ONTARIO LAND TRIBUNAL

PROCEEDING COMMENCED UNDER subsection 22(7) of the *Planning Act*, R.S.O. 1990, c. P.13, as amended.

Applicant and Appellant: Caivan (Perth GC) Limited

Subject: Request to amend the Official Plan – Failure to adopt the re-

quested amendment

Description: To permit 940 single detached dwellings and townhomes, a

nine-hole golf course, park and open space areas

Reference Number: OPA-01-2023

Property Address: 141 Peter Street, Part of Lots 26 & 27, Concession 1, Part

Lots 25, 26 & 27, Concession 2, Geographic Township of Bathurst, and Part Lot 1 in Southeast Half Lot 1, Concession

1, Part Lot 1 in Southwest Half Lot 1, Concession 2, Geographic Township of Drummond, now in the Town of

Perth, County of Lanark

Municipality/UT: Town of Perth / County of Lanark

OLT Case No.: OLT-23-000939
OLT Lead Case No.: OLT-23-000534

PROCEEDING COMMENCED UNDER subsection 34(11) of the *Planning Act*, R.S.O. 1990, c. P.13, as amended.

Applicant and Appellant: Caivan (Perth GC) Limited

Subject: Application to amend the Zoning By-law – Refusal or neglect to

make a decision

Description: To permit 940 single detached dwellings and townhomes, a

nine-hole golf course, park and open space areas

Reference Number: ZBL-03-2023

Property Address: 141 Peter Street, Part of Lots 26 & 27, Concession 1, Part

Lots 25, 26 & 27, Concession 2, Geographic Township of Bathurst, and Part Lot 1 in Southeast Half Lot 1, Concession

1, Part Lot 1 in Southwest Half Lot 1, Concession 2, Geographic Township of Drummond, now in the Town of

Perth, County of Lanark

Municipality/UT: Town of Perth / County of Lanark

OLT Case No.: OLT-23-000940

PROCEEDING COMMENCED UNDER subsection 51(34) of the *Planning Act*, R.S.O. 1990, c. P.13, as amended.

Applicant and Appellant: Caivan (Perth GC) Limited

Subject: Proposed Plan of Subdivision – Failure of Approval Authority to

make a decision

Description: To permit 940 single detached dwellings and townhomes, a

nine-hole golf course, park and open space areas

Reference Number: 09-T-22001

Property Address: 141 Peter Street, Part of Lots 26 & 27, Concession 1, Part

Lots 25, 26 & 27, Concession 2, Geographic Township of Bathurst, and Part Lot 1 in Southeast Half Lot 1, Concession

1, Part Lot 1 in Southwest Half Lot 1, Concession 2,

Geographic Township of Drummond, now in the Town of

Perth, County of Lanark

Municipality/UT: Town of Perth / County of Lanark

OLT Case No.: OLT-23-000534
OLT Lead Case No.: OLT-23-000534

OLT Case Name: Caivan (Perth GC) v Lanark County

Witness Statement of Christopher Gordon, P. Eng.

President and Senior Transportation Project Manager/Director

CGH Transportation Inc.

Qualifications

- 1. I am a Professional Engineer practicing in the Province of Ontario, licensed through the Professional Engineers of Ontario. I am a Senior Transportation Project Manager/Director, President, and one of the founders of CGH Transportation Inc. I have over 30 years of professional experience in the field of transportation planning and traffic engineering.
- I have worked on a wide variety of transportation engineering projects in Eastern Ontario and Atlantic Canada with the vast majority of my work involving Transportation Impact Assessments and Functional Designs in support of private-sector development applications.
- 3. I have been previously qualified by the Ontario Land Tribunal (formerly the Ontario Municipal Board or Local Planning Appeal Tribunal) to provide expert opinion evidence in the area of Transportation Planning and Traffic Engineering.
- 4. My curriculum vitae is attached to this witness statement as **Appendix "A"**. A copy of my Acknowledgement of Expert Duty is attached as **Appendix "B"**.

Retainer

- 5. CGH Transportation Inc. (CGH) was retained by Caivan (Perth GC) Limited (Caivan) in November 2021 to undertake the transportation planning and traffic engineering analyses associated with a proposed residential plan of subdivision project at the subject site.
- 6. As part of this retainer, I managed several tasks including a review of the transportation components of the Town's Infrastructure Master Plan (IMP), as well as an examination of the different crossing alternatives and recommended crossing solutions. Throughout the various stages of CGH's retainer, I have attended technical meetings with the Town and County and carried out site visits.

Documents Reviewed

- 7. As part of this retainer and in preparation for my evidence, I reviewed the transportationrelated portions of following documents:
 - a. Town of Perth IMP Sections 1, 3.4 and 3.5, 5.1 and 5.2, 5.6.1 and 5.6.2, 6.1.1 and 6.1.2, Figures 6-1 and 6-2, and 8.
 - b. Town of Perth Official Plan, including Section 8, as it pertains to New Development Access
 - c. Town of Perth TMP and Forecasting Memo
 - d. Caivan's updated draft plan of subdivision (2024 06 12), a copy of which is attached as **Appendix "C"**.

Issues

8. The issues that I will address in this witness statement include the following:

Planning Issues

- 5. Does the Application conform to the policies, purpose and intent of the Town of Perth Official Plan (the "Official Plan")?
 - a. The application of the conformity test will consider, but not be limited to the following policies of the Town of Perth Official Plan:
 - x. 5.5 Transportation

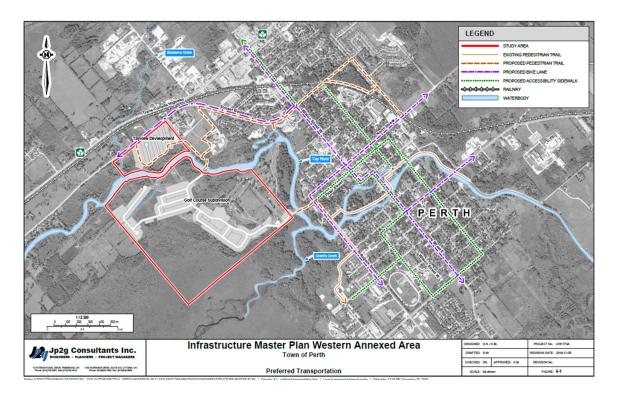
Transportation Issues

- 6. Will the proposed ingress and egress to and from the subdivision be sufficient from an emergency services perspective and from the perspective of long-term infrastructure replacement/maintenance?
- 7. Does the proposed ingress and egress to the site conform to the principles of good transportation planning and does it provide safe access?
- 8. Does the proposed ingress and egress to the site create unacceptable traffic impacts on adjacent streets?
- 9. Are the proposed parking standards functional?

Summary Intended Expert Evidence

Background Context

9. As part of the Golf Course Lands development, the Town's IMP proposed two bridge crossings of the Tay River as shown on the figure below, which is Figure 6-1 of the IMP.



- 10. The two crossings are at Peter Street and the connection to the County Lands, which, through this witness statement, is referred to as the Second Crossing.
- 11. There is an existing bridge at Peter Street that provides access to the Golf Course. The two photos below are an aerial image of the existing bridge and a view of the existing bridge, from Peter Street (west of Lustre Lane), looking west.





12. When Caivan's Draft Plan of Subdivision was submitted, the transportation plan differed from the IMP and proposed a twinned crossing at Peter Street. The Traffic Impact Study (TIS) and associated materials that CGH produced to support the development demonstrated that a twinned Peter Street Crossing arrangement, where the existing bridge would be twinned, along with modifications to the roadway network, would be suitable to support the level of development proposed.



- 13. Notwithstanding CGH's findings and opinions as noted above, Caivan informed CGH that Caivan would commit to the design and construction of the Second Crossing in addition to the twinned Peter Street Crossing. This was communicated to the Town by Caivan, with a short memorandum from CGH on March 1st, 2024.
- 14. The Town replied by letter on April 9, 2024 asserting that additional technical tasks would need to be completed in order to ensure the Town could meaningfully assess the merits of a revised development plan that included the Second Crossing.

- 15. To demonstrate how Caivan and its team would continue the planning, design and construction tasks, as outlined in the Town's April 9th, 2024 letter, CGH prepared a Transportation Issues Resolution Memo (**Appendix "D"**) in which we itemize the tasks ahead in order to address the outstanding issues and obtain approvals for both crossings. This Memo also speaks to the phasing of the development and the appropriate number of homes that could be constructed before the Second Crossing is required to be built and operational.
- 16. As I address the transportation related issues below, for clarity and based on established facts above, my opinions are provided on the understanding that Caivan will plan, design and construct the twinned Peter Street Crossing and the Second Crossing. As well, references hereafter to Caivan's plan of subdivision imply the June 12, 2024 version attached hereto as **Appendix "C"**.

Issue No. 5. – Does the Application conform to the policies, purpose and intent of the Town of Perth Official Plan (the "Official Plan")?

- a. The application of the conformity test will consider, but not be limited to the following policies of the Town of Perth Official Plan:
 - x. 5.5 Transportation
- 17. Considering that Caivan has committed to fund and construct both the twinned Peter Street Crossing and the Second Crossing, it is my opinion that the Application does conform to the Town's OP, as it meets the test for conformity, from a transportation perspective.
- 18. The Town's Official Plan includes policies related to residential development in Section 8. Section 8.1.4, speaks to the Objectives, Development Concept, Range of Permitted Uses, Development Restrictions and in particular, Access Constraints, for the New Residential Area Designation.
- 19. Section 8.1.4.5 of the Town's OP refers to Access Constraints and paragraph b) states:
 - b) The rezoning of land within this area for new development shall limit the number of

Town of Perth Official Plan
File D08-CW Ch. 8 Pg. 39 As consolidated, September, 2019

residential units and shall be based in part on the traffic management capacity of the existing Peter Street Bridge and the associated Peter Street road corridor to accept additional traffic without a reduction in the level of service. The Zoning amendment should not proceed until such time as a new primary vehicle access corridor has been established either by plan of subdivision, acquisition of a corridor by the Town of Perth or by identification of a specific road corridor in a completed formal Master Plan for the lands annexed to the westerly side of Perth.

- 20. The above paragraph notes that for the proposed rezoning to proceed, a new primary vehicle access corridor needs to be established. Among the ways to establish this corridor was by completing a formal Master Plan for the lands. The Town did complete an Infrastructure Master Plan (i.e. the IMP) for these lands, dated November 2019.
- 21. The IMP contains several relevant transportation sections:
 - a. Sections 3.4.1 & 2 Transportation Existing Roadway Network and Background Traffic Volumes – these sections describe the key transportation roadways and intersections that were considered in the overall transportation analysis presented in the IMP.
 - b. Section 5.1 presents the results of the IMP's Traffic Impact Study (TIS) and outlines the four optional access scenarios considered. Each option was analyzed and evaluated, leading to a preferred plan.
 - c. Section 6.1.1 notes the preferred design, that being Option 3, and its rationale, which included the use of the existing Peter Street Bridge access as well as a Second Crossing of the Tay River located at the Lanark County lands.
 - d. Figure 6-1 illustrates the Preferred Transportation plan. This figure locates the Peter Street Bridge as well as the Second Crossing connecting the Golf Course lands to the Lanark County property.
 - e. Section 1.3 of the IMP describes how the IMP itself fulfills Ontario's Environmental Assessment Act by following the Municipal Class Environmental Assessment process. Section 8 of the IMP continues this description and summarizes future planning activities required for the various pieces of infrastructure, mostly notably for transportation, including the processes required for both the Peter Street Bridge and the Second Crossing.
- 22. Based on the foregoing it is my opinion that the IMP fulfills the Town's OP requirement to complete a Master Plan and develop an access solution across the Tay River.
- 23. It is noted that the rezoning for the area of new development shall limit the number of residential units and shall be based in part on the traffic management capacity of the Peter

Street Bridge. This is relevant to the potential phasing of Caivan's proposed development and to the Transportation Issues List presented below.

- 24. To address the foregoing, attached as **Appendix "E"** to this witness statement is a report titled "Western Annex Lands 141 Peter Street Transportation Review", by CGH Transportation Inc. (herein referred to as the "June 2024 TR"). Building on the preferred transportation solution as presented in the IMP, the June 2024 TR analyzes and compares the transportation impacts of Caivan's updated plan of subdivision with the land use assumptions considered in the IMP. The June 2024 TR considers relevant revisions such as phasing, rights-of-way and the twinning of the Peter Street Crossing.
- 25. Based on the analysis and comparison outlined in the June 2024 TR, the increase in the number of homes over the IMP does result in an increase in the number of car trips anticipated during the AM and PM peak hours. Our conclusion is that operations for the updated subdivision concept full build-out will be similar to those anticipated by of the IMP.

Issue No. 6 - Will the proposed ingress and egress to and from the subdivision be sufficient from an emergency services perspective and from the perspective of long-term infrastructure replacement/maintenance.

- 26. It is my opinion, based on the conclusions of the June 2024 TR, that the ultimate crossing solutions (i.e. the twinned Peter Street Crossing and the Second Crossing), as identified in the IMP, and now included in the updated plan of subdivision, are sufficient for emergency services and infrastructure replacement/maintenance.
- 27. It is my opinion, based on my experience, that 200 homes can be built and occupied in reliance upon the proposed twinning of the Peter Street Crossing. My opinion on this point is based, in part, on transportation planning experience in and around the City of Ottawa, where a threshold of more than 200 homes has been the value used to warrant a secondary access.
- 28. Given that a twinned Peter Street Crossing would provide additional capacity and a second emergency vehicle crossing, the link between Lustre Lane and the eastern terminus of the existing bridge is relatively narrow. The asphalt width varies between 5 and 6 metres. However, the roadway right-of-way is currently approximately 15 metres. As part of the twinning of the Peter Street Crossing, the link between the structure and Lustre Lane will need to be widened to accommodate emergency vehicle operations.
- 29. As part of the twinned Peter Street Crossing, the dimensions of the structures and roadway links on both east and west sides of the bridge will be designed to the satisfaction of the Fire Chief and Emergency Services.
- 30. As the twinned Peter Street Crossing will ultimately become part of the Town's infrastructure, the design of the crossing improvement will be circulated to the Town for their approval, which will ensure it meets their standards for infrastructure replacement and maintenance. In my opinion, it would be appropriate to finalize this design as an approval condition associated with the draft plan (i.e. the detail design stage).

Issue No. 7. – Does the proposed ingress and egress to the site conform to the principles of good transportation planning and does it provide safe access?

- 31. It is my opinion that the proposed crossing solutions represent a 'good transportation plan' to serve the transportation needs for the new community. I rely upon the analysis presented in the June 2024 TR in support of this opinion.
- 32. A 'good transportation plan', will do the best for the most people, will provide suitable connectivity and capacity for all modes as well as goods movement to accommodate needs, and will promote sustainable choices for travellers while minimizing impacts to the social, environmental and economic environments.
- 33. The twinned Peter Street Crossing will accommodate all transportation modes, those being pedestrians, cyclists, automobiles and trucks (goods movement).
- 34. The Second Crossing will also be able to accommodate all transportation modes. The IMP noted the requirement to complete Phases 3 and 4 of the MCEA process, where the functional design of the Second Crossing will be established. The CGH Transportation Issues Resolution Memo (see **Appendix "D"**) describes the tasks that Caivan and its team will complete, in consultation with the Town, to design and implement the Second Crossing.
- 35. Issue No. 7 also speaks to safety. While transportation planning work can establish a foundation for a relatively safe transportation connection, safety is typically realized through design, construction and operation. Crossing solutions at both Peter Street and the Second Crossing will be finalized at detailed design to the satisfaction of the Town and operated with a focus on public safety.

Issue No. 8. – Does the proposed ingress and egress to the site create unacceptable traffic impacts on adjacent streets?

- 36. In my opinion, the transportation impacts of the proposed crossings at Peter Street and the Second Crossing on adjacent streets will be acceptable.
- 37. The June 2024 TR demonstrates how the resulting number of auto trips to and from the new plan of subdivision will have similar impacts to those assumed in the IMP.

Issue No. 9. – Are the proposed parking standards functional?

- 38. It is my opinion that the updated plan of subdivision provides appropriate space on roadways as well as on blocks to provide functional parking.
- 39. Reviewing the updated plan of subdivision, collector roads are measured to be 23 metres and local roads are measured to be either 18.5 metres or 16.75 metres. These rights-of-way are sufficient to enable on street parking.
- 40. Further, the proposed lot depths for both the townhome and single home blocks are typically 21 metres in depth. This dimension is typical of most subdivisions (in which CGH has been involved) and provides appropriate driveway space for larger vehicles, such as pick up trucks, to park and not impede the roadway or sidewalks.

Conclusions and Recommendations to the Tribunal

- 41. In my opinion, from a transportation perspective, based on the results of the June 2024 TR, Caivan's updated draft plan of subdivision constitutes good transportation planning. The transportation network and crossing improvements proposed through Caivan's draft plan are consistent with the objectives of the IMP, confirm with the policies of the Town's OP respecting transportation planning for this new residential area and will provide sufficient connectivity, capacity and safety for all transportation modes to the benefit of the residents of Perth's new neighbourhood.
- 42. It is my recommendation that transportation infrastructure be implemented in the following manner:
 - Construction of the Peter Street Crossing should take place in parallel with the construction of the first phase of development, that being the first 200 homes.
 - Occupancy of the first 200 homes should take place upon the twinned Peter Street Crossing being deemed operational, which will include the widening of Peter Street west of Lustre Lane
 - EA Phases 3 and 4 associated with the Second Crossing, should take place, resulting in the design and approvals of the Second Crossing.
 - Construction of the Second Crossing should take place in parallel with the construction of subsequent phases of development, with occupancy occurring once the Second Crossing is deemed operational.
- 43. Based on the foregoing, it is my recommendation to the Tribunal that the following draft plan approval conditions be imposed upon the draft plan of subdivision:

Peter Street Bridge

- 29) The first phase of development shall consist of a maximum of 200 units and can proceed once the twinning of the Peter Street Bridge is completed. The following improvements shall be required to the Peter Street Bridge and nearby right of ways prior to the first occupancy:
 - a) The new structure for the twinning of the Peter Street Bridge will be adjacent to the existing structure, and the total transportation facilities crossing these twinned bridges will comprise of two vehicle travel lanes, one multi-use pathway, and one sidewalk.

- b) Improvements to Peter Street between Lustre Lane and the existing Peter Street Bridge shall be completed to the satisfaction of the Town of Perth to ensure appropriate emergency vehicle access and egress to the improved Peter Street Bridge.
- 30) Notwithstanding condition #29, additional units (beyond 200) may be permitted within the first phase of development prior to the construction of a second bridge subject to traffic monitoring at the intersections of Peter/Lustre and Peter/Rogers to be undertaken by the Owner, all to the satisfaction of the Town of Perth.

Second Bridge

- 31) A second bridge crossing of the Tay River shall be required to support the development beyond the first phase expressed in conditions #29 and 30. The Owner will complete the process initiated in the Western Annex Lands Infrastructure Master Plan (Town of Perth, 2019) and follow the requirements of the Municipal Class Environmental Assessment, as applicable, including functional design.
- 32) The Owner will construct the second bridge with final "as built" construction drawings provided in both hard copy and digital format to specifications acceptable to the Town.
- 33) Occupancies beyond the first phase of development can occur when the second bridge is completed. Notwithstanding the foregoing, the Town of Perth shall not withhold building permits for the second phase of development provided the Owner has provided all necessary financial securities for the second bridge to the Town of Perth, and provided that a Commence Work Notice has been issued by the Town of Perth for the construction of the second bridge.
- 34) Notwithstanding the above, the Owner shall be permitted to commence underground servicing beyond the first phase prior to the second bridge being completed provided all other requirements have been met to the satisfaction of the Town of Perth.

I look forward to being present at the hearing to present this information, answer questions from legal counsel and provide the Tribunal with my opinion about this matter.

Christopher A. Gordon, P. Eng.

June 12, 2024

Appendix "A"

Curriculum Vitae – Christopher A Gordon, P. Eng, CGH Transportation Inc.

Christopher Gordon, P.Eng.

CIGIH

Transportation Project Director

Education

Bachelor of Civil Engineering Carleton University, Ottawa, Ontario 1994

Memberships

Professional Engineer, Professional Engineers Ontario

Greater Ottawa Home Builders' Association (CGH)

Transportation
Association of Canada (CGH)

Christopher Gordon, P. Eng., is a Senior Transportation Director/Project Manager with CGH Transportation Inc. Since graduating in 1994, Chris has led and contributed to many community building projects for both the public and private sectors throughout Ottawa, GTA and Atlantic Canada. These range from roadway, transit, and pedestrian bridge/facility environmental assessments to small and large scale residential, commercial, institutional, and industrial land use development projects. His roles range from project management, client liaison, and public consultation. Chris has been an approved expert witness at OMB/LPAT Hearings and supports the land use industry with topics such as development charges.

Chris is one of the founding members of CGH Transportation Inc., which was created to support the land use industry with transportation services to plan, design and implement developments through innovative approaches to TOD, mixed use, intensification, parking, on and off-site circulation and design for all modes.

Relevant Project Experience

Barrhaven South:

Chris has directed/managed many transportation projects in Barrhaven, south of the Jock River, including:

- Mattamy Half Moon Bay TIAs, RMAs and other studies such as Greenbank Road Bridge MUP Design and Construction Management
- Caivan ABIC and The Ridge TIAs, RMA
- Minto Harmony and Kennedy TIA and Construction Management Strategy
- Tamarack Meadows TIA
- Metro Grocery Store TIA and RMA
- Represented Caivan and Minto for of the Highway 416/Barnsdale Interchange
- Represent Caivan, Minto, Mattamy and Metro for the Greenbank Road Detail Design
- Chapman Mills Drive, Ottawa
- City of Ottawa Jockvale Road EA*
- City of Ottawa Cambrian Road EA*

Barrhaven West Communities along Strandherd Drive

Barrhaven West has been a focus for development in recent years. Chris' project experience in these areas include:

- Mattamy Mews and TIA and RMA*
- Minto Harmony TIAs, RMA and GRDD
- Caivan Conservancy TIAs, RMAs and related studies such as the Transit Strategy and Fill/Haul Operations
- Mattamy Cedarhill Transportation Considerations and Connections
- Represented Caivan for McKenna Casey Connection to Strandherd
- City of Ottawa Chapman Mills EA*
- Represented Minto and Caivan for the Chapman Mills DC Bylaw LPAT Hearing

^{* -} work completed at previous organization

Christopher Gordon, P.Eng.

Transportation Project Director

Cardinal Creek Village

Cardinal Creek Village has grown in several phases and Chris has been leading the transportation file, undertaking the following:

- Tamarack North and South TIAs and GRDDs
- Tamarack Mixed Use Area Planning Considerations and Road Network
- Tamarack Cardinal Creek Drive Functional Design from Old Montreal Road to Highway 174
- Tamarack Traffic Monitoring on Old Montreal Road at Famillie Laporte Drive and Cardinal Creek Drive
- Tamarack Old Montreal Road Conceptual Design

Kanata West and North

While CGH has carried out many TIAs in Ottawa's west urban community that were part of larger Community Design Plans, significant projects Chris has managed are:

- Minto Brookline TIA and RMA as well as considerations along March Road
- Cavanagh 195 Huntmar TIAs and RMA for the Palladium Drive Realignment
- Cavanagh Palladium Drive Realignment Roundabout Detail Design
- Lepine 910 March Road TIA and RMA
- Cavanagh Northridge GRDD

Eastern and Central Ontario

Chris has worked with developers and the CGH Team throughout Ontario including:

- Mattamy and ARGO Neighbourhood 9-10 11 (Oakville) TIAs
- Julida Fairgrounds Redevelopment (Arnprior) TIA and Access Design
- Caivan Golf Course Redevelopment (Perth)
 TIA, Bridge Location Study and EA
- Broccolini AEGD Commercial Development (Hamilton) TIS and Arterial 1N EA
- Dymon Self Storage Facilities (throughout Ottawa and the GTA) TIS and Access Studies/Designs
- Lepine Smiths Fall and Renfrew TISs
- Calabogie Peaks TIS



Unique Site Plans and High-Rise Plans of Subdivision

Site plans and high-rise developments require particular attention paid to issues such as access design, parking garage design, loading and garbage pick up design. Chris has managed several transportation site plan studies and designs including:

- Salvation Army Booth Centre on Montreal Road TIA and Circulation Study
- Caivan ABIC Manufacturing Facility TIA and RMA
- Theberge 780 Baseline Road TIA
- Trinity 151 Chapel TIA and RMA
- CLV 530 Tremblav TIA
- Cavanagh Concrete Batching Plant TIA and LPAT Witness
- CLV 473 Albert TIA
- Metro Greenbank Road TIA and RMA
- Properties Group Stillwater Station TIA and Functional Design
- Bertone 1649 Montreal Road TIA
- Trinity 70 Richmond Road TIS

Transportation Environmental Assessments:

In addition to the above, Chris has managed (as City Staff and Consultant) and contributed to several different Transportation Environmental Assessments:

- Limebank Road and Armstrong Road, Ottawa*
- Alta Vista Transportation Corridor, Ottawa*
- Innes-Walkley-Hunt Club Connection, Ottawa*
- Interprovincial Crossings, NCR*
- Chapman Mills Drive, Ottawa*
- Jockvale Road, Ottawa*
- Cambrian Road, Ottawa*
- North South Arterial, Ottawa
- Southwest Transitway, Ottawa*
- Fallowfield Road, Ottawa*
- Airport Parkway Pedestrian Bridge, Ottawa*
- Rideau River Pedestrian Bridge, Ottawa*
- AEGD Arterial 1N, Hamilton

^{* -} work completed at previous organization

Appendix "B"

Acknowledgement of Expert Duty `- Christopher A Gordon, P. Eng, CGH Transportation Inc.



Ontario Land Tribunal Tribunal ontarien de l'aménagement du territoire

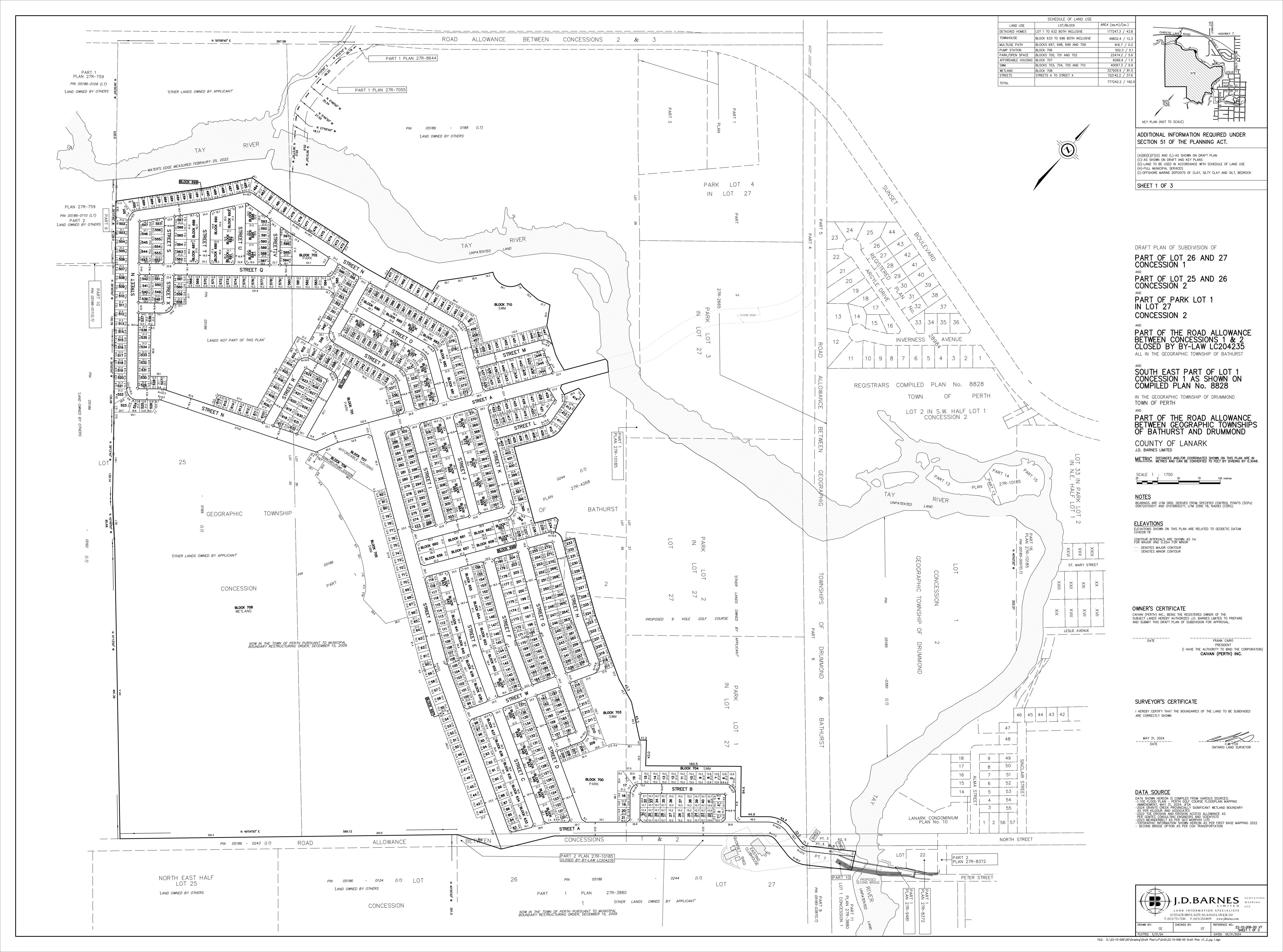
Acknowledgment Of Expert's Duty

OLT Case Number	Municipality
OLT-23-000534	Town of Perth
OLT-23-000939	
OLT-23-000940	

- 1. My name is Christopher Gordon
 - I live in the City of Ottawa
 - in the Province of Ontario
- 2. I have been engaged by or on behalf of Caivan (Perth GC) Limited to provide evidence in relation to the above-noted Ontario Land Tribunal (`Tribunal`) proceeding.
- 3. I acknowledge that it is my duty to provide evidence in relation to this proceeding as follows:
 - a. to provide opinion evidence that is fair, objective and non-partisan;
 - b. to provide opinion evidence that is related only to matters that are within my area of expertise;
 - c. to provide such additional assistance as the Tribunal may reasonably require, to determine a matter in issue; and
 - d. not to seek or receive assistance or communication, except technical support, while under cross examination, through any means including any electronic means, from any third party, including but not limited to legal counsel or client.
- 4. I acknowledge that the duty referred to above prevails over any obligation which I may owe to any party by whom or on whose behalf I am engaged.

Appendix "C"

Caivan's Updated Draft Plan of Subdivision (2024 06 12).



Appendix "D"

Transportation Issues Resolutions Memo.



Technical Memorandum

To:	Hugo Lalonde – Caivan	Date:	2024-04-29
Cc:	Susan Murphy, Colin Haskin – Caivan		
From:	John Kingsley, Christopher Gordon – CGH	Project Number:	2021-117

Re: 141 Peter Street – Transportation Issue Resolution

Context

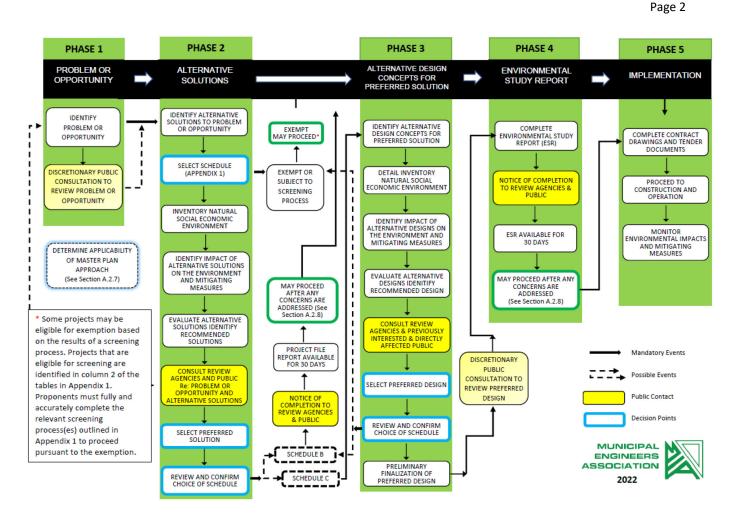
Pursuant to the resolution of concerns pertaining to the development of the Golf Course Lands (141 Peter Street), the Town of Perth and County of Lanark produced a list of issues dated April 9, 2024 that they requested the proponent address. While all disciplines of development are interdependent, a number of these listed issues directly implicate the transportation aspects of the development, and the response to these items is the subject of this memo. Those issues of direct impact to transportation strategy and staging are as follows:

- 1. The timing of development phases that is tied to construction of the second bridge.
- 3. Outstanding infrastructure issues that need to be included in the mediation include, but are not limited to the following:
 - a) Transportation: Additional information requirements to Peter Street crossing and the proposed additional crossing over the Tay River, including hydraulic, floodplain and ecological impacts as well as the phasing for construction/timing of the second crossing. Construction traffic routes and strategies need to be fully vetted.

To address these issues, the process for the construction of the second bridge and the proposed scope of modifications to the existing Peter Street crossing will first be outlined.

Framework for the Bridge Improvements

Municipal Class Environmental Assessments (MCEA) are a category of Class Environmental Assessment required for various municipal infrastructure projects and are governed by Ontario's Environmental Assessment Act under the Ministry of Environment, Conservation and Parks (MECP). The MCEA process follows a prescribed, phased progression, which is presented below.



The 2019 Infrastructure Master Plan (IMP) conformed to a Schedule B project and was therefore subject to the first two phases of the MCEA process. These MCEA requirements were fulfilled and the notice of completion to review agencies and public was completed.

Based on Appendix 1 of the February 2024 Municipal Class Environmental Assessment document, the future crossing of the Tay River at the second location is understood to be a Schedule B project. Given the IMP satisfied the MCEA Schedule B requirements, the remaining planning and design for this new facility will proceed from this completed work.

With respect to the Peter Street Crossing, the EA requirements for this project have been satisfied through the Planning Act via the development applications to date. The Commencement Notice has been issued, and analysis of alternatives has been provided through the Transportation Impact Study (TIS) submission (CGH, 2023).

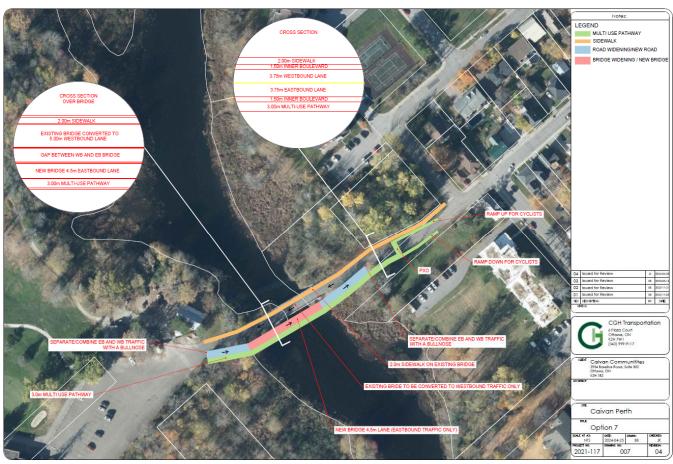
Proposed Changes to the Peter Street Crossing Location

The Peter Street crossing requirements have been studied and documented throughout the development application process. Notably, the 141 Peter Street TIS (CGH, 2023) includes an appendix detailing the various alternatives explored for crossing the Tay River, including numerous modifications to the Peter Street bridge and environs.



The previous work has found that the existing Peter Street bridge cannot accommodate the addition of cycling and pedestrian facilities with its current structure. As such, the construction of an additional bridge in the immediate vicinity of the existing crossing (either to the north or to the south) will be undertaken. In total, the decks of both bridges are to include one vehicle travel lane in each direction, a bi-directional multi-use path (MUP), and a bi-directional sidewalk. Further study will be required to determine which deck will contain which elements, but it is anticipated that a single travel lane and one active transportation facility (either the sidewalk or the MUP) will be provided on each deck. In addition to separating vulnerable users from vehicle traffic, this twinning will provide two connections on the east side of the development for enhanced emergency servicing of the community and will accommodate construction traffic.

An illustration of this concept, similar to those presented in the preceding work by CGH is provided in the below graphic and in a full-sized sheet in Attachment 1.



The Peter Street roadway between Lustre Lane and the existing bridge will also be formalized and widened to the full roadway width consistent with the cross-section east of Lustre Lane. The new sidewalk will be carried through to Lustre Lane and the new MUP will terminate with a pedestrian cross-over, splitting out the cycling directions and ramping them up/down onto the roadway as appropriate.

Terms of Reference for the Design and Construction of the Second Crossing Location

Despite its MCEA process having been completed, the prior planning and design for the Tay River crossing solution for the Golf Course Lands (141 Peter Street) in Perth, Ontario are proposed to be revisited as part of subdivision approvals. After this due diligence review, the remaining work to advance the design will be completed, and



construction will follow. This memorandum serves to establish a Terms of Reference (ToR) for these activities which is presented below.

Review of MCEA Phase 1: Problem or Opportunity

- Identification the settlement area
- Identification of the need for connectivity and transportation capacity to these lands across the Tay River
- Review of IMP
 - The IMP identified the need for an overarching strategy to service the 141 Peter Street Parcel from a transportation and civil infrastructure perspective given the separation from the remainder of the Town of Perth by the Tay River
 - The IMP was written to satisfy the first phase of the MCEA process, and this work will be reviewed and validated
- Review of relevant Official Plan policies pertaining to the settlement

Review of MCEA Phase 2: Alternative Solutions

- Review of IMP
 - Review of existing transportation conditions
 - The IMP was written to satisfy the second phase of the MCEA process, and this work will be reviewed and validated

Design, Permitting, Implementation, and Construction

- Definition of criteria for analysis
- High level analysis and evaluation of all alternatives, considering all relevant environments
- Develop preferred plan, which addresses key issues such as traffic flows in the town and emergency vehicle access to the new development.
- Provision of a qualitative description of the functional facilities crossing the Tay River and the required phasing of these to permit development, including analysis of alternative staging strategies for the preferred design
- Provision of preliminary designs of the ultimate set of facilities crossing the Tay River
- The preferred facilities identified will be advanced to detailed design and construction
- Mitigation strategies will be developed and presented
- Permitting requirements will be identified

Issue Resolution

Information Requirements

Considering the foregoing context, responding to the transportation comment with respect to the second crossing:

- 3. Outstanding infrastructure issues that need to be included in the mediation include, but are not limited to the following:
 - a) Transportation: Additional information requirements to Peter Street crossing and the proposed additional crossing over the Tay River, including hydraulic, floodplain and ecological impacts as well as the phasing for construction/timing of the second crossing. Construction traffic routes and strategies need to be fully vetted.



The information requirements to the proposed additional crossing over the Tay River, including hydraulic, floodplain and ecological impacts of the second crossing will necessarily be subject to the findings of the planning and design activities outlined in the above ToR.

Phasing/Construction Timing

Phasing for the construction and timing of both crossing locations as discussed in issue 3. a) above and in issue 1. below, will be addressed herein.

1. The timing of development phases that is tied to construction of the second bridge.

Peter Street Bridge Works

To permit construction traffic, which is typically concurrent with the traffic of the first occupancies, the Peter Street Bridge works are proposed to be commenced simultaneously with other site preparation activities. Additionally, the formalization of the Peter Street roadway along with the sidewalk and MUP tie-in will be completed as part of these activities.

These bridge and road works will be completed before the first occupancy, with their construction occurring concurrently with home construction for the first subdivision phase(s).

