)		27.0			36.3			14.5			17.6	
Confl. Peds. (#/hr)	23		4	4		23	20		16	16		20
Confl. Bikes (#/hr)			5			1			1			5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	5%	1%	6%	2%	1%	6%	0%	10%	2%	1%	1%
Adj. Flow (vph)	46	1276	20	118	947	148	5	9	38	236	46	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	1276	20	118	947	148	5	47	0	236	76	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	10.6	29.7	29.7	10.6	29.7	29.7	33.3	33.3		32.8	32.8	
Total Split (s)	11.0	35.0	35.0	11.0	35.0	35.0	34.0	34.0		34.0	34.0	
Total Split (%)	13.8%	43.8%	43.8%	13.8%	43.8%	43.8%	42.5%	42.5%		42.5%	42.5%	
Maximum Green (s)	5.4	29.3	29.3	5.4	29.3	29.3	26.7	26.7		27.2	27.2	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.7	3.7	
All-Red Time (s)	1.9	2.0	2.0	1.9	2.0	2.0	4.0	4.0		3.1	3.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.7	5.7	5.6	5.7	5.7	7.3	7.3		6.8	6.8	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	Max	Max	None	None		None	None	
Walk Time (s)		13.0	13.0		13.0	13.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		7.0	7.0		7.0	7.0	19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		5	5		5	5	5	5		5	5	
Act Effct Green (s)	42.1	37.1	37.1	45.1	40.5	40.5	19.4	19.4		19.9	19.9	
Actuated g/C Ratio	0.53	0.46	0.46	0.56	0.51	0.51	0.24	0.24		0.25	0.25	
v/c Ratio	0.15	0.85	0.03	0.52	0.56	0.19	0.02	0.12		0.75	0.18	
Control Delay	10.1	29.5	0.1	21.4	18.0	3.9	19.6	9.4		42.1	14.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	10.1	29.5	0.1	21.4	18.0	3.9	19.6	9.4		42.1	14.9	
LOS	B	C	A	C	B	A	B	A		D	B	
Approach Delay		28.4			16.6			10.4			35.4	
Approach LOS		C			B			B			D	
Queue Length 50th (m)	2.8	99.7	0.0	7.5	59.7	0.0	0.6	1.1		34.7	5.7	
Queue Length 95th (m)	8.7	#161.2	0.0	#31.6	92.5	11.4	2.9	8.1		53.4	14.1	
Internal Link Dist (m)		425.6			580.3			137.0			171.6	
Turn Bay Length (m)	80.0		80.0	60.0		90.0	20.0			30.0		
Base Capacity (vph)	305	1510	752	229	1695	788	394	503		429	582	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.15	0.85	0.03	0.52	0.56	0.19	0.01	0.09		0.55	0.13	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 11 (14%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 23.9 Intersection LOS: C
Intersection Capacity Utilization 76.2% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Downpatrick Road/McCarthy Road & Hunt Club Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	155	1180	16	76	1223	359	36	0	123	650	0	272
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	150.0		0.0	30.0		0.0	0.0		30.0	0.0		0.0
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (m)	15.0			20.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		0.97					0.98
Frt		0.998			0.966				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1676	3250	0	1513	3177	0	1710	0	1443	3317	0	1530
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1669	3250	0	1506	3177	0	1655	0	1443	3317	0	1498
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			38				159			182
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		604.3			311.4			576.1			450.7	
Travel Time (s)		36.3			18.7			41.5			32.5	
Confl. Peds. (#/hr)	48		17	17		48	8					8
Confl. Bikes (#/hr)			6			7						2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	0%	13%	3%	1%	0%	0%	6%	0%	0%	0%
Adj. Flow (vph)	168	1283	17	83	1329	390	39	0	134	707	0	296
Shared Lane Traffic (%)												
Lane Group Flow (vph)	168	1300	0	83	1719	0	39	0	134	707	0	296
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1		1	1		1
Detector Template	Left	Thru		Left	Thru		Left		Right	Left		Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0		2.0	2.0		2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0		2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type	Prot	NA		Prot	NA		Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		8			4		
Permitted Phases							8		8	4		4
Detector Phase	5	2		1	6		8		8	4		4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0		5.0	5.0		5.0
Minimum Split (s)	12.3	47.3		12.3	47.3		12.3		12.3	12.3		12.3
Total Split (s)	18.0	65.0		18.0	65.0		17.0		17.0	47.0		47.0
Total Split (%)	13.8%	50.0%		13.8%	50.0%		13.1%		13.1%	36.2%		36.2%
Maximum Green (s)	10.7	57.7		10.7	57.7		9.7		9.7	39.7		39.7
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7		3.7	3.7		3.7
All-Red Time (s)	3.6	3.6		3.6	3.6		3.6		3.6	3.6		3.6

Lane Group	ø7
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	7
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	29.3
Total Split (s)	30.0
Total Split (%)	23%
Maximum Green (s)	22.7
Yellow Time (s)	3.7
All-Red Time (s)	3.6

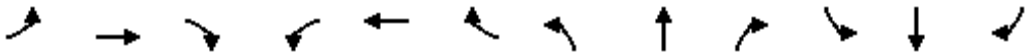
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	7.3	7.3		7.3	7.3		7.3		7.3	7.3		7.3
Lead/Lag	Lead	Lag		Lead	Lag		Lag		Lag			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0		3.0
Recall Mode	None	C-Max		None	C-Max		None		None	None		None
Walk Time (s)		31.0			31.0							
Flash Dont Walk (s)		9.0			9.0							
Pedestrian Calls (#/hr)		2			2							
Act Effct Green (s)	16.8	63.5		11.0	57.7		27.7		27.7	33.6		33.6
Actuated g/C Ratio	0.13	0.49		0.08	0.44		0.21		0.21	0.26		0.26
v/c Ratio	0.77	0.82		0.65	1.20		0.11		0.31	0.83		0.57
Control Delay	79.1	34.8		80.4	130.3		45.3		6.7	54.0		19.3
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	79.1	34.8		80.4	130.3		45.3		6.7	54.0		19.3
LOS	E	C		F	F		D		A	D		B
Approach Delay		39.9			128.0							
Approach LOS		D			F							
Queue Length 50th (m)	44.6	158.2		21.7	~293.9		8.0		0.0	92.8		25.5
Queue Length 95th (m)	#102.5	#205.3		#46.9	#339.2		22.3		13.6	109.1		52.7
Internal Link Dist (m)		580.3			287.4			552.1			426.7	
Turn Bay Length (m)	150.0			30.0					30.0			
Base Capacity (vph)	217	1588		135	1431		364		432	1012		583
Starvation Cap Reductn	0	0		0	0		0		0	0		0
Spillback Cap Reductn	0	0		0	0		0		0	0		0
Storage Cap Reductn	0	0		0	0		0		0	0		0
Reduced v/c Ratio	0.77	0.82		0.61	1.20		0.11		0.31	0.70		0.51

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 1 (1%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.20			
Intersection Signal Delay: 75.5		Intersection LOS: E	
Intersection Capacity Utilization 95.6%		ICU Level of Service F	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Airport Parkway & Hunt Club Road

Lane Group	ø7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	2
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

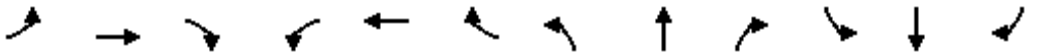


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	1062	9	45	755	107	20	31	64	238	14	24
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	80.0		80.0	60.0		90.0	20.0		0.0	30.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			40.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.96			0.96	0.99	0.99		0.99	0.98	
Frt			0.850			0.850		0.899			0.905	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1629	3226	1430	1449	3167	1430	1710	1515	0	1660	1561	0
Flt Permitted	0.268			0.135			0.730			0.690		
Satd. Flow (perm)	457	3226	1370	206	3167	1372	1296	1515	0	1198	1561	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			135			135		70			26	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		449.6			604.3			161.0			195.6	
Travel Time (s)		27.0			36.3			14.5			17.6	
Confl. Peds. (#/hr)	10		11	11		10	16		8	8		16
Confl. Bikes (#/hr)						1			1			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	6%	7%	18%	8%	7%	0%	0%	8%	3%	0%	4%
Adj. Flow (vph)	42	1154	10	49	821	116	22	34	70	259	15	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	1154	10	49	821	116	22	104	0	259	41	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	10.6	29.7	29.7	10.6	29.7	29.7	33.3	33.3		32.8	32.8	
Total Split (s)	11.0	35.0	35.0	11.0	35.0	35.0	34.0	34.0		34.0	34.0	
Total Split (%)	13.8%	43.8%	43.8%	13.8%	43.8%	43.8%	42.5%	42.5%		42.5%	42.5%	
Maximum Green (s)	5.4	29.3	29.3	5.4	29.3	29.3	26.7	26.7		27.2	27.2	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.7	3.7	
All-Red Time (s)	1.9	2.0	2.0	1.9	2.0	2.0	4.0	4.0		3.1	3.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.7	5.7	5.6	5.7	5.7	7.3	7.3		6.8	6.8	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	Max	Max	None	None		None	None	
Walk Time (s)		13.0	13.0		13.0	13.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		7.0	7.0		7.0	7.0	19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		5	5		5	5	5	5		5	5	
Act Effct Green (s)	42.6	38.8	38.8	42.7	38.9	38.9	21.1	21.1		21.6	21.6	
Actuated g/C Ratio	0.53	0.48	0.48	0.53	0.49	0.49	0.26	0.26		0.27	0.27	
v/c Ratio	0.13	0.74	0.01	0.24	0.53	0.16	0.06	0.23		0.80	0.09	
Control Delay	10.3	24.1	0.0	12.5	18.5	3.2	19.9	9.8		45.4	10.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	10.3	24.1	0.0	12.5	18.5	3.2	19.9	9.8		45.4	10.9	
LOS	B	C	A	B	B	A	B	A		D	B	
Approach Delay		23.4			16.4			11.5			40.7	
Approach LOS		C			B			B			D	
Queue Length 50th (m)	2.8	86.8	0.0	3.3	53.1	0.0	2.6	4.0		37.9	1.7	
Queue Length 95th (m)	8.2	#139.6	0.0	9.2	79.0	8.1	7.5	14.3		60.8	8.2	
Internal Link Dist (m)		425.6			580.3			137.0			171.6	
Turn Bay Length (m)	80.0		80.0	60.0		90.0	20.0			30.0		
Base Capacity (vph)	330	1565	734	204	1538	736	432	552		407	547	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.13	0.74	0.01	0.24	0.53	0.16	0.05	0.19		0.64	0.07	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 11 (14%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 22.2		Intersection LOS: C	
Intersection Capacity Utilization 70.9%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Downpatrick Road/McCarthy Road & Hunt Club Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	285	927	3	87	789	559	9	0	81	247	0	119
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	150.0		0.0	30.0		0.0	0.0		30.0	0.0		0.0
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (m)	15.0			20.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		0.99					0.99
Frt					0.938				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1710	3167	0	1513	3004	0	1629	0	1319	3285	0	1530
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1708	3167	0	1509	3004	0	1617	0	1319	3285	0	1508
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					147				159			129
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		604.3			311.4			576.1			450.7	
Travel Time (s)		36.3			18.7			41.5			32.5	
Confl. Peds. (#/hr)	8		7	7		8	2					2
Confl. Bikes (#/hr)			3			8						1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	8%	0%	13%	9%	1%	5%	0%	16%	1%	0%	0%
Adj. Flow (vph)	310	1008	3	95	858	608	10	0	88	268	0	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	310	1011	0	95	1466	0	10	0	88	268	0	129
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1		1	1		1
Detector Template	Left	Thru		Left	Thru		Left		Right	Left		Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0		2.0	2.0		2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0		2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type	Prot	NA		Prot	NA		Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		8			4		
Permitted Phases							8		8	4		4
Detector Phase	5	2		1	6		8		8	4		4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0		5.0	5.0		5.0
Minimum Split (s)	12.3	47.3		12.3	47.3		12.3		12.3	29.3		29.3
Total Split (s)	32.0	50.0		32.0	50.0		18.0		18.0	48.0		48.0
Total Split (%)	24.6%	38.5%		24.6%	38.5%		13.8%		13.8%	36.9%		36.9%
Maximum Green (s)	24.7	42.7		24.7	42.7		10.7		10.7	40.7		40.7
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7		3.7	3.7		3.7
All-Red Time (s)	3.6	3.6		3.6	3.6		3.6		3.6	3.6		3.6

