Planning Committee Agenda

Monday, November 25, 2024

Tom Davies Square

Councillor Cormier, Chair

11:00 a.m. Closed Session Committee Room C-12 / Electronic Participation
1:00 p.m. Open Session Council Chamber / Electronic Participation

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For the purpose of convenience and for expediting meetings, matters of business of repetitive or routine nature are included in the Consent Agenda, and all such matters of business contained in the Consent Agenda are voted on collectively.

A particular matter of business may be singled out from the Consent Agenda for debate or for a separate vote upon the request of any Councillor. In the case of a separate vote, the excluded matter of business is severed from the Consent Agenda, and only the remaining matters of business contained in the Consent Agenda are voted on collectively.

Each and every matter of business contained in the Consent Agenda is recorded separately in the minutes of the meeting.

10.1 Routine Management Reports

10.1.1 MacMillan Drive, Val Therese Plan of Subdivision 750

This report provides a recommendation regarding a request to extend draft plan approval for a proposed subdivision in Val Therese.

11. Managers' Reports

11.1 Institutional As-of-Right Zoning By-law Amendment 768

This report provides a recommendation directing staff to undertake the process to amend Zoning By-law 2010-100Z to permit ‘R3’, Medium Density Residential zone uses and standards as-of-right within the ‘I’, Institutional zone.

12. Members' Motions

13. Correspondence for Information Only

13.1 Downtown Sudbury Master Plan Review – Q4 2024 Update 836

This quarterly report provides information regarding the status of the Downtown Sudbury Master Plan Review.

13.2 Provincial Policy Statement, 2024 838

This report provides information regarding the new Provincial Policy Statement, 2024, as well as an update on Phase 2 of the Official Plan Review schedule.

14. Addendum

15. Civic Petitions

16. Question Period

17. Adjournment

250 Billiard’s Way, Sudbury, Additional Units

Presented To:	Planning Committee
Meeting Date:	November 25, 2024
Type:	Public Hearing
Prepared by:	Wendy Kaufman Planning Services
Recommended by:	General Manager of Growth and Infrastructure
File Number:	751-6/24-14

Report Summary

This report provides a recommendation regarding an application to amend the “H40” – Holding Zone to permit an additional 30 units prior to construction of a public road connection to Maurice Street or Tuscany Trail, to enable the development of row dwellings units or semi-detached dwelling units.

This report is presented by Wendy Kaufman, Senior Planner.

Letter(s) of concern from concerned citizen(s).

Resolution

THAT the City of Greater Sudbury approves the application by Dalron Construction Limited to amend Zoning By-law 2010-100Z by:

- amending the “H40” – Holding Zone to permit an additional 26 units prior to construction of a public road connection to Maurice Street or Tuscany Trail;
- amending the “H40R3-1(23)”, Medium Density Residential Special – Holding zone, to additionally permit row dwelling units and site-specific relief; and
- amending the “H40R3-1”, Medium Density Residential Special – Holding zone, to provide site-specific relief on lands described as PIN 73478-1214 & 73478-1229, 53R-20418, Parts 8, 9 & 11-13, Plan 53R-20418, Block 14, Plan 53M-1432, Lot 4, Concession 5, Township of Broder, as outlined in the report entitled “250 Billiard’s Way, Sudbury, Additional Units”, from the General Manager of Growth and Infrastructure, presented at the Planning Committee meeting on November 25, 2024, subject to the following conditions:

1. That the “H40” – Holding Zone be amended to permit an additional 26 units prior to construction of a public road connection to Maurice Street or Tuscany Trail;

2. That the amending by-law for the “H40R3-1(23)”, Medium Density Residential Special zone include the following site-specific provisions:
   a. Row dwelling units shall be additionally permitted;
   b. A minimum privacy yard of 6.0 m shall be provided for row dwellings and semi-detached dwellings, including swales, where 7.5 m is required for row dwellings;

    c. A minimum corner side yard setback of 1.2 m shall be provided, where 4.5 m is required.

3. That the amending by-law for the H40R3-1, Medium Density Residential Special – Holding zone include the following site-specific provisions:
    a. A minimum 9.0 m court shall be provided, including swales, between Block 21 and Block 13, where 15.0 m is required for walls containing balconies or windows to habitable rooms.
    b. A minimum 8.5 m court shall be provided, including swales, between Block 20 and Block 9, and between Block 21 and 12, where 15.0 m is required for walls containing balconies or windows to habitable rooms.
    c. A minimum 4.0 m court, including swales, shall be provided between Block 19 and Block 14, where 15.0 m is required for walls containing balconies or windows to habitable rooms.
    d. A minimum privacy yard of 4.5 m shall be provided, including swales, for all units in Block 21 and 13, where 7.5 m is required
    e. A minimum privacy yard of 4.0 m shall be provided, including swales, for all units in Block 20, where 7.5 m is required.
    f. A minimum privacy yard of 4.0 m shall be provided, including swales, for unit 64 and 65 in Block 14, where 7.5 m is required.
    g. A minimum corner side yard setback of 1.2 m shall be provided, where 4.5 m is required
    h. A screening device shall not be required along the property line being 30.05 m in length adjacent to Block 20, where a screening device is required between medium and low density residential use.

Relationship to the Strategic Plan, Health Impact Assessment and Climate Action Plans

The application to amend the Zoning By-law is an operational matter under the Planning Act to which the City is responding. The application contributes to the 2019-2027 City of Greater Sudbury Strategic Plan goals related to housing by adding to the range and mix of housing available in this area. The application aligns with the Community Energy and Emissions Plan by supporting the strategy of creating compact, complete communities.

Financial Implications

If approved, staff estimates approximately $131,000 in taxation revenue, based on the assumption of 30 multiple dwelling units based on an estimated assessed value of $275,000 at the 2024 property tax rates.

Additional taxation revenue will only occur in the supplemental tax year. Any taxation revenue generated from new development is part of the supplemental taxation in its first year. Therefore, the City does not receive additional taxation revenue in future years from new development, as the tax levy amount to be collected as determined from the budget process, is spread out over all properties within the City.

The amount of development charges will be based on final review of the property by the Building Services department.

Report Overview:

An application for zoning by-law amendment has been submitted to permit 30 dwelling units to be added to the existing Billiard’s Green development, in the form of row dwellings units or semi-detached dwelling units. The subject land is designated as Living Area 1 in the Official Plan and zoned “H40R3-1(23)”, Medium Density Residential Special – Holding, “H40R3-1”, Medium Density Residential – Holding, and “P”, Park.

Staff recommends approval of the application as described in the Resolution section on the basis that it is consistent with the Provincial Planning Statement, conforms to the Growth Plan for Northern Ontario, the Official Plan for the City of Greater Sudbury, has regard for matters of provincial interest and represents good planning.

Staff Report

Proposal:

The application proposes to amend By-law 2010-100Z being the Zoning By-law for the City of Greater Sudbury to amend the "H40" – Holding Zone to permit an additional 30 units prior to construction of a public road connection to Maurice Street or Tuscany Trail, and to amend the "H40R3-1(23)", Medium Density Residential Special – Holding zone to additionally permit row dwelling units, to enable the development of 30 row dwellings units or semi-detached dwelling units. The application also proposes to add the row dwelling built form as a permitted use in the R3-1(23) zone, and site-specific relief is requested for reduced site-yard setbacks, reduced courts, reduced privacy yards, the elimination of a planting strip, and reduced drive aisle width (applicant's Schedule C is appended).

The application would enable 30 dwelling units to be added to the existing Billiard's Green development known municipally as 250 Billiard's Way, for a total of 94 dwelling units. A total of 104 units would be permitted in the entire area affected by the H40 Holding Zone where 74 are currently permitted, since there are 10 existing privately-owned semi-detached dwellings located in this area.

The applicant's concept plan illustrates the existing Billiard's Green development, and 26 of the 30 requested units, with row dwelling units labelled 1-12 and 15-26, and semi-detached units labelled 13-14.

Materials provided in support of the application include:

- Concept Plan (4 pages)
- Plan 53R-20418
- Sewer and Water Capacity Assessment
- Review of Low Density Residential Trip Generation Rates

The subject lands are also subject to a conditionally-approved plan of subdivision (CGS File 780-6/12002). A portion of these land, being the lands shown for additional development, are proposed to be added to the existing Billiard's Green development through a consent for lot addition. The applicant has not, at this time, provided a revised development concept for the remaining lands within the conditionally-approved plan of subdivision.

The lands zoned "P" are currently part of the subject lands, and are intended to be transferred to the City for park purposes.

Existing Zoning: "H40R3-1(23), Medium Density Residential Special – Holding, "H40R3-1", Medium Density Residential – Holding, and "P", Park

The R3-1(23) zone permits duplex, single detached, and semi-detached dwellings, along with accessory uses and uses permitted in all zones under Section 4.40 of the Zoning By-law. The R3-1 zone additionally permits a full range of medium density residential and accessory uses including multiple and row dwellings.

The "H40" Holding Zone applies to Parts 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12 Plan 53R-20418, Lot 4, Concession 5, Township of Border, and lands zoned H40R2-2, H40R3-1, and H40R3-1(23).

Requested Zoning: A zoning by-law amendment is requested to amend the "H40" – Holding Zone to permit an additional 30 units prior to construction of a public road connection to Maurice Street or Tuscany Trail, to enable the development of row dwellings units or semi-detached dwelling units. The application also proposes to add the row dwelling built form in the R3-1(23) zone, and site-specific relief is requested for reduced site-yard setbacks, reduced courts, reduced privacy yards, the elimination of a planting strip, and reduced drive aisle width (applicant's Schedule C is appended).

Location and Site Description:

The subject property is described as PIN 73478-1214 & 73478-1229, 53R-20418, Parts 8, 9 & 11-13, Plan 53R-20418, Block 14, Plan 53M-1432, Lot 4, Concession 5, Township of Broder, which comprise the undeveloped lands in this area and are approximately 9 ha in size. The subject lands are located south of the existing Billiard's Green development known municipally as 250 Billiard's Way south of Algonquin Road and north of Highway 17. The lands are currently vacant. The lands are to be accessed and serviced through the existing Billiard's Green development and through a private driveway extending south from the end of Billiard's Way. The closest transit stop is located on Algonquin Road approximately 470 m to the north. The lands subject to the H40 Holding Zone to be rezoned have an area of approximately 7.9 ha in size.

Surrounding Land Uses:

The area surrounding the site includes residential and institutional uses.

North:	medium density residential use known as the Billiard's Green development
South:	vacant lands, Highway 17
East:	medium density residential use known as the Billiard's Green development, and further east is a running track or vacant lands zoned 'I', Institutional and associated with either St. Benedict Catholic Secondary School or Holy Cross Catholic Elementary School
West:	vacant lands zoned for low density residential use

The existing zoning & location map, indicates the location of the subject lands to be rezoned and the zoning in the immediate area.

Site photos show the uses in this area.

Public Consultation:

The statutory notice of the application was provided by newspaper along with a courtesy mail-out to surrounding property owners and tenants within 122 m of the property on August 20, 2024. The statutory notice of the public hearing was provided by newspaper along with a courtesy mail-out on October 31, 2024. The applicant was advised of the City's policy recommending that applicants consult with their neighbours, ward councillor and key stakeholders to inform area residents on the application prior to the public hearing. At the time of writing this report, staff had received one phone call from one individual and several written comments from another individual pertaining to the location of access for the new units.

Policy & Regulatory Framework:

The property is subject to the following policy and regulatory framework:

- 2024 Provincial Planning Statement
- 2011 Growth Plan for Northern Ontario
- Official Plan for the City of Greater Sudbury, 2006
- Zoning By-law 2010-100Z

Provincial Planning Statements and geographically specific Provincial Plans, along with municipal Official Plans, provide a policy framework for planning and development in the Province. This framework is implemented through a range of land use controls such as zoning by-laws, plans of subdivision and site plans.

Provincial Planning Statement:

Municipalities in the Province of Ontario are required under Section 3 of the Planning Act to ensure that decisions affecting planning matters are consistent with the Provincial Planning Statement (PPS).

Several sections of the PPS are relevant to the application.

Policy 2.2.1 states that planning authorities shall provide for an appropriate range and mix of housing options and densities to meet projected needs of current and future residents of the regional market area by:
b) permitting and facilitating:
    1. all housing options required to meet the social, health, economic and wellbeing requirements of current and future residents, including additional needs housing and needs arising from demographic changes and employment opportunities; and
    2. all types of residential intensification, including the development and redevelopment of underutilized commercial and institutional sites (e.g., shopping malls and plazas) for residential use, development and introduction of new housing options within previously developed areas, and redevelopment, which results in a net increase in residential units in accordance with policy 2.3.1.3;
c) promoting densities for new housing which efficiently use land, resources, infrastructure and public service facilities, and support the use of active transportation; and

Policy 2.3.1.1 states that settlement areas shall be the focus of growth and development. Within settlement areas, growth should be focused in, where applicable, strategic growth areas, including major transit station areas.

Policy 2.3.1.2 states that land use patterns within settlement areas should be based on densities and a mix of land uses which:
a) efficiently use land and resources;
b) optimize existing and planned infrastructure and public service facilities;
c) support active transportation;
d) are transit-supportive, as appropriate; and
e) are freight-supportive.

Growth Plan for Northern Ontario:

Municipalities in the Province of Ontario are required under Section 3 of the Planning Act to ensure that decisions affecting planning matters conform with the Growth Plan for Northern Ontario. Staff is satisfied that the application conforms to the Growth Plan.

Official Plan for the City of Greater Sudbury:

The subject property is designated as Living Area 1 in the City of Greater Sudbury Official Plan.

Section 2.3 of the Official Plan regarding reinforcement of the urban structure states that growth must continue to be directed to capitalize on existing investments, make the most efficient use of existing infrastructure and public service facilities, protect our rural and agricultural assets and preserve our natural features and areas. Reinforcing the urban structure also creates a more energy efficient land use pattern and supports climate change mitigation. Section 2.3.2 directs that settlement area land use patterns will be based on densities and land uses that make the most efficient use of land, resources, infrastructure and public service facilities, minimize negative impacts on air quality and climate change, promote energy efficiency and support public transit, active transportation and the efficient movement of goods.

Section 17 identifies a key housing goal is to maintain a balanced mix of ownership and rental housing, and to encourage a greater mix of housing types and tenure, including encouraging the production of smaller (one and two bedroom) units to accommodate the growing number of smaller households. The Official Plan is intended to provide direction as to how housing needs and issues can be addressed in concert with the CGS Housing and Homelessness Plan.

Zoning By-law 2010-100Z:

The development standards for the R3-1 zone require a maximum height of 11 m for a row dwelling or semi-detached dwelling. The minimum required front yard is 6.0 m, rear yard is 7.5 m and interior side yard is 1.8 m (two-storey). A minimum privacy yard depth of 7.5 m shall be provided abutting the full length of at least one exterior wall of each row dwelling unit. The maximum lot coverage is 40% for a row dwelling or semi-detached dwelling. The general provisions of the zoning by-law require a minimum of 30% of the lot area to be maintained as landscaped open space. Parking provisions for the proposed row dwelling units require 1.5 spaces per unit, and semi-detached dwellings require 1 space per unit, for a total of 38 spaces for 24 row dwellings and 2 semi-detached units (24*1.5 + 2*1).

For row and multiple dwellings, the minimum court required between opposing walls of one or
more multiple or row dwellings on the same lot shall be equivalent to 50 percent of the height of the higher of such walls, but not less than:
(i) 15.0 metres, where both walls contain balconies or windows into a habitable room;
(ii) 7.5 metres, where only one of such walls contains balconies or habitable room windows; or,
(iii) 3.0 metres, where neither of such walls contains balconies or habitable room windows, or in the case of opposing building corners.

Site Plan Control:

A Site Plan Control Agreement is required for the proposed development.

Previous Applications

The subject lands were part of previous Rezoning & Plan of Subdivision Applications 751-6/12-04 & 780-6/12002, were approved to permit the development of a total of 154 residential units consisting of 32 semi-detached dwellings and 122 row dwellings. At that time, staff recommended that a maximum of 55 dwelling units be permitted prior to a secondary access being constructed. Based on this condition, roads did not request a Traffic Impact Study.

Rezoning Application 751-6/23-18 was approved to amend the “H40” – Holding Zone to permit an additional 19 units prior to construction of a public road connection to Maurice Street or Tuscany Trail

Department/Agency Review:

The application has been circulated to all appropriate agencies and City divisions. Responses received have been used to assist in evaluating the application and to formulate appropriate zoning by-law standards. Comments have been addressed to the satisfaction of reviewing department and agencies.

Strategic & Environmental Planning Initiatives, and Transit Services advises they have no comments on this application.

Building Services can advise that they have no objection with the re-zoning proposal to permit the additional units and to permit row dwelling units. It should be noted that the current concept plan indicates 26 additional units. For the site-specific relief, they have the following comments:

- The main driveway access between Blocks 17/18 & Block 19, and between Blocks 20 & 21, must provide clear access for Fire Department vehicles, which is a minimum of 6.0m.
- All requested relief for setbacks, court yards and privacy yards will have impact on the building construction in terms of permitted materials and fire protection requirements. Approval through the zoning application will not negate these requirements, and we recommend a fulsome review with the consultants prior to application for Building Permit.
- In consideration of the 26 units indicated for this phase, 39 parking spaces are required where 38 are currently shown.

Conservation Sudbury does not oppose the Rezoning and provides the following comments regarding the future application for Site Plan Control Agreement:

As part of a complete application for Site Plan Control, the proponent must provide:

1. A wetland delineation that is accompanied by a report from a qualified professional (OWES-certified). The boundary of the wetland and both a 12-m area of interference and 30-m area of interference must be shown on the plans.
2. A lot grading plan that demonstrates compliance with the requirements for development within the area of interference of a wetland.
    a. The lot grading plan and site plan must shown that no development is proposed within the 12-m area of interference.
    b. Where the buffer has previously been impacted through fill placement, a restoration plan will be required.
    c. A plan to fully prevent impacts to the 12-metre area of interference of the wetland during construction.
    d. A mechanism to prevent long-term encroachment into the area of interference.
    e. Sediment control measures to mitigate impacts to the wetland during construction.
3. An erosion and sediment control plan.

Should the development be phased such that only units further from the wetland would be developed in a first phase (those being units 1 to 12 on the supplied concept plan), as part of a complete application for development of units 1 to 12 the proponent must provide a plan to fully prevent impacts to the 30-metre area of interference of the wetland during construction.

Roads, Transportation & Innovation, Active Transportation and Roads Operation had no concerns with the application.

Drainage staff advises that for the Site Plan Control Agreement application a stormwater management design brief is required to confirm the existing pond, constructed as part of Phase 2 & 3, is adequate to address the enhanced quality and post to pre quantity controls required for Phase 4. Otherwise, a revised Storm Water Management report will be required.

Development Engineering has no concerns with the proposal provided the development proceeds through the Site Plan Control Agreement process, and advises that sewer and water capacity have been confirmed.

Planning Analysis:

Planning staff circulated the development application to internal departments and external agencies. The PPS (2024), the Growth Plan (2011), and Greater Sudbury Official Plan, and other relevant policies and supporting guidelines were reviewed in their entirety. The following section provides a planning analysis of the application in respect of the applicable policies, including issues raised through agency circulation.

The application would enable 30 row dwelling units or semi-detached dwelling units to be added to the existing Billiard's Green development known municipally as 250 Billiard's Way, for a total of 94 row dwelling units. A total of 104 units would be permitted in the entire area affected by the H40 Holding Zone where 55 are currently permitted, since there are 10 existing privately-owned semi-detached dwellings located in this area.

Staff acknowledges that the principle for development of these lands has previously been established through approval of site-specific rezoning application (CGS File 751-6/12-04). At that time, staff recommended that a maximum of 55 dwelling units be permitted prior to a secondary access being constructed to the west. Based on this condition, roads did not request a Traffic Impact Study. Staff acknowledges the document called 'Review of Low Density Residential Trip General Rates that was supplied by the applicant, and which summarizes surveys completed to demonstrate that row dwellings and semi-detached dwellings generate less traffic than single detached dwellings. The roads to the west where the connection would have been provided (to Maurice Street or Tuscany Trail) remain undeveloped. Infrastructure Capital Planning Services had previously indicated no concerns with the additional 19 units approved through CGS File 751-6/23-18. Further, they have indicated no concerns with the proposed amendment to the holding zone to allow the additional 30 units to be built prior to the construction of the future road connection. Staff recommend that the road connection is not required prior to the construction of the proposed additional units.

Development of additional row dwelling units or semi-detached dwelling units in this area continues to be consistent with and conform to the PPS and Official Plan policies that are established to direct development to fully serviced settlement areas, and to enable densities that make the most efficient use of land, resources, infrastructure and public service facilities, minimize negative impacts on air quality and climate change, promote energy efficiency and support public transit, active transportation and the efficient movement of goods. The Official Plan encourages all forms of intensification and approval of this application will help to achieve the City's 20% intensification target.

Additional row dwelling units or semi-detached dwelling units in this area also continues to align with PPS and the Official Plan policies that encourage municipalities to provide a range and mix of housing types and densities. The proposal represents an opportunity to provide additional rental units, and staff recommends that this proposal is consistent with and conforms to these policies. Further, this proposal supports the City's Municipal Housing Pledge to achieve the target of 3800 new homes constructed by 2031. The City's Housing Supply and Demand Analysis (N. Barry Lyon Consultants Ltd., 2023) identified the most significant housing gaps are observed in the rental market. There is an immediate need for 470 additional rental units to achieve a vacancy rate of 5%, and an average of 66 additional rental units per year for the next 30 years to meet anticipated demand. The City's Populations Projections Report (Hemson, 2023) forecasts that over the next 30 years, over 10% of all housing unit growth will be in the form of row housing. This is a significant shift; in the last 15 years row housing growth accounted for less than 5% of all new units.

Staff is not concerned with the availability of infrastructure, services, and amenities in this area, and staff continues to recommend the subject property is an appropriate location for the proposed development.

Further to comments from Development Engineering regarding the need for a site plan control agreement, an application for site plan control is required prior to development of the lands. The site plan cannot be approved until the related consent for lot addition is approved to consolidate the subject lands with the abutting lands known as Billiard's Green at 250 Billiards Way. Matters related to site design, such as stormwater management and site servicing, will be addressed through this process.

The amount of site-specific relief that is requested to enable the development is relatively significant but, combined, would allow for an additional block of 4 units to be included in the development (Block 20). The applicant has indicated that they have worked with their architectural professional to ensure that Ontario Building Code requirements can be met with the zoning relief proposed. Building Code requirements will be further evaluated by Building Services at the time of a building permit application. Staff recommends that the majority of the proposed zoning relief is appropriate, and also that a screening device between the new development and future low density development to the north be eliminated to preserve an 'open' feel in the area given the limited space. However, staff is unable to support the proposed request for 30 units given the concept plan only illustrates that 26 units can be accommodated on the site. Also, further to comments from Building Services, staff does not recommend approval of a reduced drive aisle width since the minimum 6.0 m must be maintained to accommodate emergency vehicles, and has instead recommended a reduced privacy yard setback to offset the required driveway width.

Conclusion:

The Planning Division undertook a circulation of the application to ensure that all technical and planning matters have been satisfactorily addressed.

The following are the principles of the proposed site specific zoning by-law:

- To amend the "H40" – Holding Zone to permit an additional 26 units prior to construction of a public road connection to Maurice Street or Tuscany Trail

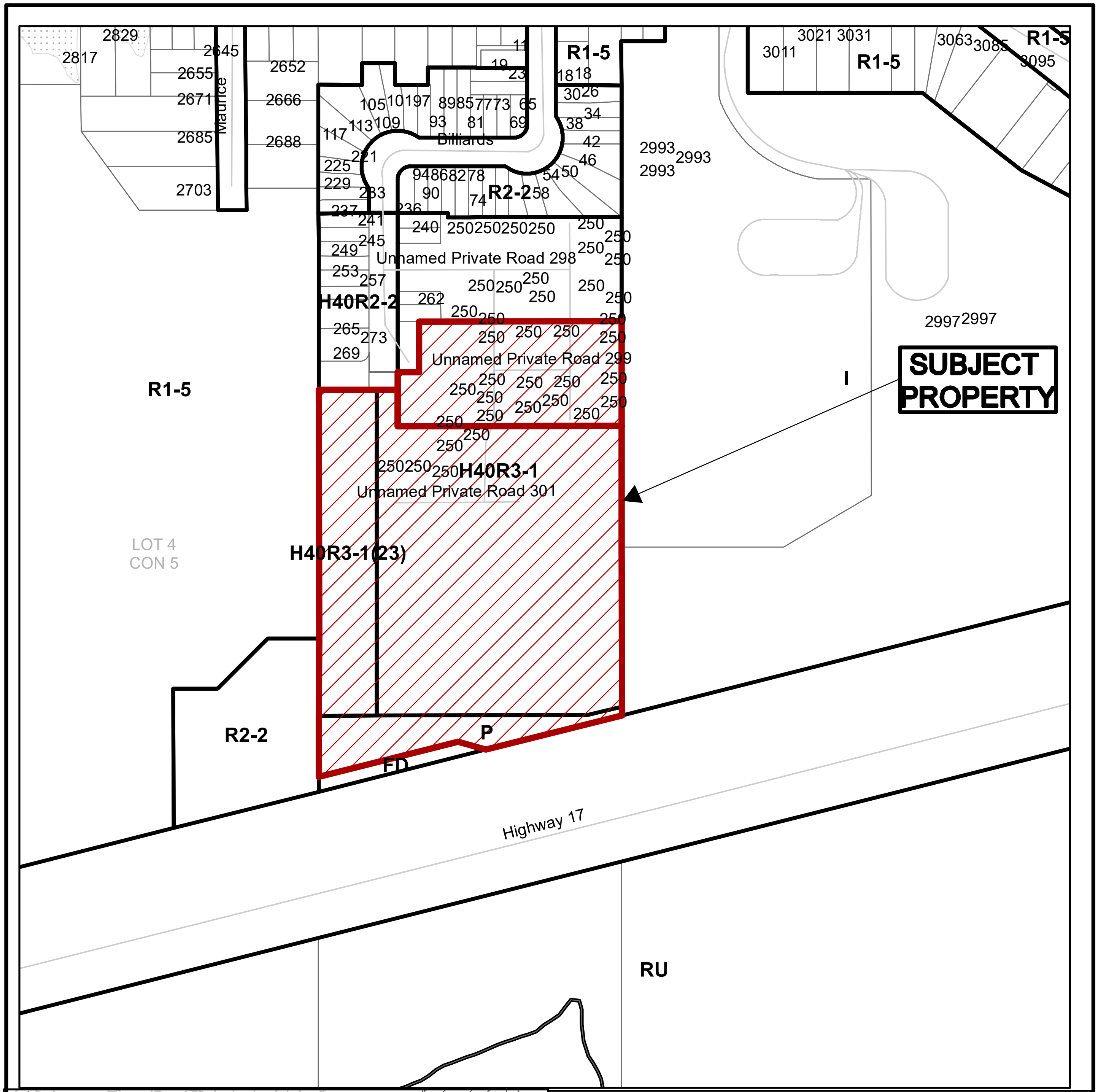
- To amend the “H40R3-1(23)”, Medium Density Residential Special – Holding zone, to additionally permit row dwelling units and site-specific relief for reduced privacy yards and reduced corner side yard setback; and
- To amend the “H40R3-1”, Medium Density Residential Special – Holding zone, to provide site-specific relief for reduced courts, reduced privacy yards, reduced corner side yard setback and elimination of a screening device.

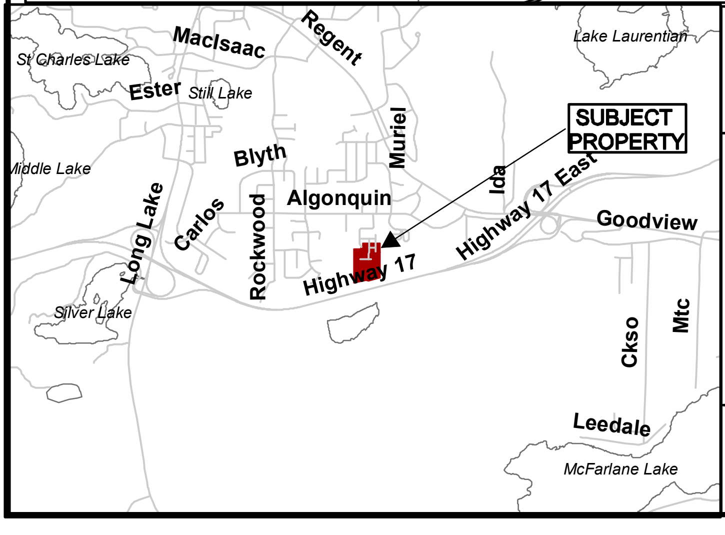
The development of the subject lands achieves a number of policy directives related to intensification and the provision of a range and mix of housing types. Staff has considered, amongst other matters, a full range of factors through a detailed review when forming the recommendation of approval for this application.

Staff is satisfied that the application is consistent with the PPS and conforms to the Growth Plan and the Official Plan. Staff is of the opinion that the proposed zoning by-law amendment is appropriate based on the following:

- The proposed row dwellings and semi-detached dwellings will contribute to the range and mix of housing available in the area.
- The site is suitable for the proposed development.
- Adequate parking, landscaping and amenity areas can be provided.
- The impact on local streets will be minimal.
- The sewer and water services are adequate for the site.

Staff recommends approval of the application as described in the Resolution section on the basis that it is consistent with the Provincial Planning Statement, conforms to the Growth Plan for Northern Ontario, the Official Plan for the City of Greater Sudbury, has regard for matters of provincial interest and represents good planning.



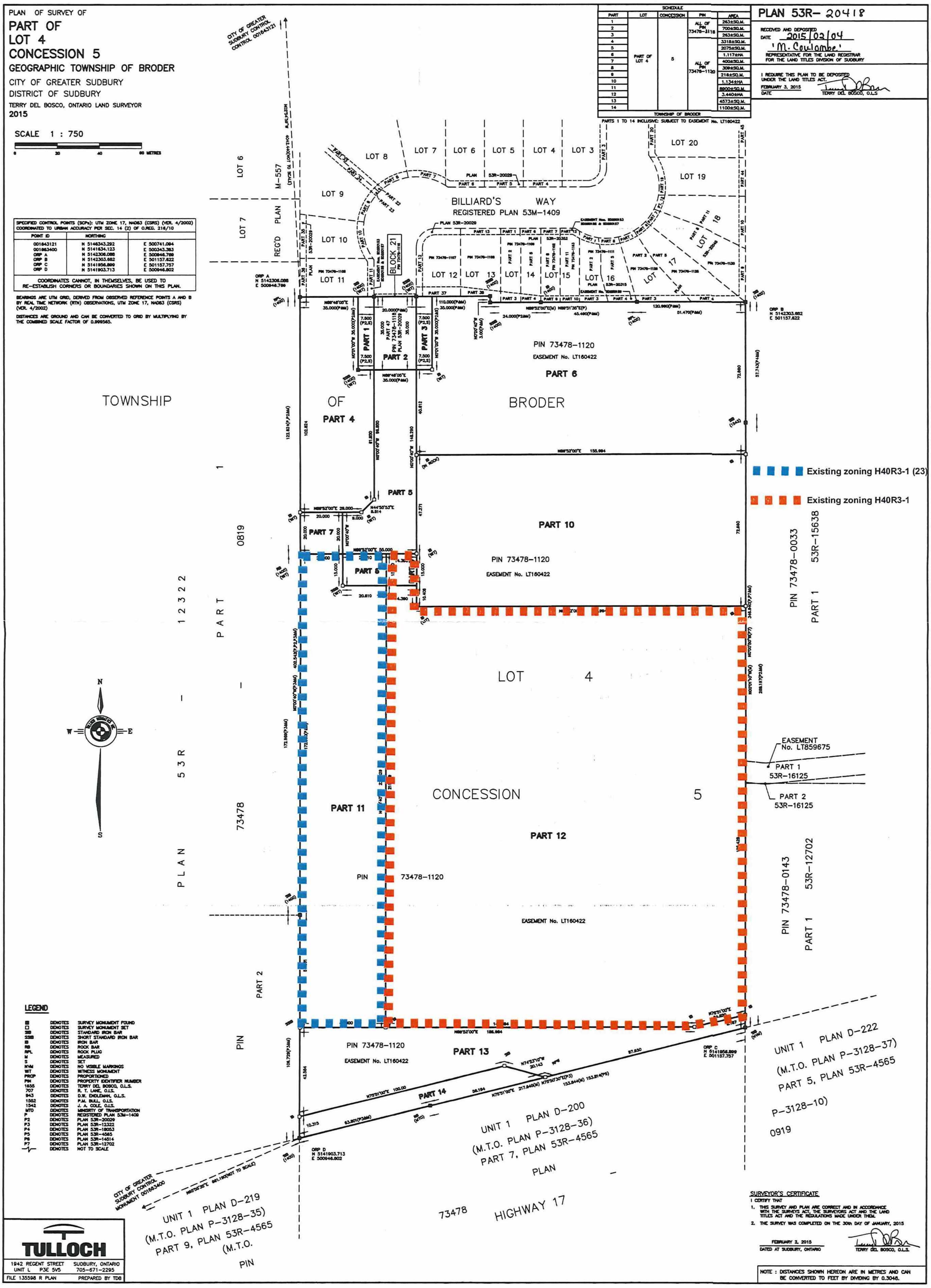


Growth and Infrastructure Department

Subject Property being PINs 73478-1214 & 73478-1229,
Parts 8, 9, 11 to 13, Plan 53R-20418,
Block 14, Plan 53M-1432,
Lot 4, Concession 5, Township of Broder,
250 Billiards Way, Sudbury,
City of Greater Sudbury

NTS
Sketch 1

751-6/24-14
Date: 2024 08 15



PLAN OF SURVEY OF

PART OF
LOT 4
CONCESSION 5

GEOGRAPHIC TOWNSHIP OF BRODER

CITY OF GREATER SUDBURY
DISTRICT OF SUDBURY
TERRY DEL BOSCO, ONTARIO LAND SURVEYOR
2015

SCALE 1 : 750

0 20 40 60 METRES

SCHEDULE

PART	LOT	CONCESSION	PIN	AREA
1	PART OF LOT 4	5	ALL OF PIN 73478-1118	263±SQ.M.
2				700±SQ.M.
3				263±SQ.M.
4			ALL OF PIN 73478-1120	3318±SQ.M.
5				2075±SQ.M.
6				1.117±HA
7				400±SQ.M.
8				309±SQ.M.
9				218±SQ.M.
10				1.134±HA
11				8800±SQ.M.
12				3.440±HA
13				4573±SQ.M.
14				1100±SQ.M.
TOWNSHIP OF BRODER				

PARTS 1 TO 14 INCLUSIVE: SUBJECT TO EASEMENT No. LT160422

PLAN 53R- 20418

RECEIVED AND DEPOSITED
DATE 2015/02/04
'M. Coulombe'
REPRESENTATIVE FOR THE LAND REGISTRAR
FOR THE LAND TITLES DIVISION OF SUDBURY

I REQUIRE THIS PLAN TO BE DEPOSITED
UNDER THE LAND TITLES ACT.
FEBRUARY 3, 2015
DATE
TERRY DEL BOSCO, O.L.S

SPECIFIED CONTROL POINTS (SCPs): UTM ZONE 17, NAD83 (CSRS) (VER. 4/2002)
COORDINATED TO URBAN ACCURACY PER SEC. 14 (2) OF O.REG. 216/10

POINT ID	NORTHING	
001643121	N 5146343.292	E 500741.094
001663400	N 5141634.123	E 500343.383
ORP A	N 5142306.088	E 500946.799
ORP B	N 5142303.682	E 501157.622
ORP C	N 5141956.899	E 501157.757
ORP D	N 5141903.713	E 500946.802

COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE-ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

BEARINGS ARE UTM GRID, DERIVED FROM OBSERVED REFERENCE POINTS A AND B BY REAL TIME NETWORK (RTN) OBSERVATIONS, UTM ZONE 17, NAD83 (CSRS) (VER. 4/2002)

DISTANCES ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.999565.

LEGEND

■	DENOTES	SURVEY MONUMENT FOUND
□	DENOTES	SURVEY MONUMENT SET
SIB	DENOTES	STANDARD IRON BAR
SSIB	DENOTES	SHORT STANDARD IRON BAR
IB	DENOTES	IRON BAR
RB	DENOTES	ROCK BAR
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M	DENOTES	MEASURED
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NVM	DENOTES	NO VISIBLE MARKINGS
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707	DENOTES	R. T. LANE, O.L.S.
943	DENOTES	D.W. ENDLEMAN, O.L.S.
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P	DENOTES	REGISTERED PLAN 53M-1409
P2	DENOTES	PLAN 53R-20029
P3	DENOTES	PLAN 53R-12322
P4	DENOTES	PLAN 53R-18063
P5	DENOTES	PLAN 53R-4565
P6	DENOTES	PLAN 53R-14614
P7	DENOTES	PLAN 53R-12702
—∿—	DENOTES	NOT TO SCALE

TULLOCH
1942 REGENT STREET SUDBURY, ONTARIO
UNIT L P3E 5V5 705-671-2295
FILE 135598 R PLAN PREPARED BY TDB

SURVEYOR'S CERTIFICATE

I CERTIFY THAT

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE LAND TITLES ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 30th DAY OF JANUARY, 2015

FEBRUARY 2, 2015
DATED AT SUDBURY, ONTARIO
TERRY DEL BOSCO, O.L.S.

NOTE : DISTANCES SHOWN HEREON ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

SITE PLAN DATA:

250 BILLIARD'S WAY
LOT 4, CONCESSION 5
GEOGRAPHIC TOWNSHIP OF BRODER
CITY OF GREATER SUDBURY

SURVEY INFORMATION BY TERRY DEL BOSCO DATED JUNE 28, 2013

ZONING	H40 R3-1 & H40 R3-1(23) - MEDIUM DENSITY RESIDENTIAL
USE OF BUILDING	RESIDENTIAL DEVELOPMENT (26 NEW UNITS, 74 EXISTING)
DENSITY	11.0 units/HA

	EXISTING	NEW	TOTAL
PROPERTY AREA	43,506 sq.m.	42,005 sq.m.	85,511 sq.m.
BUILDING COVERAGE	8,667.9 sq.m. (19.9%)	10,284 sq.m (24.5%)	18,951.9 sq.m. (22%)
GROSS FLOOR AREA	8,667.9 sq.m.	10,284 sq.m.	18,951.9 sq.m.
PAVED AREA	5,890 sq.m.	9,279 sq.m.	15,169 sq.m.
GRAVEL AREA	759.5 sq.m.	0.00 sq.m.	759.5 sq.m.
BUILDING HEIGHT	<11.0m	<11.0m	<11.0m
LANDSCAPED AREA	19,315 sq.m (44.4%)	22,460 sq.m.(53.5%)	41,775 sq.m. (48.9%)
SIDE YARD SETBACK	3.0 m	3.0 m	3.0 m
REAR YARD SETBACK	7.5 m	7.5 m	7.5 m
PARKING CALCULATION	1.5 SPACE PER UNIT	1.5 SPACE PER UNIT	1.5 SPACE PER UNIT
SPACES	116	37	153
GARAGE SPACES	64	26	90
BARRIER FREE SPACES	2	1	3

SNOW REMOVAL:	TO BE PROVIDED BY PRIVATE SERVICES
GARBAGE REMOVAL:	TO BE PROVIDED BY PRIVATE SERVICES
BICYCLE PARKING:	GARAGE UNITS
LOADING SPACES:	N/A

Dalron

R.V. ANDERSON ASSOCIATES LIMITED
Innovative solutions for complex challenges

CONCEPT PLAN

SCALE: 1:500
DATE: SEPTEMBER 2024
DRAWN: LZ
JOB NUMBER: 237154

SITE PLAN DATA:

250 BILLIARD'S WAY
LOT 4, CONCESSION 5
GEOGRAPHIC TOWNSHIP OF BRODER
CITY OF GREATER SUDBURY

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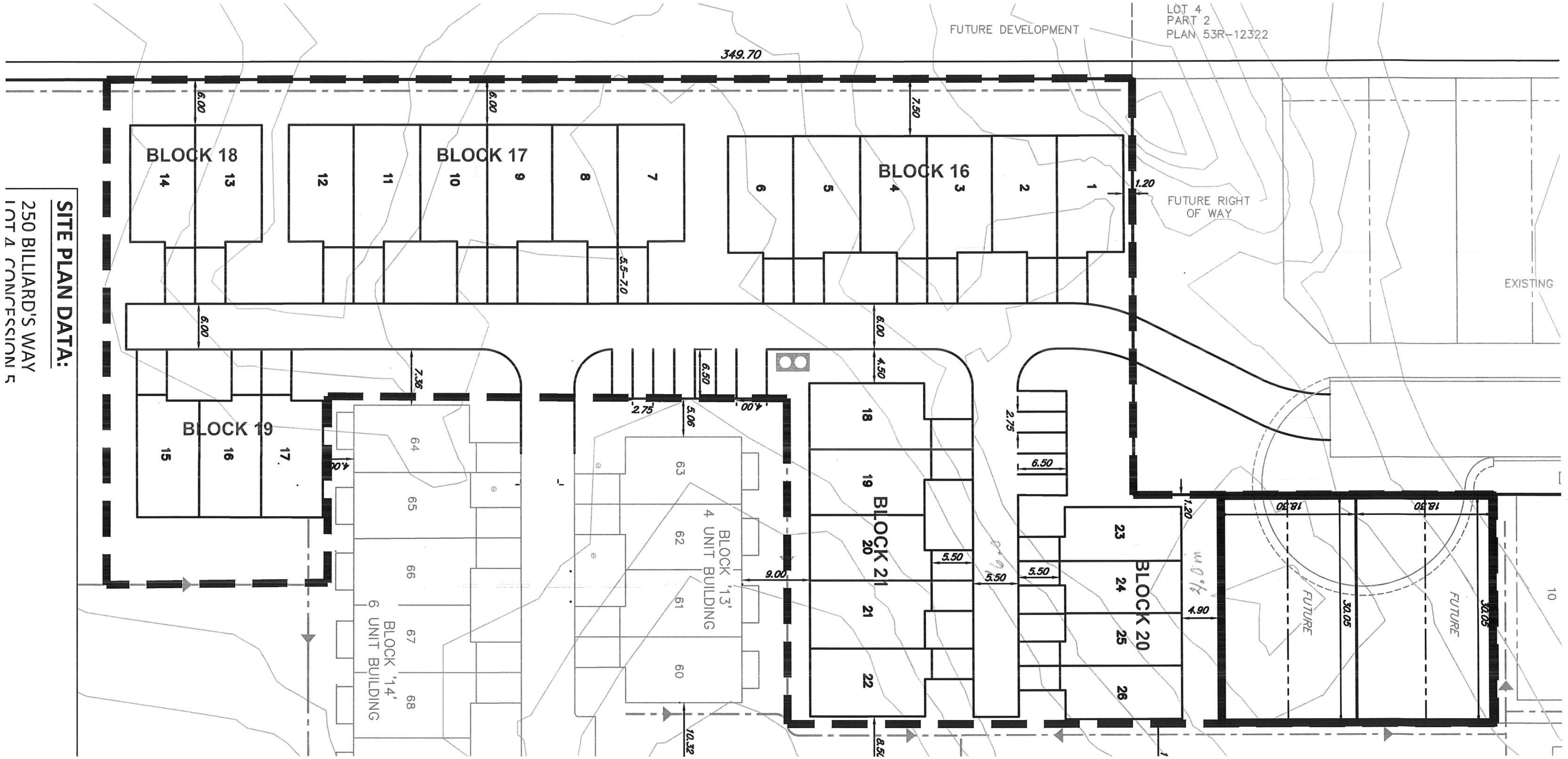
SITE PLAN DATA:
250 BILLIARD'S WAY
LOT 4 CONCESSION 5
FUTURE DEVELOPMENT
LOT 4
PART 2
PLAN 53R-12322
349.70
BLOCK 18
14
13
BLOCK 17
12
11
10
9
8
7
BLOCK 16
6
5
4
3
2
1
6.00
6.00
7.50
1.20
FUTURE RIGHT OF WAY
EXISTING
5.5-7.0
6.00
6.00
7.36
6.50
4.50
2.75
4.00
5.06
BLOCK 19
15
16
17
4.00
64
65
66
67
68
BLOCK '14'
6 UNIT BUILDING
63
62
61
60
BLOCK '13'
4 UNIT BUILDING
9.00
BLOCK 21
18
19
20
21
22
5.50
5.50
5.50
2.75
6.50
BLOCK 20
23
24
25
26
1.20
4.90
18.30
18.30
30.05
30.05
FUTURE
FUTURE
10
10.32
8.50

PLAN OF SURVEY OF

PART OF
LOT 4
CONCESSION 5
GEOGRAPHIC TOWNSHIP OF BRODER

CITY OF GREATER SUDBURY
DISTRICT OF SUDBURY
TERRY DEL BOSCO, ONTARIO LAND SURVEYOR
2015

SCALE 1 : 750

0 20 40 60 METRES

SCHEDULE				
PART	LOT	CONCESSION	PIN	AREA
1	PART OF LOT 4	5	ALL OF PIN 73478–1118	263±SQ.M.
2				700±SQ.M.
3				263±SQ.M.
4			ALL OF PIN 73478–1120	3318±SQ.M.
5				2075±SQ.M.
6				1.117±HA
7				400±SQ.M.
8				308±SQ.M.
9				218±SQ.M.
10				1.134±HA
11				8800±SQ.M.
12				3.440±HA
13				4573±SQ.M.
14				1100±SQ.M.
TOWNSHIP OF BRODER				

PARTS 1 TO 14 INCLUSIVE: SUBJECT TO EASEMENT No. LT160422

PLAN 53R- 20418

RECEIVED AND DEPOSITED
DATE 2015/02/04
'M. Coulombe'
REPRESENTATIVE FOR THE LAND REGISTRAR
FOR THE LAND TITLES DIVISION OF SUDBURY

I REQUIRE THIS PLAN TO BE DEPOSITED
UNDER THE LAND TITLES ACT.
FEBRUARY 3, 2015
DATE
TERRY DEL BOSCO, O.L.S.

SPECIFIED CONTROL POINTS (SCPs): UTM ZONE 17, NAD83 (CSRS) (VER. 4/2002) COORDINATED TO URBAN ACCURACY PER SEC. 14 (2) OF O.REG. 216/10

POINT ID	NORTHING	
001643121	N 5146343.292	E 500741.094
001663400	N 5141834.123	E 500343.383
ORP A	N 5142306.088	E 500946.789
ORP B	N 5142303.882	E 501157.822
ORP C	N 5141856.899	E 501157.757
ORP D	N 5141803.713	E 500946.802

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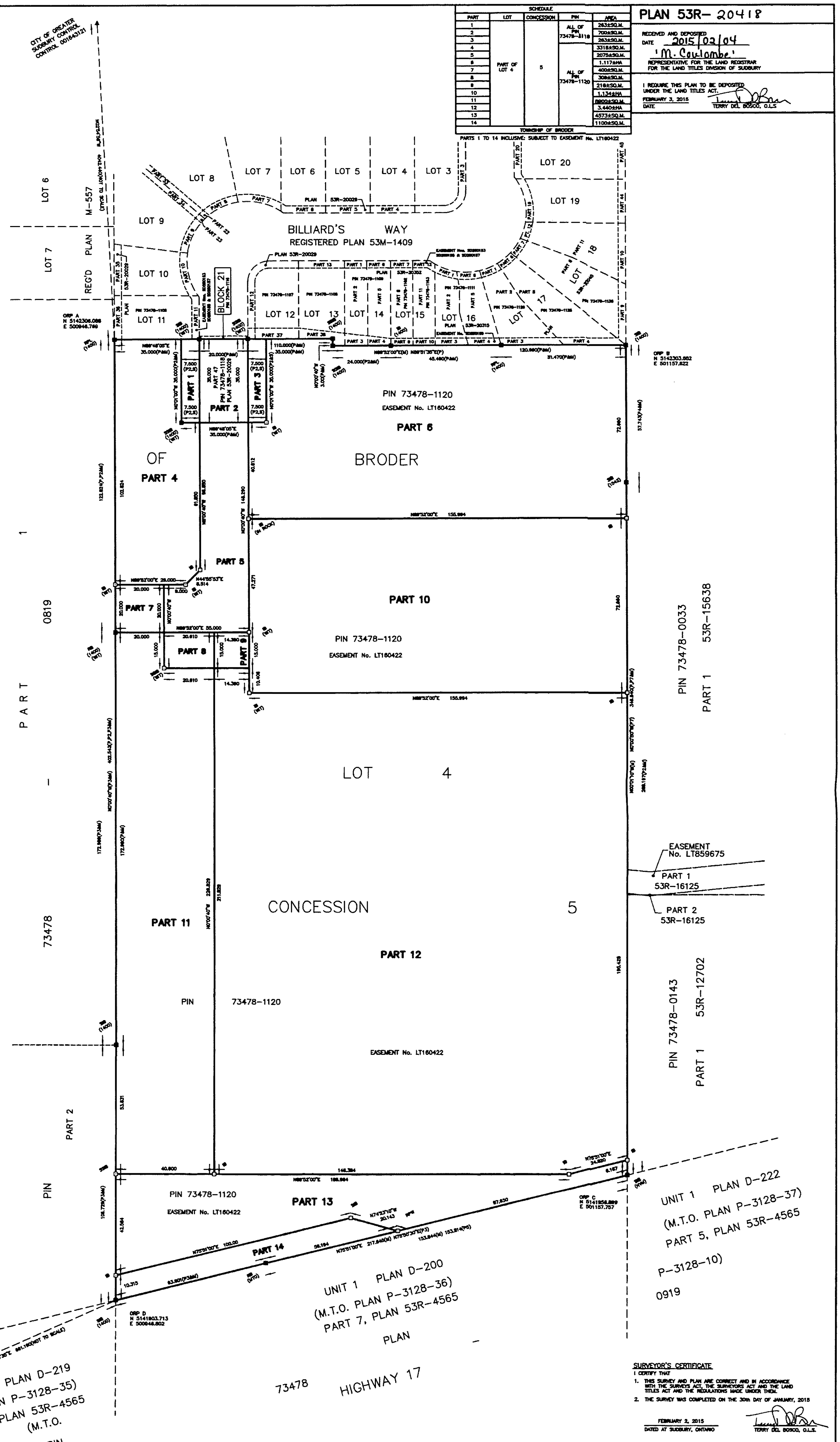

LEGEND

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RPL	DENOTES	ROCK PLUG
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DATED AT SUDBURY, ONTARIO

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TULLOCH
1942 REGENT STREET SUDBURY, ONTARIO
UNIT L P3E 5V5 705-671-2295
FILE 135598 R PLAN PREPARED BY TDB

Schedule "C"

Requested Variances:

I. Court:
   - i) Proposed 8.5m where 15m is required for walls containing balconies or windows to habitable rooms - swale to be included within court.

II. Privacy Yard:
   - i) Block 20: Proposed 4.5m where 7.5m is required – swale to be included in privacy yard.
   - ii) Block 21: Proposed 1.5m where 7.5m is required – swale to be included in privacy yard. Note: Block 21 will back onto Block 13 in a previous phase and a combined courtyard and privacy yard will be 9.0m.
   - iii) Block 16: Proposed a minimum of 7.25m where 7.5m is required – swale to included in privacy yard.
   - iv) Block 17: Proposed a minimum of 7.25m where 7.5m is required – swale to included in privacy yard.
   - v) Block 18: Proposed a minimum of 7.25m where 7.5m is required – swale to included in privacy yard.

III. Driveways (Both Unit and Common Drive):
   - i) Common Driveway between Blocks 20 and 21: Proposed 5.5m driveway where 6m is required.
   - ii) Block20: Proposed 5.5m where 6m is required.
   - iii) Block 21: Proposed 5.5m where 6m is required.

   Note: Twelve (12) larger vehicle (6.5m) parking spaces provided.

IV. Corner Side Yard Setback:
   - i) Block 16: Proposed minimum of 3.0m setback where 4.5m is required.
   - ii) Block 20: Proposed minimum of 1.6m setback where 4.5m is required.

V. Planting Strip: Relief from 4.15.4 Planting Strip where planting strip is required along the west lot line [Blocks 16, 17, 18] – proposed to leave as natural treed area.

"a) A 3.0 metre-wide *planting strip* adjacent to the full length of the *lot line* shall be *required*:
ii) Where a *lot* zoned Medium Density Residential (R3) (R3-1) or High Density Residential (R4) abuts a *lot* zoned Low Density Residential One (R1) or Low Density Residential Two (R2);

b) Notwithstanding 4.15.4 a) where a *planting strip* contains an opaque wall or opaque *fence* having a *height* of 1.5 metres or more, the width of the *required planting strip* may be reduced to 1.8 metres in width."

Photo 1. Subject lands at the end of Billiard's Way, facing south, with construction of Billiard's Green row dwelling units on the left and Highway 17 in the distance. Photo taken September 12, 2024. CGS File 751-6/24-14.

Photo 2. Subject lands at the end of Billiard's Way, facing south, with construction of Billiard's Green row dwelling units on the left and Highway 17 in the distance. Photo taken September 12, 2024. CGS File 751-6/24-14.

Photo 3. Subject lands in foreground with construction of Billiard's Green row dwelling units beyond, facing east. Photo taken September 12, 2024. CGS File 751-6/24-14.

Photo 4. Northeast corner of the subject lands showing privately-owned semi-detached units to the north of the subject lands, and Billiard's Green row dwelling units in the centre and on the right, facing east. Photo taken September 12, 2024. CGS File 751-6/24-14.

Photo 5. Privately-owned semi-detached units to the north of the subject lands on the west side of Billiard's Way, facing west. Photo taken September 12, 2024. CGS File 751-6/24-14.

Photo 6. Lands to the north of the subject lands intended for park use and a future road connection to the west on the west side of Billiard's Way, facing southwest. Photo taken September 12, 2024. CGS File 751-6/24-14.

City of Greater Sudbury | P.O. Box 5000 Stn. A, 200 Brady Street, Sudbury ON P3A 5P3 I 705.674.4455
Ville du Grand Sudbury | CP 5000 Succ A, 200, rue Brady, Sudbury, ON P3A 5P3 I 705 674.4455

Greater|Grand Sudbury

July 31, 2024

R.V. Anderson & Associates
436 Westmount Ave
Sudbury, ON P3A 5Z8

Attention: Candice Green, P.Eng CGreen@rvanderson.com

Re: Sewer and Water Capacity Analysis
Billiards Townhomes Phase 2
Township of Broder

The Development Engineering Section has reviewed your request for a Sewer and Water Capacity Analysis at the above noted location and have the following to report:

A review of the sewage mains downstream from the proposed connection at MH 3-380 Billiards Way revealed that the mains are capable of conveying the additional 1.48 L/s of flow expected from your development.

A capacity analysis performed by our WaterCAD model, developed the following results at the 300mm main on Billiards Way.

Values Obtained from Model	C.G.S. Minimum Requirements
Max Hour: 60 psi	• 40 psi
Max Day: 60 psi	• 50 psi
Fire Flow: 181 l/s	• 75 L/s R1, 100 L/s R3

The results of the WaterCAD analysis indicate that sufficient water capacity and pressure exist for the proposal in question.

It should be noted that these results are derived at by using a theoretical computer model based on our best available data. In the event that these developments do not proceed within a one (1) year period, then you should make the necessary arrangements to have a current analysis carried out to take into account any changes made in our sewer or WaterCAD models and to ensure that there is sufficient Sewage, Fire Flows and/or Domestic Pressures available for your proposal(s).

Should you have any questions or concerns please contact me at 671-2489 ext 2409.

Yours truly,

David Longarini
Development Engineering Technician

DVL/ds

cc: Akli BenAnteur, Wastewater Project Engineer, (Kelly Lake)

Review of
Low Density Residential
Trip Generation Rates
Sudbury

DRAFT

Prepared by:
Tranplan Associates
Sudbury 705-522-0272
Toronto 416-670-2005
Peterborough 705-874-3638
www.tranplan.com

Prepared for:
Dalron Construction
130 Elm Street
Sudbury, ON P2B 0A0
September 2023

CONTENTS

APPENDICES

EXHIBITS

TABLES

1. Introduction

Dalron has experienced a growing market demand for more compact residential units with fewer bedrooms than the standard R1 single family homes. These units also tend to have only a single car garage. Examples of these more compact units are the townhouses/semis of Algonquin Green, the Radcliff Street semis and Mallards Green townhouses. It was felt that these units may generate less traffic than the typical R1 single family homes and, if true, future Traffic Impact Studies for the more compact unit developments should reflect the reduced traffic flows.

In order to determine if these more compact units generate less traffic, special surveys were carried out at the three noted Dalron developments, along with surveys of two typical R1 single family residential areas. The results were compared to the ITE Trip Generation Manual rates for low density residential units.

2. Methodology

All vehicular traffic entering and leaving the following three sites was recorded 6:30 am to 9:00 am and 3:00pm to 6:00 pm in mid-September:

i) Algonquin Green (35 units)
ii) Radcliffe Park (30 units)
iii) Mallards Green (20 units)

The Key Map shows the location of the sites and Appendix A has more details about the housing at the three sites.

For control purposes, surveys were also conducted 3:00pm to 6:00pm at the following two typical R1 single family sites during September (see Key Map for location):

i) Eden Point (31 single family R1 homes)
ii) Gemma Street (50 single family homes)

The results from the above surveys were then compared against the ITE Trip Generation Manual trip rates for low density residential homes (singles and semis).