First Subdivision Phase(s)

After the twinning of the existing Peter Street crossing, the risks associated with emergencies and emergency servicing of the development are reduced. Until the twinning occurs, a single crossing of the Tay River is present. While there will still be a single roadway connection on either side of the bridges, numerous diverse emergency conditions may differently utilize the lands surrounding the roadway, as an interim condition, it is considered appropriate for a certain level of development.

After the twinning of the Peter Street crossing, typical limits for developments with limited road service are proposed to be applied. While these limits vary by jurisdiction, the value of 200 units was proposed within the TIS (CGH, 2023) and confirmed to be reasonable in the Town's peer review of the TIS (Novatech, 2023) while no industry or statutory guidance is understood to exist for this consideration.

From a traffic generation and capacity perspective, it was demonstrated within the Transportation Review of the IMP traffic work (CGH, 2021) that 150 units of traffic would have no additional impact on the transportation network than was assumed within the IMP's traffic study and was supportable. While no traffic work has yet been undertaken to demonstrate that 200 units' worth of traffic from the first phases of development can be supported, this work will be required as part of future submissions. Whatever the results of future traffic work, however, monitoring of the traffic conditions along Peter Street will be required to ensure that impacts are as anticipated.

Therefore, subject to the future traffic work supporting the upper limit, and monitoring of conditions to validate the anticipated operation of Peter Street, the first phases of development before the construction of the second crossing will include 200 units.

Construction of the Second Crossing

The background planning work for the second crossing has been ongoing throughout the site investigations in preparing the previous submissions. The activities in the ToR presented above are recommended to begin immediately upon zoning approval. This planning and design work will continue as the first development phases are being constructed. Once the second connection is made, the latter phases of development can proceed and the community buildout can ultimately conclude.



Proposed Draft Conditions

On the basis of the foregoing, the following draft conditions are proposed:

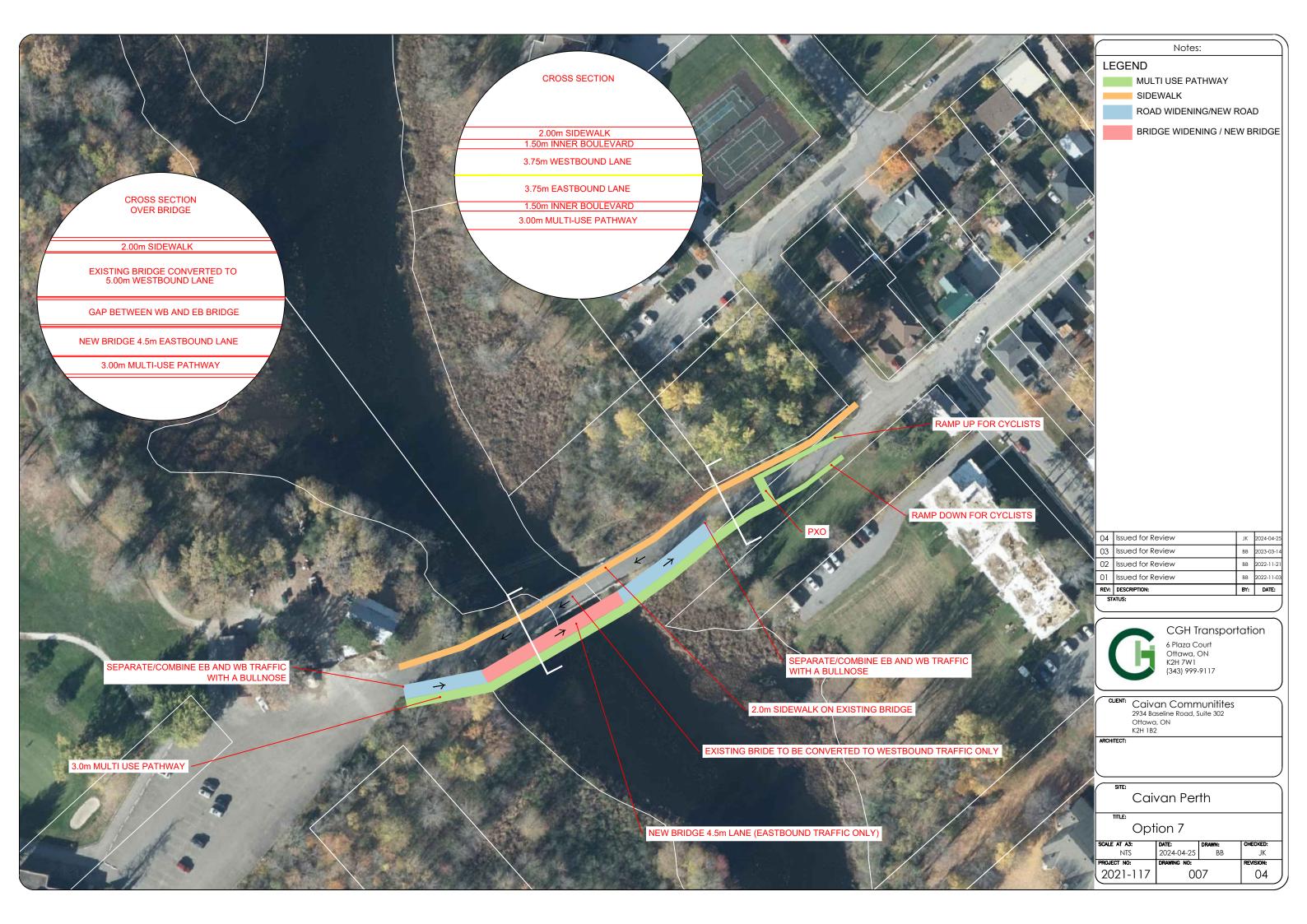
- The Peter Street roadway, sidewalk, and MUP and the additional Tay River crossing in the vicinity of the
 existing Peter Street bridge will be completed before the occupancy of the first dwelling in the Golf Course
 Lands, and unit construction permitting may proceed concurrently with these works
- The development of 200 dwelling units may proceed in the absence of a the completion of a second crossing
- Planning and design of the second crossing will proceed along a schedule to permit the commencement
 of construction of this bridge for the latter phases of construction without undue delay to the greater
 subdivision buildout, and unit construction permitting (dwelling units 201+) may proceed concurrently
 with the bridge construction activities
- Should the bridge planning work conclude that the second crossing be located at the location identified in the IMP, the Town of Perth will facilitate the acquisition rights for the lands on the opposite side of the Tay River.



Attachment 1

Peter Street Crossing Concept





Appendix "E"

Western Annex Lands – 141 Peter Street Transportation Review – 2024 06 12.

Western Annex Lands – 141 Peter Street Transportation Review

Revision #1

Prepared for:

Caivan (Perth GC) Ltd. 2934 Baseline Road, Suite 302 Ottawa ON K2H 1B2

Prepared by:



6 Plaza Court Ottawa, ON K2H 7W1

June 2024

PN: 2021-117

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Appendix A – Peter Street Twinning Concept

Appendix B – Synchro Intersection Worksheets – IMP Option 3

Appendix C – Synchro Intersection Worksheets – Full Build-Out 2041 Future Total Conditions

Appendix D – Synchro Intersection Worksheets – IMP Option 3 Peter Street Traffic Only

Appendix E – Synchro Intersection Worksheets – Phase 1 Peter Street Traffic



Transportation Review Background

Subsequent to the addition of the Western Annex Lands to the Town of Perth's Urban Settlement Boundary, an Infrastructure Master Plan (IMP) was commissioned by the Town and prepared by Jp2g Consultants Inc. in 2019, in part to develop a transportation framework for the area, identifying high-level opportunities and constraints. This Infrastructure Master Plan forms the foundation for future planning work to develop these lands. The Western Annex Lands are separated into two components, the Tayview Lands and the Golf Course Lands, and the Golf Course Lands are the subject of this Transportation Review.

The Infrastructure Master Plan's concept plan considered the development of 650 detached single dwelling units within the Golf Course Lands, based upon the expected increase in population from the Town's Official Plan, and a Transportation Impacts Study (TIS) performed by D. J. Halpenny & Associates Ltd. was undertaken in support of this concept.

Caivan (Perth GC) Ltd. is pursuing the approvals to develop the Golf Course Lands, 141 Peter Street. As part of the planning approvals process, this Transportation Review examines the refinements to the Golf Course concept plan, compares their impacts relative to the Infrastructure Master Plan's transportation conclusions for both the first phase and the total buildout. This Transportation Review is in support of a zoning by-law amendment, official plan amendment, draft plan of subdivision application, and a Municipal Class Environmental Assessment.

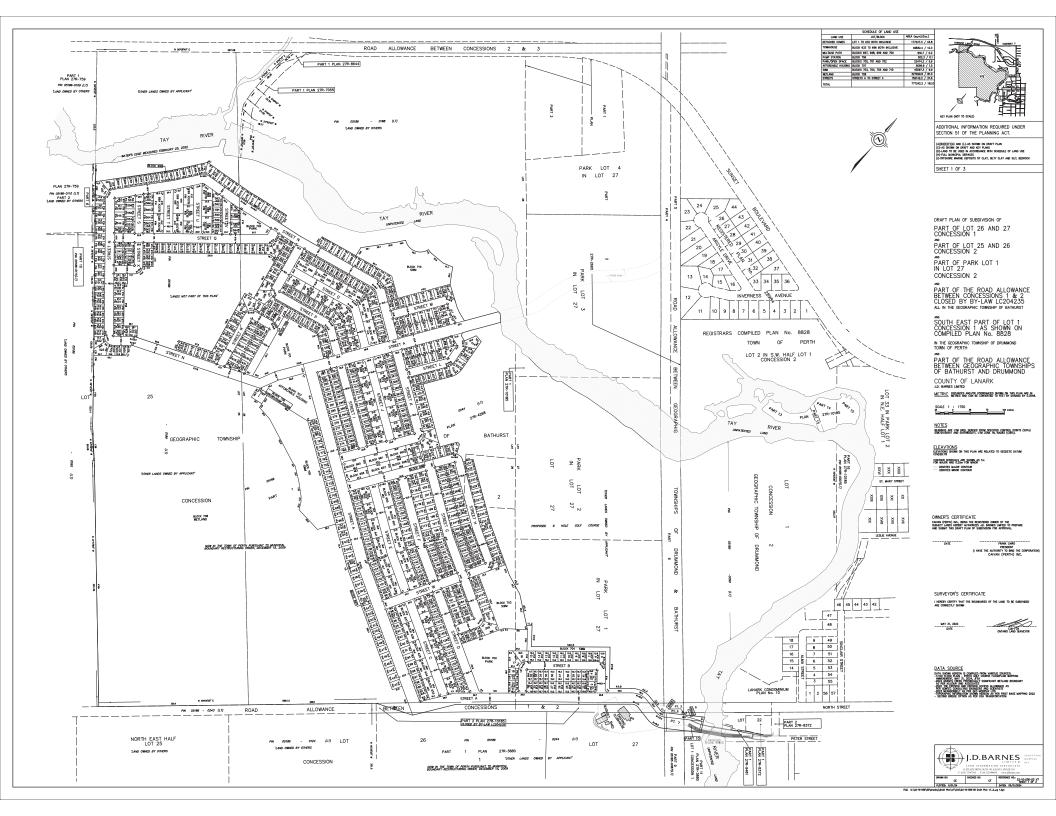
The revised subdivision concept comprises 621 single detached dwellings and 350 townhome units. The first phase is planned to comprise 200 dwellings and proposes access via a twinning of the existing Peter Street Bridge. The subsequent phases propose the construction of the second Tay River crossing, consistent with the Infrastructure Master Plan location, connecting to the existing driveway of the Lanark County Administration Building located at 99 Christie Lake Road. Figure 1 illustrates the study area context. Figure 2 illustrates the proposed concept plan.



Figure 1: Area Context Plan

Source: https://www.openstreetmap.org/ Accessed: December 20, 2021





2 Existing and Planned Conditions

2.1 Existing Conditions

2.1.1 Area Road Network

Highway 7: Highway 7 (Dufferin Street) is a provincial freeway with a two-lane rural cross-section with gravel shoulders to the west of Lanark Road (Hwy 511) and a four-lane cross-section with paved shoulders to the east within the study area. The posted speed limit is 60 km/h and the existing right-of-way varies within the study area.

Christie Lake Road: Christie Lake Road is an arterial road with two-lane rural cross-section with paved shoulders on both sides of the road. Approximately 450 metres west of the Lanark County Administration Building access, the posted limit changes from 60 km/h to 80 km/h to the west. The existing right-of-way is 30 metres.

Sunset Boulevard: Sunset Boulevard is an arterial road with two-lane rural cross-section with paved shoulders on both sides of the road. An asphalt pathway is provided along the south side of the roadway. Approximately 70 metres east of the Lanark County Administration Building, the posted limit changes from 60 km/h to 50 km/h to the east. The existing right-of-way is 30 metres.

Wilson Street: Wilson Street is an arterial road to the north of Foster Street and a collector road to the south. Between the Perth Mews access and Sunset Boulevard, Wilson Street has a three-lane urban cross-section with two southbound lanes, and it has a two-lane urban cross-section to the south. Sidewalks are provided on both sides of the road and bike lanes are provided on both sides of the road between Sunset Boulevard and Leslie Street. Street parking is permitted on both sides of the road between Leslie Street and the Best Western, and on the east side of the road to the south. The posted speed limit is 50 km/h, and the existing right-of-way is typically 20 metres.

Gore Street: Gore Street is a local road north of Foster Street and an arterial Road to the south with a two-lane urban cross-section and with sidewalks on both sides of the road. Street parking is permitted on both sides of the road south of D'Arcy Street and on the east side to the north. The unposted speed limit is assumed to be 50 km/h and the existing right-of-way is 20 metres.

Foster Street: Foster Street is an arterial road between Wilson Street and Gore Street, a collector road between Gore Street and Drummond Street, and a local road east of Drummond Street. Sidewalks are provided on both sides of the road west of Beckwith Street. Street parking is permitted on both sides of the road west of Drummond Street and on the north side of the road to the east. The unposted speed limit is assumed to be 50 km/h, and the existing right-of-way is 20 metres.

Peter Street: Peter Street is a collector road with a two-lane cross-section that is urbanized east of Lustre Lane, and transitions to a rural cross-section to the west. Sidewalks are provided on the north side of the road between Rogers Road and Lustre Lane, and both sides east of Rogers Road. The posted speed limit is 40 km/h east of Lustre Lane and 30km/h to the west. The existing right-of-way is 12 metres.

Harris Street South: Harris Street South is a collector road with a two-lane urban cross-section with a sidewalk on the north side of the road. The unposted speed limit is assumed to be 50 km/h and the existing right-of-way is 16 metres.



2.1.2 Existing Intersections

The key signalized area intersections have been summarized below:

Wilson Street W/Canadian Tire Access at Highway 7 (Dufferin Street)

The intersection of Wilson Street West/the Canadian Tire Access at Highway 7 (Dufferin Street) is a signalized intersection. The northbound approach and private southbound approach each consist of a shared left-turn/through lane and an auxiliary right turn lane. The eastbound and westbound approaches each consists of a shared left-turn/through lane and a shared through/right-turn lane. No turn restrictions were noted.

Wilson Street W at Sunset Boulevard / Harris Street S The intersection of Wilson Street West at Sunset Boulevard/Harris Street South is a signalized intersection. The northbound approach consists of an auxiliary left-turn lane, a shared through/right-turn lane, and a bike lane and the southbound approach consists of an auxiliary left-turn lane, a through lane, and a right-turn lane. The eastbound approach consists of a shared left-turn/through lane and an auxiliary right-turn lane, and the westbound approach consists of shard all-movement lane. No turn restrictions were noted.

Wilson Street W / Wilson Street E at Peter Street / Foster Street The intersection of Wilson Street West/Wilson Street East at Peter Street/Foster Street is a signalized intersection. The northbound and eastbound approaches each consist of a shared all-movement lane. The southbound approach consists of a left-turn lane and a shared through/right-turn lane, and the westbound approach consists of a shared left-turn/through lane and an auxiliary right-turn lane. No turn restrictions were noted.

Gore Street W / Gore Street E at Foster
Street

The intersection of Gore Street West/Gore Street East at Foster is a signalized intersection. The northbound approach consists of a left-turn lane and an auxiliary shared through/right-turn lane, and the southbound approach consists of a shared all-movement lane with enough pavement width to operate as a shared left-turn/through lane and a short auxiliary right-turn lane. The eastbound approach consists of a shared left-turn/through lane and an auxiliary right-turn lane, and the westbound approach consists of a shared all-movement lane with enough pavement width to operate as a shared left-turn/through lane and a short auxiliary right-turn lane. No turn restrictions were noted.

Lanark County Administration Building Access at Sunset Boulevard / Christie Lake Road The intersection of the Lanark County Administration Building Access at Sunset Boulevard/Christie Lake Road is an unsignalized T-intersection, stop-controlled on the minor approach of the access. The northbound approach consists of a shared left-turn/right-turn lane, the eastbound approach consists of a shared through/right-turn lane, and the westbound approach consists of a shared left-turn/through lane. No turn restrictions were noted.

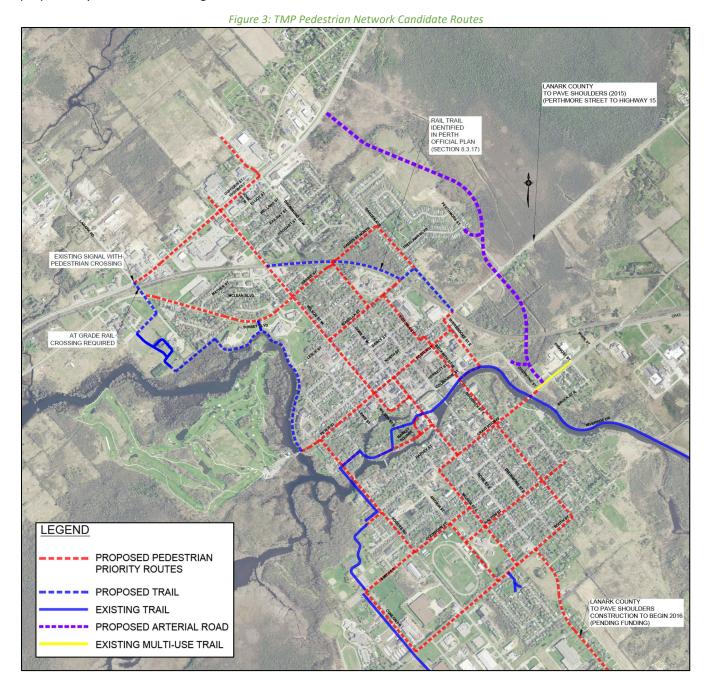


2.1.3 Cycling and Pedestrian Facilities

Sidewalks are provided on both sides of Wilson Street, Foster Street, North Street, Peter Street east of Rogers Road, on the north side of Peter Street between Rogers Road and Lustre Lane, on the west side of Rogers Road. An asphalt pathway is provided along the south side of Sunset Boulevard.

Bike lanes are provided on both sides of Wilson Street W between Harris St S/Sunset Boulevard and Leslie Street.

Figure 3 illustrates the candidate pedestrian network routes, and Figure 4 illustrates the candidate bicycle network routes, each including existing facilities, from the 2017 Town of Perth Municipal Transportation Master Plan (TMP) prepared by Stantec Consulting Ltd.





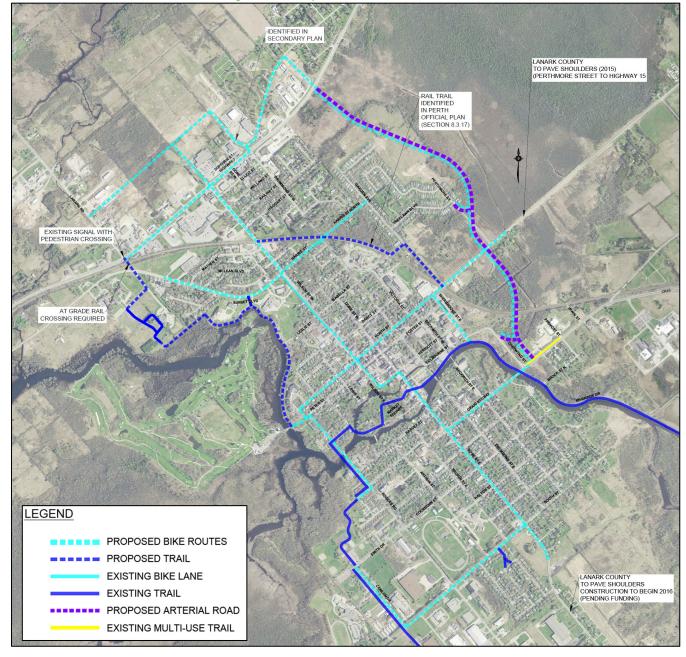


Figure 4: TMP Bicycle Network Candidate Routes

2.2 Changes to the Area Transportation Network

Two projects within the study area are presently planned that will impact the road or active transportation networks.

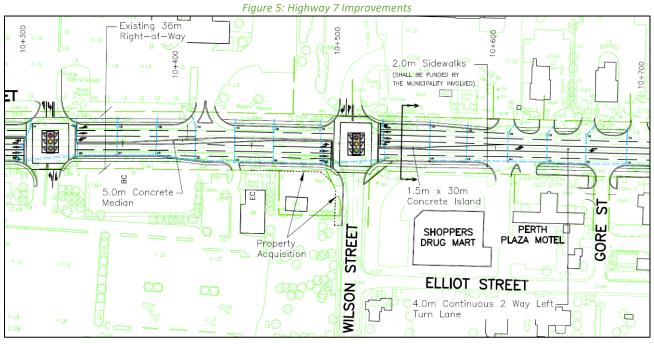
Highway 7 Reconstruction

The Ministry of Transportation has retained the services of McIntosh Perry Consulting Engineers Ltd. and LEA Consulting Ltd. Joint Venture to carry out the Class EA and Detail Design for the reconstruction of Highway 7 in the Town of Perth from approximately 1.3 km west of the County's Highway 511 easterly to Wayside Drive West, approximately 4.5 km in length. The project scope of work relevant to the subject study includes:



- Widening of Highway 7 between Wilson Street and Drummond Street to accommodate a continuous twoway left-turn lane
- Intersection improvements including dedicated left-turn lanes

The preliminary design of the facility through the study area is illustrated in Figure 5.



Source: https://www.highway7improvements.com/ Accessed: January 26, 2022

Tay River Trail Extension

The Corporation of the Town of Perth retained the services of Jp2g Consultants Inc. to design an extension for the Tay River Pathway. The proposed nature trail will meander along the north shore of the Tay River, connecting the existing Tay River Pathway (adjacent the Lanark County buildings) to the west end of Leslie Street. The proposed alignment concept is illustrated in Figure 6.



Figure 6: Tay River Trail Extension

Source: Design of the Tay River Trail Extension – Design Brief rev. 1 (JP2G, 2021)



3 Infrastructure Master Plan – Transportation Summary

The key takeaways from the transportation component of the infrastructure master plan to be referenced within the subject Transportation Review have been summarized below.

3.1 Development Concept and Transportation Options

Within the development, a collector road was proposed as a spine through the development from the Peter Street Bridge to the northern extent of the development area, accessed by numerous local roads.

The Infrastructure Master Plan presented four transportation options for the community's vehicular access to the proposed collector as summarized below:

- Option 1 assumed all traffic crossed the Peter Street Bridge
- Option 2 assumed 65% of the traffic used the Peter Street Bridge and 35% used a new connection to the County lands access
- Option 3 assumed the volume of traffic generated by the first 120 unit used the Peter Street Bridge and traffic generated by the remaining 530 units used a new connection to the County lands access, via a new bridge across the Tay River
- Option 4 assumed a one-way couplet for Peter Street and North Street with a second bridge from North Street to the subject lands

As acknowledged within the Infrastructure Master Plan, Options 2 and 3 are similar, both requiring the construction of a new bridge across the Tay River to the Lanark County Administration Building lands.

In addition to the four vehicular access options, three active transportation alternatives were assessed.

- Option 1 consisted of a multi-use pathway system
- Option 2 consisted of a limited multi-use pedestrian and separated pathway system
- Option 3 consisted of a separated pedestrian (resident/visitor) and bicycle pathway

The first two options include bike lanes on the internal collector road, and the third includes no cycling facility along the internal collector road.

3.2 Trip Generation and Distribution

Using the auto trip generation rates from the ITE Trip Generation Manual 9th Edition (2012), the trip generation for the Golf Course Lands was forecasted within the Infrastructure Master Plan, as summarize in Table 1.

Table 1: IMP Golf Course Lands Vehicle Trip Generation

Land Use	Units /		AM Peak Hour	•		PM Peak Hour	r	
Land Use	GFA	In	Out	Total	In	Out	Total	
Single Family Detached	650	116	349	465	339	199	538	

The distribution of trips from the Infrastructure Master Plan was consistent with the Perth Transportation Master Plan Future Traffic Forecasting Memo (Stantec, 2016). This methodology based upon the existing turning movement splits, and access to major infrastructure is considered to be valid. Table 2 below summarizes the distributions from the Infrastructure Master Plan.



Table 2: IMP Trip Distribution

To/From	Residential % of Trips	Via
South	50%	Gore St E
East	25%	10% Hwy 7,
		15% Foster St
West	25%	15% Hwy 7,
		10% Christie Lake Rd
Total	100%	100%

3.3 Traffic Volumes

With the above trip generation and distribution, the site trip generation for each option was presented within the Infrastructure Master Plan. The Option 2 trip generation is excerpted in Figure 7 and the Option 3 trip generation in Figure 8.

Figure 7: IMP Option 2 – 2041 Future Total Traffic Volumes 126 (21) 178 (217) 178 (217) Dufferin St. (Highway 7) (312) 188 J (312) 220 — (227) 140 ¬ (82) 77 ___ (686) 537 ___ (262) 297 ___ PERTH **MEWS** Drummond St. W Wilson St. LANARK COUNTY **OFFICES** Harris St. S (260) 205 __↓ (37) 11 - (156) 127 __} Isabella St. Wilson St. Gore St. **PERTH** GOLF COURSE D'Arcy St. North St. -104 (247) Peter St. (155) 235 -T Foster St. (Sec. 194) **LEGEND** Peak AM Traffic Peak PM Traffic



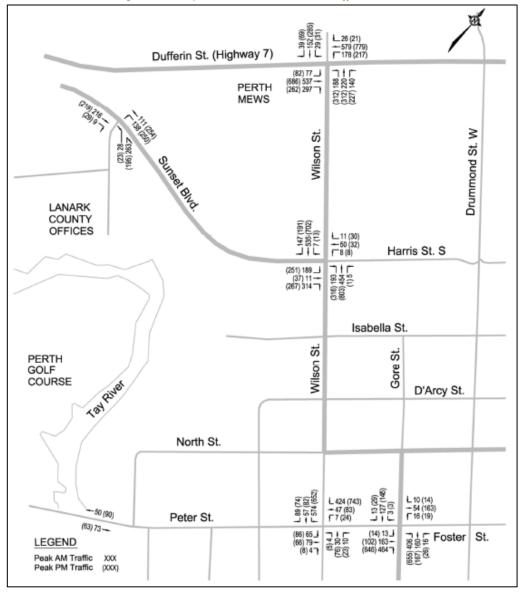


Figure 8: IMP Option 3 – 2041 Future Total Traffic Volumes

3.4 Evaluation of Options

Scoring criteria for the evaluation of transportation options was categorized by technical, environment, and socio-economic factors. Where the criteria were weighted equally, each option received a score of positive (indicated by a "+"), negative (indicated by a "-") or neutral/not applicable (indicated by a "0"). The preferred option is indicated by a "P." The scoring matrix for the transportation options has been reproduced for the subject Transportation Review in Table 3.



Table 3: IMP Transportation Option Evaluation

Criteria	Option 1 – Upgrade Existing Bridge	Option 2 – New Bridge Crossing at County Property for 35% of Site Traffic	Option 3 – New Bridge Crossing at County Property for [530 units]	Option 4 – New Bridge Crossing at North Street for 1- way in and Existing Bridge for 1-way out
		Technical		
Feasibility	-	+	+	-
Compatibility	-	+	+	-
Constructability	0	+	+	0
Maintainability	+	0	0	0
		Environmental		
GHG emissions	-	-	-	-
Terrestrial	0	-	-	-
Aquatic	0	0	0	-
Groundwater	0	0	0	0
Surface water	0	0	0	0
		Cultural Socio-economi	C	
Displacement	0	0	0	-
Disruption	-	-	0	-
Aesthetics	0	0	0	0
Cultural Heritage	0	0	0	0
Adaptability	-	0	0	+
Planning objectives	-	0	0	+
Capital cost	+	0	0	0
Operating cost	+	0	0	0
		Summary of results		
# Positives	3	3	3	2
# Negatives	6	[3]	2	7
Preference			Р	

As noted above, Option 3 is preferred to Option 2 for the scoring difference on the "disruption" criterion. This disruption was described by the Infrastructure Master Plan as "impact on residents along Peter Street and surrounding neighbourhood."

Of additional note within the Transportation Master Plan is that all options "would result in the same number of trips assigned to the Dufferin/Wilson intersection, and the same impact on the operations of the intersection."

With respect to active transportation, Option 1 for a multi-use pathway system was chosen as the preferred alternative and Table 4 summarizes the results excerpted for the subject Transportation Review.

Table 4: IMP Active Transportation Option Evaluation Summary

Criteria	Option 1 – Multi-Use Pathway System	Option 2 – Limited Multi- Use Pedestrian and Separated Pathway System	Option 3 – Separated Pedestrian (Resident/Visitor) and Bicycle Pathway								
	Summary of results										
# Positives	8	4	5								
# Negatives	2	2	6								
Preference	Р										



4 Updated Subdivision Review

4.1 Site Design

The proposed subdivision concept generally follows the one presented within the Infrastructure Master Plan. A 23.0-metre right-of-way collector road is proposed as a spine through the development from the proposed twinning of the Peter Street Bridge to the proposed bridge to the Lanark County Administration Building lands. Local roads are to access this collector in a pattern consistent with the revised development area.

Local road rights-of-way are proposed as being 18.5 metres where a sidewalk will be permitted on one side, and 16.8 metres for lower volume roadways. Both cross-sections can support 8.5-metre-wide roadways, permitting two 3.0-metre travel lanes and a 2.5-metre parking lane.

Consistent with the Town Transportation Master Plan, whose vision is of "a safe, sustainable, and multi-modal transportation system," active facility connections will be provided from the subject lands to the surrounding town and downtown. These connections will have the goal of increasing the recreational opportunities for the residents, and importantly, ultimately enabling the reduction in auto traffic by providing opportunity for a higher portion of trips to be walking and cycling.

The active transportation facilities planned include a multi-use pathway along the collector road, between, and over each crossing. Importantly, these new facilities will enable connections to the pathway Tay River Trail which is planned for extension as discussed in Section 2.2.

Additionally included in the revised concept is a system of multi-use pathways surrounding the development area which will serve both a recreational function, and as a connection for residents in all areas of the development to the facilities crossing the bridges. Sidewalks on one side of key local roads and of the collector road are also proposed, to be extended across the two crossings.

The two decks of the twinned Peter Street crossing are proposed to comprise a total of two travel lanes, a sidewalk, and a MUP once completed. A concept for these improvements is provided in Appendix A.

4.2 Trip Generation

Traffic generation for the updated full subdivision build-out concept has been prepared using the vehicle trip rates for each residential dwelling type using the fitted curve equation rates from the ITE Trip Generation Manual 11th Edition (2021). Table 5 summarizes the vehicle trip rates for the proposed land uses.

Table 5: Trip Generation Vehicle Trip Rates

Dwelling Type	ITE Land Use Code	Peak Hour	Vehicle Trip Rate
Single Family	210	AM	0.72
Detached	210	PM	0.91
Multi-Family Low Rise	220	AM	0.43
widiti-railily LOW Rise	220	PM	0.52

Using the above vehicle trip rates, the total vehicle trip generation has been estimated. Table 6 below illustrates the total vehicle trip generation by dwelling type.



Table 6: Total Vehicle Trip Generation

Land Use	Units /		AM Peak Hou	r	PM Peak Hour			
Land Ose	GFA	In	Out	Total	In	Out	Total	
Single Family Detached	621	116	331	447	362	203	565	
Multi-Family Low Rise	350	36	115	151	113	69	182	
Total	971	152	446	598	475	272	747	

As shown above, 598 new AM and 747 new PM peak hour two-way vehicle trips are projected as a result of the proposed development.

4.3 Comparison to Infrastructure Master Plan

The Infrastructure Master Plan's preferred Option 3 will serve as the basis for comparison for the updated subdivision concepts' traffic generation.

It is noted the methodology of the Halpenny TIS as presented in the Infrastructure Master Plan utilized vehicle trip rates from the ITE Trip Generation Manual 9th Edition (2012). The total trip generation forecasted within the Infrastructure Master Plan for the development based upon 650 detached single-family dwellings using the 2012 methodology was 465 new AM and 538 new PM peak hour two-way vehicle trips. The comparison of the trip generation forecasted within the Infrastructure Master Plan and the subject Transportation Review is summarized in Table 7.

Table 7: Vehicle Trip Comparison

1 111		AM Peak Hou	r	PM Peak Hour			
Land Use	In	Out	Total	In	Out	Total	
IMP Option 3	116	349	465	339	199	538	
Full Build-Out	152	446	598	475	272	747	
Difference	+36	+97	+133	+136	+73	+209	

As shown above, the forecasted trip generation based upon the updated unit count, housing typologies, and forecasting methodology results in an increase of 133 two-way AM and 209 two-way PM peak hour vehicle trips.

4.4 Trip Assignment

As Option 3 assumed a fixed number of trips at the Peter Street Access, the additional vehicle volumes associated with the updated plan will be assigned to the Sunset Boulevard access. The trip distribution proportionally travelling in each cardinal direction will be consistent with the Infrastructure Master Plan distribution summarized previously in Table 2 and the trip assignment is illustrated in Figure 9.



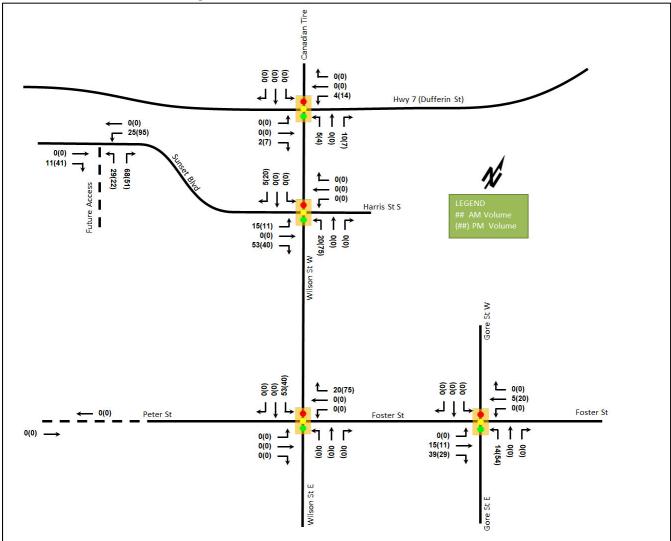


Figure 9: Full Subdivision Build-Out Increase in Auto Volumes

4.5 Traffic Review

As the full subdivision build-out traffic is built upon the Infrastructure Master Plan Option 3 traffic, this option's traffic operations will be analyzed, presented, and discussed to provide context for the changes for the updated concept. The level of service (LOS) for signalized intersections will be based on Highway Capacity Manual (HCM) scoring of the percentile delay for the individual lane movements and overall intersection, and HCM 6th delay for unsignalized intersections. Synchro version 11 will be used to model the forecasted study area traffic operations.

HCM LOS scoring for signalized intersections is summarized in Table 8 and for unsignalized intersections is summarized in Table 9.



Table 8: HCM LOS Scoring at Signalized Intersections

Level of Service (LOS)	Delay (seconds/vehicle)
Α	0 – 10 seconds
В	> 10 – 20 seconds
С	> 20 – 35 seconds
D	> 35 – 55 seconds
E	> 55 – 80 seconds
F	> 80 seconds

Table 9: HCM LOS Scoring at Unsignalized Intersections

Level of Service (LOS)	Delay (seconds/vehicle)
Α	0 – 10 seconds
В	> 10 – 15 seconds
С	> 15 – 25 seconds
D	> 25 – 35 seconds
E	> 35 – 50 seconds
F	> 50 seconds

4.5.1 IMP Option 3 2041 Future Peak Hour Travel Demand

Forecasted turning movement volumes from the Infrastructure Master Plan, previously referenced in Figure 8, have been reproduced in Figure 10. Signal timing for the study area intersections was inferred from the traffic model output summaries in 'Appendix E' of the Infrastructure Master Plan. The forecasted study area traffic operations are summarized in Table 10. The Synchro worksheets are provided in Appendix B.