Lane Group	ø7
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	7
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	29.3
Total Split (s)	30.0
Total Split (%)	23%
Maximum Green (s)	22.7
Yellow Time (s)	3.7
All-Red Time (s)	3.6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	7.3	7.3		7.3	7.3		7.3		7.3	7.3		7.3
Lead/Lag	Lead	Lag		Lead	Lag		Lag		Lag			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0		3.0
Recall Mode	None	C-Max		None	C-Max		None		None	None		None
Walk Time (s)		31.0			31.0							
Flash Dont Walk (s)		9.0			9.0							
Pedestrian Calls (#/hr)		2			2							
Act Effct Green (s)	29.5	75.3		13.5	59.3		13.5		13.5	19.4		19.4
Actuated g/C Ratio	0.23	0.58		0.10	0.46		0.10		0.10	0.15		0.15
v/c Ratio	0.80	0.55		0.61	1.01		0.06		0.32	0.55		0.39
Control Delay	63.6	21.0		71.1	58.6		54.7		3.0	54.2		9.9
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	63.6	21.0		71.1	58.6		54.7		3.0	54.2		9.9
LOS	E	C		E	E		D		A	D		A
Approach Delay		31.0			59.3							
Approach LOS		C			E							
Queue Length 50th (m)	77.7	78.9		24.9	189.5		2.4		0.0	36.1		0.0
Queue Length 95th (m)	#129.1	153.7		42.1	#304.2		8.7		0.0	41.3		15.2
Internal Link Dist (m)		580.3			287.4			552.1			426.7	
Turn Bay Length (m)	150.0			30.0					30.0			
Base Capacity (vph)	388	1833		287	1449		176		284	1028		560
Starvation Cap Reductn	0	0		0	0		0		0	0		0
Spillback Cap Reductn	0	0		0	0		0		0	0		0
Storage Cap Reductn	0	0		0	0		0		0	0		0
Reduced v/c Ratio	0.80	0.55		0.33	1.01		0.06		0.31	0.26		0.23

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 1 (1%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 44.5		Intersection LOS: D	
Intersection Capacity Utilization 84.6%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Airport Parkway & Hunt Club Road

Lane Group	ø7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	2
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

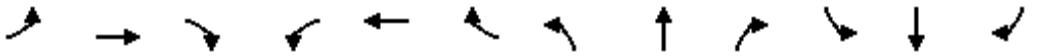
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	1198	18	109	889	136	5	8	35	217	42	28
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	80.0		80.0	60.0		90.0	20.0		0.0	30.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			40.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.97			0.93	0.98	0.98		0.99	0.99	
Frt			0.850			0.850		0.879			0.941	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1644	3257	1515	1613	3353	1515	1613	1432	0	1676	1655	0
Flt Permitted	0.226			0.105			0.708			0.726		
Satd. Flow (perm)	388	3257	1465	178	3353	1415	1182	1432	0	1263	1655	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			135			148		38			30	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		449.6			604.3			161.0			195.6	
Travel Time (s)		27.0			36.3			14.5			17.6	
Confl. Peds. (#/hr)	23		4	4		23	20		16	16		20
Confl. Bikes (#/hr)			5			1			1			5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	5%	1%	6%	2%	1%	6%	0%	10%	2%	1%	1%
Adj. Flow (vph)	46	1302	20	118	966	148	5	9	38	236	46	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	1302	20	118	966	148	5	47	0	236	76	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	10.6	29.7	29.7	10.6	29.7	29.7	33.3	33.3		32.8	32.8	
Total Split (s)	11.0	35.0	35.0	11.0	35.0	35.0	34.0	34.0		34.0	34.0	
Total Split (%)	13.8%	43.8%	43.8%	13.8%	43.8%	43.8%	42.5%	42.5%		42.5%	42.5%	
Maximum Green (s)	5.4	29.3	29.3	5.4	29.3	29.3	26.7	26.7		27.2	27.2	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.7	3.7	
All-Red Time (s)	1.9	2.0	2.0	1.9	2.0	2.0	4.0	4.0		3.1	3.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.7	5.7	5.6	5.7	5.7	7.3	7.3		6.8	6.8	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	Max	Max	None	None		None	None	
Walk Time (s)		13.0	13.0		13.0	13.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		7.0	7.0		7.0	7.0	19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		5	5		5	5	5	5		5	5	
Act Effct Green (s)	42.1	37.1	37.1	45.1	40.5	40.5	19.4	19.4		19.9	19.9	
Actuated g/C Ratio	0.53	0.46	0.46	0.56	0.51	0.51	0.24	0.24		0.25	0.25	
v/c Ratio	0.15	0.86	0.03	0.52	0.57	0.19	0.02	0.12		0.75	0.18	
Control Delay	10.1	30.5	0.1	21.4	18.2	3.9	19.6	9.4		42.1	14.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	10.1	30.5	0.1	21.4	18.2	3.9	19.6	9.4		42.1	14.9	
LOS	B	C	A	C	B	A	B	A		D	B	
Approach Delay		29.4			16.8			10.4			35.4	
Approach LOS		C			B			B			D	
Queue Length 50th (m)	2.8	103.1	0.0	7.5	61.4	0.0	0.6	1.1		34.7	5.7	
Queue Length 95th (m)	8.7	#166.1	0.0	#31.6	95.0	11.4	2.9	8.1		53.4	14.1	
Internal Link Dist (m)		425.6			580.3			137.0			171.6	
Turn Bay Length (m)	80.0		80.0	60.0		90.0	20.0			30.0		
Base Capacity (vph)	298	1510	752	229	1695	788	394	503		429	582	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.15	0.86	0.03	0.52	0.57	0.19	0.01	0.09		0.55	0.13	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 11 (14%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 24.5 Intersection LOS: C
Intersection Capacity Utilization 76.9% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Downpatrick Road/McCarthy Road & Hunt Club Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	155	1204	16	76	1248	359	36	0	123	650	0	272
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	150.0		0.0	30.0		0.0	0.0		30.0	0.0		0.0
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (m)	15.0			20.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		0.97					0.98
Frt		0.998			0.967				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1676	3250	0	1513	3181	0	1710	0	1443	3317	0	1530
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1670	3250	0	1507	3181	0	1655	0	1443	3317	0	1498
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			37				159			181
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		604.3			311.4			576.1			450.7	
Travel Time (s)		36.3			18.7			41.5			32.5	
Confl. Peds. (#/hr)	48		17	17		48	8					8
Confl. Bikes (#/hr)			6			7						2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	0%	13%	3%	1%	0%	0%	6%	0%	0%	0%
Adj. Flow (vph)	168	1309	17	83	1357	390	39	0	134	707	0	296
Shared Lane Traffic (%)												
Lane Group Flow (vph)	168	1326	0	83	1747	0	39	0	134	707	0	296
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1		1	1		1
Detector Template	Left	Thru		Left	Thru		Left		Right	Left		Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0		2.0	2.0		2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0		2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type	Prot	NA		Prot	NA		Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		8			4		
Permitted Phases							8		8	4		4
Detector Phase	5	2		1	6		8		8	4		4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0		5.0	5.0		5.0
Minimum Split (s)	12.3	47.3		12.3	47.3		12.3		12.3	12.3		12.3
Total Split (s)	18.0	65.0		18.0	65.0		17.0		17.0	47.0		47.0
Total Split (%)	13.8%	50.0%		13.8%	50.0%		13.1%		13.1%	36.2%		36.2%
Maximum Green (s)	10.7	57.7		10.7	57.7		9.7		9.7	39.7		39.7
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7		3.7	3.7		3.7
All-Red Time (s)	3.6	3.6		3.6	3.6		3.6		3.6	3.6		3.6