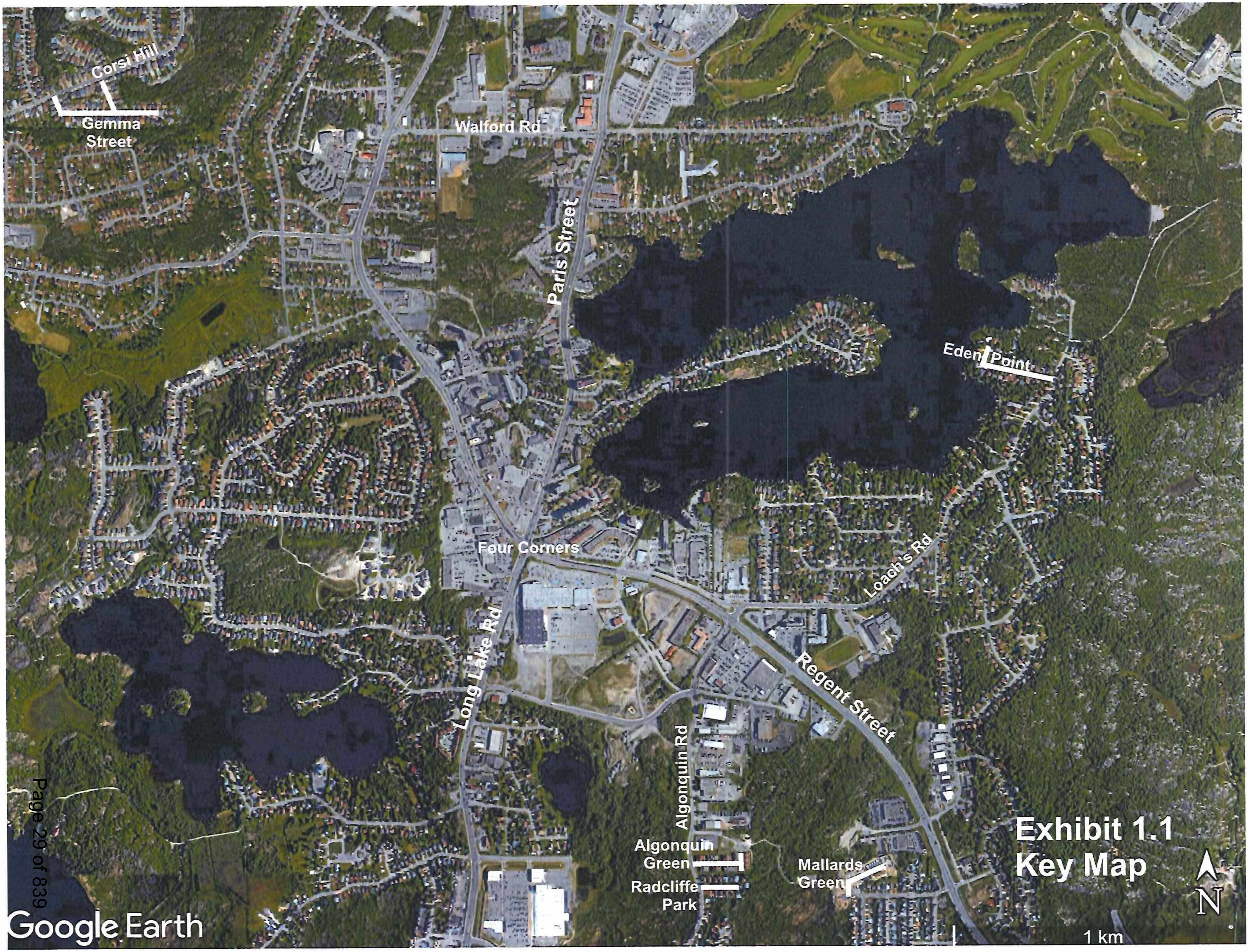


Exhibit 1.1 Key Map

3. Survey Results

The attached Table 3.1 shows the results of the surveys and the comparable ITE trip rates. The afternoon peak hour trip rates for Algonquin Green, Radcliffe Park and Mallard Green are 0.60, 0.63 and 0.50 trips per dwelling unit respectively, for an average of 0.59 trips per dwelling unit for the three sites combined. The ITE Trip Generation Manual trip rate for singles and semis is 1.00 trips per dwelling unit. The trip generation from the three special residential developments is 40% lower than the ITE rate.

The two typical R1 single family sites (Eden Point and Gemma Street) generated 1.00 trips per dwelling unit during the afternoon peak hour (i.e. identical to the ITE trip rate). This confirms that typical R1 housing in Sudbury generates traffic at ITE trip rate levels.

4. Conclusion

The more compact housing in developments such as Algonquin Green, Radcliffe Park and Mallards Green generate 40% less traffic during the critical afternoon peak hour than the rate specified in the ITE Trip Generation Manual. It is proposed that future Traffic Impact Studies for similar more compact developments be prepared using the reduced trip rates.

Table 3.1

Vehicle Trips per Dwelling Unit

Sudbury Sites vs ITE Trip Generation Manual

Survey Site	**No. of Units**	**PM Peak Hour Vehicle Trips / Unit**			**AM Peak Hour Vehicle Trips / Unit**		
		Total	In	Out	Total	In	Out
Algonquin Green	35	0.60	0.40	0.20	0.49	0.14	0.35
Radcliffe Park	30	0.63	0.43	0.20	0.63	0.20	0.43
Mallard Green	20	0.50	0.25	0.25	0.25	0.10	0.15
Total (3 Sudbury sites)	**85**	**0.59**	**0.38**	**0.21**	**0.48**	**0.15**	**0.33**
ITE Trip Generation Manual*		**1.00**	**0.63**	**0.37**	**0.75**	**0.19**	**0.56**
Eden Point	31	0.94	0.65	0.29			
Gemma St	50	1.04	0.70	0.34			
Total (2 control sites)	**81**	**1.00**	**0.68**	**0.32**			

* ITE Trip Generation Manual 11th Edition

APPENDIX A

Information about Survey Areas

- i) Algonquin Green
- ii) Radcliffe Park
- iii) Mallards Green
- iv) Eden Point
- v) Gemma Street

Description of Housing in Survey Areas

1. Algonquin Green

35 dwelling units
12 units of two-story with 3 bedrooms
11 units of *bungalofts* 2 bedroom bungalows with one loft bedroom
12 units of 2 bedroom bungalows with one bedroom in basement
Single car garages.

2. Radcliffe Park

30 dwelling units
26 units of semi-detached homes with 3 bedrooms
4 single family homes with 3 bedrooms
Single car garages.

3. Mallards Green Condos

20 dwelling units
All units with 2+1 bedrooms
Single car garages

4. Eden Point

31 dwelling units
R1 single family detached houses
Mix of single and two car garages.

5. Gemma Street

50 dwelling units
R1 single family detached houses
Mostly two car garages

APPENDIX B

Trip Generation Count Data

- i) Algonquin Green
- ii) Radcliffe Park
- iii) Mallards Green
- iv) Eden Point
- v) Gemma Street

Trip Generation Survey Counts
Date: September 14-27, 2023

All vehicles
Taken by:

TIME	Algonquin Green				Radcliffe Park				Mallards Green				Eden Point				Gemma Street			
	IN	OUT	Total 15 min	Total 60 min	IN	OUT	Total 15 min	Total 60 min	IN	OUT	Total 15 min	Total 60 min	IN	OUT	Total 15 min	Total 60 min	IN	OUT	Total 15 min	Total 60 min
6:30 - 6:45	0	0	0		0	1	1		0	0	0									
6:45 - 7:00	1	2	3		0	3	3		0	0	0									
7:00 - 7:15	0	0	0		0	1	1		0	2	2									
7:15 - 7:30	1	0	1	4	0	1	1	6	1	0	1	3								
7:30 - 7:45	0	0	0	4	3	2	5	10	1	1	2	5								
7:45 - 8:00	2	4	6	7	2	6	8	15	0	0	0	5								
8:00 - 8:15	1	2	3	10	1	1	2	16	0	1	1	4								
8:15 - 8:30	2	2	4	13	2	2	4	19	0	1	1	4								
8:30 - 8:45	0	4	4	17	1	4	5	19	0	0	0	2								
8:45 - 9:00	1	3	4	15	1	2	3	14	2	0	2	4								
AM Pk Hr	5	12	7:45-8:45 am		6	13	7:45-8:45 am		2	3	7:00-8:00 am									
2:30 - 2:45	1	0	1		1	4	5													
2:45 - 3:00	0	1	1		1	1	2													
3:00 - 3:15	3	2	5		4	2	6		0	0	0									
3:15 - 3:30	0	1	1	8	3	2	5	18	1	1	2		3	1	4		3	3	6	
3:30 - 3:45	3	1	4	11	1	1	2	15	1	1	2		1	0	1		5	4	9	
3:45 - 4:00	2	1	3	13	0	2	2	15	0	0	0	4	1	2	3		4	5	9	
4:00 - 4:15	3	2	5	13	2	5	7	16	1	1	2	6	2	4	6	14	4	6	10	34
4:15 - 4:30	3	1	4	16	3	1	4	15	1	3	4	8	3	4	7	17	14	2	16	44
4:30 - 4:45	3	3	6	18	1	1	2	15	1	0	1	7	0	2	2	18	3	3	6	41
4:45 - 5:00	5	1	6	21	3	1	4	17	2	1	3	10	7	3	10	25	8	8	16	48
5:00 - 5:15	2	2	4	20	4	3	7	17	1	0	1	9	2	0	2	21	10	4	14	52
5:15 - 5:30	1	1	2	18	3	1	4	17	0	0	0	5	6	6	12	26	3	0	3	39
5:30 - 5:45	1	2	3	15	2	1	3	18	1	0	1	5	5	0	5	29				
5:45 - 6:00	0	1	1	10	4	1	5	19	0	1	1	3								
PM Pk Hr	14	7	4:00-5:00 pm		13	6	5:00-6:00 pm		5	5	4:00-5:00 pm		20	9	4:45-5:45 pm		35	17	4:15-5:15 pm	

Lisa Locken

From: Kathy Heroux
Sent: Monday, August 26, 2024 3:47 PM
To: Wendy Kaufman
Subject: FW: FILE: # 751-6/24-14

From: [redacted]>
Sent: Saturday, August 24, 2024 11:30 AM
To: planningservices <planning.services@greatersudbury.ca>
Subject: FW: FILE: # 751-6/24-14

You don't often get email from [redacted]. Learn why this is important

Good morning Wendy

My main concern with regard to this file, is that of an escape route from the area occupied by the present units 1 to 45 plus the Phase 3 additional 20 units.
The NOTICE OF APPLICATION for Phase 3 requested approval to build 20 units prior to construction of a public road connection to Maurice Street or Tuscany Trail.
That brings the total number of units to 65

This File / Application is requesting the same; and is for an additional 30 units, which would bring the total to 95.
The drawing that was included in this correspondence does not indicate where the access to these 30 units would be.

Billiards Way; though the construction of this passage is not presently completed, leads past the home located at "269 Billiards Way".
Preferably, this route would be connected with the east – west route located in the Phase 3 development.

This would alleviate some of the traffic on the driveway of 250 Billiards past units 1 to 45.
Should there be a situation of a blockage due to a medical emergency, house fire, etc. there would be an alternate route out for these almost 95 units.

Additionally, we have been plagued with forest fires in the world and there is nothing to prevent the trees to the south and to the east of the Billiards Green development catching fire.

I look forward to your reply. I will not have access to my PC for a few days, but I am able to view and possibly respond to your reply on my mobile phone.
Email is always my preferred method of communication.

Thank you.

Robert South

250 Billiards Way Unit 10

Sudbury ON
Canada P3E 0E9
Land Line [redacted]
Cell [redacted]

From: [redacted]>
Sent: Friday, August 23, 2024 1:21 PM
To: 'planning.services@greatersudbury.ca' <planning.services@greatersudbury.ca>
Subject: FW: FILE: # 751-6/24-14

Good afternoon

The message below was sent to Alex this morning and I have received the reply as indicated below.

Yesterday, Canada Post delivered correspondence with regard to the above indicated file which invited responses pertaining to the Application.
There is no indication as to a date of a deadline for a response.

Please advise.

This is with regard to a **NOTICE OF APPLICATION** from Dalron Construction Limited pertaining to a proposed expansion of their Billiard's Green development.

I have spoken with some of my neighbours in Phase 2 of this Dalron Project which includes Units 24 to 45 and they don not appear to have received a copy of the letter from Alex.

You may wish to expedite copies to them.

Thank you.

Robert South
250 Billiards Way Unit 10
Sudbury ON
Canada P3E 0E9
Land Line [redacted]
Cell [redacted]

From: Alex Singbush <alex.singbush@greatersudbury.ca>
Sent: Friday, August 23, 2024 8:01 AM
To: [redacted]
Subject: Automatic reply: FILE: # 751-6/24-14

I am out of the office, returning on September 3, 2024. In my absence you may contact Planning Services at 705-674-4455 x 4295 or planning.services@greatersudbury.ca to have your inquiry redirected to another member of the Development Services team.

700 Paris Street, Sudbury (Stage Two)

Presented To:	Planning Committee
Meeting Date:	November 25, 2024
Type:	Public Hearing
Prepared by:	Wendy Kaufman Planning Services
Recommended by:	General Manager of Growth and Infrastructure
File Number:	701-6/23-04 & 751-6/23-25

Report Summary

This report provides a recommendation regarding Official Plan Amendment and Rezoning applications that together would permit the development of three buildings containing 109 retirement home guest rooms and 421 multiple dwelling units with up to three levels of underground shared parking, along with 380 square metres of restaurant use.

This report is presented by Wendy Kaufman, Senior Planner.

Letter(s) of concern from concerned citizen(s) have been received.

Resolutions

Resolution 1:

THAT the City of Greater Sudbury approves the application by 2226553 Ontario Inc. to amend the City of Greater Sudbury Official Plan to permit a residential density of 237 units per hectare and 380.0 square metres of commercial space on lands described as PINs 73584-0652 & 73591-0047, Part 2, Plan 53R-3947, Part of Lot 5, Concessions 2 & 3, Township of McKim as outlined in the report entitled “700 Paris Street, Sudbury (Stage Two)”, from the General Manager of Growth and Infrastructure, presented at the Planning Committee meeting on November 25, 2024.

Resolution 2:

THAT the City of Greater Sudbury approves the application by 2226553 Ontario Inc. to amend Zoning By-law 2010-100Z by changing the zoning classification from “R4(3)”, High Density Residential Special to an amended “R4(3)”, High Density Residential Special, on lands described as PINs 73584-0652 & 73591-0047, Part 2, Plan 53R-3947, Part of Lot 5, Concessions 2 & 3, Township of McKim, as outlined in the report entitled “700 Paris Street, Sudbury (Stage Two)”, from the General Manager of Growth and Infrastructure, presented at the Planning Committee meeting on November 25, 2024, subject to the following conditions:

1. That the amending by-law include the following site-specific provisions:

i) The only permitted uses shall be:

(a) a retirement home with a maximum of 109 guest rooms and a maximum height of 40.0 metres and 12 storeys;

(b) a multiple dwelling with a maximum of 199 dwelling units and a maximum height of 56.0 metres and 16 storeys;

(c) a multiple dwelling with a maximum of 222 dwelling units and a maximum height of 69.0 metres and 20 storeys; and

(d) restaurant uses not to exceed a maximum net floor area of 380.0 square metres.

ii) The lot line abutting Paris Street shall be deemed to be the front lot line;

iii) The lot line abutting Facer Street shall be deemed to be the corner side lot line;

iv) The lot line opposite the front lot line shall be deemed the rear lot line;

v) Any lot line not deemed a front, exterior side, or rear lot line shall be deemed to be an interior side lot line;

vi) The minimum corner side yard setback shall be 18.0 metres from Facer Street;

vii) The minimum rear yard setback shall be 0.0 metres;

viii) The minimum interior side yard setback shall be 0.0 metres;

iv) A minimum lot area of 41 square metres per multiple dwelling unit shall be required; and

v) The minimum required court shall be 15.0 metres between buildings.

2. That an “H”, (Holding) symbol be applied to the zoning limiting development to the uses which legally existed on the date prior to the By-law applying the “H” Holding symbol is enacted until the owner has entered into an agreement with the City of Greater Sudbury with respect to undertaking the upgrades to the transportation network required as a result of this development to the satisfaction of the Director of Planning Services.

Relationship to the Strategic Plan, Health Impact Assessment and Climate Action Plans

The applications to amend the Official Plan and Zoning By-law are operational matters under the Planning Act to which the City is responding. The proposal is consistent with the goals and objectives of the Strategic Plan by contributing to the housing-related goals by adding to the range and mix of housing available in this area. The proposal demonstrates conformity with the Strategic Plan and the Community Energy & Emissions Plan because it proposes residential intensification and housing diversification within a fully serviced settlement area. The proposal is also consistent with the goals and objectives of the Strategic Plan by providing opportunities to diversify the employment base. The application also supports business retention and growth by expanding the uses permitted at the site. Overall, the application aligns with the Community Energy and Emissions Plan by supporting the strategy of creating compact, complete communities.

Financial Implications

If approved, staff are unable to estimate taxation revenues as the assessment value of these three buildings (as includes retirement home and restaurant) would be determined by Municipal Property Assessment Corporation (MPAC).

Any additional taxation revenue will only occur in the supplemental tax year. Any taxation revenue generated from new development is part of the supplemental taxation in its first year. Therefore, the City does not receive additional taxation revenue in future years from new development, as the tax levy amount to be collected as determined from the budget process, is spread out over all properties within the City.

The amount of development charges will be based on final review of the property by the Building Services department.

Report Overview:

Applications for Official Plan Amendment and Rezoning have been submitted in order to permit the development of three buildings containing 109 retirement home guest rooms and 421 multiple dwelling units with up to three levels of underground shared parking, along with 380 square metres of restaurant use. The site was the location of the Sudbury General Hospital from 1950 to 2010. The site is located at the intersection of Paris Street and Facer Street, and Paris Street and Boland Avenue, abutting Bell Park. A site-specific exemption to the Official Plan is required to permit a residential density of 237 units per hectare and 380.0 square metres of commercial space. Zoning relief is requested for increased building height, reduced setbacks, reduced lot area per unit, and reduced courts between buildings.

The applications are subject to a two-stage public hearing process, the first of which was completed on April 29, 2024 to obtain input on the proposal. The applications are now being recommended for approval as described in the Resolution section of this report.

Staff Report

Proposal:

An application has been received to amend the Official Plan for the City of Greater Sudbury to permit a residential density of 237 units per hectare and 380.0 square metres of commercial space.

An application has been received to amend By-law 2010-100Z being the City of Greater Sudbury Zoning By-law from “R4(3)”, High Density Residential Special to an amended “R4(3)”, High Density Residential Special to permit a maximum of three buildings consisting of:

- A retirement home with a maximum of 109 guest rooms and a maximum height of 40.0 metres and 12 storeys;
- A multiple dwelling with a maximum of 199 units and a maximum height of 56.0 metres and 16 storeys;
- A multiple dwelling with a maximum of 222 units with a maximum height of 69.0 metres and 20 storeys; and
- Restaurant use up to a maximum of 380.0 square metres.

Zoning relief is requested for increased building height, reduced setbacks, reduced lot area per unit, and reduced courts between buildings.

These applications would permit the development of three buildings containing 109 retirement home guest rooms and 421 multiple dwelling units with up to three levels of underground shared parking, along with 380.0 square metres of restaurant use. Separate buildings with step-backs and varying building height are proposed, rather than a slab-style building design. A range of building materials and façade treatments are proposed, such as brick, concrete, metal, and glass, and sustainable building design measures. The site design includes realigning the Paris Street driveway to align with Boland Avenue, construction of a sidewalk on the south side of Facer Street between Paris Street and Bell Park Road, the reconstruction of Bell Park Road south of Facer Street to a 6.0 m wide private driveway, widening of the sidewalk on Paris Street, and inclusion of bike lanes and a bus lay-by. The plans also include an internal sidewalk network with pedestrian connections to the proposed sidewalk on Facer Street and Paris Street. Landscaped areas with trees are proposed along the property’s outer boundaries.

Building A is a 16-storey (56.0 m) multiple dwelling building at the south end of the parcel with 199 multiple dwelling units intended for market rental purposes, with 32.5% (64) 1-bedroom units, 66.5% (133) 2-bedroom units, and 1.0% (2) 3-bedroom units, all with private balconies. Amenity spaces will be provided on the first, second and thirteenth floors (common indoor and outdoor areas, gym, games room). Pedestrian access is provided via the residential lobby area at grade along Paris Street and via an entrance to the east along Bell Park Road.

Building B is a 20-storey (68.2 m) multiple dwelling building in the middle of the parcel with 222 multiple dwelling units intended for freehold condominium tenure, with 17.1% (38) 1-bedroom units, 68.0% (151) 2-bedroom units, and 14.9% (33) 3-bedroom units, all with private balconies. Amenity space will be provided on the first, thirteenth, fourteenth and twentieth floors (common indoor and outdoor areas). Pedestrian access is provided via the residential lobby at grade along Paris Street and via an entrance along Bell Park Road.

Building C is a 12-storey (40.0 m) retirement home at the north end of the parcel with 109 guest rooms, all with private balconies. A total of 123.8 square metres of accessory health/medical space is proposed. The majority of the parking will be provided in a 1-storey underground parking garage, which is connected to the rest of the residential development. Six surface-level parking spaces are provided for visitor parking. Pedestrian access is provided via the residential lobby on the ground floor along Paris Street.

A 288.0 square metre restaurant with 149.0 square metres of indoor dining and a 139.0 square metre covered rooftop terrace is proposed on the twentieth floor of Building B. It will be open to the public and include 21 surface-level parking spaces. Pedestrian access will be provided through Building B via the main lobby at grade along Paris Street. An 85.0 square metre café/restaurant is proposed on the ground floor of Building C that will be open to the public and will include 6 surface-level parking spaces.

The Planning Justification Report states that a total of 647 parking spaces will be located on the site (648 are noted on the site plan). Of these, 55 surface parking spaces will be provided for the restaurant uses and visitor parking for the retirement home. A 3-storey underground parking garage is proposed, accessible from Bell Park Road and Paris Street via three points (southerly entrance at Building A, Bell Park Road entrance between Buildings A and B, northerly entrance to Building B).

The following materials were submitted in support of the application:

Stage 1:

- Architectural Drawings and Renderings by ACK Architects (dated June 19th, 2023)
    - A1, EL.1, EL.2, EL.3, EL.3b, EL.4, EL.5, EL.6, EL.7
    - SP1, SP1.1, UG1, UG2
    - A1.1, A1.2, A1.3, A1.4, A1.5
    - A2.1, A2.2, A2.3, A2.4, A2.5, A2.6
    - A3.1, A3.2, A3.3, A3.4, A3.5
- Traffic Impact Study prepared by JD Engineering (dated December 23, 2022)
    - Transportation Demand Management embedded.
- Sun Shadow Study prepared by ACK Architects
- Preliminary Pedestrian Level Wind Assessment prepared by Theakston Environmental (dated September 19, 2023)
- Geotechnical and Rock Probe Investigation (dated August 10, 2016) and related geotechnical email from Building Services (April 24th, 2023)
- Conservation Authority 3:1 Slope Correspondence (dated June 2023)
- Sanitary & Water Capacity Analysis Response Letter (dated October 17, 2023)
- Planning Justification Report (Dated December 2023)
- Source Water Protection Application

The applicant has worked to respond to the City's comments and the following additional materials are now available:

- Traffic Impact Study Addendum prepared by JD Engineering (dated August 26, 2024)
- Peer Review of Wind Assessment prepared by SLR Consulting (dated April 9, 2024)
- Updated Preliminary Pedestrian Level Wind Assessment prepared by Theakston Environmental (dated April 16, 2024)
- Peer Review of Wind Assessment prepared by SLR Consulting (dated April 23, 2024) confirming agreement with the Updated Wind Assessment

In addition to the Official Plan Amendment and Zoning By-law Amendment, detailed site plan control agreement and building permit processes are required to be completed prior to the development of the site.

Existing Official Plan Designation: Living Area 1

The Living Area 1 designation permits a range of residential uses and neighbourhood-based institutional uses such as retirement homes. A maximum net residential density of 150 units per hectare is permitted. Commercial use is restricted to small-scale commercial uses that are intended to serve the convenience needs of local residents, limited to a maximum of 150 square metres of floor space per location.

Requested Official Plan Amendment: A site-specific exception to the Living Area 1 policies is requested to permit a residential density of 237 units per hectare and 380.0 square metres of commercial space.

Existing Zoning: “R4(3)”, High Density Residential Special

(c) R4(3) (210 MULTIPLE DWELLING UNITS)
McKim Township Maps Lot 5, Con 2; Lot 5, Con 3

Notwithstanding any other provision hereof to the contrary, within any area designated R4(3) on the Zone Maps, all provisions of this By-law applicable to the R4 Zone shall apply subject to the following modifications:

i) The lot line abutting Paris Street shall be deemed to be the front lot line;

ii) The only permitted uses shall be multiple dwellings with a maximum of 210 dwelling units of which, a maximum of 85 dwelling units shall be permitted in a new building to be located on the lot after November 20, 2012;

iii) The maximum number of multiple dwelling buildings permitted on the lot shall be two;

iv) The existing building as located on the lot shall be permitted and the enlargement of the existing building shall be permitted within the setbacks to the existing building;

v) Notwithstanding (iv) above, the maximum addition permitted to the existing helipad structure shall be one storey located above the helipad platform;

vi) The minimum setback from Facer Street to a multiple dwelling shall be 55 metres;

vii) The minimum setback from the rear lot line and interior side lot line to a parking structure shall be 2 metres;

viii) The minimum setback from the rear lot line and interior side lot line to multiple dwelling units in a building located above a parking structure shall be 7.5 metres;

ix) The maximum building height shall be eight storeys and 32 metres;

x) The minimum setback from the front lot line to a multiple dwelling comprising a new building to be located on the lot after November 20, 2012, shall be 11.3 metres;

xi) The maximum number of surface parking spaces on the lot not including loading spaces shall be 20;

xii) The minimum width of a landscape strip abutting Paris Street shall be 2.6 metres and from Paris Street to the existing building the minimum width of the landscape strip shall be 1.3 metres;

xiii) Loading spaces shall also be permitted in the corner side yard.

Requested Zoning: Amended “R4(3)”, High Density Residential Special

(c) R4(3) (MULTIPLE DWELLING UNITS AND RETIREMENT HOME)
McKim Township Maps Lot 5, Con 2; Lot 5, Con 3

Notwithstanding any other provision hereof to the contrary, within any area designated R4(3) on the Zone Maps, all provisions of this By-law applicable to the R4 Zone shall apply subject to the following modifications:

i) The only permitted uses shall be:

(a) a retirement home with a maximum of 109 guest rooms and a maximum height of 40.0 metres and 12 storeys;

(b) a multiple dwelling with a maximum of 199 dwelling units and a maximum height of 56.0 metres and 16 storeys;

(c) a multiple dwelling with a maximum of 222 dwelling units and a maximum height of 69.0 metres and 20 storeys; and

(d) restaurant uses not to exceed a maximum net floor area of 380.0 square metres.

ii) The lot line abutting Paris Street shall be deemed to be the front lot line;

iii) The lot line abutting Facer Street shall be deemed to be the corner side lot line;

iv) The lot line opposite the front lot line shall be deemed the rear lot line;
v) Any lot line not deemed a front, exterior side, or rear lot line shall be deemed to be an interior side lot line;

vi) The minimum corner side yard setback shall be 18.0 metres from Facer Street;

vii) The minimum rear yard setback shall be 0.0 metres;

viii) The minimum interior side yard setback shall be 0.0 metres;

iv) A minimum lot area of 41 square metres per multiple dwelling unit shall be required; and

v) The minimum required court shall be 15.0 metres between buildings.

Location and Site Description:

The subject lands are described as PINs 73584-0652 & 73591-0047, Part 2, Plan 53R-3947, Part of Lot 5, Concessions 2 & 3, Township of McKim (700 Paris Street, Sudbury). The lands are located at the intersection of Paris Street and Facer Street, and Paris Street and Boland Avenue, abutting Bell Park. The lands have an area of 1.78 ha (4.42 acres) with approximately 70 m (230 feet) of frontage on Facer Street and 220 m (725 feet) frontage on Paris Street.

The site was the location of the Sudbury General Hospital from 1950 to 2010, when the hospital services were combined with the one-site hospital now known as Health Sciences North. The land was subsequently purchased by the applicant. The site is currently occupied by the former hospital building which varies in height up to six storeys facing Paris Street and up to eight storeys facing Bell Park.

Paris Street is a primary arterial road in this location, and the lands are serviced with municipal water and sanitary sewer. The lands are located on two transit routes, being #1 Main Line to South End and #4 LU via Paris to Downtown, with stops located on both sides of Paris Street in this location. Route #1 is a high frequency route, with Monday to Friday service provided every 15 minutes, and at 30 minute or 15 minute intervals on Saturday and Sunday. Route #4 provides service Monday to Friday in the morning and afternoon at 30 minute intervals (no weekend service). A bus lay-by area is included on the concept plan. The lands are in close proximity to the City's Downtown and are approximately 2 kilometres (20 minute walk) from the Downtown Transit Hub. The Paris/Notre Dame Bikeway will be located adjacent to the site on Paris Street.

To the west of Paris Street and north of Facer Street is a well-established low density residential neighbourhood with dwellings dating from the early 1900s. To the south and east are City-owned parklands known as Bell Park. A City-owned parking lot consisting of approximately 290 spaces abuts to the south of the subject lands. Access to the City parking lot currently crosses the applicant's lands at the driveway entrance onto Paris Street.

The subject lands are with the Source Water Protection Intake Protection Zone 1 and 2 with a Vulnerability Score of 10 and 9. Water/Wastewater staff has advised that no activity or activities engaged in or proposed to be engaged in on the above noted property are considered to be significant drinking water threats at this time.

Surrounding Land Uses:

The area surrounding the site includes:

North:	Facer Street, low density residential use
East:	Bell Park and Bell Park Road
South:	City-owned parking lot
West:	Paris Street, low density residential use, vacant land zoned R1-5

Previous Planning Applications

In 2012, Council approved the subject lands to be rezoned from "I", Institutional and "P", Park to "R4", Residential High Density to permit the development of 210 units with a 332-space parking garage and a further 20 parking spaces at grade along with site-specific relief (File 751-6/12-14). The proposal originally included a wellness centre and a 418 square metre restaurant on the former helipad, but the commercial uses were removed from the proposal following public consultation and concerns raised regarding commercial use. A holding provision was used to require an agreement be entered into regarding reciprocal access agreements between the owner and the City for Bell Park Road, which crosses both City lands and the subject lands, and which is used by both parties. The hold was lifted following the parties entering into the agreement, which will require the granting of the easements as part of the required site plan process.

Public Consultation:

The notice of complete application was circulated to the public and surrounding property owners on January 29, 2024 to properties within 122 m of the subject lands. The statutory notice of the Stage 1 public hearing was provided by newspaper on April 6, 2024. A courtesy mail-out was circulated to the public and surrounding property owners on April 4, 2024.

The statutory notice of the Stage 2 public hearing was provided by newspaper on November 2, 2024. A courtesy mail-out was circulated to the public and surrounding property owners on October 31, 2024.

The applicant was advised of the City's policy recommending that applicants consult with their neighbours, ward councillor and key stakeholders to inform area residents on the application prior to the public hearing.

The City has received eight (8) written submissions to date which are attached for review. Two individuals provided verbal comments at the Stage 1 public hearing.

Policy & Regulatory Framework:

The property is subject to the following policy and regulatory framework:

- 2024 Provincial Planning Statement (PPS)
- 2011 Growth Plan for Northern Ontario
- Official Plan for the City of Greater Sudbury, 2006
- Zoning By-law 2010-100Z

Provincial Planning Statements and geographically specific Provincial Plans, along with municipal Official Plans, provide a policy framework for planning and development in the Province. This framework is implemented through a range of land use controls such as zoning by-laws, plans of subdivision and site plans.

Provincial Planning Statement (PPS):

Municipalities in the Province of Ontario are required under Section 3 of the *Planning Act* to ensure that decisions affecting planning matters are consistent with the Provincial Planning Statement.

Policy 2.1.6(a) states that planning authorities should support the achievement of complete communities by accommodating an appropriate range and mix of land uses, housing options, transportation options with multimodal access, employment, public service facilities and other institutional uses (including schools and associated child care facilities, long-term care facilities, places of worship and cemeteries), recreation, parks and open space, and other uses to meet long-term needs.

Policy 2.2.1 states that planning authorities shall provide for an appropriate range and mix of housing options and densities to meet projected needs of current and future residents of the regional market area by:
b) permitting and facilitating:
    1. all housing options required to meet the social, health, economic and wellbeing requirements of current and future residents, including additional needs housing and needs arising from demographic changes and employment opportunities; and
    2. all types of residential intensification, including the development and redevelopment of underutilized commercial and institutional sites (e.g., shopping malls and plazas) for residential use, development and introduction of new housing options within previously developed areas, and redevelopment, which results in a net increase in residential units in accordance with policy 2.3.1.3;
c) promoting densities for new housing which efficiently use land, resources, infrastructure and public service facilities, and support the use of active transportation; and
d) requiring transit-supportive development and prioritizing intensification, including potential air rights development, in proximity to transit, including corridors and stations.

Policy 2.3.1.1 states that settlement areas shall be the focus of growth and development. Within settlement areas, growth should be focused in, where applicable, strategic growth areas, including major transit station areas.

Policy 2.3.1.2 states that land use patterns within settlement areas should be based on densities and a mix of land uses which:
a) efficiently use land and resources;
b) optimize existing and planned infrastructure and public service facilities;
c) support active transportation;
d) are transit-supportive, as appropriate; and
e) are freight-supportive.

Policy 2.3.1.3 states that planning authorities shall support general intensification and redevelopment to support the achievement of complete communities, including by planning for a range and mix of housing options and prioritizing planning and investment in the necessary infrastructure and public service facilities.

Policy 2.3.1.4 states that planning authorities shall establish and implement minimum targets for intensification and redevelopment within built-up areas, based on local conditions.

Policy 2.3.1.6 states that planning authorities should establish and implement phasing policies, where appropriate, to ensure that development within designated growth areas is orderly and aligns with the timely provision of the infrastructure and public service facilities.

Policy 2.8.1.1 states that planning authorities shall promote economic development and competitiveness by:
a) providing for an appropriate mix and range of employment, institutional, and broader mixed uses to meet long-term needs;
b) providing opportunities for a diversified economic base, including maintaining a range and choice of suitable sites for employment uses which support a wide range of economic activities and ancillary uses, and take into account the needs of existing and future businesses; and
d) encouraging intensification of employment uses and compatible, compact, mixed-use development to support the achievement of complete communities.

Policy 2.9.1 states that planning authorities shall plan to reduce greenhouse gas emissions and prepare for the impacts of a changing climate through approaches that:
a) support the achievement of compact, transit-supportive, and complete communities; and
d) promote green infrastructure, low impact development, and active transportation, protect the environment and improve air quality.

Policy 3.3.1 states that planning authorities shall plan for and protect corridors and rights-of-way for infrastructure, including transportation, transit, and electricity generation facilities and transmission systems to meet current and projected needs.

Policy 3.6.2 states that municipal sewage services and municipal water services are the preferred form of servicing for settlement areas to support protection of the environment and minimize potential risks to human health and safety. For clarity, municipal sewage services and municipal water services include both centralized servicing systems and decentralized servicing systems.

Policy 3.6.8 states that planning for stormwater management shall:
b) minimize, or, where possible, prevent or reduce increases in stormwater volumes and contaminant loads;
d) mitigate risks to human health, safety, property and the environment;

f) promote best practices, including stormwater attenuation and re-use, water conservation and efficiency, and low impact development; and
g) align with any comprehensive municipal plans for stormwater management that consider cumulative impacts of stormwater from development on a watershed scale.

Policy 3.9.1 states that healthy, active, and inclusive communities should be promoted by:
d) recognizing provincial parks, conservation reserves, and other protected areas, and minimizing negative impacts on these areas.

Policy 4.2.1 states that planning authorities shall protect, improve or restore the quality and quantity of water by:

e) implementing necessary restrictions on development and site alteration to:

1. protect all municipal drinking water supplies and designated vulnerable areas; and
2. protect, improve or restore vulnerable surface and ground water, and their hydrologic functions.

Growth Plan for Northern Ontario:

Municipalities in the Province of Ontario are required under Section 3 of the *Planning Act* to ensure that decisions affecting planning matters conform with the Growth Plan for Northern Ontario. The application is considered to conform to Growth Plan policies which encourages municipalities to support and promote healthy living by providing for communities with a diverse mix of land uses, a range and mix of employment and housing types, high-quality public open spaces, and easy access to local stores and services. Staff has reviewed the planning matters contained within the Growth Plan for Northern Ontario and is satisfied that the application conforms to and does not conflict with the Growth Plan for Northern Ontario.

Official Plan for the City of Greater Sudbury:

The subject land is designated as Living Area 1, which permits a range of residential uses and neighbourhood-based institutional uses such as retirement homes. The lands are located within the settlement area and within the built boundary of the City. Since the time of application, the City has now passed Official Plan Amendment No. 119 which implements Phase 2 of the City's Nodes and Corridors Strategy. This strategy identifies Paris Street as a corridor, and though no changes to the designation of the subject lands were made, the amendment removed the principle of permitting high density housing in the Living Area 1 designation. Staff is of the view that the Official Plan policies that were in effect at the time of the application should form the basis of the review, though regardless of this policy change, an official plan amendment is required to enable the development.

Section 2.3 of the Official Plan regarding reinforcement of the urban structure states that growth must continue to be directed to capitalize on existing investments, make the most efficient use of existing infrastructure and public service facilities, protect our rural and agricultural assets, and preserve our natural features and areas. Reinforcing the urban structure also creates a more energy efficient land use pattern and supports climate change mitigation. Section 2.3.2 directs that settlement area land use patterns will be based on densities and land uses that make the most efficient use of land, resources, infrastructure and public service facilities, minimize negative impacts on air quality and climate change, promote energy efficiency and support public transit, active transportation and the efficient movement of goods. Intensification and development within the built boundary is encouraged.

Section 2.3.3 encourages all forms of intensification and establishes a 20% residential intensification target. Intensification will be encouraged on sites with suitable existing or planned infrastructure and public service facilities. Intensification will be compatible with the existing and planned character of an area in terms of the size and shape of the lot, as well as the siting, coverage, massing, height, traffic, parking, servicing, landscaping, and amenity areas of the proposal. Intensification is encouraged on sites that are no longer viable for the purpose for which they were intended such as former institutional sites.

Section 2.3.3.9 establishes that the following criteria, amongst other matters, may be used to evaluate applications for intensification:

a. the suitability of the site in terms of size and shape of the lot, soil conditions, topography and drainage;

b. the compatibility proposed development on the existing and planned character of the area;

c. the provision of on-site landscaping, fencing, planting and other measures to lessen any impact the proposed development may have on the character of the area;

d. the availability of existing and planned infrastructure and public service facilities;

e. the provision of adequate ingress/egress, off street parking and loading facilities, and safe and convenient vehicular circulation;

f. the impact of traffic generated by the proposed development on the road network and surrounding land uses;

g. the availability of existing or planned, or potential to enhance, public transit and active transportation infrastructure;

h. the level of sun-shadowing and wind impact on the surrounding public realm;

i. impacts of the proposed development of surrounding natural features and areas and cultural heritage resources;

j. the relationship between the proposed development and any natural or manmade hazards; and,

k. the provision of any facilities, services and matters if the application is made pursuant to Section 37 of the Planning Act..

Section 3.2 outlines general policies applied to Living Areas.

Section 3.2(2) states that medium density housing is permitted in all Living Area I designations where full municipal services are available. High density housing is permitted only in the community of Sudbury.

Section 3.2(3) states that new residential development must be compatible with the existing physical character of established neighbourhoods, with consideration given to the size and configuration of lots, predominant built form, building setbacks, building heights and other provisions applied to nearby properties under the Zoning Bylaw.

Section 3.2 (6) states that local institutional uses such as retirement homes, that are compatible with the residential function of neighbourhoods are allowed in all Living Area designations.

Section 3.2(9) states that small-scale commercial uses that are intended to serve the convenience needs of local residents are permitted in all Living Areas by rezoning. Such uses are intended to be isolated rather than forming a group or cluster that could potentially change the residential character of an area. These uses, which may include confectionary stores, laundromats, and other personal service establishments, are limited to a maximum of 150 m^2 of floor space per location. Zoning applications for local commercial uses will be reviewed on the basis of general conformity with the following policies:

a. access to and traffic generated by the site will not create adverse traffic problems on surrounding roads;

b. lighting and signage are located so as not to create any adverse visual impact on the surrounding residences;

c. the use will provide landscaping and buffering in a manner that is in harmony with adjoining and nearby residential properties; and,

d. the proposed small-scale commercial use must form a good fit with the existing neighbourhood fabric.

Section 3.2.1 outlines policies for the Living Area 1 designation.

Section 3.2.1 as written at the time of application, stated that high density housing is permitted only in the community of Sudbury. All housing types, excluding single detached dwellings, were permitted in high density residential areas to a maximum net density of 150 units per hectare. Densities in the downtown may exceed this maximum, as set out in the Zoning By-law. High density housing should be located on sites in close proximity to Arterial Roads, public transit, main employment and commercial areas, open space areas, and community/recreational services with adequate servicing capacity and a road system that can accommodate growth. Sites should be of a suitable size to provide adequate landscaping and amenity features.

Policy 3.2.1(6) (now numbered 3.2.1(5)) states that in considering applications to rezone land in Living Area I, Council will ensure amongst other matters that:

a. the site is suitable in terms of size and shape to accommodate the proposed density and building form;

b. the proposed development is compatible with the surrounding neighbourhood in terms of scale, massing, height, siting, setbacks, and the location of parking and amenity areas;

c. adequate on-site parking, lighting, landscaping and amenity areas are provided; and,

d. the impact of traffic on local streets is minimal.

Section 4.4 provides policies for institutional areas. Policy 4.4(3) states that rezoning applications related to the conversion of surplus institutional buildings and the rezoning of vacant lands held by institutions will be considered based on the following criteria:

i. the need for such lands or buildings for other public uses, and their long-term value to the community;

j. the compatibility of the proposed uses with surrounding land uses and the intent of the policies in this Official Plan with respect to the proposed use;

k. for conversion to residential uses, the appropriateness of the proposed density; and,

l. the policies of Sections 2.3.2, 11.3.2 and 11.8, and Chapters 13.0 Heritage Resources and 14.0 Urban Design.

Policy 7.3.1(7) enables the City to require the dedication of land for park or other recreational purposes in accordance with the provisions of Section 42 of the Planning Act. The Planning Act establishes that the conveyance or payment in lieu of parkland for residential developments may be calculated as 1 hectare per 600 dwelling units, but shall not exceed 10% of the land or the value of the land.

Policy 8.3(1) states that development, certain land use activities and public works within the vulnerable areas will conform with the policies on List A of the Greater Sudbury Source Protection Plan.

Section 11.3.2 outlines policies intended to encourage proposals that are transit-supportive, whereby the viability of public transit is enhanced by the proposed development. Urban design and community development that facilitates the provision of public transit will be promoted. Mixed uses and higher density housing along Arterial Roads and at other strategic locations are encouraged as a means of enhancing the feasibility of transit services, increasing ridership, alleviating traffic congestion and reducing reliance on the automobile. Buildings should be sited as close to the street as possible to reduce walking distances for transit users. Pedestrian walkways, intersections of major roads, and pedestrian access systems are to be integrated with transit stops, and wherever possible, connected to trail systems.

Residential intensification and conversion of surplus institutional buildings projects are also subject to the urban design policies set out under Section 14.4. Policy 1 states that development and intensification will be located an organized to fit with its existing or planned context. It will frame and support adjacent streets, parks and open spaces to improve activity, comfort and safety by:

a. generally locating buildings parallel to the street or along the edge of a park or open space with a consistent front yard setback. On a corner site, development and intensification should be located along both street frontages and give prominence to the corner. On a site that terminates a street corridor, the development should acknowledge the prominence of that site;

b. massing buildings to define the edges of streets, parks and open spaces in good proportion;

c. creating appropriate transitions in scale to neighbouring existing or planned buildings;

d. locating main building entrances so that they are clearly visible and easily accessible from the public sidewalk;

e. providing ground floor uses that have views into surrounding streets, parks and open spaces; and,

f. minimizing shadowing and uncomfortable wind conditions on surrounding streets, parks and open spaces to preserve their utility.

Policy 14.4(2) states development and intensification will locate and organize vehicle parking, vehicular access, service areas and utilities to minimize their impact on the property and on surrounding properties and the public realm by:

a. minimizing the number of curb cuts and driveways that cross the public sidewalk;

b. limiting surface parking between the front face of the building and the public street and sidewalk;

c. locating servicing and utilities towards the sides or rear of the building and screening the servicing from views from adjacent streets;

d. integrating servicing and utility functions within the building, where possible; and,

e. providing adequate landscaping and buffering between adjacent properties.

Policy 14.4(3) states that development and intensification will provide amenity for adjacent streets, parks and open spaces by making these areas attractive, interesting, safe comfortable and functional by:

a. improving adjacent boulevards and sidewalks through sustainable design elements including without limitation trees, shrubs, plantings or other ground cover, permeable paving materials, street furniture and bicycle parking facilities.

b. coordinating landscape improvements in setbacks to create attractive transitions from the private to public realm;

c. providing, where appropriate, weather protection such as canopies and awnings;

d. providing landscaped open space within the development site;

e. landscaping the edges of surface parking lots along streets, parks and open spaces to define edge condition and provide screening;

f. providing safe pedestrian routes and landscaped areas within surface parking lots; and,

g. providing bicycle parking facilities and, where appropriate, public transit infrastructure, within the development site.

Policy 14.7(1) states that new land uses or design features that would detract from the enhancement of major focal point areas within the City, such as Science North, the Big Nickel, Bell Park, Tom Davies Square and Laurentian University are discouraged. The open space character and natural aesthetic environment of the Paris Street corridor, especially that section between Walford Road and York Street, will be preserved and enhanced. In particular, the view corridor to and from Science North will be protected.

Policy 14.7(5) states that view corridors to lakes should be preserved.

Policy 14.9(1) states that the City will encourage urban design solutions that minimize non-renewable resource consumption, maximize the use of renewable energy and takes into account the impact of climate change by:

a. encouraging compact, mixed use and infill developments that concentrate complementary land uses and support active transportation and public transit.

Policy 16.2(1) states that it is a policy of this plan to support development that is age-friendly including the creation of smaller, unique, shared and transitional housing opportunities for an aging population through the rezoning process, where necessary, promotes ‘aging in place’ and is in close proximity to amenities and services in the Downtown, Regional Centres, Town Centres and Mixed Use Commercial areas.

Policy 17.2.1 states that to encourage a greater mix of housing types and tenure, it is policy of this Plan to:

a. encourage a wide range of housing types and forms suitable to meet the housing needs of all current and future residents;

b. encourage production of smaller (one and two bedroom) units to accommodate the growing number of smaller households;

c. promote a range of housing types suitable to the needs of senior citizens; and

f. support new development that is planned, designated, zoned and designed in a manner that contributes to creating complete communities – designed to have a mix of land uses, supportive of transit development, the provision of a full range of housing including affordable housing, inclusive of all ages and abilities, and meet the daily and lifetime needs of all residents.

Zoning By-law 2010-100Z:

Under the Zoning By-law, a retirement home is defined as a special needs facility, which in turn is defined as a type of institutional use. A retirement home contains guest rooms and is separate and distinct from a multiple dwelling, which is comprised of three or more self-contained dwelling units (i.e., apartments).

Retirement homes and multiple dwellings are permitted as-of-right in the “R4”, High Density Residential zone. The zone standards for retirement homes and multiple dwellings in the R4 zone are similar, with the same minimum 30.0 m lot frontage and 45.0 m lot depth required, as well as 15.0 m front yard setback, and 10.0 m corner side yard setback. The interior side yard setback is 10.0 m + 1.0 metre for each storey > five storeys above finished grade, which is 28 m from the rear lot line (10.0 m + 18.0 m for 23 storeys), and 21 m from the southerly lot line (10.0 m +11.0 m for 16 storeys). Maximum lot coverage is 50%, and the minimum landscaped open space is 30%.

The minimum lot area for a multiple dwelling is 65.0 sqm per unit, and the minimum lot area for a retirement home is 1350.0 sqm.

The maximum building height is 20.0 m for a retirement home, and 63.0 m for a multiple dwelling.

Court requirements are only applicable to multiple dwellings and require that opposing walls of one or more multiple dwellings on the same lot to be equivalent to 50 percent of the height of the higher of such walls but not less than 15.0 m where both walls contain balconies or windows into a habitable room.

A 10% parking rate reduction applies because the site is adjacent to a GOVA transit route. The parking requirements for each use are listed as follows:

- Two multiple dwelling: 1.5 spaces/unit = 199*1.5 and 222*1.5 -10% = 269 and 300
- Retirement home: 4 spaces, plus 0.5 parking spaces for each of the first 30 guest rooms, plus 0.25 parking spaces for each additional guest rooms plus 1/20 sqm gross floor area used for medical, health or personal services – 10% = 4+(0.5*30)+(0.25*79)+(1/20*123.8) – 10% = 41
- Café and Restaurant: 1/12.5 sqm net floor area = 1/12.5*80 and 1/12.5*288 – 10% = 6 and 21

Accessible spaces are required to be provided at the rate of 1 space per every 50 spaces or part thereof. One loading space is required for a multiple dwelling containing 50 or more dwelling units. Bicycle parking for a multiple dwelling shall be provided at the rate of 0.5 spaces per dwelling unit. Bicycle parking for an institutional use, which includes a retirement home, shall be provided at the rate of 2 spaces on a lot, plus 1 space per 500 sqm gross floor area to a maximum requirement of 24 per lot. Parking is not permitted to be located in the required front or corner side yard.

Site Plan Control:

Further to comments from Development Engineering, there is currently a site plan control agreement registered on the property, which aligns with the previous rezoning application approved in 2012 (dated October 7, 2014 and registered May 19, 2016). The proposed development will be subject to site plan control if approved, and an amended site plan control agreement will be required. This amendment will address, but is not limited to, the upgrades required to the transportation network, site servicing, site

grading, and stormwater management. Urban design, landscaping and Crime Prevention Through Environmental Design (CPTED) principles will also be reviewed further through the site plan control process. Site lighting may not exceed 1 foot-candle at the property line.

If blasting is required, a rock blasting report prepared by an Engineer with a minimum of 5 years of rock blasting experience must be provided for review to the satisfaction of the Chief Building Official prior to any removal of rock by blasting. The purpose of the rock blasting report is to ensure that all rock blasting, removal, and any proposed rock faces are constructed in a safe manner that does not negatively impact the surrounding properties and provides for the long-term stability of any rock faces.

While a formal Risk Management Plan under the Clean Water Act is not required for the proposed use given no significant threats to drinking water quality are proposed, it is important to note that standard stormwater management quality and quantity controls as directed by the Ramsey Lake Subwatershed Study and Master Plan will be required to be implemented through the site plan control process. In terms of quality control, on-site enhanced stormwater quality control (long-term sediment removal efficiency of 80%) is required for all impervious areas, and snow storage areas must be indicated and must be directed to the quality control facility. In terms of quantity control, where the development is located within the Ramsey Lake Source Water Protection Area, on-site post to 20% reduction in pre-development storm water peak flow control is required for all storm events up to the higher of the 100-year or Timmins Storm.

Department/Agency Review:

Comments from staff presented at the Stage 1 hearing included the following:

No concerns were raised by Roads Operations, Drainage Section, Strategic and Environmental Planning, Water/Wastewater – Source Water Protection, Conservation Sudbury, or Transit.

Development Engineering has provided the following comments:

- A water and sewer capacity analysis was performed and municipal water and sewer are available within the road right of way and is able to facilitate the requested development.
- There is a registered site plan control agreement dated October 7, 2014. This agreement will need to be amended to reflect the newly proposed development.
- It is our understanding that there are upgrades to the transportation network as a result of this development. It is our opinion that a holding designation be placed on the zoning such that the required upgrades would need to be made at the time of development of the site plan by way of an offsite servicing agreement.
- Based on the requested rezoning and amendment to the Official Plan, Development Engineering has no objection provided that development proceed by way of amendment to the site plan control agreement. This amendment will address, but not limited to, the upgrades required to the transportation network, site servicing, site grading, and stormwater management.

Roads Section has no concerns with the proposed reconstruction of Bell Park Road or the use of the road to service the proposed site, and does not support this road becoming a publicly maintained road. Property along the frontage of Paris Street and Facer Street will be required to be transferred to the City.
The south side of Facer Street will be required to be upgraded to an urban standard from Paris Street to Bell Park Road.

Transportation & Innovation Support staff has reviewed the Traffic Impact Study and has concerns with vehicles trying to access Facer Street or McNaughton Street via Paris Street as no left turn lane is provided on Paris Street. When the Hospital site was in operation both intersections had a high instance of collisions due to left turning vehicles. For this reason, the access to the site from Bell Park Road shall be limited to service vehicles only. All residents, visitors and patrons must access the parking garage from the intersection of Boland Avenue and Paris Street. In addition, Facer Street at Paris Street is required to be modified to permit right-in, right-out turning movements only.

It is noted that in the 2032 total traffic projections (with improvements) the following movements are operating at level of service (LOS) 'E'. The City requires that any movement with LOS 'E' be addressed further.

- Paris Street @ Brady Street: eastbound left (EBL) PM Peak (LOS 'C' in 2032 background)
- Paris Street @ John Street: westbound through (WBT) PM Peak (LOS 'D' in 2032 background)
- Paris Street @ Boland Avenue: southbound left (SBL) PM Peak (LOS 'A' in 2032 background)

In addition to the Paris Street at Boland Avenue intersection operating at LOS 'E' for the SBL movement, it is also noted that the projected 95th percentile queue exceeds the available storage capacity of the left turn lane. Staff is concerned this will result in motorists choosing to use Facer Street as an alternative access to the site, as well, the left turn queue will block through movements at the intersection. For these reasons the south bound left turn lane storage length must be extended to match the anticipated queue lengths.

Active transportation staff has commented that transportation demand management measures also include the promotion of the City's ride share program "Smart Commute", and that the Paris/Notre Dame Bikeway project will need to be incorporated into the site plan.

Building Services has commented on the loading space for Building C, which can be addressed through refinement of the site plan. The applicant is advised that at time of building permit review and site plan agreement review, verification will be required for the construction of the retirement home in conformance with the Retirement Homes Act and the Zoning By-law. Further By-law requirements may need to be addressed upon submission of complete building plans.

Leisure Services has advised that The City will be seeking cash-in-lieu for parkland dedication as permitted under the Planning Act.

Comments from staff following circulation of the Traffic Impact Study Addendum include the following:

Roads Section advises that the owner should be aware that as part of the site plan an irregular piece of property will need to be transferred to the City along the frontage of Paris Street and Facer Street. The provided sketch appears to show this new right-of-way limit. As well, Facer Street will be required to be upgraded to an urban standard, on the south side, from Paris Street to Bell Park Road.

Transportation & Innovation Support advises we have reviewed the Traffic Impact Study Addendum and have no further concerns.

The Addendum shows that surface level parking can now be accessed via the Boland Street intersection (previously only accessible from Facer). Facer Street at Paris Street will be modified to permit right-in, right-out turning movements only. The use of Bell Park Road will be restricted to surface-level parking for visitors, and access to the parking garage for service vehicles only. All residents, visitors and patrons will only be able to access the parking garage from the Boland Street intersection. Level of service (LOS) 'E' intersection issues and storage capacity of the left turn lane at Boland and Paris have been resolved through improved signal timing optimization.

Planning Analysis:

Planning staff circulated the development application to internal departments and external agencies. The PPS (2024), the Growth Plan (2011), and Greater Sudbury Official Plan, and other relevant policies and supporting guidelines were reviewed in their entirety. The following section provides a planning analysis of the application in respect of the applicable policies, including issues raised through agency circulation.

As part of the Stage 1 review, staff identified that updates to the Traffic Impact Study and a peer review of the Preliminary Pedestrian Level Wind Assessment were required. These have now been received and reviewed by staff.

The subject lands are currently designated Living Area 1 in the Official Plan and are zoned to permit high density residential use. The applications propose a higher residential density comprised of 421 multiple dwelling units where 210 are currently permitted, along with the development of 109 retirement home guest rooms and 380 square metres of restaurant use.

This proposal represents a significant mixed-use development which will contribute to the City's goals related to the appropriate location of growth and development with respect to Provincial and Official Plan policy, as well as the City's goal of creating a compact and complete community in order to minimize impacts on climate change. Staff recommends that the applications are consistent with and conform to the PPS and Official Plan direction to direct development to fully serviced settlement areas, and to enable densities that make the most efficient use of land, resources, infrastructure and public service facilities, minimize negative impacts on air quality and climate change, promote energy efficiency and support public transit, active transportation and the efficient movement of goods.

While the principle of the use of the site for 210 dwelling units has already been established through a previous application, the proposal for 421 multiple dwelling units as well as 109 retirement home guest rooms is a substantial increase, the technical merits of which are reviewed in further detail below. However, in terms of broad policies, the Official Plan encourages all forms of intensification and approval of this application will help to achieve the City's 20% intensification target. Both the PPS and the Official Plan encourage municipalities to provide a range and mix of housing types and densities. The Official Plan identifies a key housing goal is to maintain a balanced mix of ownership and rental housing, and to encourage a greater mix of housing types and tenure. The proposal represents an opportunity to provide additional rental units or condominium units, and staff recommends that this proposal is consistent with and conforms to these policies. Further, this proposal supports the City's Municipal Housing Pledge to achieve the target of 3800 new homes constructed by 2031. The City's Housing Supply and Demand Analysis (N. Barry Lyon Consultants Ltd., 2023) identified the most significant housing gaps are observed in the rental market. There is an immediate need for 470 additional rental units to achieve a vacancy rate of 5%, and an average of 66 additional rental units per year for the next 30 years to meet anticipated demand. The retirement home component will also contribute to the availability of housing types in this area, and the City as a whole.

In terms of the principle of the use, staff is also supportive of permitting commercial use in the form of a restaurant at this site. In proposing a commercial use, the application aligns with PPS section 1.3 that requires planning authorities to provide for a mix and range of employment uses, and policy 1.7.1(a) which promotes opportunities for economic development. The restaurant and café uses are considered to be compatible with the residential and retirement home uses on the site, as well as the surrounding uses. The addition of the restaurant use results in a 'mixed use' development, which provides an amenity for residents and the surrounding neighborhood, potentially reducing the need to travel off-site for restaurant services. It is also located on an arterial road with high frequency transit, which increases the ease of access to the site generally and enables the use of the restaurant facilities by others in the community.