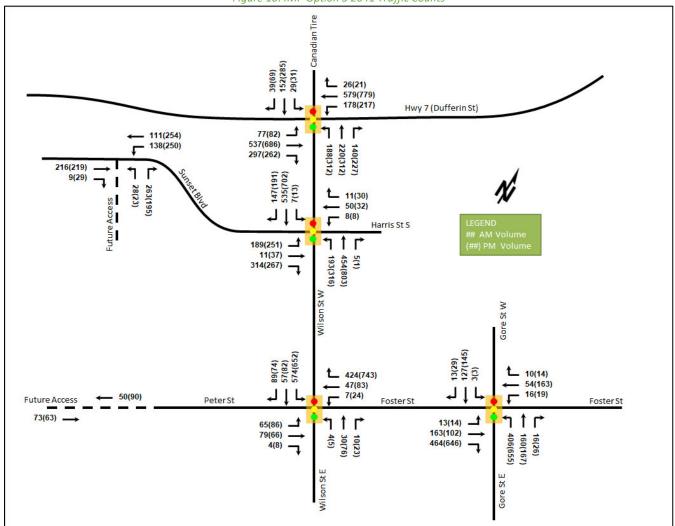


Figure 10: IMP Option 3 2041 Traffic Counts

Table 10: IMP Option 3 Intersection Operations

Interception	Long		AM Pe	ak Hour		PM Peak Hour			
Intersection	Lane	LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Peak Hour Delay (s) 24.6 2.6 45.8 0.0 386.1 5.1 76.2 4.0 101.0	Q (95 th)
	EBL/T	С	0.60	22.4	48.5	С	0.68	24.6	88.3
	EBR	Α	0.38	2.9	11.1	Α	0.30	2.6	11.9
M#1 C4	WBL/T	С	0.82	31.0	69.2	D	0.95	45.8	#159.6
Wilson St	WBR	Α	0.04	0.1	0.0	Α	0.03	0.0	0.1
N/Canadian Tire & Hwy 7	NBL/T	С	0.70	31.9	#127.0	F	1.77	386.1	#290.3
Signalized	NBR	Α	0.20	4.6	12.2	Α	0.34	5.1	16.7
Signanzea	SBL/T	С	0.26	20.2	42.1	E	0.95	76.2	#130.1
	SBR	Α	0.06	0.2	0.0	Α	0.12	4.0	6.9
	Overall	С	-	22.5	-	F	-	101.0	-



1			AM Pe	ak Hour			PM Pe	eak Hour	
Intersection	Lane	LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	ak Hour Delay (s) 67.8 7.0 18.3 91.9 22.8 6.9 40.2 3.1 37.3 25.2 20.0 4.3 21.6 15.9 3.7 11.8 14.8 5.7 16.7 0.1 40.3 5.9 16.1 0.4 19.4 - 8.4 13.7 5.3	Q (95 th)
	EBL/T	D	0.70	39.4	#57.9	Е	0.92	67.8	#98.3
	EBR	Α	0.53	7.0	18.9	Α	0.47	7.0	18.8
Wilson St W &	WB	С	0.17	20.1	17.2	В	0.17	18.3	15.6
	NBL	В	0.52	12.7	20.6	F	1.07	91.9	#88.9
Sunset Blvd/Harris St S	NBT/R	В	0.48	12.6	75.9	С	0.80	22.8	#200.1
Signalized	SBL	Α	0.01	6.4	1.8	Α	0.05	6.9	2.7
Signanzea	SBT	С	0.78	25.9	93.7	D	0.91	40.2	#169.7
	SBR	Α	0.23	3.4	8.8	Α	0.26	3.1	10.5
	Overall	В	-	17.8	-	D	-	67.8 7.0 18.3 91.9 22.8 6.9 40.2 3.1 37.3 25.2 20.0 4.3 21.6 15.9 3.7 11.8 14.8 5.7 16.7 0.1 40.3 5.9 16.1 0.4 19.4 - 8.4 13.7	-
	EB	В	0.42	18.9	23.9	С	0.52	25.2	29.9
14.01 C. 5.04.01	WBL/T	В	0.14	14.6	10.2	В	0.30	20.0	20.2
Wilson St E/Wilson	WBR	Α	0.47	2.6	8.4	Α	0.67	4.3	12.4
St W & Peter St/Foster St	NB	В	0.15	14.2	8.2	С	0.36	21.6	20.1
Signalized	SBL	В	0.73	15.3	#70.7	В	0.75	15.9	#112.7
Signanzea	SBT/R	Α	0.15	3.1	7.6	Α	0.15	3.7	10.7
	Overall	В	-	10.5	-	В	-	7 18.3 7 91.9 0 22.8 6 6.9 1 40.2 5 3.1 37.3 2 25.2 0 20.0 7 4.3 5 21.6 6 15.9 6 3.7 11.8 14.8 0 5.7 16.7 16.7 17.8 18.3 19.4 19.4 19.4	-
	EBL/T	В	0.42	16.7	24.1	В	0.28	67.8 7.0 18.3 91.9 22.8 6.9 40.2 3.1 37.3 25.2 20.0 4.3 21.6 15.9 3.7 11.8 14.8 5.7 16.7 0.1 40.3 5.9 16.1 0.4 19.4 - 8.4 13.7	16.7
	EBR	Α	0.56	4.0	9.9	Α	0.70	5.7	11.3
	WBL/T	В	0.18	13.8	11.3	В	0.43	16.7	24.8
Gore St E/Gore St	WBR	Α	0.03	0.1	0.0	Α	0.03	0.1	0.0
W & Foster St	NBL	В	0.65	14.2	31.5	D	0.94	40.3	#111.6
Signalized	NBT/R	Α	0.21	5.8	12.1	Α	0.19	5.9	15.3
	SBL/T	В	0.35	16.0	17.2	В	0.35	16.1	21.0
	SBR	Α	0.04	0.2	0.0	Α	0.07	0.4	0.1
	Overall	В	-	10.1	-	В	-	Delay (s) 67.8 7.0 18.3 91.9 22.8 6.9 40.2 3.1 37.3 25.2 20.0 4.3 21.6 15.9 3.7 11.8 14.8 5.7 16.7 0.1 40.3 5.9 16.1 0.4 19.4 - 8.4 13.7	-
Sunset Boulevard	EBT/R	-	-	-	-	-	-	-	-
& Site Access	WBL/T	Α	0.10	8.0	2.3	Α	0.19	8.4	5.3
Unsignalized	NBL/R	В	0.39	12.8	14.3	В	0.35	13.7	11.3
Onsignanzea	Overall	Α	-	6.3	-	Α	-	5.3	-

Notes: Saturation

Saturation flow rate of 1800 veh/h/lane

Queue is measured in metres Peak Hour Factor = 1.00 v/c = volume-to-capacity ratio

m = metered queue

= volume for the 95th %ile cycle exceeds capacity

Consistent with the analysis from the Infrastructure Master Plan, the study area intersections are forecasted to operate well during the AM peak hour and capacity and delay issues are anticipated to be present at the intersection of Wilson Street West at Highway 7 during the PM peak hour.

Where the traffic operations were assessed within the Infrastructure Master Plan/Halpenny TIS using Highway Capacity Software (HCS) version 7, analysis via Synchro version 11 yielded different results. The operational differences between the two methods are minor throughout much of the study area, however, the intersection of Wilson Street West and Sunset Boulevard during the PM peak hour is forecasted to operate at a reduced LOS from that previously modeled. At this peak hour and horizon when analyzed by Synchro 11, the northbound left movement is forecasted to operate over theoretical capacity with high delay and the eastbound shared left/through movement and southbound through movements are forecasted to be approaching theoretical capacity.

Furthermore, the Infrastructure Master Plan/Halpenny TIS did not include the proposed upgrades at the intersection of Wilson Street West at Highway 7. Given these two factors, operations at the intersections of Wilson Street West at Highway 7 and of Wilson Street West at Sunset Boulevard/Harris Street South can be modeled with



network changes and signal timing optimization. The new operations with these modifications are summarized in Table 11.

Table 11: Modified IMP Option 3 Intersection Operations

Intersection	Lana		AM Pe	ak Hour			PM Pe	ak Hour	
intersection	Lane	LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	53.7 53.5 7.5 49.7 29.2 0.1 137.0 3.2 23.4 0.3 51.8 68.4 7.0 20.0 53.3 21.0 7.8 45.8 3.5	Q (95 th)
	EBL	С	0.31	31.1	24.0	D	0.54	53.7	34.0
	EBT	С	0.49	28.8	59.5	D	0.84	53.5	101.8
	EBR	Α	0.44	5.6	18.2	Α	0.48	7.5	20.4
Miles of Ch	WBL	В	0.44	18.2	31.2	D	0.82	49.7	#67.4
Wilson St	WBT	В	0.37	17.7	48.7	С	0.58	29.2	89.7
W/Canadian Tire &	WBR	Α	0.04	0.1	0.0	Α	0.03	0.1	0.0
Hwy 7 Signalized	NBL/T	С	0.77	34.7	98.0	F	1.20	137.0	#251.7
Signanzea	NBR	Α	0.21	3.8	10.3	Α	0.28	3.2	13.0
	SBL/T	В	0.29	19.5	35.8	С	0.46	23.4	74.6
	SBR	Α	0.06	0.2	0.0	Α	0.09	0.3	0.6
	Overall	С	-	20.8	-	D	-	Delay (s) 53.7 53.5 7.5 49.7 29.2 0.1 137.0 3.2 23.4 0.3 51.8 68.4 7.0 20.0 53.3 21.0 7.8 45.8 3.5	-
	EBL/T					Е	0.91	Delay (s) 53.7 53.5 7.5 49.7 29.2 0.1 137.0 3.2 23.4 0.3 51.8 68.4 7.0 20.0 53.3 21.0 7.8 45.8 3.5	#102.0
	EBR					Α	0.48	7.0	18.9
M(1 C+ M) 0	WB					В	0.17	20.0	16.9
Wilson St W &	NBL					D	0.92	53.3	#87.9
Sunset Blvd/Harris St S	NBT/R	Not opti	mized duri	ng the AM p	eak hour	С	0.76	53.5 7.5 49.7 29.2 0.1 137.0 3.2 23.4 0.3 51.8 68.4 7.0 20.0 53.3 21.0 7.8 45.8 3.5	#207.2
Signalized	SBL					Α	0.05	7.8	2.9
Signanzea	SBT					D	0.93	54 53.7 84 53.5 48 7.5 82 49.7 58 29.2 03 0.1 20 137.0 28 3.2 46 23.4 09 0.3 - 51.8 91 68.4 48 7.0 17 20.0 92 53.3 76 21.0 05 7.8 93 45.8 27 3.5	#191.7
	SBR					Α	0.27	3.5	11.4
	Overall					С	-	33.8	-

Notes: Saturation flow rate of 1800 veh/h/lane

Queue is measured in metres Peak Hour Factor = 1.00 v/c = volume-to-capacity ratio

m = metered queue

= volume for the 95th %ile cycle exceeds capacity

With the two modifications described above, Option 3 operations at the two study area intersections are improved. The northbound through movement at the intersection of Wilson Street West at Highway 7 is forecast to remain over theoretical capacity with high delays, however delay has been reduced by half on this movement, and additional capacity is available and reduced delay is noted at the intersection on the remaining movements.

At the intersection of Wilson Street West at Sunset Boulevard/Harris Street South, during the PM peak hour the northbound left, eastbound through, and southbound through movements are approaching theoretical capacity and extended queuing on the northbound, southbound, and eastbound approaches may be observed. The eastbound shared left/through movement is noted to be operating with a LOS of E. As presented within the Infrastructure Master Plan, analysis through the HCS7 software at this intersection during the PM peak hour yielded a maximum delay on any movement of 35.6 seconds. As analyzed with Synchro for the subject Transportation Review, three movements have a delay of over 45.8 seconds.

Throughout the study area, only the northbound shared left-turn/through movement is forecasted to operate with a level of service of 'F'. As stated in the Infrastructure Master Plan, this condition is a result of background traffic at the 2041 horizon and the subject development was anticipated to have a minor impact on this intersection's operation.

4.5.2 Full Subdivision Build-Out 2041 Future Peak Hour Traffic Demand

Superimposing the forecasted increase in traffic volumes illustrated in Figure 9 on the Infrastructure Master Plan Option 3 volumes illustrated in Figure 10, the forecasted study area traffic volumes for the full subdivision build-



out at the 2041 horizon have been projected. These volumes are illustrated in Figure 11 and the forecasted traffic operations are summarized in Table 12. Signal timing has been optimized at this horizon. The Synchro worksheets are provided in Appendix C.

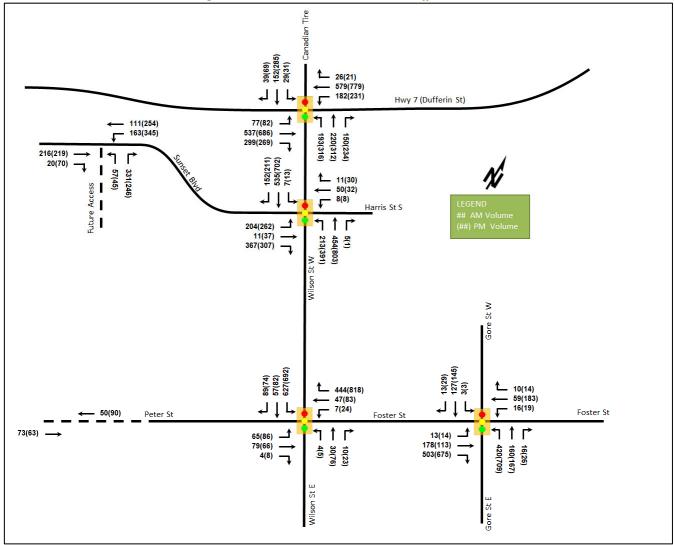


Figure 11: Full Build-Out 2041 Future Total Traffic Counts



Table 12: Full Build-Out 2041 Future Total Intersection Operations

_				041 Future To: eak Hour				ak Hour	
Intersection	Lane	LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
	EBL	С	0.36	34.1	24.0	D	0.55	53.9	34.0
	EBT	С	0.56	32.2	59.5	D	0.85	53.8	101.8
	EBR	Α	0.48	6.1	18.2	Α	0.49	7.5	20.6
	WBL	С	0.54	23.4	33.5	E	0.87	56.6	#75.9
Wilson St	WBT	В	0.39	19.2	48.7	C	0.58	29.2	89.7
W/Canadian Tire &	WBR	A	0.04	0.1	0.0	A	0.03	0.1	0.0
Hwy 7	NBL/T	С	0.72	30.8	99.2	F	1.21	140.4	#254.3
Signalized	NBR	A	0.21	3.7	10.7	A	0.29	3.2	13.1
	SBL/T	В	0.27	18.3	36.0	C	0.47	23.5	74.9
	SBR	A	0.05	0.2	0.0	A	0.09	0.3	0.6
	Overall	C	-	21.6	-	D	_	53.0	-
	EBL/T	D	0.75	43.1	#61.4	E	0.95	76.9	#106.8
	EBR	A	0.62	9.9	28.3	A	0.53	7.3	20.7
	WB	В	0.17	20.0	16.6	В	0.17	19.8	16.9
Wilson St W &	NBL	В	0.53	11.9	22.0	E	0.98	71.4	#120.6
Sunset Blvd/Harris	NBT/R	В	0.48	12.3	72.5	C	0.75	20.6	#207.2
St S	SBL	A	0.01	6.4	1.7	A	0.05	9.1	2.9
Signalized	SBT	C	0.80	28.0	95.5	E	1.05	79.5	#216.5
	SBR	A	0.24	3.6	9.2	A	0.32	5.5	16.3
	Overall	В	-	18.9	-	D	-	45.8	-
	EB	В	0.43	18.9	23.9	C	0.50	20.9	25.9
	WBL/T	В	0.14	14.6	10.2	В	0.28	16.4	17.6
Wilson St E/Wilson	WBR	A	0.48	2.6	8.5	A	0.73	5.6	11.3
St W & Peter	NB	В	0.15	14.2	8.2	В	0.34	16.6	15.3
St/Foster St	SBL	В	0.79	19.3	#101.5	D	0.99	46.8	#117.6
Signalized	SBT/R	A	0.15	3.1	7.6	A	0.18	3.9	8.9
	Overall	В	0.13	12.3	7.0	C	0.10	21.8	-
	EBL/T	В	0.44	16.9	25.9	В	0.34	18.2	20.5
	EBR	A	0.59	4.2	10.3	A	0.67	4.5	11.0
	WBL/T	B	0.19	13.8	12.0	C	0.53	21.7	#31.6
Gore St E/Gore St	WBR	A	0.13	0.1	0.0	A	0.04	0.2	0.0
W & Foster St	NBL	B	0.68	15.5	#33.1		0.98	45.6	#113.0
Signalized	NBT/R	В А	0.08	5.9	12.1	B	0.38	5.0	12.3
J.g.,	SBL/T	В	0.21	16.1	17.2	B	0.21	19.8	22.0
	SBR	<u>В</u>	0.33	0.2	0.0	<u>В</u>	0.43	0.5	0.0
	Overall	B	-	10.5	-	C	- 0.03	21.9	-
	EBT/R		_	-	-		_	-	<u>-</u>
Sunset Boulevard	WBL/T	A	0.12	8.1	3.0	A	0.27	8.9	8.3
& Site Access	NBL/R	C	0.12	16.6	26.3	C	0.62	24.0	30.8
Unsignalized	Overall	A	-	8.6	20.3	A	-	8.5	
Notos: Saturation flo	wrate of 1800 v		-	0.0	v/c = volumo t			0.5	-

Notes: Saturation flow rate of 1800 veh/h/lane

Queue is measured in metres

Peak Hour Factor = 1.00

v/c = volume-to-capacity ratio

m = metered queue

= volume for the 95th %ile cycle exceeds capacity

The study area intersections at the full build-out of the updated subdivision concept operate similarly to the Infrastructure Master Plan Option 3 conditions.

At the intersection of Wilson Street West and Sunset Boulevard/Harris Street South, the southbound through movement may be operating over theoretical capacity during the PM peak hour at this horizon and is anticipated



to operate with LOS of E. As analyzed, the intersection is considered to be at theoretical capacity at this analysis horizon. Given the pattern of delays noted within the Synchro analysis for the unmodified Option 3 volumes, the following discussion on mitigation will apply to both the Infrastructure Master Plan Option 3 conditions and updated subdivision full build-out conditions.

4.6 Transportation Impacts and Mitigations

Potential traffic impacts implicit in the Infrastructure Master Plan Option 3 scenario at the intersection of Wilson Street West and Sunset Boulevard/Harris Street South and present in the updated full subdivision build-out horizon have been noted in Section 4.5. It is forecasted that the intersection of Wilson Street West and Sunset Boulevard/Harris Street South will reach its theoretical capacity as modelled at the full subdivision build-out horizon. Several factors may inherently mitigate this outcome, however, as discussed in Section 4.6.1.

Within the transportation component of the Infrastructure Master Plan, an auxiliary westbound left-turn lane on Sunset Boulevard at the Lanark County Administration Building access was found to meet volume warrants under Option 3. The recommended storage length for this lane was 25 metres. The storage length was obtained using the left-turn lane volume warrant nomograph. The recommended methodology for the calculation of storage length from the Geometric Design Guide for Canadian Roads (Transportation Association of Canada (TAC), 2017) is from equation 9.14.1. The calculated value by this method for Option 3 would correspond to a design storage length of 60 metres and would increase to 90 metres with the additional volumes from the updated concept. From the operational analysis, however, it is noted that the 95th percentile queue for the 2041 future total horizon at full subdivision build-out would be less than 10 metres during both peak hours, and thus a 15-metre storage length is adequate from an operational perspective.

4.6.1 Mitigating Factors

4.6.1.1 Active Mode Trips

The trip generation employed within the Infrastructure Master Plan and the subject Transportation Review represent industry-standard methods for directly forecasting auto trips based upon land use types. What is not captured at this level of analysis is the site-specific potential for auto trips to be converted to walking or cycling trips based upon local travel characteristics, local land use context, and the presence, quality, and connectivity of active mode infrastructure.

The development concept includes high quality active mode connections to the surrounding network across the two crossing locations. Many employment and commercial destinations in town, including the downtown, are within walking distance of the community. Where these trips in other community contexts would be made via personal auto, the subject community may meet a higher active mode share than would otherwise be inherent to the typical values.

4.6.1.2 Emerging Trends

Another factor which would reduce the site trip generation from the values forecasted, are emerging social and technological trends such as virtual travel.

Virtual travel describes all of the trips that were previously made by auto travel and other modes being captured by internet and telecommunication technologies. These trips include those reduced by work from home, either full-time or part-time, online services such as fitness, banking, medical, or consultation appointments, and ecommerce which converts retail trips often made during the peak hours into off-peak deliveries.



4.6.2 Mitigation Options

The updated subdivision concept already includes robust active mode connectivity, and thus further mitigation to shift travel towards walking and cycling is not required.

To take advantage of the shift from auto travel towards virtual travel, infrastructure connectivity solutions should be explored. The Town of Perth has high quality fibre-optic internet infrastructure whose extension to the subject community could increase the community's potential for remote activities to supplant physical ones. Not only would such connectivity serve to shift subject development traffic towards virtual travel, however, but as adoption of virtual travel increases and as further employment and commercial activities go online, some proportion of background traffic may shift towards this new "mode" as well.

5 First Phase Subdivision Review

5.1 Site Design and Phasing

The first phase of construction is anticipated to include the first portion of the internal collector road, and some number of local roads or portions of future local roads. Active facilities along the collector will be constructed and the twinning of the Peter Street Bridge will be operational in advance of occupancies.

The first phase of development is anticipated to comprise 200 units with an anticipated 50-50 split between single detached dwellings and townhouses. The timeline of implementation for the construction of the proposed bridge to the Lanark County Administration Building lands is undetermined at the time of this review. The first full phase will be constructed in advance of the new bridge construction and the impacts of this interim scenario will be evaluated.

While Phase 1 is anticipated to be built out by 2029, the traffic analysis for the first phase will be conducted at the 2041 horizon with the Golf Course Lands traffic removed. Using this horizon accounts for all other area development traffic, providing a conservative analysis and harmonizing the evaluation with the existing area traffic work.

5.2 Phase 1 Development Generated Travel Demand

5.2.1 Trip Generation

The traffic generation for Phase 1 has been prepared using the vehicle trip rates for single dwellings using the fitted curve rates from the ITE Trip Generation Manual 11th Edition (2021). Table 13 summarizes the vehicle trip rates for the proposed land uses.

Table 13: Trip Generation Vehicle Trip Rates

Dwelling Type	ITE Land	Peak	Vehicle Trip
	Use Code	Hour	Rate
Single Family	210	AM	0.78
Detached		PM	1.04
Multi-Family Low Rise	220	AM	0.63
iviuiti-raililly LOW RISE	220	PM	0.77

Using the above vehicle trip rates, the total vehicle trip generation has been estimated. Table 14 below illustrates the total vehicle trip generation by dwelling type.



Table 14: Phase 1 Tot	tal Vehicle Trip	Generation
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Land Use	Units /		AM Peak Hou	r		PM Peak Hou	ŗ
Land Ose	GFA	In	Out	Total	In	Out	Total
Single Family Detached	100	20	58	78	67	37	104
Multi-Family Low Rise	100	15	48	63	48	29	77
Total	200	35	106	141	115	66	181

As shown above, 141 new AM and 181 new PM peak hour two-way vehicle trips are projected as a result of the first phase of the proposed development.

The resulting volumes at the Peter Street access are illustrated in Figure 12.

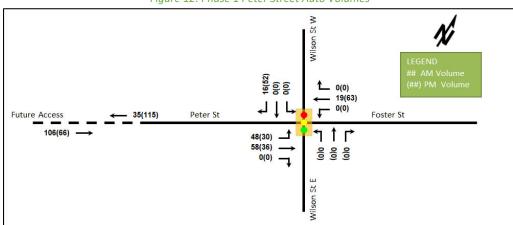


Figure 12: Phase 1 Peter Street Auto Volumes

5.2.2 Infrastructure Master Plan Peter Street Traffic Operations

As illustrated in Figure 7, Option 2 of the IMP included higher volumes from the Peter Street access than are proposed as part of Phase 1 and no capacity issues were noted as a result of those traffic volumes. The reason that Option 2 was not preferred was disruption along Peter Street. As such, an analysis will be performed to gauge the expected operations on Peter Street during this interim condition before the second crossing is constructed. As a basis of comparison for the impacts on Peter Street associated with Phase 1, the IMP Option 3 scenario's volumes, with the volumes associated with the second crossing removed from the network, will be evaluated as a background condition. These volumes are illustrated in Figure 13, and the forecasted traffic operations are summarized in Table 15. The Synchro intersection worksheets are provided in Appendix D.

Wilson St 382(590) 47(83) Foster St **Future Access** Peter St 73(63) 65(86)

Figure 13: IMP Option 3 Peter Street Traffic Only 2041 Future Total Auto Volumes



Table 15: IMP Option 3 Peter Street Traffic Only 2041 Future Total Operations

Interception	Lana		AM Pe	ak Hour			PM Pe	ak Hour	
Intersection	Lane	LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
	EB	В	0.42	18.7	23.9	С	0.50	20.9	25.9
Miles Ct F /Miles	WBL/T	В	0.14	14.6	10.2	В	0.28	16.4	17.6
Wilson St E/Wilson	WBR	Α	0.44	2.5	8.0	Α	0.59	3.4	9.7
St W & Peter St/Foster St	NB	В	0.15	14.2	8.2	В	0.34	16.6	15.3
Signalized	SBL	Α	0.52	8.8	33.3	С	0.82	21.0	#72.2
Signalized	SBT/R	Α	0.15	3.1	7.6	Α	0.18	3.9	8.9
	Overall	Α	-	7.7	-	В	-	12.7	-

Saturation flow rate of 1800 veh/h/lane Notes:

Queue is measured in metres

Peak Hour Factor = 1.00

v/c = volume-to-capacity ratio

m = metered queue

= volume for the 95th %ile cycle exceeds capacity

The intersection of Wilson Street East/Wilson Street West at Peter Street/Foster Street is forecast to operate well with the IMP Option 3 traffic associated with the Peter Street access applied to the 2041 horizon. During the AM peak hour, all movements operate with LOS B or better, and during the PM peak hour, all movements operate with LOS C or better. The southbound left-turn movement may experience extended queues that do not clear every single cycle.

5.2.3 Phase 1 Peter Street Traffic Operations

Removing the volumes associated with both the Peter Street and second crossing accesses from the IMP Option 3 and adding the Phase 1 volumes illustrated in Figure 12, the 2041 future total volumes for the Phase 1 analysis horizon has been compiled. These volumes are illustrated in Figure 14, and the forecasted traffic operations are summarized in Table 16. The Synchro intersection worksheets are provided in Appendix E.

382(590) Peter St Foster St 106(66) -

Figure 14: Phase 1 Peter Street Future Total Volumes



Table 16: Phase 1 Peter Street Operations

			0.0 20		<i> </i>				
lutava a ati a v	Lana		AM Pe	ak Hour			PM Pe	ak Hour	
Intersection	Lane	LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
	EB	С	0.50	20.2	29.2	С	0.51	21.4	26.9
NACI C+ F /\ACI	WBL/T	В	0.09	13.9	8.3	В	0.26	16.1	17.0
Wilson St E/Wilson	WBR	Α	0.42	2.3	8.0	Α	0.59	3.3	9.7
St W & Peter St/Foster St	NB	В	0.17	14.8	8.2	В	0.34	16.7	15.3
Signalized	SBL	В	0.59	11.0	33.3	С	0.83	21.9	#72.5
Signalizea	SBT/R	Α	0.18	3.4	7.6	Α	0.22	3.6	9.4
	Overall	Α	-	8.9	-	В	-	12.8	-

Notes: Saturation flow rate of 1800 veh/h/lane

Queue is measured in metres

Peak Hour Factor = 1.00

v/c = volume-to-capacity ratio

m = metered queue

= volume for the 95th %ile cycle exceeds capacity

The intersection of Wilson Street East/Wilson Street West at Peter Street/Foster Street is forecast to operate well with the Phase 1 traffic applied to the 2041 horizon, and similarly to the baseline with the IMP Option 3 volumes. All movements are expected to operate with LOS C or better during both peak hours.

Analysis and Mitigation

5.3.1 Potential Transportation Impacts

The traffic conditions associated with Peter Street after the build-out of Phase 1 are similar to those in Option 3 from the Infrastructure Master Plan, and as shown in the preceding section, negligible operation impacts are anticipated from the additional traffic. Table 17 summarizes the difference in forecasted auto trips between these two scenarios by direction and peak hour.

Table 17: Phase 1 Peter Street Vehicle Trip Comparison

Land Use		AM Peak Hou	r		PM Peak Hou	r
Land Ose	In	Out	Total	In	Out	Total
IMP Option 3	50	73	123	90	63	153
Phase 1	35	106	141	115	66	181
Difference	-15	+33	+18	+25	+3	+28

As shown above, vehicle trips are anticipated to increase by 18 vehicles in the AM peak hour and 28 vehicles in the PM peak hour above the IMP Option 3 traffic. This increase in traffic equates to fewer than one vehicle on Peter Street every two minutes during either peak hour.

While no mitigation is required for the intersection operations or for an increase in mainline traffic of this magnitude, community sensitivity about the amount of traffic on Peter Street has been documented within the IMP. As such, general traffic management measures will be discussed for the neighbouring community as part of this study.

5.3.2 Context for Impacts

Peter Street is classified as a collector road. It is noted that the future projected Phase 1 total volumes are roughly half of the typical maximum values for collector roads from Chapter 2 of The Geometric Design Guide for Canadian Roads manual (Transportation Association of Canada (TAC), 2017). As such, the volumes are considered appropriate from the perspective of the network function and road classification.

Notwithstanding the network considerations, the character of Peter Street is of a slow residential road where houses fronting onto it include narrow setbacks and all private driveways to these dwellings access the roadway. Given these conditions, Peter Street is considered to be traffic calmed in the existing conditions.



5.3.3 Proposed Monitoring Program for Future Mitigation

The existing mitigating factors described in Section 4.6.1 and the discussion concerning them are also applicable to the first phase of development. It is possible that the trip generation for Phase 1 presented in Section 5.2.1 ultimately proves conservative as the community is being designed to include a high uptake of active modes and virtual travel.

It is noteworthy that impacts associated with development traffic using a single point of access is an interim condition that will be present only until the second bridge is constructed. However, should unanticipated issues like higher volumes or unsafe operations develop, mitigation measures, such as additional traffic calming, for this interim condition may provide either temporary or permanent benefit to the surrounding community based upon their design characteristics.

On this basis, a monitoring exercise is recommended to be conducted after the construction of Phase 1, where the needs for, and appropriate selection of, mitigation measures can be accurately and responsively assessed. The monitoring program is recommended to comprise the semi-annual collection of turning movement data at the intersections of Peter Street at Lustre Lane and Peter Street at Rogers Road after an initial pre-construction collection. Through this exercise, which would be proposed to terminate once the second crossing is constructed, it may also be identified if additional traffic could be supported on the corridor beyond the 200 units, through consultation with the Town.

In keeping with the recommendations from the Infrastructure Master Plan at full-build-out, no mitigation measures are considered to be necessary to support Phase 1 at its build-out.

6 Summary of Improvements Indicated and Modifications Options

The following summarizes the analysis and results presented in this TIA report:

Proposed Development and Background

- An Infrastructure Master Plan was commissioned by the Town to study the addition of the Western Annex Lands to the Urban Settlement Boundary, an area separated into the Tayview Lands and the Golf Course
- The Golf Course Lands, the subject of this Transportation Review, were initially planned to include 650 detached single dwellings
- Caivan (Perth GC) Ltd. is seeking the approvals to develop these lands, and as part of this process, refinements to the concept are proposed
- This Transportation Review is prepared in reference to the IMP and the updates to the concept
- This Transportation Review is in support of a zoning by-law amendment, official plan amendment, draft plan of subdivision application, and a Municipal Class Environmental Assessment
- The proposed development comprises 621 single detached dwellings and 350 townhome units
- Consistent with the IMP, access is proposed via the existing Peter Street crossing and a proposed bridge across the Tay River to share the Lanark County Administration Building access on Sunset Boulevard
- The first phase of development is planned to comprise 200 units and to make exclusive use of the Peter Street crossing
- The existing Peter Street crossing is proposed as being twinned to support the first phase of development



Existing and Planned Conditions

- Highway 7 is a provincial freeway in the study area, Christie Lake Road, Sunset Boulevard, Wilson Street, Gore Street, and Foster Street are arterial roads, and Peter Street and Harris Street South are collector roads
- Consistent with the IMP, the study area will comprise the intersections of:
 - Wilson Street W at Highway 7 (Dufferin Street)
 - Wilson Street W at Sunset Boulevard / Harris Street S
 - Wilson Street W / Wilson Street E at Peter Street / Foster Street
 - Gore Street W / Gore Street E at Foster Street
- The Lanark County Administration Building Access at Sunset Boulevard/Christie Lake Road will be a Phase 2+ site access and additionally be examined
- Sidewalks are provided on both sides of Wilson Street, Foster Street, North Street, Peter Street east of Rogers Road, on the north side of Peter Street between Rogers Road and Lustre, on the west side of Rogers Road and an asphalt pathway is provided along the south side of Sunset Boulevard
- Bike lanes are provided on both sides of Wilson Street W between Harris Sunset Boulevard and Leslie Street
- Highway 7 is planned to be reconstructed through the study area, and include dedicated left-turn lanes on the eastbound and westbound approaches at intersections
- The Tay River Trail is planned for extension within the study area from the Lanark County Administration Buildings to Leslie Street

IMP Summary

- The IMP assumed four transportation options for site access with a collector road serving a spine through the development
 - Option 1 assumed all traffic used the Peter Street Bridge
 - Option 2 assumed 65% of all site traffic used the Peter Street Bridge and 35% used the proposed bridge
 - Option 3 assumed the traffic volume generated by 120 units used the Peter Street Bridge and the remainder used the proposed bridge
 - Option 4 assumed a one-way couplet for Peter Street and North Street with a second bridge from North Street to the subject lands
- Three active transportation options were proposed to service the site
 - Option 1 consisted of a multi-use pathway system
 - Option 2 consisted of a limited multi-use pedestrian and separated pathway system
 - Option 3 consisted of a separated pedestrian (resident/visitor) and bicycle pathway
- The development of 650 single detached dwellings was forecasted to generate 465 new AM and 538 new PM peak hour two-way trips
- The distribution of is 50% to/from the south, 25% to/from the east and 25% to/from the west
- The IMP recommended Transportation Option 3 based upon an evaluation of technical, environment, and socio-economic factors
- Transportation Option 2 was scored similarly to Option 3, but had one additional negative point awarded due to disruption along Peter Street and to the surrounding community



- Operational constraints were identified at the intersection of Highway 7 at Wilson Street West, and all options were found to have the same impacts at this intersection
- Active Transportation Option 1 was selected as the preferred option

Updated Subdivision Review

- The subdivision layout is functionally similar to the IMP concept with a 23.0-metre right-of-way collector route forming a spine through the subdivision between the proposed twinned Peter Street crossing and the second crossing to the County lands
- Local road rights-of-way are proposed as being 18.5 metres where a sidewalk will be permitted on one side, and 16.8 metres for lower volume roadways, each supporting 8.5-metre roadways with two 3.0-metre travel lanes and a 2.5-metre parking lane
- A mixed-use path is proposed along the collector road and a network of mixed-use paths are proposed surrounding the development areas, providing active network connections as well as recreational potential
- A sidewalk along one side of the collector road is proposed and along key local roads, with all collector road active facilities being extended across the two crossings to the surrounding active transportation network
- The two decks of the twinned Peter Street crossing are proposed to comprise a total of two travel lanes, a sidewalk, and a MUP once completed
- The updated subdivision concept is forecasted to generate 598 total AM and 747 total PM peak hour twoway auto trips
- The increase in auto traffic above the IMP is 133 two-way AM and 209 two-way PM peak hour auto trips
- The additional auto trips from the updated subdivision concept were assigned from the Sunset Boulevard access using a distribution consistent with the IMP

Traffic Review for Full Subdivision Build-Out

- The IMP Option 3 traffic operations at the study area intersections were assessed at the 2041 horizon
- Differences in modelling software between the IMP and subject Transportation Review yielded differences in forecasted operations and the IMP did not incorporate the changes associated with the Highway 7 reconstruction
- Accounting for the reconstruction and optimizing the signal timing within the study area, operational
 constraints were noted in the study area on the northbound through/left movement at the intersection
 of Wilson Street West and Highway 7, and higher delays than previously modeled were noted on the
 eastbound left/through movement, northbound left movement, and southbound through movement at
 the intersection of Wilson Street West at Sunset Boulevard/Harris Street South
- Adding the volume difference for the updated subdivision concept to the IMP Option 3 volumes, the future total 2041 traffic volumes for the full subdivision build-out have been forecasted
- Operations for the updated subdivision concept full build-out are similar to those of the IMP Option 3,
 where the pattern of delays on the three movements previously referenced at the intersection of Wilson
 Street West at Sunset Boulevard/Harris Street South persist at this horizon and the southbound through
 movement may operate over theoretical capacity and the intersection may be at theoretical capacity each
 during the PM peak hour
- The updated subdivision concept proposes robust active mode connections to the surrounding network, and many destinations are within walking distance of the site, including the downtown, and as such,



- personal auto travel may ultimately be lower than forecasted as people choose to walk or bike to and from their destinations
- Emerging technological and social trends such as virtual travel are anticipated to shift addition trips otherwise taken by the auto mode, and the availability of fibre-optic internet in Perth and the connection to that infrastructure will create the opportunity for further such shift

First Phase Subdivision Review

- The first phase of the subdivision will involve the construction of the first portion of the collector road and
 its active facilities, some number of local roads or portions of future local roads, and will comprise 200
 units anticipated to be split between single detached dwellings and townhouses
- The timing of the proposed bridge construction to the Lanark County Administration Building lands is presently undetermined and the first phase will utilize the twinned Peter Street Bridge
- Phase 1 is anticipated to generate 141 two-way AM and 181 two-way PM peak hour vehicle trips utilizing the Peter Street crossing
- The impacts of this level of traffic making exclusive use of the Peter Street crossing was compared to the impacts of the IMP Option 3 traffic assigned to the Peter Street crossing
- Traffic operations at the intersection of Wilson Street East/Wilson Street West at Peter Street/Foster Street are anticipated to be good with both the IMP Option 3 Peter Street traffic and the Phase 1 traffic
- The first phase is forecast to be associated with an increase of traffic on Peter Street of fewer than one car ever two minutes during either peak hour above the amount resultant from the IMP Option 3
- The operational and mainline traffic impacts of the first phase of development above the IMP Option 3 are negligible and no mitigation is required
- The mitigating factors presented for full subdivision build-out are expected to operate at the Phase 1 horizon and the trip generation may prove conservative
- The volumes forecasted on Peter Street are consistent with the road classification and network context, but the street context is a narrow slow residential street and this character provides traffic calming
- The impacts associated with the development using a single point of access is an interim condition until the second crossing is constructed
- A monitoring program is recommended to evaluate the pre- and post-construction traffic on Peter Street
 and assess the needs for mitigation measures and potential for additional traffic capacity beyond the
 volumes from the first 200 units
- In keeping with the recommendations from the Infrastructure Master Plan at full build-out, no mitigation measures are considered to be necessary to support Phase 1 at its build-out



7 Conclusion

It is recommended that, from a transportation perspective, the proposed development applications proceed.