Lane Group	ø7
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	7
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	29.3
Total Split (s)	30.0
Total Split (%)	23%
Maximum Green (s)	22.7
Yellow Time (s)	3.7
All-Red Time (s)	3.6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	7.3	7.3		7.3	7.3		7.3		7.3	7.3		7.3
Lead/Lag	Lead	Lag		Lead	Lag		Lag		Lag			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0		3.0
Recall Mode	None	C-Max		None	C-Max		None		None	None		None
Walk Time (s)		31.0			31.0							
Flash Dont Walk (s)		9.0			9.0							
Pedestrian Calls (#/hr)		2			2							
Act Effct Green (s)	16.8	63.5		11.0	57.7		27.7		27.7	33.6		33.6
Actuated g/C Ratio	0.13	0.49		0.08	0.44		0.21		0.21	0.26		0.26
v/c Ratio	0.77	0.84		0.65	1.22		0.11		0.31	0.83		0.57
Control Delay	79.1	35.7		80.4	138.0		45.3		6.7	54.0		19.4
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	79.1	35.7		80.4	138.0		45.3		6.7	54.0		19.4
LOS	E	D		F	F		D		A	D		B
Approach Delay		40.6			135.4							
Approach LOS		D			F							
Queue Length 50th (m)	44.6	163.6		21.7	~302.2		8.0		0.0	92.8		25.7
Queue Length 95th (m)	#102.5	#222.8		#46.9	#347.4		22.3		13.6	109.1		53.0
Internal Link Dist (m)		580.3			287.4			552.1			426.7	
Turn Bay Length (m)	150.0			30.0					30.0			
Base Capacity (vph)	217	1588		135	1432		364		432	1012		583
Starvation Cap Reductn	0	0		0	0		0		0	0		0
Spillback Cap Reductn	0	0		0	0		0		0	0		0
Storage Cap Reductn	0	0		0	0		0		0	0		0
Reduced v/c Ratio	0.77	0.84		0.61	1.22		0.11		0.31	0.70		0.51

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 1 (1%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.22			
Intersection Signal Delay: 78.9		Intersection LOS: E	
Intersection Capacity Utilization 96.3%		ICU Level of Service F	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Airport Parkway & Hunt Club Road

Lane Group	ø7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	2
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

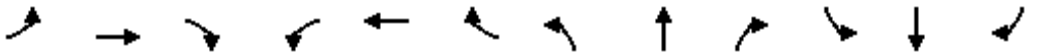
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	1089	9	45	774	107	20	31	64	238	14	24
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	80.0		80.0	60.0		90.0	20.0		0.0	30.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			40.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.96			0.96	0.99	0.99		0.99	0.98	
Frt			0.850			0.850		0.899			0.905	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1629	3226	1430	1449	3167	1430	1710	1515	0	1660	1561	0
Flt Permitted	0.259			0.125			0.730			0.690		
Satd. Flow (perm)	442	3226	1370	191	3167	1372	1296	1515	0	1198	1561	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			135			135		70			26	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		449.6			604.3			161.0			195.6	
Travel Time (s)		27.0			36.3			14.5			17.6	
Confl. Peds. (#/hr)	10		11	11		10	16		8	8		16
Confl. Bikes (#/hr)						1			1			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	6%	7%	18%	8%	7%	0%	0%	8%	3%	0%	4%
Adj. Flow (vph)	42	1184	10	49	841	116	22	34	70	259	15	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	1184	10	49	841	116	22	104	0	259	41	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	10.6	29.7	29.7	10.6	29.7	29.7	33.3	33.3		32.8	32.8	
Total Split (s)	11.0	35.0	35.0	11.0	35.0	35.0	34.0	34.0		34.0	34.0	
Total Split (%)	13.8%	43.8%	43.8%	13.8%	43.8%	43.8%	42.5%	42.5%		42.5%	42.5%	
Maximum Green (s)	5.4	29.3	29.3	5.4	29.3	29.3	26.7	26.7		27.2	27.2	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.7	3.7	
All-Red Time (s)	1.9	2.0	2.0	1.9	2.0	2.0	4.0	4.0		3.1	3.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.7	5.7	5.6	5.7	5.7	7.3	7.3		6.8	6.8	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	Max	Max	None	None		None	None	
Walk Time (s)		13.0	13.0		13.0	13.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		7.0	7.0		7.0	7.0	19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		5	5		5	5	5	5		5	5	
Act Effct Green (s)	42.6	38.8	38.8	42.7	38.9	38.9	21.1	21.1		21.6	21.6	
Actuated g/C Ratio	0.53	0.48	0.48	0.53	0.49	0.49	0.26	0.26		0.27	0.27	
v/c Ratio	0.13	0.76	0.01	0.25	0.55	0.16	0.06	0.23		0.80	0.09	
Control Delay	10.4	24.8	0.0	12.7	18.8	3.2	19.9	9.8		45.4	10.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	10.4	24.8	0.0	12.7	18.8	3.2	19.9	9.8		45.4	10.9	
LOS	B	C	A	B	B	A	B	A		D	B	
Approach Delay		24.1			16.7			11.5			40.7	
Approach LOS		C			B			B			D	
Queue Length 50th (m)	2.8	90.4	0.0	3.3	54.9	0.0	2.6	4.0		37.9	1.7	
Queue Length 95th (m)	8.2	#145.3	0.0	9.2	81.5	8.1	7.5	14.3		60.8	8.2	
Internal Link Dist (m)		425.6			580.3			137.0			171.6	
Turn Bay Length (m)	80.0		80.0	60.0		90.0	20.0			30.0		
Base Capacity (vph)	323	1565	734	197	1538	736	432	552		407	547	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.13	0.76	0.01	0.25	0.55	0.16	0.05	0.19		0.64	0.07	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 11 (14%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 22.6 Intersection LOS: C
Intersection Capacity Utilization 70.9% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Downpatrick Road/McCarthy Road & Hunt Club Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	285	951	3	87	808	559	9	0	81	247	0	119
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	150.0		0.0	30.0		0.0	0.0		30.0	0.0		0.0
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (m)	15.0			20.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		0.99					0.99
Frt					0.939				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1710	3167	0	1513	3006	0	1629	0	1319	3285	0	1530
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1708	3167	0	1509	3006	0	1617	0	1319	3285	0	1508
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					143				159			129
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		604.3			311.4			576.1			450.7	
Travel Time (s)		36.3			18.7			41.5			32.5	
Confl. Peds. (#/hr)	8		7	7		8	2					2
Confl. Bikes (#/hr)			3			8						1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	8%	0%	13%	9%	1%	5%	0%	16%	1%	0%	0%
Adj. Flow (vph)	310	1034	3	95	878	608	10	0	88	268	0	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	310	1037	0	95	1486	0	10	0	88	268	0	129
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1		1	1		1
Detector Template	Left	Thru		Left	Thru		Left		Right	Left		Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0		2.0	2.0		2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0		2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type	Prot	NA		Prot	NA		Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		8			4		
Permitted Phases							8		8	4		4
Detector Phase	5	2		1	6		8		8	4		4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0		5.0	5.0		5.0
Minimum Split (s)	12.3	47.3		12.3	47.3		12.3		12.3	29.3		29.3
Total Split (s)	32.0	50.0		32.0	50.0		18.0		18.0	48.0		48.0
Total Split (%)	24.6%	38.5%		24.6%	38.5%		13.8%		13.8%	36.9%		36.9%
Maximum Green (s)	24.7	42.7		24.7	42.7		10.7		10.7	40.7		40.7
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7		3.7	3.7		3.7
All-Red Time (s)	3.6	3.6		3.6	3.6		3.6		3.6	3.6		3.6

Lane Group	ø7
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	7
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	29.3
Total Split (s)	30.0
Total Split (%)	23%
Maximum Green (s)	22.7
Yellow Time (s)	3.7
All-Red Time (s)	3.6

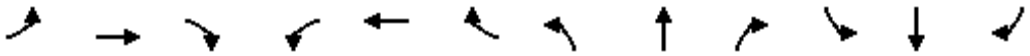
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	7.3	7.3		7.3	7.3		7.3		7.3	7.3		7.3
Lead/Lag	Lead	Lag		Lead	Lag		Lag		Lag			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0		3.0
Recall Mode	None	C-Max		None	C-Max		None		None	None		None
Walk Time (s)		31.0			31.0							
Flash Dont Walk (s)		9.0			9.0							
Pedestrian Calls (#/hr)		2			2							
Act Effct Green (s)	29.5	75.3		13.5	59.3		13.5		13.5	19.4		19.4
Actuated g/C Ratio	0.23	0.58		0.10	0.46		0.10		0.10	0.15		0.15
v/c Ratio	0.80	0.57		0.61	1.03		0.06		0.32	0.55		0.39
Control Delay	63.6	21.3		71.1	62.6		54.7		3.0	54.2		9.9
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	63.6	21.3		71.1	62.6		54.7		3.0	54.2		9.9
LOS	E	C		E	E		D		A	D		A
Approach Delay		31.1			63.1							
Approach LOS		C			E							
Queue Length 50th (m)	77.7	81.9		24.9	~199.6		2.4		0.0	36.1		0.0
Queue Length 95th (m)	#129.1	159.6		42.1	#311.2		8.7		0.0	41.3		15.2
Internal Link Dist (m)		580.3			287.4			552.1			426.7	
Turn Bay Length (m)	150.0			30.0					30.0			
Base Capacity (vph)	388	1833		287	1448		176		284	1028		560
Starvation Cap Reductn	0	0		0	0		0		0	0		0
Spillback Cap Reductn	0	0		0	0		0		0	0		0
Storage Cap Reductn	0	0		0	0		0		0	0		0
Reduced v/c Ratio	0.80	0.57		0.33	1.03		0.06		0.31	0.26		0.23