Staff recommends that the subject lands are an appropriate location for intensification. PPS section 1.1.3 requires land use patterns that are appropriate for the infrastructure and public services which are planned and available. There are full municipal services with adequate capacity available. Paris Street is a primary arterial road serviced by high-frequency public transit. A sidewalk is available on both sides of Paris Street. Employment opportunities and commercial areas are available in the Downtown, the centre of which is within 2 kilometres. The development is considered to be compatible with Bell Park, which is an important community amenity that will be available to residents.

Staff recommends that the proposed residential density is appropriate. The proposed residential density of the site is calculated at 237 units per hectare based on 421 multiple dwelling units proposed. The Official Plan currently permits a density of 150 units per hectare (or 267 dwelling units). The retirement home component of the application, while providing a form of housing, is defined under the zoning by-law as a special needs facility, which in turn is defined as a type of institutional use. A retirement home contains guest rooms and is separate and distinct from a multiple dwelling, which is comprised of three or more self-contained dwelling units (i.e., apartments). As such, retirement homes are not formally included in residential density calculations. The site is an appropriate location for increased density given it is located along a main arterial road with public transit and active transportation facilities, in the heart of the City within close proximity to the Downtown and a major amenity in the form of Bell Park. The surrounding infrastructure is capable of supporting the proposed density, with improvements to transportation network required. The site concept plan demonstrates that the site can accommodate the proposed development, or in other words, is suitable for the proposed uses. The development is considered compatible with the surrounding neighbourhood and considering the results of the sun-shadow and wind study reviewed below. Staff recommends that the proposed density is appropriate, and in the public interest. Permitting increased density and intensification in this location aligns with the Community Energy and Emissions Plan by supporting the strategy of creating compact, complete communities and directing development to fully serviced settlement areas to promote the long-term financial health of the municipality. This scale of development has the potential to increase the walkability of this neighbourhood and have a positive and meaningful impact on the commercial Downtown core.

The Official Plan establishes criteria for the review of rezoning applications for intensification, for rezoning in the Living Area 1 designation, and for rezoning to permit the conversion of surplus institutional buildings. Regarding the policies applicable to surplus institutional buildings, staff acknowledges that the building is not being converted and the lands are no longer held by an institution, though is of the opinion that these criteria still apply to the project. Staff has reviewed these overlapping criteria as follows:

- Suitability of the site including parking: The concept plan demonstrates that adequate on-site parking as required by the City's zoning by-law, lighting, landscaping, and amenity areas can be provided for the proposed mix of uses. The reduced rear, interior side yard setback and court requirements requested will enable the efficient use of land on this site and efficient access to Bell Park Road, and will not have a negative impact on adjacent Bell Park lands over the longterm. Further to comments from Building Services regarding a deficient loading space associated with Building 'C', site specific relief is not recommended and this can be addressed through the detailed site plan process.

- Compatibility with the surrounding neighbourhood: Staff is of the opinion that the proposed uses are more compatible with the surrounding neighborhood than the former hospital use. Staff has no concerns regarding compatibility with the surrounding neighbourhood in terms of siting, setbacks, and the location of parking and amenity areas. In terms of impacts on the park, the short term impacts of reconstruction of Bell Park Road and construction in proximity to the property boundary are acknowledged, though over the long term are considered to be compatible uses.

- The provision of landscaping to lessen any impacts on neighbourhood character: The concept plan demonstrates that the proposal will comply with the development standards for landscaping including the provision of landscaped areas along Paris Street and Facer Street. Landscaping will be further assessed through the site plan control process.

- The availability of infrastructure and services: The site is presently serviced by municipal water and sewer services with adequate capacity for the proposed development. As discussed above, stormwater management quality and quantity controls will be required to be implemented through the site plan control process.

- Impacts to the road network: Overall, the submitted Traffic Impact Study and Addendum demonstrates that the site can operate without negative impacts to the road network if certain upgrades to the transportation network are completed. These upgrades include including shifting the driveway entrance to the site from Paris Street to align with the Boland Street, urbanizing Facer Street, and modifying Facer Street at Paris Street to permit right-in, right-out turning movements only. Surface-level parking now be accessed via the Boland Street intersection (previously only accessible from Facer). The use of Bell Park Road will be restricted to surface-level parking for visitors, and access to the parking garage for service vehicles only. All residents, visitors and patrons will only be able to access the parking garage from the Boland Street intersection. Level of service (LOS) ‘E’ intersection issues and storage capacity of the left turn lane at Boland and Paris have been resolved through improved signal timing optimization.

  The Addendum includes a supplemental analysis that compares the traffic generation for the full operation of the St. Joseph Health Centre with the proposed development. It states that the proposed development will generate approximately 1,390 fewer trips during a typical weekday compared with the full operation of the St. Joseph Health Centre.

  Staff recommends, further to comments from Development Engineering, that a holding symbol be used to restrict development until the owner has entered into an agreement with the City of Greater Sudbury with respect to undertaking the upgrades to the transportation network required as a result of the proposed development. The holding symbol is necessary to ensure that the owner has confirmed through a formal agreement such as a site plan agreement and/or off-site servicing agreement, that they will provide the necessary transportation network upgrades to enable the development.

- Use of public transit and active transportation: The lands are in a location that is well-suited to promote the use of public transit and active transportation infrastructure. The lands are located on two transit routes, one of which is considered high-frequency, with stops located on both sides of Paris Street in this location and a bus lay-by included in the site design. The lands are within walking distance of City’s Downtown core, which is a key destination in the City. The site will be located on the Paris/Notre Dame Bikeway, and further to comments from Active Transportation, the bikeway will need to be incorporated into the site plan.

- Sun-shadowing impacts: Staff recommends that the sun-shadow impacts of the project are acceptable. The purpose of a shadow impact study is to demonstrate that adequate sunlight is available for residential amenity spaces to maximize their use during spring, summer and fall afternoons and evenings, with impacts on adjacent public spaces also considered. The identification of permanently shaded areas between the start of December to the end of February is also required. The study indicates that, while there are impacts to residential properties in the morning, the majority of shadowing is contained within the site and municipal right-of-way during by the late morning and early afternoon, with the majority of impacts in the afternoon and evening being on the adjacent open space areas. Permanently shaded areas only occur on the site over the entrances to each of the proposed buildings.

- Wind impacts: The Preliminary Wind Assessment determined that any upset to pedestrian comfort conditions is within a normal range and will be well managed by the proposed development's wind mitigative design features and no impacts are anticipated.

- The need for surplus institutional buildings for other public uses: The site is not required for other public uses.

- Principles of directing development to settlement areas while considering accessibility and urban design: The application complies with PPS and Official Plan policies that require development to be directed to settlement areas, which promotes efficient development and sustains the financial well-being of the municipality.

  This site represents the 'edge' of the residential neighbourhood to the north and west where the principle for residential and institutional development has been established. The applicant has submitted detailed building elevations and renderings of the proposed buildings that illustrate their scale and massing compared to the existing hospital building on the site. The Official Plan requires the consideration of impacts to major focal point areas such as Science North and Bell Park, and that view corridors to lakes should be preserved. The renderings illustrate the scale of the buildings which contrasts with the adjacent low density residential neighborhood. However, the design has been undertaken to minimize impacts as much as possible, for example, by proposing separate buildings with step-backs and varying building height rather than a slab-style building design. Significant views of Ramsey Lake and Bell Park to the south of this site will not be impacted by this proposal. A range of building materials and façade treatments are proposed, such as brick, concrete, metal, and glass which provide visual interest. The development will frame and support street-level activity, for example, by locating the café entrance in a manner that is visible from the public sidewalk, limiting surface parking, and by providing significant landscaping and pedestrian routes. Accessibility and urban design will be further assessed and implemented through the site plan control and building permit processes.

Further to rationale provided above, staff recommends approval of the requests for Official Plan Amendment to permit a residential density of 237 units per hectare and 380.0 square metres of commercial space, and for rezoning to permit the proposed retirement home multiple dwelling buildings and restaurant use, with relief for building height, setbacks, reduced lot area per unit, and reduced courts between buildings.

Conclusion:

The Planning Division undertook a circulation of the application to ensure that all technical and planning matters have been satisfactorily addressed.

The following are the principles of the proposed site-specific official plan and zoning by-law amendment:

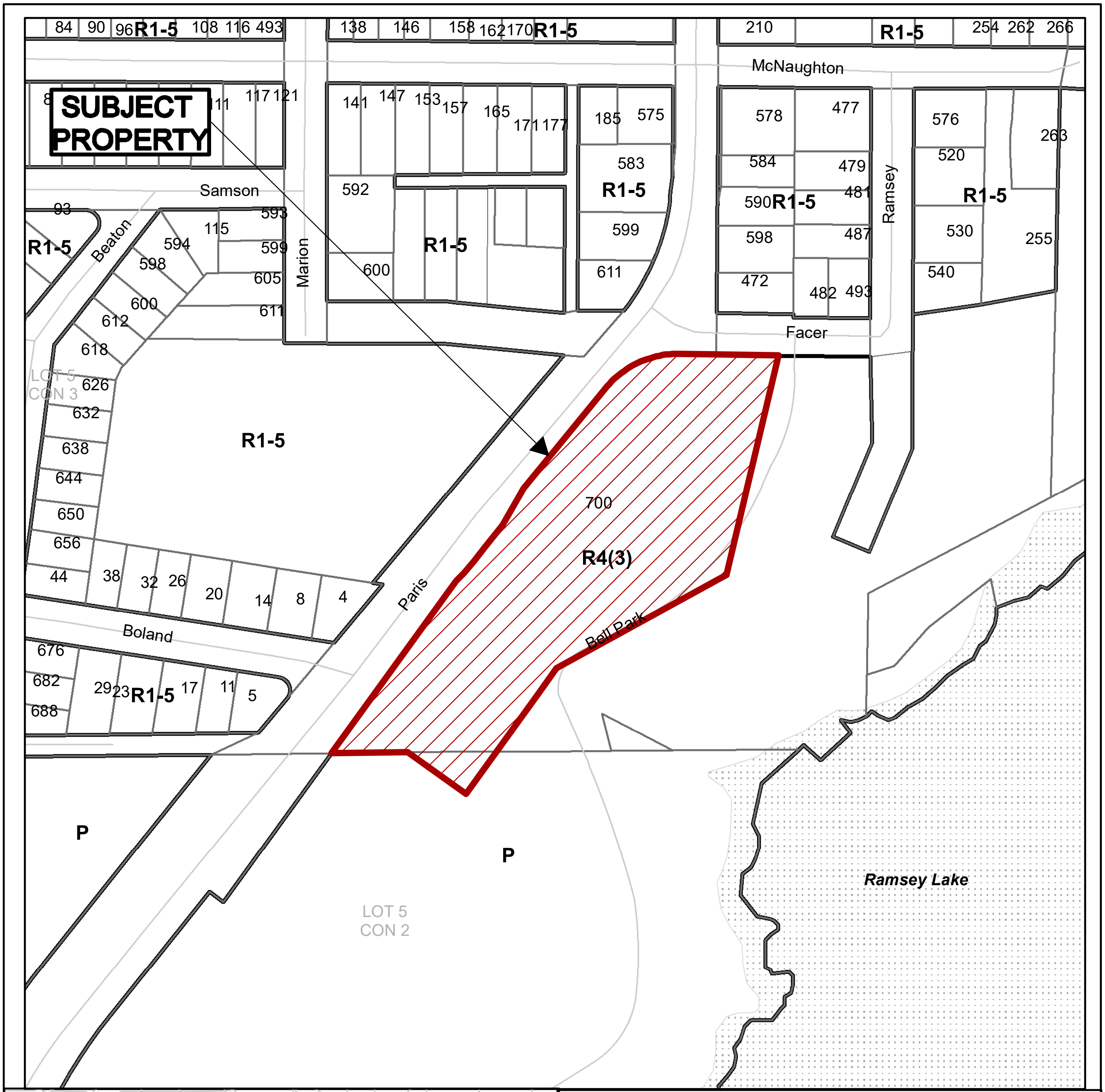
- To amend the Official Plan for the City of Greater Sudbury to provide a site-specific exemption to permit a residential density of 237 units per hectare and 380.0 square metres of commercial space;
- To rezone the lands from "R4-(3)", High Density Residential Special to an amended "R4(3)", High Density Residential Special zone, to permit the development of three buildings containing 109 retirement home guest rooms and 421 multiple dwelling units with up to three levels of underground shared parking, along with 380 square metres of restaurant use, along with site-specific relief for increased building height, reduced setbacks, reduced lot area per unit, and reduced courts between buildings; and
- To apply an "H", (Holding) symbol limiting development to the uses which legally existed on the date prior to the By-law applying the "H" Holding symbol being enacted, until the owner has entered into an agreement with the City of Greater Sudbury with respect to undertaking the upgrades to the transportation network required as a result of this development.

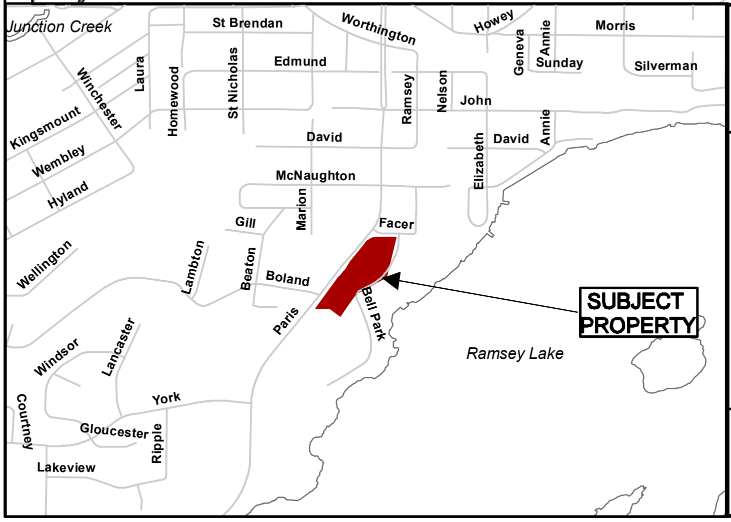
The development of the subject lands complies with several policy directives including the promotion of economic development and the provision of housing types. Staff has considered, amongst other matters, a full range of factors through a detailed review when forming the recommendation of approval for this application.

Staff is satisfied that the application is consistent with the PPS and conforms to the Growth Plan and the Official Plan. Staff is of the opinion that the proposed official plan amendment and zoning by-law amendment are appropriate based on the following:

- The proposal represents a significant mix-use development which complies with the principle of directing development to settlement areas to promote efficient development, minimize impacts on climate change, and sustain the financial well-being of the municipality by striving to create a compact and complete community.
- The application will contribute to meeting the City's 20% residential intensification target and the City's Municipal Housing Pledge to achieve the target of 3800 new homes constructed by 2031.
- The proposed commercial use in the form of a restaurant will provide an amenity for the neighbourhood and community at large, and generally support economic development goals.
- The proposed location is appropriate for the proposed uses given the availability of municipal infrastructure and transit services, and proximity to commercial and amenity areas including the Downtown and adjacent Bell Park.
- The proposal is compatible with the surrounding neighbourhood and can be accommodated on the site.
- This density, or scale, of development has been demonstrated to be compatible with the surrounding neighbourhood and can be accommodated on the site, with the potential to increase the walkability of this neighbourhood and have a positive and meaningful impact on the commercial Downtown core.

Staff recommends approval of the application as described in the Resolution section on the basis that it is consistent with the Provincial Planning Statement, conforms to the Growth Plan for Northern Ontario, the Official Plan for the City of Greater Sudbury, has regard for matters of provincial interest and represents good planning.





Growth and Infrastructure Department

Subject Property being PINs 73584-0652 & 73591-0047,
Plan 53R-3947, Lot 5, Concession 2 & 3,
Township of McKim, 700 Paris Street, Sudbury,
City of Greater Sudbury

NTS

751-6/23-25

Sketch 1

Date: 2023 01 10

PARIS STREET ELEVATION (FRONT)(WEST)

1" = 30'-0"

BELL PARK ELEVATION (REAR)(EAST)

1" = 30'-0"

*** DISCLAIMER: ISSUED FOR PRELIMINARY DESIGN DISCUSSION ONLY**

PARIS STREET DEVELOPMENT

700 PARIS STREET, SUDBURY, ONTARIO

A·C·K
architects
STUDIO INC.

FRONT AND REAR
ELEVATIONS

DWG. No.
A1

SCALE: AS SHOWN
DATE: JUNE 19 2023
PROJECT No.: 2010-205

*** DISCLAIMER: ISSUED FOR PRELIMINARY DESIGN DISCUSSION ONLY**

PARIS STREET DEVELOPMENT

700 PARIS STREET, SUDBURY, ONTARIO

A·C·K
architects
STUDIO INC.

PARIS STREET
ELEVATIONS

DWG. No.
EL.1

SCALE: AS SHOWN
DATE: JUNE 19 2023
PROJECT No.: 2010-205

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PARIS STREET DEVELOPMENT

700 PARIS STREET, SUDBURY, ONTARIO

A·C·K
architects
STUDIO INC.

FACER STREET
ELEVATIONS

DWG. No.
EL.2

SCALE: AS SHOWN
DATE: JUNE 19 2023
PROJECT No.: 2010-205

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PARIS STREET DEVELOPMENT

700 PARIS STREET, SUDBURY, ONTARIO

A·C·K
architects
STUDIO INC.

REAR ELEVATIONS

DWG. No.
EL.3

SCALE: AS SHOWN
DATE: JUNE 19 2023
PROJECT No.: 2010-205

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PARIS STREET DEVELOPMENT

700 PARIS STREET, SUDBURY, ONTARIO

A·C·K
architects
STUDIO INC.

REAR ELEVATIONS

DWG. No.
EL.3b

SCALE: AS SHOWN
DATE: JUNE 19 2023
PROJECT No.: 2010-205

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PARIS STREET DEVELOPMENT

700 PARIS STREET, SUDBURY, ONTARIO

A·C·K
architects
STUDIO INC.

REAR ELEVATIONS
FROM BELL PARK

DWG. No.
EL.4

SCALE: AS SHOWN
DATE: JUNE 19 2023
PROJECT No.: 2010-205

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PARIS STREET DEVELOPMENT

700 PARIS STREET, SUDBURY, ONTARIO

A·C·K
architects
STUDIO INC.

REAR ELEVATIONS
FROM BELL PARK 02

DWG. No.
EL.5

SCALE: AS SHOWN
DATE: JUNE 19 2023
PROJECT No.: 2010-205

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PARIS STREET DEVELOPMENT

700 PARIS STREET, SUDBURY, ONTARIO

A·C·K
architects
STUDIO INC.

BUILDING C PATIO

DWG. No.
EL.6

SCALE: AS SHOWN
DATE: JUNE 19 2023
PROJECT No.: 2010-205

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PARIS STREET DEVELOPMENT

700 PARIS STREET, SUDBURY, ONTARIO

A·C·K
architects
STUDIO INC.

REAR OF BUILDINGS

DWG. No.
EL.7

SCALE: AS SHOWN
DATE: JUNE 19 2023
PROJECT No.: 2010-205

SITE STATS (FOR DISCUSSION PURPOSES ONLY)

700 PARIS STREET, SUDBURY, ONTARIO

LOT AREA	**17,893.1 SQ.M**	**192,600.2 SF**	**100%**
LOT COVERAGE (INC. CANOPIES, PROJECTIONS)			
PROPOSED			
BUILDING A - RESIDENTIAL	2,382.8 SQ.M	25,648.3 SF	13.3%
BUILDING B - RESIDENTIAL	2,006.5 SQ.M	21,598.2 SF	11.2%
BUILDING C - RETIREMENT	1,101.0 SQ.M	11,851.4 SF	6.2%
EXTEND OF P1 GARAGE	659.5 SQ.M	7,098.9 SF	3.7%
TOTAL PROPOSED	**6,149.9 SQ.M**	**66,196.7 SF**	**34.4%**
LANDSCAPING			
PROPOSED	7,731.7 SQ.M	83,223.2 SF	43.2%
PAVED AREA (ASPHALT)			
PROPOSED	4,011.6 SQ.M	43,180.3 SF	22.4%
BUILDING HEIGHT			
PROPOSED			
BUILDING A	56 M	183.7 FT	
BUILDING B	68.2 M	223.7 FT	
BUILDING C	40 M	131.2 FT	
LOT FRONTAGE			
PROPOSED	232.9 M	764.1 FT	

PARKING STATS

PARKING REQUIRED (INC 10% REDUCTION)*	
1.35 SPACES /RESIDENTIAL UNIT (BLDG A)	268.7 SPACES
1.35 SPACES /RESIDENTIAL UNIT (BLDG B)	299.7 SPACES
SPACES FOR RETIREMENT BUILDING**	51.2 SPACES
1 SPACE / 12.5 M2 OF RESTAURANT AREA***	20.7 SPACES
1 SPACE /12.5 M2 OF CAFE AREA****	6.1 SPACES
TOTAL REQUIRED	**646.4 SPACES**
REQUIRED BARRIER FREE PARKING	12.9 SPACES
REQUIRED LOADING AREAS	3.0 SPACES
PROPOSED PARKING	
SURFACE PARKING	55 SPACES
P1 UNDERGROUND	166 SPACES
P2 UNDERGROUND	217 SPACES
P3 UNDERGROUND	210 SPACES
TOTAL PARKING PROPOSED	**648 SPACES**
PROPOSED BARRIER FREE SPACES	15 SPACES
PROPOSED LOADING AREA	3 SPACES

* 10% PARKING REDUCTION PERMITTED FOR LOCATION TO TRANSIT

**4 SPACES PLUS 0.5 SPACES FOR EACH OF THE FIRST 30 ROOMS PLUS 0.25 SPACES FOR EACH ADDITIONAL ROOM. PLUS 1 SPACES FOR 20M2 FOR HEALTH/MEDICAL/PERSONAL SERVICE SPACE (123.8 M2 PROVIDED)

*** RESTAURANT AREA (INCLUDING OUTDOOR PATIO) - 287.4 SQ.M .

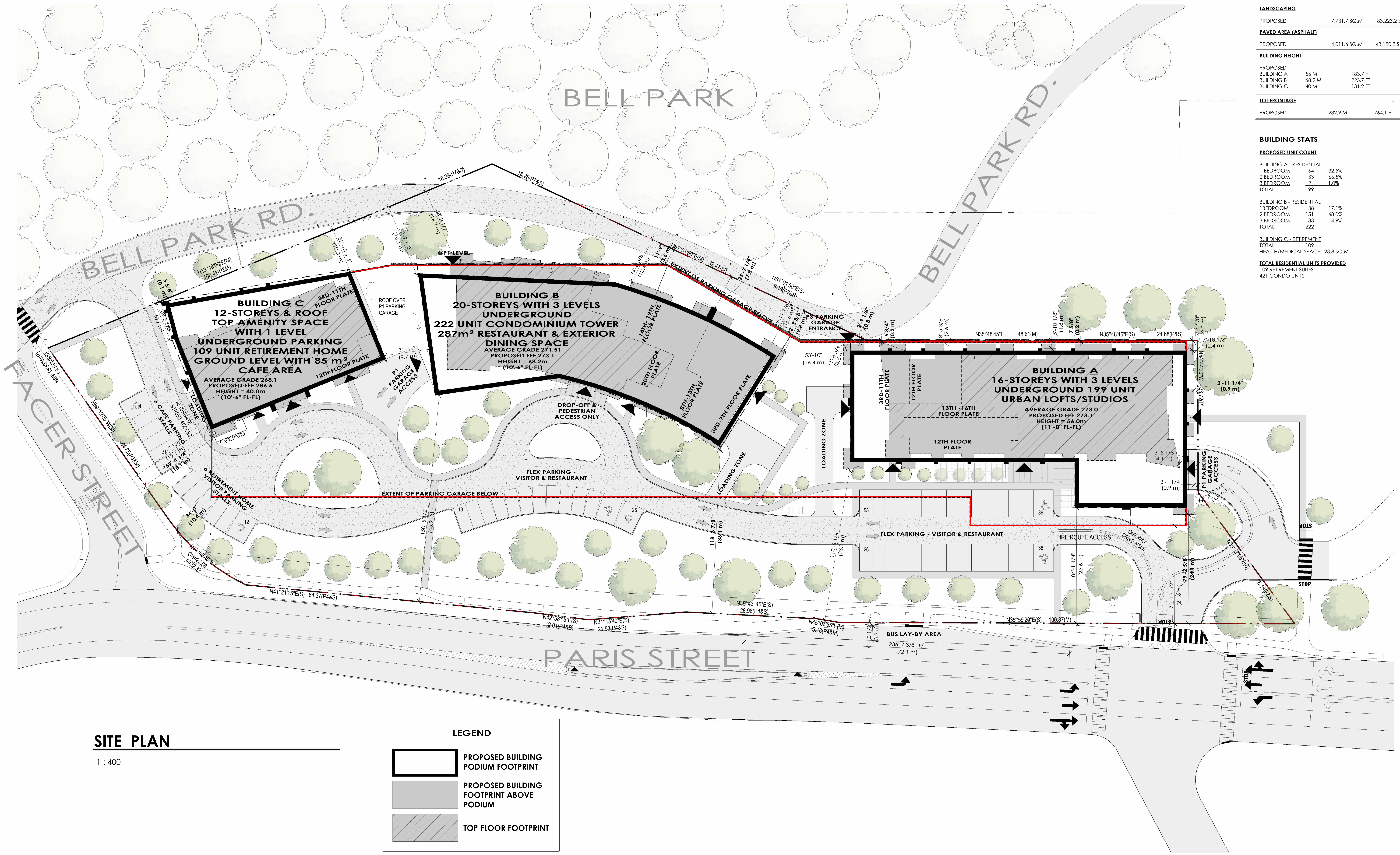
**** CAFE AREA (NOT INCLUDING OUTDOOR PATIO) - 85.0 SQ.M

BUILDING STATS

PROPOSED UNIT COUNT

BUILDING A - RESIDENTIAL		
1 BEDROOM	64	32.5%
2 BEDROOM	133	66.5%
3 BEDROOM	2	1.0%
TOTAL	199	
BUILDING B - RESIDENTIAL		
1BEDROOM	38	17.1%
2 BEDROOM	151	68.0%
3 BEDROOM	33	14.9%
TOTAL	222	
BUILDING C - RETIREMENT		
TOTAL	109	
HEALTH/MEDICAL SPACE 123.8 SQ.M		

TOTAL RESIDENTIAL UNITS PROVIDED
109 RETIREMENT SUITES
421 CONDO UNITS



SITE PLAN

1 : 400

NO.	DATE:	REVISION:	BY:
1	JULY 29 2019	SCHEMATIC CONCEPTS	JMR/MDA
2	AUG. 7 2019	SCHEMATIC CONCEPTS	JMR/MDA
3	MAY 7 2021	PARKING GARAGE LAYOUT	CH
4	JUNE 18 2021	REVISED BLD. HEIGHTS	CH
5	JUNE 20 2023	FOR SUBMISSION	ACK
6			

COMMISSION:

PARIS STREET
DEVELOPMENT

700 PARIS STREET, SUDBURY, ONTARIO

N

A·C·K
architects
STUDIO INC.

Architectural Office:

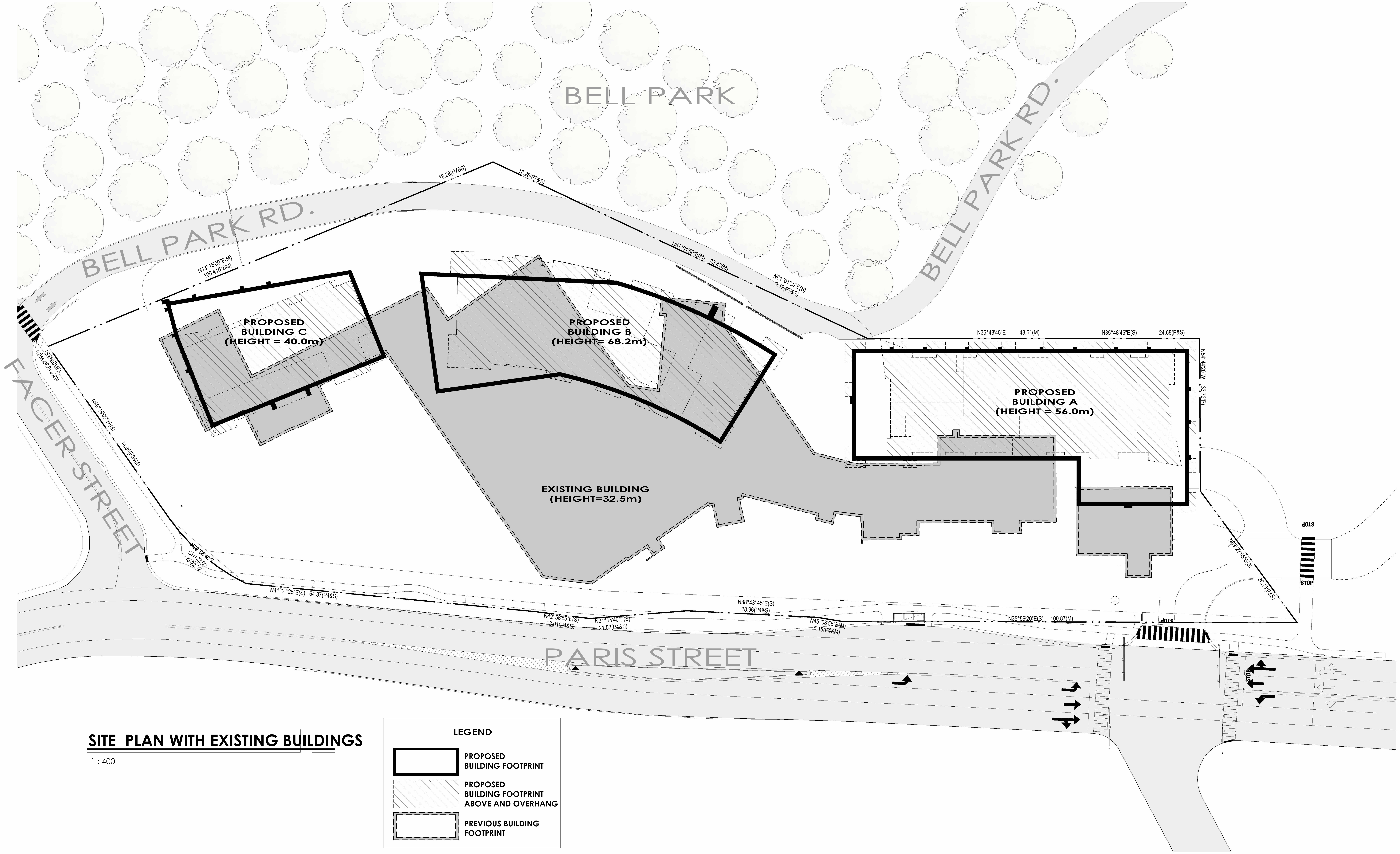
290 Glendale Ave. St. Catharines, ON, L2T 2L3
905 984 5545

SHEET TITLE:

SITE PLAN

Issued for Re-Zoning
Issued for Site Plan Agreement:
Issued for Permit:
Issued for Tender:
Issued for Construction:

DRAWN BY:	JMR	DWG. No.
CHECKED BY:	MDA	.SP1
DATE:	JUNE 19 2023	
SCALE:	AS SHOWN	
PROJECT No.:	2010-205	



SITE PLAN WITH EXISTING BUILDINGS

1 : 400

NO.	DATE:	REVISION:	BY:
1	JULY 29 2019	SCHEMATIC CONCEPTS	JMR/MDA
2	AUG. 7 2019	SCHEMATIC CONCEPTS	JMR/MDA
3	MAY 7 2021	PARKING GARAGE LAYOUT	CH
4	JUNE 18 2021	REVISED BLD. HEIGHTS	CH
5	JUNE 20 2023	FOR SUBMISSION	ACK
6			

COMMISSION:

PARIS STREET
DEVELOPMENT

700 PARIS STREET, SUDBURY, ONTARIO

N

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Architectural Office:

290 Glendale Ave. St. Catharines, ON, L2T 2L3
905 984 5545

SHEET TITLE:

SITE PLAN WITH
EXISTING BUILDINGS

Issued for Re-Zoning

Issued for Site Plan Agreement:

Issued for Permit:

Issued for Tender:

Issued for Construction:

DRAWN BY:	JMR
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DATE:	JUNE 19 2023
SCALE:	AS SHOWN
PROJECT No.:	2010-205

DWG. No.
.SP1.1

P1 PARKING LEVEL

166 SPACES
(6 BARRIER FREE SPACES)

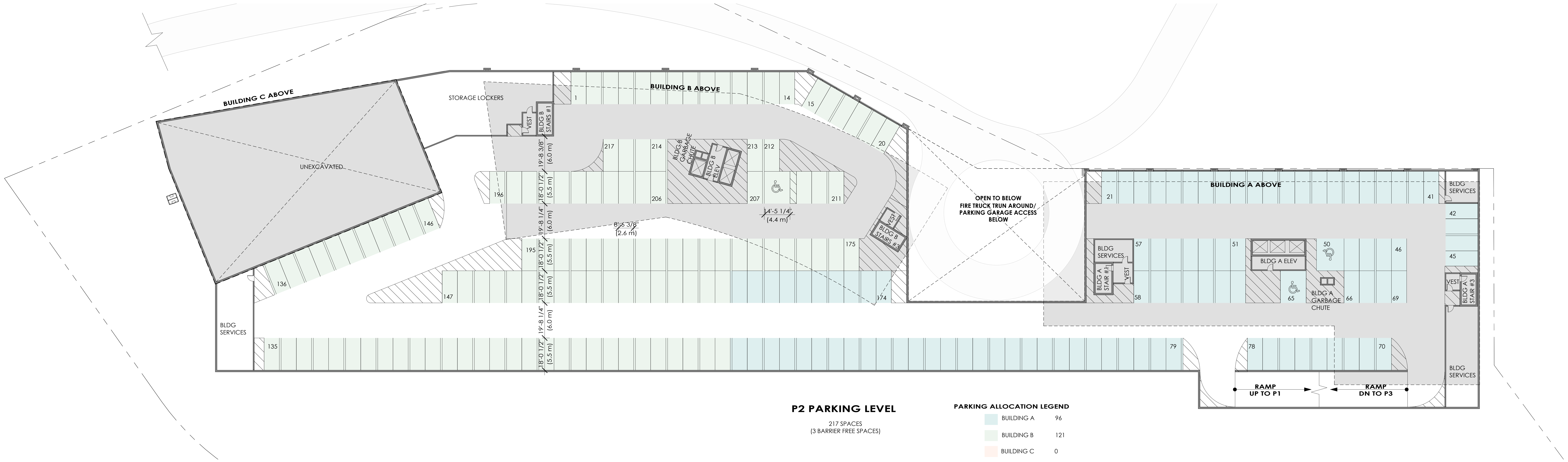
PARKING ALLOCATION LEGEND

🟦	BUILDING A	47
🟩	BUILDING B	73
🟧	BUILDING C	46

PAKRING LEVEL 1 PLAN

1" = 30'-0"

68,548 S.F



P2 PARKING LEVEL

217 SPACES
(3 BARRIER FREE SPACES)

PARKING ALLOCATION LEGEND

🟦	BUILDING A	96
🟩	BUILDING B	121
🟧	BUILDING C	0

PARKING LEVEL 2 PLAN

1" = 30'-0"

86,442 S.F

NO.	DATE:	REVISION:	BY:
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2	AUG. 7 2019	SCHEMATIC CONCEPTS	JMR/MDA
3	MAY 7 2021	PARKING GARAGE LAYOUT	CH
4	JUNE 18 2021	REVISED BLD. HEIGHTS	CH
5	JUNE 20 2023	FOR SUBMISSION	ACK
6			

COMMISSION:

PARIS STREET
DEVELOPMENT

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905 984 5545

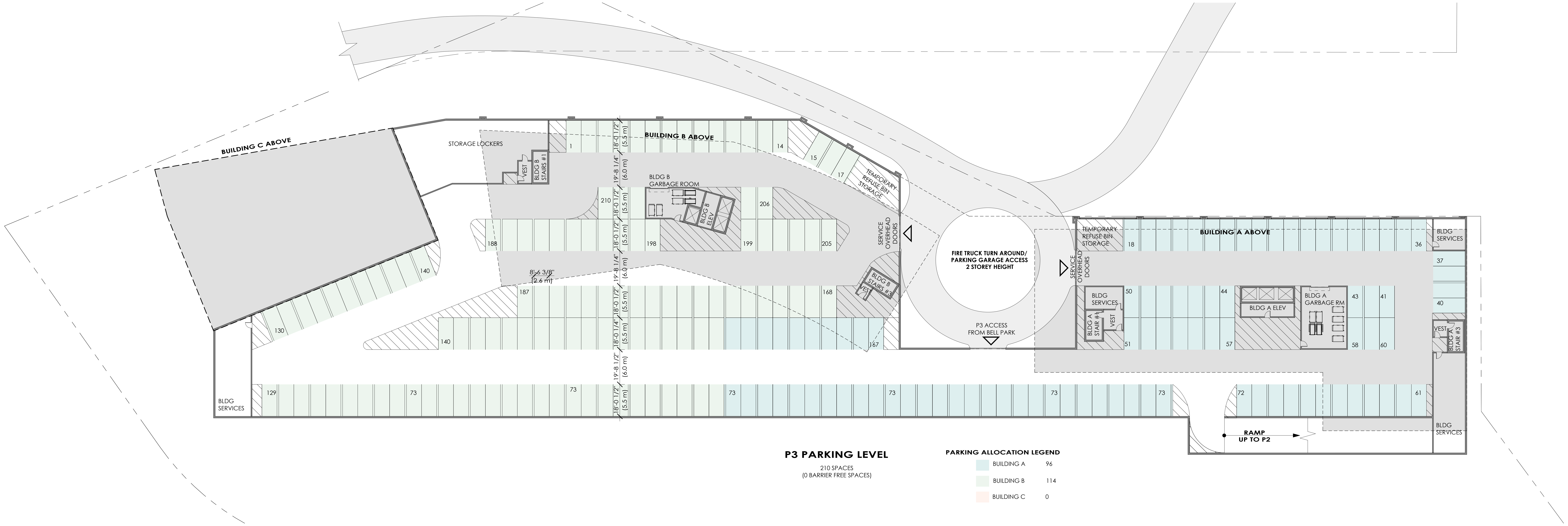
SHEET TITLE:

UNDERGROUND
PARKING LEVEL P1
AND P2

Issued for Re-Zoning
Issued for Site Plan Agreement:
Issued for Permit:
Issued for Tender:
Issued for Construction:

DRAWN BY: JMR
CHECKED BY: MDA
DATE: JUNE 19 2023
SCALE: AS SHOWN
PROJECT No.: 2010-205

DWG. No.
.UG1



P3 PARKING LEVEL

210 SPACES
(0 BARRIER FREE SPACES)

PARKING ALLOCATION LEGEND

🟦	BUILDING A	96
🟩	BUILDING B	114
🟥	BUILDING C	0

PARKING LEVEL 3 PLAN

1" = 30'-0"

86,442 S.F

All contractors and/or trades shall verify all dimensions, notes, site and report any discrepancies prior to commencement of the work. This drawing not to be scaled, all drawings, prints and related documents are the property of the architect and must be returned upon request. Reproduction of drawings and related documents in part or in whole is strictly forbidden without written consent. Drawings to be for the purpose for which they are issued.

NO.	DATE:	REVISION:	BY:
1	JULY 29 2019	SCHEMATIC CONCEPTS	JMR/MDA
2	AUG. 7 2019	SCHEMATIC CONCEPTS	JMR/MDA
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6			

COMMISSION:

PARIS STREET
DEVELOPMENT

700 PARIS STREET, SUDBURY, ONTARIO

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architects
STUDIO INC.

Architectural Office:

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905 984 5545

SHEET TITLE:

UNDERGROUND
PAKRING LEVEL P3

Issued for Re-Zoning
Issued for Site Plan Agreement:
Issued for Permit:
Issued for Tender:
Issued for Construction:

DRAWN BY: JMR
CHECKED BY: MDA
DATE: JUNE 19 2023
SCALE: AS SHOWN
PROJECT No.: 2010-205

DWG. No.
.UG2

1ST FLOOR PLATE

1" = 10'-0"

22,488 S.F

UNIT STATS
1 BED - 0 UNITS
2 BED - 12 UNITS
3 BED - 1 UNITS
TOTAL - 13 UNITS

*** DISCLAIMER: ISSUED FOR PRELIMINARY DESIGN DISCUSSION ONLY**

BUILDING A - URBAN LOFTS

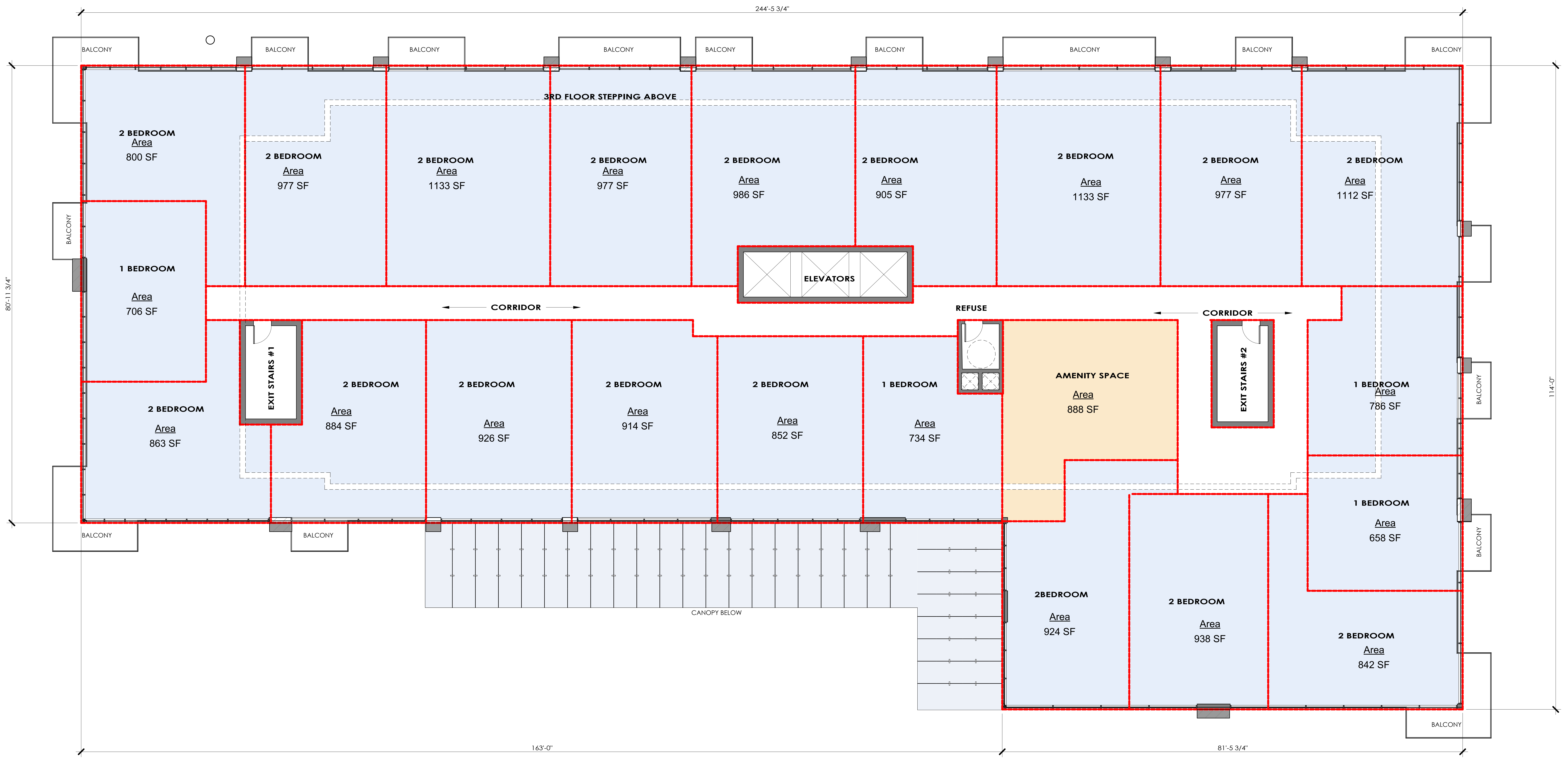
700 PARIS STREET, SUDBURY, ONTARIO

A·C·K
architects
STUDIO INC.

1ST FLOOR PLATE

DWG. No.
A1.1

SCALE: AS SHOWN
DATE: MARCH 30 2023
PROJECT No.: 2021-144



2ND FLOOR PLAN

1" = 10'-0"

22,488 S.F

UNIT STATS
1 BED - 4 UNITS
2 BED - 17 UNITS
TOTAL - 21 UNITS

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BUILDING A - URBAN LOFTS

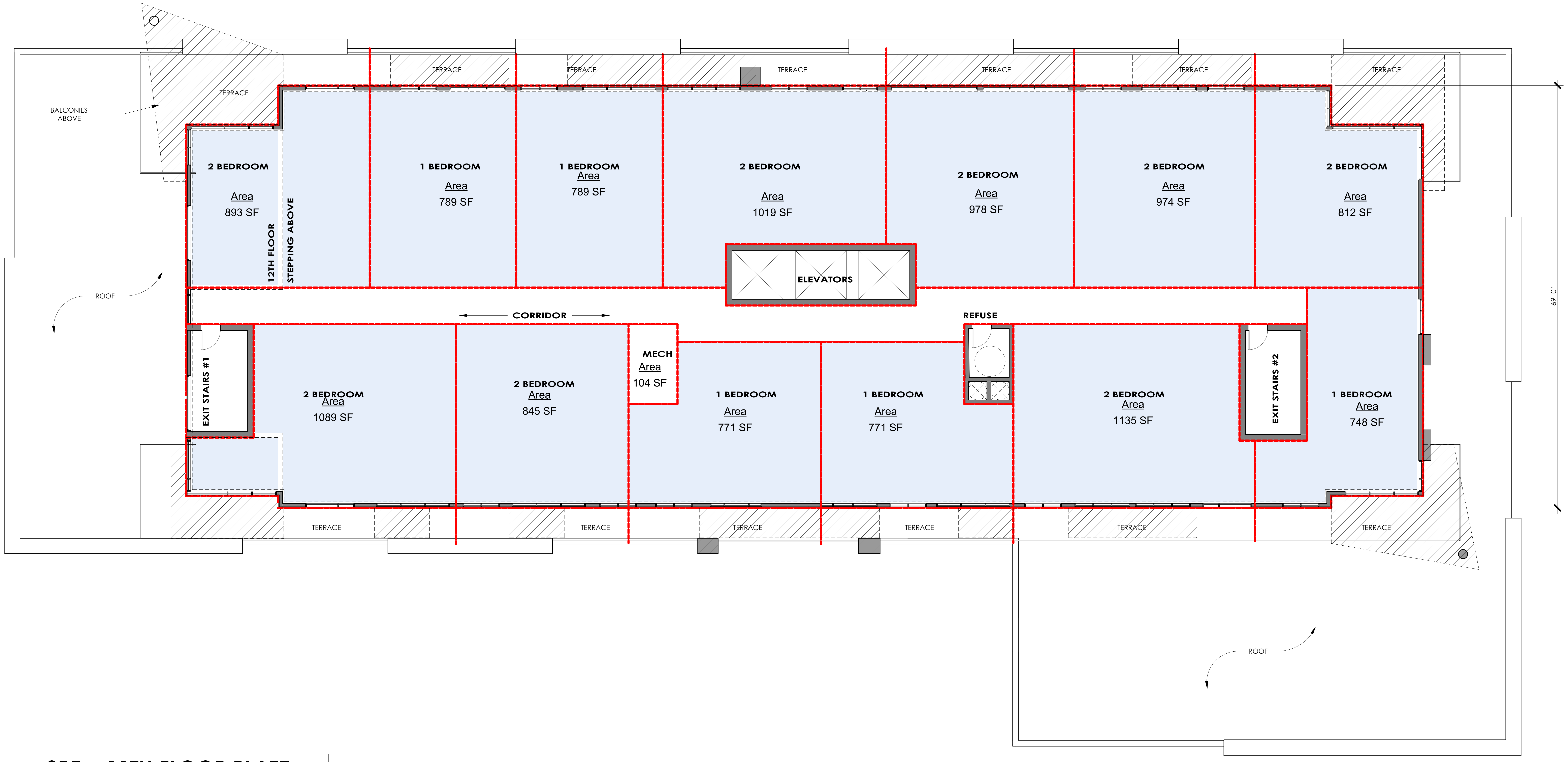
700 PARIS STREET, SUDBURY, ONTARIO

A·C·K
architects
STUDIO INC.

2ND FLOOR PLATE

DWG. No.
A1.2

SCALE: AS SHOWN
DATE: MARCH 30 2023
PROJECT No.: 2021-144



N

3RD - 11TH FLOOR PLATE

1" = 10'-0"

13,684 S.F

UNIT STATS
1 BED - 5 UNITS
2 BED - 8 UNITS
TOTAL - 13 UNITS

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BUILDING A - URBAN LOFTS

700 PARIS STREET, SUDBURY, ONTARIO

A·C·K
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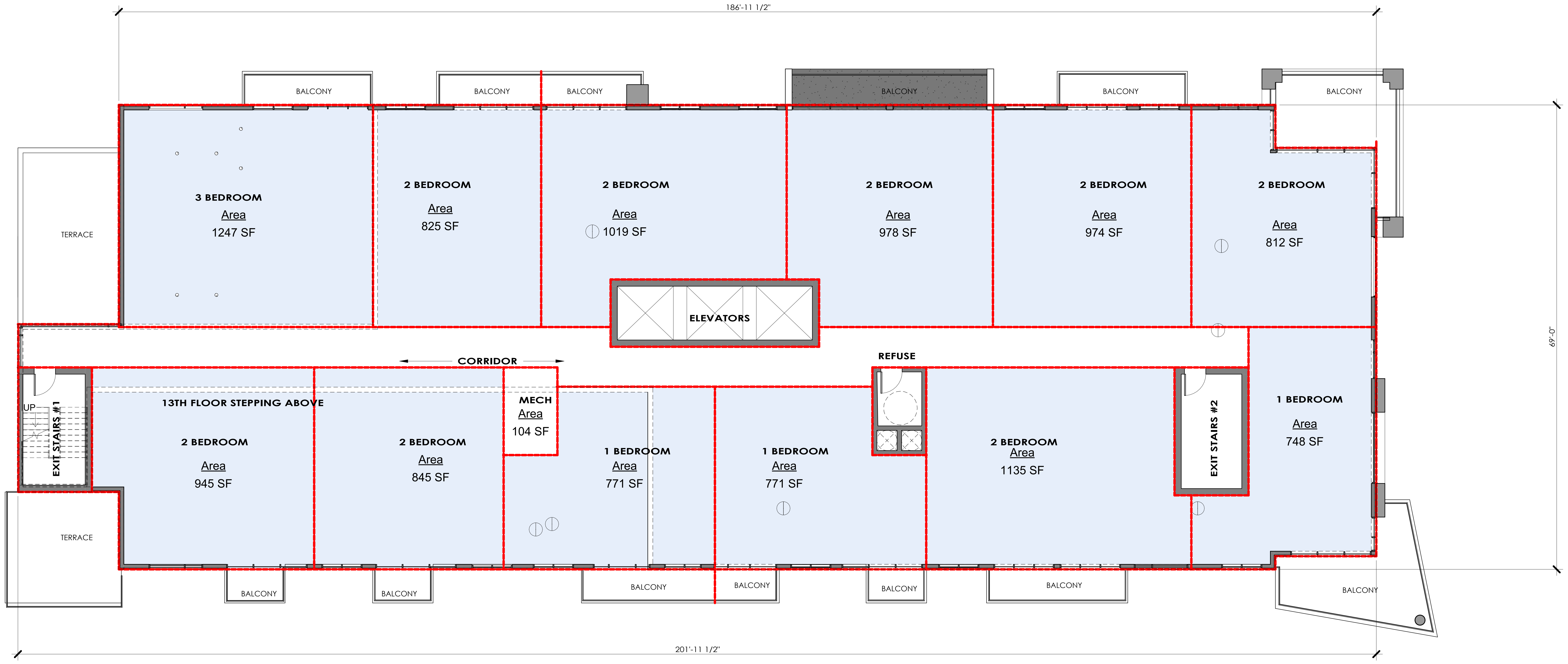
3RD - 11TH FLOOR PLATE

DWG. No.
A1.3

SCALE:	AS SHOWN
DATE:	MARCH 30 2023
PROJECT No.:	2021-144



12TH FLOOR

1" = 10'-0"

13,320 S.F

UNIT STATS
1 BED - 3 UNITS
2 BED - 8 UNITS
3 BED - 1 UNITS
TOTAL - 12 UNITS

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BUILDING A - URBAN LOFTS

700 PARIS STREET, SUDBURY, ONTARIO

A·C·K
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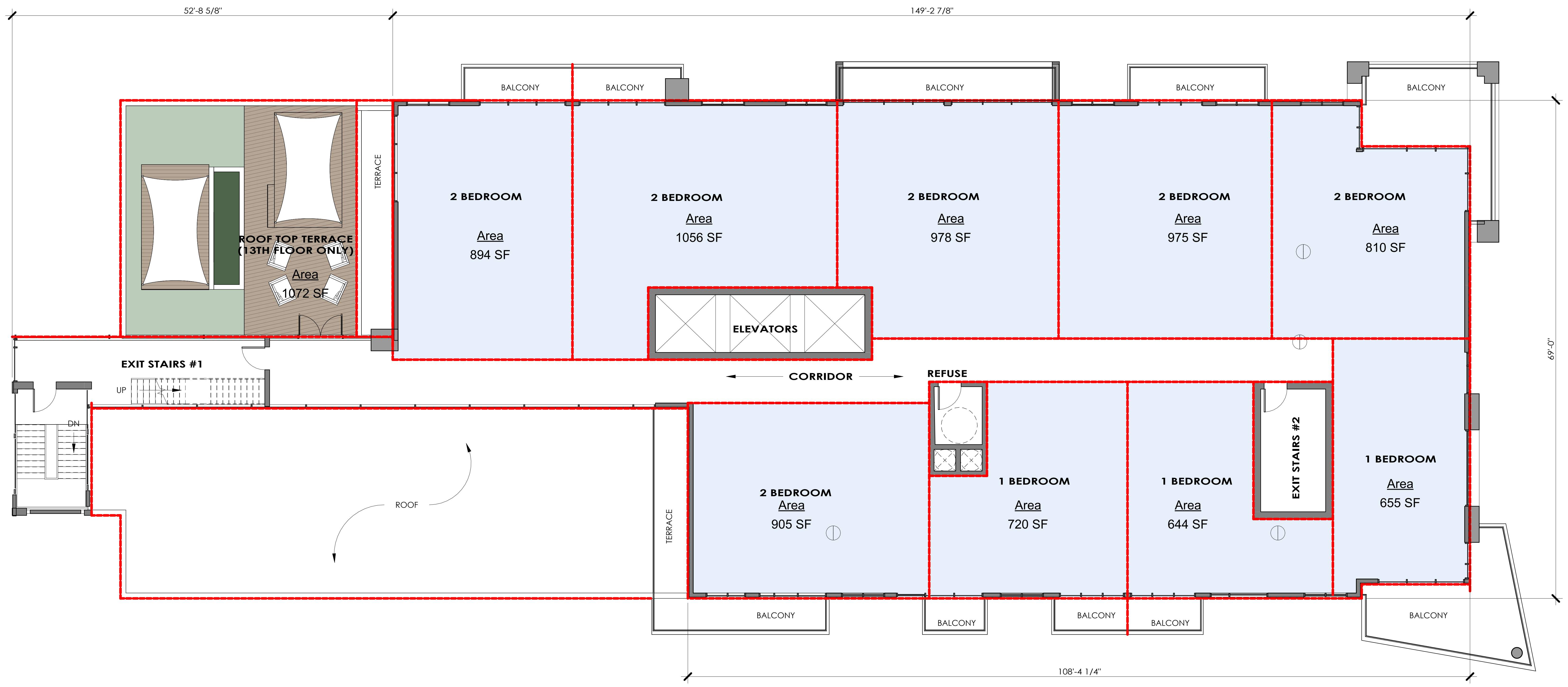
STUDIO INC.

12TH FLOOR PLATE

DWG. No.
A1.4

SCALE: AS SHOWN
DATE: MARCH 30 2023
PROJECT No.: 2021-144



13TH - 16TH FLOOR PLATE

1" = 10'-0"

9,899 S.F

UNIT STATS
1 BED - 3 UNITS
2 BED - 6 UNITS
TOTAL - 9UNITS

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BUILDING A - URBAN LOFTS

700 PARIS STREET, SUDBURY, ONTARIO

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STUDIO INC.

13TH - 16TH FLOOR PLATE

DWG. No.
A1.5

SCALE: AS SHOWN
DATE: MARCH 30 2023
PROJECT No.: 2021-144

1ST FLOOR PLATE

1" = 10'-0"

18,553 S.F

UNIT STATS
1 BED - 0 UNITS
2 BED - 9 UNITS
3 BED - 2 UNITS
TOTAL - 11 UNITS

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BUILDING B - CONDO TOWER

700 PARIS STREET, SUDBURY, ONTARIO

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architects
STUDIO INC.