Prepared By:

Reviewed By:



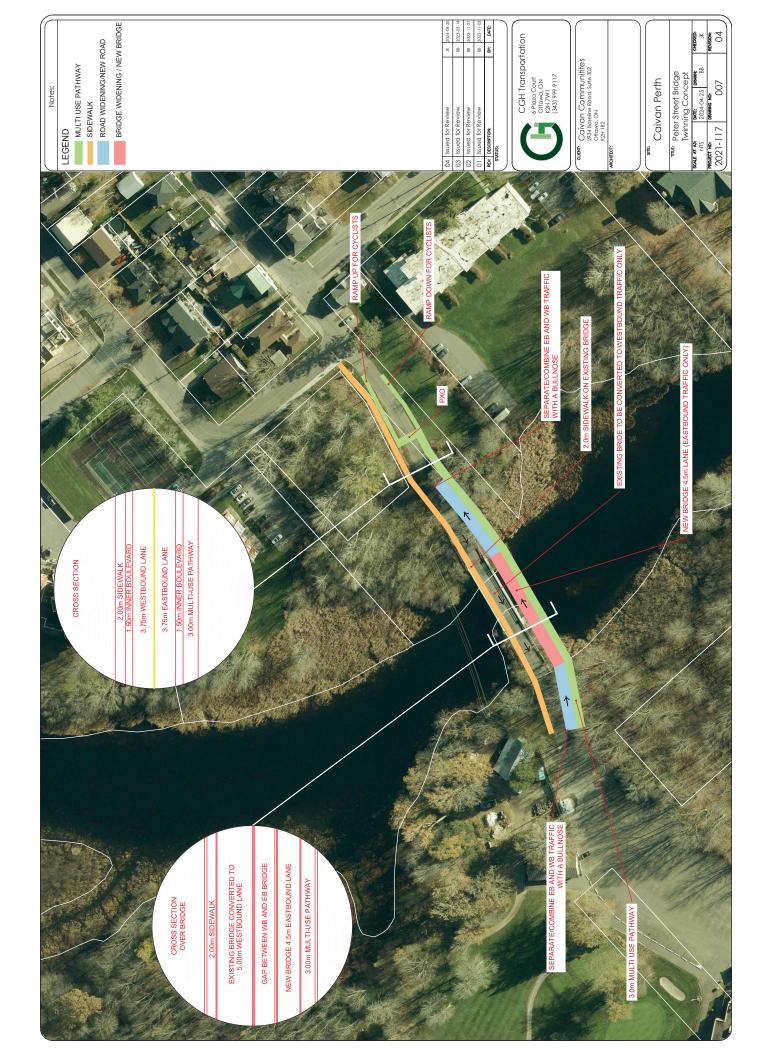
John Kingsley Christopher Gordon, P.Eng.
Transportation Engineering-Intern Senior Transportation Engineer



Appendix A

Peter Street Twinning Concept





Appendix B

Synchro Intersection Worksheets – IMP Option 3



2041 IMP Op3 AM Peak Hour Perth Golf Course Lands Lanes, Volumes, Timings 1: Wilson St W/Canadian Tire & HWY 7

FBL FBT FBR WBL WBT NBL NBT NBT NBT NBT SBL		1	†	<i>></i>	-	ţ	4	•	←	•	۶	→	•
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National Perm	Lane Configurations		₩.	*		₩,	*-		÷	*-		÷	*
Name	Traffic Volume (vph)	11	537	297	178	579	26	188	220	140	53	152	39
Perm NA Perm pm+pt NA Perm pm+pt NA Perm Perm NA Perm pm+pt NA Perm Perm NA Perm NA Perm Perm	Future Volume (vph)	11	537	297	178	579	28	88	220	140	59	152	33
Form NA Perm pm+pt NA Perm Perm Pm-pt NA Perm Perm Perm Perm Perm Perm Perm Perm	Lane Group Flow (vph)	0	614	297	0	757	56	0	408	140	0	181	33
2 2 2 6 6 7 4 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Turn Type	Fem	Z C	Fem	pm+pt	YA W	Ferm	pm+pt	Z Y	Ferm	Ferm	¥°	Fem
2 2 2 2 1 6 6 7 7 4 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Protected Phases	6	7	0	- (0	Œ	Α .	4	4	œ	0	α
268 56 56 56 56 56 56 56 56 56 56 56 56 56	Detector Phase	7 6	6	7 0	·	œ	2		4	4	ο α	00	0
56 56 56 50 50 50 50 50 50 50 50 50 50 50 50 50	Switch Phase	1	1	1	-		>		-	+	•	•	•
268 268 268 83 218 81 228 218 818 818 818 818 818 818	Minimum Initial (s)	2.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	2.0	2.0	2.0	5.0
March Marc	Minimum Split (s)	26.8	26.8	26.8	8.3	21.8	21.8	8.3	22.8	22.8	21.8	21.8	21.8
501% 501% 501% 137% 638% 638% 133% 362% 362% 229% 22 418 418 418 418 418 418 418 418 418 418	Total Split (s)	47.6	47.6	47.6	13.0	9.09	9.09	12.6	34.4	34.4	21.8	21.8	21.8
418 418 418 97 548 548 93 286 286 160 42 42 42 33 33 33 33 33	Total Split (%)	50.1%	50.1%	50.1%	13.7%	63.8%	63.8%	13.3%	36.2%	36.2%	22.9%	22.9%	22.9%
1.6 1.6 1.6 0.0 2.5 2.5 0.0 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5	Maximum Green (s)	41.8	41.8	41.8	2.6	54.8	54.8	9.3	28.6	28.6	16.0	16.0	16.0
1.6 1.6 1.6 0.0 2.5 2.5 0.0 2.5 2.5 2.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Yellow Time (s)	4.2	4.2	4.2	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
1.00	All-Red Time (s)	1.6	1.6	1.6	0.0	2.5	2.5	0.0	2.5	2.5	2.5	2.5	2.5
Lag Lag Lag Lad Lad Lag	Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Lag Lag Lag Lead Lead Lead Lead Lag Yes	Total Lost Time (s)		2.8	2.8		2.8	2.8		2.8	2.8		2.8	5.8
Ves Ves <td>Lead/Lag</td> <td>Гag</td> <td>Lag</td> <td>Lag</td> <td>Lead</td> <td></td> <td></td> <td>Lead</td> <td></td> <td></td> <td>Lag</td> <td>Lag</td> <td>Lag</td>	Lead/Lag	Гag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
C-Min C-Min None C-Min None None None None None None None Non	Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	Yes
C-Min C-Min None C-Min None None None None None None C-Min C-Min None C-Min None C-Min None C-Min None C-Min None None S.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Recall Mode	C-Min	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
160 160 160 110 110 120 120 110 110 120 20 20 10 10 10 10 10 10 10 10 10 10 10 10 10	Walk Time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0
) 20 20 20 10 10 10 20 20 10 10 10 10 20 20 10 10 10 10 10 10 10 10 10 10 10 10 10	Flash Dont Walk (s)	16.0	16.0	16.0		11.0	11.0		12.0	15.0	11.0	11.0	11.0
11.36 14.13	Pedestrian Calls (#/hr)	8	8	8		9	9		8	50	9	10	10
0.43 0.43 0.43 0.44 0.44 0.44 0.44 0.43 0.43 0.44 0.44 0.00 0.38 0.82 0.04 0.70 0.20 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Act Effct Green (s)		41.3	41.3		41.3	41.3		42.1	42.1		42.1	42.1
0.60 0.38 0.82 0.04 0.70 0.20 0.20 0.20 0.20 0.00 0.01 0.10 0.20 0.00 0.0	Actuated g/C Ratio		0.43	0.43		0.43	0.43		0.44	0.44		0.44	0.44
1.95 1.24 2.9 310 0.1 31.9 4.6 224 2.9 310 0.1 31.9 4.6 224 2.9 310 0.1 31.9 4.6 1.60 0.0 0.0 0.0 0.0 224 2.9 310 0.1 31.9 4.6 A	v/c Katio		0.60	0.38		0.82	0.04		0.70	0.20		0.26	0.06
160 000 000 000 000 000 000 000 000 000	Control Delay		22.4	2.9		31.0	0.1		34.9	9.4		20.5	0.2
16.0	Queue Delay		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
1	Total Delay		22.4	2.9		31.0	0.1		34.9	4.6		20.5	0.2
1) 160 300 24.9 1) 44.1 0.0 62.5 0.0 58.3 0.0 1) 44.5 11.1 69.2 0.0 #177.0 12.2 185.3 2.84 633.6 10.9 825 12.2 843 586 705 10 0 0 0 0 0 0 10.56 0.36 0.62 0.03 0.70 0.20 1.95 1.95	SOT		ပ	∢		O	V		ပ	∢		ပ	⋖
) 4H 00 62,5 0.0 58.3 0.0 1,1 692,5 0.0 58.3 0.0 1,1 692,5	Approach Delay		16.0			30.0			24.9			9.91	
1) 44.1 0.0 62.5 0.0 85.3 0.0 1) 18.5 11.1 6.2 0.0 #127.0 12.2 18.5 11.1 6.2 0.0 #127.0 12.2 18.5 80.0 284.2 633.6 10.9 82.5 12.2 84.3 586 705 10.0 0 0 0 0 0 10.5 0.3 0.0 0 0 0 10.5 0.3 0.0 0 0 10.5 0.3 0.0 0 0 10.5 0.3 0.0 0 0 10.5 0.3 0.0 0 0 10.5 0.3 0.0 0 0 10.5 0.3 0.0 0 10.5 0.0 0 1	Approach LOS		m :			O			O			m ;	
19) 48.5 11.1 69.2 0.0 #12.7 12.2 18.3 6.3 6.3 6.0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Queue Length 50th (m)		44.1	0.0		62.5	0.0		58.3	0.0		20.2	0.0
183.3 264.2 530.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0	Queue Length 95th (m)		48.5	11.1		2.69	0.0		#127.0	12.2		42.1	0.0
th 1098 825 1223 803 505 50.0 th 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Internal Link Dist (m)		185.3	6		7.497	2		033.0	6		27.0	
th 1098 825 1223 843 586 705 147 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Turn Bay Length (m)		7000	0.00		0007	30.0		C	30.0		700	20.0
nn 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Base Capacity (vpn)		8601	972		1773	843		280	92		694	/60
n 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Starvation Cap Reductn		0	0		0	0		0	0		0	0
0.56 0.36 0.62 0.03 0.70 0. 0.56 0.36 0.62 0.03 0.70 0. 0.95 0.09 0.00 0.70 0.	Spillback Cap Reductn		0	0		0	0		0	0		0	0
0.03 0.70 0.	Storage Cap Reductn									0		0	0
Intersection Summary Cycle Length: 95 Actualed Cydle Length: 95 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	Reduced v/c Ratio			0.36			0.03		0.70	0.20		0.26	90.0
Cycle Length: 95 Actualed Cycle Length: 95 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	Intersection Summary												
Actualed Cycle Length: 95 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	Cycle Length: 95												
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	Actuated Cycle Length: 95												
	Offset: 0 (0%), Referenced	to phase 2:	EBTL an	d 6:WBTL	., Start of	Green							
Natural Cycle: 70	Natural Cycle: 70												

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Lanes, Volumes, Timings 1: Wilson St W/Canadian Tire & HWY 7

2041 IMP Op3 AM Peak Hour Perth Golf Course Lands

Intersection LOS: C ICU Level of Service F Control Type: Actuated-Coordinated
Maximum vic Ratio: 0.82
Intersection Signat Delay, 22.5
Intersection Signat Delay, 22.5
Intersection Capacity Utilization 94.0%
Aralysis Period (min) 15.
95th percentile volume axceeds capacity, queue may be longer.
Queue shown is maximum affer two cycles.

Splits and Phases: 1: Wilson St W/Canadian Tire & HWY 7

\$0 **√** Ø7 👉 Ø2 (R) 💠 🗸 Ø1

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Lanes, Volumes, Timings 2: Wilson St W & Sunset Blvd/Harris St S

2041 IMP Op3 AM Peak Hour Perth Golf Course Lands

314 8 50 193 454 7 535 147 314 8 50 193 454 7 535 147 9em Perm 8 193 454 7 535 147 9em Perm 8 193 454 7 535 147 4 8 8 2 6 6 6 6 4 8 8 5 2 6 <td< th=""><th></th></td<>	
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Perm NA pm+pt NA pm+pt NA 5	
8 8 5 2 1 6 6 6 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	0 200 Perm NA
8 8 5 7 1 6 6 5.0 5.0 5.0 5.0 5.0 5.0 8.0 10.0 20.7 10.0 20.7 5.6 26.6 26.6 11.0 52.4 11.0 52.4 5.0 8 20.8 10.0 20.7 10.0 52.7 5.0 8 20.8 6.0 46.7 6.0 46.7 5.3 3.3 3.3 3.3 3.3 3.3 5.5 5.5 5.7 5.0 5.7 5.8 5.0 5.7 5.0 5.0 10.0 10.0 10.0 10.0 10.1 16.2 37.3 36.8 5.6 10.1 0.2 12.8 6.6 26.0 10.0 0.0 0.0 0.0 0.0 10.1 0.2 0.3 12.9 12.8 6.6 26.0 10.0 0.0 0.0 0.0 0.0 10.1 0.2 0.3 12.9 12.8 6.6 26.0 10.2 20.3 12.9 12.8 6.6 26.0 10.3 12.9 12.8 6.6 26.0 10.0 0.0 0.0 0.0 0.0 11.3 26.0 716.4 53.1 18 93.7 12.9 12.8 6.6 26.0 12.0 20.3 12.9 12.8 6.6 26.0 13.0 20.3 12.9 12.8 6.6 26.0 14.1 29.8 0.3 55.0 15.1 12.9 12.8 6.6 26.0 16.1 12.9 12.8 6.6 26.0 17.1 25.0 12.8 6.6 26.0 17.1 25.0 12.8 6.6 26.0 17.1 25.0 12.8 6.6 26.0 17.1 25.0 12.8 6.6 26.0 17.1 25.0 12.8 6.6 26.0 17.1 25.0 12.8 6.6 26.0 17.1 29.8 0.3 55.0 18.1 20.8 55.0 19.1 20.8 55.0 19.1 20.8 55.0 19.1 20.8 55.0 19.1 20.8 55.0 19.1 20.8 55.0 19.1 20.8 55.	
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208 208 60 50 50 50 50 50 50 50 50 50 50 50 50 50	4
20.8 20.8 10.0 20.7 10.0 20.7 20.8 20.8 20.8 11.0 52.4 11.0 52.4 11.0 52.4 20.8 52.4 12.8 56.2 12.8 56.2 12.8 56.2 12.8 56.2 12.8 56.2 12.8 56.2 12.8 56.2 12.8 56.2 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	
266 286 122% 582% 122% 582% 13.2 28.4 22.8 28.4 22.8 28.4 22.8 28.2 28.4 22.8 28.2 28.4 22.8 28.2 28.4 22.8 28.2 28.4 22.8 28.2 28.4 22.8 28.2 28.4 22.8 28.4 22.4 22	
2.05 2.07 2.07 2.07 2.07 2.07 2.07 2.07 2.07	26.6 26.6
3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3	1
2.5 2.5 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.2 2.4 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5	3.3 3.3
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9.0 9.7 9.7 9.7 9.7 9.7 9.7 9.7 9.7 9.7 9.7	0.0
1.5 1.5	5.0
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 None Min None Mi	
None None None Min Nore Min 55.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.	3.0 3.0
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10 10 10 10 10 10 10 10 10 10 10 10 10 1	5.0 5.0
162 37.3 35.6 32.5 25.9 0.25 0.57 0.54 0.50 0.40 0.17 0.53 0.49 0.01 0.78 20.3 12.9 12.8 6.6 26.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 2.8 6.6 26.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	9
0.25 0.57 0.54 0.50 0.40 0.17 0.53 0.49 0.01 0.78 20.3 12.9 12.8 6.6 26.0 0.0 0.0 0.0 0.0 0.0 0.0 20.3 12.9 12.8 6.6 26.0 0.0 0.1 28 6.6 26.0 0.0 0.0 0.0 0.0 0.17 0.28 0.3 65.0 17.3 20.6 76.1 1.8 93.7 283.0 716.4 633.6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	16.2
0.17 0.53 0.49 0.01 0.78 20.3 12.9 12.8 6.6 26.0 20.3 12.9 12.8 6.6 26.0 20.3 12.9 12.8 6.6 26.0 20.3 12.9 12.8 6.6 26.0 20.3 12.9 12.8 6.6 26.0 20.3 12.9 12.8 6.6 26.0 20.3 12.9 12.8 6.6 26.0 20.3 12.9 12.8 6.6 26.0 20.3 12.9 12.8 6.6 26.0 20.0 0 0 0 0 20.1 29.8 20.0 20.0 0 0 0 0 20.1 20.0 0 0 20.1 20.0 0 0 20.1 20.0 0 0 20.1 20.0 0 0 20.1 20.0 0 0 20.1 20.0 0 0 20.1 20.0 0 0 20.1 20.0 0 20.0 0 20.0 0 20.0 0 20.0 0 20.0 0 20.0 0 20.0 0 20.0 0 20.0 0 20.0 0 20.0 0 20.0 0 20.0 0 20.0 0 20.0 0 20.0 0 20.0 0	
20.3 12.9 12.8 6.6 26.0 0.0 20.3 12.9 12.8 6.6 26.0 0.0 20.3 12.9 12.8 6.6 26.0 20.3 12.9 12.8 6.6 26.0 20.3 12.9 12.8 20.3 12.8 20.0 17.3 20.6 76.1 18 93.7 263.0 26.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.69
20.3 12.9 12.8 6.6 26.0 C B B A C C C B C C C B C C C C C C C C	78.7
C B B A C C C B B A C C C B B A C C C B B A C C C B B A C C C C	38.7
20.3 12.8 21.0 C B C C 5.6 10.1 29.8 0.3 55.0 17.3 20.6 76.1 1.8 93.7 283.0 776.4 633.6 541 367 1294 503 1296 0 0 0 0 0 0 0 0 0 0 0 13 0.53 0.35 0.01 0.41	Ω
C 10.1 29.8 0.3 55.0 17.3 20.6 76.1 18 93.7 283.0 716.4 20.0 541 367 1294 503 1296 0	19.3
17.3 20.6 76.1 18 93.7 28.30 76.4 633.6 28.30 76.4 633.6 65.1 63.7 65.30 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	В 6
283.0 716.1 18 95.7 716.4 20.0 633.6 25.0 716.4 20.0 633.6 25.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	22.0
250 200 541 367 1294 503 1296 0 0 0 0 0 0 0 0 0 0 0 13 0.53 0.35 0.01 0.41	#57.5 888.9
86 541 367 1294 503 1296 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	387
46 0.13 0.53 0.35 0.01 0.41	0
46 0.13 0.53 0.35 0.01 0.41	0 0
	Control Type: Actuated-Uncoordinated

Lanes, Volumes, Timings

2041 IMP Op3 AM Peak Hour Perth Golf Course Lands

2: Wilson S	2: Wilson St W & Sunset Blvd/Harris St S		Perth Golf Cours
Maximum v/c Ratio: 0.78	atio: 0.78		
Intersection Signal Delay: 17.7		Intersection LOS: B	
Intersection Cap	Intersection Capacity Utilization 73.1%	ICU Level of Service D	
Analysis Period (min) 15	(min) 15		
# 95th percent	95th percentile volume exceeds capacity, queue may be longer	yer.	
Queue show	Queue shown is maximum after two cycles.		
:			
Splits and Phase	Splits and Phases: Z: Wilson St W & Sunset Blvd/Harris St S		
• 01	≪ ↑ Ø2		₽ 04
118	52,4 s		26.6 s
	-		

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2041 IMP Op3 AM Peak Hour Perth Golf Course Lands Lanes, Volumes, Timings 4: Wilson St E/Wilson St W & Peter St/Foster St

Particular Par		1	1	-	ţ	4	•	←	۶	→	
66 79 7 47 424 4 30 574 6 6 79 7 47 424 4 30 574 6 6 79 7 47 424 4 30 574 6 74 7 47 424 6 9 6 74 8 74 8 8 6 74 8 9 574 6 74 8 8 8 1 2 2 1 1 6 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7	Lane Group	EBF	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
66 79 7 47 424 4 30 574 67 7 87 47 424 4 30 574 68 79 7 47 424 4 30 574 69 79 7 47 424 4 30 574 60 148 8 8 1 2 2 11 4 8 8 8 2 6 14 4 4 8 8 8 1 2 2 17 3 17 3 17 3 17 3 18 160 467 467 160 17 3 17 3 17 3 17 3 18 160 467 467 160 17 3 17 3 17 3 17 3 18 160 467 467 160 17 3 17 3 17 3 17 3 18 168 168 98 17 3 17 3 17 3 17 3 18 168 168 98 17 4 8 8 8 1 8 12 2 2 17 5 12 12 12 11 2 41 9 41 9 11 2 13 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Lane Configurations		4		4	¥C.		4	K	£ 3	
65 779 7 47 424 4 30 574 Perm NA Perm	Traffic Volume (vph)	92	79	7	47	424	4	ස	574	22	
Name	Future Volume (vph)	92	79	7	47	424	4	30	574	22	
Ferm NA Ferm NA pm+ov Perm NA pm+pt 4 8 8 1 2 2 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1	Lane Group Flow (vph)	0	148	0	\$	424	0	4	574	146	
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	I urn I ype	Pem	Υ Y	Pem	¥,	bm+ov	Perm	Y Y	bm+pt	NA	
50 50 50 50 50 50 50 50 50 50 50 50 50 5	Protected Phases Permitted Phases	4	4	00	∞	~ ∞	2	2	- 0	9	
17.3 17.3 17.3 18.8 16.8 16.8 98 17.3 17.3 17.3 17.3 9.8 16.8 16.8 98 17.3 17.3 17.3 17.3 16.0 46.7 46.7 16.0 12.6 2.16% 21.6% 21.6% 20.0% 83.4% 20.0% 73.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.	Detector Phase	4	4	∞	∞	~	2	2	~	9	
15.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Switch Phase										
17.3 17.3 17.3 17.3 9.8 16.8 16.8 9.8 17.8 17.3 17.3 17.3 17.3 17.3 17.3 17.3 17.3	Minimum Initial (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
17.3 17.3 16.0 46.7 46.7 16.0 17.3 17.3 16.0 46.7 46.7 16.0 17.5 12.5 12.5 12.5 12.5 12.5 12.5 12.5 12	Minimum Split (s)	17.3	17.3	17.3	17.3	8. 8.	16.8	16.8	8.6	16.8	
216% 216% 216% 216% 200% 854% 564% 200% 71 12 12 12 12 12 12 11 12 14 19 14 19 11 12 13 13 13 13 13 13 13 13 13 13 13 13 13	Total Split (s)	17.3	17.3	17.3	17.3	16.0	46.7	46.7	16.0	62.7	
12.5 12.5 12.5 12.5 17.5 17.5 17.5 17.5 17.5 17.5 17.5 17	Total Split (%)	21.6%	21.6%	21.6%	21.6%	20.0%	58.4%	58.4%	20.0%	78.4%	
3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3	Maximum Green (s)	12.5	12.5	12.5	12.5	11.2	41.9	41.9	11.2	57.9	
1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	All-Red Time (s)	1.5	7.5	1.5	7.	7.5	1.5	7:5	7.5	1.5	
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	
Lead Lag Lead Lag Lead Lag Lead Lag Lead Lag Lead None Non	l otal Lost Time (s)		φ.		φ.	δ.		φ.	δ. 4	4.8	
3.0 3.0 7.0s 7.es 7.es 7.es 7.es 7.es 7.es 7.es 7.e	Lead/Lag					Lead	Lag	Fag	Lead		
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Lead-Lag Optimize?					Yes	Yes	Yes	Yes		
None None None None Min Min None 7.5 7.5 7.5 7.0 5.0 7.5 7.5 7.5 7.0 7.0 20 20 20 20 7.5 7.5 7.5 7.5 7.0 7.0 22 20 20 20 7.1 10.0 9.5 19.4 7.3 23.9 0.42 0.14 0.47 0.15 0.73 18.9 14.6 2.6 14.2 15.3 0.0 0.0 0.0 0.0 0.0 0.1 8.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 17.1 18.9 14.8 14.3 14.3 18.9 14.6 14.3 14.3 18.9 14.0 0.0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Recall Mode	None	None	None	None	None	Min	<u>u</u>	None	Min	
7.5 7.5 7.5 7.5 7.0 7.0 20 20 20 20 20 10.0 9.5 19.4 7.3 23.9 10.2 0.24 0.48 0.18 0.59 0.42 0.14 0.47 0.15 0.73 0.0 0.0 0.0 0.0 0.0 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 3.9 3.9 14.3 14.3 18.9 A B B B B B B B B B B B B B B B B B B	Walk Time (s)	2.0	2.0	2.0	2.0		2.0	2.0		5.0	
20 20 20 20 20 20 20 20 20 20 20 20 20 2	Flash Dont Walk (s)	7.5	7.5	7.5	7.5		7.0	7.0		7.0	
10.0 9.5 19.4 73 23.9 0.25 0.24 0.48 0.18 0.73 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.7 14.3 14.3 14.3 18.9 14.6 14.2 15.3 18.9 14.6 14.2 15.3 18.9 14.7 14.3 14.3 14.3 14.3 18.9 14.7 14.3 14.3 14.3 14.3 14.3 18.9 14.9 14.3 14.3 14.3 14.3 14.3 18.9 14.9 14.3 14.3 14.3 14.3 14.3 14.3 14.3 14.3	Pedestrian Calls (#/hr)	20	20	20	20		20	20		20	
0.25 0.42 0.48 0.18 0.73 0.73 0.00 0.00 0.00 0.00 0.00 0.00	Act Effet Green (s)		10.0		9.5	19.4		7.3	23.9	25.4	
0.42 0.14 0.47 0.15 0.73 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Actuated g/C Katio		0.25		0.24	0.48		0.18	0.59	0.63	
18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.6 2.6 14.2 15.3 18.9 14.3 18.9 14.3 10.0 2.2 25.3 25.3 10.2 8.4 8.2 #70.7 494.3 110.6 10.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	v/c Ratio		0.42		0.14	0.47		0.15	0.73	0.15	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Control Delay		18.9		14.6	2.6		14.2	15.3	3.1	
18.9 14.6 2.6 14.2 15.3 18.9 18.9 18.9 18.9 18.9 18.9 18.9 14.3 18.9 18.9 18.2 18.2 18.9 18.9 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0	Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	
18.9 3.9 14.3 18.9 3.9 14.3 18.9 3.9 14.3 18.9 3.9 14.3 19.0 3.1 0.0 2.2 25.3 23.9 10.2 8.4 8.2 #70.7 494.3 110.6 8.4 18.2 #70.7 15.0 17.1 7 16.0 0	Total Delay		18.9		14.6	5.6		14.2	15.3	3.1	
18.9 3.9 14.3 B A B B A B B B A B B B B B B B B B B B	SOT		Ω		ш	∢		ш	ш	⋖	
9.0 3.1 0.0 2.2 55.3 25.3 9.0 10.2 8.4 8.2 #70.7 494.3 110.6 117.1	Approach Delay		18.9		3.9			14.3		12.8	
9.0 3.1 0.0 2.2 25.3 25.3 494.3 110.6 6.4 82 #70.7 494.3 110.6 15.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Approach LOS		a		⋖			m		m	
494.3 110.2 8.4 8.2 #70.7 494.3 110.6 15.0 117.1	Queue Length 50th (m)		9.0		3.1	0.0		2.2	25.3	1.7	
494.3 110.6 117.1 117.1 494.3 110.6 15.0 117.1 1	Queue Length 95th (m)		23.9		10.2	8.4		8.2	#70.7	9.7	
15.0 15.0 15.0 15.0 0 0 0 0 0 0 0 0 0 0 0 0 0	Internal Link Dist (m)		494.3		110.6			117.1		716.4	
460 534 915 1519 793 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Turn Bay Length (m)					12.0					
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Base Capacity (vph)		460		534	915		1519	793	1504	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Starvation Cap Reductn		0		0	0		0	0	0	
0.32 0.10 0.46 0.03 0.72 0.1 ordinated	Spillback Cap Reductn		0		0	0		0	0	0	
0.32 0.10 0.46 0.03 0.72 0.	Storage Cap Reductn		0		0	0		0	0	0	
Intersection Summary Cycle Length: 80 Actualed Cycle Length: 40.3 Natural Cycle: Cycle Length: 40.2 Control Tycle: Cycle Length: 40.3	Reduced v/c Ratio				0.10	0.46		0.03	0.72	0.10	
Cycle Length: 80 Actualed Cycle Length: 40.3 Natural Cycle: Cycle Length: 40.0 Contriol Tycle: Adatased-Uncoordinated	Intersection Summary										
Actualed Cycle Length: 40.3 Natural Cycle: 60 Control Tyce: Aduated-Uncoordinated	Cycle Length: 80										
Natural Cycle: 60 Control Tyoe: Aduated-Uncoordinated	Actuated Cycle Length: 40.3	~									
Control Type: Actuated-Uncoordinated	Natural Cycle: 60										
	Control Type: Actuated-Unc	oordinated									

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Lanes, Volumes, Timings 4: Wilson St E/Wilson St W & Peter St/Foster St

2041 IMP Op3 AM Peak Hour Perth Golf Course Lands

Intersection LOS: B ICU Level of Service B Maximum v/c Ratio: 0,73
Intersection Signal Delay: 10,5
Intersection Signal Delay: 10,5
Intersection Capacity Utilization 63,4%
Analysis Period (min) 15
95fin percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

4 ₩ 02

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2041 IMP Op3 AM Peak Hour Perth Golf Course Lands Lanes, Volumes, Timings 6: Gore St E/Gore St W & Foster St

Control Check Control Chec	(fg	3 8	EBR	WBL	WBT	WBR	NBL	NRT	SBL	SBT	SBR
13 163 464 16 54 10 406 160 3 127 14 16 3464 16 54 10 406 160 3 127 15 0 176 464 16 54 10 406 176 0 130 Perm NA pri+vo Perm NA Perm pri+pl NA Perm NA Perm NA Perm 1 14 4 4 5 8 8 8 5 2 6 6 6 4 4 4 5 8 8 8 8 5 2 6 6 6 6 6 6 4 4 4 5 8 8 8 8 5 2 6 6 6 6 6 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5	(qu				ŀ	١	ŀ	2			5
13 163 464 16 54 10 406 160 3 127 13 163 464 16 54 10 406 160 3 127 0 0 176 464 0 70 10 406 160 3 127 0 0 176 464 0 70 10 406 160 131 4 4 5 8 8 8 5 2 6 6 6 4 4 4 5 8 8 8 5 2 6 6 6 154 154 100 154 154 154 100 170 170 170 170 170 170 170 170 170	(tr		R_		'	_	-	£,		€	¥.
13 163 464 16 54 10 406 176 0 31 177 14 4 5 8 8 8 5 2 6 6 4 4 5 8 8 8 5 2 6 6 4 4 5 8 8 8 5 2 6 6 4 4 5 8 8 8 5 2 6 6 4 4 5 8 8 8 5 2 6 6 4 4 5 8 8 8 5 2 6 6 4 4 5 8 8 8 5 2 6 6 4 4 5 8 8 8 5 2 6 6 4 4 5 8 8 8 5 2 6 6 4 4 5 8 8 8 5 2 6 6 4 4 5 8 8 8 8 5 2 6 6 4 4 5 8 8 8 8 5 2 6 6 50 50 50 50 50 50 50	(fu				\$	9	406	160	က	127	13
Pem NA Pem NA Pem Pem Pem NA Pem Pe	(udv.)				Z	ę :	406	9 [က	127	<u></u>
Ferm NA pm-ov Perm NA Perm pm-px NA Perm NA Pe					2 :	9	406	1/6	0	130	
4 4 4 5 8 8 8 2 6 6 6 6 1 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15					×	Fell	pm+pt	A C	FeLI	Y Y	FeII
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0					•	00	0 0	1	9	•	ç
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	(s)	4	. 73	- ∞	00	- ∞	2	2	9	9	9
15.4 15.4 15.4 15.4 15.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17											
154 154 100 154 154 164 100 170 170 170 170 170 170 170 170 170					2.0	2.0	2.0	2.0	2.0	2.0	2.0
19.3% 19.3%					15.4	15.4	10.0	17.0	17.0	17.0	17.0
193% 193% 13.8% 19.3% 19.3% 13.8% 80.8% 67.0% 67.0% 67.0% 67.0% 10.4 10.4 10.4 10.4 10.4 10.4 10.4 10.4					15.4	15.4	11.0	64.6	53.6	53.6	53.6
104 104 60 104 104 104 60 596 486 486 486 486 486 486 486 486 486 48		-			19.3%	19.3%	13.8%	80.8%	%0'.29	%0'.29	%0'.29
30 30 30 30 30 30 30 30 30 30 30 30 30 3	n (s) 1				10.4	10.4	0.9	29.6	48.6	48.6	48.6
2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0					3.0	3.0	3.0	3.0	3.0	3.0	3.0
10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0					7.0	7.0	7.0	7.0	7.0	7.0	7.0
1.00	Lost Time Adjust (s)	0.0			0.0	0.0	0.0	0.0		0.0	0.0
Nome	l otal Lost IIme (s)	0.0			0.0	0.0	0.0	0.0	1000	0.0	0.0
3.0 3.0 7 468	Lead/Lag		Lag				Lag		read	Lead	Lead
None None None None None None None None					C	c	res	c	res	res	res
5.0		Ž		Ž	None and N	O.C.	O.C.	O.S.	o.c	o.o	O.S.
54 54 54 54 54 54 54 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0					5.0	200	2	2.0	2.0	2.0	2.0
90 30 30 30 30 30 30 30 30 30 30 30 30 30	alk (s)			5.4	5.4	5.4		7.0	7.0	7.0	7.0
9.6 15.7 9.6 9.6 19.5 19.5 8.4 0.24 0.40 0.24 0.24 0.50 0.50 0.50 0.21 0.42 0.56 0.13 0.24 0.50 0.50 0.50 0.21 16.7 4.0 13.8 0.1 14.2 5.8 16.0 0.0 0.0 0.0 0.0 0.0 16.7 4.0 13.8 0.1 14.2 5.8 16.0 0.0 0.0 0.0 0.0 0.0 0.0 16.8 A B A B A B B B A B B B B A B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B A B B B A B B B A B B B A B B B A B B B A B B B A B B B A B B B B A B B B A B B B A B B B A B B B B A B B B A B B B B A B B B A B B B A B B B A B B B A B B B A B B B A B B B A B B B A B B B B A B B B B A B B B B A B B B B A B B B A B B B B A B B B A B B B B A B B B B A B B B B A B B B A B B B B A B B B A B B B A B B B A B B B A B B B B A B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B B A B B B A B B B B A B B B B A B B B B A B B B A B B B A B B B A B B B A B B B B A B B B B A B B B B B B B B B A B				8	30	8		9	30	30	30
0.24 0.40 0.24 0.24 0.50 0.50 0.20 1.42 0.56 0.18 0.03 0.66 0.21 0.35 1.67 4 0 138 0.1 14.2 5.8 16.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.67 4 0 138 0.1 14.2 5.8 16.0 1.8 A B A B A B B A B 1.2.1 11.1 11.1 11.1 1.0 0.0 3.6 0.0 3.6 0.0 16.4 5.4 7.6 1.1 0.0 0.0 0.0 0.0 0.0 0.0 1.1 0.0 0.0 0.0 0.0 0.0 0.0 1.2 0.39 0.56 0.17 0.02 0.65 0.10 0.08 1.392	Act Effct Green (s)	9.6			9.6	9.6	19.5	19.5		8.4	8.4
0.42 0.56 0.18 0.03 0.66 0.21 0.35 16.7 4.0 138 0.1 14.2 5.8 16.0 0.0 16.7 4.0 138 0.1 14.2 5.8 16.0 0.0 16.7 4.0 138 0.1 14.2 5.8 16.0 0.0 16.7 4.0 138 0.1 14.2 5.8 16.0 16.0 16.0 16.0 16.0 16.0 16.0 16.0	Actuated g/C Ratio	0.24			0.24	0.24	0.50	0.50		0.21	0.21
167 40 138 0.1 142 5.8 16.0 00 00 00 00 00 00 0.0 167 40 138 0.1 142 5.8 16.0 16.0 00 00 00 0.0 16.0 00 00 00 0.0 17.5 A 12.1 A A B A B A B 13.1 A 11.7 14.5 19.2 4.1 9.9 11.3 0.0 31.5 12.1 17.2 110.6 25.0 0 0 0 0 0 0 0 10.0 0 0 0 0 0 0 0 11.2 1 0.0 0 0 0 0 0 11.2 1 0.0 0 0 0 0 0 11.3 0.39 0.56 0.17 0.02 0.65 0.10 0.08 11.3 0.39 0.56 0.17 0.02 0.65 0.10 0.08	v/c Ratio	0.42			0.18	0.03	0.65	0.21		0.35	0.04
16.7 4.0 138 0.1 14.2 5.8 16.0 16.0 17.5 14.5 12.1 14.2 5.8 16.0 17.5 12.1 14.2 5.8 16.0 17.5 12.1 12.1 11.7 14.5 18.0 17.5 12.1 17.1 14.5 18.0 17.5 17.0 17.5 17.5 17.5 17.5 17.5 17.5 17.5 17.5	Control Delay	16.7			13.8	0.1	14.2	5.8		16.0	0.2
167 40 138 0.1 142 5.8 16.0 B A B A B A B A B 7.5 12.1 1.2 1 2.1 9.6 0.0 3.6 0.0 16.4 5.4 7.6 1.0 25.0 11.3 0.0 31.5 12.1 17.2 1.0 0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 1.0 0 0 0 0 0 1.0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Queue Delay	0.0			0.0	0.0	0.0	0.0		0.0	0.0
7.5 12.1 1.7 14.5 14.5 17.7 14.5 18.0 19.6 0.0 3.6 0.0 16.4 5.4 7.6 17.2 11.0 11.0 25.0 11.3 0.0 315 12.1 17.2 108.0 25.0 10.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Total Delay	16.7			13.8	0.1	14.2	5.8		16.0	0.2
7.5 12.1 11.7 14.5 14.5 19.9 19.6 0.0 3.6 0.0 16.4 5.4 7.6 17.2 17.0 17.2 17.0 17.2 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0	ros	В			Ф	⋖	В	∢		В	V
9	Approach Delay	7.5			12.1			11.7		14.5	
) 9.6 0.0 3.6 0.0 164 5.4 7.6 17.2 17.2 17.2 17.2 17.2 17.2 17.2 17.2	Approach LOS	∀			Ф			В		В	
10 241 9.9 11.3 0.0 31.5 12.1 17.2 17.2 17.2 17.2 17.2 17.2 17.2	Queue Length 50th (m)	9.6			3.6	0.0	16.4	5.4		7.6	0.0
1100 250 1191 1100 1	Queue Length 95th (m)	24.1			71.3	0.0	31.5	12.1		77.7	0.0
th 450 230 411 412 625 1702 1725 1725 1725 1725 1725 1725 1725 172	Internal Link Dist (m)	0.011			 	d		2/0.3		108.0	0 0 0
th 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Turn bay Lengur (m)	AEO			444	0.0	200	470		1705	1200
0.39 0.56 0.17 0.02 0.65 0.10 0.08 0.00 0.03 0.59 0.50 0.17 0.02 0.65 0.10 0.00 0.00 0.00 0.00 0.00 0.00 0.0	base Capacity (vpri)	004			‡ = c	4 0	070	70/		67/	0000
0.39 0.56 0.17 0.02 0.65 0.10 0.08 0.00 0.139.2	Stalvation Cap Reductin				> <	> 0	> <	> 0		> 0	> <
0.39 0.56 0.17 0.02 0.65 0.10 0.08 0.0 1.39.2	Spillback Cap Reductin	0 0			0	0	0	0		0	0 0
0.39 0.56 0.17 0.02 0.65 0.10 0.08 0. any ight: 39.2	Storage Cap Reductn		٠				0 !	0 9			
Intersection Summary Cycle Length: 80 Actuated Cycle Length: 39.2 Nahmar Cycle 45	Reduced v/c Ratio		o		0.17	0.02	0.65	0.10		0.08	0.01
Cycle Length: 80 Actualed Cycle Length: 39.2 Natural Cycle 45	Intersection Summary										
Actuated Cycle Length: 39.2 Natural Cycle 45	Cycle Length: 80										
Natural Cycle: 45	Actuated Cycle Length: 39.2										
Namial Oyolo, 13	Natural Cycle: 45										

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Lanes, Volumes, Timings 6: Gore St E/Gore St W & Foster St

2041 IMP Op3 AM Peak Hour Perh Golf Course Lands

	Intersection LOS: B	ICU Level of Service B	
Maximum v/c Ratio: 0.65	Intersection Signal Delay: 10.1	Intersection Capacity Utilization 62.9%	Analysis Period (min) 15



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HCM 6th TWSC 9: Christie Lake Rd/Sunset Blvd

2041 IMP Op3 AM Peak Hour

Perth Golf Course Lands

NBLn1 EBT EBR WBL WBT 748 - 1344 - 0.389 - 0.103 - 12.8 - 8 - 8 - 8 - 1.9 - 1.9 - 0.3 - 0.3 - 0. .8 263 28 263 0 0 op Stop - None - 412 819 - 412 -- 816 -- 615 -100 12.8 B 100 100 100 2 2 2 9 138 111 - 1344 - - -- 2.218 - 1344 - 4.12 Major2 WB 4.4 Lane Configurations 19-1 Traffic Vol. veh/h 216
Conflicting Peds.#hr 0
Sign Control Sign Control Sign Control 0 Major1 Minor LaneMajor Murnt Capacity (veh/h) HCM Lane V/C Ratio HCM Control Delay (s) HCM Lane LOS HCM Lane LOS Approach HCM Control Delay, s HCM LOS Critical Howy Stg 1
Critical Howy Stg 1
Critical Howy Stg 2
Critical Howy Stg 2
Critical Howy Stg 2
Critical Howy Stg 2
Stage 1
Stage 2
Platoon blocked, %
Mov Cap-1 Maneuver
Mov Cap-1 Maneuver
Stage 1
Stage 2
Stage 1 Major/Minor Conflicting Flow All Intersection Int Delay, s/veh Stage 1 Stage 2