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 1 (1%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 46.2		Intersection LOS: D	
Intersection Capacity Utilization 85.2%		ICU Level of Service E	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Airport Parkway & Hunt Club Road

Lane Group	ø7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	2
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

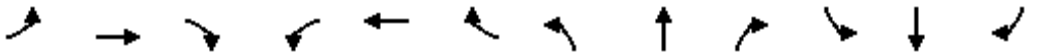


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	1228	18	109	911	136	5	8	35	217	42	28
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	80.0		80.0	60.0		90.0	20.0		0.0	30.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			40.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.97			0.93	0.98	0.98		0.99	0.99	
Frt			0.850			0.850		0.879			0.941	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1644	3257	1515	1613	3353	1515	1613	1432	0	1676	1655	0
Flt Permitted	0.216			0.105			0.708			0.726		
Satd. Flow (perm)	371	3257	1465	178	3353	1415	1182	1432	0	1263	1655	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			135			148		38			30	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		449.6			604.3			161.0			195.6	
Travel Time (s)		27.0			36.3			14.5			17.6	
Confl. Peds. (#/hr)	23		4	4		23	20		16	16		20
Confl. Bikes (#/hr)			5			1			1			5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	5%	1%	6%	2%	1%	6%	0%	10%	2%	1%	1%
Adj. Flow (vph)	46	1335	20	118	990	148	5	9	38	236	46	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	1335	20	118	990	148	5	47	0	236	76	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	10.6	29.7	29.7	10.6	29.7	29.7	33.3	33.3		32.8	32.8	
Total Split (s)	11.0	35.0	35.0	11.0	35.0	35.0	34.0	34.0		34.0	34.0	
Total Split (%)	13.8%	43.8%	43.8%	13.8%	43.8%	43.8%	42.5%	42.5%		42.5%	42.5%	
Maximum Green (s)	5.4	29.3	29.3	5.4	29.3	29.3	26.7	26.7		27.2	27.2	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.7	3.7	
All-Red Time (s)	1.9	2.0	2.0	1.9	2.0	2.0	4.0	4.0		3.1	3.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.7	5.7	5.6	5.7	5.7	7.3	7.3		6.8	6.8	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	Max	Max	None	None		None	None	
Walk Time (s)		13.0	13.0		13.0	13.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		7.0	7.0		7.0	7.0	19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		5	5		5	5	5	5		5	5	
Act Effct Green (s)	42.1	37.1	37.1	45.1	40.5	40.5	19.4	19.4		19.9	19.9	
Actuated g/C Ratio	0.53	0.46	0.46	0.56	0.51	0.51	0.24	0.24		0.25	0.25	
v/c Ratio	0.16	0.88	0.03	0.52	0.58	0.19	0.02	0.12		0.75	0.18	
Control Delay	10.2	32.1	0.1	21.4	18.6	3.9	19.6	9.4		42.1	14.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	10.2	32.1	0.1	21.4	18.6	3.9	19.6	9.4		42.1	14.9	
LOS	B	C	A	C	B	A	B	A		D	B	
Approach Delay		30.9			17.1			10.4			35.4	
Approach LOS		C			B			B			D	
Queue Length 50th (m)	2.8	107.5	0.0	7.5	63.6	0.0	0.6	1.1		34.7	5.7	
Queue Length 95th (m)	8.7	#172.1	0.0	#31.6	98.1	11.4	2.9	8.1		53.4	14.1	
Internal Link Dist (m)		425.6			580.3			137.0			171.6	
Turn Bay Length (m)	80.0		80.0	60.0		90.0	20.0			30.0		
Base Capacity (vph)	291	1510	752	229	1695	788	394	503		429	582	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.16	0.88	0.03	0.52	0.58	0.19	0.01	0.09		0.55	0.13	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 11 (14%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 25.3		Intersection LOS: C	
Intersection Capacity Utilization 77.8%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Downpatrick Road/McCarthy Road & Hunt Club Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	155	1234	16	76	1279	359	36	0	123	650	0	272
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	150.0		0.0	30.0		0.0	0.0		30.0	0.0		0.0
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (m)	15.0			20.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		0.97					0.98
Frt		0.998			0.967				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1676	3250	0	1513	3181	0	1710	0	1443	3317	0	1530
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1670	3250	0	1507	3181	0	1655	0	1443	3317	0	1498
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			36				159			180
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		604.3			311.4			576.1			450.7	
Travel Time (s)		36.3			18.7			41.5			32.5	
Confl. Peds. (#/hr)	48		17	17		48	8					8
Confl. Bikes (#/hr)			6			7						2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	0%	13%	3%	1%	0%	0%	6%	0%	0%	0%
Adj. Flow (vph)	168	1341	17	83	1390	390	39	0	134	707	0	296
Shared Lane Traffic (%)												
Lane Group Flow (vph)	168	1358	0	83	1780	0	39	0	134	707	0	296
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1		1	1		1
Detector Template	Left	Thru		Left	Thru		Left		Right	Left		Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0		2.0	2.0		2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0		2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type	Prot	NA		Prot	NA		Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		8			4		
Permitted Phases							8		8	4		4
Detector Phase	5	2		1	6		8		8	4		4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0		5.0	5.0		5.0
Minimum Split (s)	12.3	47.3		12.3	47.3		12.3		12.3	12.3		12.3
Total Split (s)	18.0	65.0		18.0	65.0		17.0		17.0	47.0		47.0
Total Split (%)	13.8%	50.0%		13.8%	50.0%		13.1%		13.1%	36.2%		36.2%
Maximum Green (s)	10.7	57.7		10.7	57.7		9.7		9.7	39.7		39.7
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7		3.7	3.7		3.7
All-Red Time (s)	3.6	3.6		3.6	3.6		3.6		3.6	3.6		3.6

Lane Group	ø7
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	7
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	29.3
Total Split (s)	30.0
Total Split (%)	23%
Maximum Green (s)	22.7
Yellow Time (s)	3.7
All-Red Time (s)	3.6

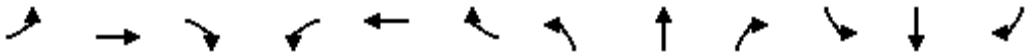
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	7.3	7.3		7.3	7.3		7.3		7.3	7.3		7.3
Lead/Lag	Lead	Lag		Lead	Lag		Lag		Lag			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0		3.0
Recall Mode	None	C-Max		None	C-Max		None		None	None		None
Walk Time (s)		31.0			31.0							
Flash Dont Walk (s)		9.0			9.0							
Pedestrian Calls (#/hr)		2			2							
Act Effct Green (s)	16.8	63.5		11.0	57.7		27.7		27.7	33.6		33.6
Actuated g/C Ratio	0.13	0.49		0.08	0.44		0.21		0.21	0.26		0.26
v/c Ratio	0.77	0.86		0.65	1.24		0.11		0.31	0.83		0.57
Control Delay	79.1	36.9		80.4	148.0		45.3		6.7	54.0		19.5
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	79.1	36.9		80.4	148.0		45.3		6.7	54.0		19.5
LOS	E	D		F	F		D		A	D		B
Approach Delay		41.5			145.0							
Approach LOS		D			F							
Queue Length 50th (m)	44.6	170.5		21.7	~312.3		8.0		0.0	92.8		26.0
Queue Length 95th (m)	#102.5	#232.4		#46.9	#357.5		22.3		13.6	109.1		53.2
Internal Link Dist (m)		580.3			287.4			552.1			426.7	
Turn Bay Length (m)	150.0			30.0					30.0			
Base Capacity (vph)	217	1588		135	1431		364		432	1012		582
Starvation Cap Reductn	0	0		0	0		0		0	0		0
Spillback Cap Reductn	0	0		0	0		0		0	0		0
Storage Cap Reductn	0	0		0	0		0		0	0		0
Reduced v/c Ratio	0.77	0.86		0.61	1.24		0.11		0.31	0.70		0.51

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 1 (1%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.24			
Intersection Signal Delay: 83.3		Intersection LOS: F	
Intersection Capacity Utilization 97.2%		ICU Level of Service F	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Airport Parkway & Hunt Club Road

Lane Group	ø7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	2
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