1ST FLOOR PLATE

DWG. No.
A2.1

SCALE: AS SHOWN
DATE: FEB 10 2023
PROJECT No.: 2021-144

2ND FLOOR PLATE

1" = 10'-0"

14,507 S.F

UNIT STATS
1 BED - 1 UNITS
2 BED - 11 UNITS
3 BED - 3 UNITS
TOTAL - 15 UNITS

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BUILDING B - CONDO TOWER

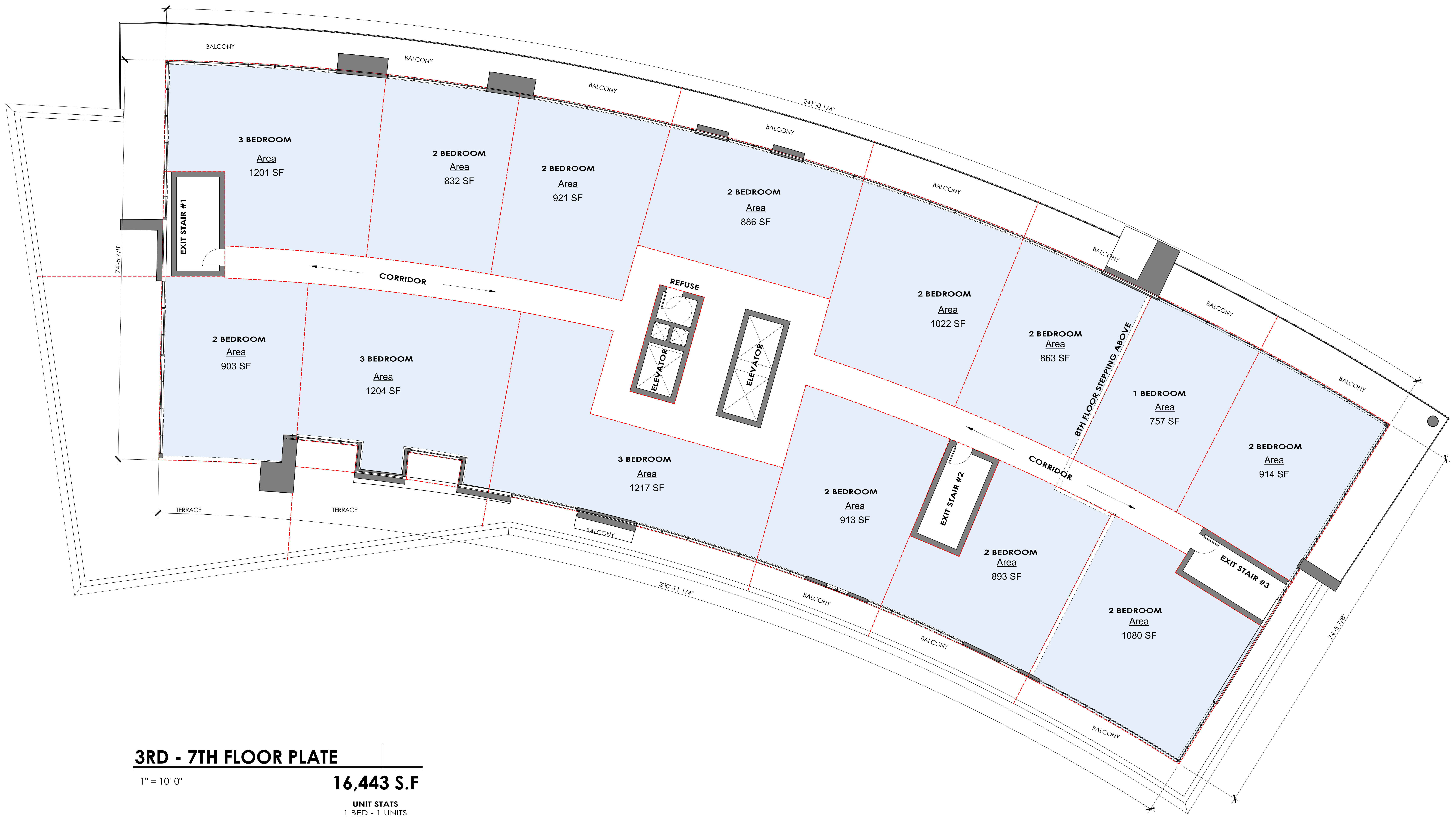
700 PARIS STREET, SUDBURY, ONTARIO

A·C·K
architects
STUDIO INC.

2ND FLOOR PLATE

DWG. No.
A2.2

SCALE: AS SHOWN
DATE: FEB 10 2023
PROJECT No.: 2021-144



3RD - 7TH FLOOR PLATE

1" = 10'-0"

16,443 S.F

UNIT STATS
1 BED - 1 UNITS
2 BED - 10 UNITS
3 BED - 3 UNITS
TOTAL - 14 UNITS

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BUILDING B - CONDO TOWER

700 PARIS STREET, SUDBURY, ONTARIO

A·C·K
architects
STUDIO INC.

3RD-7TH FLOOR
PLATE

DWG. No.
A2.3

SCALE: AS SHOWN
DATE: FEB 10 2023
PROJECT No.: 2021-144

8TH - 13TH FLOOR PLATE

1" = 10'-0"

13,361 S.F

UNIT STATS
1 BED - 2 UNITS
2 BED - 9 UNITS
3 BED - 1 UNITS
TOTAL - 12 UNITS

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BUILDING B - CONDO TOWER

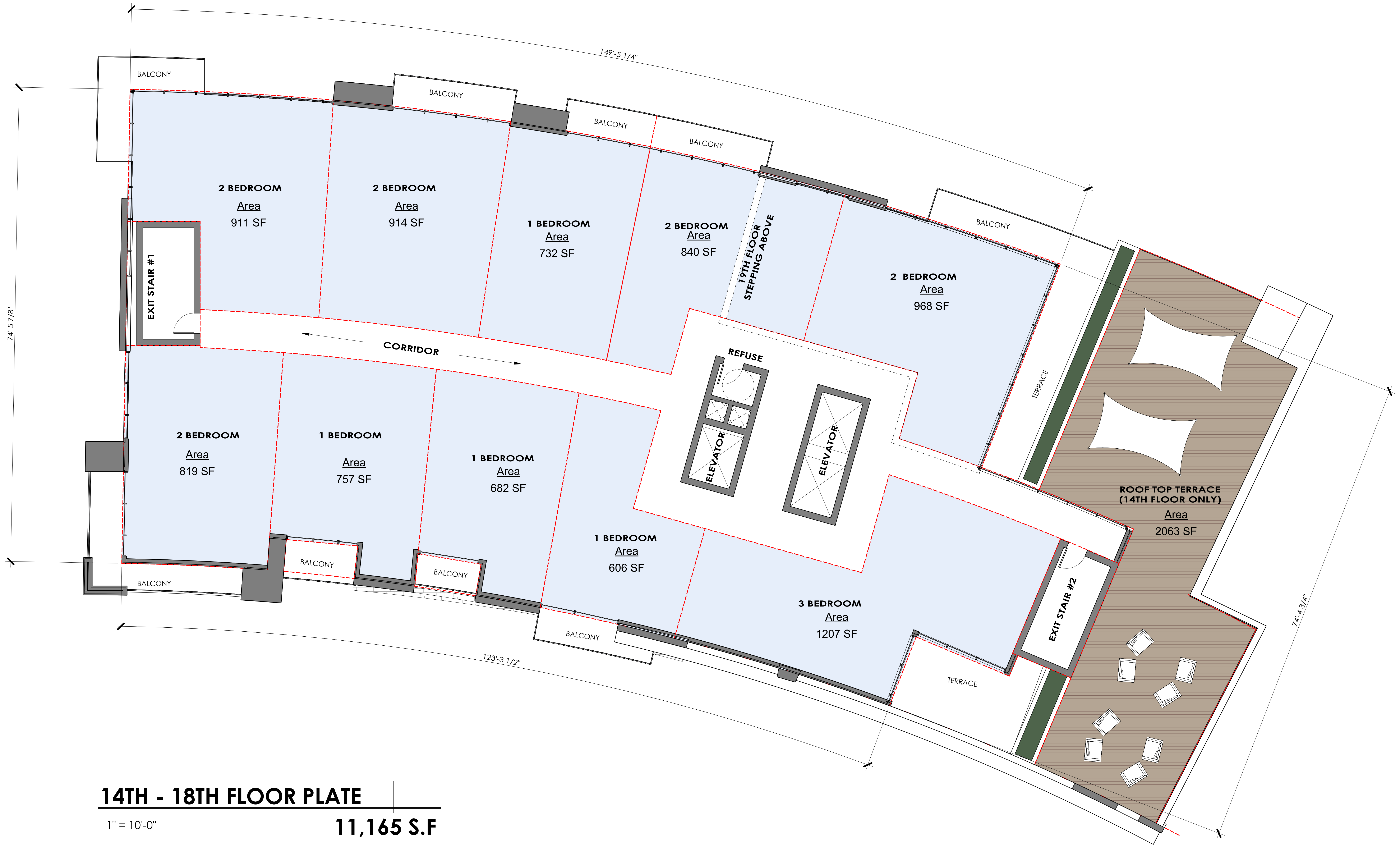
700 PARIS STREET, SUDBURY, ONTARIO

A·C·K
architects
STUDIO INC.

8TH - 13 FLOOR
PLATE

DWG. No.
A2.4

SCALE: AS SHOWN
DATE: FEB 10 2023
PROJECT No.: 2021-144



14TH - 18TH FLOOR PLATE

1" = 10'-0"

11,165 S.F

UNIT STATS
1 BED - 4 UNITS
2 BED - 5 UNITS
3 BED - 1 UNITS
TOTAL - 10 UNITS

*** DISCLAIMER: ISSUED FOR PRELIMINARY DESIGN DISCUSSION ONLY**

BUILDING B - CONDO TOWER

700 PARIS STREET, SUDBURY, ONTARIO

A·C·K
architects
STUDIO INC.

14TH - 19TH FLOOR
PLATE

DWG. No.
A2.5

SCALE: AS SHOWN
DATE: FEB 10 2023
PROJECT No.: 2021-144

20TH FLOOR

1" = 10'-0"

9,480 S.F

UNIT STATS
1 BED - 0 UNITS
2 BED - 4 UNITS
3 BED - 0 UNITS
TOTAL - 4 UNITS

*** DISCLAIMER: ISSUED FOR PRELIMINARY DESIGN DISCUSSION ONLY**

BUILDING B - CONDO TOWER

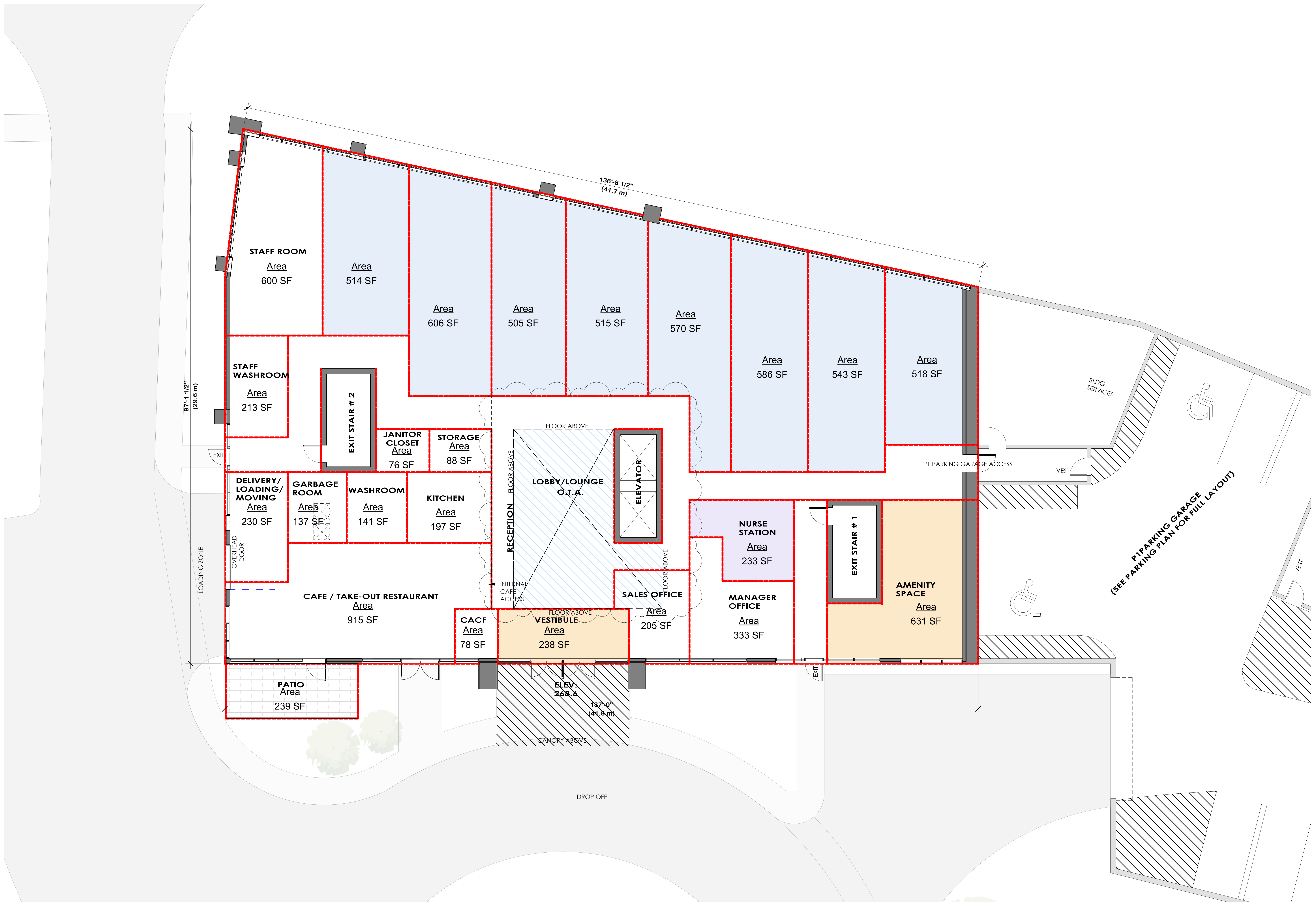
700 PARIS STREET, SUDBURY, ONTARIO

A·C·K
architects
STUDIO INC.

20TH FLOOR PLATE

DWG. No.
A2.6

SCALE: AS SHOWN
DATE: FEB 10 2023
PROJECT No.: 2021-144



1ST FLOOR PLATE

1" = 10'-0"

11,345 S.F

(8 UNITS)

*** DISCLAIMER: ISSUED FOR PRELIMINARY DESIGN DISCUSSION ONLY**

BUILDING C - RETIREMENT HOME

700 PARIS STREET, SUDBURY, ONTARIO

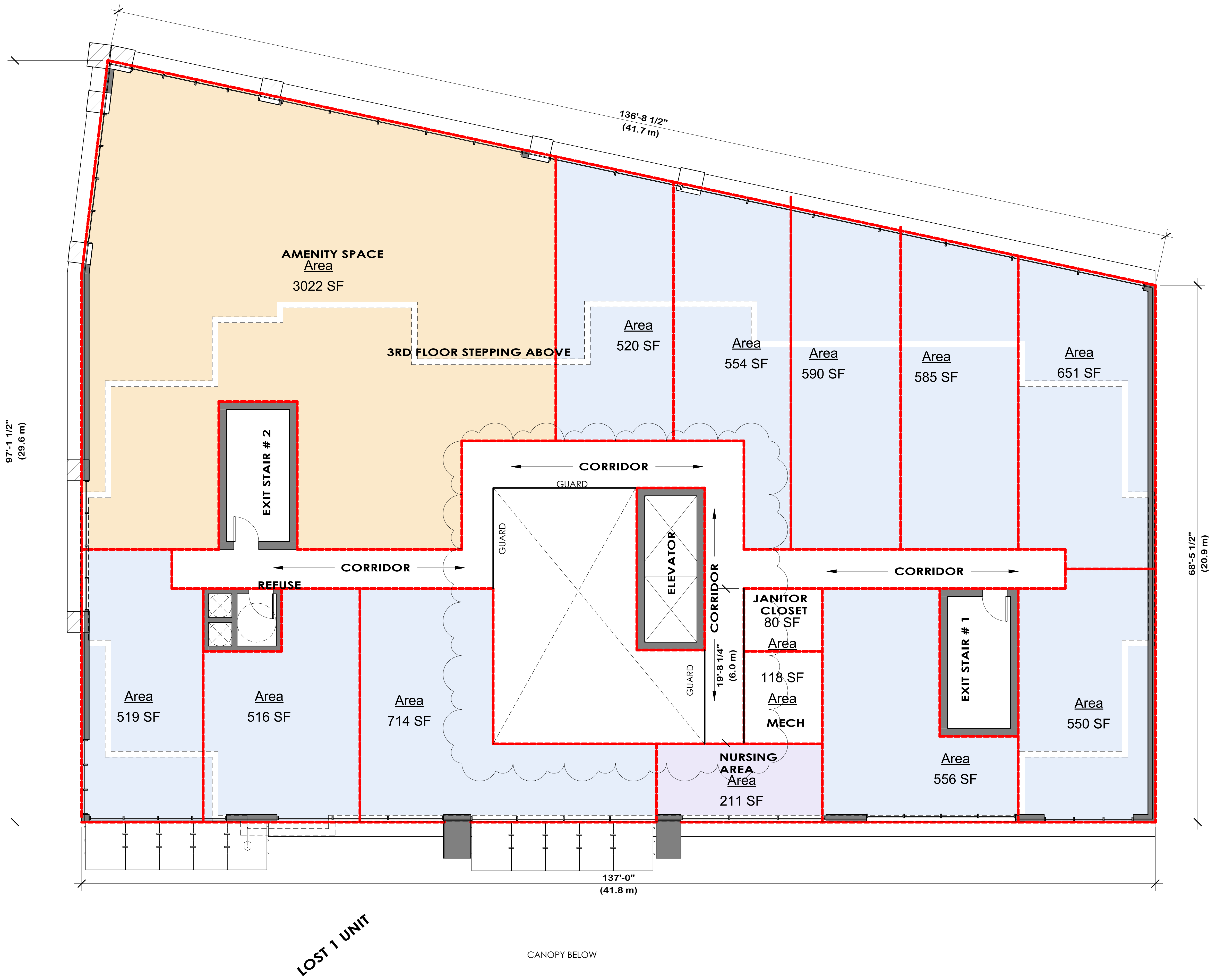
A·C·K
architects
STUDIO INC.

1ST FLOOR PLATES

DWG. No.
A3.1

SCALE: AS SHOWN
DATE: JUNE 12 2023
PROJECT No.: 2021-144

N



2ND FLOOR PLATE

1" = 10'-0"

11,345 S.F

(11 UNITS)

*** DISCLAIMER: ISSUED FOR PRELIMINARY DESIGN DISCUSSION ONLY**

BUILDING C - RETIREMENT HOME

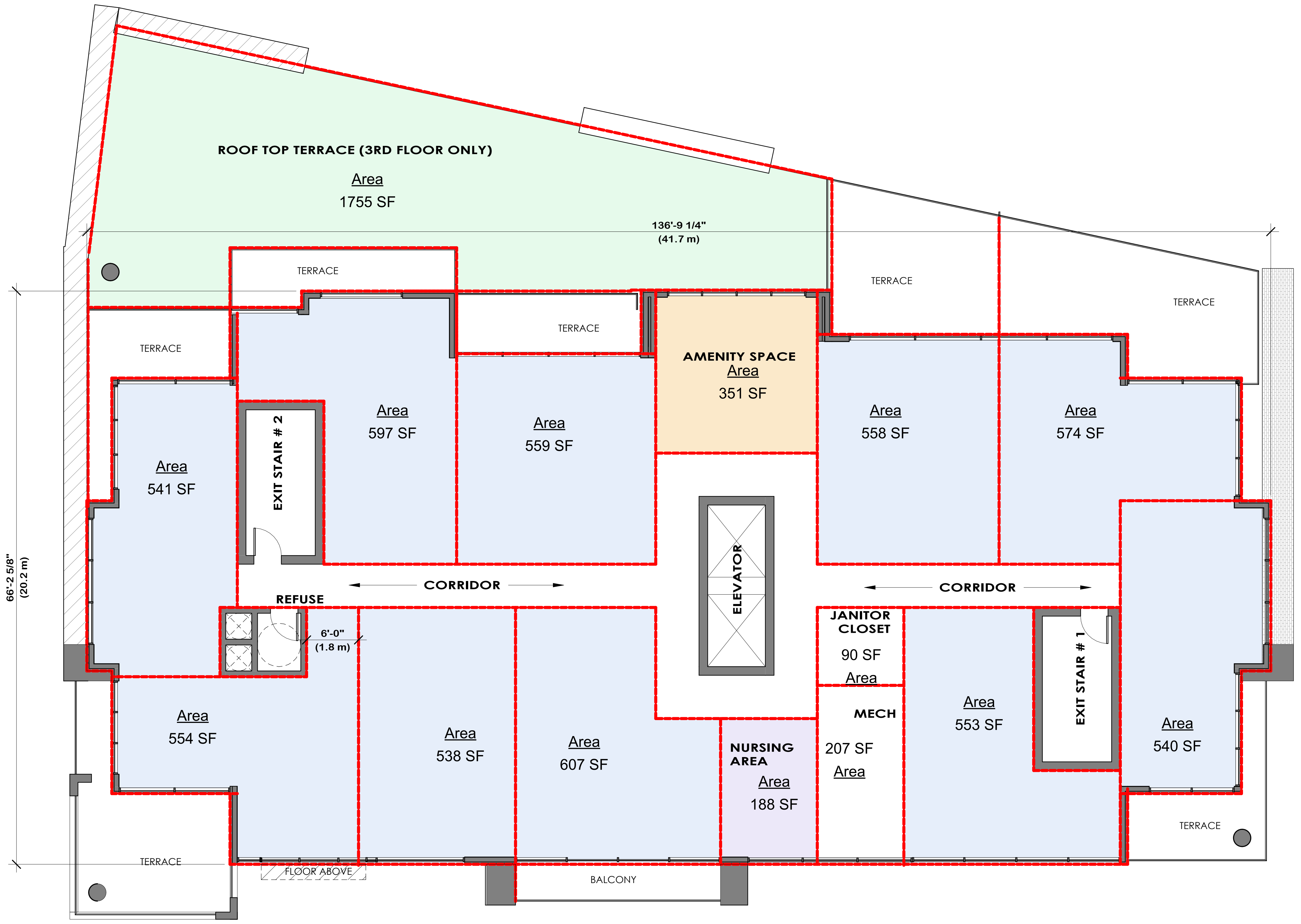
700 PARIS STREET, SUDBURY, ONTARIO

A·C·K
architects
STUDIO INC.

2ND FLOOR PLATE

DWG. No.
A3.2

SCALE: AS SHOWN
DATE: JUNE 12 2023
PROJECT No.: 2021-144



3RD FLOOR PLATE

1" = 10'-0"

7,914 S.F

(10 UNITS)

*** DISCLAIMER: ISSUED FOR PRELIMINARY DESIGN DISCUSSION ONLY**

BUILDING C - RETIREMENT HOME

700 PARIS STREET, SUDBURY, ONTARIO

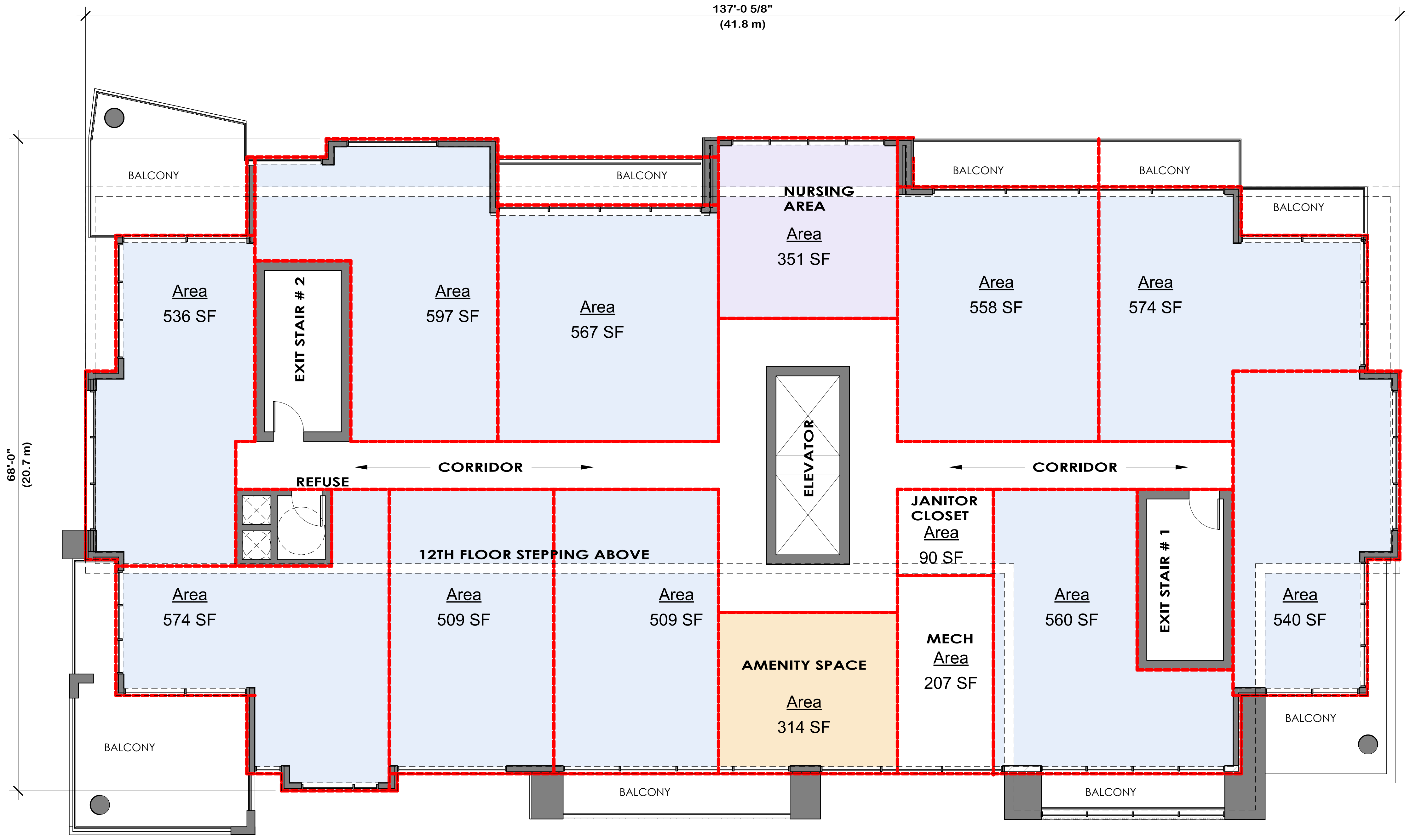
A·C·K
architects
STUDIO INC.

3RD FLOOR PLATE

DWG. No.
A3.3

SCALE: AS SHOWN
DATE: JUNE 12 2023
PROJECT No.: 2021-144

N



4TH - 11TH FLOOR PLATE

1" = 10'-0"

7,938 S.F

(10 UNITS/ FLOOR)

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BUILDING C - RETIREMENT HOME

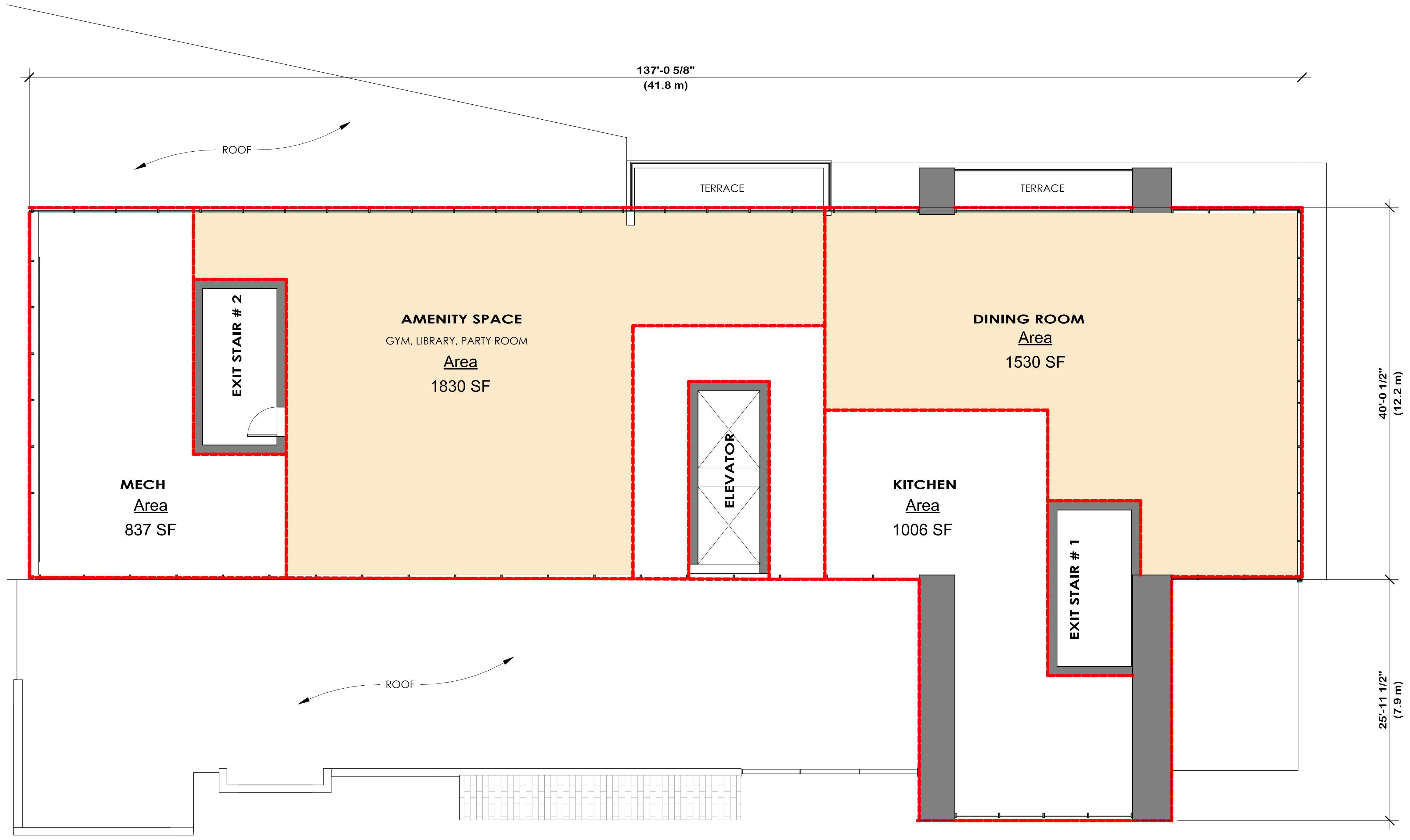
700 PARIS STREET, SUDBURY, ONTARIO

A·C·K
architects
STUDIO INC.

4TH - 11TH FLOOR PLATE

DWG. No.
A3.4

SCALE: AS SHOWN
DATE: JUNE 12 2023
PROJECT No.: 2021-144



PENTHOUSE

1" = 10'-0"

6,182 S.F

*** DISCLAIMER: ISSUED FOR PRELIMINARY DESIGN DISCUSSION ONLY**

BUILDING C - RETIREMENT HOME

700 PARIS STREET, SUDBURY, ONTARIO

A·C·K
architects
STUDIO INC.

12TH FLOOR PLATE

DWG. No.
A3.5

SCALE: AS SHOWN
DATE: JUNE 12 2023
PROJECT No.: 2021-144

700 Paris Street
City of Greater Sudbury

Traffic Impact Study for
2226553 Ontario Inc.

Type of Document:
Final Report

Project Number:
JDE – 21192

Date Submitted:
December 23rd, 2022

John Northcote, P.Eng.
Professional License #: 100124071

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12/23/22
PROVINCE OF ONTARIO

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Legal Notification

This report was prepared by **JD Northcote Engineering Inc.** for the account of **2226553 Ontario Inc.**

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. **JD Northcote Engineering Inc.** accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this project.

Executive Summary

This report summarizes the traffic impact study prepared for the proposed development on a site municipally known as 700 Paris Street, located on the east side of Paris Street between Boland Avenue and Facer Street, in the City of Greater Sudbury [City]. The report assesses the impact of traffic related to the development on the adjacent roadway and provides recommendations to accommodate this traffic in a safe and efficient manner.

The proposed development is anticipated to consist of a 16-storey building with 198 units, a 20-storey building with 250 units and a ground-floor restaurant (500 sq.m. of GFA) and a 10-storey retirement home with 100 rooms.

The proposed development will redevelop the existing site which was formerly the location St. Joseph Hospital. The St. Joseph Hospital has been closed since 2012.

The proposed development will share the existing access with the municipal parking lot south of the proposed development [Paris Driveway], located at the east leg of the Paris Street / Boland Avenue & Existing Driveway intersection. The proposed development will include a full-movement access driveway onto Bell Park Road [Bell Park Access] and an ingress only parking lot access onto Bell Park Road [Bell Park Ingress].

The scope of this analysis includes a review of the following intersections:

- Paris Street / Brady Street;
- Paris Street / Van Horne Street;
- Paris Street / John Street;
- Paris Street / McNaughton Street;
- Paris Street / Facer Street;
- Facer Street / Bell Park Road;
- Paris Street / Boland Avenue & Paris Driveway;
- Paris Street / York Street; and
- Paris Street / Ramsey Lake Road.

Conclusions

1. The proposed development is expected to generate a total of 202 AM and 206 PM peak hour primary trips and 18 PM peak hour pass-by trips.
2. Background traffic and pedestrian counts were commissioned for the existing intersections of Paris Street / Van Horne Street, Paris Street / McNaughton Street, Paris Street / Facer Street, Facer Street / Bell Park Road and Paris Street / York Street completed on Wednesday, April 20th 2022. Background traffic and pedestrian counts at the study area intersections were also obtained from the City.
3. An intersection operation analysis was completed at the study area intersections, using the existing (2022) and background (2027 & 2032) traffic volumes, with the adjacent development traffic. This enabled a review of existing and future traffic deficiencies that would be present without the influence of the proposed development. These improvements are warranted based on the anticipated growth in the City and traffic generated by future developments in the study area without the proposed development. The following improvements are recommended:

Existing (2022) Traffic Volumes

- **Paris Street / John Street and Paris Street / Ramsey Lake Road**
    - Optimize signal timing plan.

Background (2027) Traffic Volumes

- **Paris Street / Van Horne Street, Paris Street / McNaughton Street, Paris Street / Boland Avenue & Paris Driveway and Paris Street / York Street**
    - Optimize signal timing plan.

Background (2032) Traffic Volumes

- **Paris Street / Brady Street**
    - Adjust eastbound pavement markings to accommodate a double left-turn lane.
    - Adjust eastbound signal heads to accommodate a protected eastbound left turn phase.
    - Optimize signal timing plan.
- **Paris Street / Ramsey Lake Road**
    - Widen Ramsey Lake Road to accommodate westbound double right turn lane with a 100 metre storage length and 60 metre taper length
    - Optimize signal timing plan.

4. An estimate of the amount of traffic that would be generated by the Subject Site was prepared and assigned to the study area streets and intersections.
5. An intersection operation analysis was completed under total (2027 & 2032) traffic volumes with the proposed development operational at the study area intersections. The following improvements are recommended prior to build-out of the proposed development:

Opening Day (2027) Traffic Volumes

Paris Street / Boland Avenue & Paris Driveway

- Shift the Paris Driveway to align with Boland Avenue.
- The westbound configuration of Paris Driveway at the intersection shall include a left turn lane and through-right lane.

Facer Street

- Construct sidewalk on the south side of the road between Paris Street and Bell Park Road.

Bell Park Road

- Reconstruct Bell Park Road south of Facer Street to a 6.0 metre wide paved condominium road.
- Bell Park Road shall have a posted speed limit of 20 km/h once Bell Park Road is reconstructed.

6. The proposed development will shift the location of the Paris Driveway slightly further north at the intersection to align with Boland Avenue. It is recommended the westbound lane configuration at the Paris Street / Boland Avenue & Paris Driveway intersection include a left turn lane and through-right lane. A single ingress and egress lane at the Paris Driveway will

provide the necessary capacity to service the proposed development. The Paris Driveway will provide ingress and egress access to the underground parking and surface parking.

7. The Bell Park Access will operate as full-movement access driveway. A single ingress and egress lane at the Bell Park Access will provide the necessary capacity to service the proposed development. The Bell Park Ingress will operate efficiently with a single ingress only driveway. A single ingress lane at the Bell Park Ingress will provide the necessary capacity to service the proposed development. Bell Park Access will provide ingress and egress access to the surface parking and the Bell Park Ingress will provide ingress only access to the underground parking.
8. There are no issues regarding the sight distance available for the proposed Paris Driveway and Bell Park Access.
9. The proposed parking supply for the proposed development meets the minimum parking requirement specified in the City’s Zoning By-law 2010–100Z.
10. In summary the proposed development will not cause any operational issues and will not add significant delay or congestion to the local roadway network.

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1 Introduction

1.1 Background

2226553 Ontario Inc. [The Client] is proposing a development on a site municipally known as 700 Paris Street, located on the east side of Paris Street between Boland Avenue and Facer Street, in the City of Greater Sudbury [City]. The proposed development is anticipated to consist of a 16-storey building with 198 units, a 20-storey building with 250 units and a ground-floor restaurant (500 sq.m. of GFA) and a 10-storey retirement home with 100 rooms.

The proposed development will redevelop the existing site which was formerly the location St. Joseph Hospital. The St. Joseph Hospital has been closed since 2012.

The proposed development will share the existing access with the municipal parking lot south of the proposed development [Paris Driveway], located at the east leg of the Paris Street / Boland Avenue & Existing Driveway intersection. The Paris Driveway will provide ingress and egress access to the underground parking and surface parking.

The proposed development will include a full-movement access driveway onto Bell Park Road [Bell Park Access] and an ingress only parking lot access onto Bell Park Road [Bell Park Ingress]. Bell Park Access will provide ingress and egress access to the surface parking and the Bell Park Ingress will provide ingress only access to the underground parking.

The Client has retained **JD Northcote Engineering Inc.** [JD Engineering] to prepare this traffic impact study in support of the proposed development.

1.2 Study Area

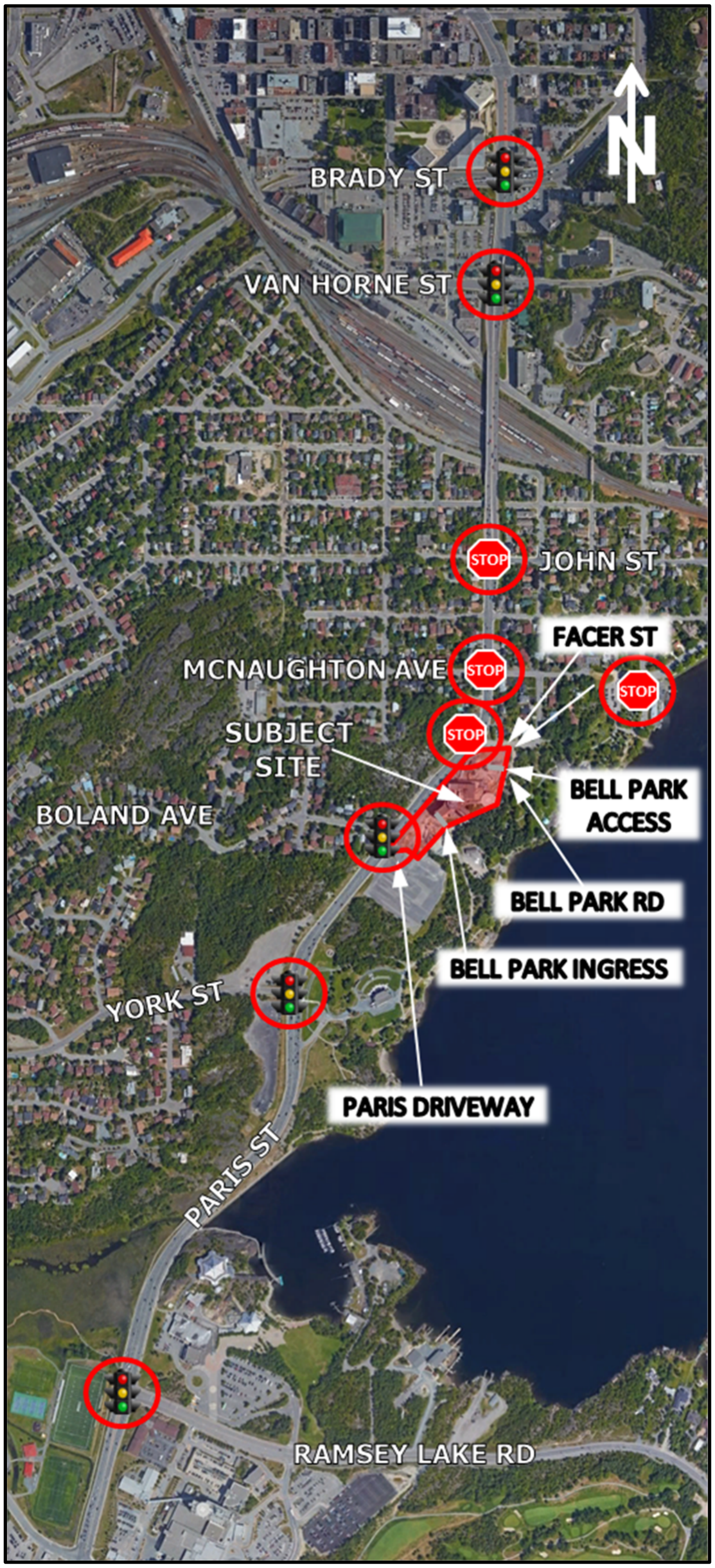
Figure 1 illustrates the location of the subject site and study area intersections in relation to the surrounding area. The Draft Plan by ACK Architects is attached in **Appendix A**.

The subject site is bound by Paris Street to the west, Facer Street to the north, Bell Park Road to the east and existing municipal parking lot to the south.

Through our consultation with the City, the following intersections will be analysed as part of the study:

- Paris Street / Brady Street;
- Paris Street / Van Horne Street;
- Paris Street / John Street;
- Paris Street / McNaughton Street;
- Paris Street / Facer Street;
- Facer Street / Bell Park Road;
- Paris Street / Boland Avenue & Paris Driveway;
- Paris Street / York Street; and
- Paris Street / Ramsey Lake Road.

Figure 1 – Proposed Site Location and Study Area



1.3 Study Scope and Objectives

The purpose of this study is to identify the potential impacts to traffic flow at the site access and on the surrounding roadway network. The study analysis includes the following tasks:

- Determine existing traffic volumes and circulation patterns;
- Estimate future traffic volumes if the proposed development was not constructed, including the impact of additional proposed developments in the area;
- Complete level-of-service [LOS] analysis of horizon year (without the proposed development) traffic conditions and identify operational deficiencies;
- Estimate the amount of traffic that would be generated by the proposed development and assign to the roadway network;
- Complete LOS analysis of horizon year (with the proposed development) traffic conditions and identify additional operational deficiencies;
- Identify improvement options to address operational deficiencies;
- Calculate lane improvements for the Site Access based on the Transportation Association of Canada [TAC] and Ontario Ministry of Transportation [MTO] guidelines;
- Review the proposed configuration of the site accesses;
- Review the suitability of the proposed parking supply; and
- Document findings and recommendations in a final report.

1.4 Horizon Year and Analysis Periods

Traffic scenarios for the existing (2022) and horizon (2027 & 2032) year were selected for analysis of traffic operations in the study area. The weekday morning [AM] and weekday afternoon [PM] peak hours have been selected as the analysis periods for this study.

2 Information Gathering

2.1 Street and Intersection Characteristics

Paris Street is a primary arterial road with an urban cross-section and sidewalks on both sides of the road in the study area. Paris Street is a two-lane roadway south of Van Horne Street and a three-lane roadway north of Van Horne Street. Paris Street has a multi-use paths on both sides of the road south of Boland Avenue. Paris Street north of John Street has a posted speed limit of 50 km/h, Paris Street between John Street and York Street has a posted speed limit of 40 km/h and Paris Street south of York Street has a posted speed limit of 60km/h. Paris Street is under jurisdiction of the City.

Brady Street is a two-lane primary arterial road with an urban cross-section and sidewalks on both sides of the road. Brady Street has a posted speed limit of 50 km/h and is under jurisdiction of the City.

Van Horne Street is a secondary arterial road with an urban cross-section and sidewalks on both sides of the road. Van Horne Street has an unposted (assumed) speed limit of 50km/h east of Paris Street and a posted speed limit of 40 km/h west of Brady Street. Van Horne Street is under jurisdiction of the City.

John Street is a two-lane local road with an urban cross-section and a sidewalk on both sides of the road east of Paris Street and no sidewalk west of Paris Street. John Street has an unposted (assumed) speed limit of 50km/h and is under jurisdiction of the City.

McNaughton Street is a two-lane local road with an urban cross-section and a sidewalk on the south side of the road east of Paris Street and no sidewalk west of Paris Street. McNaughton Street has an unposted (assumed) speed limit of 50km/h and is under jurisdiction of the City.

Facer Street is a two-lane local road with an urban cross-section and no sidewalk. Facer Street has an unposted (assumed) speed limit of 50km/h and is under jurisdiction of the City.

Bell Park Road is a two-lane local road with a rural cross-section and a gravel surface. Bell Park Road has an unposted (assumed) speed limit of 50km/h and is under jurisdiction of the City.

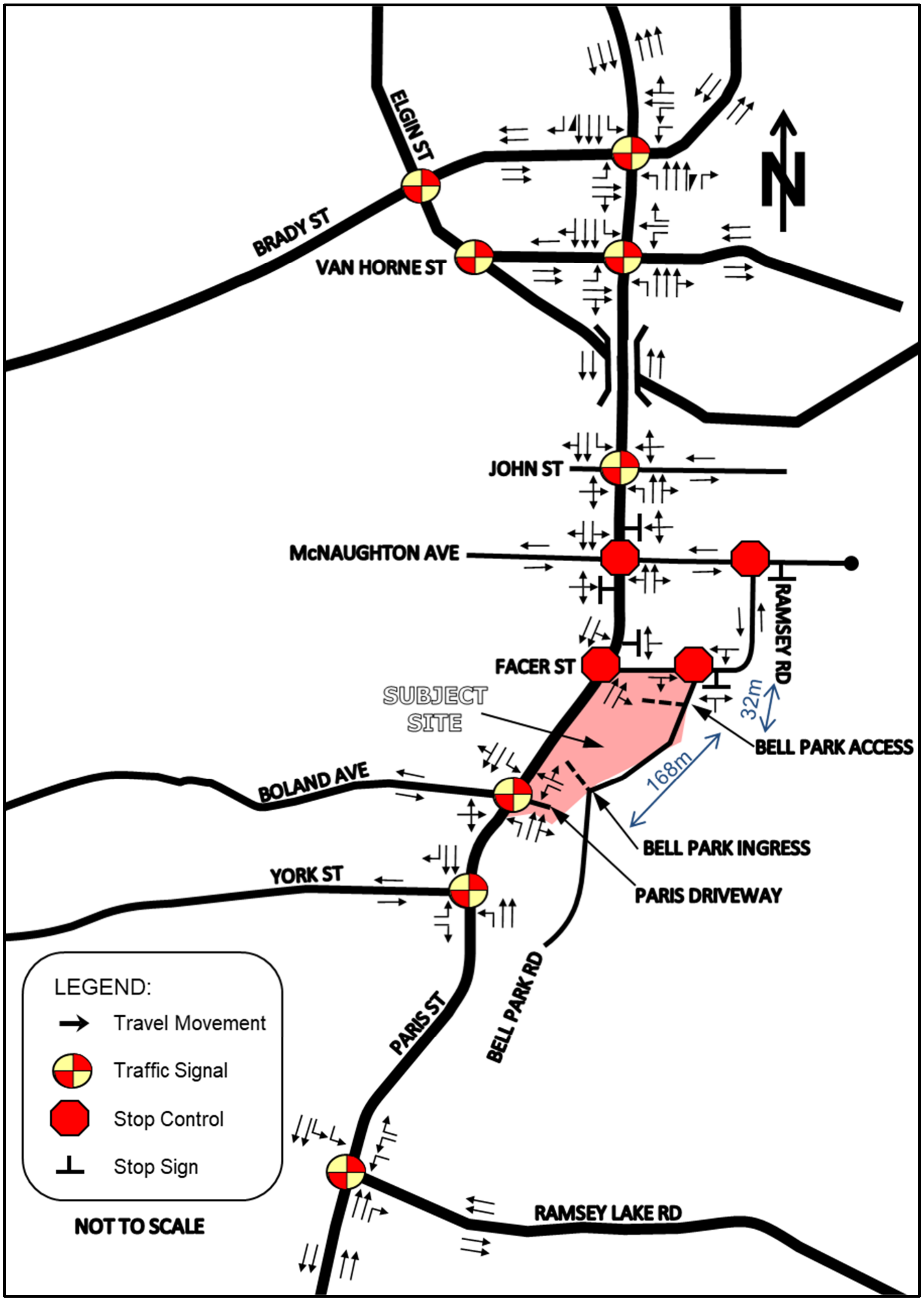
Boland Avenue is a two-lane collector road with an urban cross-section and a sidewalk on the south side of the road. Boland Avenue has an unposted (assumed) speed limit of 50km/h and is under jurisdiction of the City.

York Street is a two-lane collector road with an urban cross-section including sidewalks and bike lanes on the both sides of the road. York Street has a posted speed limit of 40km/h and is under jurisdiction of the City.

Ramsey Lake Road is a four-lane secondary arterial road with an urban cross-section and sidewalks on both sides of the road. Ramsey Lake Road has a posted speed limit of 60 km/h and is under jurisdiction of the City.

The existing intersection lane configuration within the study area is illustrated in **Figure 2**.

Figure 2 – Existing Lane Configuration within Study Area



2.2 Local Transportation Infrastructure Improvements

Based on a review of the City's Transportation Master Plan (2016) [TMP] and 2022 Capital Budget, there are no planned road improvements in the study area.

The City is planning to construct a bikeway path along Paris Street & Notre Dame Street from Van Horne Street to Wilma Street located north of the study area. Construction of the bikeway is planned to start construction in 2022 which will coincide with the rehabilitation of the Bridge of Nations, which includes the addition of a cycle track as part of the improvements.

2.3 Transit Access

The City's bus service [GOVA Transit] provides one bus route near the subject site. The Route 1 (Main Line) bus route provides service along Paris Street.

Route 1 operates from 06:15 – 24:00 on weekdays with service every 15 minutes and from 07:15 – 23:30 on the weekend with service every 15 minutes. The closest bus stop for Route 1 northbound and southbound route are located at the northeast (85 metres from the subject site) and northwest (25 metres from the subject site) corner of the Paris Street / Boland Avenue intersection.

2.4 Other Developments within the Study Area

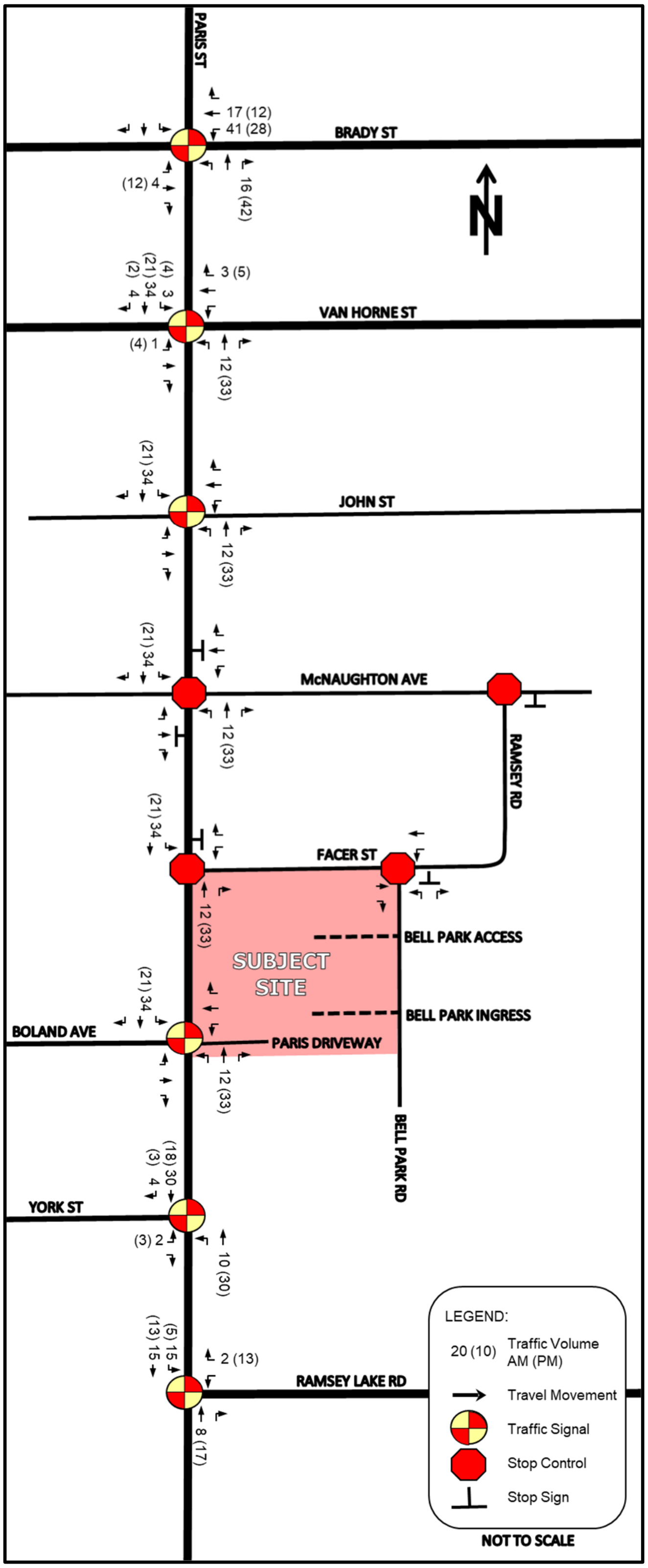
Based on correspondence with the City's planning department, the Manitou Residential Development is the only other development that would impact traffic in the study area.

2356268 Ontario Ltd. is proposing a residential development located northeast of the Paris Street / Van Horne Street intersection [Manitou Residential Development]. The Manitou Residential Development will consist of two high-rise buildings with a total of 826 dwelling units. The buildings will contain 476 units for active older adults and 350 units at rental rates geared to income. Transplan Associates completed a traffic impact study [TIS] for the Manitou Residential Development (dated May 2018) [Transplan TIS]. The Manitou Residential Development is site plan approved with no timeline for build-out.

The traffic generation and assignment for the Manitou Residential Development was obtained from the Transplan TIS (excerpts provided in **Appendix B**) and assumed in the study area.

Figure 3 illustrates the traffic assignment for the Manitou Residential Development, during the AM and PM peak hour.

Figure 3 – Manitou Residential Development Traffic Assignment



2.5 Background Traffic Growth

Based on correspondence with the City a 1.5% background traffic growth rate was applied on collector and arterial roads in the study area. The 1.5% background traffic growth rate was applied on Paris Street, Van Horne Street, Boland Avenue, York Street and Ramsey Lake Road. Based on a review of the surrounding development and road network, no background traffic growth was applied on John Street, McNaughton Street, Facer Street and Bell Park Road.

2.6 Traffic Counts

Detailed turning movements traffic and pedestrian counts were obtained from the City and commissioned by JD Engineering at the study area intersections. **Table 1** summarizes the traffic count data collection information.

Table 1 - Traffic Count Data

Intersection (N-S Street / E-W Street)	**Count Date**	**AM Peak Hour**	**PM Peak Hour**	**Source**
Paris Street / Brady Street	Thursday, August 5th 2021	-	16:00 – 17:00	City
	Friday, August 6th 2021	07:30 – 08:30	-	
Paris Street / Van Horne Street	Thursday, August 5th 2021	-	16:00 – 17:00	City
	Friday, August 6th 2021	07:30 – 08:30	-	
	Wednesday, April 20th 2022	07:45 – 08:45	16:00 – 17:00	JD Eng*
Paris Street / John Street	Thursday, July 18th 2019	-	16:00 – 17:00	City
	Friday, July 19th 2019	08:00 – 09:00	-	
Paris Street / McNaughton Street	Wednesday, April 20th 2022	07:45 – 08:45	16:00 – 17:00	JD Eng*
Paris Street / Facer Street	Wednesday, April 20th 2022	07:45 – 08:45	16:00 – 17:00	JD Eng*
Facer Street / Bell Park Road	Wednesday, April 20th 2022	08:00 – 09:00	16:15 – 17:15	JD Eng*
Paris Street / Boland Avenue & Paris Driveway	Monday, August 9th 2021	-	15:45 – 16:45	City
	Tuesday, August 9th 2021	07:30 – 08:30	-	
Paris Street / York Street	Tuesday, July 23rd 2019	-	16:00 – 17:00	City
	Wednesday, July 24th 2019	07:45 – 08:45	-	
	Wednesday, April 20th 2022	07:45 – 08:45	16:00 – 17:00	JD Eng*
Paris Street / Ramsey Lake Road	Tuesday, August 6th 2019	-	15:45 – 16:45	City
	Wednesday, August 7th 2019	08:00 – 09:00	-	

** Traffic counts were completed by Ontario Traffic Inc. on behalf of JD Engineering.

Detailed traffic count data can be found in **Appendix C**.

The peak hours of traffic generation for all other peak hours at the study area intersections generally aligned with the anticipated peak hour of traffic generation by the proposed development.

To determine the equivalent existing (2022) traffic volumes, the background traffic growth rate noted in Section 2.5 was applied to the traffic counts completed in 2019 and 2021.

Heavy vehicle percentages and pedestrian crossings from the traffic count data have also been included in the Synchro analysis.

As a result of the physical distancing requirements associated with COVID-19, the traffic counts completed in 2019, 2021 and 2022 [2019 Counts, 2021 Counts & 2022 Counts respectively] are notably different in comparison, with the critical scenario generally observed in the 2019 Counts. For the purposes of this report, we have adjusted the traffic volumes to illustrate the critical scenarios observed in the AM and PM peak hours. The following sections will discuss the adjustments made at the study area intersections for use in the traffic model.

Based on our review, there is a notable difference between the traffic patterns observed for the intersections in the City's downtown core (Paris Street at Brady Street and Van Horne Street) [Internal Downtown Intersections] and the intersections south of the downtown area (Paris Street at John Street, McNaughton Street, Facer Street, Boland Avenue, York Street and Ramsey Lake Road) [External Downtown Intersections]; Consequently, the following sections will review slightly different methodologies for both areas.

2.6.1 Internal Downtown Intersections

2.6.1.1 AM Peak Hour

Based on a comparison of the 2021 and 2022 Counts at the Paris Street / Van Horne Street intersection, the 2022 Counts were 31% higher than the 2021 Counts. For the AM peak hour, the 2022 Counts were used at the Paris Street / Van Horne Street intersection and the 2021 Counts with a 31% factor applied was used at the Paris Street / Brady Street intersection. The southbound traffic at the Paris Street / Van Horne Street intersection was adjusted to match the south leg egress traffic at the Paris Street / Brady Street intersection to accurately depict the traffic volumes[1]. It is noted, the south leg of traffic at the Paris Street / Van Horne Street intersection is consistent with the north leg 2019 Counts at the Paris Street / John Street intersection.