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Lanes, Volumes, Timings 1: Wilson St W/Canadian Tire & HWY 7

2041 IMP Op3 PM Peak Hour Perth Golf Course Lands

Figure Configuration	Lane Group	Ē		0	10/41	FC/V/	00/21	2	FON	OON	00	ABT	0
Fig. 312 312 227 31 285 21 312 312 227 31 285 21 312 227 31 285 21 312 227 31 285 21 312 227 31 285 21 312 227 31 285 21 312 227 31 285 21 312 227 31 285 21 312 227 31 285 21 312 228 218 21.8 21.8 21.8 21.8 21.8 21.8		EBL	EBT	EB.	WBL	WBI	WBK	NDL	- QN	NDN	SDL	יחס	ספו
21 312 312 227 31 285 21 0 624 227 0 316 21 0 624 227 0 316 21 0 624 227 0 316 6 4 4 8 8 8 6 7 4 4 4 8 8 8 50 50 50 50 50 30 30 30 583% 167% 417% 417% 242 242 242 33 33 33 33 33 33 33 25 00 25 25 25 25 25 25 25 30 642 167 442 242 242 242 242 30 00 00 00 00 00 00 00 58 10 10 120 120 110 110 110 110 110 110 1	Lane Configurations		44	W_		44	NC.		4	RC.		4	_
21 312 312 227 31 285 21 0 624 227 0 316 Perm pmrpti NA Perm Perm NA Per 7 4 4 8 8 8 6 7 4 4 4 8 8 8 5 6 7 4 4 8 8 8 5 6 7 6 5 0 5 0 5 0 5 0 218 95 228 228 218 218 218 218 95 228 228 218 218 218 218 95 228 228 218 218 218 218 95 20 5 0 30 30 30 218 33 33 33 33 32 32 22 5 0 0 25 5 0 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Traffic Volume (vph)	85	989	262	217	779	7	312	312	227	31	285	69
21 0 624 227 0 316 Perm pm+pt NA Perm Perm NA F F F 6 6 7 4 4 8 8 8 8 6 7 4 4 4 8 8 8 8 8 6 7 7 4 4 4 8 8 8 8 8 6 7 0 200 50.0 30.0 30.0 218 218 218 218 218 218 218 218 218 218	Future Volume (vph)	82	989	262	217	779	21	312	312	227	31	285	Ö
Perm pm+pt NA Perm Perm NA F 6 7 4 8 8 8 6 7 4 4 8 8 50 5.0 5.0 5.0 5.0 5.0 218 9.5 22.8 22.8 21.8 21.8 700 200 5.0 30.0 30.0 30.0 64.2 16.7 44.2 44.2 24.2 24.2 24.2 84.2 16.7 44.2 44.2 24.2 24.2 25.2 <td>Lane Group Flow (vph)</td> <td>0</td> <td>292</td> <td>262</td> <td>0</td> <td>966</td> <td>21</td> <td>0</td> <td>624</td> <td>227</td> <td>0</td> <td>316</td> <td>69</td>	Lane Group Flow (vph)	0	292	262	0	966	21	0	624	227	0	316	69
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Turn Type	Perm	Α	Perm	pm+pt	¥	Perm	pm+pt	¥	Perm	Perm	NA	Perm
6 4 4 4 8 8 8 6 6 7 4 4 4 8 8 8 6 6 7 4 4 4 8 8 8 8 6 6 7 0 4 4 8 8 8 8 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Protected Phases		2		_	9		7	4			∞	
50 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Permitted Phases	2		2	9		9	4		4	∞		-
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 2.18 21.8 21.8 21.8 21.8 21.8 21.8 21.8	Detector Phase	2	2	2	_	9	9	7	4	4	∞	∞	
218 95, 50 50 50 50 50 50 50 50 50 50 50 50 50	Switch Phase												
218 95 228 218 218 218 200 200 200 200 200 200 200 200 200 20	Minimum Initial (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.0
70.0 20.0 50.0 30.0 30.0 30.0 30.8 33.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3	Minimum Split (s)	26.8	26.8	26.8	9.5	21.8	21.8	9.5	22.8	22.8	21.8	21.8	21.8
58.3% 16.7% 41.7% 41.7% 25.0% 25.0% 25.0% 24.2 24.2 24.2 24.2 24.2 24.2 24.2 24.	Total Split (s)	20.0	20.0	20.0	20.0	70.0	70.0	20.0	20.0	20.0	30.0	30.0	30.0
642 16.7 44.2 44.2 24.2 24.2 24.2 23.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3	Total Split (%)	41.7%	41.7%	41.7%	16.7%	58.3%	58.3%	16.7%	41.7%	41.7%	25.0%	25.0%	25.0%
3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3	Maximum Green (s)	44.2	44.2	44.2	16.7	64.2	64.2	16.7	44.2	44.2	24.2	24.2	24.2
2.5 0.0 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5	Yellow Time (s)	4.2	4.2	4.2	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
5.8	All-Red Time (s)	1.6	1.6	1.6	0.0	2.5	2.5	0.0	2.5	2.5	2.5	2.5	2.5
Column C	Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Lead	Total Lost Time (s)		2.8	5.8		5.8	5.8		2.8	5.8		2.8	5.8
3.0 Yes Yes 3.0 3.0 3.0 3.0 3.0 5.0 3.0 3.0 3.0 3.0 3.0 5.0	Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	Yes
C-Min None None None None None None S.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Recall Mode	C-Min	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
11.0 12.0 11.0 11.0 10.0 10.0 10.0 10.0	Walk Time (s)	2.0	5.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0
10	Flash Dont Walk (s)	16.0	16.0	16.0		0.17	0.17		12.0	12.0	11.0	11.0	<u> </u>
0.53	Pedestrian Calls (#/hr)	22	2 2	25.50		10	10		707	207	01	10	- 1
0.03	Act Elict Green (s)					20.0	. 20		5.04	5.04		5.0	40.
0.03 38.1 5.1 76.2 0.0 0.0 386.1 5.1 76.2 0.0 0.0 386.1 5.1 76.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Actuated g/C Katio		0.53	0.53		0.53	0.53		0.38	0.38		0.38	ا ا
0.0 386.1 5.1 76.2 0.0 386.1 5.1 76.2 0.0 386.1 5.1 76.2 0.0 -221.7 0.8 72.6 0.1 #290.3 16.7 #130.1 0.0 63.6 90 0	Vic Kauo		0.00	0.30		0.80	0.03		7.000	0.34		0.95	0.1.
0.0 36.1 76.2 A 284.5 A E E 0.0 -221.7 0.8 72.6 0.1 #290.3 16.7 #130.1 633.6 90.0 774 352 668 33.2 0 0 0 0 0 0 0 0 0.0 36.1 77 0.34 0.95	Control Delay		24.0	7.0		45.8	0.0		380.			7.0/	0.4
A F A F A E E A E E A E E A E E A E E A E E A E E A E E A E E E A E	Queue Delay		0.0	0.00		45.0	0.0		206.4	0.0		76.0	
284.5 63.3 F F 63.3 0.0 ~221.7 0.8 72.6 0.1 #220.3 16.7 #130.1 30.0 90.0 774 352 668 332 0 0 0 0 0 0 0 0 0.03 1.77 0.34 0.95	I Olai Delay		0.42	0.2		9	0.0		. DOC	- d		7.0.Z	ť
0.0	Annroach Delay		19.0			449	=		284.5			63.3	
0.0 ~221.7 0.8 72.6 0.1 #290.3 16.7 #130.1 630.0 90.0 52.6 774 352 668 332 0 0 0 0 0 0 0 0 0.03 1.77 0.34 0.95	Approach LOS		a						ш			ш	
0.03 1.77 0.34 # 0.95	Queue Length 50th (m)		66.1	0.0		110.2	0.0		~221.7	8.0		72.6	0.0
30.0 633.6 52.6 774 362 668 332 0 0 0 0 0 0 0 0 0 0 0 0 0.03 1.77 0.34 0.95	Queue Length 95th (m)		88.3	11.9		#159.6	0.1		#290.3	16.7		#130.1	6.9
30.0 90.0 33.2 774 35.2 668 33.2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Internal Link Dist (m)		185.3			284.2			633.6			52.6	
774 352 668 332 0 0 0 0 0 0 0 0 0 0 0.03 1.77 0.34 0.95	Turn Bay Length (m)			80.0			30.0			90.0			50.0
0 0 0 0 0 0 0 0 0 0 0 0 0.03 1.77 0.34 0.95	Base Capacity (vph)		1130	868		1066	774		352	999		332	594
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Starvation Cap Reductn		0	0		0	0		0	0		0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Spillback Cap Reductn		0	0		0	0		0	0		0	
0.03 1.77 0.34 0.95	Storage Cap Reductn		0			0	0		0	0		0	
Intersection Summary Cycle Length: 120 Activated Cycle Length: 120 Activate Of Cycle Length: 120	Reduced v/c Ratio		0.68	0.30		0.93	0.03		1.77	0.34		0.95	0.12
Cycle Length: 120 Cycle Length	Intersection Summary												
Aduated Oyde Length: 120	Cycle Length: 120												
Office ON (750) Paternand to a home O. EDTI and G.WDTI Other of Oregon	Actuated Cycle Length: 120												
Offset 90 (75%). Referenced to Driage Z.Edit and S.wdit. Start of Green	Office 00 /75/00 Defende	and the selection	F		i								

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CGH Transportation Page 1

2041 IMP Op3 PM Peak Hour Perth Golf Course Lands Lanes, Volumes, Timings 1: Wilson St W/Canadian Tire & HWY 7

Intersection LOS: FICU Level of Service H 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. Control Type: Actuated-Coordinated Maximum v/c Ratio: 1,77 Intersection Signal Delay; 101.0 Intersection Capacity Utilization 124.4% Analysis Period (min) 15

1: Wilson St W/Canadian Tire & HWY 7 Splits and Phases:

80 100 **→** Ø2 (R) **★** Ø6 (R) 100

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Lanes, Volumes, Timings 2: Wilson St W & Sunset Blvd/Harris St S

2041 IMP Op3 PM Peak Hour Perth Golf Course Lands

Control Carbon Ebi Ebi Ebi Well Well Nell Sel Se		1	Ť	-	-	ļ	•	_	۶	→	*	
251 37 267 8 32 316 803 13 702 251 37 267 8 32 316 803 13 702 0 288 267 0 70 316 804 13 702 4 4 4 8 8 5 2 2 1 6 6 4 4 4 4 8 8 8 5 2 2 1 6 6 20.8 20.8 20.8 20.8 118 20.7 100 20.7 2 20.8 20.8 20.8 20.8 118 20.7 100 20.7 2 20.8 32 32 3 22 3 22 3 22 3 3 3 3 3 3 3 3 3	Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	
251 37 267 8 32 316 803 13 702 258 267 8 32 316 803 13 702 2 288 267 0 70 316 804 13 702 2 2 2 2 2 1 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Lane Configurations		₹	NC.		4	K	2	F	*	W_	
251 37 267 8 32 316 803 13 702 9 288 267 0 70 37 8 9 37 702 9 4 4 4 8 8 5 5 2 1 6 6 4 4 4 4 8 8 8 5 5 2 1 6 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 28. 20. 20. 20. 20. 20. 20. 110 80. 110 28. 32. 32. 32. 32. 32. 32. 33 33 33 33 22. 3 22. 3 22. 3 22. 3 22. 3 86 45. 2 6.0 42. 6 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 10 10 10 10 10 10 10 10 10 10 10 10 10 1	Traffic Volume (vph)	251	37	267	∞	35	316	803	13	702	191	
Perm	Future Volume (vph)	251	37	267	∞	35	316	803	13	702	191	
Perm NA Perm NA pm+pt NA Pm+pt NA Pm+pt NA Pm+pt NA Pm-pt A Pm Pm Pm Pm Pm-pt NA NA <th< td=""><td>Lane Group Flow (vph)</td><td>0</td><td>288</td><td>267</td><td>0</td><td>2</td><td>316</td><td>804</td><td>13</td><td>702</td><td>191</td><td></td></th<>	Lane Group Flow (vph)	0	288	267	0	2	316	804	13	702	191	
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Turn Type	Perm	Ν	Perm	Perm	¥	pm+pt	₹	pm+pt	¥	Perm	
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Protected Phases		4			∞	2	2	-	9		
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Permitted Phases	4		4	∞		2		9		9	
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Detector Phase	4	4	4	00	∞	5	2	_	9	9	
50 50 50 50 50 50 50 50 50 50 50 50 50 5	Switch Phase											
20.8 20.8 20.8 11.8 20.7 10.0 20.7 20.8 11.8 1.2 20.7 20.8 11.8 20.7 10.0 20.7 20.8 11.8 20.7 10.0 20.7 20.8 11.8 20.7 10.0 20.7 20.8 11.8 20.7 10.0 20.7 20.8 11.8 20.7 10.0 20.7 20.8 11.8 20.3 22.3 22.3 22.3 22.3 22.3 22.3 22.3	Minimum Initial (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
281 281 281 281 136 509 110 483 4 312% 312% 312% 312% 312% 512% 550% 533 32 323 223 223 223 223 223 223 223 22	Minimum Split (s)	20.8	20.8	20.8	20.8	20.8	11.8	20.7	10.0	20.7	20.7	
312% 312% 312% 312% 312% 151% 566% 122% 537% 53 223 223 223 223 286 452 60 425 6 25 2.5 2.5 2.5 1.7 2.4 1.7 2.4 2.5 2.5 2.5 2.5 1.7 2.4 1.7 2.4 3.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 4.0 10. 10. 10. 10. 10. 10. 10. 10. 10. 1	Total Split (s)	28.1	28.1	28.1	28.1	28.1	13.6	50.9	11.0	48.3	48.3	
223 223 223 223 86 452 60 426 426 426 426 426 426 426 426 426 426	Total Split (%)	31.2%	31.2%	31.2%	31.2%	31.2%	15.1%	26.6%	12	53.7%	53.7%	
3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3	Maximum Green (s)	22.3	22.3	22.3	22.3	22.3	9.8	45.2		45.6	45.6	
2.5 2.5 2.5 2.5 1.7 2.4 1.7 2.4 2.4 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3		3.3	3.3	
10	All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	1.7	2.4		2.4	2.4	
Second S	Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0		0.0	0.0	
Lead Lag Lead Lag Lead Lag Lead Lag Lead Lag Lead Lag Nore	Total Lost Time (s)		2.8	2.8		2.8	2.0	5.7		2.7	2.7	
3.0 3.0 3.0 3.0 3.0 4es Yes Yes Yes Yes Yes Yes Yes Yes Yes None Nore Nore Nore Min	Lead/Lag						Lead	Lag	Lead	Lag	Lag	
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	
None None None None None Min N	Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 10.0 10.	Recall Mode	None	None	None	None	None	None	Mir	None	Mir	Min	
100 100 100 100 100 100 100 100 100 100	Walk Time (s)	2.0	2.0	5.0	2.0	5.0		2.0		2.0	2.0	
10 10 10 10 10 10 10 10 10 10 10 10 10 1	Flash Dont Walk (s)	10.0	10.0	10.0	10.0	10.0		10.0		10.0	10.0	
223 223 223 514 491 440 375 026 026 026 056 056 044 092 047 047 107 080 005 094 092 047 047 107 080 005 094 072 047 107 080 005 091 073 040 040 040 060 060 060 060 074 075 183 919 22.8 6.9 40.2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Pedestrian Calls (#/hr)	10	10	10	10	10		10		10	10	
0.26 0.26 0.26 0.60 0.68 0.62 0.44 0.47 0.17 1.07 0.80 0.05 0.91 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Act Effct Green (s)		22.3	22.3		22.3	51.4	49.1	44.0	37.5	37.5	
0.92 0.47 0.17 1.07 0.88 0.05 0.91 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Actuated g/C Ratio		0.26	0.26		0.26	0.60	0.58	0.52	0.44	0.44	
67.8 7.0 18.3 91.9 22.8 6.9 40.2 67.8 7.0 18.3 91.9 22.8 6.9 40.2 67.8 7.0 18.3 91.9 22.8 6.9 40.2 67.8 7.0 18.3 91.9 22.8 6.9 40.2 67.8 7.0 18.3 91.9 22.8 6.9 40.2 67.8 7.0 18.3 91.9 22.8 6.9 40.2 67.8 7.0 18.3 91.9 22.8 6.9 40.2 67.9 7.0 18.3 6.9 40.2 67.3 67.8 7.0 18.3 67.3 67.8 7.0 18.3 67.3 67.8 7.0 18.3 67.3 67.8 7.0 18.3 67.3 67.8 7.0 18.3 67.3 67.8 7.0 18.3 67.3 67.8 7.0 18.3 67.3 67.3 67.8 7.0 18.3 67.3 67.8 7.0 18.3 67.3 67.8 7.0 18.3 67.3 67.3 67.3 67.3 67.3 67.3 67.3 67	v/c Ratio		0.92	0.47		0.17	1.07	0.80	0.05	0.91	0.26	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Control Delay		67.8	7.0		18.3	91.9	22.8	6.9	40.2	3.1	
67.8 7.0 18.3 91.9 22.8 6.9 40.2 E A B F C A D 38.5 B F C A 3 11.9 48.9 0.5 5.3 -36.0 87.5 0.8 102.8 ##89.3 18.8 15.6 #89.9 #200.1 2.7 #169.7 1 888.9 300.0 283.0 25.0 27.8 63.5 0	Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
86.1 28.5 A B F C A D A 2.3 38.5 B A 42.3 38.5 B A 42.3 38.5 B A 42.3 B B B A 42.3 B B B B B B B B B B B B B B B B B B B	Total Delay		67.8	7.0		18.3	91.9	22.8	6.9	40.2	3.1	
38.5 18.3 42.3 31.9 D	SOT		ш	⋖		മ	ш	O	∢	۵	∢	
88.9 0.5 5.3 -36.0 87.5 0.8 10.2 C 888.9 15.6 #88.9 #200.1 2.7 #169.7 1 888.9 283.0 25.0 716.4 0.33.6 888.9 283.0 25.0 35.0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Approach Delay		38.5			18.3		42.3		31.9		
#99.3 18.8 5.3 -36.0 87.5 0.8 102.8 #99.3 18.8 15.6 #88.9 #200.1 2.7 #169.7 #16	Approach LOS		۵			മ				O		
#88.3 18.8 15.6 #88.9 #200.1 2.7 #169	Queue Length 50th (m)		48.9	0.5		5.3	~36.0	87.5	0.8	102.8	0.0	
888.9 283.0 716.4 633.6 33.6 30.0 2 20.0 2 20.0 3 3.6 573 426 294 1031 272 878 6 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Queue Length 95th (m)		#38.3	18.8		15.6	6.88#	#200.1	2.7	#169.7	10.5	
316 573 426 284 1031 272 878 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Internal Link Dist (m)		888.9			283.0		716.4		633.6		
316 573 426 294 1031 272 878	Turn Bay Length (m)			300.0			25.0		20.0			
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Base Capacity (vph)		316	573		426	294	1031	272	878	804	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Starvation Cap Reductn		0	0		0	0	0	0	0	0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Spillback Cap Reductn		0	0		0	0	0	0	0	0	
ary 0.91 0.47 0.16 1.07 0.78 0.05 0.80 ary oght: 85.1	Storage Cap Reductn		0	0		0	0	0	0	0	0	
Intersection Summary Cycle Length: 90 Actuated Cycle Length: 85.1	Reduced v/c Ratio			0.47		0.16	1.07	0.78	0.05	0.80	0.24	
Oycle Length: 90 Actuated Cycle Length: 85.1 Actuated Cycle 20 Act	Intersection Summary											
Aduated Cycle Length: 85.1 Natural Cycle: Advantal Incommissional	Cycle Length: QU											
Natural Cock of the congress of the constraint o	Oycie Leligili. 30 Actilated Cycle Length: 85 1	_										
Traction of Advisory and Harman adjusted	Natural Cycle: 90											
	Natural Systems of	potentinated										

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2041 IMP Op3 PM Peak Hour Perth Golf Course Lands Lanes, Volumes, Timings 2: Wilson St W & Sunset Blvd/Harris St S Maximum v/c Ratio: 1.07

Intersection LOS: DICU Level of Service F Queue shown is maximum after two cycles. 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles. Volume exceeds capacity, queue is theoretically infinite. Intersection Signal Delay: 37.3 Intersection Capacity Utilization 94.6% Analysis Period (min) 15

₩ 08 ₹04 * 2: Wilson St W & Sunset Blvd/Harris St S 02 Splits and Phases: 05

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š Lanes, Volumes, Timings 4: Wilson St E/Wilson St W & Peter St/Foster

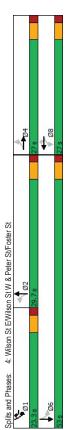
2041 IMP Op3 PM Peak Hour

Perth Golf Course Lands

2.8 10.7 716.4 5.0 16.8 53.0 66.3% 48.2 3.3 1.5 0.0 82 82 ¥ ¥ ¥ ¥ 3.0 Min 5.0 7.0 20 33.7 0.67 0.015 3.7 13.6 5.0 9.8 23.3 29.1% 18.5 3.3 1.5 0.0 4.8 Kes 3.0 None 32.0 0.64 0.75 15.9 0.0 15.9 652 652 652 652 pm+pt 34.1 00 0.73 888 7.3 20.1 5.0 16.8 29.7 37.1% **4** % % **2** ₹ 0.12 Lag Yes 3.0 Min 5.0 7.0 Perm 5.0 16.8 29.7 37.1% 3.3 • 5.0 9.8 29.1% 18.5 3.3 1.5 0.0 4.8 Lead Yes 3.0 None 743 743 743 pm+ov 27.7 0.55 0.67 4.3 0.0 4.3 A 1.7 15.0 1123 0 ₹ 6 8 8 ₹ 5.0 17.3 27.0 33.8% 22.2 3.3 Perm 5.0 17.3 27.0 33.8% 22.2 3.3 1.5 3.0 None 5.0 7.5 24 24 5.0 17.3 27.0 33.8% 22.2 \$ 8 8 5 ₹ 3.3 1.5 0.0 4.8 Natural Cycle: 60 Control Type: Actuated-Uncoordinated 5.0 17.3 27.0 33.8% 22.2 22.2 3.3 1.5 Perm 3.0 None 5.0 7.5 88 80 Actuated Cycle Length: 50 Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m) Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio Lead/Lag
Lead-Lag Optimize?
Vehicle Extension (s)
Recall Mode
Walk Time (s)
Flash Dont Walk (s)
Pedestrian Calls (#hn)
Act Effet Green (s)
Act Effet Green (s)
Act Effet Green (s) Base Capacity (vph) Starvation Cap Reductn -ane Group Flow (vph) Minimum Initial (s)
Minimum Spitt (s)
Total Spitt (s)
Maximum Green (s)
Yellow Time (s)
All-Red Time (s)
Lost Time Adjust (s)
Total Lost Time (s) Lane Configurations Traffic Volume (vph) Future Volume (vph) Turn Type Protected Phases Permitted Phases Control Delay
Queue Delay
Cotal Delay
LOS
Approach Delay
Approach LOS Sycle Length: 80 Detector Phase Switch Phase

2041 IMP Op3 PM Peak Hour Perth Golf Course Lands Lanes, Volumes, Timings 4: Wilson St E/Wilson St W & Peter StFoster St

Intersection LOS: B ICU Level of Service D Maximum v/c Ratio: 0.75 Intersection Signal Delay: 11.8 Intersection Signal Delay: 11.8 Intersection Capacity Utilization 80.5% Analysis Period (min) 15 # . 95th percentile volume exceeds capacity, queue may be longer. A



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Lanes, Volumes, Timings 6: Gore St E/Gore St W & Foster St

2041 IMP Op3 PM Peak Hour Perh Golf Course Lands

	1	1	1	1	ţ	4	•	←	۶	-	*
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations		÷	K.		4	r_	je-	4		4	ĸ
Traffic Volume (vph)	4	102	646	9	163	4	655	167	က	145	29
Future Volume (vph)	4 0	102	946	<u>ත</u>	163	4 5	655	16/	<i>∞</i> ⊂	145	50
Turn Type	Para	2 4	0+0 0+0 0+0	Para	NA AN	Parm 1	tu+mu	S AN	Pera	O AN	Perm
Protected Phases	5	4	2	5	0	5		2	5	9	5
Permitted Phases	4		4	∞		∞	2		9		9
Detector Phase	4	4	2	∞	00	∞	2	2	9	9	9
Switch Phase											
Minimum Initial (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.0
Minimum Split (s)	15.4	15.4	10.0	15.4	15.4	15.4	10.0	17.0	17.0	17.0	17.0
Total Split (s)	23.0	23.0	11.0	23.0	23.0	23.0	11.0	27.0	46.0	46.0	46.0
Total Split (%)	28.8%	28.8%	13.8%	28.8%	28.8%	28.8%	13.8%	71.3%	27.5%	21.5%	27.5%
Maximum Green (s)	18.0	18.0	0.9	18.0	18.0	18.0	0.9	52.0	41.0	41.0	41.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)		2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0
Lead/Lag			Lag				Lag		Lead	Lead	Lead
Lead-Lag Optimize?			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	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	Min	Min
Walk Time (s)	2.0	2.0		2.0	2.0	5.0		2.0	2.0	2.0	5.0
Flash Dont Walk (s)	5.4	5.4		5.4	5.4	5.4		7.0	7.0	7.0	7.0
Pedestrian Calls (#/hr)	ස	೫		೫	8	೫		30	30	30	30
Act Effct Green (s)		9.5	14.0		8.6	8.6	21.0	22.6		9.5	9.5
Actuated g/C Ratio		0.25	0.37		0.26	0.26	0.56	0.60		0.25	0.25
v/c Ratio		0.28	0.70		0.43	0.03	0.94	0.19		0.35	0.07
Control Delay		14.8	2.7		16.7	0.1	40.3	5.9		16.1	0.4
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0:0
Total Delay		14.8	2.7		16.7	0.1	40.3	5.9		16.1	0.4
FOS		Ф	V		В	∢	_	⋖		В	∢
Approach Delay		7.1			15.5			32.5		13.5	
Approach LOS		∢			В			O		В	
Queue Length 50th (m)		6.3	0.0		10.4	0.0	~33.6	5.5		8.4	0.0
Queue Length 95th (m)		16.7	11.3		24.8	0.0	#111.6	15.3		21.0	0.1
Internal Link Dist (m)		110.6			119.1			270.3		108.0	
Turn Bay Length (m)			25.0			8.0					10.0
Base Capacity (vph)		826	917		88	705	992	1683		1674	1271
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		0.14	0.70		0.22	0.02	0.94	0.11		0.09	0.02
Intersection Summary											
Cycle Length: 80											
Actuated Cycle Length: 37.5											
Natural Cycle: 60											
Control Type: Actuated-Uncoordinated	ordinated										

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Lanes, Volumes, Timings 6: Gore St E/Gore St W & Foster St

2041 IMP Op3 PM Peak Hour Perth Golf Course Lands

Intersection LOS: B ICU Level of Service D Maximum v/c Ratio: 0.94 Intersection Signal Delay. 19.4 Intersection Capacity Utilization 78.3% Analysis Period (min) 15

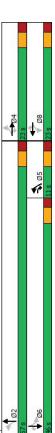
- Volume exceeds capacity, queue is theoretically infinite.

 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: 6: Gore St E/Gore St W & Foster St



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HCM 6th TWSC 9: Christie Lake Rd/Sunset Blyd

2041 IMP Op3 PM Peak Hour Perth Golf Course Lands

Movement EE	EBT	EBR	WBL	WBT	NBL	NBR	C.
Lane Configurations	æ,		K	*	>		
	219	53	250	254	23	195	5
	13	83	220	254	23	195	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0
	Free	Free	Free	Free	Stop	Stop	α.
RT Channelized	•	None	•	None	•	None	· O
Storage Length	٠	•	25	•	0		
Veh in Median Storage, #	0	1	1	0	0		
Grade, %	0	٠	•	0	0	'	
Peak Hour Factor 10	100	100	100	100	100	100	0
cles, %	7	5	2	2	2	2	2
Mvmt Flow 27	219	53	250	254	23	195	5
Major/Minor Major1	J. 1	2	Major2	_	Minor1		
Conflicting Flow All	0	0	248	0	88	234	4
Stage 1		1		1	234		
Stage 2	٠	٠	'	•	754	•	
Critical Hdwy		٠	4.12	•	6.42	6.22	2
Critical Hdwy Stg 1	٠	٠	•	٠	5.42	ľ	
Critical Hdwy Stg 2	1	•	•	•	5.42	'	
Follow-up Hdwy	٠	1	2.218	•	3.518	3.318	8
Pot Cap-1 Maneuver	٠	1	1318	•	274	802	2
Stage 1	٠	٠	•	'	802	'	
Stage 2		•	•	•	465	•	
Platoon blocked, %	٠	٠		٠			
Mov Cap-1 Maneuver	÷	٠	1318	•	222	802	2
Mov Cap-2 Maneuver	٠	٠	٠	٠	222	Ť	
Stage 1	•	•	•	•	802	,	
Stage 2		٠	1	1	377	Ì	
Approach	B		WB		NB		
HCM Control Delay, s	0		4.2		13.7		
HCM LOS					Ф		
Minor Lane/Major Mvmt	Z	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)		630			1318	ľ	
HCM Lane V/C Ratio		0.346	٠	'	0.19	ľ	
HCM Control Delay (s)		13.7	•	•	8.4	ľ	
HCM Lane LOS		В	٠	٠	⋖	'	

2041 IMP Op3 - Modified AM Peak Hour Perth Golf Course Lands Lanes, Volumes, Timings 1: Wilson St W/Canadian Tire & HWY 7

	\	Ť	~	*		,	_	-	L	•	+	7
ane Group	EBL	BH	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	*	*	*	*	‡	*		4	*		₩	*-
raffic Volume (vph)	11	537	297	178	579	56	188	220	140	59	152	39
uture Volume (vph)	11	537	297	178	579	28	188	220	140	59	152	33
ane Group Flow (vph)	11	537	297	178	579	58	0	408	140	0	18	33
urn Iype	Perm	Υ Y	Pem	pm+pt	¥.	Perm	bm+pt	¥.	Perm	Perm	≨	Pem
Protected Phases		2		~	9		7	4			∞	ľ
Permitted Phases	5		7	9		9	4		4	∞		∞
Detector Phase	2	2	2	_	9	9	7	4	4	∞	∞	∞
Switch Phase												
Minimum Initial (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.0
Minimum Split (s)	26.8	26.8	26.8	8.3	21.8	21.8	8.3	22.8	22.8	21.8	21.8	21.8
otal Split (s)	36.0	36.0	36.0	15.0	51.0	51.0	14.0	44.0	44.0	30.0	30.0	30.0
otal Split (%)	37.9%	37.9%	37.9%	15.8%	53.7%	53.7%	14.7%	46.3%	46.3%	31.6%	31.6%	31.6%
Maximum Green (s)	30.2	30.2	30.2	11.7	45.2	45.2	10.7	38.2	38.2	24.2	24.2	24.2
'ellow Time (s)	4.2	4.2	4.2	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.6	1.6	1.6	0.0	2.5	2.5	0.0	2.5	2.5	2.5	2.5	2.5
ost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
otal Lost Time (s)	2.8	2.8	2.8	3.3	2.8	2.8		2.8	2.8		2.8	5.8
-ead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
.ead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	Yes
/ehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Min	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
Valk Time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	5.0
-lash Dont Walk (s)	16.0	16.0	16.0		11.0	11.0		12.0	12.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	20	20	8		9	9		8	50	9	9	9
Act Effct Green (s)	31.2	31.2	31.2	47.4	44.9	44.9		38.5	38.5		38.5	38.5
Actuated g/C Ratio	0.33	0.33	0.33	0.50	0.47	0.47		0.41	0.41		0.41	0.41
//c Ratio	0.31	0.49	0.44	0.44	0.37	0.04		0.77	0.21		0.29	0.06
Control Delay	31.1	28.8	5.6	18.2	17.7	0.1		34.7	3.8		19.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
otal Delay	31.1	28.8	5.6	18.2	17.7	0.1		34.7	3.8		19.5	0.2
SO	O	O	A	Ω	ш	∢		O	⋖		Ω	A
Approach Delay		21.5			17.2			26.8			16.1	
Approach LOS		ပ			m			ပ			m	
Jueue Length 50th (m)	11.1	43.7	0.0	18.6	36.3	0:0		0.09	0.0		20.7	0.0
Queue Length 95th (m)	24.0	29.2	18.2	31.2	48.7	0.0		0.86	10.3		35.8	0.0
ntemal Link Dist (m)		185.3			284.2			633.6			52.6	
urn Bay Length (m)	40.0		80.0	30.0		30.0			90.0			50.0
Base Capacity (vph)	262	1163	693	417	1641	734		222	682		635	648
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	0.29	0.46	0.43	0.43	0.35	0.04		0.73	0.21		0.29	0.06
ntersection Summary												
Vola Langth: 05												
Actuated Cycle Length: 95												
Officet: 0 (0%) Deferenced to phase 2:EBTI and 6:WBTI Start of Green												
7113GL. 0 (0 /0), INCIGIONING	to phase 2:	ERIL an	d 6:WB I I	., Start of	Green							

CGH Transportation Page 1 04-12-2022 JK

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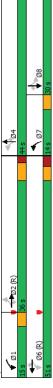
CGH Transportation Page 2

2041 IMP Op3 - Modified AM Peak Hour Perth Golf Course Lands

Lanes, Volumes, Timings 1: Wilson St W/Canadian Tire & HWY 7

Intersection LOS: C ICU Level of Service D Control Type: Actuated-Coordinated Maximum Wc Ratio: 0.77 Intersection Signal Delay. 20.8 Intersection Capacity Utilization 80.0% Analysis Period (min) 15

Splits and Phases: 1: Wilson St W/Canadian Tire & HWY 7



Lanes, Volumes, Timings 2041 IMP Op3 - Modified PM Peak Hour 1: Wilson St W/Canadian Tire & HWY 7 Penth Golf Course Lands

Lange Goup		1	†	1	-	Ļ	1	•	—	•	۶	→	*
F 31 312 312 227 31 285 21 312 312 312 312 312 312 313 315 315	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
21 312 312 227 31 285 21 0 1 227 31 285 21 0 224 227 31 285 21 0 24 227 31 285 21 0 24 227 31 285 25 0 24 227 31 285 26 7 4 4 4 8 8 8 27 106 32.1 32.1 32.1 27 106 32.1 32.1 32.1 27 106 32.1 32.1 32.1 27 106 32.1 32.1 32.1 27 25.3 56.9 56.9 86.9 86.0 27 10.0 32.1 32.1 32.1 28 25.8 52.5 52.5 88. 26.8 26.0 29 10.0 0.0 0.0 20 10.0 0.0 0.0 20 10.0 0.0 0.0 20 10.0 0.0 0.0 20 10.0 0.0 0.0 20 10.0 0.0 0.0 20 10.0 0.0 0.0 20 10.0 0.0 0.0 20	Lane Configurations	K	*	R.	F	*	R.		4	R.		4	R
21 312 312 227 31 285 29 0 644 27 0 316 Ferm purptit NA Perm Perm NB Ferm NB	Traffic Volume (vph)	82	989	262	217	779	21	312	312	227	31	285	69
21 0 624 227 0 316 Perm pm+pt NA Perm Perm NA F F 6 4 4 8 8 8 6 6 7 4 4 4 8 8 8 8 6 6 7 4 4 4 8 8 8 8 6 6 7 30 50 50 50 50 50 50 50 50 50 50 50 50 50	Future Volume (vph)	82	989	262	217	779	21	312	312	227	31	285	69
Ferm pm+pt NA Perm Perm NA F F F F F F F F F F F F F F F F F F	Lane Group Flow (vph)	82	989	262	217	6//	21	0	624	227	0	316	69
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Turn Type	Perm	¥	Perm	pm+pt	Š	Perm	bm+pt	Ϋ́	Perm	Perm	ž	Perm
50 50 50 50 50 50 50 50 50 50 50 50 50 5	Protected Phases Permitted Phases	2	2	2	- 9	9	9	~ 4	4	4	∞	∞	00
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Detector Phase	2	2	2	~	9	9	7	4	4	∞	∞	00
237 10.6 32.1 32.1 32.1 32.1 32.1 32.1 32.1 32.1	Switch Phase												
23.7 10.6 32.1 32.1 32.1 47.5% 25.8% 25.8% 25.5% 25.8% 26.8% 26.8% 26.8% 26.9 26.0 26.0 26.0 26.0 26.0 26.0 26.0 26.0	Minimum Initial (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.0
57.0 30.9 63.0 63.0 63.0 8.7 82.1 82.1 82.1 82.1 82.1 82.1 82.1 82.1	Minimum Split (s)	26.8	26.8	26.8	10.4	23.7	23.7	10.6	32.1	32.1	32.1	32.1	32.1
47.5% 52.5% 52.5% 52.5% 52.5% 52.5% 56.9 56.9 56.9 56.0 56.0 56.0 56.0 56.0 56.0 56.0 56.0	Total Split (s)	37.0	37.0	37.0	20.0	22.0	57.0	30.9	63.0	63.0	32.1	32.1	32.1
512 25.3 50.9 50.9 260 260 260 260 260 260 260 260 260 260	Total Split (%)	30.8%	30.8%	30.8%	16.7%	47.5%	47.5%	25.8%	52.5%	52.5%	26.8%	26.8%	26.8%
42 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7	Maximum Green (s)	31.2	31.2	31.2	14.6	51.2	51.2	25.3	56.9	56.9	76.0	76.0	26.0
1.6 1.9 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4	Yellow Time (s)	4.2	4.2	4.2	4.2	4.2	4.2	3.7	3.7	3.7	3.7	3.7	3.7
5.8 6.1 6.1 1.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	All-Red Time (s)	9.1	9.6	9.1	1.2	9.1	9. 6	0.1	2.4	2.4	2.4	2.4	2.4
C-Min C-Min C-Min Mone	Lost I Ime Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
1.08	l otal Lost IIme (s)	2.0 2.0	ο.	ο. Σ	5.4	2.0	ο.α		0	0.	-	o _	.0
3	Lead/Lag	rag	Lag	Lag	Lead			Lead			Lag	Lag	Fag
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	Yes
0.1 Min None North Nort	Vehicle Extension (s)	3.0	3.0	3.0	1	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
120 210 210 210 210 489 489 592 592 592 592 592 692 692 6049 6049 6049 6049 6049 6049 6049 6049	Mell Time (a)	JIM G						None	None	None	None	None	None
120 210 210 100 100 100 100 100 100 100	Walk IIIIe (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
48.9 59.2 59.2 69.0 64.0 60.0 60.0 60.0 60.0 60.0 60.0 60	Plash Don Walk (s)	0.21	0.21	0.21		10.0	10.7		0.12	0.12	0.12	0.12	40
40.9 0.49 0.49 0.49 0.49 0.49 0.49 0.49	recessing Calls (#fill)	700	02 20	02 00		2 0	2 0		02 0	02 0	2	2 6	2 6
0.03 1.20 0.39 0.45 0.1 137.0 3.2 23.4 0.0 0.0 0.0 0.0 0.1 137.0 3.2 23.4 0.1 137.0 3.2 23.4 0.0 ~183.1 0.0 0.0 0.0 ~183.1 0.0 49.4 0.0 ~283.6 30.0 643 0.0 0 0 0 0 0.0 0 0 0 0 0.0 0 0 0 0 0.0 0 0 0	Act Effet Green (s)	0.25	0.25	0.25	0.74	9.04	0.04		23.50	23.50		23.50	2.80
0.1 137.0 3.2 23.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	v/c Ratio	0.54	0.23	0.20	0.82	0.58	0 0		1 20	0.78		0.46	0.00
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Control Delay	53.7	53.5	7.5	49.7	29.2	0.1		137.0	3.2		23.4	0.3
0.1 (37.0 3.2 23.4 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4	One in Delay	0.00	0.00	0.0	0	000	0		0.0	900		000	0.0
A 1013 A C C C C C C C C C C C C C C C C C C	Total Delay	53.7	73.0	7.0	49.7	20.00	0.0		137.0	3.0		23.4	0.0
1013 19.3 F F B B B C C C C C C C C C C C C C C C	l Os	3	2	2	2	4 C	5		2	4. ⊲		. C	5. 4
0.0 ~\text{18.1} 0.0 494 0.0 \text{#251.7} 13.0 494 0.0 \text{#251.7} 13.0 74.6 30.0 633.6 52.6 643 520 818 684 0	Approach Delay	1	418	:	1	33.0	:		1013	:		19.3	
0.0 ~183.1 0.0 49.4 0.0 #251.7 13.0 74.6 633.6 52.6 30.0 90.0 52.6 643 520 818 684 0 0 0 0 0 0 0 0 0.03 1.20 0.28 0.46	Approach LOS					O			<u>L</u>			<u>a</u>	
0.0 #251.7 13.0 74.6 0.33.6 53.6 52.6 0.00 0 0 0 0.03 1.20 0.28 0.46	Queue Length 50th (m)	16.5	79.6	0.0	32.9	71.1	0.0		~183.1	0.0		49.4	0.0
30.0 633.6 52.6 643 520 818 664 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.03 1.20 0.28 0.46	Queue Length 95th (m)	34.0	101.8	20.4	#67.4	89.7	0.0		#251.7	13.0		74.6	9.0
30.0 90.0 684 684 684 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Internal Link Dist (m)		185.3			284.2			633.6			52.6	
643 520 818 684 0 0 0 0 0 0 0 0 0.03 1.20 0.28 0.46	Turn Bay Length (m)	40.0		80.0	30.0		30.0			0.06			50.0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Base Capacity (vph)	160	862	228	272	1414	643		520	818		684	176
0 0 0 0 0 0 0 0 0.03 1.20 0.28 0.46	Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
0.03 1.20 0.28 0.46	Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Intersection Summary Cycle Length: 120 Actuated Cycle Length: 120 Offset 20 (75%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green Natural Cycle, 20 (75%).	Reduced v/c Ratio	0.51	0.80	0.47	0.80		0.03		1.20	0.28		0.46	0.09
Cyde Lengtr: 120 Actuated Cycle Lengtr: 120 Offset: 90 (75%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green Mannari Cycle, on	Intersection Summary												
Actuated Cycle Length: 120 Actuated Cycle Length: 120 Actuated Cycle Length: 120 Netwise Toward Comment of Comment of Comment of Comment Cycle Cycle Comment Cycle Cycl	Cvde Lenath: 120												
Offset: 90 (75%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green Mannar County on	Actuated Cycle Length: 120												
Natural On	Offset: 90 (75%), Reference	ed to phase	2:EBTL	and 6:WB	TL, Start	of Green							
	Natural Cycle: 90												

04-12-2022 CGH Transportation JK

Lanes, Volumes, Timings 1: Wilson St W/Canadian Tire & HWY 7

2041 IMP Op3 - Modified PM Peak Hour Perth Golf Course Lands

Control Type: Actualed-Coordinated
Maximum vic Ratio: 1.20
Intersection Signal Delay: 51.8
Intersection Capacity Utilization 106.5%
Intersection Capacity, Utilization 106.5%
Analysis Perio (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.