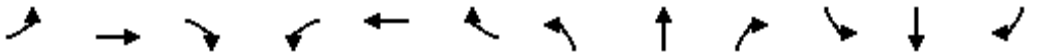


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	1085	9	59	761	107	20	31	76	238	14	24
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	80.0		80.0	60.0		90.0	20.0		0.0	30.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			40.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.96			0.96	0.99	0.99		0.99	0.98	
Frt			0.850			0.850		0.894			0.905	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1629	3226	1430	1449	3167	1430	1710	1501	0	1660	1561	0
Flt Permitted	0.275			0.114			0.730			0.682		
Satd. Flow (perm)	469	3226	1370	174	3167	1372	1296	1501	0	1184	1561	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			135			135		83			26	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		449.6			350.0			161.0			195.6	
Travel Time (s)		27.0			21.0			14.5			17.6	
Confl. Peds. (#/hr)	10		11	11		10	16		8	8		16
Confl. Bikes (#/hr)						1			1			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	6%	7%	18%	8%	7%	0%	0%	8%	3%	0%	4%
Adj. Flow (vph)	42	1179	10	64	827	116	22	34	83	259	15	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	1179	10	64	827	116	22	117	0	259	41	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	10.6	29.7	29.7	10.6	29.7	29.7	33.3	33.3		32.8	32.8	
Total Split (s)	11.0	35.0	35.0	11.0	35.0	35.0	34.0	34.0		34.0	34.0	
Total Split (%)	13.8%	43.8%	43.8%	13.8%	43.8%	43.8%	42.5%	42.5%		42.5%	42.5%	
Maximum Green (s)	5.4	29.3	29.3	5.4	29.3	29.3	26.7	26.7		27.2	27.2	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.7	3.7	
All-Red Time (s)	1.9	2.0	2.0	1.9	2.0	2.0	4.0	4.0		3.1	3.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.7	5.7	5.6	5.7	5.7	7.3	7.3		6.8	6.8	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	Max	Max	None	None		None	None	
Walk Time (s)		13.0	13.0		13.0	13.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		7.0	7.0		7.0	7.0	19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		5	5		5	5	5	5		5	5	
Act Effct Green (s)	41.2	36.3	36.3	42.7	38.8	38.8	21.2	21.2		21.7	21.7	
Actuated g/C Ratio	0.52	0.45	0.45	0.53	0.48	0.48	0.26	0.26		0.27	0.27	
v/c Ratio	0.13	0.81	0.01	0.34	0.54	0.16	0.06	0.25		0.81	0.09	
Control Delay	10.4	27.7	0.0	14.7	18.7	3.2	19.8	9.2		45.8	10.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	10.4	27.7	0.0	14.7	18.7	3.2	19.8	9.2		45.8	10.9	
LOS	B	C	A	B	B	A	B	A		D	B	
Approach Delay		26.9			16.6			10.9			41.0	
Approach LOS		C			B			B			D	
Queue Length 50th (m)	2.8	91.1	0.0	4.4	53.9	0.0	2.6	4.0		37.8	1.7	
Queue Length 95th (m)	8.2	#144.3	0.0	11.3	79.8	8.1	7.5	14.8		61.2	8.2	
Internal Link Dist (m)		425.6			326.0			137.0			171.6	
Turn Bay Length (m)	80.0		80.0	60.0		90.0	20.0			30.0		
Base Capacity (vph)	326	1462	694	190	1534	734	432	556		402	547	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.13	0.81	0.01	0.34	0.54	0.16	0.05	0.21		0.64	0.07	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 11 (14%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 23.8		Intersection LOS: C	
Intersection Capacity Utilization 71.9%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Downpatrick Road/McCarthy Road & Hunt Club Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	289	942	22	87	805	559	9	0	81	247	0	124
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	150.0		0.0	30.0		0.0	0.0		30.0	0.0		0.0
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (m)	15.0			20.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		0.99					0.99
Frt		0.997			0.939				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1710	3160	0	1513	3007	0	1629	0	1319	3285	0	1530
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1708	3160	0	1509	3007	0	1617	0	1319	3285	0	1508
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			143				159			135
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		189.4			311.4			576.1			450.7	
Travel Time (s)		11.4			18.7			41.5			32.5	
Confl. Peds. (#/hr)	8		7	7		8	2					2
Confl. Bikes (#/hr)			3			8						1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	8%	0%	13%	9%	1%	5%	0%	16%	1%	0%	0%
Adj. Flow (vph)	314	1024	24	95	875	608	10	0	88	268	0	135
Shared Lane Traffic (%)												
Lane Group Flow (vph)	314	1048	0	95	1483	0	10	0	88	268	0	135
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1		1	1		1
Detector Template	Left	Thru		Left	Thru		Left		Right	Left		Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0		2.0	2.0		2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0		2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type	Prot	NA		Prot	NA		Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		8			4		
Permitted Phases							8		8	4		4
Detector Phase	5	2		1	6		8		8	4		4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0		5.0	5.0		5.0
Minimum Split (s)	12.3	47.3		12.3	47.3		12.3		12.3	29.3		29.3
Total Split (s)	32.0	50.0		32.0	50.0		18.0		18.0	48.0		48.0
Total Split (%)	24.6%	38.5%		24.6%	38.5%		13.8%		13.8%	36.9%		36.9%
Maximum Green (s)	24.7	42.7		24.7	42.7		10.7		10.7	40.7		40.7
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7		3.7	3.7		3.7
All-Red Time (s)	3.6	3.6		3.6	3.6		3.6		3.6	3.6		3.6

Lane Group	ø7
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	7
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	29.3
Total Split (s)	30.0
Total Split (%)	23%
Maximum Green (s)	22.7
Yellow Time (s)	3.7
All-Red Time (s)	3.6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	7.3	7.3		7.3	7.3		7.3		7.3	7.3		7.3
Lead/Lag	Lead	Lag		Lead	Lag		Lag		Lag			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0		3.0
Recall Mode	None	C-Max		None	C-Max		None		None	None		None
Walk Time (s)		31.0			31.0							
Flash Dont Walk (s)		9.0			9.0							
Pedestrian Calls (#/hr)		2			2							
Act Effct Green (s)	30.1	75.3		13.5	58.7		13.5		13.5	19.4		19.4
Actuated g/C Ratio	0.23	0.58		0.10	0.45		0.10		0.10	0.15		0.15
v/c Ratio	0.79	0.57		0.61	1.03		0.06		0.32	0.55		0.40
Control Delay	62.6	21.4		71.1	64.9		54.7		3.0	54.2		9.9
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	62.6	21.4		71.1	64.9		54.7		3.0	54.2		9.9
LOS	E	C		E	E		D		A	D		A
Approach Delay		30.9			65.3							
Approach LOS		C			E							
Queue Length 50th (m)	78.5	83.1		24.9	~202.5		2.4		0.0	36.1		0.0
Queue Length 95th (m)	#131.4	161.8		42.1	#309.9		8.7		0.0	41.3		15.7
Internal Link Dist (m)		165.4			287.4			552.1			426.7	
Turn Bay Length (m)	150.0			30.0					30.0			
Base Capacity (vph)	395	1830		287	1435		176		284	1028		564
Starvation Cap Reductn	0	0		0	0		0		0	0		0
Spillback Cap Reductn	0	0		0	0		0		0	0		0
Storage Cap Reductn	0	0		0	0		0		0	0		0
Reduced v/c Ratio	0.79	0.57		0.33	1.03		0.06		0.31	0.26		0.24

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 1 (1%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 47.0		Intersection LOS: D	
Intersection Capacity Utilization 85.3%		ICU Level of Service E	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Airport Parkway & Hunt Club Road

Lane Group	ø7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	2
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1260	4	0	937	0	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1370	4	0	1018	0	3
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	350			255		
pX, platoon unblocked			0.71		0.83	0.71
vC, conflicting volume			1374		1881	687
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			724		87	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			625		747	775

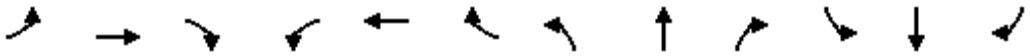
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	913	461	509	509	3
Volume Left	0	0	0	0	0
Volume Right	0	4	0	0	3
cSH	1700	1700	1700	1700	775
Volume to Capacity	0.54	0.27	0.30	0.30	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.0	0.0	9.7
Lane LOS					A
Approach Delay (s)	0.0		0.0		9.7
Approach LOS					A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1218	45	0	937	0	34
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1324	49	0	1018	0	37
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				189		
pX, platoon unblocked					0.66	
vC, conflicting volume			1373		1858	686
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1373		1275	686
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	91
cM capacity (veh/h)			496		105	390

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	883	490	509	509	37
Volume Left	0	0	0	0	0
Volume Right	0	49	0	0	37
cSH	1700	1700	1700	1700	390
Volume to Capacity	0.52	0.29	0.30	0.30	0.09
Queue Length 95th (m)	0.0	0.0	0.0	0.0	2.5
Control Delay (s)	0.0	0.0	0.0	0.0	15.2
Lane LOS					C
Approach Delay (s)	0.0		0.0		15.2
Approach LOS					C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		