2.6.1.2 PM Peak Hour

Based on a comparison of the 2021 and 2022 Counts at the Paris Street / Van Horne Street intersection, there is a marginal difference between the counts. Based on a comparison of the 2019 Counts and 2022 Counts at the Paris Street / York Street intersection, the 2019 Counts were 18% higher than the 2022 Counts. Since there is marginal difference between the 2021 and 2022 Counts, the Internal Downtown Intersections were increased by 18% in the PM peak hour. The southbound traffic on Paris Street between Brady Street, Van Horne Street and John Street were adjusted to match at each leg to accurately depict the traffic volumes[1]. It is noted, the south leg of traffic at the Paris Street / Van Horne Street intersection is consistent with the north leg 2019 Counts at the Paris Street / John Street intersection.

2.6.2 External Downtown Intersections

2.6.2.1 AM Peak Hour

Based on a comparison of the 2019 and 2022 Counts at the Paris Street / York Street intersection, the 2019 Counts were higher than the 2022 Counts by 17%, 4% and 16% in the northbound, southbound and west leg movements respectively, at the intersection. The 2022 Counts at the External Downtown Intersections were increased by 17%, 4% and 16% for the northbound through, southbound through and side street traffic volumes respectively in the AM peak hour.

The northbound and southbound through traffic volumes from the 2021 Counts at the Paris Street / Boland Avenue & & Paris Driveway intersection were adjusted to match the north leg of the Paris Street / York Street intersection. The side street traffic at the Paris Street / Boland Avenue & & Paris Driveway

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[1] There are no driveways onto Paris Street, between the intersections, in the southbound direction.

intersection were increased by 31% in the AM peak hour, based on the increase between 2021 to 2022 Counts as noted in Section 2.6.1.1.

2.6.2.2 **PM Peak Hour**

Based on a comparison of the 2019 and 2022 Counts at the Paris Street / York Street intersection, the 2019 Counts were higher than the 2022 Counts by 15%, 24% and 16% in the northbound, southbound and west leg movements respectively, at the intersection. The 2022 Counts at the External Downtown Intersections were increased by 15%, 24% and 16% for the northbound through, southbound through and side street traffic volumes respectively in the PM peak hour.

The northbound and southbound through traffic volumes from the 2021 Counts at the Paris Street / Boland Avenue & & Paris Driveway intersection were adjusted to match the north leg of the Paris Street / York Street intersection. The side street traffic at the Paris Street / Boland Avenue & & Paris Driveway intersection were increased by 18% in the PM peak hour, based on the increase between 2021 to 2022 Counts as noted in Section 2.6.1.2.

Figure 4 illustrates the existing (2022) AM and PM peak hour traffic volumes in the study area.

2.7 Horizon Year Traffic Volumes

In addition to the adjacent development traffic volumes (outlined in Section 2.4), the background (2027 & 2032) traffic volumes were estimated for the AM and PM peak hour by applying the background traffic growth rates discussed in Section 2.5 to the existing traffic volumes.

Figures 5 and **6** illustrates the background (2027 & 2032) AM and PM peak hour traffic volumes respectively, in the study area.

Figure 4 – Existing (2022) Traffic Volumes

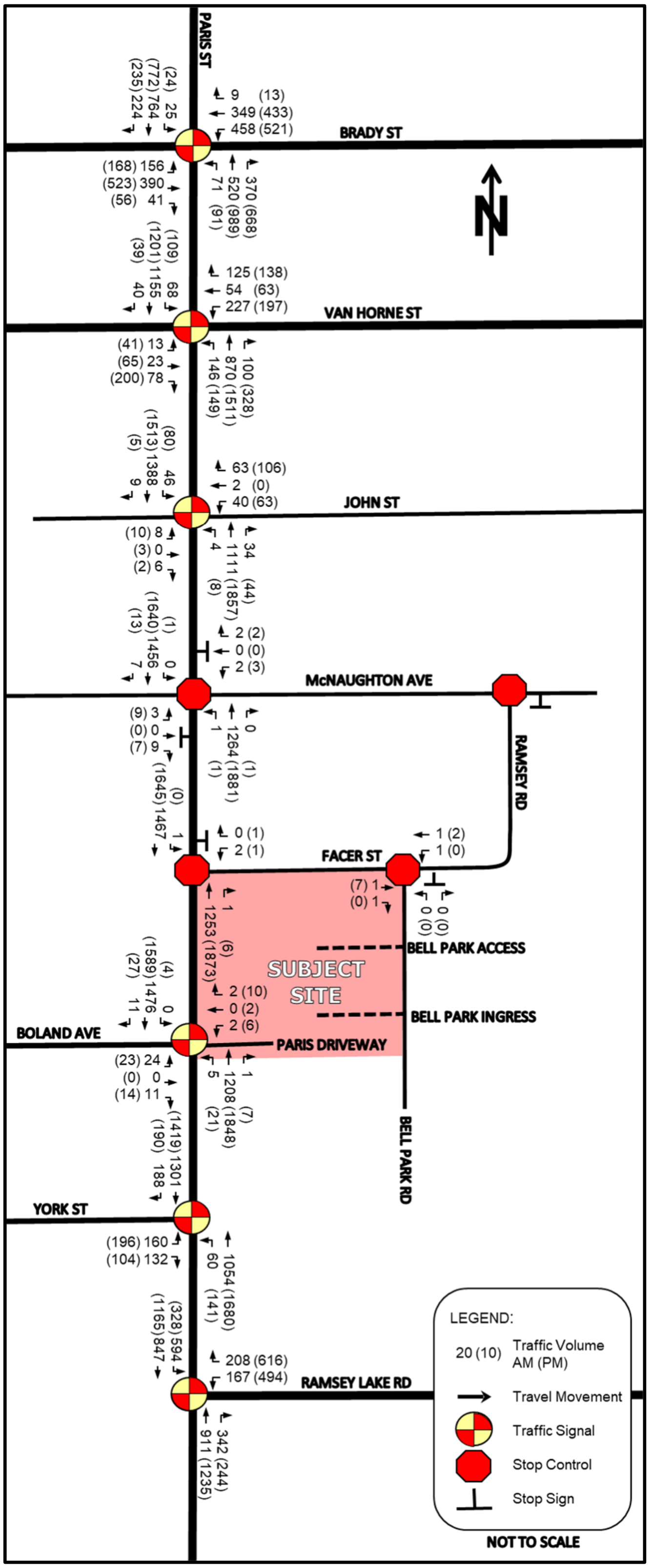


Figure 5 – Background (2027) Traffic Volumes

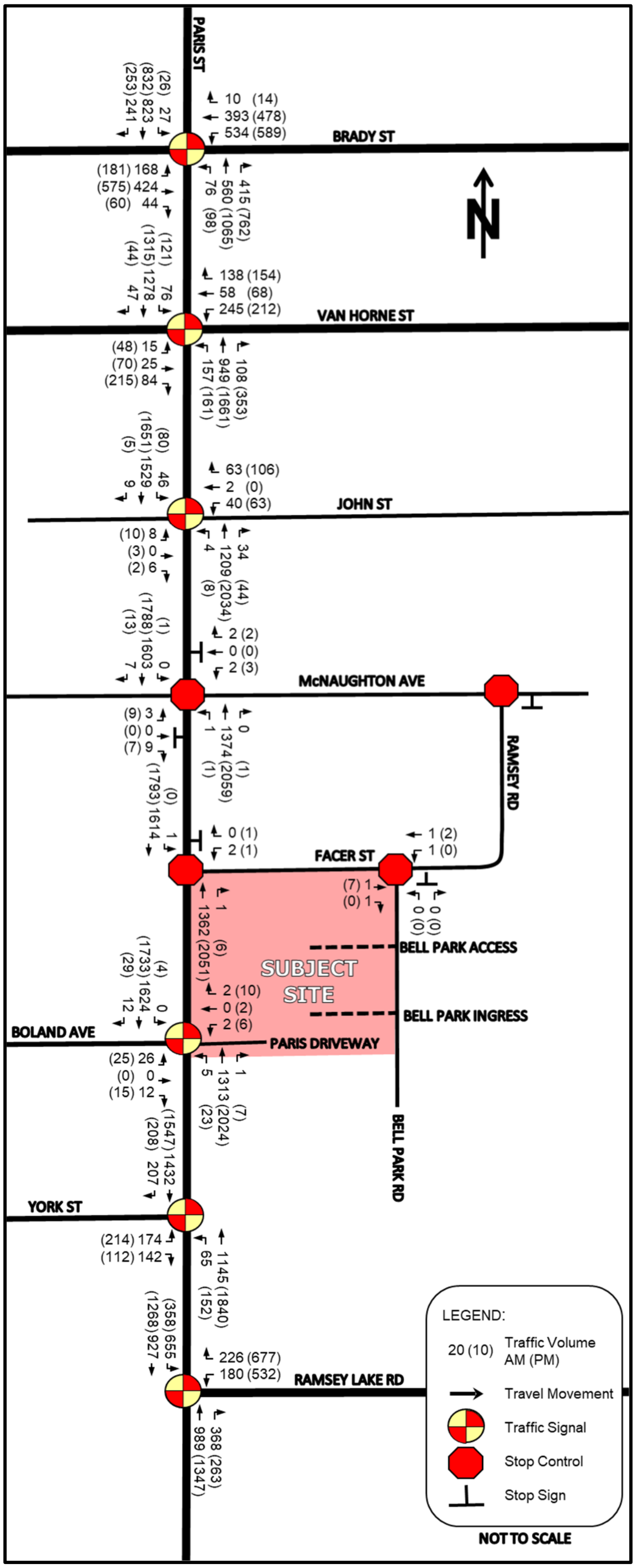
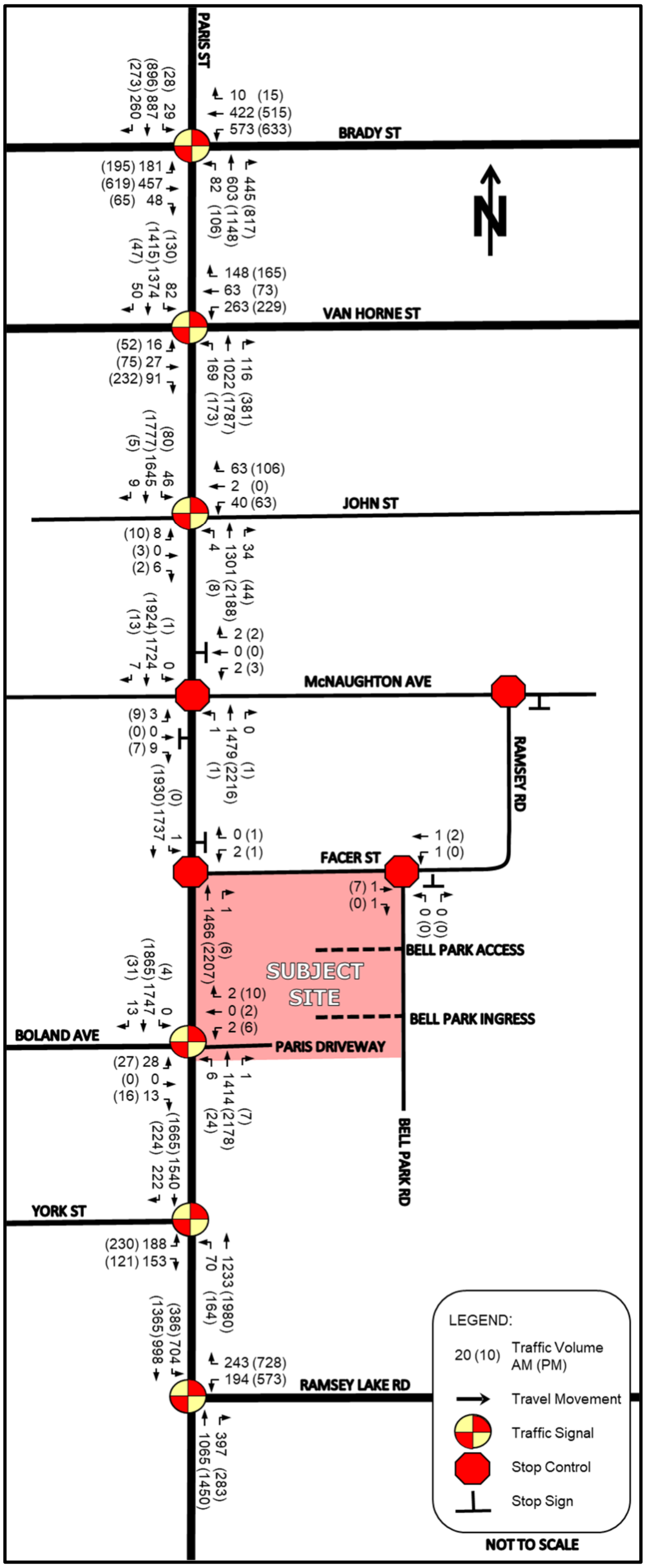


Figure 6 – Background (2032) Traffic Volumes



3 Intersection Operation with Proposed Development

3.1 Intersection Capacity Analysis Criteria

Intersection performance was measured using the traffic analysis software, Synchro 11, a deterministic model that employs Highway Capacity Manual and Intersection Capacity Utilization methodologies for analysing intersection operations. These procedures are accepted by provincial and municipal agencies throughout North America.

Synchro 11 enables the study area to be graphically defined in terms of streets and intersections, along with their geometric and traffic control characteristics. The user is able to evaluate both signalized and unsignalized intersections in relation to each other, thus not only providing level of service for the individual intersections, but also enabling an assessment of the impact the various intersections in a network have on each other in terms of spacing, traffic congestion, delay, and queuing.

Individual turning movements with a volume-to-capacity [V/C] ratio of 0.85 or greater are considered to be critical movements and have been highlighted in the LOS tables.

The intersection operations were also evaluated in terms of the LOS. LOS is a common measure of the quality of performance at an intersection and is defined in terms of vehicular delay. This delay includes deceleration delay, queue move-up time, stopped delay, and acceleration delay. LOS is expressed on a scale of A through F, where LOS A represents very little delay (i.e. less than 10 seconds per vehicle) and LOS F represents very high delay (i.e. greater than 50 seconds per vehicle for a stop sign controlled intersection and greater than 80 seconds per vehicle for a signalized intersection).

The LOS criteria for signalized and stop sign controlled intersections are shown in **Table 2.** A description of traffic performance characteristics is included for each LOS.

Table 2 – Level of Service Criteria for Intersections

LOS	LOS Description	Control Delay (seconds per vehicle)	
		Signalized Intersections	Stop Controlled Intersections
A	Very low delay; most vehicles do not stop (**Excellent**)	less than 10.0	less than 10.0
B	Higher delay; more vehicles stop (**Very Good**)	between 10.0 and 20.0	between 10.0 and 15.0
C	Higher level of congestion; number of vehicles stopping is significant, although many still pass through intersection without stopping **(Good)**	between 20.0 and 35.0	between 15.0 and 25.0
D	Congestion becomes noticeable; vehicles must sometimes wait through more than one red light; many vehicles stop (**Satisfactory**)	between 35.0 and 55.0	between 25.0 and 35.0
E	Vehicles must often wait through more than one red light; considered by many agencies to be the limit of **acceptable** delay	between 55.0 and 80.0	between 35.0 and 50.0
F	This level is considered to be unacceptable to most drivers; occurs when arrival flow rates exceed the capacity of the intersection (**Unacceptable**)	greater than 80.0	greater than 50.0

3.2 Existing (2022) Intersection Operation

The results of the LOS analysis under existing (2022) traffic volumes during the AM and PM peak hours can be found below in **Table 3**. The existing intersection geometry and traffic control has been utilized in this scenario. Detailed output of the Synchro analysis can be found in **Appendix D**.

Table 3 – Existing (2022) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Paris Street / Brady Street (signalized)	0.64	26.8	C	-	-	0.70	30.2	C	-	-
EBL	0.43	23.4	C	36	57	0.46	27.1	C	44	57
EBTR	0.69	36.5	D	66	-	0.76	44.0	D	109	-
WBL	0.72	36.7	D	78	85	0.71	41.9	D	89	85
WBTR	0.41	26.7	C	52	-	0.42	30.0	C	72	-
NBL	0.32	18.6	B	20	70	0.34	21.6	C	24	70
NBT	0.36	23.5	C	47	-	0.59	29.9	C	92	-
NBR	0.33	9.5	A	41	-	0.60	14.3	B	111	-
SBL	0.11	22.7	C	9	24	0.14	24.8	C	9	24
SBT	0.63	29.9	C	74	-	0.51	31.3	C	74	-
SBR	0.32	19.0	B	39	-	0.26	20.3	C	34	-
Paris Street / Van Horne Street (signalized)	0.67	16.2	B	-	-	0.72	17.8	B	-	-
EBL	0.05	25.4	C	7	21	0.14	26.2	C	14	21
EBTR	0.07	25.4	C	8	-	0.20	26.5	C	18	-
WBL	0.81	45.4	D	68	133	0.82	50.9	D	61	133
WBT	0.14	26.0	C	18	-	0.14	26.1	C	19	-
WBR	0.09	25.6	C	14	62	0.09	25.8	C	14	62
NBL	0.62	12.8	B	27	34	0.54	10.4	B	21	34
NBTR	0.40	11.9	B	58	-	0.70	16.3	B	127	-
SBL	0.22	7.5	A	11	48	0.50	12.5	B	19	48
SBTR	0.48	12.9	B	71	-	0.46	12.6	B	68	-
Paris Street / John Street (signalized)	0.61	8.1	A	-	-	0.84	16.6	B	-	-
EB	0.01	21.8	C	0	-	0.07	29.4	C	7	-
WB	0.28	23.3	C	20	-	0.49	33.0	C	33	-
NBL	0.02	6.0	A	2	33	0.05	6.9	A	3	33
NBTR	0.63	9.6	A	82	-	0.94	23.4	C	245	-
SBL	0.17	4.9	A	5	23	0.39	16.7	B	11	23
SBTR	0.61	5.6	A	69	-	0.62	6.3	A	97	-
Paris Street / McNaughton Street (unsignalized)	-	0.2	A	-	-	-	0.1	D	-	-
EB	0.06	23.4	C	2	-	0.05	15.7	C	2	-
WB	0.03	33.9	D	1	-	0.02	20.0	C	1	-

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Paris Street / Facer Street (unsignalized)	-	0.1	A	-	-	-	0.0	B	-	-
WB	0.01	30.9	D	1	-	0.01	17.9	C	1	-
Bell Park Road / Facer Street (unsignalized)	-	1.8	A	-	-	-	0.0	A	-	-
WB	0.00	0.0	A	0	-	0.00	0.0	A	0	-
Paris Street / Boland Avenue & Paris Driveway (signalized)	0.57	3.9	A	-	-	0.70	5.6	A	-	-
EB	0.02	25.5	C	7	-	0.04	29.1	C	9	-
WBL	0.02	25.5	C	2	-	0.06	29.1	C	5	-
WBTR	0.00	25.4	C	0	-	0.03	28.9	C	5	-
NBL	0.03	2.1	A	2	40	0.16	2.8	A	4	40
NBTR	0.49	3.2	A	46	-	0.76	5.9	A	108	-
SBL	0.00	0.0	A	0	100	0.03	2.2	A	1	100
SBTR	0.61	3.9	A	65	-	0.66	4.6	A	79	-
Paris Street / York Street (signalized)	0.71	13.1	B	-	-	0.80	15.8	B	-	-
EBL	0.56	29.7	C	49	21	0.64	34.0	C	58	21
EBR	0.10	25.3	C	16	-	0.07	26.9	C	14	-
NBL	0.27	9.4	A	8	123	0.49	13.2	B	25	123
NBT	0.51	6.5	A	67	-	0.74	9.9	A	135	-
SBT	0.78	16.0	B	141	-	0.84	20.5	C	160	-
SBR	0.14	8.9	A	11	72	0.13	10.5	B	12	72
Paris Street / Ramsey Lake Road (signalized)	0.65	17.6	B	-	-	0.96	31.4	C	-	-
WBL	0.35	29.4	C	25	158	0.72	44.4	D	87	158
WBR	0.25	11.7	B	34	-	0.88	38.4	D	223	-
NBT	0.73	22.4	C	92	-	0.93	42.5	D	217	-
NBR	0.36	17.5	B	35	37	0.31	22.6	C	49	37
SBL	0.69	27.5	C	87	175	0.50	40.1	D	56	175
SBT	0.37	4.7	A	41	-	0.54	9.8	A	90	-

The results of the analysis indicate that the intersections of Paris Street / John Street and Paris Street / Ramsey Lake Road are operating marginally outside the typical design limits noted in Section 3.1 during the PM peak hour. It is recommended the signal timing at these intersections are adjusted to optimize the use of the existing infrastructure.

A summary of the results of the Synchro analysis with the above-noted improvements, during the PM peak hour, can be found below in **Table 4**. Detailed output of the Synchro analysis can be found in **Appendix D**.

Table 4 – Existing (2022) LOS with Improvements

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Paris Street / John Street (signalized)	-	-	-	-	-	0.81	14.0	B	-	-
EB	-	-	-	-	-	0.06	33.4	C	10	-
WB	-	-	-	-	-	0.56	39.2	D	51	-
NBL	-	-	-	-	33	0.05	6.2	A	3	33
NBTR	-	-	-	-	-	0.87	17.2	B	215	-
SBL	-	-	-	-	23	0.55	20.4	C	15	23
SBTR	-	-	-	-	-	0.61	6.7	A	101	-
Paris Street / Ramsey Lake Road (signalized)	-	-	-	-	-	0.96	31.2	C	-	-
WBL	-	-	-	-	158	0.60	37.9	D	82	158
WBR	-	-	-	-	-	0.92	45.0	D	245	-
NBT	-	-	-	-	-	0.89	36.0	D	185	-
NBR	-	-	-	-	37	0.29	21.0	C	42	37
SBL	-	-	-	-	175	0.71	51.0	D	63	175
SBT	-	-	-	-	-	0.58	12.7	B	105	-

The results of the LOS analysis indicate that the intersections of Paris Street / John Street and Paris Street / Ramsey Lake Road are operating outside the typical design limits as noted in Section 3.1; however, no improvements are recommended as the intersection is operating within theoretical capacity (V/C of 1.0) and the methodology noted in Section 2.6 assumed conservative traffic volumes along Paris Street in the study area. The northbound movements in the PM peak hour exceeds the capacity for a two-lane roadway in each direction (1800 vph); it is recommended the City monitor the traffic volumes and queuing on Paris Street to determine if improvements are warranted and prioritize transportation demand management [TDM] strategies and promote active transportation to reduce automobile traffic along Paris Street in the downtown area.

The anticipated queue for northbound movements at the Paris Street / John Street intersection will extend past the intersections of Paris Street at David Street (90 metres) and McNaughton Street (192 metres). As noted above, northbound traffic volumes are approaching the capacity for a two-lane roadway (1800 vph); it is recommended the City monitor the northbound queue at the intersection and prioritize TDM strategies and promote active transportation to reduce automobile traffic along Paris Street in the downtown area.

The anticipated queue for eastbound left turn movements at the Paris Street / York Street intersection exceeds the existing storage and taper length; however, the excess queue will not block any intersections. Consequently, there are no issues with the anticipated eastbound left turn queue.

The anticipated queue for all other highlighted auxiliary left turn movements exceed the existing storage, however, the excess queue can be accommodated by the taper length.

There are no other issues regarding the anticipated queuing for all other movements at the study area intersections.

An analysis was completed for left turn movements at the unsignalized intersections in the study area, based on the criteria outlined in Appendix 9A of the MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads (dated June 2017) [MTO DS]. Based on the above noted criteria a left-turn lane is not warranted at the unsignalized intersections in the study area (results are provided in **Appendix G**).

A review of the need for additional auxiliary right turn lanes was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all right turn movements; consequently, additional right turn lane improvements are not recommended.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the unsignalized intersections in the study area (results are provided in **Appendix H**).

No improvements are recommended for the existing (2022) scenario.

3.3 Background (2027) Intersection Operation

The results of the LOS analysis under background (2027) traffic volumes during the AM and PM peak hours can be found below in **Table 5**. The signal timing improvements noted in Section 3.2 and additional signal timing improvements at all other intersections were applied in this scenario to optimize the use of the existing infrastructure. Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 5 – Background (2027) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Paris Street / Brady Street (signalized)	0.69	30.1	C	-	-	0.80	31.5	C	-	-
EBL	0.47	26.1	C	42	57	0.49	27.8	C	44	57
EBTR	0.74	41.4	D	84	-	0.77	45.2	D	110	-
WBL	0.74	39.3	D	92	85	0.76	45.7	D	106	85
WBTR	0.41	27.5	C	64	-	0.42	29.6	C	76	-
NBL	0.39	22.6	C	24	70	0.39	24.5	C	30	70
NBT	0.40	27.8	C	56	-	0.53	26.8	C	96	-
NBR	0.38	10.8	B	49	-	0.69	13.4	B	171	-
SBL	0.11	24.8	C	11	24	0.21	33.7	C	15	24
SBT	0.69	34.6	C	91	-	0.63	38.1	D	91	-
SBR	0.32	21.4	C	42	-	0.35	25.3	C	52	-
Paris Street / Van Horne Street (signalized)	0.68	18.9	B	-	-	0.79	20.1	C	-	-
EBL	0.05	23.0	C	7	21	0.15	26.5	C	16	21
EBTR	0.07	23.1	C	8	-	0.24	27.2	C	24	-
WBL	0.80	40.9	D	73	133	0.82	51.0	D	66	133
WBT	0.13	23.6	C	19	-	0.14	26.4	C	20	-
WBR	0.10	23.4	C	14	62	0.19	26.9	C	22	62
NBL	0.59	15.1	B	38	34	0.62	14.4	B	41	34
NBTR	0.46	13.8	B	74	-	0.76	18.7	B	167	-
SBL	0.28	10.5	B	14	48	0.69	25.6	C	44	48
SBTR	0.63	18.9	B	109	-	0.54	16.3	B	101	-
Paris Street / John Street (signalized)	0.66	8.6	A	-	-	0.86	15.6	B	-	-
EB	0.01	23.1	C	0	-	0.07	37.6	D	10	-
WB	0.29	24.8	C	20	-	0.60	45.2	D	51	-
NBL	0.03	5.8	A	2	33	0.06	5.9	A	3	33
NBTR	0.66	9.8	A	91	-	0.91	19.5	B	268	-
SBL	0.19	5.2	A	5	23	0.61	28.9	C	20	23
SBTR	0.66	6.0	A	81	-	0.65	6.9	A	119	-
Paris Street / McNaughton Street (unsignalized)	-	0.1	A	-	-	-	0.1	C	-	-
EB	0.06	21.6	C	2	-	0.03	12.4	B	1	-
WB	0.03	29.5	D	1	-	0.02	17.6	C	1	-
Paris Street / Facer Street (unsignalized)	-	0.1	B	-	-	-	0.0	C	-	-
WB	0.01	29.9	D	1	-	0.01	15.8	C	1	-
NB	0.59	0.0	A	0	-	0.85	0.0	A	0	-
Bell Park Road / Facer Street (unsignalized)	-	1.8	A	-	-	-	0.0	A	-	-
WB	0.04	0.0	A		-	0.02	0.0	A	0	-

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Paris Street / Boland Avenue & Paris Driveway (signalized)	0.61	4.7	A	-	-	0.75	6.8	A	-	-
EB	0.04	26.9	C	9	-	0.24	36.5	D	16	-
WBL	0.02	26.8	C	3	-	0.07	34.8	C	7	-
WBTR	0.00	26.7	C	0	-	0.03	34.5	C	7	-
NBL	0.03	2.3	A	1	40	0.20	2.8	A	4	40
NBTR	0.54	3.8	A	51	-	0.79	6.2	A	141	-
SBL	0.00	0.0	A	0	100	0.04	1.9	A	1	100
SBTR	0.67	4.9	A	76	-	0.69	4.5	A	99	-
Paris Street / York Street (signalized)	0.74	13.0	B	-	-	0.81	16.9	B	-	-
EBL	0.62	33.8	C	62	21	0.71	43.1	D	86	21
EBR	0.26	28.6	C	29	-	0.08	31.7	C	17	-
NBL	0.41	11.7	B	8	123	0.67	26.1	C	48	123
NBT	0.54	6.8	A	76	-	0.79	11.1	B	157	-
SBT	0.78	14.7	B	145	-	0.82	19.1	B	162	-
SBR	0.15	7.8	A	9	72	0.15	9.7	A	10	72
Paris Street / Ramsey Lake Road (signalized)	0.68	20.3	C	-	-	1.04	38.8	D	-	-
WBL	0.37	34.4	C	32	158	0.67	41.4	D	89	158
WBR	0.29	14.3	B	48	-	1.05	79.9	E	284	-
NBT	0.74	24.9	C	127	-	0.93	39.8	D	217	-
NBR	0.42	19.8	B	56	37	0.32	20.6	C	48	37
SBL	0.75	33.5	C	103	175	0.81	58.2	E	74	175
SBT	0.39	5.0	A	53	-	0.62	13.0	B	120	-

The results of the LOS analysis indicate that the intersections of Paris Street / John Street and Paris Street / Ramsey Lake Road are operating outside the typical design limits as noted in Section 3.1; however, no improvements are recommended as the intersection is only operating marginally outside theoretical capacity (V/C of 1.0) and the methodology noted in Section 2.6 assumed conservative traffic volumes along Paris Street in the study area. The northbound and southbound movements in the PM peak hour exceeds the capacity for a two-lane roadway in each direction (1800 vph); it is recommended the City monitor the traffic volumes and queuing on Paris Street to determine if improvements are warranted as development proceeds and prioritize TDM strategies and promote active transportation to reduce automobile traffic along Paris Street in the downtown area.

The results of the LOS analysis indicate that the northbound movement at the Paris Street / Facer Street intersection is operating outside the typical design limits as noted in Section 3.1; however, since there are no queuing issues and the V/C ratio only marginally exceeds the typical design limits, no improvements are recommended.

The anticipated queue for northbound movements at the Paris Street / John Street intersection will extend past the intersections of Paris Street at David Street (90 metres) and McNaughton Street (192 metres). As noted above, northbound traffic volumes are approaching the capacity for a two-lane roadway (1800 vph); it is recommended the City monitor the northbound queue at the intersection and prioritize TDM strategies and promote active transportation to reduce automobile traffic along Paris Street in the downtown area.

The anticipated queue for eastbound left turn movements at the Paris Street / York Street intersection exceeds the existing storage and taper length; however, the excess queue will not block any intersections. Consequently, there are no issues with the anticipated eastbound left turn queue.

The anticipated queue for all other highlighted auxiliary left turn movements exceed the existing storage, however, the excess queue can be accommodated by the taper length.

An analysis was completed for left turn movements at the unsignalized intersections in the study area, based on the criteria outlined in Appendix 9A of the MTO DS. Based on the above noted criteria a left-turn lane is not warranted at the unsignalized intersections in the study area (results are provided in **Appendix G**).

A review of the need for additional auxiliary right turn lanes was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all right turn movements; consequently, additional right turn lane improvements are not recommended.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the unsignalized intersections in the study area (results are provided in **Appendix H**).

No further improvements are recommended for the background (2027) scenario.

3.4 Background (2032) Intersection Operation

The results of the LOS analysis under background (2032) traffic volumes during the AM and PM peak hours can be found below in **Table 6**. The signal timing improvements noted in Section 3.2 and 3.3 have been utilized in this scenario. Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 6 – Background (2032) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Paris Street / Brady Street (signalized)	0.73	32.5	D	-	-	0.85	34.5	C	-	-
EBL	0.51	27.9	C	46	57	0.53	30.0	C	48	57
EBTR	0.78	45.7	D	93	-	0.81	50.0	D	119	-
WBL	0.79	43.3	D	103	85	0.83	52.6	D	121	85
WBTR	0.43	29.0	C	70	-	0.45	32.0	C	83	-
NBL	0.44	24.3	C	25	70	0.44	26.3	C	32	70
NBT	0.42	29.3	C	61	-	0.56	28.6	C	105	-
NBR	0.41	11.4	B	57	-	0.74	15.9	B	200	-
SBL	0.13	26.1	C	11	24	0.24	35.4	D	17	75
SBT	0.72	37.1	D	99	-	0.64	40.0	D	99	-
SBR	0.35	22.7	C	46	-	0.37	26.4	C	57	-
Paris Street / Van Horne Street (signalized)	0.73	20.7	C	-	-	0.87	23.2	C	-	-
EBL	0.06	23.0	C	8	21	0.16	26.4	C	18	21
EBTR	0.07	23.0	C	9	-	0.27	27.2	C	27	-
WBL	0.83	44.0	D	78	133	0.92	69.2	E	88	133
WBT	0.14	23.6	C	20	-	0.14	26.2	C	22	-
WBR	0.10	23.3	C	14	62	0.21	26.8	C	25	62
NBL	0.63	19.2	B	42	34	0.73	22.2	C	45	34
NBTR	0.51	15.0	B	81	-	0.82	20.8	C	146	-
SBL	0.33	11.5	B	15	48	0.75	32.5	C	40	48
SBTR	0.70	21.0	C	120	-	0.58	17.1	B	88	-
Paris Street / John Street (signalized)	0.69	8.6	A	-	-	0.90	17.7	B	-	-
EB	0.01	24.5	C	0	-	0.08	41.7	D	10	-
WB	0.30	26.3	C	21	-	0.64	52.2	D	51	-
NBL	0.03	5.6	A	2	33	0.06	5.6	A	3	33
NBTR	0.68	9.9	A	102	-	0.94	22.7	C	351	-
SBL	0.20	5.6	A	5	23	0.65	38.4	D	24	23
SBTR	0.70	6.3	A	93	-	0.68	7.0	A	138	-
Paris Street / McNaughton Street (unsignalized)	-	0.1	B	-	-	-	0.2	C	-	-
EB	0.06	22.2	C	2	-	0.03	12.9	B	1	-
WB	0.03	29.2	D	1	-	0.02	20.3	C	1	-
Paris Street / Facer Street (unsignalized)	-	0.1	C	-	-	-	0.0	D	-	-
WB	0.01	31.0	D	1	-	0.01	17.2	C	1	-
NB	0.64	0.0	A	0	-	0.91	0.0	A	0	-

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Bell Park Road / Facer Street (unsignalized)	-	1.8	A	-	-	-	0.0	A	-	-
WB	0.04	0.0	A	0	-	0.02	0.0	A	0	-
Paris Street / Boland Avenue & Paris Driveway (signalized)	0.65	4.9	A	-	-	0.79	7.2	A	-	-
EB	0.07	28.8	C	9	-	0.23	41.4	D	17	-
WBL	0.02	28.4	C	3	-	0.07	40.0	D	7	-
WBTR	0.00	28.3	C	0	-	0.02	39.6	D	7	-
NBL	0.05	2.3	A	2	40	0.25	3.6	A	6	40
NBTR	0.57	3.8	A	58	-	0.84	7.9	A	182	-
SBL	0.00	0.0	A	0	100	0.05	2.1	A	1	100
SBTR	0.70	5.2	A	202	-	0.73	5.4	A	121	-
Paris Street / York Street (signalized)	0.78	14.3	B	-	-	0.86	19.3	B	-	-
EBL	0.66	37.3	D	67	21	0.77	50.4	D	100	21
EBR	0.32	31.0	C	34	-	0.08	34.6	C	18	-
NBL	0.48	14.7	B	10	123	0.79	43.3	D	63	123
NBT	0.58	7.4	A	85	-	0.83	13.0	B	185	-
SBT	0.82	16.2	B	167	-	0.85	20.5	C	185	-
SBR	0.16	7.9	A	10	72	0.17	9.6	A	12	72
Paris Street / Ramsey Lake Road (signalized)	0.71	22.5	C	-	-	1.12	48.5	D	-	-
WBL	0.39	37.1	D	34	158	0.73	44.3	D	97	158
WBR	0.32	15.6	B	53	-	1.15	117.0	F	317	-
NBT	0.78	27.8	C	145	-	0.98	48.8	D	259	-
NBR	0.47	21.6	C	67	37	0.34	20.7	C	53	37
SBL	0.79	37.5	D	123	175	0.88	67.6	E	83	175
SBT	0.41	5.4	A	63	-	0.66	13.7	B	136	-

The results of the LOS analysis indicate that the Paris Street / Brady Street intersection is operating outside the typical design limits as noted in Section 3.1. It is recommended the eastbound pavement markings be adjusted to accommodate a double left-turn lane; the recommended eastbound lane configuration will include double left turn lanes, a single through lane and a single through-right turn lane. It is recommended the eastbound signal heads are adjusted to include a protected eastbound left turn phase and adjust the signal timing plan, to accommodate the double eastbound left turn lanes.

The results of the LOS analysis indicate that the Paris Street / Ramsey Lake Road intersection is operating outside the typical design limits as noted in Section 3.1. It is recommended Ramsey Lake Road is widened to accommodate a westbound double right turn lane with a 100 metre storage length and 60 metre taper length; the recommended westbound lane configuration will include double left turn lanes and a double right lane. It is recommended the signal timing plan is adjusted to accommodate the double westbound right turn lane improvement.

A summary of the results of the Synchro analysis with the above-noted improvements, during the PM peak hour, can be found below in **Table 7**. Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 7 – Background (2032) LOS with Improvements

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Paris Street / Brady Street (signalized)	0.73	33.1	C	-	-	0.85	35.0	D	-	-
EBL	0.53	46.4	D	38	57	0.57	53.8	D	41	57
EBTR	0.78	46.3	D	93	-	0.81	50.0	D	119	-
WBL	0.79	43.9	D	101	85	0.83	52.6	D	121	85
WBTR	0.41	28.4	C	68	-	0.44	31.0	C	81	-
NBL	0.44	24.2	C	25	70	0.44	26.3	C	32	70
NBT	0.42	28.4	C	61	-	0.56	28.6	C	105	-
NBR	0.41	11.3	B	57	-	0.74	15.9	B	200	-
SBL	0.13	26.0	C	11	24	0.24	35.4	D	17	75
SBT	0.71	36.8	D	99	-	0.64	40.0	D	99	-
SBR	0.31	19.3	B	49	-	0.33	23.0	C	59	-
Paris Street / Ramsey Lake Road (signalized)	0.72	20.5	C	-	-	0.89	31.6	C	-	-
WBL	0.48	38.1	D	34	158	0.84	51.8	D	107	158
WBR	0.18	14.4	B	26	-	0.68	29.0	C	117	-
NBT	0.77	25.4	C	128	-	0.94	39.9	D	249	-
NBR	0.46	19.9	B	59	37	0.33	18.9	B	50	37
SBL	0.76	33.8	C	105	175	0.82	57.5	E	77	175
SBT	0.40	4.3	A	46	-	0.63	11.1	B	121	-

The results of the LOS analysis indicate that the intersections of Paris Street / Brady Street, Paris Street / Van Horne Street, Paris Street / John Street, Paris Street / York Street and Paris Street / Ramsey Lake Road operates outside the typical design limits noted in Section 3.1 in the PM peak hour; however, no improvements are recommended as the intersection is still operating within theoretical capacity (V/C < 1.0). The northbound and southbound movements in the PM peak hour exceeds the capacity for a two-lane roadway in each direction (1800 vph); it is recommended the City monitor the traffic volumes and queuing on Paris Street to determine if further improvements are warranted and prioritize TDM strategies and promote active transportation to reduce automobile traffic along Paris Street in the downtown area.

The anticipated queue for northbound and southbound movements at the intersections of Paris Street / John Street, Paris Street / Facer Street and Paris Street / McNaughton Street intersection will marginally extend past intersections along Paris Street. As noted above, northbound traffic volumes are approaching the capacity for a two-lane roadway; it is recommended the City monitor the queuing at the intersections and prioritize TDM strategies and promote active transportation to reduce automobile traffic along Paris Street in the downtown area.

The anticipated queue for eastbound left turn movements at the Paris Street / York Street intersection exceeds the existing storage and taper length; however, the excess queue will not block any intersections. Consequently, there are no issues with the anticipated eastbound left turn queue.

The anticipated queue for all other highlighted auxiliary left turn movements exceed the existing storage, however, the excess queue can be accommodated by the taper length.

An analysis was completed for left turn movements at the unsignalized intersections in the study area, based on the criteria outlined in Appendix 9A of the MTO DS. Based on the above noted criteria a left-turn lane is not warranted at the unsignalized intersections in the study area (results are provided in **Appendix G**).

A review of the need for additional auxiliary right turn lanes was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all right turn movements; consequently, additional right turn lane improvements are not recommended.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the unsignalized intersections in the study area (results are provided in **Appendix H**).

No further improvements are recommended for the background (2032) scenario.

4 Proposed Development Traffic Generation and Assignment

4.1 Traffic Generation

The traffic generation for the proposed development has been based on the ITE Trip Generation Manual. The following ITE land uses have been applied to estimate the traffic from the proposed development:

- ITE land use 222 (Multi-Family Housing (High-Rise)) – General Urban / Suburban Setting
- ITE land use 251 (Senior Adult Housing - Single-Family) – General Urban / Suburban Setting
- ITE land use 932 (High-Turnover (Sit-Down) Restaurant) – General Urban / Suburban Setting

The estimated trip generation of the proposed development is illustrated below in **Table 8**. The AM and PM peak hour traffic generation for the proposed development is not expected to exactly align with the AM and PM peak hour in the traffic counts; consequently, we have applied the peak hour of adjacent street traffic values provided in the ITE Trip Generation Manual.

Table 8 – Estimated Traffic Generation of Proposed Development

Land Use	Size	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Multi-Family Housing High-Rise ITE Land Use: 222	448 units	41	80	121	81	63	144
Senior Adult Housing - Single-Family ITE Land Use: 251	100 rooms	13	26	39	27	18	45
High-Turnover (Sit-Down) Restaurant ITE Land Use: 932	500 sq.m. (5,382 sq.ft).	29	23	52	30	19	49
TOTAL TRIP GENERATION		**83**	**129**	**212**	**138**	**100**	**228**
INTERNAL CAPTURE*		-5	-5	-10	-7	-7	-14
NET GENERATION		**78**	**124**	**202**	**131**	**93**	**224**
PASS-BY TRIPS (ITE Land Use: 932)**		0	0	0	-9	-9	-18
TOTAL TRAFFIC GENERATION		**78**	**124**	**202**	**122**	**84**	**206**

* The internal capture rate has been calculated using the methodology outlined in the National Cooperative Highway Research Program (NCHRP) Report 684. Internal capture reports are provided in **Appendix I**.

** Pass-by trips for the AM and PM peak hour are 0% and 43% respectively, according to the ITE data for ITE land use 932.

In order to be conservative, no transportation modal split reduction has been applied to the above-noted traffic generation calculation.

4.2 Traffic Assignment

For the purposes of this study, it has been assumed that all traffic generated by the proposed development will be new traffic and would not be in the study area if the development was not constructed.

The distribution of traffic for the proposed development is assumed to follow the existing trip distribution of the traffic counts in Section 2.6. The distribution of trips is illustrated in **Table 9** using the methodology outlined above.

Table 9 – Proposed Development Traffic Distribution Summary

Scenario	Direction	Ingress / Egress Traffic Direction								
		North via Paris Street	**South** via Paris Street	**West** via Brady Street	**East** via Brady Street	**West** via Van Horne Street	**East** via Van Horne Street	**West** via Boland Avenue	**West** via York Street	**East** via Ramsey Lake Road
AM	In	21%	25%	12%	17%	2%	8%	1%	6%	8%
	Out	14%	21%	14%	17%	5%	4%	0%	5%	20%
PM	In	16%	23%	12%	15%	5%	6%	1%	5%	17%
	Out	18%	25%	12%	18%	4%	8%	1%	5%	9%

Figures 7 to **9** illustrates the traffic assignment for the residential and restaurant (primary and pass-by trips) components for the proposed development, during the AM and PM peak hour.

Figure 7 – Traffic Assignment for Proposed Development (Residential Trips)

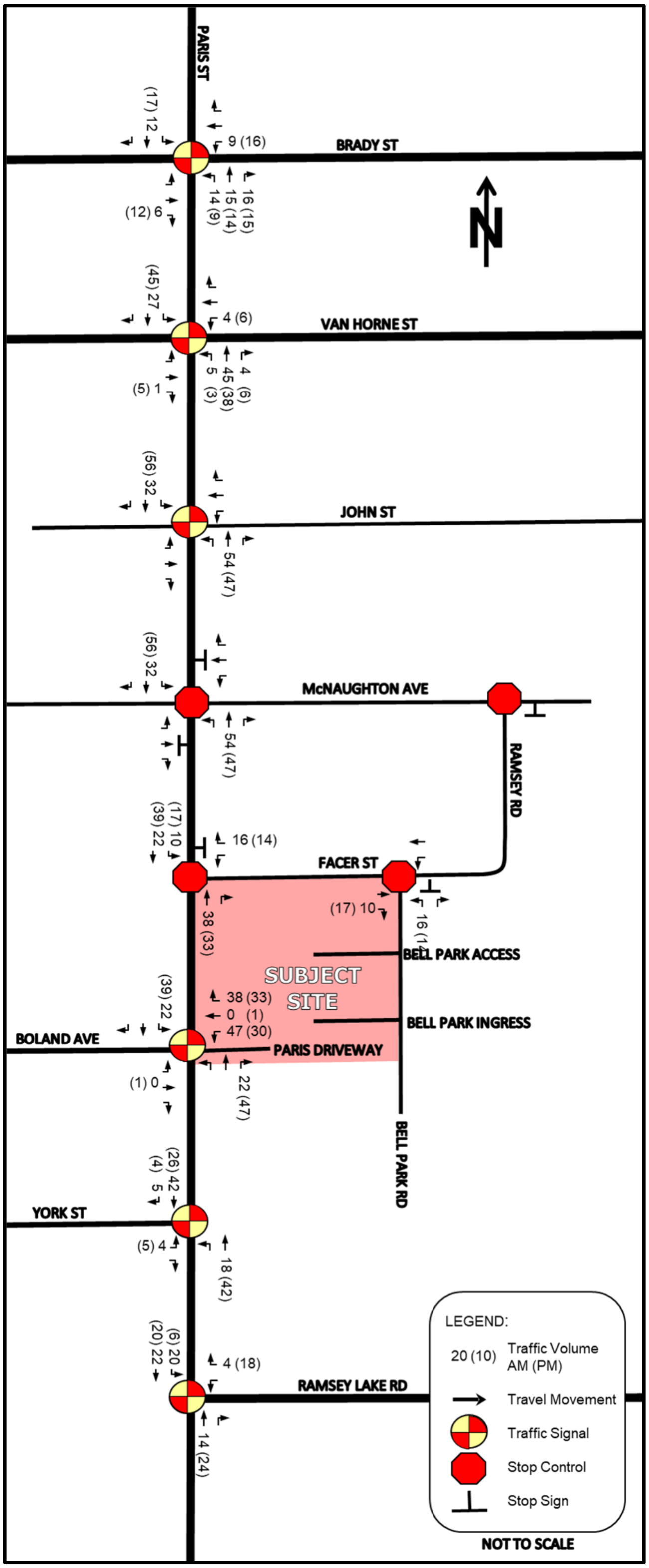


Figure 8 – Traffic Assignment for Proposed Development (Restaurant Primary Trips)

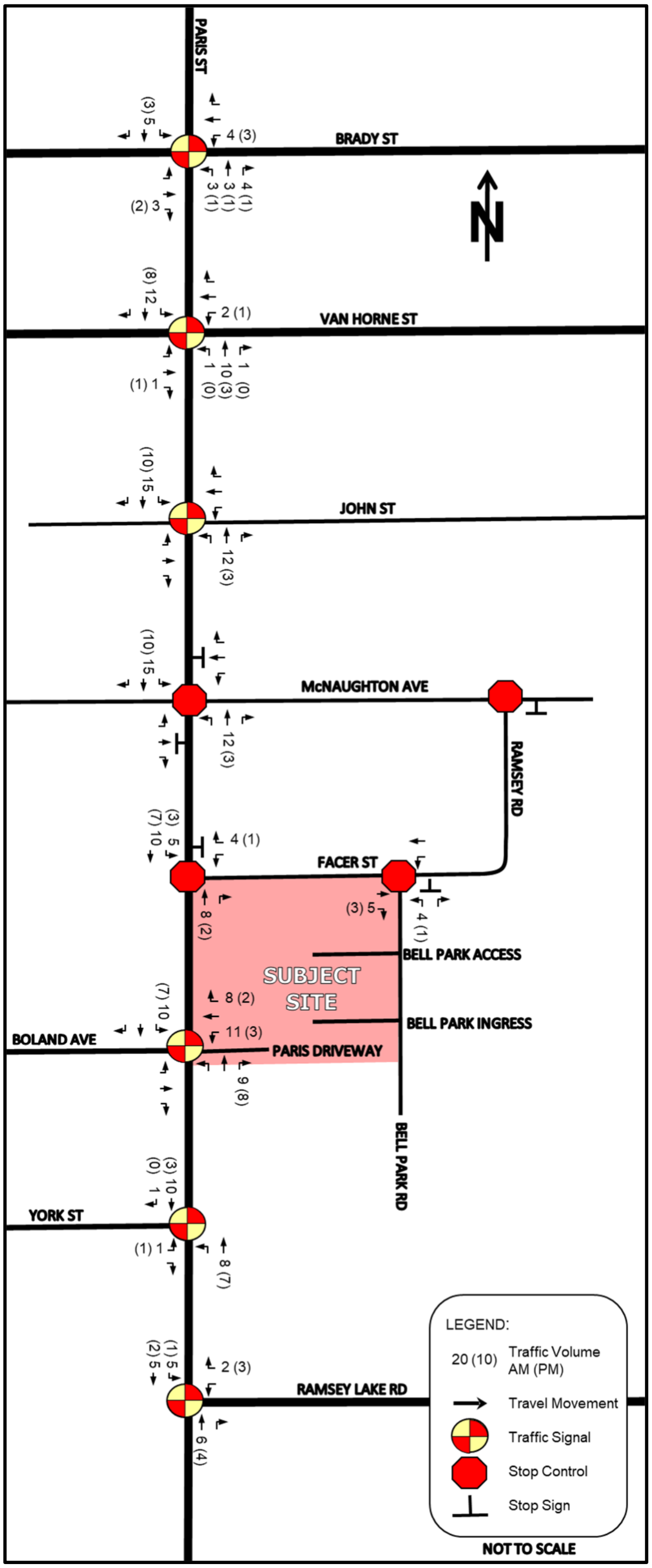
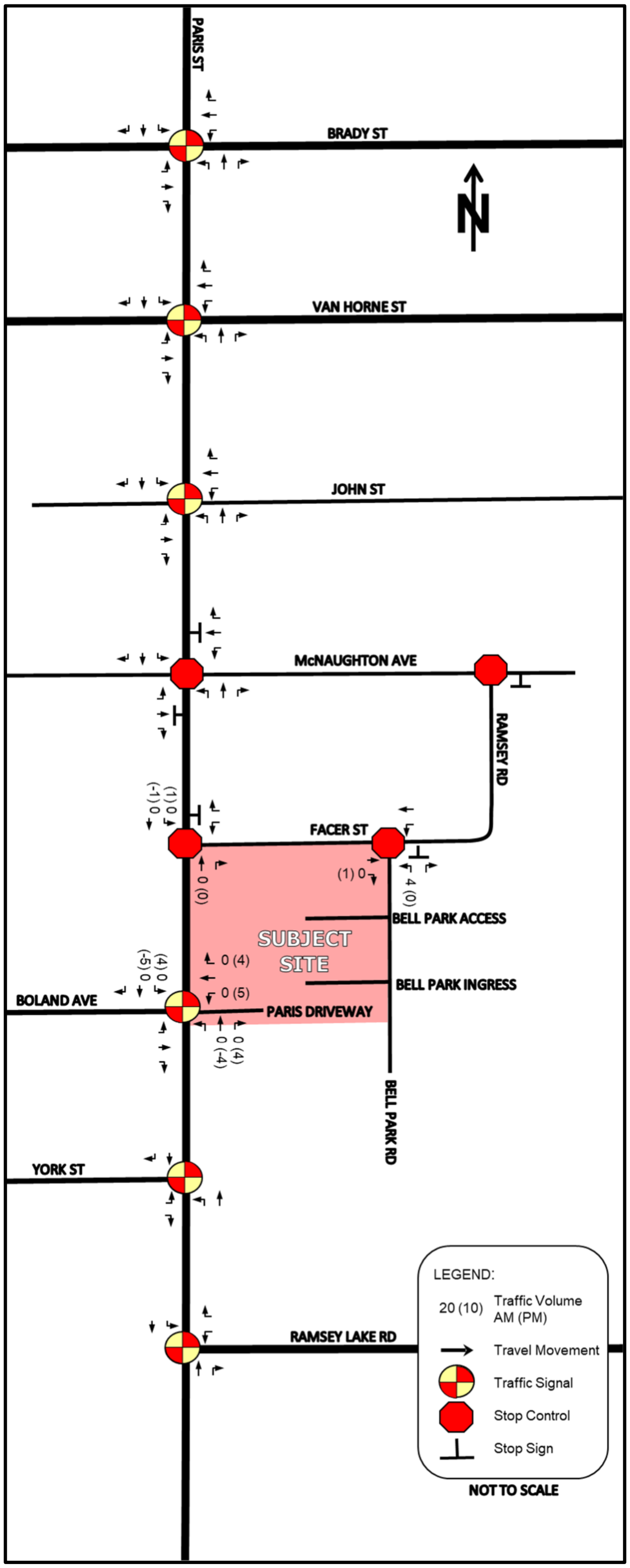


Figure 9 – Traffic Assignment for Proposed Development (Restaurant Pass-by Trips)



4.3 Total Horizon Year Traffic Volumes with the Proposed Development

For the total (2027 & 2032) horizon year traffic volumes, the proposed development traffic was added to the background (2027 & 2032) traffic volumes. The resulting total (2027 & 2032) horizon year traffic volume for the AM and PM peak hour are illustrated in **Figure 10** and **11,** respectively.

Figure 10 – Total (2027) Traffic Volumes

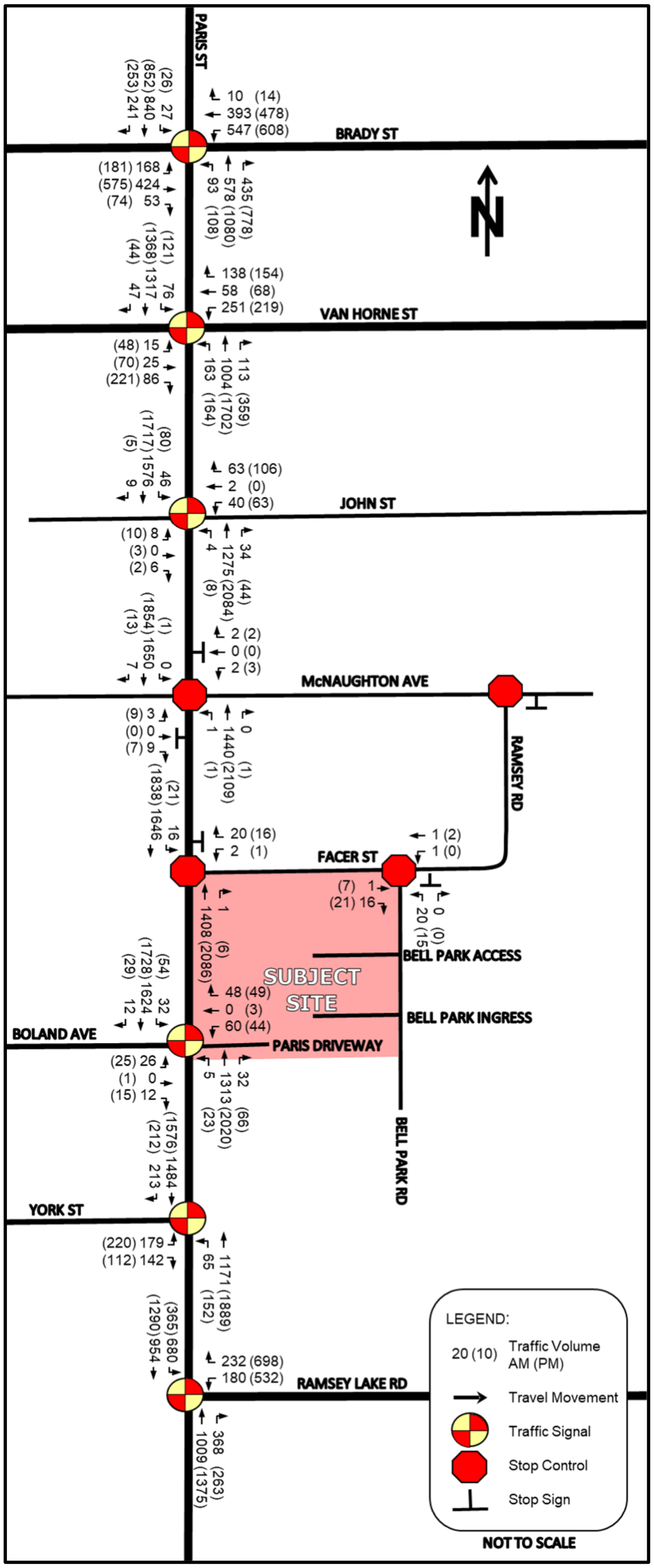
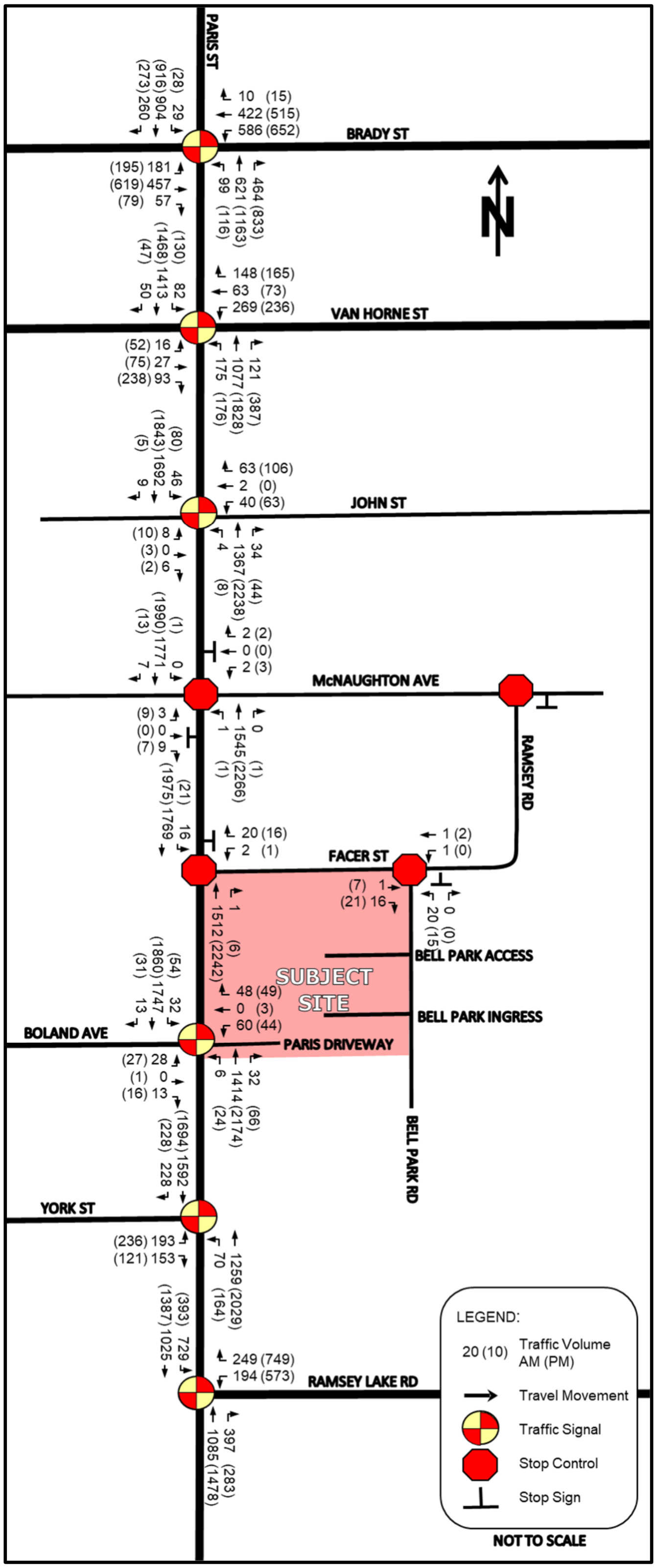


Figure 11 – Total (2032) Traffic Volumes



5 Intersection Operation with Proposed Development

5.1 Total (2027) Intersection Operation

The results of the LOS analysis under total (2027) traffic volumes during the AM and PM peak hours can be found below in **Table 10**. The infrastructure improvements and signal timing improvements noted in Section 3.3 have been utilized in this scenario.