04-12-2022 CGH Transportation JK

2041 IMP Op3 - Modified PM Peak Hour Perth Golf Course Lands Lanes, Volumes, Timings 2: Wilson St W & Sunset Blvd/Harris St S

37 267 8 32 316 803 13 388 288 267 0 70 316 804 13 388 2 316 804 13 4 4 8 8 5 2 1 4 4 8 8 5 2 1 4 4 8 8 5 2 1 4 5 2 4 4 8 8 5 2 1 4 5 2 4 4 8 8 5 2 1 4 5 2 4 4 8 8 5 2 1 4 5 2 4 4 8 8 5 2 1 4 5 2 4 4 8 8 5 2 1 4 5 2 4 4 8 8 5 2 1 4 5 2 4 4 8 8 5 2 1 4 5 2 4 4 8 8 5 2 1 4 5 2 4 4 5 4 5 4 5 4 5 4 5 4 5 4 5 4 5	/ 🗐	† = *	► A B	WBL	, MBT	W M	— NBT ←	≯ BS ►	→ SBT	* SB *
288 267 0 316 804 13 702 A Perm Perm NA print NA print NA Print 4 4 8 8 5 2 6 6 50 5.0 5.0 5.0 5.0 5.0 5.0 5.0 20.8 2.0 5.0 5.0 5.0 5.0 5.0 5.0 31.0% 31.0% 31.0% 31.0% 31.0 31.0 30.0 20.7 21.0% 31.0% 31.0% 31.0 31.0 30.0 20.0 10.0 20.7 22.0 22.5 25.2 13.0 53.3 3.3	251 251		267	∞ ∞	32 33	316	803	£ £	702	191 194
4 4 8 5 2 1 6 4 4 8 8 5 2 1 6 4 4 8 8 5 2 1 6 20 50 50 50 50 50 50 50 50 310 310 310 310 310 310 310 510 510 510 252 252 252 252 33 <	Perm		267 Perm	Perm	0 N	316 pm+pt	804 NA	13 pm+pt	702 NA	191 Perm
4 4 8 8 5 6	ľ		ŀ		∞		2	<u>_</u> ~ 0	9	
50 50<	4 4		4 4	∞ œ	00	27 12	2	9 -	ç	သ ဇ
50 50<				•	•	•	•		•	•
20.8 20.8 20.8 118 20.7 100 20.7 31.0 31.0 31.0 31.0 31.0 31.0 31.0 31.0	5.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
3.10 3.10 3.10 3.10 18.00 58.0 10.0 51.0 51.0 52.2 25.2 25.2 25.2 13.0 53.0 10.0 51.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	20.8		20.8	20.8	20.8	11.8	20.7	10.0	20.7	20.7
25.2 25.2 25.2 13.0 53.3 53.0 45.3 25 2.5 2.5 1.7 24 17 24 26 2.5 2.5 1.7 24 1.7 24 26 2.5 1.7 2.4 1.7 24 1.7 24 2.6 2.5 2.5 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.7 2.4 1.8 1.6 5.7 2.0 0.0 <	31.0%	ന		31.0%	31.0%	18.0%	59.0% 59.0%	10.0%	51.0%	51.0%
2.5 2.5 2.5 2.5 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3	25.2			25.2	25.2	13.0	53.3	2.0	45.3	45.3
2.5 2.5 2.5 2.5 2.7 2.4 2.4 2.4 2.4 2.4 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5	c			3.33 1.33	y. y.					c
5.8 5.8 5.8 5.0 5.7 5.0 <td>2.3</td> <td></td> <td></td> <td>C.2</td> <td>0.0</td> <td>- 0</td> <td>4.7</td> <td>- 0</td> <td>4.0</td> <td>4. 0</td>	2.3			C.2	0.0	- 0	4.7	- 0	4.0	4. 0
Color Colo		20.00			2. 62	20.0	2.7	20.00	2. 7.	2.0
3.0 3.0 3.0 3.0 4 Ves Yes Yes Yes Yes None None None None None None Min Non						Lead	Lad	Lead	Lag	Lag
None						Yes	Yes	Yes	Yes	Yes
None None None None Min None Min 100 100 50 50 50 50 50 50 50 50 50 50 50 50 50 50 50 100 <t< td=""><td>3.0</td><td></td><td>3.0</td><td>3.0</td><td>3.0</td><td>3.0</td><td>3.0</td><td>3.0</td><td>3.0</td><td>3.0</td></t<>	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 10.0 <td>None</td> <td>Ž</td> <td>None</td> <td>None</td> <td>None</td> <td>None</td> <td>Min</td> <td>None</td> <td>Min</td> <td>Min</td>	None	Ž	None	None	None	None	Min	None	Min	Min
100 100 100 100 100 100 100 100 100 100	2.0		2.0	2.0	2.0		20.0		20.0	2.0
24.0 24.0 24.0 60.0 57.4 46.9 41.1 0.25 0.25 0.25 0.63 0.69 0.49 0.43 0.91 0.48 0.77 0.02 0.03 0.04 0.43 0.84 7.0 20.0 53.3 21.0 7.8 45.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 38.9 20.0 53.3 21.0 7.8 45.8 E A B D C A D 38.9 20.0 53.3 21.0 7.8 45.8 B D C A D D D D 38.9 20.0 53.6 96.7 0.8 D <t< td=""><td>9 6</td><td></td><td>10.0</td><td>10.0</td><td>10.0</td><td></td><td>0.0</td><td></td><td>0.0</td><td>10.0</td></t<>	9 6		10.0	10.0	10.0		0.0		0.0	10.0
0.25 0.25 0.25 0.63 0.60 0.49 0.43 0.91 0.48 0.17 0.92 0.76 0.05 0.93 0.70 0.00 0.00 0.00 0.00 0.00 0.00 0.0		24.0	24.0		24.0	0.09	57.4	46.9	41.1	41.1
0.91 0.48 0.17 0.92 0.76 0.05 0.93 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		0.25	0.25		0.25	0.63	0.60	0.49	0.43	0.43
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		0.91	0.48		0.17	0.92	0.76	0.05	0.93	0.27
684 70 200 00 00 00 00 00 00 00 00 00 00 00 0		68.4	0.7		20.0	53.3	21.0	8. 6	82.8	3.5
88.9 20.0 30.1 36.3 40.0 5.0 4.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5		0.0	0.0		20.0	53.3	0.0	0.0	45.8	3.5
38.9 20.0 30.1 36.3 2		ш	<		B B		O	<		₹ 4
D B C D 54.3 0.0 6.0 36.2 96.7 0.8 10.9 #102.0 18.9 16.9 #87.9 #70.9 #10.9 #10.9 888.9 283.0 16.9 #87.9 #70.4 633.6 #10.7 888.9 283.0 285.0 776.4 633.6 #10.7 633.6 33.7 580 4.2 34.2 10.9 10.0 0		38.9			20.0		30.1		36.3	
54.3 0.0 6.0 36.2 96.7 0.8 120.9 #102.0 18.9 16.9 #87.9 #207.2 2.9 #191.7 888.9 300.0 283.0 716.4 20.0 833.6 337 580 432 342 1080 270 840 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.85 0.46 0.16 0.92 0.74 0.05 0.84 (8		٥			В		O		Ω	
888.9 283.0 716.4 633.6 23.6 23.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25		54.3	0.0		6.0	36.2	96.7	0.8	120.9	0.0
337 580 432 25.0 20.0 0.85 0.46 0.16 0.92 0.74 0.05 0.84		888.9			283.0		716.4		633.6	
337 580 432 342 1080 270 840 0.85 0.46 0.16 0.92 0.74 0.05 0.84			300.0			25.0		20.0		
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		337	280		432	342	1080	270	840	775
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0	0		0	0	0	0	0	0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.84 0.25 0.74 0.05 0.84 0.2		0	0		0	0	0	0	0	0
0.85 0.46 0.16 0.92 0.74 0.05 0.84 0.		0	0			0		0		
		0.85	0.46			0.92	0.74	0.05		0.25
	Valual Cycle: 90									

04-12-2022 JK

Lanes, Volumes, Timings 2: Wilson St W & Sunset Blvd/Harris St S

2041 IMP Op3 - Modified PM Peak Hour Perth Golf Course Lands

Intersection LOS: C ICU Level of Service F

Maximum v/c Ratio: 0.93
Intersection Signal Delay: 33.8
Intersection Signal Delay: 33.8
Intersection Capacity Utilization 94.6%
Analysis Period (min 1)
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

\$ D80 **₽**04 Splits and Phases: 2: Wilson St W & Sunset Blvd/Harris St S **№** Ø2

CGH Transportation Page 4 04-12-2022 JK

Appendix C

Synchro Intersection Worksheets – Full Build-Out 2041 Future Total Conditions



Lanes, Volumes, Timings 2041 Future TotalPM Peak Hour 1: Wilson St W/Canadian Tire & HWY 7

	`	Ť	~	*		,		_	Ĺ	ļ.	+	r
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	je.	*	¥C.	*	*	¥c.		4	¥C.		4	¥.
Traffic Volume (vph)	11	537	299	182	579	56	193	220	150	53	152	39
Future Volume (vph)	77	537	299	182	579	56	193	220	150	59	152	39
Lane Group Flow (vph)		537	299	182	226	26	0	413	120	0	181	39
Turn Type	Pem	Υ Y	Perm	bm+pt	¥,	Perm	bm+pt	Š.	Perm	Perm	≨ '	Perm
Protected Phases Permitted Phases	2	2	2	- 9	9	9	∼ 4	4	4	œ	∞	00
Detector Phase	2	2	2	~	9	9	7	4	4	∞	∞	00
Switch Phase												
Minimum Initial (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.0
Minimum Split (s)	22.8	22.8	22.8	10.4	22.8	22.8	10.6	32.1	32.1	32.1	32.1	32.1
Total Split (s)	36.0	36.0	36.0	15.0	21.0	21.0	11.0	44.0	44.0	33.0	33.0	33.0
Total Split (%)	37.9%	37.9%	37.9%	15.8%	53.7%	53.7%	11.6%	46.3%	46.3%	34.7%	34.7%	34.7%
Maximum Green (s)	30.2	30.2	30.2	9.6	45.2	45.2	5.4	37.9	37.9	26.9	26.9	26.9
Yellow Time (s)	4.2	4.2	4.2	4.2	4.2	4.2	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	1.6	1.6	1.6	1.2	1.6	1.6	1.9	2.4	2.4	2.4	2.4	2.4
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)	2.8	2.8	2.8	5.4	2.8	2.8		6.1	6.1		6.1	6.1
Lead/Lag	Гад	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	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	3.0	3.0
Recall Mode	C-Min	O-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
Walk Time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0
Flash Dont Walk (s)	12.0	12.0	12.0		12.0	12.0		21.0	21.0	21.0	21.0	21.0
Pedestrian Calls (#/hr)	8	8	8		9	9		50	50	9	9	9
Act Effct Green (s)	27.4	27.4	27.4	42.7	42.3	42.3		40.8	40.8		40.8	40.8
Actuated g/C Ratio	0.29	0.29	0.29	0.45	0.45	0.45		0.43	0.43		0.43	0.43
v/c Ratio	0.36	0.56	0.48	0.54	0.39	0.04		0.72	0.21		0.27	0.05
Control Delay	34.1	32.2	6.1	23.4	19.2	0.1		30.8	3.7		18.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	34.1	32.2	6.1	23.4	19.2	0.1		30.8	3.7		18.3	0.2
SOT	O	O	∢	O	В	V		O	∢		В	V
Approach Delay		23.8			19.5			23.6			12.1	
Approach LOS		O			മ			ပ			മ	
Queue Length 50th (m)	12.2	48.1	0.0	22.1	40.2	0.0		54.8	0.0		18.7	0.0
Queue Length 95th (m)	24.0	59.5	18.2	33.5	48.7	0.0		99.2	10.7		36.0	0.0
Internal Link Dist (m)		185.3			284.2			633.6			97.79	
Turn Bay Length (m)	40.0		80.0	30.0		30.0			90.0			20.0
Base Capacity (vph)	247	1096	999	341	1605	735		284	712		673	713
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	0.31	0.49	0.45	0.53	0.36	0.04		0.71	0.21		0.27	0.05
Intersection Summary												
Cycle Length: 95												
Actuated Cycle Length: 95												
Offset 0.0%) Referenced to phase 2: FBTL and 6:WBTL Start of Green	to shoop	HOL	TOWN'S F									
000000000000000000000000000000000000000	to pridate 2.	IDIL all	1 6:WB11	L, Start or	Green							

06-12-2024 JK

Lanes, Volumes, Timings 1: Wilson St W/Canadian Tire & HWY 7

ngs 2041 Future TotalPM Peak Hour lian Tire & HWY 7 Perth Golf Course Lands

Control Type: Actuated-Coordinated
Maximum vib Ratio: 0.72
Intersection Signal Delay: 21.6
Intersection Capacity Utilization 82.7%
Analysis Period (min) 15

Splits and Phases: 1: Wilson St W/Canadian Tire & HWY 7



06-12-2024 CGH Transportation JK

2041 Future TotalPM Peak Hour Perth Golf Course Lands Lanes, Volumes, Timings 2: Wilson St W & Sunset Blvd/Harris St S

Traffic Volume (yel) 204 4 7 7 7 8 50 213 454 7 7 535 152 Franch Volume (yel) 205 21 357 0 8 50 213 454 7 535 152 Franch Volume (yel) 206 21 357 0 8 50 213 454 7 535 152 Franch Volume (yel) 207 21 357 0 8 50 213 454 7 535 152 Franch Volume (yel) 208 208 208 208 208 208 208 208 208 208	Lane Group Lane Configurations Traffic Volume (vph) Future Volume (vph) Lane Group Flow (vph)	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	
204 111 387 8 50 213 454 7 535 20 213 499 17 52 20 213 499 17 52 20 213 499 17 52 20 213 499 17 52 20 213 41 51 24 64 22 20 214 61 2	ane Configurations raffic Volume (vph) uture Volume (vph) ane Group Flow (vph)											
204 11 367 8 50 213 454 7 535 204 11 367 8 50 213 454 7 535 204 11 367 8 50 213 454 7 535 204 214 387 8 50 213 454 7 535 204 215 387 8 50 213 454 7 535 204 215 387 8 50 213 454 7 535 204 215 387 8 5 213 454 7 535 204 215 215 215 215 215 215 215 215 215 215	raffic Volume (vph) uture Volume (vph) ane Group Flow (vph)		4	*		4	*	÷z	F	*	¥C	
204 11 387 8 50 213 459 7 555 0 215 367 0 69 213 459 7 555 0 216 367 0 69 213 459 7 555 0 216 368 0 69 213 459 7 555 0 216 368 0 69 213 459 7 555 0 216 368 280 280 28 28 28 28 28 28 28 28 28 28 28 28 28	uture Volume (vph) ane Group Flow (vph)	204	7	367	∞	20	213	454	7	535	152	
Perm NA Perm Perm NA purpt NA purpt NA Perm A	ane Group Flow (vph)	204	Ξ	367	œ	20	213	454	7	535	152	
Ferm NA Perm Perm NA pm+pt NA pm+pt NA PF		0	215	367	0	69	213	429	7	535	152	
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	urn Type	Perm	Ā,	Perm	Perm	¥°	pm+pt	Υ Y	bm+pt	¥ °	Perm	
4 4 4 8 8 5 2 1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	rotected Phases		4			∞	2	2	_	9		
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	ermitted Phases	4		4	∞		2		9		9	
260 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.	etector Phase	4	4	4	∞	∞	2	2	-	9	9	
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	witch Phase											
20.8 20.8 20.8 20.8 95 20.7 95 20.7 32.5% 22.5% 22.5% 22.5% 10.2 44.5 95. 42.0 20.2 20.2 20.2 7.5 38.8 5.0 36.3 5.2 20.2 20.2 20.2 20.2 7.5 38.8 5.0 36.3 5.2 20.2 20.2 20.2 20.2 7.5 38.8 5.0 36.3 5.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3	inimum Initial (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
26.0 26.0 26.0 12.0 44.5 95 42.0 2.5.6 12.0 44.5 95 42.0 2.5.6 12.0 2.6 12.0 5.6 10.0 2.6 10.0 2.4 2.5 2.5 2.5 10.0 2.4 10.0 2.4 2.4 2.2 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5	inimum Split (s)	20.8	20.8	20.8	20.8	20.8	9.5	20.7	9.5	20.7	20.7	
32.5% 32.5% 32.5% 15.0% 55.6% 119% 52.5% 55.7 5.2 38.8 5.0 38.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.				26.0	26.0	26.0	12.0	44.5	9.5	45.0	45.0	
202 202 202 202 75 388 50 363 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3				32.5%	32.5%	32.5%	15.0%	25.6%	11.9%	52.5%	52.5%	
3.3 3.3 3.3 3.3 3.3 3.3 3.5 3.3 3.5 3.3 3.5 3.3 3.5 3.3 3.5 3.3 3.3	aximum Green (s)	20.2	20.2	20.2	20.2	20.2	7.5	38.8	2.0	36.3	36.3	
25 25 25 25 10 24 1.0 24 58 58 58 58 58 58 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.5	3.3	3.5	3.3	3.3	
10	I-Red Time (s)	2.5	2.5	2.5	2.5	2.5	1.0	2.4	1.0	2.4	2.4	
Section	ost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Lead Lag	otal Lost Time (s)		2.8	2.8		2.8	4.5	2.2	4.5	2.5	2.5	
3.0 3.0 3.0 3.0 3.0 Yes	ead/Lag						Lead	Lag	Lead	Lag	Lag	
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	ad-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	
None None None None None Nin None Nin	shicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	ecall Mode	None	None	None	None	None	None	Min	None	Min	Min	
100 100 100 100 100 100 100 100 100 100	alk Time (s)	2.0	2.0	2.0	2.0	2.0		5.0		5.0	2.0	
10 10 10 10 10 10 10 10 10 10 10 10 10 1	ash Dont Walk (s)	10.0	10.0	10.0	10.0	10.0		10.0		10.0	10.0	
16.3 16.3 16.3 186 38.1 31.7 25.3 16.3 8 6.0 5.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0	edestrian Calls (#/hr)	9	9	9	10	9		9		10	10	
0.25 0.25 0.25 0.59 0.55 0.48 0.38 0.42 4 0.48 0.38 0.42 4 0.48 0.48 0.48 0.48 0.48 0.48 0.48 0.	ct Effct Green (s)		16.3	16.3		16.3	38.6	36.1	31.7	25.3	25.3	
0.74 0.62 0.17 0.54 0.48 0.01 0.80 0.00 0.00 0.00 0.00 0.00 0.0	ctuated g/C Ratio		0.25	0.25		0.25	0.59	0.55	0.48	0.38	0.38	
42.4 9.8 19.9 12.1 12.4 6.4 28.2 20.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	c Ratio		0.74	0.62		0.17	0.54	0.48	0.01	0.80	0.24	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	ontrol Delay		42.4	8.6		19.9	12.1	12.4	6.4	28.2	3.6	
42.4 9.8 19.9 12.1 12.4 6.4 28.2 21.8 21.8 21.8 21.8 21.8 21.8 21.8	ueue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
218	otal Delay		42.4	8.6		19.9	12.1	12.4	6.4	28.2	3.6	
21.8 19.9 12.3 22.6 22.0 24.7 4.0 5.7 11.7 31.3 88.3 22.6 24.7 4.0 5.7 11.7 31.3 88.3 22.6 88.9 285.8 689.7 22.0 72.5 1.7 95.5 88.9 286.8 20.0 72.5 1.7 95.5 89.3 20.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	SC		_	⋖		ш	ш	В	∢	O	∢	
C B B B C C C C C C C C C C C C C C C C	oproach Delay		21.8			19.9		12.3		22.6		
#614 283 166 220 725 17 965 83 883 8889 3000 2858 6957 6336 836 900 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	oproach LOS		ပ			ш		ш		ပ		
#614 28.3 166 22.0 72.5 1.7 95.5 888.9 286.8 686.7 20.0 33.6 83.6 898.9 266.8 686.7 20.0 37.0 67.1 67.1 67.1 67.1 67.1 67.1 67.1 67.1	ueue Length 50th (m)		24.7	4.0		2.7	11.7	31.3	0.3	58.3	0.0	
888.9 285.8 658.7 633.6 33.6 33.0 285.8 658.7 633.6 33.6 33.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2	ueue Length 95th (m)		#61.4	28.3		16.6	22.0	72.5	1.7	95.5	9.5	
3000 250 200 300 300 300 300 300 300 300 300 30	temal Link Dist (m)		888.9			285.8		658.7		633.6		
371 671 519 397 1085 476 995 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	urn Bay Length (m)			300.0			25.0		20.0			
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ase Capacity (vph)		371	671		519	397	1085	476	962	872	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tarvation Cap Reductn		0	0		0	0	0	0	0	0	
0.58 0.55 0.13 0.54 0.42 0.01 0.54 0.1 (65.9	oillback Cap Reductn		0	0		0	0	0	0	0	0	
0.58 0.55 0.13 0.54 0.42 0.01 0.54 0.15 0.54 0.42 0.01 0.54 0.01 0.54 0.01 0.55 0.01 0.54 0.01 0.55 0.01 0.01	torage Cap Reductn		0	0		0	0	0	0	0	0	
tersection Summary ycle Length: 80 stuated Cycle Length: 65.9 stuated Cycle Length: 165.9	educed v/c Ratio								0.01			
ycle Length: 80 ctuated Cyde Length: 65.9 ctuated Cyde Cyde Cyde Cyde Cyde Cyde Cyde Cy	tersection Summary											
stuated Cycle Length: 65.9 atural Cycle: 60.7 and Cycle: 60.7	vole Length: 80											
atural Cycle: 60 atural Cycle: 60 anna Turan Antanda I Innonvalinated	stuated Cycle Length: 65.9											
annual of your on Anthony of Honorardin at 2d	atiral Cycle: 60											
	antal Cyons. So	potoniba										

06-12-2024 JK

Lanes, Volumes, Timings 2: Wilson St W & Sunset Blvd/Harris St S

2041 Future TotalPM Peak Hour Perh Golf Course Lands

Intersection LOS: B ICU Level of Service D Maximum v/c Ratio: 0.80 Intersection Signal Delay: 18.8 Intersection Signal Delay: 18.8 Intersection Capacity Utilization 75.7% ICUI Analysis Period (min) 15 # 95th per cardile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

₩ 80 * Splits and Phases: 2: Wilson St W & Sunset Blvd/Harris St S ₩ ₩

CGH Transportation Page 4 06-12-2024 JK

2041 Future TotalPM Peak Hour Perth Golf Course Lands Lanes, Volumes, Timings 4: Wilson St E/Wilson St W & Peter St/Foster St

						-	-			
ane Group	EBL	E	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
ane Configurations		4		4	*		4	*	2,	
raffic Volume (vph)	92	62	7	47	444	4	8	627	22	
Future Volume (vph)	92	79	7	47	444	4	93	627	22	
ane Group Flow (vph)	0	148	0	72	444	0	4	627	146	
urn Type	Perm	Ž.	Perm	¥.	vo+md	Perm	ž	bm+pt	Ϋ́	
Protected Phases		4	,	∞	- (•	2	— (9	
Permitted Phases	4	١	∞ (•	∞ ·	2 0	•	· Q:	•	
Detector Phase	4	4	∞	∞	_	2	2	_	9	
Switch Phase	C	C	C	L	c L	c	L	C	r.	
Minimum Initial (s)	0.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	
Minimum Split (s)	17.3	17.3	17.3	17.3	ω. Θ.	16.8	16.8	ο Θ.	16.8	
otal Split (s)	17.3	17.3	17.3	17.3	16.0	46.7	46.7	16.0	62.7	
otal Split (%)	21.6%	21.6%	21.6%	21.6%	20.0%	58.4%	58.4%	20.0%	78.4%	
Maximum Green (s)	12.5	12.5	12.5	12.5	11.2	41.9	41.9	11.2	6.73	
'ellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	7.5	1.5	1.5	
ost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	
otal Lost Time (s)		4.8		4.8	4.8		4.8	4.8	4.8	
-ead/Lag					Lead	Lag	Lag	Lead		
ead-Lag Optimize?					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	
Recall Mode	None	None	None	None	None	Min	Min	None	Min	
Valk Time (s)	2.0	2.0	2.0	5.0		5.0	5.0		5.0	
-lash Dont Walk (s)	7.5	7.5	7.5	7.5		7.0	7.0		7.0	
Pedestrian Calls (#/hr)	8	8	8	8		8	8		20	
Act Effct Green (s)		10.0		9.5	19.6		7.3	24.1	25.5	
Actuated g/C Ratio		0.25		0.23	0.48		0.18	09:0	0.63	
//c Ratio		0.43		0.14	0.48		0.15	0.79	0.15	
Control Delay		18.9		14.6	5.6		14.2	19.3	3.1	
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	
otal Delay		18.9		14.6	2.6		14.2	19.3	 -	
SO		Ω		В	∢		В	ш	V	
Approach Delay		18.9		3.9			14.3		16.2	
Approach LOS		œ		⋖			В		œ	
Queue Length 50th (m)		9.0			0.0		2.2	29.1	1.7	
Queue Length 95th (m)		23.9		10.2	8.5		8.2	#101.5	9.7	
nternal Link Dist (m)		494.3		110.6			117.1		33.7	
urn Bay Length (m)					15.0					
Base Capacity (vph)		426		230	923		1519	792	1504	
Starvation Cap Reductn		0		0	0		0	0	0	
Spillback Cap Reductn		0		0	0		0	0	0	
Storage Cap Reductn		0		0	0		0	0	0	
Reduced v/c Ratio		0.32		0.10	0.48		0.03	0.79	0.10	
ntersection Summary										
Cycle Length: 80										
Actuated Cycle Length: 40.5	20									
Natural Cycle: 60										
Control Type: Actuated-Uncoordinated	coordinated									

Lanes, Volumes, Timings
4: Wilson St E/Wilson St W & Peter St/Foster St
Maximum v/6 Ratio: 0.79

2041 Future TotalPM Peak Hour Perth Golf Course Lands

							4 04	17.3 s	₩ 08	12.0.
Intersection LOS: B	ICU Level of Service C		may be longer.		Dotor Of Englan Of	। ବାହା ପଥା ପଥାବା ପ				
Delay: 12.3	ntersection Capacity Utilization 66.5%	n) 15	95th percentile volume exceeds capacity, queue may be longer.	Queue shown is maximum after two cycles.	Colife and Dhasse: 4: Wilson & EMilson & W. & Datar & Erstar &	4. WIISON OF E/WIISON OF W & I	★ 1 Ø2	46.7 s		
Intersection Signal Delay: 12.3	Intersection Capaci	Analysis Period (min) 15	# 95th percentile	Queue shown is	Colife and Dhases	opilis and Hases.	2 × 10	16 s	90	27.72

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2041 Future TotalPM Peak Hour Perth Golf Course Lands Lanes, Volumes, Timings 6: Gore St E/Gore St W & Foster St

Land Color Lan	Lane Group												
13 178 503 16 59 10 420 160 3 127 13 178 503 16 59 10 420 160 3 127 13 178 503 16 59 10 420 176 0 130 4		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
13 178 503 16 59 10 420 160 3 127 13 178 503 0 16 59 10 420 160 3 127 0 0 191 503 0 75 10 420 160 3 127 0 0 191 503 0 75 10 420 176 0 3 127 4 4 5 8 8 8 5 2 6 6 6 154 154 100 154 154 154 100 170 170 170 170 154 154 100 154 154 154 100 170 170 170 170 154 154 100 154 154 154 100 170 170 170 170 155 50 50 50 50 50 50 50 50 50 50 154 154 110 154 154 154 100 170 170 170 170 150 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 20 20 20 20 20 20 20 20 20 20 20 20 20 20 0 0 0	Lane Configurations		₹	*-		4	*	F	2		4	*	
13 178 503 16 59 10 420 170 0 130 Perm AA Pinton None None None None None None None No	Traffic Volume (vph)	13	178	503	16	29	9	420	160	က	127	13	
National Perm	Future Volume (vph)	<u>6</u>	178	203	9	23	9	420	160	က	127	(2	
Fem. NA pin+ov Pelm NA Pelm pin+ov NA Pelm NA	Lane Group Flow (vph)	0	ر اور	203	0	2	9	420	1/6	o '	130		
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Turn Type	Fe	Z V	bm+ov	Ferm	×α	Ferm	pm+pt	A C	Ferm	Z Y	Ferm	
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Pormitted Phases	_	+	o <	α	0	α	0 0	7	ď	>	ď	
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Defector Phase	1 4	4	t rc	0 00	00	0 00	4 rc	0	တ	ç	၁ (၄	
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Switch Phase	-	٠	•		•	•		1	•	•	•	
154 154 100 154 154 167 100 170 170 170 170 170 170 1754 154 154 164 154 164 164 164 164 164 164 164 164 164 16	Minimum Initial (s)	2.0	2.0	2.0	2.0	2.0	2.0	5.0	5.0	5.0	5.0	5.0	
193, 154 154 110 154 154 110 646 536 536 1936 1938, 19	Minimum Split (s)	15.4	15.4	10.0	15.4	15.4	15.4	10.0	17.0	17.0	17.0	17.0	
19.3% 19.3% 13.8% 19.3% 19.3% 13.8% 80.8% 67.0% 67.0% 67.10% 67.10% 10.3	Total Split (s)		15.4	11.0	15.4	15.4	15.4	11.0	64.6	53.6	53.6	53.6	
104 104 60 104 104 104 60 596 486 486 88 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Total Split (%)		9.3%	13.8%	19.3%	19.3%	19.3%	13.8%	80.8%	%0'.29	%0'.29	%0.79	
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Maximum Green (s)	10.4	10.4	0.9	10.4	10.4	10.4	0.9	9.69	48.6	48.6	48.6	
2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
100 0.0	All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
1.00	Lost Time Adjust (s)		0:0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Lag Ves	Total Lost Time (s)		2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	
None	Lead/Lag			Lag				Fag		Lead	Lead	Lead	
San	Lead-Lag Optimize?	d		Yes	d	d	d	Yes	d	Yes	Yes	Yes	
5.0 5.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4	Venicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0 Min	3.0 Min	3.0 Min	3.0 Min	
54 54 54 54 70<	Walk Time (s)		2 0	200	500	2 2	200	200	2	, r.	, r.	2	
30 30<	Flash Dont Walk (s)	5.5	5.4		5. 4	5.4	5.4		2.0	2.0	2.0	2.0	
10.1 16.1 10.1 10.1 19.5 19.5 8.4 0.26 0.41 0.26 0.26 0.49 0.49 0.40 0.44 0.59 0.49 0.49 0.49 0.21 16.9 4.2 13.8 0.1 15.5 5.9 16.1 16.9 4.2 13.8 0.1 15.5 5.9 16.1 16.9 4.2 13.8 0.1 15.5 5.9 16.1 16.9 4.2 13.8 0.1 15.5 5.9 16.1 17.7 12	Pedestrian Calls (#/hr)	8	30		8	8	98		30	30	30	30	
0.26 0.41 0.26 0.26 0.49 0.49 0.21 0.44 0.59 0.79 0.03 0.08 0.21 0.035 16.9 42 13.8 0.1 15.5 5.9 16.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 16.9 42 13.8 0.1 15.5 5.9 16.1 A B A B A B A B A B 10.6 0.0 3.9 0.0 172 5.4 7.6 25.9 10.3 12.0 0 #33.1 12.1 17.2 110.6 1.0 19.1 270.3 108.0 25.9 10.3 12.0 0 #33.1 12.1 17.2 10.0 0	Act Effct Green (s)		10.1	16.1		10.1	10.1	19.5	19.5		8.4	8.4	
16.9 4.2 13.8 0.1 15.5 5.9 16.1 16.9 4.2 13.8 0.1 15.5 5.9 16.1 16.9 4.2 13.8 0.1 15.5 5.9 16.1 16.9 4.2 13.8 0.1 15.5 5.9 16.1 16.9 4.2 13.8 0.1 15.5 5.9 16.1 17.7	Actuated g/C Ratio		0.26	0.41		0.26	0.26	0.49	0.49		0.21	0.21	
16.9 42 138 0.1 15.5 5.9 16.1 16.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	v/c Ratio		0.4	0.59		0.19	0.03	0.68	0.21		0.35	0.04	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Control Delay		16.9	4.2		13.8	0.1	15.5	5.9		16.1	0.2	
16.9 4.2 13.8 0.1 15.5 5.9 16.1 B A B A B A B A B A A B A B A B A A B A B	Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
7.7 122 12.6 14.7 H A	Total Delay		16.9	4.2		13.8	0.1	15.5	5.9		16.1	0.2	
7.7 122 126 14.7 A	SOT		Ф	⋖		В	V	В	V		В	۷	
10.6 0.0 3.9 0.0 17.2 54 7.6 25.9 10.3 12.0 0.0 #33.1 12.1 17.2 110.6 25.9 10.3 12.0 0.0 #33.1 12.1 17.2 110.6 25.9 10.3 12.0 0.0 #33.1 12.1 17.2 25.0 119.1 8.0 445 851 409 408 618 1702 1725 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Approach Delay		7.7			12.2			12.6		14.7		
10.6 0.0 3.9 0.0 172 5.4 7.6 25.9 10.3 12.0 0.0 #33.1 12.1 17.2 17.2 17.2 17.2 17.2 17.2 17	Approach LOS		⋖			В			Ф		æ		
25.9 10.3 12.0 0.0 #33.1 12.1 17.2 17.2 10.0 1	Queue Length 50th (m)		10.6	0.0		3.9	0.0	17.2	5.4		7.6	0.0	
250 150.2 100.0 10	Queue Length 95th (m)		25.9	10.3		12.0	0:0	#33.1	72.1		77.7	0.0	
38.6	memai Link Dist (m)		0.0	0 10			c		2/0.3		0.00	000	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Full Bay Leligir (III)		445	851		908	708 0.0	818	1702		1705	1308	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Starvation Can Reductn		7	5		9	9	0	707		0	000	
0.43 0.59 0.18 0.02 0.68 0.10 0.08 0.0 39.6	Spillback Cap Dodugto		0 0	o c		o c	o c	o c	0 0		o c	o c	
0.43 0.59 0.18 0.02 0.68 0.10 0.08 0.0 1.39,6	Storage Can Reductin		0	0		0	0	0	0		0	0	
Intersection Summary Cycle Length: 80 Cycle Length: 39.6 Natural Cycler 50	Reduced v/c Ratio					_	0.02		0.10		0.08	0.01	
Cycle Length: 80 Actualed Cycle Length: 39.6 Natural Cycle: 50	Intersection Summary												
Actualed Cycle Length: 39.6 Natural Cycle: 50	Cycle Length: 80												
Natural Cycle: 50	Actuated Cycle Length: 39.6												
	Natural Cycle: 50												

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Lanes, Volumes, Timings 6: Gore St E/Gore St W & Foster St

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Intersection LOS: B ICU Level of Service C Maximum v/c Ratio: 0.68
Intersection Signal Delay: 10.5
Intersection Capacity Utilization 64.1%
Analysis Period (min) 15
95fin percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cydes.