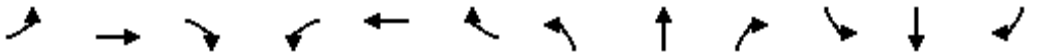
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	1222	18	126	897	136	5	8	47	217	42	28
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	80.0		80.0	60.0		90.0	20.0		0.0	30.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			40.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.97			0.93	0.98	0.98		0.99	0.99	
Frt			0.850			0.850		0.872			0.941	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1644	3257	1515	1613	3353	1515	1613	1413	0	1676	1655	0
Flt Permitted	0.232			0.105			0.708			0.718		
Satd. Flow (perm)	399	3257	1465	178	3353	1415	1182	1413	0	1250	1655	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			135			148		51			30	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		449.6			350.8			161.0			195.6	
Travel Time (s)		27.0			21.0			14.5			17.6	
Confl. Peds. (#/hr)	23		4	4		23	20		16	16		20
Confl. Bikes (#/hr)			5			1			1			5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	5%	1%	6%	2%	1%	6%	0%	10%	2%	1%	1%
Adj. Flow (vph)	46	1328	20	137	975	148	5	9	51	236	46	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	1328	20	137	975	148	5	60	0	236	76	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	10.6	29.7	29.7	10.6	29.7	29.7	33.3	33.3		32.8	32.8	
Total Split (s)	11.0	35.0	35.0	11.0	35.0	35.0	34.0	34.0		34.0	34.0	
Total Split (%)	13.8%	43.8%	43.8%	13.8%	43.8%	43.8%	42.5%	42.5%		42.5%	42.5%	
Maximum Green (s)	5.4	29.3	29.3	5.4	29.3	29.3	26.7	26.7		27.2	27.2	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.7	3.7	
All-Red Time (s)	1.9	2.0	2.0	1.9	2.0	2.0	4.0	4.0		3.1	3.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.7	5.7	5.6	5.7	5.7	7.3	7.3		6.8	6.8	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	Max	Max	None	None		None	None	
Walk Time (s)		13.0	13.0		13.0	13.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		7.0	7.0		7.0	7.0	19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		5	5		5	5	5	5		5	5	
Act Effct Green (s)	40.4	34.3	34.3	45.1	40.3	40.3	19.6	19.6		20.1	20.1	
Actuated g/C Ratio	0.50	0.43	0.43	0.56	0.50	0.50	0.24	0.24		0.25	0.25	
v/c Ratio	0.16	0.95	0.03	0.58	0.58	0.19	0.02	0.16		0.75	0.17	
Control Delay	10.2	40.7	0.1	25.5	18.5	3.9	19.4	8.6		42.2	14.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	10.2	40.7	0.1	25.5	18.5	3.9	19.4	8.6		42.2	14.8	
LOS	B	D	A	C	B	A	B	A		D	B	
Approach Delay		39.1			17.5			9.4			35.5	
Approach LOS		D			B			A			D	
Queue Length 50th (m)	2.8	~110.4	0.0	8.9	62.6	0.0	0.6	1.1		34.6	5.6	
Queue Length 95th (m)	8.7	#170.8	0.0	#40.3	96.3	11.4	2.9	8.9		53.7	14.1	
Internal Link Dist (m)		425.6			326.8			137.0			171.6	
Turn Bay Length (m)	80.0		80.0	60.0		90.0	20.0			30.0		
Base Capacity (vph)	295	1394	704	236	1689	786	394	505		425	582	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.16	0.95	0.03	0.58	0.58	0.19	0.01	0.12		0.56	0.13	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 29.1 Intersection LOS: C
Intersection Capacity Utilization 78.6% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Downpatrick Road/McCarthy Road & Hunt Club Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	1226	40	76	1267	359	36	0	123	650	0	278
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	150.0		0.0	30.0		0.0	0.0		30.0	0.0		0.0
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (m)	15.0			20.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		0.97					0.98
Frt		0.995			0.967				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1676	3240	0	1513	3181	0	1710	0	1443	3317	0	1530
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1670	3240	0	1507	3181	0	1655	0	1443	3317	0	1498
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			36				159			180
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		184.3			311.4			576.1			450.7	
Travel Time (s)		11.1			18.7			41.5			32.5	
Confl. Peds. (#/hr)	48		17	17		48	8					8
Confl. Bikes (#/hr)			6			7						2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	0%	13%	3%	1%	0%	0%	6%	0%	0%	0%
Adj. Flow (vph)	174	1333	43	83	1377	390	39	0	134	707	0	302
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	1376	0	83	1767	0	39	0	134	707	0	302
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1		1	1		1
Detector Template	Left	Thru		Left	Thru		Left		Right	Left		Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0		2.0	2.0		2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0		2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type	Prot	NA		Prot	NA		Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		8			4		
Permitted Phases							8		8	4		4
Detector Phase	5	2		1	6		8		8	4		4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0		5.0	5.0		5.0
Minimum Split (s)	12.3	47.3		12.3	47.3		12.3		12.3	12.3		12.3
Total Split (s)	18.0	65.0		18.0	65.0		17.0		17.0	47.0		47.0
Total Split (%)	13.8%	50.0%		13.8%	50.0%		13.1%		13.1%	36.2%		36.2%
Maximum Green (s)	10.7	57.7		10.7	57.7		9.7		9.7	39.7		39.7
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7		3.7	3.7		3.7
All-Red Time (s)	3.6	3.6		3.6	3.6		3.6		3.6	3.6		3.6

Lane Group	ø7
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	7
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	29.3
Total Split (s)	30.0
Total Split (%)	23%
Maximum Green (s)	22.7
Yellow Time (s)	3.7
All-Red Time (s)	3.6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	7.3	7.3		7.3	7.3		7.3		7.3	7.3		7.3
Lead/Lag	Lead	Lag		Lead	Lag		Lag		Lag			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0		3.0
Recall Mode	None	C-Max		None	C-Max		None		None	None		None
Walk Time (s)		31.0			31.0							
Flash Dont Walk (s)		9.0			9.0							
Pedestrian Calls (#/hr)		2			2							
Act Effct Green (s)	16.8	63.5		11.0	57.7		27.7		27.7	33.6		33.6
Actuated g/C Ratio	0.13	0.49		0.08	0.44		0.21		0.21	0.26		0.26
v/c Ratio	0.80	0.87		0.65	1.23		0.11		0.31	0.83		0.58
Control Delay	82.0	37.8		80.4	144.2		45.3		6.7	54.0		20.3
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	82.0	37.8		80.4	144.2		45.3		6.7	54.0		20.3
LOS	F	D		F	F		D		A	D		C
Approach Delay		42.7			141.4							
Approach LOS		D			F							
Queue Length 50th (m)	46.4	174.4		21.7	~308.4		8.0		0.0	92.8		27.7
Queue Length 95th (m)	#106.5	#238.1		#46.9	#353.6		22.3		13.6	109.1		55.1
Internal Link Dist (m)		160.3			287.4			552.1			426.7	
Turn Bay Length (m)	150.0			30.0					30.0			
Base Capacity (vph)	217	1584		135	1431		364		432	1012		582
Starvation Cap Reductn	0	0		0	0		0		0	0		0
Spillback Cap Reductn	0	0		0	0		0		0	0		0
Storage Cap Reductn	0	0		0	0		0		0	0		0
Reduced v/c Ratio	0.80	0.87		0.61	1.23		0.11		0.31	0.70		0.52

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 1 (1%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.23			
Intersection Signal Delay: 81.8		Intersection LOS: F	
Intersection Capacity Utilization 97.1%		ICU Level of Service F	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Airport Parkway & Hunt Club Road

Lane Group	ø7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	2
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1416	11	0	1581	0	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1539	12	0	1718	0	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	351			254		
pX, platoon unblocked			0.63		0.80	0.63
vC, conflicting volume			1551		2404	776
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			712		200	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			560		618	687

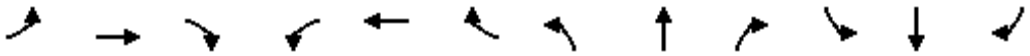
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1026	525	859	859	10
Volume Left	0	0	0	0	0
Volume Right	0	12	0	0	10
cSH	1700	1700	1700	1700	687
Volume to Capacity	0.60	0.31	0.51	0.51	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.3
Control Delay (s)	0.0	0.0	0.0	0.0	10.3
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.3
Approach LOS					B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1384	41	0	1581	0	42
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1504	45	0	1718	0	46
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				184		
pX, platoon unblocked					0.61	
vC, conflicting volume			1549		2386	774
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1549		2000	774
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	87
cM capacity (veh/h)			424		32	341

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1003	546	859	859	46
Volume Left	0	0	0	0	0
Volume Right	0	45	0	0	46
cSH	1700	1700	1700	1700	341
Volume to Capacity	0.59	0.32	0.51	0.51	0.13
Queue Length 95th (m)	0.0	0.0	0.0	0.0	3.7
Control Delay (s)	0.0	0.0	0.0	0.0	17.2
Lane LOS					C
Approach Delay (s)	0.0		0.0		17.2
Approach LOS					C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		



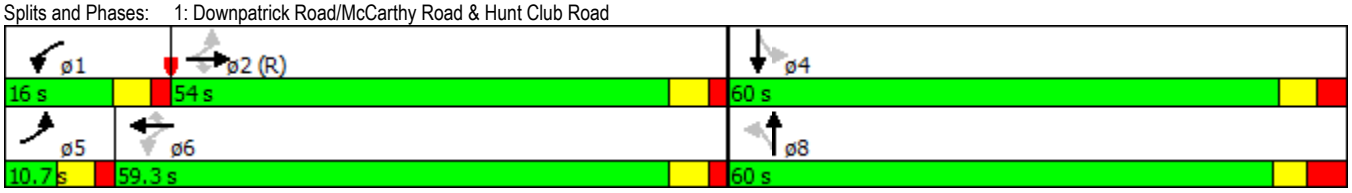
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	1222	18	126	897	136	5	8	47	217	42	28
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	80.0		80.0	60.0		90.0	20.0		0.0	30.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			40.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.96			0.91	0.97	0.97		0.98	0.98	
Frt			0.850			0.850		0.872			0.941	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1644	3257	1515	1613	3353	1515	1613	1402	0	1676	1648	0
Flt Permitted	0.254			0.097			0.708			0.718		
Satd. Flow (perm)	435	3257	1458	165	3353	1372	1170	1402	0	1239	1648	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			83			148		51			30	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		449.6			350.8			161.0			195.6	
Travel Time (s)		27.0			21.0			14.5			17.6	
Confl. Peds. (#/hr)	23		4	4		23	20		16	16		20
Confl. Bikes (#/hr)			5			1			1			5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	5%	1%	6%	2%	1%	6%	0%	10%	2%	1%	1%
Adj. Flow (vph)	46	1328	20	137	975	148	5	9	51	236	46	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	1328	20	137	975	148	5	60	0	236	76	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	10.6	29.7	29.7	10.6	29.7	29.7	33.3	33.3		32.8	32.8	
Total Split (s)	10.7	54.0	54.0	16.0	59.3	59.3	60.0	60.0		60.0	60.0	
Total Split (%)	8.2%	41.5%	41.5%	12.3%	45.6%	45.6%	46.2%	46.2%		46.2%	46.2%	
Maximum Green (s)	5.1	48.3	48.3	10.4	53.6	53.6	52.7	52.7		53.2	53.2	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.7	3.7	
All-Red Time (s)	1.9	2.0	2.0	1.9	2.0	2.0	4.0	4.0		3.1	3.1	