The proposed development will shift the location of the Paris Driveway slightly further north at the intersection to align with Boland Avenue. It is recommended the westbound lane configuration at the Paris Street / Boland Avenue & Paris Driveway intersection include a left turn lane and through-right lane.

Detailed output of the Synchro analysis can be found in **Appendix F**.

Table 10 – Total (2027) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Paris Street / Brady Street (signalized)	0.70	32.2	C	-	-	0.82	32.5	C	-	-
EBL	0.49	29.0	C	43	57	0.49	28.5	C	44	57
EBTR	0.78	46.4	D	88	-	0.78	46.6	D	112	-
WBL	0.79	44.3	D	97	85	0.78	47.5	D	110	85
WBTR	0.42	30.0	C	65	-	0.42	29.8	C	76	-
NBL	0.40	21.9	C	28	70	0.43	25.5	C	32	70
NBT	0.38	27.2	C	58	-	0.54	27.5	B	98	-
NBR	0.40	10.7	B	53	-	0.71	14.1	C	178	-
SBL	0.11	26.1	C	11	24	0.21	34.6	D	15	24
SBT	0.69	36.3	D	94	-	0.64	39.3	C	94	-
SBR	0.32	22.9	C	42	-	0.35	26.1		53	-
Paris Street / Van Horne Street (signalized)	0.70	19.5	C	-	-	0.81	21.6	C	-	-
EBL	0.05	23.0	C	7	21	0.14	26.3	C	16	21
EBTR	0.07	23.1	C	9	-	0.25	27.1	C	25	-
WBL	0.81	41.9	D	76	133	0.84	52.6	D	69	133
WBT	0.13	23.6	C	19	-	0.13	26.1	C	20	-
WBR	0.10	23.3	C	14	62	0.19	26.7	C	22	62
NBL	0.61	16.9	B	40	34	0.66	17.7	B	48	34
NBTR	0.49	14.3	B	79	-	0.78	19.9	B	177	-
SBL	0.30	11.0	B	14	48	0.70	27.3	C	44	48
SBTR	0.66	19.6	B	114	-	0.56	17.2	B	108	-
Paris Street / John Street (signalized)	0.67	8.4	A	-	-	0.87	16.2	B	-	-
EB	0.01	24.2	C	0	-	0.07	38.9	D	10	-
WB	0.30	25.9	C	21	-	0.61	47.1	D	51	-
NBL	0.03	5.6	A	2	33	0.06	5.8	A	3	33
NBTR	0.67	9.8	A	99	-	0.92	20.5	C	292	-
SBL	0.20	5.5	A	5	23	0.62	31.4	C	21	23
SBTR	0.67	6.0	A	86	-	0.67	7.1	A	128	-
Paris Street / McNaughton Street (unsignalized)	-	0.1	B	-	-	-	0.1	C	-	-
EB	0.04	18.0	C	2	-	0.03	12.8	B	1	-
WB	0.02	23.5	C	1	-	0.02	16.2	C	1	-
Paris Street / Facer Street (unsignalized)	-	0.8	C	-	-	-	0.4	D	-	-
WB	0.04	11.7	B	2	-	0.07	20.7	C	2	-
Bell Park Road / Facer Street (unsignalized)	-	4.7	A	-	-	-	2.9	A	-	-
WB	0.04	8.8	A	1	-	0.02	8.7	A		-

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Paris Street / Boland Avenue & Paris Driveway (signalized)	0.67	7.3	A	-	-	0.76	7.7	A	-	-
EB	0.03	23.1	C	9	-	0.30	48.8	D	18	-
WBL	0.37	25.3	C	20	-	0.48	51.2	D	23	-
WBTR	0.03	23.1	C	9	-	0.33	48.8	D	22	-
NBL	0.04	3.3	A	2	40	0.18	2.8	A	5	40
NBTR	0.60	5.7	A	67	-	0.79	6.6	A	178	-
SBL	0.17	4.0	A	6	100	0.79	45.7	D	23	100
SBTR	0.73	7.3	A	96	-	0.66	4.6	A	114	-
Paris Street / York Street (signalized)	0.76	13.5	B	-	-	0.83	17.5	B	-	-
EBL	0.63	35.3	D	64	21	0.73	45.3	D	93	21
EBR	0.27	29.6	C	30	-	0.08	32.6	C	17	-
NBL	0.42	12.8	B	8	123	0.68	28.9	C	51	123
NBT	0.55	7.0	A	78	-	0.80	11.8	B	166	-
SBT	0.80	15.4	B	156	-	0.82	19.4	B	167	-
SBR	0.15	7.8	A	10	72	0.15	9.7	A	11	72
Paris Street / Ramsey Lake Road (signalized)	0.69	21.0	C	-	-	1.07	41.8	D	-	-
WBL	0.37	35.2	D	32	158	0.67	41.7	D	89	158
WBR	0.30	14.5	B	50	-	1.09	93.2	F	298	-
NBT	0.76	26.1	C	132	-	0.94	41.9	D	236	-
NBR	0.43	20.4	C	58	37	0.32	20.6	C	48	37
SBL	0.76	34.3	C	114	175	0.83	60.2	E	76	175
SBT	0.40	5.1	A	57	-	0.63	13.2	B	124	-

The results of the LOS analysis indicate that the intersections of Paris Street / John Street and Paris Street / Ramsey Lake Road are operating outside the typical design limits as noted in Section 3.1; however, no improvements are recommended as the intersection is operating marginally outside the theoretical capacity (V/C of 1.0) and the methodology noted in Section 2.6 assumed conservative traffic volumes along Paris Street in the study area. The northbound and southbound movements in the PM peak hour exceeds the capacity for a two-lane roadway in each direction (1800 vph); it is recommended the City monitor the traffic volumes and queuing on Paris Street to determine if improvements are warranted and prioritize TDM strategies and promote active transportation to reduce automobile traffic along Paris Street in the downtown area.

The results of the LOS analysis indicate that the northbound movement at the Paris Street / Facer Street intersection is operating outside the typical design limits as noted in Section 3.1; however, since there are no queuing issues and the V/C ratio only marginally exceeds the typical design limits, no improvements are recommended.

The anticipated queue for northbound movements at the Paris Street / John Street intersection will extend past the intersections of Paris Street at David Street (90 metres) and McNaughton Street (192 metres). As noted above, northbound traffic volumes are approaching the capacity for a two-lane roadway (1800 vph); it is recommended the City monitor the northbound queue at the intersection and prioritize TDM strategies and promote active transportation to reduce automobile traffic along Paris Street in the downtown area.

The anticipated queue for eastbound left turn movements at the Paris Street / York Street intersection exceeds the existing storage and taper length; however, the excess queue will not block any intersections. Consequently, there are no issues with the anticipated eastbound left turn queue.

The anticipated queue for all other highlighted auxiliary left turn movements exceed the existing storage, however, the excess queue can be accommodated by the taper length.

An analysis was completed for left turn movements at the unsignalized intersections in the study area, based on the criteria outlined in Appendix 9A of the MTO DS.

Based on the above noted criteria a southbound left turn lane is warranted at the Paris Street / Facer Street intersection; however, left turn movements will only block the left lane (turning lane) 9% of the time during the critical PM peak hour scenario. Furthermore, southbound through vehicles will be able to use the right-lane (curb-lane) in the event the turning lane is blocked. Consequently, a southbound left turn lane is not recommended at the Paris Street / Facer Street intersection

Based on the above noted criteria a left-turn lane is not warranted at all other unsignalized intersections in the study area (results are provided in **Appendix G**).

A review of the need for additional auxiliary right turn lanes was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all right turn movements; consequently, additional right turn lane improvements are not recommended.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the unsignalized intersections in the study area (results are provided in **Appendix H**).

No further improvements are recommended for the background (2027) scenario.

5.2 Total (2032) Intersection Operation

The results of the LOS analysis under total (2032) traffic volumes during the AM and PM peak hours can be found below in **Table 11**. The infrastructure and signal timing improvements noted in Section 3.3, 3.4 and 5.1 have been utilized in this scenario. Detailed output of the Synchro analysis can be found in **Appendix F**.

Table 11 – Total (2032) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Paris Street / Brady Street (signalized)	0.75	35.4	D	-	-	0.87	36.1	D	-	-
EBL	0.56	50.2	D	38	57	0.58	55.2	E	41	57
EBTR	0.83	52.7	D	100	-	0.83	51.8	D	122	-
WBL	0.82	49.0	D	105	85	0.84	53.9	D	127	85
WBTR	0.43	30.8	C	69	-	0.43	31.0	C	81	-
NBL	0.45	23.8	C	29	70	0.49	27.4	C	34	70
NBT	0.40	28.6	C	63	-	0.57	29.3	C	107	-
NBR	0.43	11.2	B	61	-	0.76	16.5	B	209	-
SBL	0.13	27.3	C	11	24	0.25	36.5	D	17	75
SBT	0.72	38.7	D	102	-	0.67	41.4	D	102	-
SBR	0.31	20.9	C	50	-	0.37	23.9	C	60	-
Paris Street / Van Horne Street (signalized)	0.75	21.5	C	-	-	0.89	24.4	C	-	-
EBL	0.06	22.9	C	8	21	0.15	26.1	C	18	21
EBTR	0.07	23.0	C	9	-	0.27	27.0	C	28	-
WBL	0.84	45.2	D	83	133	0.94	72.6	E	92	133
WBT	0.14	23.5	C	20	-	0.14	26.0	C	22	-
WBR	0.10	23.3	C	14	62	0.21	26.6	C	25	62
NBL	0.65	20.7	C	43	34	0.78	29.3	C	50	34
NBTR	0.54	15.7	B	87	-	0.84	22.2	C	152	-
SBL	0.35	12.0	B	15	48	0.76	34.4	C	40	48
SBTR	0.72	22.1	C	125	-	0.61	17.9	B	92	-
Paris Street / John Street (signalized)	0.71	8.7	A	-	-	0.91	18.3	B	-	-
EB	0.01	25.2	C	0	-	0.08	43.7	D	10	-
WB	0.31	27.2	C	21	-	0.67	55.9	E	51	-
NBL	0.03	5.4	A	2	33	0.07	5.5	A	3	33
NBTR	0.70	10.1	B	111	-	0.95	23.7	C	265	-
SBL	0.22	6.0	A	5	23	0.66	41.1	D	25	23
SBTR	0.71	6.3	A	99	-	0.70	7.1	A	149	-
Paris Street / McNaughton Street (unsignalized)	-	0.1	B	-	-	-	0.2	D	-	-
EB	0.05	18.1	C	2	-	0.03	12.5	B	1	-
WB	0.02	22.6	C	1	-	0.02	18.9	C	1	-
Paris Street / Facer Street (unsignalized)	-	1.1	C	-	-	-	0.5	D	-	-
WB	0.04	11.7	B	2	-	0.07	21.0	C	2	-
NB	0.66	0.0	A	0	-	0.93	0.0	D	0	-
Bell Park Road / Facer Street (unsignalized)	-	4.7	A	-	-	-	2.9	A	-	-
WB	0.04	8.8	A	1	-	0.02	8.7	A	1	-

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Paris Street / Boland Avenue & Paris Driveway (signalized)	0.71	7.6	A	-	-	0.82	9.0	A	-	-
EB	0.05	24.9	C	9	-	0.33	49.4	D	19	-
WBL	0.39	27.4	C	20	-	0.48	51.4	D	23	-
WBTR	0.08	25.0	C	11	-	0.37	49.5	D	23	-
NBL	0.05	3.2	A	2	40	0.24	3.4	A	6	40
NBTR	0.63	5.7	A	76	-	0.85	8.4	A	223	-
SBL	0.19	4.0	A	6	100	0.84	62.7	E	25	100
SBTR	0.76	7.7	A	113	-	0.71	5.2	A	135	-
Paris Street / York Street (signalized)	0.80	14.9	B	-	-	0.88	20.2	C	-	-
EBL	0.67	38.6	D	69	21	0.79	52.8	D	105	21
EBR	0.33	31.7	C	34	-	0.09	35.5	D	18	-
NBL	0.48	15.9	B	11	123	0.81	47.4	D	65	123
NBT	0.59	7.6	A	88	-	0.85	13.8	B	197	-
SBT	0.84	17.3	B	179	-	0.85	20.9	C	192	-
SBR	0.17	8.0	A	11	72	0.17	9.6	A	12	72
Paris Street / Ramsey Lake Road (signalized)	0.73	21.0	C	-	-	0.91	32.8	C	-	-
WBL	0.49	39.0	D	34	158	0.84	52.3	D	107	158
WBR	0.18	14.6	B	27	-	0.70	30.1	C	121	-
NBT	0.78	26.2	C	131	-	0.96	42.2	D	257	-
NBR	0.46	20.2	C	60	37	0.33	18.9	B	50	37
SBL	0.78	34.6	C	116	175	0.84	59.9	E	80	175
SBT	0.41	4.3	A	48	-	0.64	11.4	B	125	-

The results of the LOS analysis indicate that the intersections of Paris Street / Brady Street, Paris Street / Van Horne Street, Paris Street / John Street, Paris Street / York Street and Paris Street / Ramsey Lake Road operates outside the typical design limits noted in Section 3.1 in the PM peak hour; however, no improvements are recommended as the intersection is still operating within the theoretical capacity (V/C < 1.0). The northbound and southbound movements in the PM peak hour exceeds the capacity for a two-lane roadway in each direction (1800 vph); it is recommended the City monitor the traffic volumes and queuing on Paris Street to determine if further improvements are warranted and prioritize TDM strategies and promote active transportation to reduce automobile traffic along Paris Street in the downtown area.

The results of the LOS analysis indicate that the northbound movement at the Paris Street / Facer Street intersection is operating outside the typical design limits as noted in Section 3.1; however, since there are no queuing issues and the V/C ratio only marginally exceeds the typical design limits, no improvements are recommended.

The anticipated queue for northbound and southbound movements at the intersections of Paris Street / John Street, Paris Street / Facer Street and Paris Street / McNaughton Street intersection will marginally extend past intersections along Paris Street. As noted above, northbound traffic volumes are approaching the capacity for a two-lane roadway; it is recommended the City monitor the queuing at the intersections and prioritize TDM strategies and promote active transportation to reduce automobile traffic along Paris Street in the downtown area.

The anticipated queue for eastbound left turn movements at the Paris Street / York Street intersection exceeds the existing storage and taper length; however, the excess queue will not block any intersections. Consequently, there are no issues with the anticipated eastbound left turn queue.

The anticipated queue for all other highlighted auxiliary left turn movements exceed the existing storage, however, the excess queue can be accommodated by the taper length.

Based on the above noted criteria a southbound left turn lane is warranted at the Paris Street / Facer Street intersection; however, left turn movements will only block the left lane (turning lane) 10% of the time during the critical PM peak hour scenario. Furthermore, southbound through vehicles will be able to use the right-lane (curb-lane) in the event the turning lane is blocked. Consequently, a southbound left turn lane is not recommended at the Paris Street / Facer Street intersection.

Based on the above noted criteria a left-turn lane is not warranted at all other unsignalized intersections in the study area (results are provided in **Appendix G**).

A review of the need for additional auxiliary right turn lanes was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all right turn movements; consequently, additional right turn lane improvements are not recommended.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the unsignalized intersections in the study area (results are provided in **Appendix H**).

No further improvements are recommended for the background (2032) scenario.

5.3 Sight Distance Review

A review of the available sight distance for the proposed Paris Driveway, Bell Park Access and Bell Park Ingress was completed as part of this analysis.

The sight distance north (greater than 140 metres) and south (greater than 150 metres) of the Paris Driveway exceed the minimum stopping and intersection sight distance requirements as identified in the Transportation Association of Canada Design Guide for Canadian Roads (2017) [TAC Guidelines] for a design speed of 50 km/h (65 metres & 105 metres respectively).

The proposed development will reconstruct and pave Bell Park Road prior to build-out of the proposed development. The current sightlines on Bell Park Road at the Bell Park Access will change as a result. The sight distance at the Bell Park Access is based on the sight distance triangles observed in the proposed road configuration in the site plan (provided in **Appendix A**).

The following sight distance was observed south of the Bell Park Access (75 metres). It is recommended Bell Park Road from Facer Street to the Bell Park Ingress have a posted speed limit of 20 km/h, once Bell Park Road is reconstructed; with a posted speed limit of 20 km/h the sight distance noted exceeds the minimum stopping and intersection sight distance requirements as identified in the TAC Guidelines for the proposed posted speed of 20 km/h (design speed of 30 km/h) – 35 metres & 65 metres respectively.

The sight distance west of the Bell Park Access (19 metres) is less than the stopping sight distance requirements as identified in the TAC Guidelines for the proposed posted speed of 20 km/h (design speed of 30 km/h) – 35 metres; however, vehicles will be turning onto Bell Park Road from Facer Street at much slower speeds; furthermore, there are no issues with driveway spacing requirements identified in Section 5.5. Consequently, there are no issues with the proposed location of the Bell Park Access.

The sight distance available at the proposed Paris Driveway, Bell Park Access and Bell Park Ingress are acceptable for the intended use.

5.4 Site Access

The proposed development will shift the location of the Paris Driveway slightly further north at the intersection to align with Boland Avenue. It is recommended the westbound lane configuration at the Paris Street / Boland Avenue & Paris Driveway intersection include a left turn lane and through-right lane, as noted in Section 5.1. A single ingress and egress lane at the Paris Driveway will provide the necessary capacity to service the proposed development. The Paris Driveway will provide ingress and egress access to the underground parking and surface parking.

The Bell Park Access will operate as full-movement access driveway. A single ingress and egress lane at the Bell Park Access will provide the necessary capacity to service the proposed development. Bell Park Access will provide ingress and egress access to the surface parking

The Bell Park Ingress will operate efficiently with a single ingress only driveway. A single ingress lane at the Bell Park Ingress will provide the necessary capacity to service the proposed development. Bell Park Ingress will provide ingress only access to the underground parking.

The proposed spacing between the Bell Park Access and Facer Street (22 metres – measured edge of driveway to edge of road) exceeds the minimum driveway spacing requirements identified in the TAC Guidelines Figure 8.8.2 – 15 metres for a local road.

The proposed spacing between the Bell Park Access and Bell Park Ingress (148 metres – measured edge to edge of driveway) are greater than the minimum driveway spacing requirements as per the TAC Guidelines – Figure 8.9.2 (Driveway Spacing Guidelines – Locals and Collectors).

5.5 Parking Review

The proposed parking supply meets the requirements as noted in the City's Zoning By-law 2010–100Z [Zoning By-law]. **Table 12** illustrates the parking requirement for the proposed development, according to the Zoning By-law.

Table 12 – Zoning By-law Requirement Parking Calculation

Unit Type	Section	Parking Standard	Proposed Units	Required Parking	Proposed Parking
Residential Dwelling, Multiple	5.5.1	1.5 sp./unit	448	672 spaces	672 spaces
Retirement Home		4 spaces plus 0.5 parking spaces for each of the first 30 guest rooms plus 0.25 spaces for each additional guest rooms 1/20 sq.m. gross floor area used for medical, health or personal services	100	38 spaces	38 spaces
Restaurant	5.3	1 spaces per 1/12.5 sq.m. net floor area	500 sq.m.	40 spaces	40 spaces
TOTAL REQUIRED PARKING SPACES				**750 spaces**	**750 spaces**
Accessible Parking	5.2.3.5	2 sp. plus 1 space for each additional 50 sp. greater than 100 sp.	750	15 spaces	15 spaces
Bicycle Parking (Residential)	5.8	0.5 sp./unit	448	224 spaces	224 spaces
Bicycle Parking (Restaurant)	5.8	2 spaces on a lot, plus 1 space per 500 sq.m. gross floor area to a maximum requirement of 24/lot	500 sq.m.	3 spaces	3 spaces
TOTAL REQUIRED BICYCLE PARKING SPACES				**227 spaces**	**227 spaces**

6 Transportation Demand Management

As noted in Section 3.4 and 5.2, the traffic volumes along Paris Street in the study area are reaching overcapacity and further widening of the road is not feasible. It is recommended the City, implement TDM measures to reduce single-occupancy vehicles and improve the accessibility of transit and non-auto modes of transportation. The following transportation demand management measures are recommended as part of the proposed development:

- Construct sidewalk on the south side of Facer Street extending from Facer Street to Bell Park Road;
- The proposed development includes an internal sidewalk network with pedestrian connections to the proposed sidewalk on Facer Street and the existing municipal pedestrian infrastructure on Paris Street;
- The proposed development includes 227 bicycle parking spaces;
- An information display board will be provided in a central location in the apartment buildings to display travel information such as bicycle maps, local transit map/schedule and other relevant information;
- Information packages will be distributed to new residents including transit and cycling maps; and
- Subsidized transit passes be provided to residents.

7 Summary

2226553 Ontario Inc. retained **JD Engineering** to prepare this traffic impact study in support of the proposed development on a site municipally known as 700 Paris Street, located on the east side of Paris Street between Boland Avenue and Facer Street, in the City of Greater Sudbury. The proposed Draft Plan by ACK Architects is shown in **Appendix A**. This chapter summarizes the conclusions and recommendations from the study.

The proposed development is anticipated to consist of a 16-storey building with 198 units, a 20-storey building with 250 units and a ground-floor restaurant (500 sq.m. of GFA) and a 10-storey retirement home with 100 rooms.

1. The proposed development is expected to generate a total of 202 AM and 206 PM peak hour primary trips and 18 PM peak hour pass-by trips.
2. Background traffic and pedestrian counts were commissioned for the existing intersections of Paris Street / Van Horne Street, Paris Street / McNaughton Street, Paris Street / Facer Street, Facer Street / Bell Park Road and Paris Street / York Street completed on Wednesday, April 20th 2022. Background traffic and pedestrian counts at the study area intersections were also obtained from the City.
3. An intersection operation analysis was completed at the study area intersections, using the existing (2022) and background (2027 & 2032) traffic volumes, with the adjacent development traffic. This enabled a review of existing and future traffic deficiencies that would be present without the influence of the proposed development. These improvements are warranted based on the anticipated growth in the City and traffic generated by future developments in the study area without the proposed development. The following improvements are recommended:

   Existing (2022) Traffic Volumes

   - **Paris Street / John Street and Paris Street / Ramsey Lake Road**
     - Optimize signal timing plan.

   Background (2027) Traffic Volumes

   - **Paris Street / Van Horne Street, Paris Street / McNaughton Street, Paris Street / Boland Avenue & Paris Driveway and Paris Street / York Street**
     - Optimize signal timing plan.

   Background (2032) Traffic Volumes

   - **Paris Street / Brady Street**
     - Adjust eastbound pavement markings to accommodate a double left-turn lane.
     - Adjust eastbound signal heads to accommodate a protected eastbound left turn phase.
     - Optimize signal timing plan.
   - **Paris Street / Ramsey Lake Road**
     - Widen Ramsey Lake Road to accommodate westbound double right turn lane with a 100 metre storage length and 60 metre taper length
     - Optimize signal timing plan.

4. An estimate of the amount of traffic that would be generated by the Subject Site was prepared and assigned to the study area streets and intersections.
5. An intersection operation analysis was completed under total (2027 & 2032) traffic volumes with the proposed development operational at the study area intersections. The following improvements are recommended prior to build-out of the proposed development:

   Opening Day (2027) Traffic Volumes

   Paris Street / Boland Avenue & Paris Driveway

   - Shift the Paris Driveway to align with Boland Avenue.
   - The westbound configuration of Paris Driveway at the intersection shall include a left turn lane and through-right lane.

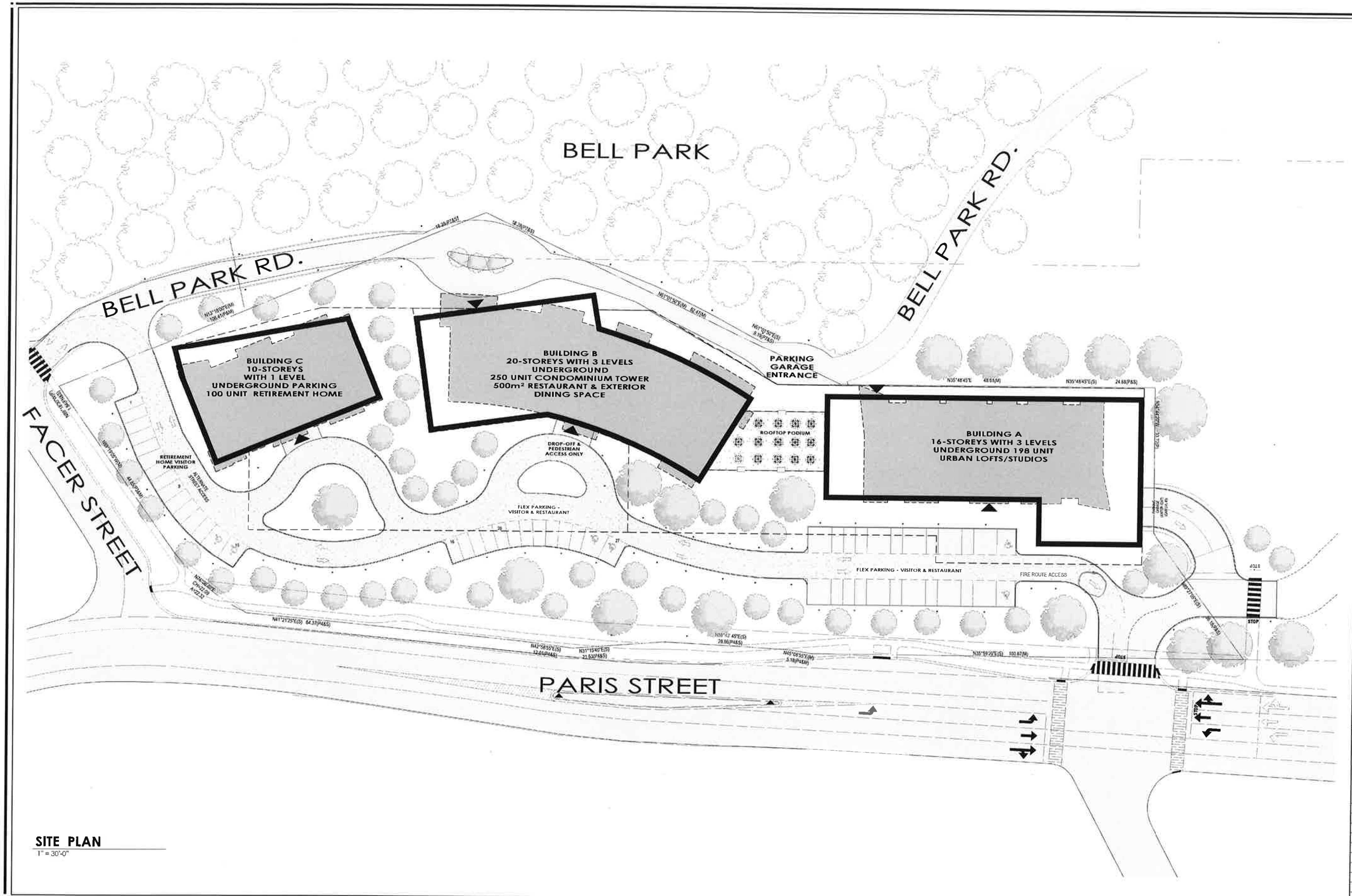
   Facer Street

   - Construct a sidewalk on the south side of the road between Paris Street and Bell Park Road.

   Bell Park Road

   - Reconstruct Bell Park Road south of Facer Street to a 6.0 metre wide paved condominium road.
   - Bell Park Road shall have a posted speed limit of 20 km/h once Bell Park Road is reconstructed.
6. The proposed development will shift the location of the Paris Driveway slightly further north at the intersection to align with Boland Avenue. It is recommended the westbound lane configuration at the Paris Street / Boland Avenue & Paris Driveway intersection include a left turn lane and through-right lane. A single ingress and egress lane at the Paris Driveway will provide the necessary capacity to service the proposed development. The Paris Driveway will provide ingress and egress access to the underground parking and surface parking.
7. The Bell Park Access will operate as full-movement access driveway. A single ingress and egress lane at the Bell Park Access will provide the necessary capacity to service the proposed development. The Bell Park Ingress will operate efficiently with a single ingress only driveway. A single ingress lane at the Bell Park Ingress will provide the necessary capacity to service the proposed development. Bell Park Access will provide ingress and egress access to the surface parking and the Bell Park Ingress will provide ingress only access to the underground parking.
8. There are no issues regarding the sight distance available for the proposed Paris Driveway and Bell Park Access.
9. The proposed parking supply for the proposed development meets the minimum parking requirement specified in the City's Zoning By-law 2010–100Z.
10. In summary the proposed development will not cause any operational issues and will not add significant delay or congestion to the local roadway network.

Appendix A – Site Plan



SITE PLAN
1" = 30'-0"

NO.	DATE:	REVISION:	BY:
1	JULY 29 2019	SCHEMATIC CONCEPTS	JMR/MDA
2	AUG. 7 2019	SCHEMATIC CONCEPTS	JMR/MDA
3	MAY 7 2021	PARKING GARAGE LAYOUT	CH
4	JUNE 18 2021	REVISED BLD. HEIGHTS	CH

COMMISSION:

PROPOSED MIXED USE DEVELOPMENT

700 PARIS STREET, SUDBURY, ONTARIO

N

A·C·K
architects
STUDIO INC.

SHEET TITLE:

SITE PLAN

Issued for Re-Zoning
Issued for Site Plan Agreement
Issued for Permit
Issued for Tender
Issued for Construction

DRAWN BY	JMR	DWG. No.
CHECKED BY	MDA	.SP1
DATE	JULY 2019	
SCALE	AS SHOWN	
PROJECT No.	2010-210	

Appendix B –
Adjacent Development Excerpts

Transplan TIS

RECEIVED
JUN 19 2018
PLANNING SERVICES

Proposed
Project Manitou
Residential Development
City of Greater Sudbury

Traffic Impact Study

Revised May 22, 2018

Prepared by:
Tranplan Associates
Sudbury 705-522-0272
Toronto 416-670-2005
Peterborough 705-874-3638
www.tranplan.com

Prepared for:
2356268 ONTARIO LIMITED
per
D.S. Dorland Limited
May 2018

N

NOTE: Not to scale

Exhibit 1.1

Key Plan

tranplan associates

1/1

TRAFFIC, TRANSIT, PARKING, TRANSPORTATION PLANNING

TORONTO	SUDBURY	PETERBOROUGH
905-670-2005	705-522-0272	705-874-3638

www.tranplan.com

Table 4.1: PROJECTED TRIP GENERATION BY PROPOSED PROJECT MANITOU RESIDENTIAL DEVELOPMENT

LAND USE		WEEKDAY AM PEAK HOUR				WEEKDAY PM PEAK HOUR			
		Trip Generation Rate (ITE Trip Generation Manual - 8th Edition)	**Vehicle Trips**			**Trip Generation Rate** (ITE Trip Generation Manual - 8th Edition)	**Vehicle Trips**		
			Total	In	Out		Total	In	Out
Senior Adult Units									
High-Rise Apartments (ITE L.U. 222)	**476** units	Ln(T) = 0.99Ln(X)-1.14 where T = vehicle trips X = no of dwelling units	**143**	25% **36**	75% **107**	T = 0.32(X) + 12.30	**165**	61% **100**	39% **64**
Senior Adult Housing (ITE L.U.252)	**476** units	T = 0.19(X) - 13.86 where T = vehicle trips X = no of dwelling units	**77**	36% **28**	64% **49**	T = 0.24(X) - 16.45 where T = vehicle trips X = no of dwelling units	**98**	60% **59**	40% **39**
Average of LU 222 & 252			**110**	**32**	**78**		**131**	**80**	**52**
Rent Geared to Income Units									
Modified Cherry Gardens Survey Trip Rates*	**350** units	T = 0.15 (X)	**53**	25% **13**	75% **39**	T = 0.20 (X)	**70**	60% **42**	40% **28**
TOTAL UNITS	**826** units		**162**	**45**	**118**		**201**	**122**	**80**

Note: Numbers do not add up exactly due to rounding.

Cherry Gardens survey trip rates increased by 25% to reflect slightly greater distance from Paris Street and potential higher parking supply.

- The new apartments may have more available parking.

Using the two trip rates as shown in **Table 4.1**, the proposed development is projected to generate approximately 200 vehicle trips during the afternoon peak hour (120 in, 80 out) and 160 vehicle trips during the morning peak hour (45 in, 115 out).

ITE trip rates for the active older people are considered to be conservative (higher volumes than likely) because of the downtown location of the proposed development. The proximity of the site to downtown will likely result in a higher proportion of walking and transit trips, with fewer auto trips than the ITE rates would project.

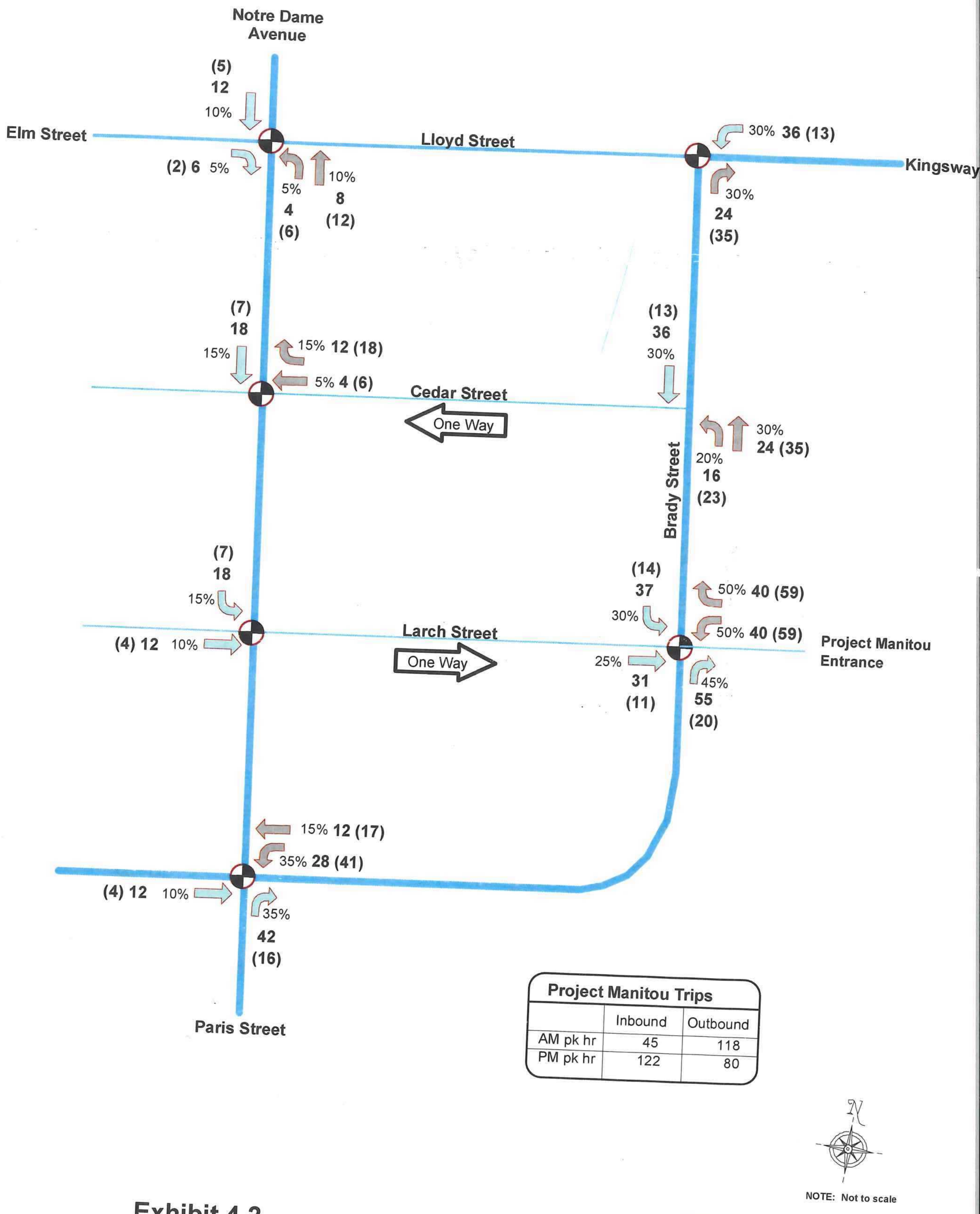
4.3 Orientation of the Site Traffic

As shown in **Exhibit 4.2** traffic is expected to leave the site:

i) split evenly between left turns and right turns onto Brady Street.
ii) 35% will go south on Paris Street
iii) 15% will continue west along Brady
iv) 30% will go out to the Kingsway
v) 20% will turn left into Cedar Street with 5% staying downtown, 10% going up Notre Dame and 5% going west on Elm.

Traffic is expected to approach the site

i) 30% from the north along Brady Street (from the Kingsway)
ii) 45% from the south along Brady Street (35% from Paris Street south and 10% from Brady Street west)
iii) 25% eastbound along Larch Street (10% from Notre Dame, 5% from Elm west and 10% from downtown)



Project Manitou Trips

	Inbound	Outbound
AM pk hr	45	118
PM pk hr	122	80

Exhibit 4.2

Site Traffic

Afternoon Peak Hour (Morning Peak Hour in Brackets)

Appendix C – Traffic Count Data

Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
Sudbury, Ontario, Canada P3A 5P3
705-674-4455 David.Knutson@greatersudbury.ca

Count Name: Brady Street @ Paris Street
Site Code: 00911103
Start Date: 08/05/2021
Page No: 1

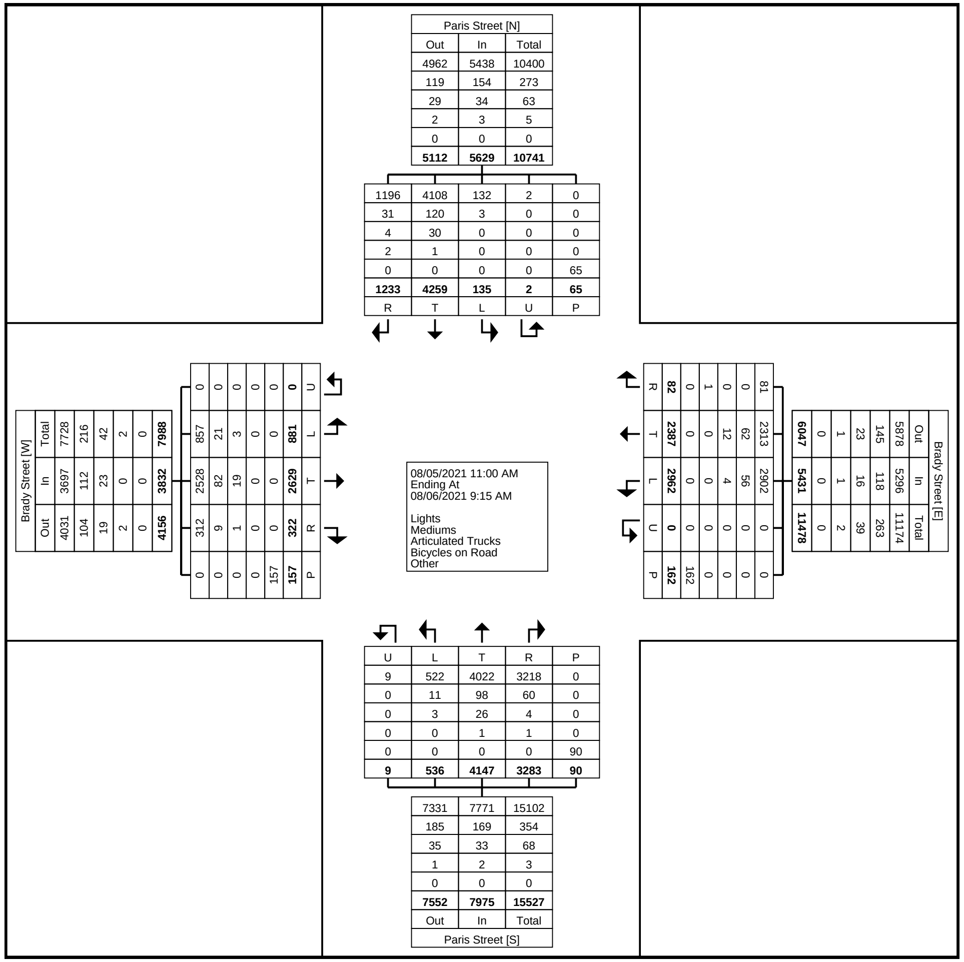
Turning Movement Data

Start Time	Paris Street Southbound						Brady Street Westbound						Paris Street Northbound						Brady Street Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
11:00 AM	36	114	2	0	1	152	0	83	102	0	2	185	116	118	14	0	7	248	16	84	30	0	7	130	715
11:15 AM	36	122	10	1	2	169	5	74	95	0	8	174	118	132	12	0	5	262	10	76	24	0	1	110	715
11:30 AM	33	134	3	0	3	170	2	67	91	0	6	160	124	119	23	0	5	266	18	84	30	0	6	132	728
11:45 AM	45	151	7	0	1	203	3	67	99	0	4	169	124	134	14	0	5	272	13	85	18	0	5	116	760
Hourly Total	150	521	22	1	7	694	10	291	387	0	20	688	482	503	63	0	22	1048	57	329	102	0	19	488	2918
12:00 PM	37	113	8	0	5	158	4	69	94	0	10	167	122	133	23	0	1	278	10	115	41	0	10	166	769
12:15 PM	44	149	7	0	3	200	3	87	111	0	6	201	118	157	19	0	3	294	7	68	25	0	5	100	795
12:30 PM	39	153	8	0	7	200	3	77	93	0	7	173	128	125	26	1	5	280	11	87	36	0	5	134	787
12:45 PM	40	141	6	0	2	187	3	76	108	0	8	187	125	155	26	0	0	306	17	78	30	0	1	125	805
Hourly Total	160	556	29	0	17	745	13	309	406	0	31	728	493	570	94	1	9	1158	45	348	132	0	21	525	3156
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	48	138	7	0	0	193	1	98	92	0	3	191	137	160	17	1	8	315	8	109	38	0	4	155	854
3:15 PM	46	133	4	0	2	183	3	95	136	0	5	234	143	184	21	1	4	349	16	98	28	0	10	142	908
3:30 PM	49	137	2	0	12	188	5	69	117	0	8	191	153	165	24	1	7	343	16	115	32	0	7	163	885
3:45 PM	42	168	5	0	3	215	5	72	108	0	6	185	143	180	27	0	5	350	15	96	37	0	6	148	898
Hourly Total	185	576	18	0	17	779	14	334	453	0	22	801	576	689	89	3	24	1357	55	418	135	0	27	608	3545
4:00 PM	51	155	5	0	2	211	3	93	104	0	5	200	144	209	18	0	2	371	8	116	32	0	3	156	938
4:15 PM	49	153	5	0	5	207	3	79	125	0	10	207	140	213	16	0	2	369	7	115	31	0	6	153	936
4:30 PM	49	171	2	0	2	222	4	75	93	0	12	172	134	233	25	0	2	392	13	92	50	0	3	155	941
4:45 PM	47	165	8	0	0	220	1	114	113	0	6	228	139	170	17	0	0	326	19	113	27	0	13	159	933
Hourly Total	196	644	20	0	9	860	11	361	435	0	33	807	557	825	76	0	6	1458	47	436	140	0	25	623	3748
5:00 PM	56	142	4	0	1	202	1	102	106	0	8	209	122	195	17	2	1	336	13	121	35	0	8	169	916
5:15 PM	38	178	7	0	1	223	3	123	106	0	6	232	149	177	17	2	7	345	11	111	34	0	11	156	956
5:30 PM	41	152	1	0	0	194	5	88	115	0	4	208	124	141	15	1	6	281	9	96	34	0	10	139	822
5:45 PM	40	115	1	0	1	156	6	102	111	0	7	219	105	127	15	0	3	247	13	61	28	0	2	102	724
Hourly Total	175	587	13	0	3	775	15	415	438	0	25	868	500	640	64	5	17	1209	46	389	131	0	31	566	3418
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
6:00 AM	10	27	1	0	1	38	0	37	26	0	1	63	21	27	5	0	0	53	3	15	3	0	2	21	175
6:15 AM	25	50	0	0	0	75	0	44	24	0	0	68	26	44	9	0	0	79	2	36	5	0	1	43	265
6:30 AM	16	83	2	0	1	101	0	52	55	0	1	107	42	64	10	0	1	116	5	47	21	0	0	73	397
6:45 AM	30	119	3	0	0	152	2	54	75	0	4	131	39	60	9	0	0	108	7	56	17	0	2	80	471

Hourly Total	81	279	6	0	2	366	2	187	180	0	6	369	128	195	33	0	1	356	17	154	46	0	5	217	1308
7:00 AM	30	142	0	0	0	172	2	53	92	0	4	147	43	64	16	0	0	123	2	41	10	0	1	53	495
7:15 AM	22	141	2	0	0	165	0	64	55	0	1	119	47	70	13	0	2	130	2	59	14	0	2	75	489
7:30 AM	24	155	1	0	2	180	4	76	83	0	1	163	83	94	5	0	0	182	7	69	22	0	5	98	623
7:45 AM	47	158	3	0	3	208	1	77	85	0	4	163	73	82	26	0	1	181	10	88	40	0	5	138	690
Hourly Total	123	596	6	0	5	725	7	270	315	0	10	592	246	310	60	0	3	616	21	257	86	0	13	364	2297
8:00 AM	43	114	9	0	2	166	2	56	74	0	3	132	56	104	9	0	0	169	9	59	20	0	4	88	555
8:15 AM	54	146	6	0	0	206	0	53	101	0	2	154	65	110	13	0	3	188	5	76	35	0	5	116	664
8:30 AM	35	112	2	1	2	150	4	54	87	0	5	145	87	101	19	0	2	207	11	70	25	0	2	106	608
8:45 AM	31	128	4	0	1	163	4	55	86	0	5	145	92	100	16	0	3	208	9	92	29	0	5	130	646
Hourly Total	163	500	21	1	5	685	10	218	348	0	15	576	300	415	57	0	8	772	34	297	109	0	16	440	2473
9:00 AM	0	0	0	0	0	0	0	2	0	0	0	2	1	0	0	0	0	1	0	0	0	0	0	0	3
Grand Total	1233	4259	135	2	65	5629	82	2387	2962	0	162	5431	3283	4147	536	9	90	7975	322	2629	881	0	157	3832	22867
Approach %	21.9	75.7	2.4	0.0	-	-	1.5	44.0	54.5	0.0	-	-	41.2	52.0	6.7	0.1	-	-	8.4	68.6	23.0	0.0	-	-	-
Total %	5.4	18.6	0.6	0.0	-	24.6	0.4	10.4	13.0	0.0	-	23.8	14.4	18.1	2.3	0.0	-	34.9	1.4	11.5	3.9	0.0	-	16.8	-
Lights	1196	4108	132	2	-	5438	81	2313	2902	0	-	5296	3218	4022	522	9	-	7771	312	2528	857	0	-	3697	22202
% Lights	97.0	96.5	97.8	100.0	-	96.6	98.8	96.9	98.0	-	-	97.5	98.0	97.0	97.4	100.0	-	97.4	96.9	96.2	97.3	-	-	96.5	97.1
Mediums	31	120	3	0	-	154	0	62	56	0	-	118	60	98	11	0	-	169	9	82	21	0	-	112	553
% Mediums	2.5	2.8	2.2	0.0	-	2.7	0.0	2.6	1.9	-	-	2.2	1.8	2.4	2.1	0.0	-	2.1	2.8	3.1	2.4	-	-	2.9	2.4
Articulated Trucks	4	30	0	0	-	34	0	12	4	0	-	16	4	26	3	0	-	33	1	19	3	0	-	23	106
% Articulated Trucks	0.3	0.7	0.0	0.0	-	0.6	0.0	0.5	0.1	-	-	0.3	0.1	0.6	0.6	0.0	-	0.4	0.3	0.7	0.3	-	-	0.6	0.5
Bicycles on Road	2	1	0	0	-	3	1	0	0	0	-	1	1	1	0	0	-	2	0	0	0	0	-	0	6
% Bicycles on Road	0.2	0.0	0.0	0.0	-	0.1	1.2	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	25	-	-	-	-	-	6	-	-	-	-	-	16	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	15.4	-	-	-	-	-	6.7	-	-	-	-	-	10.2	-	-
Pedestrians	-	-	-	-	65	-	-	-	-	-	137	-	-	-	-	-	84	-	-	-	-	-	141	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	84.6	-	-	-	-	-	93.3	-	-	-	-	-	89.8	-	-

Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
Sudbury, Ontario, Canada P3A 5P3
705-674-4455 David.Knutson@greatersudbury.ca

Count Name: Brady Street @ Paris Street
Site Code: 00911103
Start Date: 08/05/2021
Page No: 3



08/05/2021 11:00 AM
Ending At
08/06/2021 9:15 AM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

Paris Street [N]

Out	In	Total
4962	5438	10400
119	154	273
29	34	63
2	3	5
0	0	0
5112	**5629**	**10741**

R	T	L	U	P
1196	4108	132	2	0
31	120	3	0	0
4	30	0	0	0
2	1	0	0	0
0	0	0	0	65
1233	**4259**	**135**	**2**	**65**

Brady Street [W]

Out	In	Total
4031	3697	7728
104	112	216
19	23	42
2	0	2
0	0	0
4156	**3832**	**7988**

U	L	T	R	P
0	857	2528	312	0
0	21	82	9	0
0	3	19	1	0
0	0	0	0	0
0	0	0	0	157
0	**881**	**2629**	**322**	**157**

Brady Street [E]

Out	In	Total
5878	5296	11174
145	118	263
23	16	39
1	1	2
0	0	0
6047	**5431**	**11478**

R	T	L	U	P
81	2313	2902	0	0
0	62	56	0	0
0	12	4	0	0
1	0	0	0	0
0	0	0	0	162
82	**2387**	**2962**	**0**	**162**

U	L	T	R	P
9	522	4022	3218	0
0	11	98	60	0
0	3	26	4	0
0	0	1	1	0
0	0	0	0	90
9	**536**	**4147**	**3283**	**90**

Out	In	Total
7331	7771	15102
185	169	354
35	33	68
1	2	3
0	0	0
7552	**7975**	**15527**

Paris Street [S]

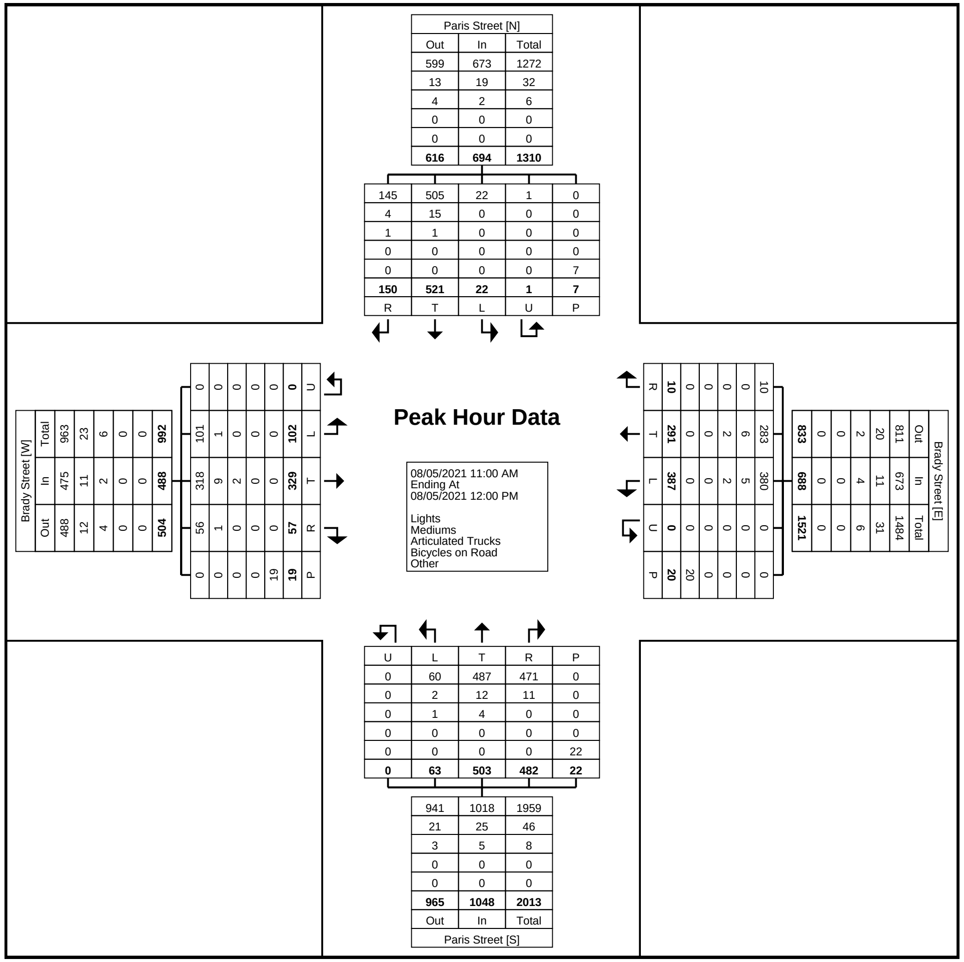
Turning Movement Data Plot

Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
Sudbury, Ontario, Canada P3A 5P3
705-674-4455 David.Knutson@greatersudbury.ca

Count Name: Brady Street @ Paris Street
Site Code: 00911103
Start Date: 08/05/2021
Page No: 4

Turning Movement Peak Hour Data (11:00 AM)

	Paris Street Southbound						Brady Street Westbound						Paris Street Northbound						Brady Street Eastbound						
Start Time	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
11:00 AM	36	114	2	0	1	152	0	83	102	0	2	185	116	118	14	0	7	248	16	84	30	0	7	130	715
11:15 AM	36	122	10	1	2	169	5	74	95	0	8	174	118	132	12	0	5	262	10	76	24	0	1	110	715
11:30 AM	33	134	3	0	3	170	2	67	91	0	6	160	124	119	23	0	5	266	18	84	30	0	6	132	728
11:45 AM	45	151	7	0	1	203	3	67	99	0	4	169	124	134	14	0	5	272	13	85	18	0	5	116	760
Total	150	521	22	1	7	694	10	291	387	0	20	688	482	503	63	0	22	1048	57	329	102	0	19	488	2918
Approach %	21.6	75.1	3.2	0.1	-	-	1.5	42.3	56.3	0.0	-	-	46.0	48.0	6.0	0.0	-	-	11.7	67.4	20.9	0.0	-	-	-
Total %	5.1	17.9	0.8	0.0	-	23.8	0.3	10.0	13.3	0.0	-	23.6	16.5	17.2	2.2	0.0	-	35.9	2.0	11.3	3.5	0.0	-	16.7	-
PHF	0.833	0.863	0.550	0.250	-	0.855	0.500	0.877	0.949	0.000	-	0.930	0.972	0.938	0.685	0.000	-	0.963	0.792	0.968	0.850	0.000	-	0.924	0.960
Lights	145	505	22	1	-	673	10	283	380	0	-	673	471	487	60	0	-	1018	56	318	101	0	-	475	2839
% Lights	96.7	96.9	100.0	100.0	-	97.0	100.0	97.3	98.2	-	-	97.8	97.7	96.8	95.2	-	-	97.1	98.2	96.7	99.0	-	-	97.3	97.3
Mediums	4	15	0	0	-	19	0	6	5	0	-	11	11	12	2	0	-	25	1	9	1	0	-	11	66
% Mediums	2.7	2.9	0.0	0.0	-	2.7	0.0	2.1	1.3	-	-	1.6	2.3	2.4	3.2	-	-	2.4	1.8	2.7	1.0	-	-	2.3	2.3
Articulated Trucks	1	1	0	0	-	2	0	2	2	0	-	4	0	4	1	0	-	5	0	2	0	0	-	2	13
% Articulated Trucks	0.7	0.2	0.0	0.0	-	0.3	0.0	0.7	0.5	-	-	0.6	0.0	0.8	1.6	-	-	0.5	0.0	0.6	0.0	-	-	0.4	0.4
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	7	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	9.1	-	-	-	-	-	36.8	-	-
Pedestrians	-	-	-	-	7	-	-	-	-	-	20	-	-	-	-	-	20	-	-	-	-	-	12	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	90.9	-	-	-	-	-	63.2	-	-