Splits and Phases: 6: Gore St E/Gore St W & Foster St

₽04 **€**

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Lanes, Volumes, Timings 9: Christie Lake Rd/Sunset Blvd

2041 Future TotalPM Peak Hour Perth Golf Course Lands

HCM 6th TWSC 9: Christie Lake Rd/Sunset Blvd

2041 Future TotalPM Peak Hour Perth Golf Course Lands

Int Delay, s/veh	8.6						
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	43		*	*	>		
Traffic Vol, veh/h	216	20	163	=======================================	22	331	
Future Vol, veh/h	216	20	163	111	22	331	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized		None	1	- None		None	
Storage Length		•	52		0		
Veh in Median Storage, #	0 #.	1	1	0	0		
Grade, %	0	•	٠	0	0		
Peak Hour Factor	100	100	100	100	100	100	
Heavy Vehicles, %	7	7	7	7	7	2	
Mvmt Flow	216	20	163	=======================================	27	331	
Major/Minor	Major1	_	Major2		Minor		
low All	0	0	236	0	663	226	
Stage 1		•	•	•	226		
Stage 2		'	•		437		
Critical Hdwy		•	4.12	•	6.42	6.22	
Critical Hdwy Stg 1					5.45		
Critical Hdwy Stg 2	1	1	•	1	5.42		
Follow-up Hdwy			2.218		3.518	3.318	
Pot Cap-1 Maneuver	•	•	1331	1	426	813	
Stage 1					812		
Stage 2	1	1		1	651		
Platoon blocked, %	•	•		•			
Mov Cap-1 Maneuver	1	1	1331	1	374	813	
Mov Cap-2 Maneuver	•	٠	٠	•	374		
Stage 1		1	1	•	812		
Stage 2	•	•	•	•	222		
Approach	B		WB		B		
HCM Control Delay, s	0		4.8		16.6		
HCM LOS					O		
Minor Long/Major Man	Ш	NDI P		000	Į į	WDT	
MILIOI Laile/iviajoi iviviii		ADCILL	EDI	LDN	WDL	IQ.	
Capacity (veh/h)		693	•	•	1331		
HCM Lane V/C Ratio		0.56	٠	•	o.		
HCM Control Delay (s)		16.6	1		7		
HCM Lane LOS		C	•	'	٥	,	
)			_		

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2041 Future TotalPM Peak Hour Lanes, Volumes, Timings 1: Wilson St W/Canadian Tire & HWY 7

The configurations Est E	## EBL EBT EBR WBL WBT ## 82 686 269 231 779 ## 82 686 269 231 779 ## 82 686 269 231 779 ## 82 686 269 231 779 ## 82 686 269 231 779 ## 82 686 269 231 779 ## 82 686 269 231 779 ## 82 686 269 231 779 ## 82 686 269 231 779 ## 82 686 269 231 779 ## 83 68 269 231 779 ## 84 78 78 78 78 78 ## 84 89 88 78 88 89 ## 85 88 68 89 89 89 89 89 78 ## 85 89 89 89 89 71 89 89 71 ## 85 89 89 89 89 71 89 89 71 ## 85 89 89 89 89 71 80 86 89 89 71 ## 85 89 89 89 89 71 80 86 89 89 71 ## 85 86 86 87 88 89 89 71 89 89 71 ## 85 89 89 89 89 71 80 86 86 89 89 71 80 86 86 86 89 89 71 80 88 89 71 80 89 71 80 89 71 80 80 80 80 80 80 80 80 80 80 80 80 80		i i i i i i i i i i i i i i i i i i i		285 285 285 285 285 32.1 26.0 32.1 26.0 32.1 26.0 32.1 26.0 37.1 26.0 37.1 26.0 37.1 37.0 37.0 37.0 37.0 37.0 37.0 37.0 37.0	SBR 69 69 69 69 69 69 69 69 69 69 69 69 69
March Marc	No.	Ω	9		285 285 285 285 316 NA NA 8 8 8 8 8 8 32.1 32.1 32.1 26.0 32.1 26.0 32.1 26.0 37.1 26.0 37.1 26.0 37.1 26.0 37.1 37.1 37.1 37.1 37.1 37.1 37.1 37.1	69 69 69 69 8 8 8 8 8 32.1 32.1 32.1 2.4 2.6 0.0 6.1 Lag Ves
86 686 289 231 779 21 316 312 234 31 285 82 82 686 289 231 779 21 316 312 234 0 316 82 82 82 82 88 289 231 779 21 0 628 234 0 316 82 82 82 88 289 231 779 21 0 628 234 0 316 82 22 2 2 2 2 6 6 4 4 8 8 8 8 28 28 28 28 10 6 321 321 321 321 321 321 321 321 321 321	82 686 269 231 779 82 686 269 231 779 82 686 269 231 779 82 686 269 231 779 82 686 269 231 779 82 2 2 2 1 6 82 22 2 1 6 82 22 2 1 6 83 20 20 20 20 83 20 370 370 200 570 30 30 30 30 30 30 85 8 58 54 58 120 1				285 285 316 NA NA NA 8 8 8 8 32.1 26.8% 26.8% 26.8% 26.8% 26.9% 26.9% 26.9% 26.9% 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7	69 69 69 69 8 8 8 8 8 8 8 32.1 32.1 32.1 3.7 2.6 0.0 6.1 Lag Ves
82 686 269 231 779 21 316 234 31 285 Perm NA Perm pra-pt NA Perm P	SE 686 269 231 779		- is		285 316 NA NA NA 8 8 8 32.1 26.8% 26.8% 26.0 3.7 3.7 3.7 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4	69 69 8 8 8 8 8 32.1 26.8 26.8 26.0 3.7 0.0 6.1 Lag Ves 3.0 None
82 686 269 231 779 21 0 628 234 0 316 2 2 2 6 6 4 4 8 8 2 2 2 1 6 6 7 4 4 8 8 50 5	h) Perm NA Perm pm+tt NA Perm Pm+tt NA Perm NA Perm Pm+tt	ω	<u>ن</u>		316 NA 8 8 8 8 8 32.1 26.9%. 26.0 3.7 26.0 0.0 6.1 Lag	69 8 8 8 8 8 8 5.0 32.1 26.8% 2.6.0 2.4 0.0 6.1 Lag Yes 3.0 None
Perm NA Perm NA Perm Perm NA Perm Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm Perm NA Perm Perm NA Perm NA Perm Perm NA Perm NA Perm NA Perm NA Perm NA	Perm NA Perm pm+pt NA F F F F F F F F F F F F F F F F F F		- iii	8	NA 8 8 8 8 5.0 32.1 26.8% 22.1 26.8% 26.0 3.7 2.4 Ces 7 Ces	8 8 8 8 8 2.1 32.1 32.1 26.8% 26.0 2.4 0.0 6.1 Lag Yes 3.0 None 5.0
2 2 6 6 7 4 4 8 8 8 8 8 8 8 9 1 6 6 7 4 4 8 8 8 8 8 8 8 1 8 9 1 6 8 7 4 4 8 8 8 8 8 1 8 1 8 1 8 1 8 1 8 1 8 1	2 2 2 1 6 2 2 2 1 6 2 2 2 1 6 2 2 2 1 6 2 2 2 2 1 6 2 2 2 2 1 6 2 2 2 2 1 6 2 2 2 2 1 6 2 2 2 2 1 6 2 2 2 2 1 6 2 2 2 2 1 7 2 2 2 2 1 6 2 2 2 2 1 7 2 2 2 2 104 2.28 3 7.0 37.0 37.0 20.0 57.0 3 0.8% 3 0.8% 3 0.8% 16.7% 47.5% 4 4 2 4.2 4.2 4.2 4.2 4 2 4.2 4.2 4.2 4.2 4 3 1.2 14.6 16 16 12 16 0.0 0.0 0.0 0.0 5 8 5 8 5 8 5 4 5 8 4 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ω	<u>ن</u> ا	7	8 8 32.1 26.8% 22.1 26.8% 26.0 3.7 2.4 Ces 6.1 Lag	8 8 8 8 8 32.1 32.1 26.0 3.7 2.4 0.0 6.1 Lag Yes 3.0 None
2 2 2 2 6 6 6 4 4 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8	2 2 2 1 6 50 50 50 50 50 22.8 22.8 22.8 104 22.8 37.0 37.0 37.0 20.0 57.0 30.8% 30.8% 30.8% 16.7% 47.5	σ	io = = = = = = = = = = = = = = = = = = =	2	8 32.1 32.1 32.1 26.8% 26.0 0.0 0.0 6.1 Lag	8 32.1 26.0 32.1 26.0 3.7 2.4 0.0 6.1 Lag Yes 3.0 None
2 2 2 1 6 6 6 7 4 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	2 2 2 1 6 22.8 22.8 22.8 10.4 22.8 37.0 37.0 37.0 20.0 57.0 30.8% 30.8% 16.7% 47.5%	ω	<u>م</u>	2	5.0 32.1 32.1 32.1 26.8% 26.0 3.7 6.1 Lag	5.0 32.1 32.1 32.1 3.7 2.6.8 3.7 0.0 6.1 Lag Ves 3.0 None
50 50<	5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	ν σ σ σ σ σ σ σ σ σ σ σ σ σ σ σ σ σ σ σ	is	2	5.0 32.1 32.1 26.8% 26.0 2.4 0.0 6.1 Lag Yes 3.0	5.0 32.1 32.1 26.8% 26.0 3.7 2.4 0.0 6.1 Lag Yes 3.0 None 5.0
50 50<	2.8 2.8 2.8 10.4 2.8 2.8 37.0 37.0 37.0 37.0 37.0 37.0 37.0 37.0		ιώ <u>-</u>	2	5.0 32.1 32.1 26.8% 26.0 3.7 2.4 0.0 6.1 Lag Yes	5.0 32.1 32.1 26.8% 26.0 3.7 2.4 0.0 6.1 Lag Yes 3.0 None
228 228 104 228 228 110 32.1 32.1 32.1 32.1 30.8 30.8 30.8 30.8 30.8 16.7% 47.5% 47.5% 25.8 55.9 56.9 56.0 26.0 26.0 30.8 30.8 30.8 30.8 16.7% 47.5% 47.5% 25.8 56.9 56.9 26.0 26.0 26.0 31.2 31.2 31.2 31.2 31.2 31.2 31.2 31.2	228 228 104 228 338 308% 30.8% 30.8% 30.8% 16.7% 47.5% 4. 31.2 31.2 31.2 31.2 31.2 31.2 31.2 31.	ω	<u>د</u>	2	32.1 32.1 26.0 26.0 3.7 2.4 0.0 6.1 Lag Yes	32.1 26.8% 26.0 3.7 2.4 0.0 6.1 Lag Yes 3.0 None
30.8% 30.8% 16.7% 47.5% 52.8% 52.5% 52.8% 26.8% 28.8% 17.3% 13.2 31.2 31.2 31.2 31.2 31.2 31.2 31.2	37.0 37.0 37.0 57.0 57.0 37.0 37.0 37.0 37.0 37.0 37.0 37.0 3	Ω	۵ ا		32.1 26.0 26.0 3.7 2.4 0.0 6.1 Lag Yes 3.0	32.1 26.8% 26.0 3.7 2.4 0.0 6.1 Lag Yes 3.0 None 5.0
308% 308% 308% 16.7% 47.5% 47.5% 52.8% 52.5% 52.8% 52.8% 58.8% 28.8% 28.9 24 4.2 4.2 4.2 4.2 4.2 51.2 51.2 55.3 56.9 56.9 56.0 56.0 5.8 5.8 5.8 5.4 5.8 5.8 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1	312 31.2 31.2 14.5 47.5% 47.5% 47. 31.2 31.2 31.2 14.6 51.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4	ς	۵ - ۵		26.0 26.0 3.7 2.4 0.0 6.1 Lag Yes 3.0	26.8% 26.0 3.7 2.4 0.0 6.1 Lag Yes 3.0 None
12 312 312 146 512 513 569 569 569 560 580	312 312 312 146 512 E 14 4 2 42 42 42 42 16 16 16 16 12 16 0.0 0.0 0.0 0.0 0.0 0.0 5.8 5.8 5.8 5.4 5.8 1.9 1.9 1.9 1.9 1.9 1.0 1.0 5.0 3.0 3.0 3.0 3.0 3.0 1.2 12 0 12 0 12 0 12 0 1.2 20 20 20 10 1.2 12 0 12 0 12 0 12 0 1.2 12 0 12 0 12 0 12 0 1.3 29.3 29.3 49.3 48.9 4 0.24 0.24 0.24 0.24 0.41 0.41 0.41 0.41 0.41 0.41 0.41 0.4				26.0 3.7 2.4 0.0 6.1 Lag Yes 3.0	26.0 3.7 2.4 0.0 6.1 Lag Yes 3.0 None 5.0
15 16 16 15 15 17 17 17 17 17 17	1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6		z		3.7 2.4 0.0 6.1 Lag Yes 3.0	3.7 2.4 0.0 6.1 Lag Yes 3.0 None
16 16 16 16 16 16 19 24 24 24 24 0.0 0.0 5.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	16 16 16 17 15 16 16 18 17 16 18 18 18 18 18 18 18 18 18 18 18 18 18		z		2.4 0.0 6.1 Lag Yes 3.0	2.4 0.0 6.1 Lag Yes 3.0 None
10	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		2 ``		0.0 6.1 Lag Yes 3.0	0.0 6.1 Lag Yes 3.0 None 5.0
Lag Lag Lag Lad Lead Lead Lag La	5.8 5.8 5.8 5.4 5.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1		Z		6.1 Lag Yes 3.0	Lag Yes 3.0 None 5.0
Lag Lag Lag Lead Lead Lead Lag Lag Lag Lag Lag Lead Lag Res	Lag Lag Lag Lad Lad Lad Lag Lad Lad Lad Yes		ž		Yes 7es 3.0	Yes Yes 3.0 None 5.0
Yes Yes <td> Yes Yes Yes Yes Yes</td> <td></td> <td>ž</td> <td></td> <td>Yes 3.0</td> <td>Yes 3.0 None 5.0</td>	Yes Yes Yes Yes Yes		ž		Yes 3.0	Yes 3.0 None 5.0
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	(c) 30 30 30 30 30 30 30 30 30 30 30 30 30		ž		3.0	3.0 None 5.0
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ection Summary Lengh: 120 ted Cyde Lengh: 120 t 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	0.51 0.80 0.48 0.85 0.55 0.		0	_	0.47	0.09
s Length: 120 stred Cycle Length: 120 rt 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	section Summary					
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tt 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	ited Cyde Length: 120					
	rt 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green					

CGH Transportation Page 1 06-04-2024 JK

Lanes, Volumes, Timings 1: Wilson St W/Canadian Tire & HWY 7

2041 Future TotalPM Peak Hour Perh Golf Course Lands

Intersection LOS: D ICU Level of Service G 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. Control Type: Actuated-Coordinated Maximum vic Ratio: 1.21 Intersection Signal Delay: 53.0 Intersection Capacity Utilization 107.6% Analysis Period (min) 15

√ Ø7

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Splits and Phases: 1: Wilson St W/Canadian Tire & HWY 7

01

★ Ø6 (R)

CGH Transportation Page 2 06-04-2024 JK

Lanes, Volumes, Timings

2: Wilson St W & Sunset Blvd/Harris St S

Perth Golf Course Lands

Configurations EBI EBI RBI WBI NBI NBI NBI SBR Configurations 262 37 307 8 32 391 803 13 70 211 c volume (vpn) 262 37 307 8 32 391 803 13 702 211 c volume (vpn) 262 37 307 8 32 391 803 13 702 211 c volume (vpn) 262 37 307 8 32 391 803 13 702 211 c volume (vpn) 262 37 307 8 3 30 10 80 6 6 6 c volume (vpn) Pem NA Prep NA Prep <t< th=""><th>## FBF WBI WBT NBI NBT SBI SBT 37 37 307 8 32 391 803 13 702 38 307 8 32 391 803 13 702 NA Perm Perm NA pm+pt NA P</th><th></th><th>1</th><th>†</th><th><u> </u></th><th>></th><th>ļ</th><th>•</th><th>←</th><th>۶</th><th>→</th><th>•</th><th></th></t<>	## FBF WBI WBT NBI NBT SBI SBT 37 37 307 8 32 391 803 13 702 38 307 8 32 391 803 13 702 NA Perm Perm NA pm+pt NA P		1	†	<u> </u>	>	ļ	•	←	۶	→	•	
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310% 310% 310% 310% 25.0% 59.0% 1000 44.0 43.0 43.0% 31.0% 31.0% 25.0% 59.0% 100.0 44.0 44.0 43.0% 31.0% 31.0% 31.0% 50.0% 10.0% 40.0% 43.0% 31.0% 31.0% 31.0% 31.3% 31.3 31.3 31.3 31.3 31.3 31.3 31	31.0% 31.0% 31.0% 25.0% 59.0% 100.0 44.0 41.0	num Split (s)	20.8	20.8	20.8	20.8	20.8	10.0	20.7	10.0	20.7	20.7	
110% 110% 110% 110% 110% 140% 440%	25 25 25 25 200 833 50 33 83 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Split (s)	31.0	31.0	31.0	31.0	31.0	25.0	29.0	10.0	0.44	0.44	
255. 255. 255. 257. 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3	25.2 25.2 25.2 25.2 20.0 35.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.	Split (%)	31.0%	31.0%	31.0%	31.0%	31.0%	25.0%	29.0%	10.0%	44.0%	44.0%	
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2.5 2.5 2.5 2.5 1.7 2.4 1.2 2.4 1.2 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2	2.5 2.5 2.5 2.5 1.7 2.4 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2	w Time (s)	 	3.3	33.33	33.33	 	 	 	 	 	 	
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Second S	Second S	Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Lead	Lead	Lost Time (s)		2.8	2.8		2.8	2.0	2.7	2.0	2.7	2.7	
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	/Lag						Lead	Lag	Lead	Lag	Lag	
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None	None	de Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 10.0 10	5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 10.0 10.	II Mode	None	None	None	None	None	None	Min	None	Min	Min	
10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0	10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0	Time (s)	2.0	2.0	2.0	2.0	2.0		2.0		2.0	2.0	
10 10 10 10 10 10 10 10 10 10 10 10 10 1	10 10 10 10 10 10 10 10 10 10 10 10 10 1	Dont Walk (s)	10.0	10.0	10.0	10.0	10.0		10.0		10.0	10.0	
24.9 24.9 24.9 64.0 61.3 44.0 88.3 8.3 8.3 8.3 8.3 8.3 8.3 8.3 8.3 8.	24.9 24.9 24.9 64.0 6f.3 44.0 38.3 0.25 0.25 0.64 0.61 0.44 0.38 0.95 0.83 0.77 0.98 0.75 0.05 1.05 76.9 7.3 19.8 7.14 20.6 9.1 79.5 76.9 7.3 19.8 7.14 20.6 9.1 79.5 76.9 7.3 19.8 7.14 20.6 9.1 79.5 76.9 7.3 19.8 7.14 20.6 9.1 79.5 76.9 7.3 19.8 7.14 20.6 9.1 79.5 86.9 0.0 6.0 6.0 6.0 6.0 0.0 0.0 76.9 41.7 19.8 7.2 6f.6 868.9 0.0 6.0 6.0 6.0 6.0 6.30 7 1073 27.5 67.0 78.0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	strian Calls (#/hr)	9	9	9	9	9		9		9	9	
0.25 0.25 0.25 0.64 0.61 0.44 0.38 76.9 7.3 19.8 71.4 20.6 9.1 79.5 76.9 7.3 19.8 71.4 20.6 9.1 79.5 76.9 7.3 19.8 71.4 20.6 9.1 79.5 76.9 7.3 19.8 71.4 20.6 9.1 79.5 76.9 7.3 19.8 71.4 20.6 9.1 79.5 8.6 2.0 0.0 0.0 0.0 0.0 0.0 0.0 8.6 2.0 96.7 0.8 -149.2 8.8 3 20.0 6.0 6.0 96.7 0.8 -149.2 8.8 9 2 20.7 16.9 120.6 140.2 8.8 9 0.0 0 0 0 0 0 0 0 9.0 0 0 0 0 0 0 0 0 9.0 0 0 0 0 0 0 0 9.0 0 0 0 0 0 0 0 9.0 0 0 0 0 0 0 0 9.0 0 0 0 0 0 0 9.0 0 0 0 0 0 0 0 0 9.0 0 0 0 0 0 0 0 0 9.0 0 0 0 0 0 0 0 0 9.0 0 0 0 0 0 0 0 0 9.0 0 0 0 0 0 0 0 0 0 9.0 0 0 0 0 0 0 0 0 0 9.0 0 0 0 0 0 0 0 0 0 9.0 0 0 0 0 0 0 0 0 0 9.0 0 0 0 0 0 0 0 0 0 0 0 9.0 0 0 0 0 0 0 0 0 0 0 0 9.0 0 0 0 0 0 0 0 0 0 0 0 9.0 0 0 0 0 0 0 0 0 0 0 0 0 9.0 0 0 0 0 0 0 0 0 0 0 0 0 0 9.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 9.0 0 0 0 0 0 0 0	0.25 0.25 0.25 0.64 0.61 0.44 0.88 0.75 0.05 0.05 0.05 0.05 0.05 0.05 0.05	ffct Green (s)		24.9	24.9		24.9	64.0	61.3	44.0	38.3	38.3	
0.95 0.53 0.17 0.98 0.77 0.05 1.05 0.05 0.05 0.05 0.05 0.05 0.05	0.35 0.53 0.17 0.38 0.77 0.05 1.05 0.05 0.05 0.05 0.05 0.05 0.05	ted g/C Ratio		0.25	0.25		0.25	0.64	0.61	0.44	0.38	0.38	
76.9 7.3 19.8 71.4 20.6 9.1 79.5 76.9 7.3 19.8 71.4 20.6 9.1 79.5 76.9 7.3 19.8 71.4 20.6 9.1 79.5 76.9 7.3 19.8 71.4 20.6 9.1 79.5 76.9 7.3 19.8 71.4 20.6 9.1 79.5 76.9 19.8 71.4 20.6 9.1 79.5 76.9 19.8 71.4 20.6 9.1 79.5 76.6 9.1 79.5 76.6 9.1 79.5 76.6 9.1 79.5 76.6 9.1 79.5 76.6 9.1 79.5 76.6 9.1 79.5 76.6 70.6 70.6 70.6 70.6 70.6 70.6 70.6	76.9 73 19.8 71.4 20.6 9.1 79.5 76.9 7.3 19.8 71.4 20.6 9.1 79.5 76.9 7.3 19.8 71.4 20.6 9.1 79.5 76.9 7.3 19.8 71.4 20.6 9.1 79.5 76.9 7.3 19.8 71.4 20.6 9.1 79.5 76.9 7.3 19.8 71.4 20.6 9.1 79.5 76.9 7.3 19.8 71.4 20.6 9.1 79.5 76.9 7.3 19.8 71.4 20.6 9.1 79.5 76.9 70.6 70.6 70.6 70.6 70.6 70.6 70.6 70.6	atio		0.95	0.53		0.17	0.98	0.75	0.02	1.05	0.32	
769 7.3 198 714 206 9.1 79.5 E A B E C A E 41.7 198 714 206 9.1 79.5 E A B E C A E 41.7 198 714 206 9.1 79.5 B B C A E 56.9 0.0 6.0 6.0 96.7 08 -149.2 #106.8 20.7 16.9 #120.6 #207.2 2.9 #24.65 888.9 20.0 6.0 96.7 08 -149.2 320 584 408 397 1073 275 670 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	769 73 198 714 76 9.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	ol Delay		76.9	7.3		19.8	71.4	20.6	9.1	79.5	5.5	
76.9 7.3 19.8 71.4 20.6 9.1 79.5 7.4 20.6 9.1 79.5 7.5 19.8 71.4 20.6 9.1 79.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7	76.9 7.3 19.8 71.4 20.6 9.1 79.5 F. 4.7 T. 4 20.6 9.1 79.5 F. 4.7 T. 4 20.6 9.1 79.5 F. 4.7 T. 4 20.6 9.1 79.5 F. 5.6 P.	e Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
H A B E C A E E C A E E C A E E C A E E C A E E C A E E C A E E C A B	H A B E C A E E A E E C A E E C A E E C A E E D B B B B B B B B B B B B B B B B B	Delay		76.9	7.3		19.8	71.4	20.6	9.1	79.5	5.5	
41,7 19,8 37,2 61,6 D	41,7 19,8 37,2 61,6 D 6,0 6,0 62,0 96,7 0.8 ~149,2 #106,8 20,7 16,9 #120,6 #207,2 2,9 #216,5 1,8 888.9 283,0 6,30 1,0 2,0 0.0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			ш	⋖		ш	ш	ပ	V	ш	⋖	
D	Second S	ach Delay		41.7			19.8		37.2		9.19		
#1068	#1068 20.7 16.9 #120.6 #2072 2.9 #216.5 149.2 #106.8 20.7 16.9 #120.6 #2072 2.9 #216.5 149.2 #20.6 #2072 2.9 #216.5 149.2 #20.0 #20.	ach LOS					В				ш		
#1068 20.7 16.9 #120.6 #207.2 2.9 #216.5 888.9 283.0 639.2 2.0 633.6 33.6 33.6 33.0 639.2 2.0 03.6 63.6 2.0 03.6 63.6 2.0 03.6 63.6 2.0 03.6 63.6 2.0 03.6 63.6 2.0 0	#106.8 20.7 16.9 #120.6 #207.2 2.9 #216.5 888.9 2880 639.2 2.8 #216.5 888.9 2880 639.2 2.9 #216.5 83.6 888.9 2880 639.2 2.0 #216.5 83.6 83.6 83.6 83.6 83.6 83.6 83.6 83.6	e Length 50th (m)		56.9	0.0		0.9	62.0	2.96	0.8	~149.2	2.2	
888.9 283.0 639.2 633.6 83.0 639.2 633.6 83.0 83.0 83.0 83.0 83.0 83.0 83.0 83.0	888.9 283.0 639.2 633.6 838.8 830.0 639.2 20.0 633.6 83.6 83.0 63.0 63.0 63.0 63.0 63.0 63.0 63.0 6	e Length 95th (m)		#106.8	20.7		16.9	#120.6	#207.2	2.9	#216.5	16.3	
320 300 250 200 200 200 200 200 200 200 200 2	320 3000 250 200 200 200 200 200 200 200 200	al Link Dist (m)		888.9			283.0		639.2		633.6		
320 584 408 397 1073 275 670 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	320 584 408 397 1073 275 670 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Bay Length (m)			300.0			25.0		20.0			
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Capacity (vph)		320	284		408	397	1073	275	029	658	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ation Cap Reductn		0	0		0	0	0	0	0	0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ack Cap Reductn		0	0		0	0	0	0	0	0	
any 0.93 0.53 0.17 0.98 0.75 0.05 1.05 0.09 0.07 0.05 0.05 0.05 0.05 0.05 0.05 0.05	0.93 0.53 0.17 0.98 0.75 0.05 1.05 0.05 0.05 0.05 0.05 0.05 0.0	ge Cap Reductn		0	0		0	0	0	0	0	0	
ection Summary Length: 100 ted Cycle Length: 99.7 ted Cycle Length: 99.7	ection Summary Length: 100 Length: 92.7 Length: 93.7 Length: 100 Length: 94.7 Length: 100	ced v/c Ratio					0.17	0.98	0.75	0.05	1.05		
Length: 100 ted Cycle Length: 99.7 ted Cycle: 100	Length: 100 ted Cycle Length: 99.7 al Cycle: 100 ol Type: Actuated-Uncoordinated	ection Summary											
ted Oyde Length: 99.7 at Cycle: 100	red Cycle Length: 99.7 al Cycle: 100 ol Type: Actuated-Uncoordinated	I enoth: 100											
at Cycle: 100	al Cycle; 100 ol Type: Actuated-Uncoordinated	ted Cvde Lenath: 99.7											
1 T. O.	of Type: Actualed-Uncoordinated	al Cycle: 100											
	or i ype. Acutated-unoonginated	al Cycle. 100	La ada at la a a										

06-04-2024 JK

Lanes, Volumes, Timings 2: Wilson St W & Sunset Blvd/Harris St S

2041 Future TotalPM Peak Hour Perth Golf Course Lands

Maximum vic Ratio: 1.05
Intersection Signal Delay: 45.8
Intersection LOS: D
Intersection Capacity Utilization 99.7%
ICU Level of Service F
Analysis Period fundation 99.7%
Analysis Period fundation of the control of t

06-04-2024 CGH Transportation JK

Lanes, Volumes, Timings 2041 Future TotalPM Peak Hour 4: Wilson St E/Wilson St W & Peter St/Foster St

	1	1	>	ļ.	✓	<	←	•	
Lane Group	EBL	EBI	WBL	WBT	WBR	R	NBT	SBL	SBT
Lane Configurations		4		₩	¥.		4	*	£3,
Traffic Volume (vph)	88	99	24	83	818	2	9/	692	82
Future Volume (vph)	98	99	54	83	818	2	9/	692	82
Lane Group Flow (vph)	0	160	0	107	818	0	4	692	156
Turn Type	Perm	A A	Perm	A N	pm+ov	Perm	Ϋ́	bm+pt	AN A
Protected Phases		4		∞	_		2	_	9
Permitted Phases	4		ω ,		ω .	2		တ -	
Detector Phase	4	4	∞	∞	_	2	2	_	9
Switch Phase									
Minimum Initial (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Split (s)	17.3	17.3	17.3	17.3	8.6	16.8	16.8	8.6	16.8
Total Split (s)	17.3	17.3	17.3	17.3	16.0	46.7	46.7	16.0	62.7
Total Split (%)	21.6%	21.6%	21.6%	21.6%	20.0%	58.4%	58.4%	20.0%	78.4%
Maximum Green (s)	12.5	12.5	12.5	12.5	11.2	41.9	41.9	11.2	67.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.5	1.5	7.5	7.	7.	1.5	1.5	1.5	1.5
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)		4.8		4.8	4.8		4.8	4.8	4.8
Lead/Lag					Lead	Lag	Lag	Lead	
Lead-Lag Optimize?					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
Recall Mode	None	None	None	None	None	Min	Min	None	Min
Walk Time (s)	2.0	2.0	2.0	2.0		2.0	2.0		5.0
Flash Dont Walk (s)	7.5	7.5	7.5	7.5		7.0	7.0		7.0
Pedestrian Calls (#/hr)	20	20	8	20		20	8		20
Act Effct Green (s)		11.0		11.0	22.3		7.9	24.1	24.1
Actuated g/C Ratio		0.25		0.25	0.50		0.18	0.54	0.54
v/c Ratio		0.50		0.28	0.73		0.34	0.99	0.18
Control Delay		20.9		16.4	5.6		16.6	46.8	3.9
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		20.9		16.4	5.6		16.6	46.8	3.9
SOT		O		В	∢		ш	Ω	∢
Approach Delay		20.9		6.8			16.6		38.9
Approach LOS		O		∢			ш		۵
Queue Length 50th (m)		10.3		9.9	0.0		2.7	~40.3	2.8
Queue Length 95th (m)		25.9		17.6	11.3		15.3	#117.6	8.9
Internal Link Dist (m)		494.3		110.6			117.1		53.2
Turn Bay Length (m)					15.0				
Base Capacity (vph)		367		441	1119		1543	869	1556
Starvation Cap Reductn		0		0	0		0	0	0
Spillback Cap Reductn		0		0	0		0	0	0
Storage Cap Reductn		0		0	0		0	0	0
Reduced v/c Ratio		0.44		0.24	0.73		0.07	0.99	0.10
Intersection Summary									
Cipil Cardinal									
Aptioted Cight on									
Actuated Cycle Lengur. 44.7									
Natural Cycle: 60	- The section of								
Control I ype: Actuated-Uncoordinated	oordinated								

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Lanes, Volumes, Timings 4: Wilson St E/Wilson St W & Peter St/Foster St

2041 Future TotalPM Peak Hour Perth Golf Course Lands

Maximum v/c Ratio: 0.99
Intersection Signal Delay; 21.8
Intersection LOS; C
Intersection Capacity Utilization 85.4%
ICU Level of Service E
Analysis Period (finin) 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.

Solits and Phases: 4: Wilson St EWilson St W & Peter St/Foster St

Ess

Analysis Period (finin) 15

A

06-04-2024 CGH Transportation JK

2041 Future TotalPM Peak Hour Perth Golf Course Lands Lanes, Volumes, Timings 6: Gore St E/Gore St W & Foster St

Lane Group	(ho	EBL	EBT *	EBR	WBL	WBT	WBR	2	1	SBL	SRT	SBR	
14 113 675 19 183 14 709 167 3 145 14 113 675 19 183 14 709 197 3 145 14 113 675 19 183 14 709 193 0 148 15 17 675 10 202 14 709 193 0 148 15 17 675 10 202 14 709 193 0 148 15 15 15 15 15 15 15	oh)		+					NBL	NBI		5		
14	h) (h) (vph)		¥	*		₩	*-	*	2		₩	¥c_	
14	h) (vph)	14	113	675	19	183	14	200	167	က	145	59	
NA Perm NA	(vdv)	4	13	675	9	33	4	200	167	က	145	53	
Ferm NA pm+ov Perm NA Perm pm+pt NA Perm NA Pe		0	127	675	0	202	4	400	193	0	148	29	
15.4	Desta de la Constantina del Constantina de la Co	Perm	Υ Y	w+md	Perm	Ž,	Perm	bm+pt	ξ'	Perm	Υ Y	Perm	
4 4 5 8 8 8 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Protected Phases		4	2		∞		2	2		9		
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Permitted Phases	4		4	∞		∞	7		9		ဖ	
50 110 1154 1154 1154 1154 1154 1154 1154 1154 1154 110 170 <td< td=""><td>Detector Phase</td><td>4</td><td>4</td><td>2</td><td>∞</td><td>∞</td><td>∞</td><td>2</td><td>2</td><td>9</td><td>9</td><td>9</td><td></td></td<>	Detector Phase	4	4	2	∞	∞	∞	2	2	9	9	9	
5.0 5.0 <td>Switch Phase</td> <td></td>	Switch Phase												
15.4 15.4 15.6 15.4 15.4 15.4 15.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17	Minimum Initial (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
195, 15, 15, 15, 15, 15, 15, 15, 15, 16, 16, 16, 16, 16, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10	Minimum Split (s)	15.4	15.4	10.0	15.4	15.4	15.4	10.0	17.0	17.0	17.0	17.0	
193% 193% 19.5% 19.3% 19.3% 19.5% 80.8% 61.3% 61.3% 61.13%			15.4	15.6	15.4	15.4	15.4	15.6	64.6	49.0	49.0	49.0	
104 104 106 104 104 104 106 596 440 440 2 20 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2			9.3%	19.5%	19.3%	19.3%	19.3%	19.5%	80.8%	61.3%	61.3%	61.3%	
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Maximum Green (s)	10.4	10.4	10.6	10.4	10.4	10.4	10.6	59.6	44.0	44.0	44.0	
20 20 20 20 20 20 20 20 20 20 20 20 20 2	Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
10	All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lag	Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Lag	Total Lost Time (s)		2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	
3.0 Yes To To <t< td=""><td>Lead/Lag</td><td></td><td></td><td>Lag</td><td></td><td></td><td></td><td>Lag</td><td></td><td>Lead</td><td>Lead</td><td>Lead</td><td></td></t<>	Lead/Lag			Lag				Lag		Lead	Lead	Lead	
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Lead-Lag Optimize?			Yes				Yes		Yes	Yes	Yes	
None None <th< td=""><td></td><td></td><td>3.0</td><td>3.0</td><td>3.0</td><td>3.0</td><td>3.0</td><td>3.0</td><td>3.0</td><td>3.0</td><td>3.0</td><td>3.0</td><td></td></th<>			3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
5.0 5.0 <td></td> <td></td> <td>None</td> <td>None</td> <td>None</td> <td>None</td> <td>None</td> <td>None</td> <td>Min</td> <td>Min</td> <td>Min</td> <td>Min</td> <td></td>			None	None	None	None	None	None	Min	Min	Min	Min	
54 54 54 54 54 7.0	Walk Time (s)	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0	2.0	
30 30 30 30 30 30 30 30 30 30 30 30 30 3	Flash Dont Walk (s)	5.4	5.4		5.4	5.4	5.4		7.0	7.0	7.0	7.0	
10.4 21.0 10.4 24.7 24.7 9.0 10.4 24.7 24.7 9.0 10.2 0.3 0.47 0.53 0.29 0.55 0.55 0.55 0.50 0.3 0.3 0.3 0.55 0.55	Pedestrian Calls (#/hr)	90	9		90	90	8		30	30	30	30	
0.23 0.47 0.23 0.25 0.55 0.55 0.20 0.20 0.34 0.67 0.53 0.04 0.98 0.21 0.43 0.43 0.67 0.65 0.55 0.55 0.55 0.20 0.30 0.04 0.98 0.21 0.43 0.43 0.43 0.43 0.43 0.43 0.45 0.45 0.45 0.43 0.43 0.43 0.44 0.45 0.45 0.45 0.45 0.43 0.43 0.43 0.44 0.45 0.45 0.45 0.45 0.45 0.45 0.45	Act Effct Green (s)		10.4	21.0		10.4	10.4	24.7	24.7		0.6	0.6	
0.34 0.67 0.53 0.04 0.98 0.21 0.43 0.00 0.00 0.0 0.00 0.0 0.0 0.0 0.0 0.0	Actuated g/C Ratio		0.23	0.47		0.23	0.23	0.55	0.55		0.20	0.20	
182 45 217 02 456 50 198 00 00 00 00 00 01 01 02 45 50 198 182 45 217 02 456 50 00 01 00 00 00 00 01 01 01 01 01 01 01 01 01 01 01 01 01 0	v/c Ratio		0.34	0.67		0.53	0.04	0.98	0.21		0.43	0.09	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Control Delay		18.2	4.5		21.7	0.2	45.6	5.0		19.8	0.5	
18.2 4.5 21.7 0.2 45.6 5.0 19.8 E A C A D A B E C A D	Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
6.7 20.3 86.9 16.6 A C C A D A B B B A C C A D A B B B 8.3 0.0 13.9 0.0 37.8 5.6 10.3 20.5 11.0 #316 0.0 #113.0 12.3 22.0 110.6 119.1 270.3 108.0 379 1006 383 370 721 1683 1674 0	Total Delay		18.2	4.5		21.7	0.2	45.6	5.0		19.8	0.5	
6.7 20.3 36.9 16.6 8.4 0 0 0 37.8 56.9 16.6 8.2 20.5 11.0 #31.6 0.0 #113.0 12.3 22.0 110.6 119.1 8.0 #113.0 12.3 22.0 110.6 37.9 100.6 #113.0 12.3 22.0 37.9 100.6 383 370 72.1 1683 1674 168.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ros		Ф	∢		ပ	∢	۵	V		В	V	
8.3 0.0 13.9 0.0 37.8 5.6 10.3 10.3 20.5 11.0 #181.6 0.0 #118.0 12.3 22.0 11.0 #181.6 0.0 #118.0 12.3 22.0 11.0	Approach Delay		6.7			20.3			36.9		16.6		
8.3 0.0 13.9 0.0 37.8 5.6 10.3 12.2 22.0 11.0 #31.6 0.0 #113.0 12.3 22.0 11.0 #31.6 0.0 #113.0 12.3 22.0 11.0 #31.6 0.0 #113.0 12.3 22.0 11.0 #31.6 0.0 #31.	Approach LOS		∢			ပ					മ		
20.5 11.0 #316 0.0 #113.0 12.3 22.0 110.6 113.0 12.3 22.0 110.6 25.0 8.0 721 1683 1674 108.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Queue Length 50th (m)		8.3	0.0		13.9	0.0	37.8	5.6		10.3	0.0	
110.6 25.0 119.1 270.3 108.0 108.0 25.0 38.3 370 721 1683 1674 109.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Queue Length 95th (m)		20.5	11.0		#31.6	0.0	#113.0	12.3		22.0	0.0	
250 80 1674 1674 1674 1674 1674 1674 1674 1674	Internal Link Dist (m)		110.6			119.1			270.3		108.0		
379 1006 383 370 721 1683 1674 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Turn Bay Length (m)			25.0			8.0					10.0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Base Capacity (vph)		379	1006		383	370	721	1683		1674	1271	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Starvation Cap Reductn		0	0		0	0	0	0		0	0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Spillback Cap Reductn		0	0		0	0	0	0		0	0	
0.34 0.67 0.53 0.04 0.98 0.11 0.09	Storage Cap Reductn		0	0		0	0	0	0		0	0	
Intersection Summary Cycle Length: 80 Ashirated Cycle Length: 45.1 Ashirat Cycle For By	Reduced v/c Ratio		0.34	0.67			0.04	0.98	0.11		0.09	0.02	
Cycle Length: 80 Matural Cycle Length: 45.1 Matural Cycle 60	Intersection Summary												
Actuated Cycle Length: 45.1 Mahiral Cycle: 60	Cycle Length: 80												
Natural Cycle- An	Actuated Cycle Length: 45.1												
	Natural Cycle: 60												