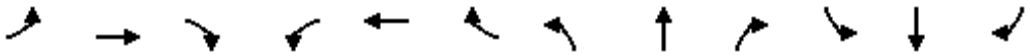
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.7	5.7	5.6	5.7	5.7	7.3	7.3		6.8	6.8	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	Max	Max	None	None		None	None	
Walk Time (s)		13.0	13.0		13.0	13.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		7.0	7.0		7.0	7.0	19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		5	5		5	5	5	5		5	5	
Act Effct Green (s)	75.2	68.3	68.3	86.4	76.3	76.3	30.4	30.4		30.9	30.9	
Actuated g/C Ratio	0.58	0.53	0.53	0.66	0.59	0.59	0.23	0.23		0.24	0.24	
v/c Ratio	0.15	0.78	0.02	0.55	0.50	0.17	0.02	0.16		0.80	0.18	
Control Delay	11.4	31.0	0.1	27.0	28.3	10.9	33.0	12.0		65.6	23.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	11.4	31.0	0.1	27.0	28.3	10.9	33.0	12.0		65.6	23.4	
LOS	B	C	A	C	C	B	C	B		E	C	
Approach Delay		29.9			26.1			13.6			55.4	
Approach LOS		C			C			B			E	
Queue Length 50th (m)	3.9	146.4	0.0	26.4	96.0	9.6	1.1	1.9		60.2	9.8	
Queue Length 95th (m)	10.9	#245.5	0.0	m26.0	m87.1	m8.2	4.1	12.1		82.5	20.6	
Internal Link Dist (m)		425.6			326.8			137.0			171.6	
Turn Bay Length (m)	80.0		80.0	60.0		90.0	20.0			30.0		
Base Capacity (vph)	315	1710	805	258	1968	866	474	598		507	692	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.15	0.78	0.02	0.53	0.50	0.17	0.01	0.10		0.47	0.11	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 11 (8%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 30.6 — Intersection LOS: C
Intersection Capacity Utilization 78.6% — ICU Level of Service D
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Downpatrick Road/McCarthy Road & Hunt Club Road





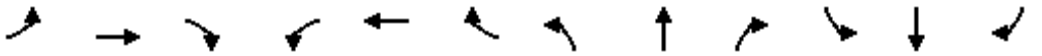
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	1112	9	59	780	107	20	31	76	238	14	24
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	80.0		80.0	60.0		90.0	20.0		0.0	30.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			40.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.96			0.96	0.99	0.99		0.99	0.98	
Frt			0.850			0.850		0.894			0.905	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1629	3226	1430	1449	3167	1430	1710	1501	0	1660	1561	0
Flt Permitted	0.265			0.109			0.730			0.682		
Satd. Flow (perm)	452	3226	1370	166	3167	1372	1296	1501	0	1184	1561	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			135			135		83			26	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		449.6			350.0			161.0			195.6	
Travel Time (s)		27.0			21.0			14.5			17.6	
Confl. Peds. (#/hr)	10		11	11		10	16		8	8		16
Confl. Bikes (#/hr)						1			1			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	6%	7%	18%	8%	7%	0%	0%	8%	3%	0%	4%
Adj. Flow (vph)	42	1209	10	64	848	116	22	34	83	259	15	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	1209	10	64	848	116	22	117	0	259	41	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	10.6	29.7	29.7	10.6	29.7	29.7	33.3	33.3		32.8	32.8	
Total Split (s)	11.0	35.0	35.0	11.0	35.0	35.0	34.0	34.0		34.0	34.0	
Total Split (%)	13.8%	43.8%	43.8%	13.8%	43.8%	43.8%	42.5%	42.5%		42.5%	42.5%	
Maximum Green (s)	5.4	29.3	29.3	5.4	29.3	29.3	26.7	26.7		27.2	27.2	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.7	3.7	
All-Red Time (s)	1.9	2.0	2.0	1.9	2.0	2.0	4.0	4.0		3.1	3.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.7	5.7	5.6	5.7	5.7	7.3	7.3		6.8	6.8	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	Max	Max	None	None		None	None	
Walk Time (s)		13.0	13.0		13.0	13.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		7.0	7.0		7.0	7.0	19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		5	5		5	5	5	5		5	5	
Act Effct Green (s)	41.2	36.3	36.3	42.7	38.8	38.8	21.2	21.2		21.7	21.7	
Actuated g/C Ratio	0.52	0.45	0.45	0.53	0.48	0.48	0.26	0.26		0.27	0.27	
v/c Ratio	0.13	0.83	0.01	0.34	0.55	0.16	0.06	0.25		0.81	0.09	
Control Delay	10.5	28.8	0.0	15.1	18.9	3.2	19.8	9.2		45.8	10.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	10.5	28.8	0.0	15.1	18.9	3.2	19.8	9.2		45.8	10.9	
LOS	B	C	A	B	B	A	B	A		D	B	
Approach Delay		28.0			16.9			10.9			41.0	
Approach LOS		C			B			B			D	
Queue Length 50th (m)	2.8	94.9	0.0	4.4	55.7	0.0	2.6	4.0		37.8	1.7	
Queue Length 95th (m)	8.2	#150.0	0.0	11.3	82.3	8.1	7.5	14.8		61.2	8.2	
Internal Link Dist (m)		425.6			326.0			137.0			171.6	
Turn Bay Length (m)	80.0		80.0	60.0		90.0	20.0			30.0		
Base Capacity (vph)	319	1462	694	186	1534	734	432	556		402	547	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.13	0.83	0.01	0.34	0.55	0.16	0.05	0.21		0.64	0.07	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 11 (14%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 24.4 Intersection LOS: C
Intersection Capacity Utilization 72.7% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Downpatrick Road/McCarthy Road & Hunt Club Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	289	966	22	87	824	559	9	0	81	247	0	124
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	150.0		0.0	30.0		0.0	0.0		30.0	0.0		0.0
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (m)	15.0			20.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		0.99					0.99
Frt		0.997			0.939				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1710	3160	0	1513	3006	0	1629	0	1319	3285	0	1530
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1708	3160	0	1509	3006	0	1617	0	1319	3285	0	1508
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			136				159			135
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		189.4			311.4			576.1			450.7	
Travel Time (s)		11.4			18.7			41.5			32.5	
Confl. Peds. (#/hr)	8		7	7		8	2					2
Confl. Bikes (#/hr)			3			8						1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	8%	0%	13%	9%	1%	5%	0%	16%	1%	0%	0%
Adj. Flow (vph)	314	1050	24	95	896	608	10	0	88	268	0	135
Shared Lane Traffic (%)												
Lane Group Flow (vph)	314	1074	0	95	1504	0	10	0	88	268	0	135
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1		1	1		1
Detector Template	Left	Thru		Left	Thru		Left		Right	Left		Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0		2.0	2.0		2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0		2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type	Prot	NA		Prot	NA		Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		8			4		
Permitted Phases							8		8	4		4
Detector Phase	5	2		1	6		8		8	4		4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0		5.0	5.0		5.0
Minimum Split (s)	12.3	47.3		12.3	47.3		12.3		12.3	29.3		29.3
Total Split (s)	32.0	50.0		32.0	50.0		18.0		18.0	48.0		48.0
Total Split (%)	24.6%	38.5%		24.6%	38.5%		13.8%		13.8%	36.9%		36.9%
Maximum Green (s)	24.7	42.7		24.7	42.7		10.7		10.7	40.7		40.7
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7		3.7	3.7		3.7
All-Red Time (s)	3.6	3.6		3.6	3.6		3.6		3.6	3.6		3.6

Lane Group	ø7
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	7
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	29.3
Total Split (s)	30.0
Total Split (%)	23%
Maximum Green (s)	22.7
Yellow Time (s)	3.7
All-Red Time (s)	3.6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	7.3	7.3		7.3	7.3		7.3		7.3	7.3		7.3
Lead/Lag	Lead	Lag		Lead	Lag		Lag		Lag			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0		3.0
Recall Mode	None	C-Max		None	C-Max		None		None	None		None
Walk Time (s)		31.0			31.0							
Flash Dont Walk (s)		9.0			9.0							
Pedestrian Calls (#/hr)		2			2							
Act Effct Green (s)	30.1	75.3		13.5	58.7		13.5		13.5	19.4		19.4
Actuated g/C Ratio	0.23	0.58		0.10	0.45		0.10		0.10	0.15		0.15
v/c Ratio	0.79	0.59		0.61	1.05		0.06		0.32	0.55		0.40
Control Delay	62.6	21.8		71.1	70.5		54.7		3.0	54.2		9.9
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	62.6	21.8		71.1	70.5		54.7		3.0	54.2		9.9
LOS	E	C		E	E		D		A	D		A
Approach Delay		31.0			70.5							
Approach LOS		C			E							
Queue Length 50th (m)	78.5	86.2		24.9	~217.5		2.4		0.0	36.1		0.0
Queue Length 95th (m)	#131.4	167.8		42.1	#318.0		8.7		0.0	41.3		15.7
Internal Link Dist (m)		165.4			287.4			552.1			426.7	
Turn Bay Length (m)	150.0			30.0					30.0			
Base Capacity (vph)	395	1830		287	1431		176		284	1028		564
Starvation Cap Reductn	0	0		0	0		0		0	0		0
Spillback Cap Reductn	0	0		0	0		0		0	0		0
Storage Cap Reductn	0	0		0	0		0		0	0		0
Reduced v/c Ratio	0.79	0.59		0.33	1.05		0.06		0.31	0.26		0.24

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 1 (1%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay: 49.4		Intersection LOS: D	
Intersection Capacity Utilization 85.9%		ICU Level of Service E	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Airport Parkway & Hunt Club Road

Lane Group	ø7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	2
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1284	4	0	956	0	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1396	4	0	1039	0	3
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	350			255		
pX, platoon unblocked			0.70		0.82	0.70
vC, conflicting volume			1400		1917	700
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			715		42	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			617		792	759

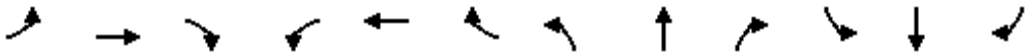
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	930	470	520	520	3
Volume Left	0	0	0	0	0
Volume Right	0	4	0	0	3
cSH	1700	1700	1700	1700	759
Volume to Capacity	0.55	0.28	0.31	0.31	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.0	0.0	9.8
Lane LOS					A
Approach Delay (s)	0.0		0.0		9.8
Approach LOS					A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1242	45	0	956	0	34
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1350	49	0	1039	0	37
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				189		
pX, platoon unblocked					0.65	
vC, conflicting volume			1399		1894	699
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1399		1310	699
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	90
cM capacity (veh/h)			484		99	382

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	900	499	520	520	37
Volume Left	0	0	0	0	0
Volume Right	0	49	0	0	37
cSH	1700	1700	1700	1700	382
Volume to Capacity	0.53	0.29	0.31	0.31	0.10
Queue Length 95th (m)	0.0	0.0	0.0	0.0	2.6
Control Delay (s)	0.0	0.0	0.0	0.0	15.4
Lane LOS					C
Approach Delay (s)	0.0		0.0		15.4
Approach LOS					C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