Peak Hour Data

08/05/2021 11:00 AM
Ending At
08/05/2021 12:00 PM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

Paris Street [N]

Out	In	Total
599	673	1272
13	19	32
4	2	6
0	0	0
0	0	0
616	**694**	**1310**

R	T	L	U	P
145	505	22	1	0
4	15	0	0	0
1	1	0	0	0
0	0	0	0	0
0	0	0	0	7
150	**521**	**22**	**1**	**7**

Brady Street [W]

Out	In	Total
488	475	963
12	11	23
4	2	6
0	0	0
0	0	0
504	**488**	**992**

U	L	T	R	P
0	101	318	56	0
0	1	9	1	0
0	0	2	0	0
0	0	0	0	0
0	0	0	0	19
0	**102**	**329**	**57**	**19**

Brady Street [E]

Out	In	Total
811	673	1484
20	11	31
2	4	6
0	0	0
0	0	0
833	**688**	**1521**

R	T	L	U	P
10	283	380	0	0
0	6	5	0	0
0	2	2	0	0
0	0	0	0	0
0	0	0	0	20
10	**291**	**387**	**0**	**20**

U	L	T	R	P
0	60	487	471	0
0	2	12	11	0
0	1	4	0	0
0	0	0	0	0
0	0	0	0	22
0	**63**	**503**	**482**	**22**

Out	In	Total
941	1018	1959
21	25	46
3	5	8
0	0	0
0	0	0
965	**1048**	**2013**

Paris Street [S]

Turning Movement Peak Hour Data Plot (11:00 AM)

Turning Movement Peak Hour Data (12:00 PM)

	Paris Street						Brady Street						Paris Street						Brady Street						
	Southbound						Westbound						Northbound						Eastbound						
Start Time	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
12:00 PM	37	113	8	0	5	158	4	69	94	0	10	167	122	133	23	0	1	278	10	115	41	0	10	166	769
12:15 PM	44	149	7	0	3	200	3	87	111	0	6	201	118	157	19	0	3	294	7	68	25	0	5	100	795
12:30 PM	39	153	8	0	7	200	3	77	93	0	7	173	128	125	26	1	5	280	11	87	36	0	5	134	787
12:45 PM	40	141	6	0	2	187	3	76	108	0	8	187	125	155	26	0	0	306	17	78	30	0	1	125	805
Total	160	556	29	0	17	745	13	309	406	0	31	728	493	570	94	1	9	1158	45	348	132	0	21	525	3156
Approach %	21.5	74.6	3.9	0.0	-	-	1.8	42.4	55.8	0.0	-	-	42.6	49.2	8.1	0.1	-	-	8.6	66.3	25.1	0.0	-	-	-
Total %	5.1	17.6	0.9	0.0	-	23.6	0.4	9.8	12.9	0.0	-	23.1	15.6	18.1	3.0	0.0	-	36.7	1.4	11.0	4.2	0.0	-	16.6	-
PHF	0.909	0.908	0.906	0.000	-	0.931	0.813	0.888	0.914	0.000	-	0.905	0.963	0.908	0.904	0.250	-	0.946	0.662	0.757	0.805	0.000	-	0.791	0.980
Lights	154	532	29	0	-	715	13	300	401	0	-	714	482	554	92	1	-	1129	42	331	131	0	-	504	3062
% Lights	96.3	95.7	100.0	-	-	96.0	100.0	97.1	98.8	-	-	98.1	97.8	97.2	97.9	100.0	-	97.5	93.3	95.1	99.2	-	-	96.0	97.0
Mediums	5	20	0	0	-	25	0	7	5	0	-	12	10	13	2	0	-	25	2	14	0	0	-	16	78
% Mediums	3.1	3.6	0.0	-	-	3.4	0.0	2.3	1.2	-	-	1.6	2.0	2.3	2.1	0.0	-	2.2	4.4	4.0	0.0	-	-	3.0	2.5
Articulated Trucks	1	4	0	0	-	5	0	2	0	0	-	2	1	3	0	0	-	4	1	3	1	0	-	5	16
% Articulated Trucks	0.6	0.7	0.0	-	-	0.7	0.0	0.6	0.0	-	-	0.3	0.2	0.5	0.0	0.0	-	0.3	2.2	0.9	0.8	-	-	1.0	0.5
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	6.5	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	17	-	-	-	-	-	29	-	-	-	-	-	9	-	-	-	-	-	21	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	93.5	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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Traffic and Transportation Engineering Services
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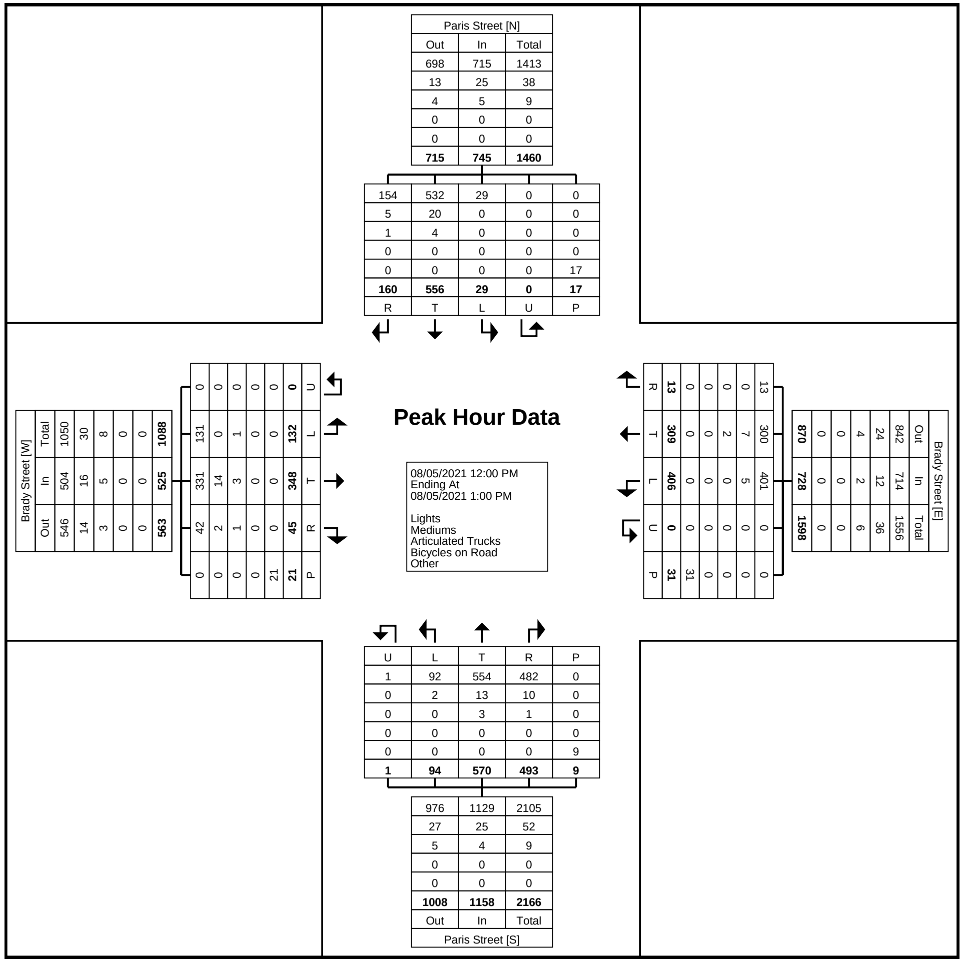

Paris Street [N]

Out	In	Total
698	715	1413
13	25	38
4	5	9
0	0	0
0	0	0
715	**745**	**1460**

R	T	L	U	P
154	532	29	0	0
5	20	0	0	0
1	4	0	0	0
0	0	0	0	0
0	0	0	0	17
160	**556**	**29**	**0**	**17**

Brady Street [W]

Out	In	Total
546	504	1050
14	16	30
3	5	8
0	0	0
0	0	0
563	**525**	**1088**

U	L	T	R	P
0	131	331	42	0
0	0	14	2	0
0	1	3	1	0
0	0	0	0	0
0	0	0	0	21
0	**132**	**348**	**45**	**21**

Peak Hour Data

08/05/2021 12:00 PM
Ending At
08/05/2021 1:00 PM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

Brady Street [E]

Out	In	Total
842	714	1556
24	12	36
4	2	6
0	0	0
0	0	0
870	**728**	**1598**

R	T	L	U	P
13	300	401	0	0
0	7	5	0	0
0	2	0	0	0
0	0	0	0	0
0	0	0	0	31
13	**309**	**406**	**0**	**31**

U	L	T	R	P
1	92	554	482	0
0	2	13	10	0
0	0	3	1	0
0	0	0	0	0
0	0	0	0	9
1	**94**	**570**	**493**	**9**

Out	In	Total
976	1129	2105
27	25	52
5	4	9
0	0	0
0	0	0
1008	**1158**	**2166**

Paris Street [S]

Turning Movement Peak Hour Data Plot (12:00 PM)

Count Name: Brady Street @ Paris Street
Site Code: 00911103
Start Date: 08/05/2021
Page No: 8

Turning Movement Peak Hour Data (4:00 PM)

Start Time	Paris Street						Brady Street						Paris Street						Brady Street						Int. Total
	Southbound						Westbound						Northbound						Eastbound						
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:00 PM	51	155	5	0	2	211	3	93	104	0	5	200	144	209	18	0	2	371	8	116	32	0	3	156	938
4:15 PM	49	153	5	0	5	207	3	79	125	0	10	207	140	213	16	0	2	369	7	115	31	0	6	153	936
4:30 PM	49	171	2	0	2	222	4	75	93	0	12	172	134	233	25	0	2	392	13	92	50	0	3	155	941
4:45 PM	47	165	8	0	0	220	1	114	113	0	6	228	139	170	17	0	0	326	19	113	27	0	13	159	933
Total	196	644	20	0	9	860	11	361	435	0	33	807	557	825	76	0	6	1458	47	436	140	0	25	623	3748
Approach %	22.8	74.9	2.3	0.0	-	-	1.4	44.7	53.9	0.0	-	-	38.2	56.6	5.2	0.0	-	-	7.5	70.0	22.5	0.0	-	-	-
Total %	5.2	17.2	0.5	0.0	-	22.9	0.3	9.6	11.6	0.0	-	21.5	14.9	22.0	2.0	0.0	-	38.9	1.3	11.6	3.7	0.0	-	16.6	-
PHF	0.961	0.942	0.625	0.000	-	0.968	0.688	0.792	0.870	0.000	-	0.885	0.967	0.885	0.760	0.000	-	0.930	0.618	0.940	0.700	0.000	-	0.980	0.996
Lights	195	629	20	0	-	844	11	351	429	0	-	791	555	811	74	0	-	1440	47	426	138	0	-	611	3686
% Lights	99.5	97.7	100.0	-	-	98.1	100.0	97.2	98.6	-	-	98.0	99.6	98.3	97.4	-	-	98.8	100.0	97.7	98.6	-	-	98.1	98.3
Mediums	1	10	0	0	-	11	0	8	6	0	-	14	1	13	1	0	-	15	0	10	2	0	-	12	52
% Mediums	0.5	1.6	0.0	-	-	1.3	0.0	2.2	1.4	-	-	1.7	0.2	1.6	1.3	-	-	1.0	0.0	2.3	1.4	-	-	1.9	1.4
Articulated Trucks	0	5	0	0	-	5	0	2	0	0	-	2	1	1	1	0	-	3	0	0	0	0	-	0	10
% Articulated Trucks	0.0	0.8	0.0	-	-	0.6	0.0	0.6	0.0	-	-	0.2	0.2	0.1	1.3	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	9	-	-	-	-	-	1	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	27.3	-	-	-	-	-	16.7	-	-	-	-	-	8.0	-	-
Pedestrians	-	-	-	-	9	-	-	-	-	-	24	-	-	-	-	-	5	-	-	-	-	-	23	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	72.7	-	-	-	-	-	83.3	-	-	-	-	-	92.0	-	-

Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
Sudbury, Ontario, Canada P3A 5P3
705-674-4455 David.Knutson@greatersudbury.ca

Count Name: Brady Street @ Paris Street
Site Code: 00911103
Start Date: 08/05/2021
Page No: 9

Paris Street [N]

Out	In	Total
960	844	1804
15	11	26
1	5	6
0	0	0
0	0	0
976	**860**	**1836**

R	T	L	U	P
195	629	20	0	0
1	10	0	0	0
0	5	0	0	0
0	0	0	0	0
0	0	0	0	9
196	**644**	**20**	**0**	**9**

Brady Street [W]

Out	In	Total
620	611	1231
10	12	22
3	0	3
0	0	0
0	0	0
633	**623**	**1256**

U	L	T	R	P
0	138	426	47	0
0	2	10	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	25
0	**140**	**436**	**47**	**25**

Peak Hour Data

08/05/2021 4:00 PM
Ending At
08/05/2021 5:00 PM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

R	T	L	U	P
11	351	429	0	0
0	8	6	0	0
0	2	0	0	0
0	0	0	0	0
0	0	0	0	33
11	**361**	**435**	**0**	**33**

Brady Street [E]

Out	In	Total
1001	791	1792
11	14	25
1	2	3
0	0	0
0	0	0
1013	**807**	**1820**

U	L	T	R	P
0	74	811	555	0
0	1	13	1	0
0	1	1	1	0
0	0	0	0	0
0	0	0	0	6
0	**76**	**825**	**557**	**6**

Out	In	Total
1105	1440	2545
16	15	31
5	3	8
0	0	0
0	0	0
1126	**1458**	**2584**

Paris Street [S]

Turning Movement Peak Hour Data Plot (4:00 PM)

Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
Sudbury, Ontario, Canada P3A 5P3
705-674-4455 David.Knutson@greatersudbury.ca

Count Name: Brady Street @ Paris Street
Site Code: 00911103
Start Date: 08/05/2021
Page No: 10

Turning Movement Peak Hour Data (7:30 AM)

	Paris Street						Brady Street						Paris Street						Brady Street						
	Southbound						Westbound						Northbound						Eastbound						
Start Time	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
7:30 AM	24	155	1	0	2	180	4	76	83	0	1	163	83	94	5	0	0	182	7	69	22	0	5	98	623
7:45 AM	47	158	3	0	3	208	1	77	85	0	4	163	73	82	26	0	1	181	10	88	40	0	5	138	690
8:00 AM	43	114	9	0	2	166	2	56	74	0	3	132	56	104	9	0	0	169	9	59	20	0	4	88	555
8:15 AM	54	146	6	0	0	206	0	53	101	0	2	154	65	110	13	0	3	188	5	76	35	0	5	116	664
Total	168	573	19	0	7	760	7	262	343	0	10	612	277	390	53	0	4	720	31	292	117	0	19	440	2532
Approach %	22.1	75.4	2.5	0.0	-	-	1.1	42.8	56.0	0.0	-	-	38.5	54.2	7.4	0.0	-	-	7.0	66.4	26.6	0.0	-	-	-
Total %	6.6	22.6	0.8	0.0	-	30.0	0.3	10.3	13.5	0.0	-	24.2	10.9	15.4	2.1	0.0	-	28.4	1.2	11.5	4.6	0.0	-	17.4	-
PHF	0.778	0.907	0.528	0.000	-	0.913	0.438	0.851	0.849	0.000	-	0.939	0.834	0.886	0.510	0.000	-	0.957	0.775	0.830	0.731	0.000	-	0.797	0.917
Lights	164	541	18	0	-	723	7	251	331	0	-	589	270	373	49	0	-	692	28	277	109	0	-	414	2418
% Lights	97.6	94.4	94.7	-	-	95.1	100.0	95.8	96.5	-	-	96.2	97.5	95.6	92.5	-	-	96.1	90.3	94.9	93.2	-	-	94.1	95.5
Mediums	4	24	1	0	-	29	0	8	12	0	-	20	7	13	4	0	-	24	3	10	6	0	-	19	92
% Mediums	2.4	4.2	5.3	-	-	3.8	0.0	3.1	3.5	-	-	3.3	2.5	3.3	7.5	-	-	3.3	9.7	3.4	5.1	-	-	4.3	3.6
Articulated Trucks	0	8	0	0	-	8	0	3	0	0	-	3	0	3	0	0	-	3	0	5	2	0	-	7	21
% Articulated Trucks	0.0	1.4	0.0	-	-	1.1	0.0	1.1	0.0	-	-	0.5	0.0	0.8	0.0	-	-	0.4	0.0	1.7	1.7	-	-	1.6	0.8
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.3	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	10.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	7	-	-	-	-	-	9	-	-	-	-	-	4	-	-	-	-	-	19	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	90.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
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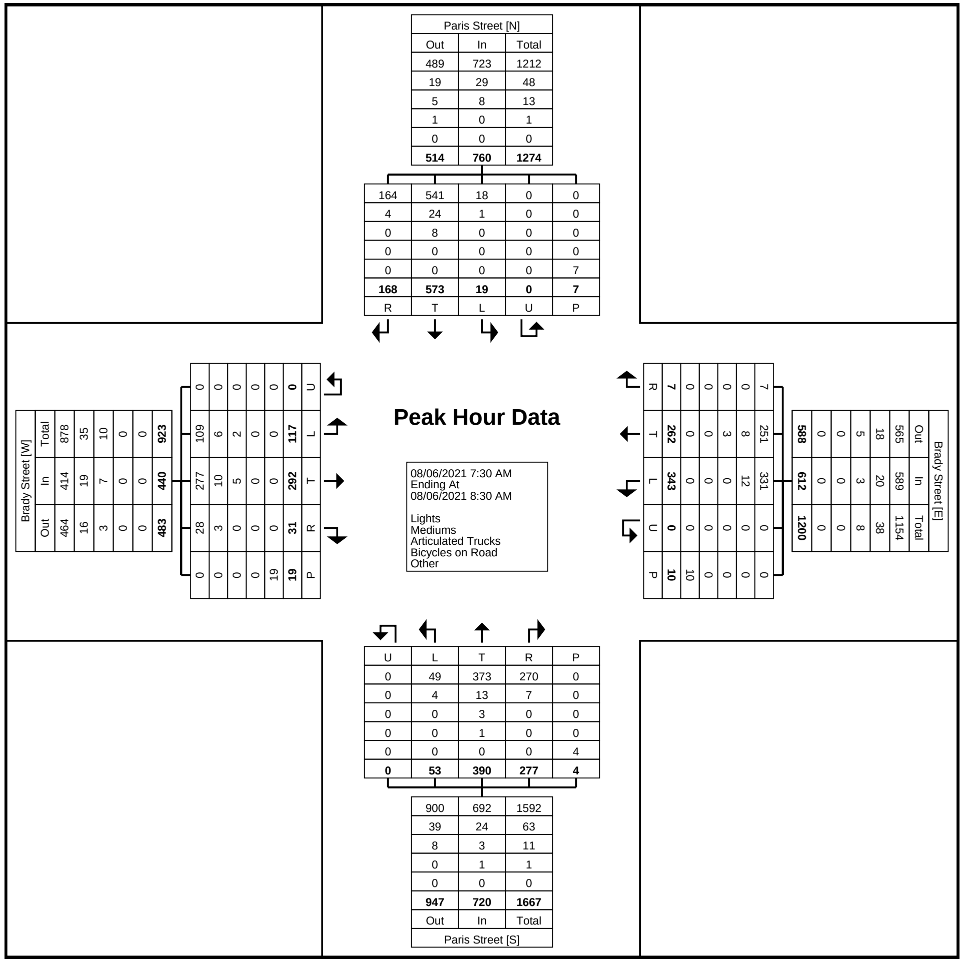
705-674-4455 David.Knutson@greatersudbury.ca

Count Name: Brady Street @ Paris Street
Site Code: 00911103
Start Date: 08/05/2021
Page No: 11



Paris Street [N]

Out	In	Total
489	723	1212
19	29	48
5	8	13
1	0	1
0	0	0
514	**760**	**1274**

164	541	18	0	0
4	24	1	0	0
0	8	0	0	0
0	0	0	0	0
0	0	0	0	7
168	**573**	**19**	**0**	**7**
R	T	L	U	P

Brady Street [W]

Out	In	Total
464	414	878
16	19	35
3	7	10
0	0	0
0	0	0
483	**440**	**923**

U	L	T	R	P
0	109	277	28	0
0	6	10	3	0
0	2	5	0	0
0	0	0	0	0
0	0	0	0	19
0	**117**	**292**	**31**	**19**

Peak Hour Data

08/06/2021 7:30 AM
Ending At
08/06/2021 8:30 AM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

R	T	L	U	P
7	251	331	0	0
0	8	12	0	0
0	3	0	0	0
0	0	0	0	0
0	0	0	0	10
7	**262**	**343**	**0**	**10**

Brady Street [E]

Out	In	Total
565	589	1154
18	20	38
5	3	8
0	0	0
0	0	0
588	**612**	**1200**

U	L	T	R	P
0	49	373	270	0
0	4	13	7	0
0	0	3	0	0
0	0	1	0	0
0	0	0	0	4
0	**53**	**390**	**277**	**4**

900	692	1592
39	24	63
8	3	11
0	1	1
0	0	0
947	**720**	**1667**
Out	In	Total

Paris Street [S]

Turning Movement Peak Hour Data Plot (7:30 AM)

Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
Sudbury, Ontario, Canada P3A 5P3
705-674-4455 David.Knutson@greatersudbury.ca

Count Name: Paris Street @ Van Horne Street
Site Code: 00912103
Start Date: 08/05/2021
Page No: 1

Turning Movement Data

Start Time	Paris Street						Van Horne St						Paris Street						Van Horne St						
	Southbound						Westbound						Northbound						Eastbound						
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
3:00 PM	9	241	19	0	1	269	24	12	35	0	5	71	58	321	23	0	0	402	22	5	6	0	1	33	775
3:15 PM	8	247	20	0	0	275	28	7	47	0	2	82	56	310	22	0	1	388	27	10	6	0	4	43	788
3:30 PM	12	278	17	0	4	307	24	13	46	0	3	83	69	333	30	1	1	433	26	9	9	0	4	44	867
3:45 PM	7	216	25	0	6	248	29	9	56	0	1	94	54	318	30	0	1	402	37	6	9	0	3	52	796
Hourly Total	36	982	81	0	11	1099	105	41	184	0	11	330	237	1282	105	1	3	1625	112	30	30	0	12	172	3226
4:00 PM	2	255	22	0	1	279	22	22	51	0	6	95	77	345	32	0	0	454	40	12	13	0	2	65	893
4:15 PM	11	267	23	0	5	301	21	10	41	0	4	72	71	329	27	0	3	427	32	13	8	0	0	53	853
4:30 PM	5	275	32	0	2	312	31	14	38	0	4	83	69	325	15	1	0	410	32	9	9	0	1	50	855
4:45 PM	11	248	31	0	5	290	37	12	50	0	3	99	61	273	23	0	0	357	43	14	10	0	0	67	813
Hourly Total	29	1045	108	0	13	1182	111	58	180	0	17	349	278	1272	97	1	3	1648	147	48	40	0	3	235	3414
5:00 PM	8	236	28	0	6	272	28	13	35	0	5	76	61	327	20	0	1	408	36	11	7	0	3	54	810
5:15 PM	6	269	26	0	5	301	37	11	31	0	4	79	57	269	16	0	2	342	31	3	3	0	6	37	759
5:30 PM	6	218	21	0	4	245	24	7	35	0	2	66	56	249	18	0	6	323	26	6	7	0	2	39	673
5:45 PM	10	210	22	0	4	242	25	9	36	0	2	70	30	207	25	0	4	262	28	7	5	0	1	40	614
Hourly Total	30	933	97	0	19	1060	114	40	137	0	13	291	204	1052	79	0	13	1335	121	27	22	0	12	170	2856
6:00 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
6:00 AM	0	50	4	0	1	54	9	2	9	0	0	20	1	49	2	0	0	52	3	2	2	0	0	7	133
6:15 AM	4	72	6	0	0	82	16	3	12	0	0	31	3	58	3	0	0	64	5	1	2	0	0	8	185
6:30 AM	2	146	10	0	0	158	22	2	30	0	2	54	10	102	4	0	0	116	6	0	0	0	0	6	334
6:45 AM	2	210	5	0	1	217	14	5	32	0	2	51	6	91	13	0	0	110	8	3	1	0	0	12	390
Hourly Total	8	478	25	0	2	511	61	12	83	0	4	156	20	300	22	0	0	342	22	6	5	0	0	33	1042
7:00 AM	7	217	6	0	2	230	17	5	31	0	1	53	8	107	9	0	0	124	10	2	1	0	2	13	420
7:15 AM	9	166	3	0	2	178	21	0	33	0	2	54	12	124	13	0	0	149	12	4	0	0	1	16	397
7:30 AM	7	241	12	0	3	260	29	8	43	0	1	80	19	149	17	0	1	185	12	3	6	0	3	21	546
7:45 AM	4	239	8	0	3	251	32	11	54	0	0	97	26	152	23	0	1	201	13	3	4	0	3	20	569
Hourly Total	27	863	29	0	10	919	99	24	161	0	4	284	65	532	62	0	2	659	47	12	11	0	9	70	1932
8:00 AM	3	206	11	0	5	220	22	8	29	0	5	59	15	156	9	0	0	180	10	3	3	0	3	16	475
8:15 AM	7	208	8	0	0	223	19	4	45	0	3	68	19	171	24	0	0	214	17	4	1	0	2	22	527
8:30 AM	2	192	18	0	0	212	30	11	48	0	2	89	24	171	22	0	0	217	14	6	3	0	1	23	541
8:45 AM	8	186	20	0	1	214	23	4	45	0	4	72	24	206	25	0	1	255	17	6	4	0	0	27	568
Hourly Total	20	792	57	0	6	869	94	27	167	0	14	288	82	704	80	0	1	866	58	19	11	0	6	88	2111
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	3	190	11	0	1	204	21	9	34	0	0	64	35	234	23	0	0	292	22	3	8	0	4	33	593
11:15 AM	7	190	10	0	1	207	24	7	39	0	1	70	26	219	16	0	2	261	26	4	6	0	1	36	574
11:30 AM	9	254	17	0	0	280	27	8	23	0	1	58	40	247	13	0	3	300	24	7	5	0	2	36	674
11:45 AM	8	214	13	0	1	235	21	6	39	0	0	66	40	269	22	0	3	331	26	5	7	0	3	38	670
Hourly Total	27	848	51	0	3	926	93	30	135	0	2	258	141	969	74	0	8	1184	98	19	26	0	10	143	2511
12:00 PM	7	235	18	0	1	260	23	6	42	0	2	71	39	270	22	0	2	331	34	3	7	0	2	44	706
12:15 PM	5	204	19	0	0	228	30	8	32	0	5	70	21	216	25	0	0	262	25	7	9	0	2	41	601
12:30 PM	9	240	14	0	3	263	23	10	61	0	1	94	33	266	22	0	2	321	28	3	2	0	1	33	711
12:45 PM	2	259	18	0	2	279	20	8	32	0	3	60	45	213	21	0	1	279	34	7	6	0	1	47	665
Hourly Total	23	938	69	0	6	1030	96	32	167	0	11	295	138	965	90	0	5	1193	121	20	24	0	6	165	2683
1:00 PM	0	2	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	3
Grand Total	200	6881	517	0	70	7598	774	264	1214	0	76	2252	1165	7077	609	2	35	8853	726	181	169	0	58	1076	19779
Approach %	2.6	90.6	6.8	0.0	-	-	34.4	11.7	53.9	0.0	-	-	13.2	79.9	6.9	0.0	-	-	67.5	16.8	15.7	0.0	-	-	-
Total %	1.0	34.8	2.6	0.0	-	38.4	3.9	1.3	6.1	0.0	-	11.4	5.9	35.8	3.1	0.0	-	44.8	3.7	0.9	0.9	0.0	-	5.4	-
Lights	188	6673	506	0	-	7367	765	260	1202	0	-	2227	1149	6896	595	2	-	8642	710	177	161	0	-	1048	19284
% Lights	94.0	97.0	97.9	-	-	97.0	98.8	98.5	99.0	-	-	98.9	98.6	97.4	97.7	100.0	-	97.6	97.8	97.8	95.3	-	-	97.4	97.5
Mediums	10	173	11	0	-	194	8	4	12	0	-	24	16	151	13	0	-	180	15	4	7	0	-	26	424
% Mediums	5.0	2.5	2.1	-	-	2.6	1.0	1.5	1.0	-	-	1.1	1.4	2.1	2.1	0.0	-	2.0	2.1	2.2	4.1	-	-	2.4	2.1
Articulated Trucks	2	35	0	0	-	37	1	0	0	0	-	1	0	29	1	0	-	30	1	0	1	0	-	2	70
% Articulated Trucks	1.0	0.5	0.0	-	-	0.5	0.1	0.0	0.0	-	-	0.0	0.0	0.4	0.2	0.0	-	0.3	0.1	0.0	0.6	-	-	0.2	0.4
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	6	-	-	-	-	-	15	-	-	-	-	-	0	-	-	-	-	-	6	-	-
% Bicycles on Crosswalk	-	-	-	-	8.6	-	-	-	-	-	19.7	-	-	-	-	-	0.0	-	-	-	-	-	10.3	-	-
Pedestrians	-	-	-	-	64	-	-	-	-	-	61	-	-	-	-	-	35	-	-	-	-	-	52	-	-
% Pedestrians	-	-	-	-	91.4	-	-	-	-	-	80.3	-	-	-	-	-	100.0	-	-	-	-	-	89.7	-	-

Traffic and Transportation Engineering Services
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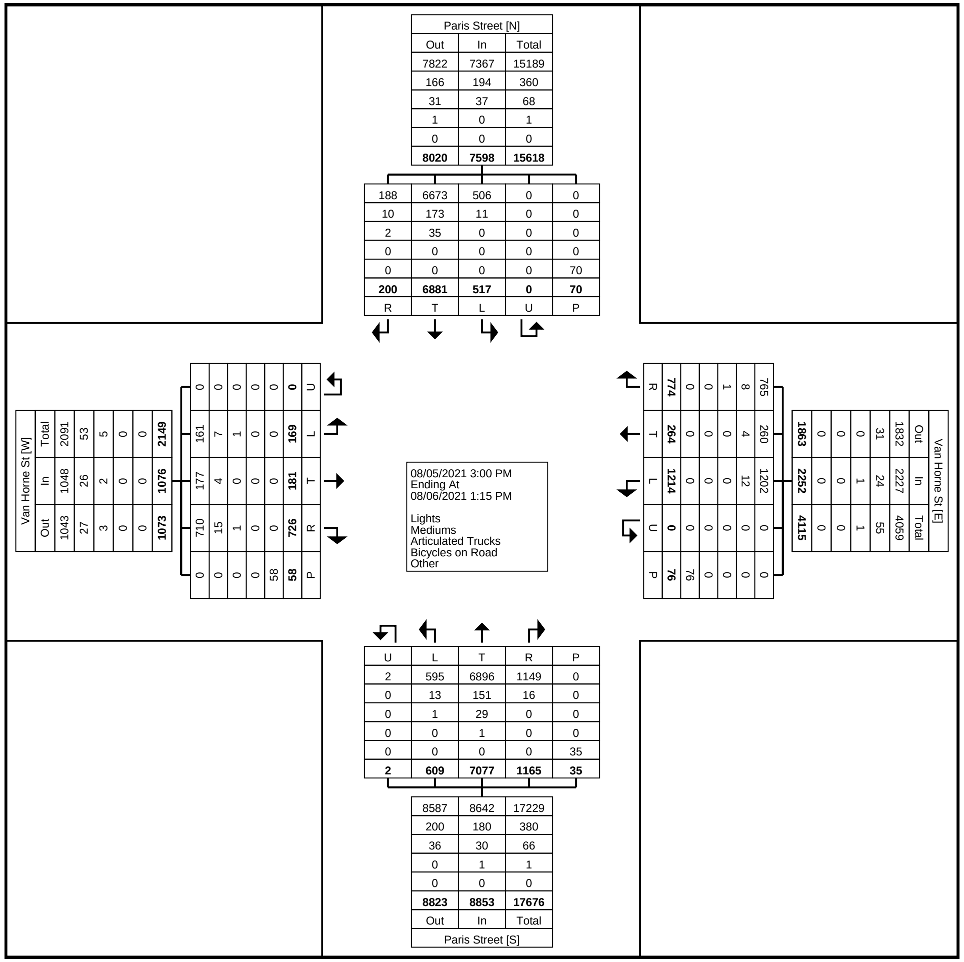
705-674-4455 David.Knutson@greatersudbury.ca

Count Name: Paris Street @ Van Horne Street
Site Code: 00912103
Start Date: 08/05/2021
Page No: 3



08/05/2021 3:00 PM
Ending At
08/06/2021 1:15 PM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

Paris Street [N]

Out	In	Total
7822	7367	15189
166	194	360
31	37	68
1	0	1
0	0	0
8020	**7598**	**15618**

R	T	L	U	P
188	6673	506	0	0
10	173	11	0	0
2	35	0	0	0
0	0	0	0	0
0	0	0	0	70
200	**6881**	**517**	**0**	**70**

Van Horne St [W]

Out	In	Total
1043	1048	2091
27	26	53
3	2	5
0	0	0
0	0	0
1073	**1076**	**2149**

U	L	T	R	P
0	161	177	710	0
0	7	4	15	0
0	1	0	1	0
0	0	0	0	0
0	0	0	0	58
0	**169**	**181**	**726**	**58**

Van Horne St [E]

Out	In	Total
1832	2227	4059
31	24	55
0	1	1
0	0	0
0	0	0
1863	**2252**	**4115**

R	T	L	U	P
765	260	1202	0	0
8	4	12	0	0
1	0	0	0	0
0	0	0	0	0
0	0	0	0	76
774	**264**	**1214**	**0**	**76**

U	L	T	R	P
2	595	6896	1149	0
0	13	151	16	0
0	1	29	0	0
0	0	1	0	0
0	0	0	0	35
2	**609**	**7077**	**1165**	**35**

Out	In	Total
8587	8642	17229
200	180	380
36	30	66
0	1	1
0	0	0
8823	**8853**	**17676**

Paris Street [S]

Turning Movement Data Plot

Count Name: Paris Street @ Van Horne Street
Site Code: 00912103
Start Date: 08/05/2021
Page No: 4

Turning Movement Peak Hour Data (4:00 PM)

	Paris Street						Van Horne St						Paris Street						Van Horne St						
	Southbound						Westbound						Northbound						Eastbound						
Start Time	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
4:00 PM	2	255	22	0	1	279	22	22	51	0	6	95	77	345	32	0	0	454	40	12	13	0	2	65	893
4:15 PM	11	267	23	0	5	301	21	10	41	0	4	72	71	329	27	0	3	427	32	13	8	0	0	53	853
4:30 PM	5	275	32	0	2	312	31	14	38	0	4	83	69	325	15	1	0	410	32	9	9	0	1	50	855
4:45 PM	11	248	31	0	5	290	37	12	50	0	3	99	61	273	23	0	0	357	43	14	10	0	0	67	813
Total	29	1045	108	0	13	1182	111	58	180	0	17	349	278	1272	97	1	3	1648	147	48	40	0	3	235	3414
Approach %	2.5	88.4	9.1	0.0	-	-	31.8	16.6	51.6	0.0	-	-	16.9	77.2	5.9	0.1	-	-	62.6	20.4	17.0	0.0	-	-	-
Total %	0.8	30.6	3.2	0.0	-	34.6	3.3	1.7	5.3	0.0	-	10.2	8.1	37.3	2.8	0.0	-	48.3	4.3	1.4	1.2	0.0	-	6.9	-
PHF	0.659	0.950	0.844	0.000	-	0.947	0.750	0.659	0.882	0.000	-	0.881	0.903	0.922	0.758	0.250	-	0.907	0.855	0.857	0.769	0.000	-	0.877	0.956
Lights	28	1026	107	0	-	1161	110	58	179	0	-	347	276	1255	95	1	-	1627	146	48	39	0	-	233	3368
% Lights	96.6	98.2	99.1	-	-	98.2	99.1	100.0	99.4	-	-	99.4	99.3	98.7	97.9	100.0	-	98.7	99.3	100.0	97.5	-	-	99.1	98.7
Mediums	1	14	1	0	-	16	0	0	1	0	-	1	2	15	2	0	-	19	1	0	1	0	-	2	38
% Mediums	3.4	1.3	0.9	-	-	1.4	0.0	0.0	0.6	-	-	0.3	0.7	1.2	2.1	0.0	-	1.2	0.7	0.0	2.5	-	-	0.9	1.1
Articulated Trucks	0	5	0	0	-	5	1	0	0	0	-	1	0	2	0	0	-	2	0	0	0	0	-	0	8
% Articulated Trucks	0.0	0.5	0.0	-	-	0.4	0.9	0.0	0.0	-	-	0.3	0.0	0.2	0.0	0.0	-	0.1	0.0	0.0	0.0	-	-	0.0	0.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	6	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	7.7	-	-	-	-	-	35.3	-	-	-	-	-	0.0	-	-	-	-	-	33.3	-	-
Pedestrians	-	-	-	-	12	-	-	-	-	-	11	-	-	-	-	-	3	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	92.3	-	-	-	-	-	64.7	-	-	-	-	-	100.0	-	-	-	-	-	66.7	-	-

Traffic and Transportation Engineering Services
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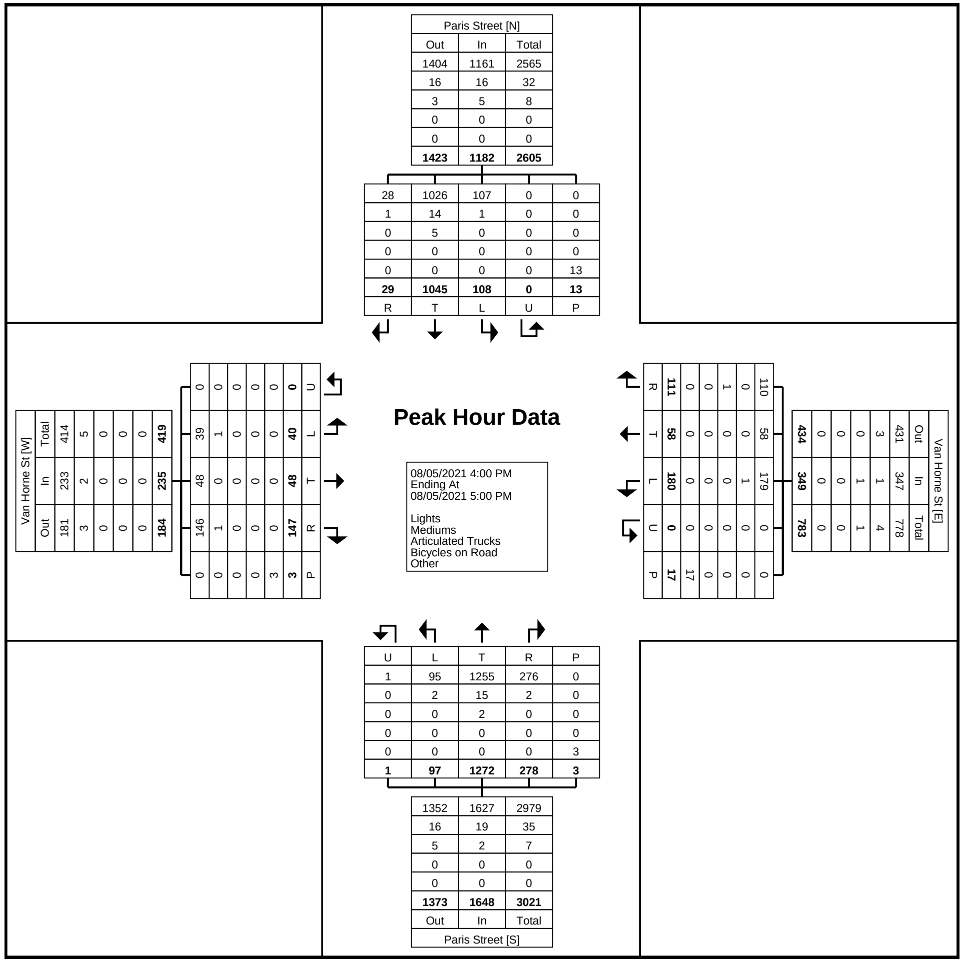
Count Name: Paris Street @ Van Horne Street
Site Code: 00912103
Start Date: 08/05/2021
Page No: 5



Peak Hour Data

08/05/2021 4:00 PM
Ending At
08/05/2021 5:00 PM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

Paris Street [N]

Out	In	Total
1404	1161	2565
16	16	32
3	5	8
0	0	0
0	0	0
1423	**1182**	**2605**

R	T	L	U	P
28	1026	107	0	0
1	14	1	0	0
0	5	0	0	0
0	0	0	0	0
0	0	0	0	13
29	**1045**	**108**	**0**	**13**

Van Horne St [W]

Out	In	Total
181	233	414
3	2	5
0	0	0
0	0	0
0	0	0
184	**235**	**419**

U	L	T	R	P
0	39	48	146	0
0	1	0	1	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	3
0	**40**	**48**	**147**	**3**

Van Horne St [E]

R	T	L	U	P
110	58	179	0	0
0	0	1	0	0
1	0	0	0	0
0	0	0	0	0
0	0	0	0	17
111	**58**	**180**	**0**	**17**

Out	In	Total
431	347	778
3	1	4
0	1	1
0	0	0
0	0	0
434	**349**	**783**

U	L	T	R	P
1	95	1255	276	0
0	2	15	2	0
0	0	2	0	0
0	0	0	0	0
0	0	0	0	3
1	**97**	**1272**	**278**	**3**

Out	In	Total
1352	1627	2979
16	19	35
5	2	7
0	0	0
0	0	0
1373	**1648**	**3021**

Paris Street [S]

Turning Movement Peak Hour Data Plot (4:00 PM)

Turning Movement Peak Hour Data (7:30 AM)

	Paris Street						Van Horne St						Paris Street						Van Horne St						
	Southbound						Westbound						Northbound						Eastbound						
Start Time	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
7:30 AM	7	241	12	0	3	260	29	8	43	0	1	80	19	149	17	0	1	185	12	3	6	0	3	21	546
7:45 AM	4	239	8	0	3	251	32	11	54	0	0	97	26	152	23	0	1	201	13	3	4	0	3	20	569
8:00 AM	3	206	11	0	5	220	22	8	29	0	5	59	15	156	9	0	0	180	10	3	3	0	3	16	475
8:15 AM	7	208	8	0	0	223	19	4	45	0	3	68	19	171	24	0	0	214	17	4	1	0	2	22	527
Total	21	894	39	0	11	954	102	31	171	0	9	304	79	628	73	0	2	780	52	13	14	0	11	79	2117
Approach %	2.2	93.7	4.1	0.0	-	-	33.6	10.2	56.3	0.0	-	-	10.1	80.5	9.4	0.0	-	-	65.8	16.5	17.7	0.0	-	-	-
Total %	1.0	42.2	1.8	0.0	-	45.1	4.8	1.5	8.1	0.0	-	14.4	3.7	29.7	3.4	0.0	-	36.8	2.5	0.6	0.7	0.0	-	3.7	-
PHF	0.750	0.927	0.813	0.000	-	0.917	0.797	0.705	0.792	0.000	-	0.784	0.760	0.918	0.760	0.000	-	0.911	0.765	0.813	0.583	0.000	-	0.898	0.930
Lights	20	856	37	0	-	913	99	31	170	0	-	300	77	607	70	0	-	754	48	13	13	0	-	74	2041
% Lights	95.2	95.7	94.9	-	-	95.7	97.1	100.0	99.4	-	-	98.7	97.5	96.7	95.9	-	-	96.7	92.3	100.0	92.9	-	-	93.7	96.4
Mediums	1	30	2	0	-	33	3	0	1	0	-	4	2	18	3	0	-	23	3	0	1	0	-	4	64
% Mediums	4.8	3.4	5.1	-	-	3.5	2.9	0.0	0.6	-	-	1.3	2.5	2.9	4.1	-	-	2.9	5.8	0.0	7.1	-	-	5.1	3.0
Articulated Trucks	0	8	0	0	-	8	0	0	0	0	-	0	0	3	0	0	-	3	1	0	0	0	-	1	12
% Articulated Trucks	0.0	0.9	0.0	-	-	0.8	0.0	0.0	0.0	-	-	0.0	0.0	0.5	0.0	-	-	0.4	1.9	0.0	0.0	-	-	1.3	0.6
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	22.2	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	11	-	-	-	-	-	7	-	-	-	-	-	2	-	-	-	-	-	11	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	77.8	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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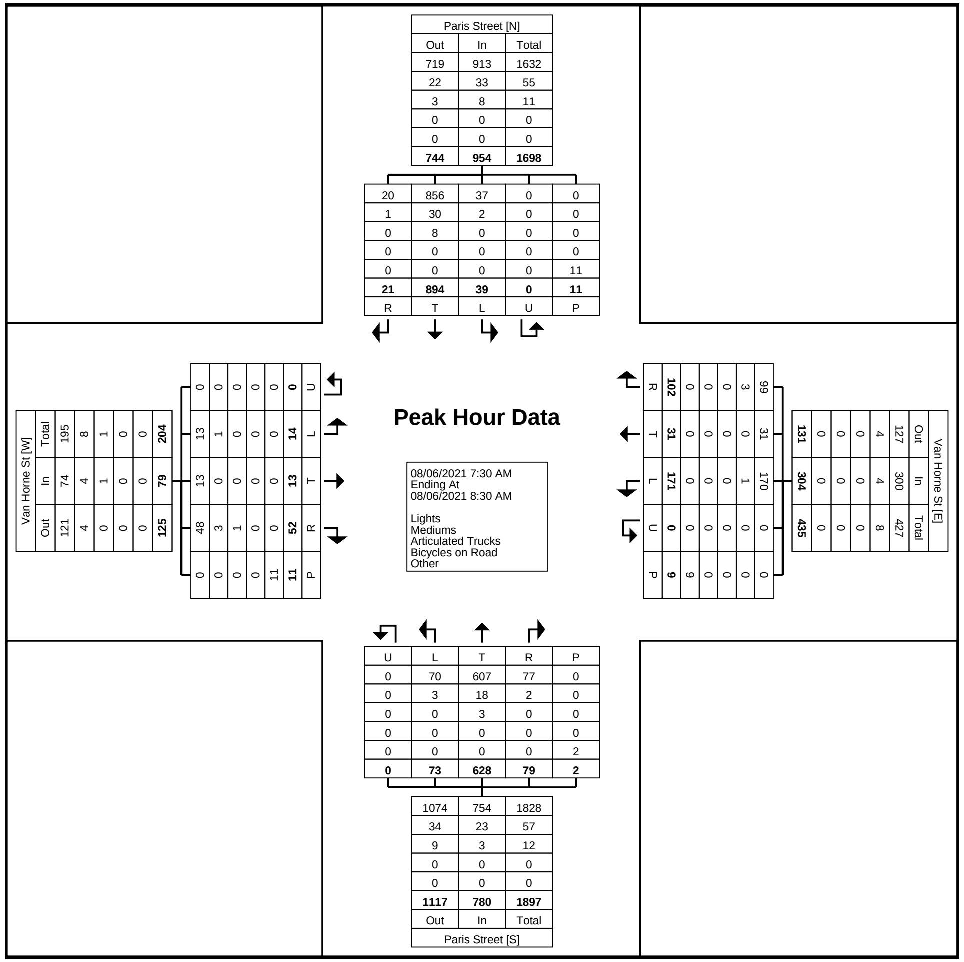
Count Name: Paris Street @ Van Horne Street
Site Code: 00912103
Start Date: 08/05/2021
Page No: 7



Paris Street [N]

Out	In	Total
719	913	1632
22	33	55
3	8	11
0	0	0
0	0	0
744	**954**	**1698**

R	T	L	U	P
20	856	37	0	0
1	30	2	0	0
0	8	0	0	0
0	0	0	0	0
0	0	0	0	11
21	**894**	**39**	**0**	**11**

Van Horne St [W]

Out	In	Total
121	74	195
4	4	8
0	1	1
0	0	0
0	0	0
125	**79**	**204**

U	L	T	R	P
0	13	13	48	0
0	1	0	3	0
0	0	0	1	0
0	0	0	0	0
0	0	0	0	11
0	**14**	**13**	**52**	**11**

Peak Hour Data

08/06/2021 7:30 AM
Ending At
08/06/2021 8:30 AM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

Van Horne St [E]

Out	In	Total
127	300	427
4	4	8
0	0	0
0	0	0
0	0	0
131	**304**	**435**

R	T	L	U	P
99	31	170	0	0
3	0	1	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	9
102	**31**	**171**	**0**	**9**

U	L	T	R	P
0	70	607	77	0
0	3	18	2	0
0	0	3	0	0
0	0	0	0	0
0	0	0	0	2
0	**73**	**628**	**79**	**2**

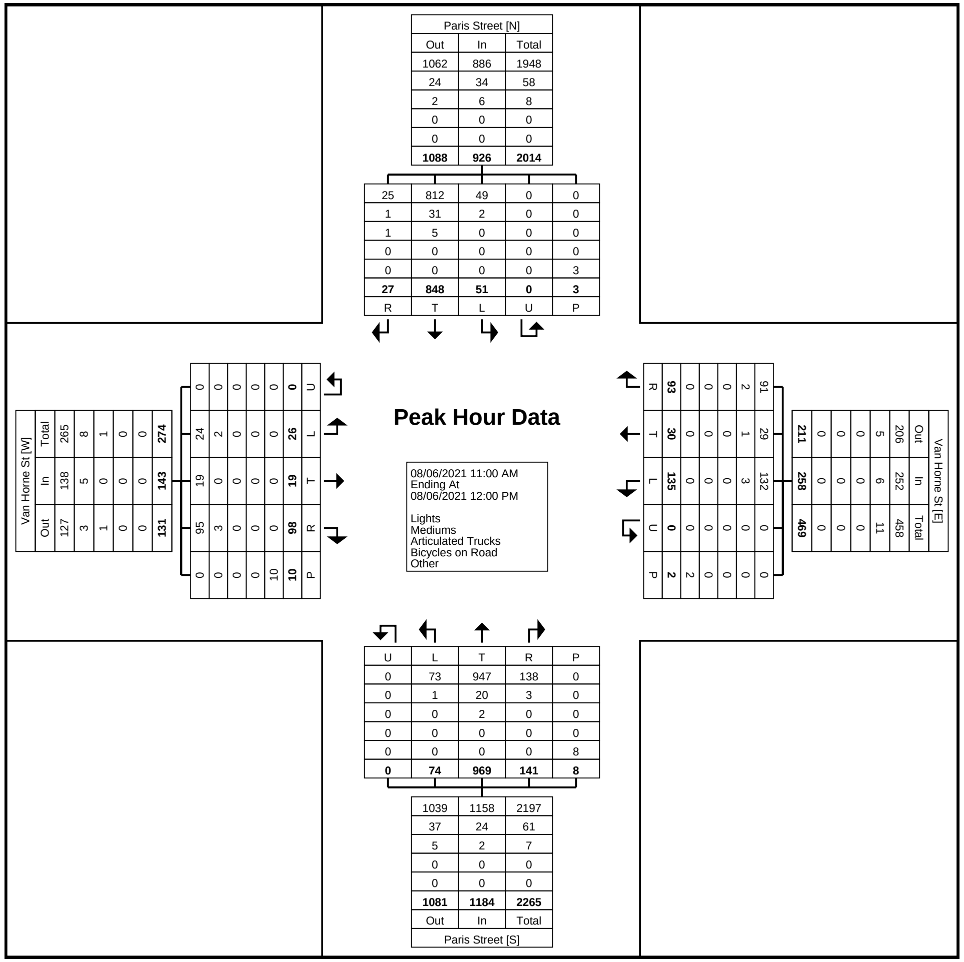
1074	754	1828
34	23	57
9	3	12
0	0	0
0	0	0
1117	**780**	**1897**
Out	In	Total

Paris Street [S]

Turning Movement Peak Hour Data Plot (7:30 AM)

Turning Movement Peak Hour Data (11:00 AM)

	Paris Street						Van Horne St						Paris Street						Van Horne St						
	Southbound						Westbound						Northbound						Eastbound						
Start Time	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
11:00 AM	3	190	11	0	1	204	21	9	34	0	0	64	35	234	23	0	0	292	22	3	8	0	4	33	593
11:15 AM	7	190	10	0	1	207	24	7	39	0	1	70	26	219	16	0	2	261	26	4	6	0	1	36	574
11:30 AM	9	254	17	0	0	280	27	8	23	0	1	58	40	247	13	0	3	300	24	7	5	0	2	36	674
11:45 AM	8	214	13	0	1	235	21	6	39	0	0	66	40	269	22	0	3	331	26	5	7	0	3	38	670
Total	27	848	51	0	3	926	93	30	135	0	2	258	141	969	74	0	8	1184	98	19	26	0	10	143	2511
Approach %	2.9	91.6	5.5	0.0	-	-	36.0	11.6	52.3	0.0	-	-	11.9	81.8	6.3	0.0	-	-	68.5	13.3	18.2	0.0	-	-	-
Total %	1.1	33.8	2.0	0.0	-	36.9	3.7	1.2	5.4	0.0	-	10.3	5.6	38.6	2.9	0.0	-	47.2	3.9	0.8	1.0	0.0	-	5.7	-
PHF	0.750	0.835	0.750	0.000	-	0.827	0.861	0.833	0.865	0.000	-	0.921	0.881	0.901	0.804	0.000	-	0.894	0.942	0.679	0.813	0.000	-	0.941	0.931
Lights	25	812	49	0	-	886	91	29	132	0	-	252	138	947	73	0	-	1158	95	19	24	0	-	138	2434
% Lights	92.6	95.8	96.1	-	-	95.7	97.8	96.7	97.8	-	-	97.7	97.9	97.7	98.6	-	-	97.8	96.9	100.0	92.3	-	-	96.5	96.9
Mediums	1	31	2	0	-	34	2	1	3	0	-	6	3	20	1	0	-	24	3	0	2	0	-	5	69
% Mediums	3.7	3.7	3.9	-	-	3.7	2.2	3.3	2.2	-	-	2.3	2.1	2.1	1.4	-	-	2.0	3.1	0.0	7.7	-	-	3.5	2.7
Articulated Trucks	1	5	0	0	-	6	0	0	0	0	-	0	0	2	0	0	-	2	0	0	0	0	-	0	8
% Articulated Trucks	3.7	0.6	0.0	-	-	0.6	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	10.0	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	2	-	-	-	-	-	8	-	-	-	-	-	9	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	90.0	-	-



Paris Street [N]

Out	In	Total
1062	886	1948
24	34	58
2	6	8
0	0	0
0	0	0
1088	**926**	**2014**

25	812	49	0	0
1	31	2	0	0
1	5	0	0	0
0	0	0	0	0
0	0	0	0	3
27	**848**	**51**	**0**	**3**
R	T	L	U	P

Van Horne St [W]

Out	In	Total
127	138	265
3	5	8
1	0	1
0	0	0
0	0	0
131	**143**	**274**

U	L	T	R	P
0	24	19	95	0
0	2	0	3	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	10
0	**26**	**19**	**98**	**10**

Peak Hour Data

08/06/2021 11:00 AM
Ending At
08/06/2021 12:00 PM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

R	T	L	U	P
91	29	132	0	0
2	1	3	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	2
93	**30**	**135**	**0**	**2**

Van Horne St [E]

Out	In	Total
206	252	458
5	6	11
0	0	0
0	0	0
0	0	0
211	**258**	**469**

U	L	T	R	P
0	73	947	138	0
0	1	20	3	0
0	0	2	0	0
0	0	0	0	0
0	0	0	0	8
0	**74**	**969**	**141**	**8**

1039	1158	2197
37	24	61
5	2	7
0	0	0
0	0	0
1081	**1184**	**2265**
Out	In	Total

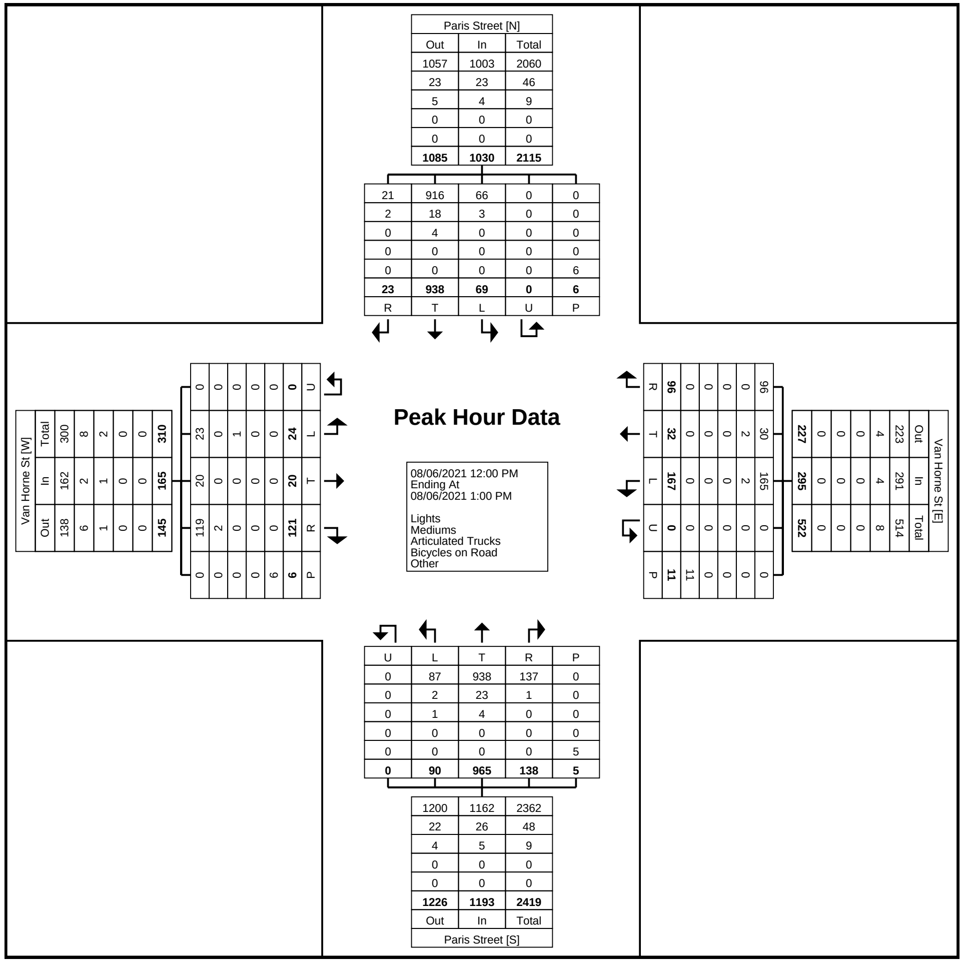
Paris Street [S]