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Lanes, Volumes, Timings 6: Gore St E/Gore St W & Foster St

2041 Future TotalPM Peak Hour Perth Golf Course Lands

Intersection LOS: C ICU Level of Service D

Maximum v/c Ratio; 0.98 Intersection Signal Delay; 21.9 Intersection Signal Delay; 21.9 Intersection Capacity Utilization 82.0% ICU Analysis Period (min) 15 # 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Splits and Phases: 6: Gore St E/Gore St W & Foster St

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Lanes, Volumes, Timings 9: Christie Lake Rd/Sunset

2041 Future TotalPM Peak Hour

2041 Future TotalPM Peak Hour Perth Golf Course Lands

HCM 6th TWSC 9: Christie Lake Rd/Sunset Blvd

9. CIIIISIIE LAKE NU/JUIISEI DIVU	n/Salliser	DIAG			I ettil goll coulse carids
	†	>	Ļ	•	
Lane Group	EBT	WBL	WBT	NBL	
Lane Configurations	43	je.	*	*	
Traffic Volume (vph)	219	345	254	45	
Future Volume (vph)	219	345	254	45	
Lane Group Flow (vph)	289	345	254	291	
Sign Control	Free		Free	Stop	
Intersection Summary					
Control Type: Unsignalized					
ntersection Capacity Utilization 65.5%	ation 65.5%			ICU Level of Service C	
Analysis Period (min) 15					

	NBR		246	740	Stop	None	٠	٠		100	2	246		254			6.22			3.318	785				785							WBT	٠		·		
	NBL	ž	45	4 ک	Stop		0	0	0	100	2	45	Minor1	1198	254	944	6.42	5.45	5.45	3.518 3.318	205	788	378		149	149	788	276	NB	24	ပ	WBL	1273	- 0.271	8.9	⋖	-
	WBT	+	254	724	Free c	None		0	0	100	2	254	2	0	•	٠	•	•	•	•	•	'	1	٠	•	1	•	•				EBR WBL	•	•	•	٠	•
	WBL	-	345	345	Free	'	52	1	٠	100	5	345	Major2	289	٠	٠	4.12	•	٠	2.218	1273	٠	1		1273	1	•	٠	WB	5.1		EBT	•	٠	1	٠	•
	EBR		20	2 0	Free	None		1	٠	100	2	20	2	0	•	٠	٠	'	٠	1	•	٠	•	٠	•	1	•	٠				NBLn1	473	0.615	24	ပ	4.1
8.5	EBT	4	219	513	Free	'	•	0 #	0	100	2	219	Major1	0	•	٠	•	•	•	•	1	'	1	٠	1	1	•	•	B	0							
Int Delay, s/veh	Movement	Lane Configurations	Traffic Vol, veh/h	Conflicting Pads #/hr	Sian Control	RT Channelized	Storage Length	Veh in Median Storage, #	Grade, %	Peak Hour Factor	Heavy Vehicles, %	Mvmt Flow		Conflicting Flow All	Stage 1	Stage 2	Critical Hdwy	Critical Hdwy Stg 1	Critical Hdwy Stg 2	Follow-up Hdwy	Pot Cap-1 Maneuver	Stage 1	Stage 2	Platoon blocked, %	Mov Cap-1 Maneuver	Mov Cap-2 Maneuver	Stage 1	Stage 2	Approach	HCM Control Delay, s	HCM LOS	Minor Lane/Major Mvmt	Capacity (veh/h)	HCM Lane V/C Ratio	HCM Control Delay (s)	HCM Lane LOS	HCM 95th %tile Q(veh)

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Appendix D

IMP Option 3 Peter Street Traffic Only



2041 Future TotalPM Peak Hour Perth Golf Course Lands Lanes, Volumes, Timings 4: Wilson St E/Wilson St W & Peter St/Foster St

	1	1	>	ļ	4	<	←	•	 	
Lane Group	EBE	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Configurations		Q		4	¥C.		4	*	43	
Traffic Volume (vph)	92	62	7	47	382	4	ස	403	57	
Future Volume (vph)	92	79	7	47	382	4	30	403	22	
Lane Group Flow (vph)	0	148	0	장	382	0	4 5	403	146	
I urn Iype	Fem	A,	Ferm	Y S	yo+md	Ferm	AN O	pm+pt	NA O	
Protected Phases	•	4		[∞]	- 0	d	2	- 0	9	
Permitted Phases	4 -	•	∞ α	c	∞ -	2 0	c	· O	c	
Detector Phase	4	4	x	x	-	7	7	-	Q	
Minimum Initial (s)	2	7.0	5.0	5.0	5.0	20	7.0	5.0	7.0	
Minimum Solit (s)	17.3	17.3	17.3	17.3	ο α ο σ	2 9	2, 67	ο α ο σ	16.8	
Total Split (s)	17.3	17.3	17.3	17.3	16.0	46.7	46.7	16.0	62.7	
Total Split (%)	21.6%	21.6%	21.6%	21.6%	20.0%	58.4%	58.4%	20.0%	78.4%	
Maximum Green (s)	12.5	12.5	12.5	12.5	11.2	41.9	41.9	11.2	67.9	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	
lotal Lost IIIIe (s)		0.4		0.4	0.4	-	0.4	0.4	4.0	
Lead/Lag					Lead	Lag V	Lag	Lead		
Vehiolo Extension (s)	C	C	c	0	S C	8 6	8 6	8 6	0.6	
Vericle Exterision (s)	O.C	O.C	O.C	0.0	0.0	O.O.	O.O.	O.C	0.0 Min	
Walk Time (s)	5.0	5.0	5.0	5.0	NOIS	2.0	2.0	NO	2.0	
Flach Dopt Walk (s)	2.5	7.0	7 5	2 7		2.0	200		2.0	
Pedestrian Calls (#/hr)	2 8	2 8	2 8	2 8		2 8	2 8		20 02	
Act Effet Green (s)	i	10.01	i	5 6 2	186	i	7.4	23.4	25.0	
Actuated g/C Ratio		0.25		0.24	0.47		0.19	0.59	0.63	
v/c Ratio		0.45		0.14	0.44		0.15	0.52	0.15	
Control Delay		18.7		14.6	2.5		14.2	8.8	3.1	
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	
Total Delay		18.7		14.6	2.5		14.2	∞ ∞	3.1	
SOT		മ		a	∀		Ω.	∢	∢	
Approach Delay		18.7		4.0			14.2		7.3	
Approach LOS		а		∢ ;			а		∢ !	
Queue Length 50th (m)		0.6		č	0.0		7.7	15.2	1.7	
Queue Length 95th (m)		23.9		10.2	8.0		8.7	33.3	9.7	
Internal Link Dist (m)		494.3		0.01	0 11				D: \$	
Turn bay Length (m)		į		i	0.00		001	100	7	
Base Capacity (vph)		4/4		551	903		1520	(95	1504	
Starvation Cap Reductn		0		0	0		0	0	0 (
Spillback Cap Reductn		0		0	0		0	0	0 (
Storage Cap Reductn									0	
Reduced v/c Ratio		0.31		0.10	0.45		0.03	0.51	0.10	
Intersection Summary										
Cycle Length: 80										
Actuated Cyde Length: 39.7	_									
Natural Cycle: 50										
Control Type: Actuated-Uncoordinated	oordinated									

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Lanes, Volumes, Timings 4: Wilson St E/Wilson St W & Peter St/Foster St

2041 Future TotalPM Peak Hour Perh Golf Course Lands

Intersection LOS: A ICU Level of Service B Maximum v/c Ratio: 0.52 Intersection Signal Delay: 7.7 Intersection Capacity Utilization 55.3% Analysis Period (min) 15

Spits and Phases: 4: Wilson St EWilson St W & Peter StFoster St

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2041 Future TotalPM Peak Hour Perth Golf Course Lands Lanes, Volumes, Timings 4: Wilson St E/Wilson St W & Peter St/Foster St

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86 66 24 83 590 5 76 572 0 160 0 107 590 0 104 572 0 160 0 107 590 0 104 572 0 160 0 107 590 0 104 572 0 160 0 107 590 0 104 572 0 160 0 107 590 0 104 572 1 4 4 8 8 1 1 2 2 1 1 2 50 50 50 50 50 50 50 50 1 73 173 173 173 160 467 160 6 1 173 173 173 173 160 467 467 160 6 1 173 173 173 173 160 467 160 6 1 173 173 173 173 160 467 160 6 1 173 173 173 173 173 160 467 160 6 1 173 173 173 173 160 467 160 6 1 173 173 173 173 173 160 467 160 6 1 18 18 18 18 18 18 18 18 18 18 18 18 18	86 66 24 83 590 5 76 572 0 160 101 572 0 160 107 590 0 104 572 0 160 107 590 0 104 572 4 4 8 8 1 2 2 1 4 4 4 8 8 1 2 2 1 50 50 50 50 50 50 50 50 17.3 17.3 17.3 17.3 160 467 467 160 6 17.3 17.3 17.3 17.3 160 467 467 160 6 17.3 17.3 17.3 17.3 18 16 16 8 16 8 98 17 17.3 17.3 17.3 17.3 18 16 16 16 98 18 17.3 17.3 17.3 17.3 18 18 18 19 18 18 17.3 17.3 17.3 17.3 17.3 18 18 18 8 84% 2010% 78 17.3 17.3 17.3 17.3 17.3 18 160 467 467 160 6 17.3 17.3 17.3 17.3 17.3 18 160 467 467 160 6 17.3 17.3 17.3 17.3 18 160 467 467 160 6 17.3 17.3 17.3 17.3 18 18 18 18 18 18 18 18 18 18 18 18 18	nfigurations		4		₩	*		4	F	æ	
No	86 66 24 83 590 5 76 572 Perm NA Perm NA Physol Perm NA Physol Perm NA Perm	lume (vph)	98	99	24	83	290	2	9/	572	82	
NA Perm NA	Perm NA Perm NA pm+ov Perm NA pm-ov Perm NA pm+ov Perm NA pm-ov Perm NA	lume (vph)	88	99	54	83	290	2	9/	572	82	
Perm NA Perm NA pm+pt 4 8 8 1 2 1 4 8 8 1 2 1 50 50 50 50 50 50 50 17.3 17.3 17.3 17.3 17.3 17.3 18 6 6 50 50 17.3 17.3 17.3 17.3 17.3 17.3 19.4 10.6 9.8 1.6 1.6 9.8 1.6 1.6 9.8 1.6 1.6 9.8 1.6 1.6 9.8 1.6 1.6 9.8 1.6 1.6 9.8 1.6 1.6 9.8 1.6 1.6 9.8 1.6 1.6 9.8 1.6 9.8 1.6 9.8 1.6 9.8 1.6 9.8 1.6 9.8 1.6 9.8 1.6 9.8 1.6 9.8 1.6 9.8 1.6 9.8 1.6 9.8 <	Perm NA Perm NA pm+ov Perm NA pm+pt 4 8 8 1 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	up Flow (vph)	0	160	0	107	290	0	104	572	156	
4 4 8 8 1 2 2 1 4 4 8 8 1 2 2 1 4 4 4 8 8 1 2 2 1 17.3 17.3 17.3 17.3 98 168 168 98 7 17.3 17.3 17.3 17.3 160 46.7 46.7 16.0 17.5 17.5 17.5 17.5 17.5 16.0 46.7 46.7 16.0 12.5 12.5 12.5 12.5 11.2 41.9 41.9 11.2 15 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 1.73 17.3 17.3 17.3 19.8 16.8 16.8 9.8 1 1 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	i	Perm	Š,	Perm	¥ °	vo+md	Perm	¥°	bm+pt	NA V	
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50 50 50 50 50 50 50 50 50 17 173 173 173 173 173 173 173 173 173	50 50 50 50 50 50 50 50 50 50 50 50 50 5	Phases	4		∞ (•	- α	7	•	۰ م	•	
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	17.3 17.3 17.3 17.3 16.8 16.8 16.8 16.8 17.3 17.3 17.3 17.3 17.3 17.3 17.3 17.3	hase	4	4	œ	œ	_	7	7	_	9	
17.3 17.3 17.3 17.3 18.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	17.3 17.3 17.3 17.3 18.6 16.8 16.8 16.8 16.8 16.8 16.8 16.8	ase										
17.3 17.3 17.3 17.3 98 16.8 16.8 16.8 17.3 17.3 17.3 17.3 17.3 17.3 17.3 17.3	17.3 17.3 17.3 17.3 98 16.8 16.8 98 17.5 17.3 17.3 17.3 17.3 17.3 17.3 17.3 17.3	Initial (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
17.3 17.3 16.0 46.7 46.7 16.0 R 12.5 12.5 12.5 12.5 12.5 12.5 12.5 12.5	17.3 17.3 16.0 46.7 46.7 16.0 R 21.6% 21.6	Split (s)	17.3	17.3	17.3	17.3	9.8	16.8	16.8	8.6	16.8	
116% 216% 216% 20.0% 58.4% 58.4% 20.0% 78 12 13 13 13 13 13 13 13 13 13 13 13 13 13	216% 216% 216% 200% 584% 584% 200% 78 125 125 125 112 419 419 112 61 15 15 15 15 15 15 15 15 15 15 15 15 00 00 00 00 00 00 00 00 00 00 00 00 00	(s)		17.3	17.3	17.3	16.0	46.7	46.7	16.0	62.7	
125 125 125 125 112 419 419 112 8 33 33 33 33 33 33 33 33 33 33 33 33 33	125 125 125 125 112 419 419 112 8 33 33 33 33 33 33 33 33 33 33 33 33 33	(%)		21.6%	21.6%	21.6%	20.0%	58.4%	58.4%	20.0%	78.4%	
3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3	3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3	Green (s)	12.5	12.5	12.5	12.5	11.2	41.9	41.9	11.2	67.9	
1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	ne (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	
100 00 00 00 00 00 00 00 00 00 00 00 00	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	me (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
18	4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8	Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	
Lead Lag Lead Lag Lead Lag Lead Lag Lead Lag	Lead Lag Lead Lag Lead Lag Lead Lag Lead Lag	t Time (s)		4.8		4.8	4.8		4.8	4.8	4.8	
3.0 3.0 3.0 3.0 46s Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye	3.0 3.0 3.0 3.0 40es Yees Yes Yes Yes Yes Yes Yes Yes Yes						Lead	Lag	Lag	Lead		
None	30 30 30 30 30 30 30 30 30 30 30 30 30 3	Optimize?					Yes	Yes	Yes	Yes		
None None None None Min Min None 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	None None None None Min Min None 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	xtension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
5.0 5.0 <td>5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0</td> <td>de</td> <td>None</td> <td>None</td> <td>None</td> <td>None</td> <td>None</td> <td>Min</td> <td>Min</td> <td>None</td> <td>Min</td> <td></td>	5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	de	None	None	None	None	None	Min	Min	None	Min	
75 75 75 75 70 70 20 20 20 20 20 20 20 110 0.25 0.26 0.50 0.18 0.54 0.54 0.54 0.04 0.05 0.04 0.05 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.00	75 75 75 75 70 70 20 20 20 20 20 110 110 222 79 240 0.25 0.50 0.18 0.54 0.50 0.28 0.59 0.34 0.82 20.9 164 34 166 21.0 20.9 164 34 166 21.0 20.9 54 166 21.0 20.9 54 166 20.9 54 166 494.3 110.6 5.7 28.7 25.9 176 9.7 117.1 25.9 176 9.7 117.1 26.0 0	(s) e	2.0	2.0	2.0	2.0		2.0	2.0		5.0	
20 20 20 20 20 20 20 20 20 20 20 20 20 2	20 20 20 20 20 20 20 20 20 20 20 20 20 2	it Walk (s)	7.5	7.5	7.5	7.5		7.0	7.0		7.0	
110 110 222 79 24.0 225 0.25 0.50 0.18 0.54 0.50 0.28 0.39 0.34 0.82 20.9 16.4 3.4 16.6 21.0 C B A B C 20.9 16.4 3.4 16.6 21.0 C B A B C 20.9 5.4 16.6 21.0 C B A B C 20.9 5.4 16.6 21.0 C B A B C 494.3 110.6 117.1 10.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	110 110 22 79 240 00 00 00 00 00 00 00 00 00 00 00 00 0	n Calls (#/hr)	20	20	20	20		20	20		20	
0.25 0.25 0.50 0.18 0.54 0.50 0.28 0.59 0.34 0.82 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	0.25 0.25 0.50 0.18 0.54 0.50 0.28 0.59 0.34 0.62 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Green (s)		11.0		11.0	22.2		7.9	24.0	24.0	
0.50 0.28 0.59 0.34 0.82 0.29 0.24 0.82 0.29 0.24 0.82 0.29 0.24 0.82 0.20 0.00 0.00 0.00 0.00 0.00 0.00	0.50 0.28 0.59 0.24 0.82 0.29 0.24 0.82 0.29 0.24 0.82 0.29 0.24 0.82 0.20 0.00 0.00 0.00 0.00 0.00 0.00	g/C Ratio		0.25		0.25	0.50		0.18	0.54	0.54	
20.9 164 34 166 21.0 20.0 0.0 0.0 0.0 0.0 20.9 164 34 166 21.0 20.9 164 34 166 21.0 20.9 54 166 20.9 54 176 9.7 153 #722 494.3 110.6 9.7 153 #722 494.3 110.6 1543 698 20.0 0 0 0 0 20.0 0 0 0 0 20.0 0 0 0 0 20.0 0 0 0 20.0 0 0 0 20.0 0 0 0 20.0 0 0 0 20.0	20.9 164 34 166 21.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0			0.50		0.28	0.59		0.34	0.82	0.18	
00 00 00 00 00 00 00 00 00 00 00 00 00	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	elay		20.9		16.4	3.4		16.6	21.0	3.9	
20.9 16.4 3.4 16.6 21.0 C B A B C C A 16.8 C A 1	20.9 16.4 3.4 16.6 21.0 C B A B C C A 16.6 C A B B C C A B B C C A B B C C A B B C C A B B C C A B B C C A B B C C A B B C C A B B C C A B B C C A B B C C A B B C C A B B C C A B B C C A B B C C A B B C C A C C C C C A C C C C C C C C C C C C C C	lay		0.0		0.0	0.0		0.0	0.0	0.0	
20.9 5.4 18 C C	C B A B C C C C C C C C C C C C C C C C	λí		20.9		16.4	3.4		16.6	21.0	3.9	
20.9 5.4 16.6 C A B B 10.3 6.6 0.0 5.7 15.3 #72.2 25.9 17.6 9.7 15.3 #72.2 494.3 110.6 17.1 17.1 368 441 1005 1543 698 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 44.6	20.9 5.4 16.6 C A B B B C C C C C C C C C C C C C C C			ပ		Ω	∢		Ω	O	⋖	
C A B B C C C C C C C C C C C C C C C C	10.3 6.6 0.0 5.7 28.7 28.7 25.9 17.6 9.7 15.3 #722 494.3 110.6 15.0 177.1 15.3 #722 494.3 110.6 15.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Delay		20.9		5.4			16.6		17.3	
10.3 6.6 0.0 5.7 28.7 28.7 28.5 49.4.3 110.6 9.7 15.3 #722 49.4.3 110.6 117.1	10.3 6.6 0.0 5.7 28.7 25.9 17.6 9.7 15.3 #722 494.3 110.6 15.0 17.1 17.1 17.1 17.1 17.1 17.1 17.1 17	SOT		O		∢			ш		ш	
25.9 17.6 9.7 15.3 #72.2 494.3 110.6 17.1 15.0 17.1 368 441 1005 1543 698 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 43 0.24 0.59 0.07 0.82 44.6	25.9 17.6 9.7 15.3 #72.2 494.3 110.6 117.1 15.0 16.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ngth 50th (m)		10.3		9.9	0.0		5.7	28.7	2.8	
494.3 110.6 117.1	494.3 110.6 117.1 17.1 18.6 19.6 19.6 19.6 19.6 19.6 19.6 19.6 19	ngth 95th (m)		25.9		17.6	9.7		15.3	#72.2	8.9	
15.0 388 441 1005 1543 698 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 43 0.24 0.59 0.07 0.82	15.0 388 441 1005 1543 698 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 10 0 0 0	nk Dist (m)		494.3		110.6			117.1		54.7	
368 441 1005 1543 698 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.43 0.24 0.59 0.07 0.82	368 441 1005 1543 698 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Length (m)					15.0					
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	acity (vph)		368		441	1005		1543	869	1556	
0 0 0 0 0 0 0 0 0 0 0.43 0.24 0.59 0.07 0.82	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Cap Reductn		0		0	0		0	0	0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Cap Reductn		0		0	0		0	0	0	
0.43 0.24 0.59 0.07 0.82 0.43 0.24 0.59 0.07 0.82	0.43 0.24 0.59 0.07 0.82 0.144.6	ap Reductn		0		0	0		0	0	0	
an Summary gftr. 80 Cycle Length: 44.6 ycle: 60	on Summary gth: 80 yoke Length: 44.6 yoke Attuated-Uncoordinated	v/c Ratio				0.24			0.07	0.82	0.10	
ght. 80 Cycle Length: 44.6 ycle: 60	gfh: 0. Cycle Length: 44.6 Vole: 60 ppe: Actuated-Uncoordinated	Summary no										
gyr. ov Cyde Length: 44.6 yde: 60	ignt. ov Cyde Length: 44.6 ype: Actuated-Uncoordinated	- th- 00										
Vyde Leighi 44.0 ycle: 60	Vyve Lengan 44.0 ycle: 80 ype: Actualed-Uncoordinated	igur: ou										
ycle: b0	ycle; bd ype: Actuated-Uncoordinated	Cycle Length: 44.b										
	pe: Actuated-Uncoordinated	/cle: 60										

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Lanes, Volumes, Timings 4: Wilson St E/Wilson St W & Peter St/Foster St

2041 Future TotalPM Peak Hour Perh Golf Course Lands

Intersection LOS: B ICU Level of Service C Maximum v/c Ratio: 0.82
Intersection Signal Delay: 12.7
Intersection Signal Delay: 12.7
Intersection Capacity Utilization 70.5%
Analysis Period (min) 15
95th per cardia volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

40 **№**

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Appendix E

Phase 1 Peter Street Traffic



2041 Future TotalPM Peak Hour Perth Golf Course Lands Lanes, Volumes, Timings 4: Wilson St E/Wilson St W & Peter St/Foster St

	•	1	-	ţ	4	•	←	۶	→	
Lane Group	EBF	BH	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Configurations		4		4	*		4	*	43	
Traffic Volume (vph)	96	8	7	33	382	4	8	403	22	
Future Volume (vph)	8	8	7	83	382	4	೫	403	22	
Lane Group Flow (vph)	0	184	0	9 5	382	0	4 5	403	145	
Turn Type	E E	¥ ×	E .	2	^ t	E .	¥ (pill+pi	Y C	
Protected Phases		4	c	œ	- c	c	7	c	9	
Permitted Phases	4 <	_	x> 0x	œ	× σ	7 0	c	۰ ح	Œ	
Switch Phase	+	4	0	0	-	7	7	-	Þ	
Minimum Initial (s)	2.0	5.0	5.0	5.0	5.0	5.0	5.0	2.0	2.0	
Minimum Split (s)	17.3	17.3	17.3	17.3	8.6	16.8	16.8	8.6	16.8	
Total Split (s)	17.3	17.3	17.3	17.3	16.0	46.7	46.7	16.0	62.7	
Total Split (%)	21.6%	21.6%	21.6%	21.6%	20.0%	58.4%	58.4%	20.0%	78.4%	
Maximum Green (s)	12.5	12.5	12.5	12.5	11.2	41.9	41.9	11.2	6.73	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
Lost Time Adjust (s) Total Lost Time (s)		0.0		0.0	0.0		0.0	0.0	0.0	
Lead/Lag		2		2	Lead	Lad	Fag	Lead	2	
Lead-Lag Optimize?					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	
Recall Mode	None	None	None	None	None	Min	Min	None	Min	
Walk Time (s)	2.0	2.0	5.0	5.0		5.0	5.0		2.0	
Flash Dont Walk (s)	7.5	7.5	7.5	7.5		7.0	7.0		7.0	
Pedestrian Calls (#/hr)	20	20	20	20		20	20		20	
Act Effct Green (s)		11.6		11.6	22.2		7.2	22.7	22.7	
Actuated g/C Ratio		0.26		0.26	0.51		0.16	0.52	0.52	
v/c Ratio		0.50		0.09	0.42		0.17	0.59	0.18	
Control Delay		70.7		<u>5</u>	2.2		<u>4</u> 0	0. 6	4.0	
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	
l otal Delay		70.7		ا ان ت	2.3		Σ. Σ. C	0.1	4.6	
LOS		2		0 7	<		0 0	Ω	₹ 0	
Approach Delay		20.2		4.6			Σ. Σ.		0.6	
Outrol of on the 50th (m)		7		¥ °°	0		2 6	20,7	ζ (
Queue Length 35th (m)		20.0		γ γ γ	0.0		t.2	- c	2.7	
Internal Link Dist (m)		494.3		110.6	0.0		117.1	ر. د.	34.0	
Turn Bay Length (m)		2		2	15.0				2	
Base Capacity (vph)		392		467	922		1487	069	1504	
Starvation Cap Reductn		0		0	0		0	0	0	
Spillback Cap Reductn		0		0	0		0	0	0	
Storage Cap Reductn		0		0	0		0	0	0	
Reduced v/c Ratio		0.46		0.09	0.41		0.03	0.58	0.10	
Intersection Summary										
Cycle Length: 80										
Actuated Cycle Length: 43.9	0									
Natural Cycle: 55										
Control Type: Actuated-Uncoordinated	coordinated									

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Lanes, Volumes, Timings 4: Wilson St E/Wilson St W & Peter St/Foster St

2041 Future TotalPM Peak Hour Perh Golf Course Lands

Intersection LOS: A ICU Level of Service B Maximum v/c Ratio: 0.59 Intersection Signal Delay: 8.9 Intersection Capacity Utilization 56.3% Analysis Period (min) 15

Spits and Phases: 4: Wilson St EWilson St W & Peter StFoster St

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2041 Future TotalPM Peak Hour Perth Golf Course Lands Lanes, Volumes, Timings 4: Wilson St E/Wilson St W & Peter St/Foster St

Control of the cont	FBL (vph) 103 (v	₩ 52 52 EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
103 52 24 78 590 5 76 572 103 52 24 78 590 5 76 572 10 163 0 102 590 0 104 572 10 163 0 102 590 0 104 572 10 163 0 102 590 0 104 572 10 173 173 173 173 173 18 18 1 2 2 1 173 173 173 173 173 18 18 1 2 2 1 173 173 173 173 173 18 18 18 19 112 125 125 125 125 125 112 419 419 112 125 125 125 125 125 112 419 419 112 126 127 127 127 128 112 419 419 112 127 128 128 128 128 112 419 419 112 128 128 128 128 128 112 419 419 112 129 120 120 0 0 0 0 0 0 0 0 120 0 0 0 0 0 0 0 0 0 1214 16.1 33 16.7 19 126 127 173 173 18 18 18 18 18 127 173 173 173 18 18 18 18 18 128 128 128 128 128 118 112 129 120 120 120 120 120 120 120 120 120 120 120 1214 16.1 33 16.7 219 1214 16.1 33 16.7 219 1214 16.1 33 16.7 219 1214 16.1 33 16.7 219 1214 16.1 33 16.7 219 1214 16.1 33 16.7 219 1214 16.1 33 16.7 219 1214 16.1 33 16.7 219 1214 16.1 33 16.7 219 1214 16.1 33 16.7 219 1214 16.1 33 16.7 219 1215 128 128 128 128 128 129 129 129 129 129 120 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ns (vph) 103 (vp	45 52 55 NA			*-				
103 52 24 78 590 5 76 572 103 52 24 78 590 5 76 572 0 163 0 102 590 0 104 572 0 163 0 102 590 0 104 572 0 163 0 102 590 0 104 572 1 4 4 8 8 8 1 2 2 2 1 1 73 173 173 173 98 168 168 98 173 1 173 173 173 173 98 168 168 98 173 1 173 173 173 173 98 168 168 98 173 1 173 173 173 173 98 168 168 98 173 1 173 173 173 173 98 168 168 98 173 1 173 173 173 173 98 168 168 98 173 1 173 173 173 173 180 168 168 98 180 1 173 173 173 173 180 180 180 180 1 173 173 173 173 180 180 180 180 1 173 173 173 173 180 180 180 180 1 173 173 173 173 180 180 180 180 1 173 173 173 173 180 180 180 180 1 18 15 15 15 15 15 15 15 15 15 1 15 15 15 15 15 15 15 15 15 1 15 15 15 15 15 15 15 15 1 15 15 15 15 15 15 15 15 1 15 15 15 15 15 15 15 15 1 15 15 15 15 15 15 15 1 15 15 15 15 15 15 15 1 15 15 15 15 15 15 1 15 15 15 15 15 15 1 15 15 15 15 15 15 1 15 15 15 15 15 15 1 15 15 15 15 15 15 1 15 15 15 15 15 15 1 15 15 15 15 15 15 1 15 15 15 15 15 15 1 15 15 15 15 15 1 15 15 15 15 15 1 15 15 15 15 15 1 15 15 15 15 15 1 15 15 15 15 15 1 15 15 15 15 15 1 15 15 15 15 15 1 15 15 15 15 15 1 15 15 15 15 15 1 15 15 15 15 15 1 15 15 15 15 15 1 15 15 15 15 15 1 15 15 15 15 15 1 15 15 15 15 1 15 15 15 15 15 1 15 15 15 1 15 15 1 15 15 15 1 15 15 15 1 15 15 15 1 15 15 15 1 15 15 15 1 15 15 1 15 15 15 1 15 15 15 1 15 15 15 1 15 15 15 1 15 15 15 1 15 15 15 1 15 15 15 1 15 15 15 1 15 15 15 1 15 15 15 1 15 15 15 1 15	(vph) 103 (vph) 103 (vph) 0 17.3 17.3 17.3 17.3 17.3 17.3 17.3 17.3	NA 16 52 52		4			4	F	æ,
103 52 24 78 560 5 76 572 Perm NA Perm NA Pirth NA Pirth 4 4 8 8 1 2 2 1 5 5 5 5 5 5 5 5 5 5 5 5 5 5 6 7 17.3 17.3 17.3 17.3 17.3 18.4 16.0 16.0 16.0 21.6% 21.6% 21.6% 21.6% 20.0% 58.4% 58.4% 20.0% 78 12.5 12.5 12.5 12.5 11.2 41.9 41.9 11.2 15 12.5 12.5 12.5 12.5 11.2 41.9 41.9 11.2 15 12.6 21.6% 21.6% 21.6% 20.0% 58.4% 58.4% 20.0% 78 13.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3	(vph) 103 (vph) Perm 4 4 4 4 4 17.3 17.3 17.3 17.3 12.5 8) 12.5 8) 12.5 8) 3.0 (s) 3.0 (s) None	163 NA	24	78	290	2	9/	572	82
Name	(vph) Perm 4 4 4 4 17.3 17.3 17.3 12.16% s) 12.5 3.3 1.5 (s) None	163 NA	24	82	230	2	9/	572	85
10. 1	50 17.3 17.3 17.3 12.5 8) 12.5 3.3 1.5 (s) 3.0 (s) None		Derm 0	102 NA	290	Darm 0	104 N	572 nm+nt	186 NA
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	_	5	ξ α	5	5	2	۲ ۲	2
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7	(s) 5.0 17.3 17.3 17.3 17.3 12.5% 12.5 13.3 1.5 1(s) 3.0 on (s) 3.0	r	œ	>	- ∞	2	7	- 9	0
50 50 50 50 50 50 50 50 50 50 50 50 17.3 17.3 17.3 17.3 17.3 19.8 16.8 16.8 16.8 9.8 17.3 17.3 17.3 17.3 16.0 46.7 46.7 16.0 6.1 12.5 12.5 12.5 12.5 12.5 12.5 12.5 12	(s) 5.0 (s) 17.3 17.3 21.6% en (s) 21.6% 5.) 3.3 5.) 1.5 5.) 1.5 en (s) 3.0 mize? 3.0	4	00	00	~	2	2	_	9
50 50 50 50 50 50 50 50 50 50 50 50 50 5	(s) 17.3 (s) 17.3 17.3 21.6% en (s) 12.5 3.3 (s) 1.5 (s) 1.5 (s) 1.5 (s) 3.3 mize? 3.0 imize? 3.0								
173 173 173 173 176 160 168 168 168 168 168 168 168 168 168 168	(s) 17.3 17.3 17.3 21.6% en (s) 12.5 5,5) 1.5 (s) 1.5 mize? 3.0 imize? 3.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
17.3 17.3 17.3 17.9 16.0 46.7 46.7 16.0 6.0 12.6 12.6 12.6 21.6% 20.0% 58.4% 58.4% 50.0% 78.1 12.5 12.5 12.5 12.5 12.5 12.5 12.5 12	en (s) 216% (s) 3.3 (s) 1.5 (s) 1.5 (s)	17.3	17.3	17.3	8.6	16.8	16.8	8.6	16.8
216% 216% 216% 200% 884% 584% 200% 78 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	216% s) 12.5 s) 12.5 s) 1.5 ust (s) 1.5 e (s) 3.0 sion (s) None	17.3	17.3	17.3	16.0	46.7	46.7	16.0	62.7
125 125 125 125 112 419 419 112 81 81 81 81 81 81 81 81 81 81 81 81 81	en (s) 12.5 \$) 3.3 \$) 1.5 ust (s) 1.5 e (s) 1.5 mize? 3.0 None	21.6%	21.6%	21.6%	20.0%	58.4%	58.4%	20.0%	78.4%
3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3	s) 33 (s) 1.5 (s) 1.5 (mize? 30 sion (s) None	12.5	12.5	12.5	11.2	41.9	41.9	11.2	67.9
1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	(s) 1.5 ust (s) e (s) mize? 3.0 sion (s) None	3.3	3.3	 	დ ლ		3.3 3.3	3.3	3.3
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4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8	e (s) mize? 3.0 sion (s) None	0.0		0.0	0.0		0.0	0.0	0.0
None	sion (s) 3.0 None	4.0		0.4	0.4	-	0.4	0.4	4.0
3.0 3.0 70 8 788 788 788 788 788 788 788 788 7	imize? sion (s) 3.0 None				Lead	Lag	c ag	Lead	
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Sion (s) 3.0 None	d	d	d	Yes	Yes	Yes	Yes	0
None Note Note Note Note Note Note Note Not	None	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
7.5 7.5 7.5 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0		None	None	None	None	Z Z	E C	None	E C
1,5 1,5 1,5 1,0		2.0	2.0	0.0		0.0	0.0		0.0
20 20 20 20 20 20 20 20 20 20 20 20 20 2		7.5	7.5	7.5		0.7	7.0		7.0
115 115 22,7 7,9 24,0 2 0.25 0.26 0.59 0.18 0.53 0.51 0.26 0.59 0.34 0.83 0.51 0.51 0.51 0.51 0.51 0.51 0.51 0.51		₹ .	2	2		2	₹ ;		07
0.51 0.26 0.59 0.34 0.83 0.51 0.20 0.51 0.20 0.51 0.20 0.51 0.20 0.34 0.83 0.51 0.51 0.51 0.51 0.51 0.51 0.51 0.51	Act Effet Green (s)	11.5		11.5	22.7		7.9	24.0	24.0
214 16.1 3.3 16.7 21.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Actualed g/o hallo	0.63		0.20	0.0		0.00	0.00	0.00
214 16.1 3.3 16.7 21.9 21.4 16.1 3.3 16.7 21.9 21.4 16.1 3.3 16.7 21.9 21.4 5.2 B A B C C A B A B C C A B B C 10.6 6.3 0.0 5.8 29.8 26.9 17.0 9.7 15.3 #72.5 494.3 110.6 15.0 0	Vic Railo	0.0		16.4	6.09		16.7	20.00	27.0
214 16.1 3.3 16.7 21.9 C B A B C 214 5.2 B A B C 214 5.2 B B C 215 6.3 0.0 5.8 29.8 26.9 17.0 9.7 15.3 #72.5 494.3 110.6 15.0 689 11 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Collifor Delay	+ 0		<u>.</u>	5 6		200	6.12	9 6
214 10.1 3.3 10.7 21.9 214 5.2 B A B C C C B A B C C C C C C C C C C C	Queue Delay	0.0		0.0	0.0		0.0	0.0	0.0
214 52 167 67 167 1	l otal Delay	51.4 C		- o - c	χ. Σ. «		70. C	21.9	3.6
26.9 17.0 9.7 16.7 16.7 16.7 16.7 16.7 16.7 16.7 16		. ر		ם מ	₹		ם מ	د	₹ !
106 63 00 58 298 3 26.9 17.0 9.7 15.3 #72.5 9 494.3 1106 117.1 54 10.0 0	Approach Delay	21.4		2.5			16.7		17.4
10.6 6.3 0.0 5.8 29.8 3 26.9 17.0 97 15.3 #72.5 9 494.3 110.6 117.1 54 349 435 1008 1530 689 155 0	Approach LOS	ی و		₹ 0			ם מ	0	ъ 9
26.9 17.0 9.7 15.3 #72.5 9 494.3 1106 17.1 54 0		9.0		6.3	0:0		5.8 8.6	29.8	3.0
494.3 110.6 117.1 54 349 435 1008 1530 689 155 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 47 0.23 0.59 0.07 0.83 0.1		26.9		17.0	9.7		15.3	#72.5	9.4
15.0 15.0 689 15.0 6.0 15.0 15.0 6.0 15		494.3		110.6			117.1		54.7
349 435 1008 1550 689 155, 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Turn Bay Length (m)				15.0				
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Base Capacity (vph)	349		432	1008		1530	689	1522
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Starvation Cap Reductn	0		0	0		0	0	0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Spillback Cap Reductn	0		0	0		0	0	0
0.47 0.23 0.59 0.07 0.83 0.1 n:45.1	Storage Cap Reductn	0		0	0		0	0	0
Intersection Summary Cycle Length: 80 Actualed Cycle Length: 45.1 Actualed Cycle Length: 45.0 Actual Cycle (2001)	Reduced v/c Ratio	0.47		0.23			0.07	0.83	0.12
Cycle Length: 80 Actualed Cycle Length: 45.1 Natural Cycles (2011: 45.1)	Intersection Summary								
Sylva Langur. 30 Actualed Cyde Langur. 45.1 Natural Cyde Langur. 1.1	Cycle Length: 80								
Natural Cycle Cycle Control of the C	Actuated Cycle Length: 45 1								
7	Natural Cycle: 60								
	Control Time: Activited Uncountingtod								

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Lanes, Volumes, Timings 4: Wilson St E/Wilson St W & Peter St/Foster St

2041 Future TotalPM Peak Hour Perh Golf Course Lands

Intersection LOS: B ICU Level of Service C

40 Maximum v/c Ratio: 0.83
Intersection Signal Delay: 12.8
Intersection Capacity Utilization 70.6%
Analysis Period (min) 15
95fin per cardia volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles. **№**

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