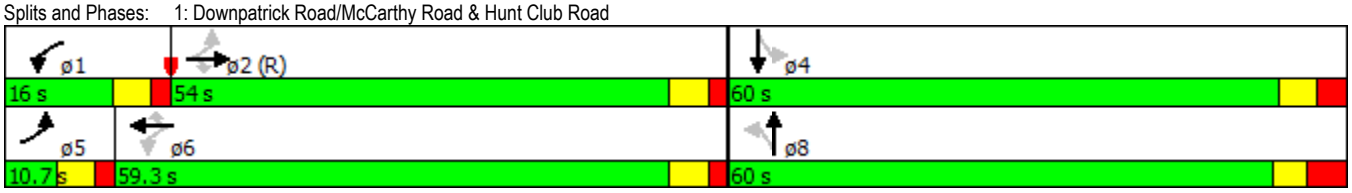


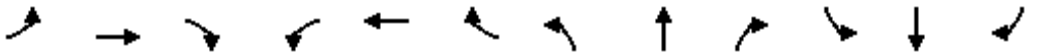
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	1252	18	126	919	136	5	8	47	217	42	28
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	80.0		80.0	60.0		90.0	20.0		0.0	30.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			40.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96			0.91	0.97	0.97		0.98	0.98	
Frt			0.850			0.850		0.872			0.941	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1644	3257	1515	1613	3353	1515	1613	1402	0	1676	1648	0
Flt Permitted	0.245			0.090			0.708			0.718		
Satd. Flow (perm)	424	3257	1458	153	3353	1372	1170	1402	0	1239	1648	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			83			148		51			30	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		449.6			350.8			161.0			195.6	
Travel Time (s)		27.0			21.0			14.5			17.6	
Confl. Peds. (#/hr)	23		4	4		23	20		16	16		20
Confl. Bikes (#/hr)			5			1			1			5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	5%	1%	6%	2%	1%	6%	0%	10%	2%	1%	1%
Adj. Flow (vph)	46	1361	20	137	999	148	5	9	51	236	46	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	1361	20	137	999	148	5	60	0	236	76	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	10.6	29.7	29.7	10.6	29.7	29.7	33.3	33.3		32.8	32.8	
Total Split (s)	10.7	54.0	54.0	16.0	59.3	59.3	60.0	60.0		60.0	60.0	
Total Split (%)	8.2%	41.5%	41.5%	12.3%	45.6%	45.6%	46.2%	46.2%		46.2%	46.2%	
Maximum Green (s)	5.1	48.3	48.3	10.4	53.6	53.6	52.7	52.7		53.2	53.2	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.7	3.7	
All-Red Time (s)	1.9	2.0	2.0	1.9	2.0	2.0	4.0	4.0		3.1	3.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.7	5.7	5.6	5.7	5.7	7.3	7.3		6.8	6.8	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	Max	Max	None	None		None	None	
Walk Time (s)		13.0	13.0		13.0	13.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		7.0	7.0		7.0	7.0	19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		5	5		5	5	5	5		5	5	
Act Effct Green (s)	75.2	68.3	68.3	86.4	76.3	76.3	30.4	30.4		30.9	30.9	
Actuated g/C Ratio	0.58	0.53	0.53	0.66	0.59	0.59	0.23	0.23		0.24	0.24	
v/c Ratio	0.15	0.80	0.02	0.56	0.51	0.17	0.02	0.16		0.80	0.18	
Control Delay	11.5	31.7	0.1	24.3	34.0	13.6	33.0	12.0		65.6	23.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	11.5	31.7	0.1	24.3	34.0	13.6	33.0	12.0		65.6	23.4	
LOS	B	C	A	C	C	B	C	B		E	C	
Approach Delay		30.6			30.6			13.6			55.4	
Approach LOS		C			C			B			E	
Queue Length 50th (m)	3.9	152.7	0.0	28.9	121.4	13.2	1.1	1.9		60.2	9.8	
Queue Length 95th (m)	10.9	#255.2	0.0	m28.1	m107.6	m10.9	4.1	12.1		82.5	20.6	
Internal Link Dist (m)		425.6			326.8			137.0			171.6	
Turn Bay Length (m)	80.0		80.0	60.0		90.0	20.0			30.0		
Base Capacity (vph)	310	1710	805	251	1968	866	474	598		507	692	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.15	0.80	0.02	0.55	0.51	0.17	0.01	0.10		0.47	0.11	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 32.8		Intersection LOS: C	
Intersection Capacity Utilization 79.5%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 1: Downpatrick Road/McCarthy Road & Hunt Club Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	1256	40	76	1298	359	36	0	123	650	0	278
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	150.0		0.0	30.0		0.0	0.0		30.0	0.0		0.0
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (m)	15.0			20.0			0.0			0.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		0.97					0.98
Frt		0.995			0.968				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1676	3240	0	1513	3185	0	1710	0	1443	3317	0	1530
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1670	3240	0	1507	3185	0	1655	0	1443	3317	0	1498
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			35				159			179
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		184.3			311.4			576.1			450.7	
Travel Time (s)		11.1			18.7			41.5			32.5	
Confl. Peds. (#/hr)	48		17	17		48	8					8
Confl. Bikes (#/hr)			6			7						2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	0%	13%	3%	1%	0%	0%	6%	0%	0%	0%
Adj. Flow (vph)	174	1365	43	83	1411	390	39	0	134	707	0	302
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	1408	0	83	1801	0	39	0	134	707	0	302
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1		1	1		1
Detector Template	Left	Thru		Left	Thru		Left		Right	Left		Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0		2.0	2.0		2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0		2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type	Prot	NA		Prot	NA		Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		8			4		
Permitted Phases							8		8	4		4
Detector Phase	5	2		1	6		8		8	4		4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0		5.0	5.0		5.0
Minimum Split (s)	12.3	47.3		12.3	47.3		12.3		12.3	12.3		12.3
Total Split (s)	18.0	65.0		18.0	65.0		17.0		17.0	47.0		47.0
Total Split (%)	13.8%	50.0%		13.8%	50.0%		13.1%		13.1%	36.2%		36.2%
Maximum Green (s)	10.7	57.7		10.7	57.7		9.7		9.7	39.7		39.7
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7		3.7	3.7		3.7
All-Red Time (s)	3.6	3.6		3.6	3.6		3.6		3.6	3.6		3.6

Lane Group	ø7
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	7
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	29.3
Total Split (s)	30.0
Total Split (%)	23%
Maximum Green (s)	22.7
Yellow Time (s)	3.7
All-Red Time (s)	3.6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	7.3	7.3		7.3	7.3		7.3		7.3	7.3		7.3
Lead/Lag	Lead	Lag		Lead	Lag		Lag		Lag			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0		3.0
Recall Mode	None	C-Max		None	C-Max		None		None	None		None
Walk Time (s)		31.0			31.0							
Flash Dont Walk (s)		9.0			9.0							
Pedestrian Calls (#/hr)		2			2							
Act Effct Green (s)	16.8	63.5		11.0	57.7		27.7		27.7	33.6		33.6
Actuated g/C Ratio	0.13	0.49		0.08	0.44		0.21		0.21	0.26		0.26
v/c Ratio	0.80	0.89		0.65	1.26		0.11		0.31	0.83		0.58
Control Delay	78.2	31.4		80.4	153.5		45.3		6.7	54.0		20.5
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	78.2	31.4		80.4	153.5		45.3		6.7	54.0		20.5
LOS	E	C		F	F		D		A	D		C
Approach Delay		36.5			150.3							
Approach LOS		D			F							
Queue Length 50th (m)	49.6	76.3		21.7	~318.4		8.0		0.0	92.8		27.9
Queue Length 95th (m)	m#90.4	#241.1		#46.9	#363.4		22.3		13.6	109.1		55.4
Internal Link Dist (m)		160.3			287.4			552.1			426.7	
Turn Bay Length (m)	150.0			30.0					30.0			
Base Capacity (vph)	217	1584		135	1433		364		432	1012		581
Starvation Cap Reductn	0	0		0	0		0		0	0		0
Spillback Cap Reductn	0	0		0	0		0		0	0		0
Storage Cap Reductn	0	0		0	0		0		0	0		0
Reduced v/c Ratio	0.80	0.89		0.61	1.26		0.11		0.31	0.70		0.52

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 1 (1%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.26			
Intersection Signal Delay: 83.5		Intersection LOS: F	
Intersection Capacity Utilization 98.0%		ICU Level of Service F	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Airport Parkway & Hunt Club Road

Lane Group	ø7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	2
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1446	11	0	1612	0	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1572	12	0	1752	0	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	351			254		
pX, platoon unblocked			0.66		0.79	0.66
vC, conflicting volume			1584		2454	792
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			859		374	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			514		473	717

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1048	536	876	876	10
Volume Left	0	0	0	0	0
Volume Right	0	12	0	0	10
cSH	1700	1700	1700	1700	717
Volume to Capacity	0.62	0.32	0.52	0.52	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.3
Control Delay (s)	0.0	0.0	0.0	0.0	10.1
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.1
Approach LOS					B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1414	41	0	1612	0	42
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1537	45	0	1752	0	46
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				184		
pX, platoon unblocked					0.61	
vC, conflicting volume			1582		2435	791
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1582		2081	791
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	86
cM capacity (veh/h)			412		28	333

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1025	557	876	876	46
Volume Left	0	0	0	0	0
Volume Right	0	45	0	0	46
cSH	1700	1700	1700	1700	333
Volume to Capacity	0.60	0.33	0.52	0.52	0.14
Queue Length 95th (m)	0.0	0.0	0.0	0.0	3.8
Control Delay (s)	0.0	0.0	0.0	0.0	17.5
Lane LOS					C
Approach Delay (s)	0.0		0.0		17.5
Approach LOS					C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		