Turning Movement Peak Hour Data Plot (11:00 AM)

Turning Movement Peak Hour Data (12:00 PM)

Start Time	Paris Street						Van Horne St						Paris Street						Van Horne St						
	Southbound						Westbound						Northbound						Eastbound						
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
12:00 PM	7	235	18	0	1	260	23	6	42	0	2	71	39	270	22	0	2	331	34	3	7	0	2	44	706
12:15 PM	5	204	19	0	0	228	30	8	32	0	5	70	21	216	25	0	0	262	25	7	9	0	2	41	601
12:30 PM	9	240	14	0	3	263	23	10	61	0	1	94	33	266	22	0	2	321	28	3	2	0	1	33	711
12:45 PM	2	259	18	0	2	279	20	8	32	0	3	60	45	213	21	0	1	279	34	7	6	0	1	47	665
Total	23	938	69	0	6	1030	96	32	167	0	11	295	138	965	90	0	5	1193	121	20	24	0	6	165	2683
Approach %	2.2	91.1	6.7	0.0	-	-	32.5	10.8	56.6	0.0	-	-	11.6	80.9	7.5	0.0	-	-	73.3	12.1	14.5	0.0	-	-	-
Total %	0.9	35.0	2.6	0.0	-	38.4	3.6	1.2	6.2	0.0	-	11.0	5.1	36.0	3.4	0.0	-	44.5	4.5	0.7	0.9	0.0	-	6.1	-
PHF	0.639	0.905	0.908	0.000	-	0.923	0.800	0.800	0.684	0.000	-	0.785	0.767	0.894	0.900	0.000	-	0.901	0.890	0.714	0.667	0.000	-	0.878	0.943
Lights	21	916	66	0	-	1003	96	30	165	0	-	291	137	938	87	0	-	1162	119	20	23	0	-	162	2618
% Lights	91.3	97.7	95.7	-	-	97.4	100.0	93.8	98.8	-	-	98.6	99.3	97.2	96.7	-	-	97.4	98.3	100.0	95.8	-	-	98.2	97.6
Mediums	2	18	3	0	-	23	0	2	2	0	-	4	1	23	2	0	-	26	2	0	0	0	-	2	55
% Mediums	8.7	1.9	4.3	-	-	2.2	0.0	6.3	1.2	-	-	1.4	0.7	2.4	2.2	-	-	2.2	1.7	0.0	0.0	-	-	1.2	2.0
Articulated Trucks	0	4	0	0	-	4	0	0	0	0	-	0	0	4	1	0	-	5	0	0	1	0	-	1	10
% Articulated Trucks	0.0	0.4	0.0	-	-	0.4	0.0	0.0	0.0	-	-	0.0	0.0	0.4	1.1	-	-	0.4	0.0	0.0	4.2	-	-	0.6	0.4
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	9.1	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	10	-	-	-	-	-	5	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	90.9	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Count Name: Paris Street @ Van Horne Street
Site Code: 00912103
Start Date: 08/05/2021
Page No: 11



Peak Hour Data

08/06/2021 12:00 PM
Ending At
08/06/2021 1:00 PM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

Paris Street [N]

Out	In	Total
1057	1003	2060
23	23	46
5	4	9
0	0	0
0	0	0
1085	**1030**	**2115**

R	T	L	U	P
21	916	66	0	0
2	18	3	0	0
0	4	0	0	0
0	0	0	0	0
0	0	0	0	6
23	**938**	**69**	**0**	**6**

Van Horne St [W]

Out	In	Total
138	162	300
6	2	8
1	1	2
0	0	0
0	0	0
145	**165**	**310**

U	L	T	R	P
0	23	20	119	0
0	0	0	2	0
0	1	0	0	0
0	0	0	0	0
0	0	0	0	6
0	**24**	**20**	**121**	**6**

Van Horne St [E]

Out	In	Total
223	291	514
4	4	8
0	0	0
0	0	0
0	0	0
227	**295**	**522**

R	T	L	U	P
96	30	165	0	0
0	2	2	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	11
96	**32**	**167**	**0**	**11**

U	L	T	R	P
0	87	938	137	0
0	2	23	1	0
0	1	4	0	0
0	0	0	0	0
0	0	0	0	5
0	**90**	**965**	**138**	**5**

Out	In	Total
1200	1162	2362
22	26	48
4	5	9
0	0	0
0	0	0
1226	**1193**	**2419**

Paris Street [S]

Turning Movement Peak Hour Data Plot (12:00 PM)

Morning Peak Diagram

Specified Period		**One Hour Peak**	
From:	7:00:00	**From:**	7:45:00
To:	9:00:00	**To:**	8:45:00

Municipality: Sudbury
Site #: 2206300001
Intersection: Paris St & Van Horne St
TFR File #: 1
Count date: 20-Apr-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Paris St runs N/S

North Leg Total: 2196
North Entering: 1188
North Peds: 4
Peds Cross: ⋈

Heavys	1	16	1	18
Trucks	1	11	1	13
Cars	36	1059	62	1157
Totals	38	1086	64	

Heavys	26
Trucks	20
Cars	962
Totals	1008

East Leg Total: 593
East Entering: 406
East Peds: 6
Peds Cross: ⧗

Paris St

Heavys	Trucks	Cars	Totals
10	3	225	238

Van Horne St

Cars	Trucks	Heavys	Totals
124	1	0	125
52	0	2	54
226	0	1	227
402	1	3	

Heavys	Trucks	Cars	Totals
1	1	11	13
1	0	22	23
6	2	70	78
8	3	103	

Van Horne St

Cars	Trucks	Heavys	Totals
182	2	3	187

Paris St

Peds Cross: ⧗
West Peds: 6
West Entering: 114
West Leg Total: 352

Cars	1355
Trucks	13
Heavys	23
Totals	1391

Cars	137	827	98	1062
Trucks	2	18	1	21
Heavys	7	25	1	33
Totals	146	870	100	

Peds Cross: ⋈
South Peds: 4
South Entering: 1116
South Leg Total: 2507

Comments

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 16:00:00
To: 17:00:00

Municipality: Sudbury
Site #: 2206300001
Intersection: Paris St & Van Horne St
TFR File #: 1
Count date: 20-Apr-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Paris St runs N/S

North Leg Total: 2573
North Entering: 1142
North Peds: 8
Peds Cross: ⋈

Heavys	0	16	0	16
Trucks	1	6	0	7
Cars	32	995	92	1119
Totals	33	1017	92	

Heavys	16
Trucks	17
Cars	1398
Totals	1431

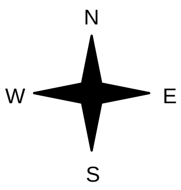
East Leg Total: 762
East Entering: 337
East Peds: 7
Peds Cross: ⧖

Paris St

Heavys	Trucks	Cars	Totals
2	2	208	212

Van Horne St

Cars	Trucks	Heavys	Totals
112	2	3	117
53	0	0	53
163	1	3	167
328	3	6	



Heavys	Trucks	Cars	Totals
0	2	33	35
1	0	54	55
1	0	168	169
2	2	255	

Van Horne St

Cars	Trucks	Heavys	Totals
422	1	2	425

Paris St

Peds Cross: ⧖
West Peds: 6
West Entering: 259
West Leg Total: 471

Cars	1326
Trucks	7
Heavys	20
Totals	1353

Cars	123	1253	276	1652
Trucks	1	13	1	15
Heavys	2	13	1	16
Totals	126	1279	278	

Peds Cross: ⋈
South Peds: 10
South Entering: 1683
South Leg Total: 3036

Comments

Total Count Diagram

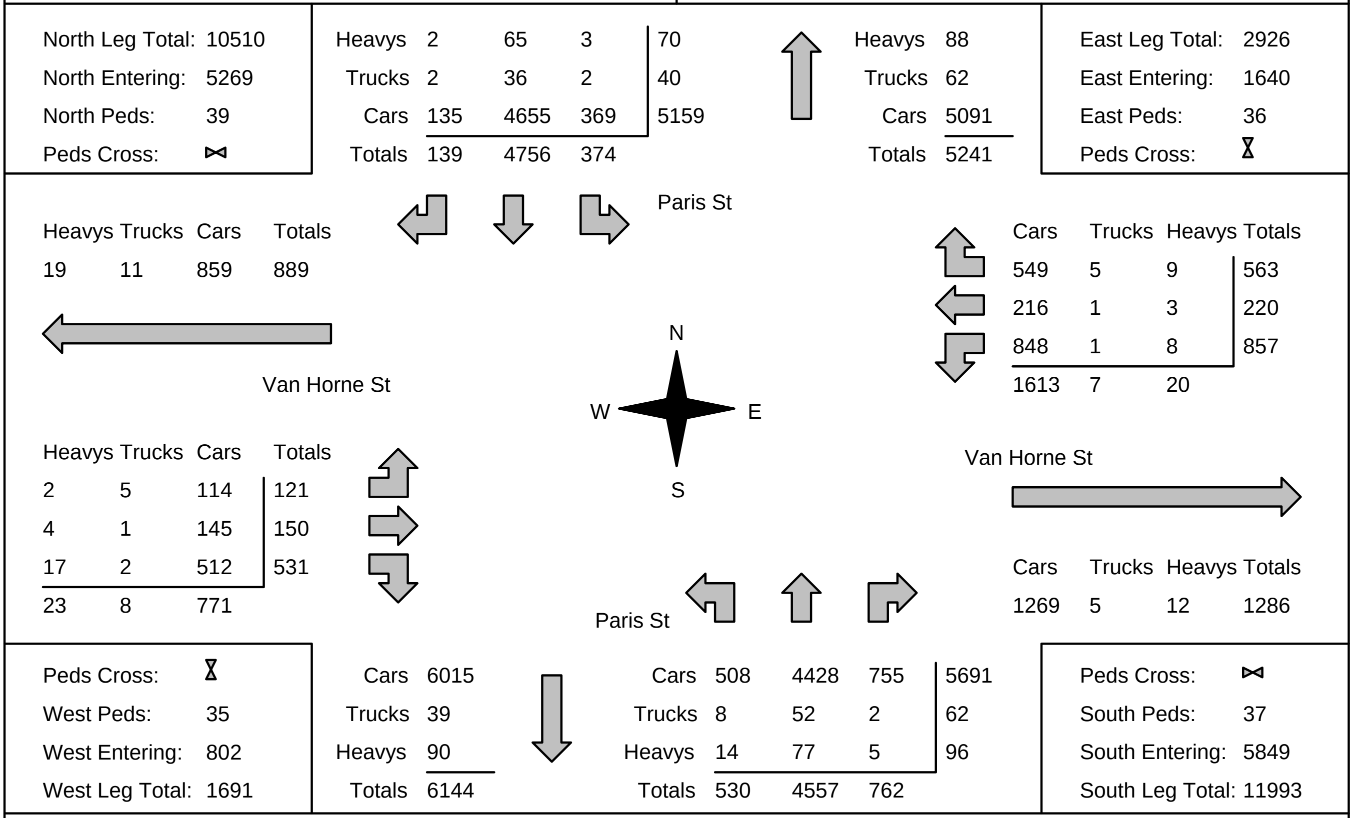
Municipality: Sudbury
Site #: 2206300001
Intersection: Paris St & Van Horne St
TFR File #: 1
Count date: 20-Apr-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Paris St runs N/S



North Leg Total: 10510
North Entering: 5269
North Peds: 39
Peds Cross: ⋈

Heavys	2	65	3	70
Trucks	2	36	2	40
Cars	135	4655	369	5159
Totals	139	4756	374	

Heavys	88
Trucks	62
Cars	5091
Totals	5241

East Leg Total: 2926
East Entering: 1640
East Peds: 36
Peds Cross: ⧗

Paris St

Heavys	Trucks	Cars	Totals
19	11	859	889

Van Horne St

Cars	Trucks	Heavys	Totals
549	5	9	563
216	1	3	220
848	1	8	857
1613	7	20	

Heavys	Trucks	Cars	Totals
2	5	114	121
4	1	145	150
17	2	512	531
23	8	771	

Van Horne St

Cars	Trucks	Heavys	Totals
1269	5	12	1286

Paris St

Peds Cross: ⧗
West Peds: 35
West Entering: 802
West Leg Total: 1691

Cars	6015
Trucks	39
Heavys	90
Totals	6144

Cars	508	4428	755	5691
Trucks	8	52	2	62
Heavys	14	77	5	96
Totals	530	4557	762	

Peds Cross: ⋈
South Peds: 37
South Entering: 5849
South Leg Total: 11993

Comments

Traffic Count Summary

Intersection: Paris St & Van Horne St | **Count Date:** 20-Apr-22 | **Municipality:** Sudbury

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*7:00:00*	*0*	*0*	*0*	*0*	*0*
8:00:00	*45*	*959*	*24*	*1028*	*6*	*1866*	*8:00:00*	*80*	*691*	*67*	*838*	*2*
9:00:00	*60*	*1039*	*34*	*1133*	*8*	*2247*	*9:00:00*	*155*	*853*	*106*	*1114*	*4*
16:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*16:00:00*	*0*	*0*	*0*	*0*	*0*
17:00:00	*92*	*1017*	*33*	*1142*	*8*	*2825*	*17:00:00*	*126*	*1279*	*278*	*1683*	*10*
18:00:00	*102*	*919*	*27*	*1048*	*12*	*2383*	*18:00:00*	*89*	*1041*	*205*	*1335*	*6*
19:00:00	*75*	*822*	*21*	*918*	*5*	*1797*	*19:00:00*	*80*	*693*	*106*	*879*	*15*
Totals:	374	4756	139	5269	39	11118	S Totals:	530	4557	762	5849	37

East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*7:00:00*	*0*	*0*	*0*	*0*	*0*
8:00:00	*219*	*47*	*119*	*385*	*3*	*469*	*8:00:00*	*7*	*10*	*67*	*84*	*5*
9:00:00	*211*	*44*	*121*	*376*	*5*	*490*	*9:00:00*	*15*	*22*	*77*	*114*	*4*
16:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*16:00:00*	*0*	*0*	*0*	*0*	*0*
17:00:00	*167*	*53*	*117*	*337*	*7*	*596*	*17:00:00*	*35*	*55*	*169*	*259*	*6*
18:00:00	*136*	*43*	*100*	*279*	*9*	*484*	*18:00:00*	*29*	*41*	*135*	*205*	*12*
19:00:00	*124*	*33*	*106*	*263*	*12*	*403*	*19:00:00*	*35*	*22*	*83*	*140*	*8*
Totals:	857	220	563	1640	36	2442	W Totals:	121	150	531	802	35

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*19:00*	*0:00*
Crossing Values:	*0*	*281*	*282*	*0*	*275*	*226*	*212*	*0*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Count Date: 20-Apr-22 **Site #: 2206300001**

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	9	9	206	206	5	5	0	0	0	0	0	0	1	1	3	3	0	0	1	1
7:30:00	19	10	411	205	11	6	0	0	2	2	0	0	1	0	9	6	1	1	2	1
7:45:00	24	5	650	239	14	3	0	0	3	1	0	0	1	0	14	5	1	0	5	3
8:00:00	44	20	937	287	23	9	0	0	3	0	0	0	1	0	19	5	1	0	6	1
8:15:00	53	9	1200	263	32	9	1	1	7	4	0	0	1	0	25	6	1	0	7	1
8:30:00	73	20	1458	258	41	9	1	0	10	3	1	1	2	1	27	2	2	1	8	1
8:45:00	86	13	1709	251	50	9	1	0	14	4	1	0	2	0	30	3	2	0	9	1
9:00:00	101	15	1946	237	55	5	1	0	19	5	1	0	3	1	33	3	2	0	14	5
9:15:00	101	0	1946	0	55	0	1	0	19	0	1	0	3	0	33	0	2	0	14	0
16:00:00	101	0	1946	0	55	0	1	0	19	0	1	0	3	0	33	0	2	0	14	0
16:15:00	125	24	2172	226	59	4	1	0	20	1	1	0	3	0	38	5	2	0	15	1
16:30:00	147	22	2442	270	68	9	1	0	22	2	1	0	3	0	40	2	2	0	18	3
16:45:00	174	27	2676	234	75	7	1	0	23	1	1	0	3	0	45	5	2	0	19	1
17:00:00	193	19	2941	265	87	12	1	0	25	2	2	1	3	0	49	4	2	0	22	3
17:15:00	225	32	3177	236	93	6	1	0	26	1	2	0	3	0	50	1	2	0	28	6
17:30:00	256	31	3443	266	102	9	1	0	27	1	2	0	3	0	53	3	2	0	31	3
17:45:00	277	21	3621	178	106	4	1	0	28	1	2	0	3	0	54	1	2	0	32	1
18:00:00	294	17	3845	224	114	8	2	1	29	1	2	0	3	0	60	6	2	0	34	2
18:15:00	317	23	4064	219	122	8	2	0	32	3	2	0	3	0	61	1	2	0	35	1
18:30:00	335	18	4284	220	128	6	2	0	34	2	2	0	3	0	63	2	2	0	39	4
18:45:00	353	18	4464	180	131	3	2	0	35	1	2	0	3	0	64	1	2	0	39	0
19:00:00	369	16	4655	191	135	4	2	0	36	1	2	0	3	0	65	1	2	0	39	0
19:15:00	369	0	4655	0	135	0	2	0	36	0	2	0	3	0	65	0	2	0	39	0
19:15:15	369	0	4655	0	135	0	2	0	36	0	2	0	3	0	65	0	2	0	39	0

Count Date: 20-Apr-22 Site #: 2206300001

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	48	48	7	7	19	19	0	0	0	0	0	0	1	1	0	0	0	0	0	0
7:30:00	92	44	18	11	47	28	0	0	0	0	0	0	2	1	0	0	0	0	2	2
7:45:00	142	50	26	8	84	37	0	0	1	1	0	0	3	1	0	0	3	3	2	0
8:00:00	216	74	46	20	116	32	0	0	1	0	0	0	3	0	0	0	3	0	3	1
8:15:00	266	50	54	8	143	27	0	0	1	0	0	0	3	0	0	0	3	0	3	0
8:30:00	311	45	69	15	177	34	0	0	1	0	0	0	4	1	1	1	3	0	4	1
8:45:00	368	57	78	9	208	31	0	0	1	0	1	1	4	0	2	1	3	0	8	4
9:00:00	426	58	87	9	234	26	0	0	1	0	1	0	4	0	3	1	5	2	8	0
9:15:00	426	0	87	0	234	0	0	0	1	0	1	0	4	0	3	0	5	0	8	0
16:00:00	426	0	87	0	234	0	0	0	1	0	1	0	4	0	3	0	5	0	8	0
16:15:00	467	41	103	16	263	29	0	0	1	0	1	0	6	2	3	0	8	3	11	3
16:30:00	504	37	117	14	297	34	0	0	1	0	1	0	7	1	3	0	8	0	12	1
16:45:00	552	48	128	11	318	21	1	1	1	0	3	2	7	0	3	0	8	0	13	1
17:00:00	589	37	140	12	346	28	1	0	1	0	3	0	7	0	3	0	8	0	15	2
17:15:00	643	54	155	15	372	26	1	0	1	0	3	0	7	0	3	0	8	0	19	4
17:30:00	666	23	163	8	392	20	1	0	1	0	3	0	8	1	3	0	9	1	20	1
17:45:00	700	34	175	12	418	26	1	0	1	0	3	0	8	0	3	0	9	0	23	3
18:00:00	724	24	183	8	444	26	1	0	1	0	4	1	8	0	3	0	9	0	24	1
18:15:00	747	23	190	7	471	27	1	0	1	0	4	0	8	0	3	0	9	0	26	2
18:30:00	780	33	195	5	499	28	1	0	1	0	5	1	8	0	3	0	9	0	28	2
18:45:00	818	38	205	10	517	18	1	0	1	0	5	0	8	0	3	0	9	0	34	6
19:00:00	848	30	216	11	549	32	1	0	1	0	5	0	8	0	3	0	9	0	36	2
19:15:00	848	0	216	0	549	0	1	0	1	0	5	0	8	0	3	0	9	0	36	0
19:15:15	848	0	216	0	549	0	1	0	1	0	5	0	8	0	3	0	9	0	36	0

Count Date: 20-Apr-22 **Site #: 2206300001**

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	7	7	91	91	11	11	0	0	1	1	0	0	0	0	1	1	0	0	0	0
7:30:00	22	15	229	138	21	10	0	0	3	2	0	0	1	1	5	4	0	0	1	1
7:45:00	42	20	436	207	41	20	0	0	5	2	0	0	5	4	11	6	2	2	1	0
8:00:00	74	32	663	227	65	24	1	1	9	4	0	0	5	0	19	8	2	0	2	1
8:15:00	109	35	864	201	88	23	1	0	13	4	0	0	10	5	23	4	3	1	3	1
8:30:00	149	40	1053	189	110	22	1	0	19	6	0	0	10	0	28	5	3	0	5	2
8:45:00	179	30	1263	210	139	29	2	1	23	4	1	1	12	2	36	8	3	0	5	0
9:00:00	221	42	1474	211	169	30	2	0	25	2	1	0	12	0	45	9	3	0	6	1
9:15:00	221	0	1474	0	169	0	2	0	25	0	1	0	12	0	45	0	3	0	6	0
16:00:00	221	0	1474	0	169	0	2	0	25	0	1	0	12	0	45	0	3	0	6	0
16:15:00	249	28	1817	343	223	54	3	1	30	5	1	0	13	1	47	2	3	0	7	1
16:30:00	285	36	2127	310	291	68	3	0	34	4	1	0	14	1	51	4	3	0	9	2
16:45:00	312	27	2435	308	371	80	3	0	38	4	2	1	14	0	54	3	4	1	9	0
17:00:00	344	32	2727	292	445	74	3	0	38	0	2	0	14	0	58	4	4	0	16	7
17:15:00	359	15	3025	298	511	66	3	0	40	2	2	0	14	0	60	2	4	0	17	1
17:30:00	380	21	3317	292	570	59	3	0	43	3	2	0	14	0	62	2	5	1	17	0
17:45:00	406	26	3552	235	610	40	4	1	45	2	2	0	14	0	65	3	5	0	18	1
18:00:00	432	26	3750	198	649	39	4	0	47	2	2	0	14	0	67	2	5	0	22	4
18:15:00	459	27	3923	173	673	24	4	0	48	1	2	0	14	0	69	2	5	0	27	5
18:30:00	480	21	4101	178	704	31	6	2	48	0	2	0	14	0	72	3	5	0	28	1
18:45:00	491	11	4261	160	731	27	6	0	50	2	2	0	14	0	76	4	5	0	34	6
19:00:00	508	17	4428	167	755	24	8	2	52	2	2	0	14	0	77	1	5	0	37	3
19:15:00	508	0	4428	0	755	0	8	0	52	0	2	0	14	0	77	0	5	0	37	0
19:15:15	508	0	4428	0	755	0	8	0	52	0	2	0	14	0	77	0	5	0	37	0

Count Date: 20-Apr-22 **Site #: 2206300001**

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	3	3	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	5	2	20	12	0	0	0	0	0	0	0	0	0	0	5	5	0	0
7:45:00	5	5	6	1	36	16	0	0	0	0	0	0	0	0	0	0	6	1	2	2
8:00:00	6	1	10	4	57	21	0	0	0	0	0	0	1	1	0	0	10	4	5	3
8:15:00	10	4	17	7	70	13	0	0	0	0	1	1	1	0	0	0	10	0	6	1
8:30:00	14	4	20	3	90	20	0	0	0	0	1	0	1	0	0	0	12	2	7	1
8:45:00	16	2	28	8	106	16	1	1	0	0	2	1	1	0	1	1	12	0	8	1
9:00:00	20	4	29	1	128	22	1	0	0	0	2	0	1	0	3	2	14	2	9	1
9:15:00	20	0	29	0	128	0	1	0	0	0	2	0	1	0	3	0	14	0	9	0
16:00:00	20	0	29	0	128	0	1	0	0	0	2	0	1	0	3	0	14	0	9	0
16:15:00	29	9	48	19	170	42	1	0	0	0	2	0	1	0	4	1	15	1	11	2
16:30:00	35	6	59	11	209	39	1	0	0	0	2	0	1	0	4	0	15	0	11	0
16:45:00	48	13	72	13	257	48	3	2	0	0	2	0	1	0	4	0	15	0	12	1
17:00:00	53	5	83	11	296	39	3	0	0	0	2	0	1	0	4	0	15	0	15	3
17:15:00	59	6	95	12	347	51	3	0	0	0	2	0	1	0	4	0	16	1	17	2
17:30:00	64	5	110	15	379	32	3	0	0	0	2	0	1	0	4	0	16	0	18	1
17:45:00	72	8	117	7	405	26	3	0	0	0	2	0	1	0	4	0	17	1	23	5
18:00:00	82	10	124	7	429	24	3	0	0	0	2	0	1	0	4	0	17	0	27	4
18:15:00	89	7	127	3	451	22	3	0	0	0	2	0	1	0	4	0	17	0	31	4
18:30:00	95	6	135	8	470	19	3	0	1	1	2	0	1	0	4	0	17	0	32	1
18:45:00	106	11	143	8	494	24	4	1	1	0	2	0	1	0	4	0	17	0	35	3
19:00:00	114	8	145	2	512	18	5	1	1	0	2	0	2	1	4	0	17	0	35	0
19:15:00	114	0	145	0	512	0	5	0	1	0	2	0	2	0	4	0	17	0	35	0
19:15:15	114	0	145	0	512	0	5	0	1	0	2	0	2	0	4	0	17	0	35	0

Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
Sudbury, Ontario, Canada P3A 5P3
705-674-4455 David.Knutson@greatersudbury.ca

Count Name: John St. @ Paris St.
Site Code: 00829103
Start Date: 07/18/2019
Page No: 1

Turning Movement Data

Start Time	Paris St. Southbound						John St. Westbound						Paris St. Northbound						John St. Eastbound						
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
3:00 PM	1	279	19	0	0	299	27	0	14	0	2	41	12	358	0	0	0	370	1	0	0	0	0	1	711
3:15 PM	2	355	12	0	1	369	18	0	17	0	2	35	15	371	0	0	0	386	0	0	1	0	3	1	791
3:30 PM	1	332	11	0	0	344	24	0	16	0	4	40	12	375	0	0	0	387	1	0	1	0	1	2	773
3:45 PM	0	347	28	0	0	375	23	1	12	0	0	36	9	379	0	0	3	388	0	1	1	0	1	2	801
Hourly Total	4	1313	70	0	1	1387	92	1	59	0	8	152	48	1483	0	0	3	1531	2	1	3	0	5	6	3076
4:00 PM	0	391	18	0	3	409	42	0	22	0	0	64	11	437	2	0	1	450	0	0	2	0	2	2	925
4:15 PM	0	385	18	1	0	404	19	0	11	0	0	30	18	461	4	0	2	483	0	1	3	0	5	4	921
4:30 PM	3	374	23	0	0	400	23	0	13	0	0	36	10	449	1	0	1	460	1	1	1	0	4	3	899
4:45 PM	2	344	20	0	0	366	22	0	17	0	2	39	5	429	1	0	0	435	1	1	4	0	3	6	846
Hourly Total	5	1494	79	1	3	1579	106	0	63	0	2	169	44	1776	8	0	4	1828	2	3	10	0	14	15	3591
5:00 PM	1	322	23	0	5	346	19	0	22	0	4	41	20	377	0	0	2	397	0	0	3	0	2	3	787
5:15 PM	3	349	27	0	0	379	22	0	23	0	2	45	14	355	0	0	3	369	0	0	2	0	7	2	795
5:30 PM	1	268	19	0	1	288	17	0	14	0	0	31	15	330	0	0	2	345	0	0	1	0	1	1	665
5:45 PM	0	286	16	1	0	303	18	0	10	0	0	28	11	281	0	0	0	292	0	0	0	0	0	0	623
Hourly Total	5	1225	85	1	6	1316	76	0	69	0	6	145	60	1343	0	0	7	1403	0	0	6	0	10	6	2870
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1
6:30 AM	0	176	3	0	0	179	6	0	4	0	0	10	1	140	0	0	0	141	0	0	1	0	0	1	331
6:45 AM	0	196	7	0	0	203	4	0	6	0	0	10	3	150	0	0	1	153	0	0	0	0	0	0	366
Hourly Total	0	372	10	0	0	382	10	0	10	0	0	20	4	290	0	0	1	294	0	0	1	0	0	1	697
7:00 AM	0	231	6	0	0	237	5	0	4	0	0	9	4	128	0	0	0	132	0	0	1	0	0	1	379
7:15 AM	0	313	11	0	1	324	8	0	10	0	0	18	2	157	1	0	1	160	0	0	0	0	2	0	502
7:30 AM	3	284	11	0	0	298	17	0	2	0	0	19	3	236	1	0	0	240	1	0	1	0	0	2	559
7:45 AM	0	352	11	0	1	363	16	0	10	0	1	26	6	236	0	0	0	242	0	0	1	0	1	1	632
Hourly Total	3	1180	39	0	2	1222	46	0	26	0	1	72	15	757	2	0	1	774	1	0	3	0	3	4	2072
8:00 AM	0	297	13	0	3	310	14	2	13	0	1	29	12	243	0	0	0	255	0	0	0	0	1	0	594
8:15 AM	3	347	11	0	0	361	18	0	7	0	1	25	6	279	2	0	1	287	0	0	2	0	0	2	675
8:30 AM	5	345	9	0	1	359	15	0	4	0	0	19	7	269	1	0	1	277	2	0	6	0	3	8	663
8:45 AM	1	338	13	0	1	352	16	0	16	0	2	32	9	271	1	0	3	281	4	0	0	0	4	4	669
Hourly Total	9	1327	46	0	5	1382	63	2	40	0	4	105	34	1062	4	0	5	1100	6	0	8	0	8	14	2601
9:00 AM	2	238	9	0	1	249	15	0	11	0	2	26	8	234	2	0	2	244	2	0	3	0	1	5	524
9:15 AM	3	242	13	0	0	258	12	0	12	0	2	24	11	218	0	0	2	229	1	0	1	0	1	2	513
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Hourly Total	5	480	22	0	1	507	27	0	23	0	4	50	19	452	2	0	4	473	3	0	4	0	2	7	1037
11:30 AM	0	241	13	0	1	254	16	0	15	0	0	31	6	302	0	0	0	308	3	0	1	0	2	4	597
11:45 AM	0	303	16	0	1	319	19	0	18	0	1	37	7	282	0	0	0	289	2	0	0	0	3	2	647
Hourly Total	0	544	29	0	2	573	35	0	33	0	1	68	13	584	0	0	0	597	5	0	1	0	5	6	1244
12:00 PM	1	355	19	0	0	375	17	0	18	0	0	35	6	305	0	0	0	311	2	0	0	0	2	2	723
12:15 PM	0	285	18	0	0	303	19	0	16	0	2	35	12	302	1	0	0	315	0	0	0	0	2	0	653
12:30 PM	2	286	16	0	2	304	18	0	14	0	1	32	14	310	1	0	0	325	2	1	1	0	0	4	665
12:45 PM	0	299	18	0	0	317	12	0	13	0	0	25	18	298	0	1	3	317	0	0	0	0	1	0	659
Hourly Total	3	1225	71	0	2	1299	66	0	61	0	3	127	50	1215	2	1	3	1268	4	1	1	0	5	6	2700
1:00 PM	0	276	16	0	0	292	24	1	18	0	0	43	11	296	1	0	5	308	1	1	1	0	1	3	646
1:15 PM	1	295	18	0	0	314	25	1	15	0	0	41	12	314	0	0	1	326	0	1	0	0	0	1	682
Grand Total	35	9731	485	2	22	10253	570	5	417	0	29	992	310	9573	19	1	34	9903	24	7	38	0	53	69	21217
Approach %	0.3	94.9	4.7	0.0	-	-	57.5	0.5	42.0	0.0	-	-	3.1	96.7	0.2	0.0	-	-	34.8	10.1	55.1	0.0	-	-	-
Total %	0.2	45.9	2.3	0.0	-	48.3	2.7	0.0	2.0	0.0	-	4.7	1.5	45.1	0.1	0.0	-	46.7	0.1	0.0	0.2	0.0	-	0.3	-
Lights	35	9527	464	2	-	10028	551	5	417	0	-	973	308	9365	19	1	-	9693	23	7	38	0	-	68	20762
% Lights	100.0	97.9	95.7	100.0	-	97.8	96.7	100.0	100.0	-	-	98.1	99.4	97.8	100.0	100.0	-	97.9	95.8	100.0	100.0	-	-	98.6	97.9
Mediums	0	185	18	0	-	203	18	0	0	0	-	18	2	182	0	0	-	184	1	0	0	0	-	1	406
% Mediums	0.0	1.9	3.7	0.0	-	2.0	3.2	0.0	0.0	-	-	1.8	0.6	1.9	0.0	0.0	-	1.9	4.2	0.0	0.0	-	-	1.4	1.9
Articulated Trucks	0	19	2	0	-	21	1	0	0	0	-	1	0	26	0	0	-	26	0	0	0	0	-	0	48
% Articulated Trucks	0.0	0.2	0.4	0.0	-	0.2	0.2	0.0	0.0	-	-	0.1	0.0	0.3	0.0	0.0	-	0.3	0.0	0.0	0.0	-	-	0.0	0.2
Bicycles on Road	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.2	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	9	-	-	-	-	-	3	-	-	-	-	-	12	-	-
% Bicycles on Crosswalk	-	-	-	-	9.1	-	-	-	-	-	31.0	-	-	-	-	-	8.8	-	-	-	-	-	22.6	-	-
Pedestrians	-	-	-	-	20	-	-	-	-	-	20	-	-	-	-	-	31	-	-	-	-	-	41	-	-
% Pedestrians	-	-	-	-	90.9	-	-	-	-	-	69.0	-	-	-	-	-	91.2	-	-	-	-	-	77.4	-	-

Traffic and Transportation Engineering Services
1800 Frobisher Street
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Sudbury, Ontario, Canada P3A 5P3
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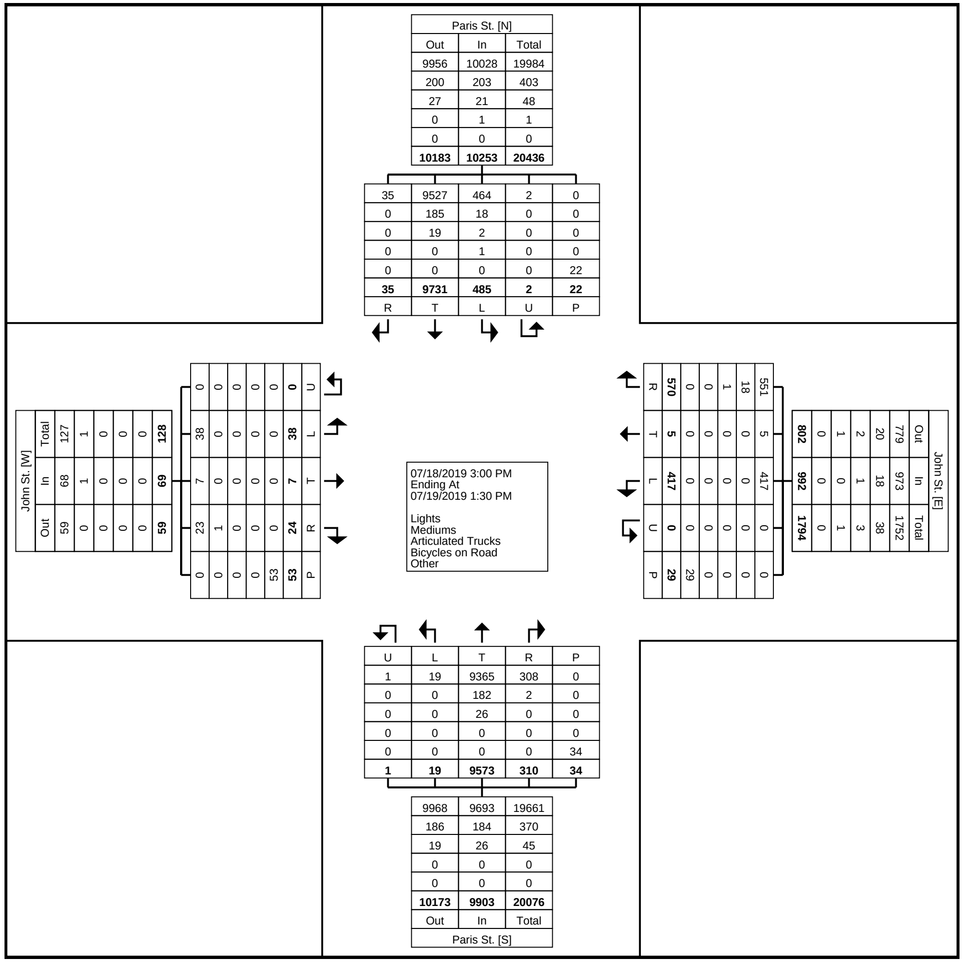
Count Name: John St. @ Paris St.
Site Code: 00829103
Start Date: 07/18/2019
Page No: 3



Paris St. [N]

Out	In	Total
9956	10028	19984
200	203	403
27	21	48
0	1	1
0	0	0
10183	**10253**	**20436**

R	T	L	U	P
35	9527	464	2	0
0	185	18	0	0
0	19	2	0	0
0	0	1	0	0
0	0	0	0	22
35	**9731**	**485**	**2**	**22**

John St. [W]

Out	In	Total
59	68	127
0	1	1
0	0	0
0	0	0
0	0	0
59	**69**	**128**

U	L	T	R	P
0	38	7	23	0
0	0	0	1	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	53
0	**38**	**7**	**24**	**53**

07/18/2019 3:00 PM
Ending At
07/19/2019 1:30 PM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

R	T	L	U	P
551	5	417	0	0
18	0	0	0	0
1	0	0	0	0
0	0	0	0	0
0	0	0	0	29
570	**5**	**417**	**0**	**29**

John St. [E]

Out	In	Total
779	973	1752
20	18	38
2	1	3
1	0	1
0	0	0
802	**992**	**1794**

U	L	T	R	P
1	19	9365	308	0
0	0	182	2	0
0	0	26	0	0
0	0	0	0	0
0	0	0	0	34
1	**19**	**9573**	**310**	**34**

Out	In	Total
9968	9693	19661
186	184	370
19	26	45
0	0	0
0	0	0
10173	**9903**	**20076**

Paris St. [S]

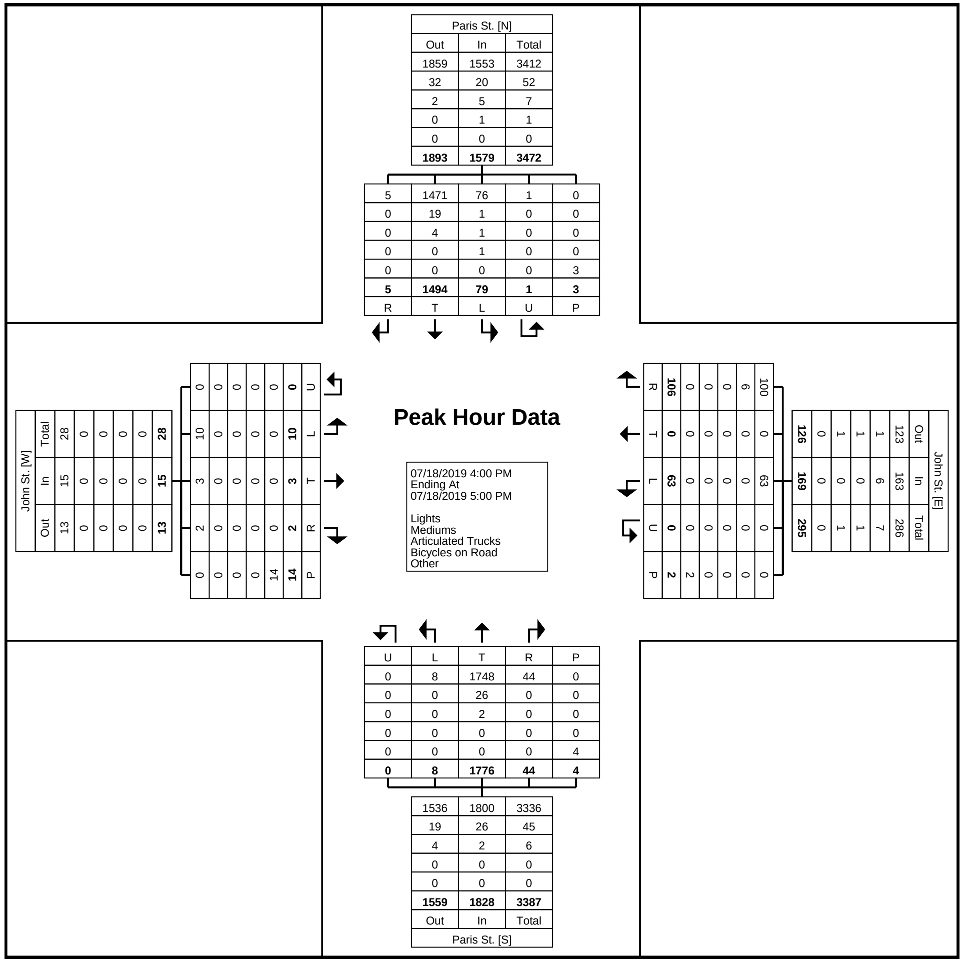
Turning Movement Data Plot

Turning Movement Peak Hour Data (4:00 PM)

	Paris St.						John St.						Paris St.						John St.						
	Southbound						Westbound						Northbound						Eastbound						
Start Time	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
4:00 PM	0	391	18	0	3	409	42	0	22	0	0	64	11	437	2	0	1	450	0	0	2	0	2	2	925
4:15 PM	0	385	18	1	0	404	19	0	11	0	0	30	18	461	4	0	2	483	0	1	3	0	5	4	921
4:30 PM	3	374	23	0	0	400	23	0	13	0	0	36	10	449	1	0	1	460	1	1	1	0	4	3	899
4:45 PM	2	344	20	0	0	366	22	0	17	0	2	39	5	429	1	0	0	435	1	1	4	0	3	6	846
Total	5	1494	79	1	3	1579	106	0	63	0	2	169	44	1776	8	0	4	1828	2	3	10	0	14	15	3591
Approach %	0.3	94.6	5.0	0.1	-	-	62.7	0.0	37.3	0.0	-	-	2.4	97.2	0.4	0.0	-	-	13.3	20.0	66.7	0.0	-	-	-
Total %	0.1	41.6	2.2	0.0	-	44.0	3.0	0.0	1.8	0.0	-	4.7	1.2	49.5	0.2	0.0	-	50.9	0.1	0.1	0.3	0.0	-	0.4	-
PHF	0.417	0.955	0.859	0.250	-	0.965	0.631	0.000	0.716	0.000	-	0.660	0.611	0.963	0.500	0.000	-	0.946	0.500	0.750	0.625	0.000	-	0.625	0.971
Lights	5	1471	76	1	-	1553	100	0	63	0	-	163	44	1748	8	0	-	1800	2	3	10	0	-	15	3531
% Lights	100.0	98.5	96.2	100.0	-	98.4	94.3	-	100.0	-	-	96.4	100.0	98.4	100.0	-	-	98.5	100.0	100.0	100.0	-	-	100.0	98.3
Mediums	0	19	1	0	-	20	6	0	0	0	-	6	0	26	0	0	-	26	0	0	0	0	-	0	52
% Mediums	0.0	1.3	1.3	0.0	-	1.3	5.7	-	0.0	-	-	3.6	0.0	1.5	0.0	-	-	1.4	0.0	0.0	0.0	-	-	0.0	1.4
Articulated Trucks	0	4	1	0	-	5	0	0	0	0	-	0	0	2	0	0	-	2	0	0	0	0	-	0	7
% Articulated Trucks	0.0	0.3	1.3	0.0	-	0.3	0.0	-	0.0	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.2
Bicycles on Road	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	1.3	0.0	-	0.1	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	2	-	-	-	-	-	4	-	-	-	-	-	14	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
Sudbury, Ontario, Canada P3A 5P3
705-674-4455 David.Knutson@greatersudbury.ca

Count Name: John St. @ Paris St.
Site Code: 00829103
Start Date: 07/18/2019
Page No: 5



Peak Hour Data

07/18/2019 4:00 PM
Ending At
07/18/2019 5:00 PM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

Paris St. [N]

Out	In	Total
1859	1553	3412
32	20	52
2	5	7
0	1	1
0	0	0
1893	**1579**	**3472**

R	T	L	U	P
5	1471	76	1	0
0	19	1	0	0
0	4	1	0	0
0	0	1	0	0
0	0	0	0	3
5	**1494**	**79**	**1**	**3**

John St. [W]

Out	In	Total
13	15	28
0	0	0
0	0	0
0	0	0
0	0	0
13	**15**	**28**

U	L	T	R	P
0	10	3	2	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	14
0	**10**	**3**	**2**	**14**

John St. [E]

Out	In	Total
123	163	286
1	6	7
1	0	1
1	0	1
0	0	0
126	**169**	**295**

R	T	L	U	P
100	0	63	0	0
6	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	2
106	**0**	**63**	**0**	**2**

U	L	T	R	P
0	8	1748	44	0
0	0	26	0	0
0	0	2	0	0
0	0	0	0	0
0	0	0	0	4
0	**8**	**1776**	**44**	**4**

Out	In	Total
1536	1800	3336
19	26	45
4	2	6
0	0	0
0	0	0
1559	**1828**	**3387**

Paris St. [S]

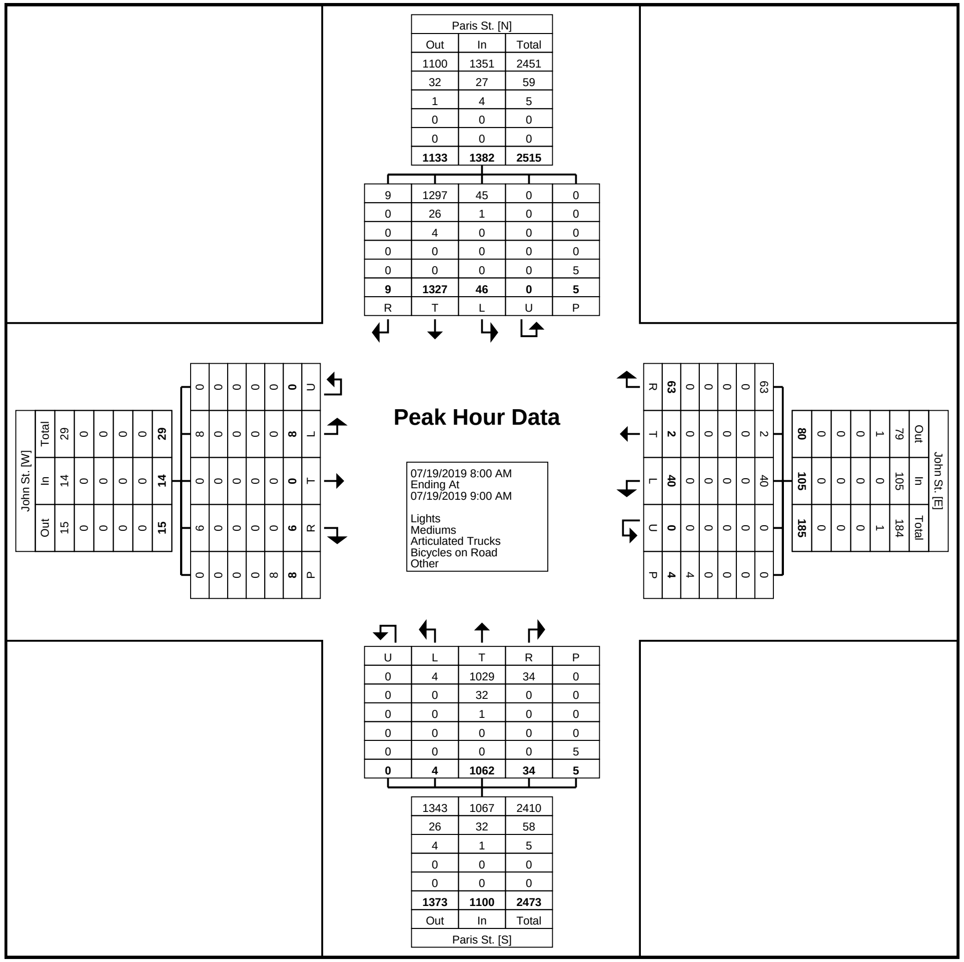
Turning Movement Peak Hour Data Plot (4:00 PM)

Turning Movement Peak Hour Data (8:00 AM)

	Paris St.						John St.						Paris St.						John St.						
	Southbound						Westbound						Northbound						Eastbound						
Start Time	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
8:00 AM	0	297	13	0	3	310	14	2	13	0	1	29	12	243	0	0	0	255	0	0	0	0	1	0	594
8:15 AM	3	347	11	0	0	361	18	0	7	0	1	25	6	279	2	0	1	287	0	0	2	0	0	2	675
8:30 AM	5	345	9	0	1	359	15	0	4	0	0	19	7	269	1	0	1	277	2	0	6	0	3	8	663
8:45 AM	1	338	13	0	1	352	16	0	16	0	2	32	9	271	1	0	3	281	4	0	0	0	4	4	669
Total	9	1327	46	0	5	1382	63	2	40	0	4	105	34	1062	4	0	5	1100	6	0	8	0	8	14	2601
Approach %	0.7	96.0	3.3	0.0	-	-	60.0	1.9	38.1	0.0	-	-	3.1	96.5	0.4	0.0	-	-	42.9	0.0	57.1	0.0	-	-	-
Total %	0.3	51.0	1.8	0.0	-	53.1	2.4	0.1	1.5	0.0	-	4.0	1.3	40.8	0.2	0.0	-	42.3	0.2	0.0	0.3	0.0	-	0.5	-
PHF	0.450	0.956	0.885	0.000	-	0.957	0.875	0.250	0.625	0.000	-	0.820	0.708	0.952	0.500	0.000	-	0.958	0.375	0.000	0.333	0.000	-	0.438	0.963
Lights	9	1297	45	0	-	1351	63	2	40	0	-	105	34	1029	4	0	-	1067	6	0	8	0	-	14	2537
% Lights	100.0	97.7	97.8	-	-	97.8	100.0	100.0	100.0	-	-	100.0	100.0	96.9	100.0	-	-	97.0	100.0	-	100.0	-	-	100.0	97.5
Mediums	0	26	1	0	-	27	0	0	0	0	-	0	0	32	0	0	-	32	0	0	0	0	-	0	59
% Mediums	0.0	2.0	2.2	-	-	2.0	0.0	0.0	0.0	-	-	0.0	0.0	3.0	0.0	-	-	2.9	0.0	-	0.0	-	-	0.0	2.3
Articulated Trucks	0	4	0	0	-	4	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	5
% Articulated Trucks	0.0	0.3	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.0	-	0.0	-	-	0.0	0.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	20.0	-	-	-	-	-	50.0	-	-	-	-	-	0.0	-	-	-	-	-	25.0	-	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	2	-	-	-	-	-	5	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	80.0	-	-	-	-	-	50.0	-	-	-	-	-	100.0	-	-	-	-	-	75.0	-	-

Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
Sudbury, Ontario, Canada P3A 5P3
705-674-4455 David.Knutson@greatersudbury.ca

Count Name: John St. @ Paris St.
Site Code: 00829103
Start Date: 07/18/2019
Page No: 7



Peak Hour Data

07/19/2019 8:00 AM
Ending At
07/19/2019 9:00 AM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

Paris St. [N]

Out	In	Total
1100	1351	2451
32	27	59
1	4	5
0	0	0
0	0	0
1133	**1382**	**2515**

R	T	L	U	P
9	1297	45	0	0
0	26	1	0	0
0	4	0	0	0
0	0	0	0	0
0	0	0	0	5
9	**1327**	**46**	**0**	**5**

John St. [W]

Out	In	Total
15	14	29
0	0	0
0	0	0
0	0	0
0	0	0
15	**14**	**29**

U	L	T	R	P
0	8	0	6	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	8
0	**8**	**0**	**6**	**8**

John St. [E]

Out	In	Total
79	105	184
1	0	1
0	0	0
0	0	0
0	0	0
80	**105**	**185**

R	T	L	U	P
63	2	40	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	4
63	**2**	**40**	**0**	**4**

U	L	T	R	P
0	4	1029	34	0
0	0	32	0	0
0	0	1	0	0
0	0	0	0	0
0	0	0	0	5
0	**4**	**1062**	**34**	**5**

Out	In	Total
1343	1067	2410
26	32	58
4	1	5
0	0	0
0	0	0
1373	**1100**	**2473**

Paris St. [S]

Turning Movement Peak Hour Data Plot (8:00 AM)

Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
Sudbury, Ontario, Canada P3A 5P3
705-674-4455 David.Knutson@greatersudbury.ca

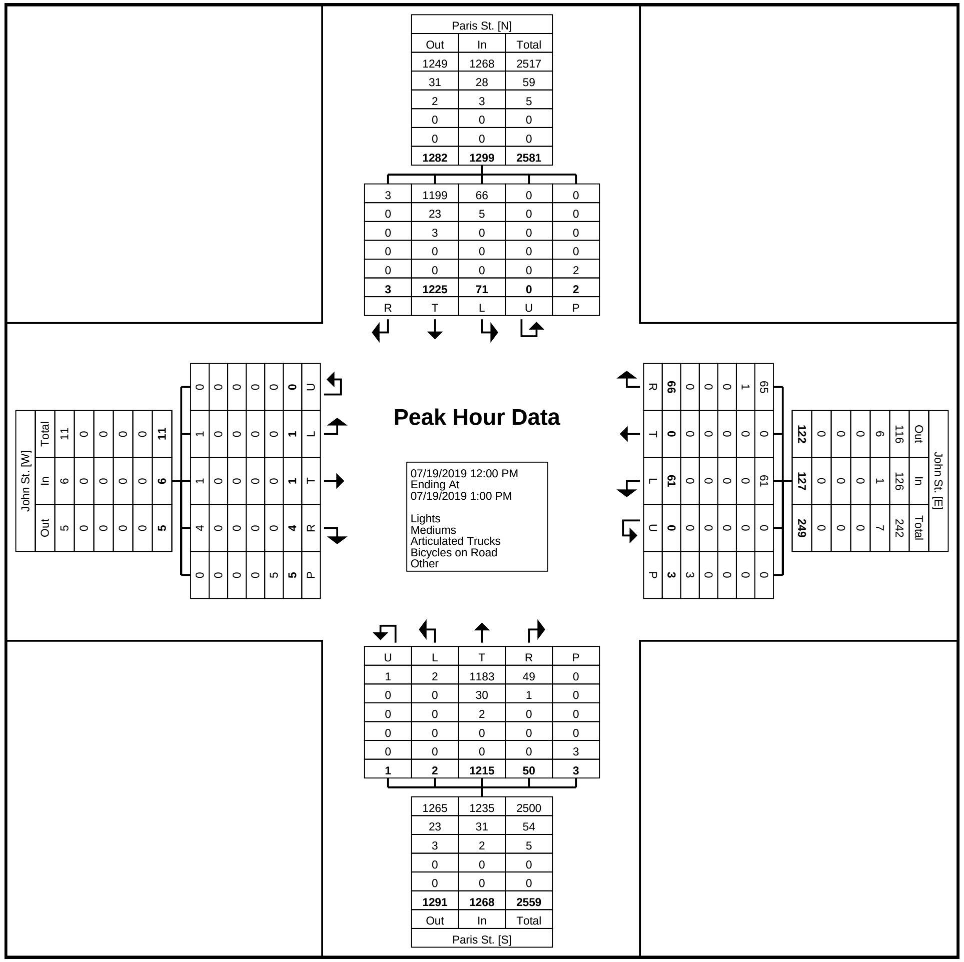
Count Name: John St. @ Paris St.
Site Code: 00829103
Start Date: 07/18/2019
Page No: 8

Turning Movement Peak Hour Data (12:00 PM)

	Paris St.						John St.						Paris St.						John St.						
	Southbound						Westbound						Northbound						Eastbound						
Start Time	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
12:00 PM	1	355	19	0	0	375	17	0	18	0	0	35	6	305	0	0	0	311	2	0	0	0	2	2	723
12:15 PM	0	285	18	0	0	303	19	0	16	0	2	35	12	302	1	0	0	315	0	0	0	0	2	0	653
12:30 PM	2	286	16	0	2	304	18	0	14	0	1	32	14	310	1	0	0	325	2	1	1	0	0	4	665
12:45 PM	0	299	18	0	0	317	12	0	13	0	0	25	18	298	0	1	3	317	0	0	0	0	1	0	659
Total	3	1225	71	0	2	1299	66	0	61	0	3	127	50	1215	2	1	3	1268	4	1	1	0	5	6	2700
Approach %	0.2	94.3	5.5	0.0	-	-	52.0	0.0	48.0	0.0	-	-	3.9	95.8	0.2	0.1	-	-	66.7	16.7	16.7	0.0	-	-	-
Total %	0.1	45.4	2.6	0.0	-	48.1	2.4	0.0	2.3	0.0	-	4.7	1.9	45.0	0.1	0.0	-	47.0	0.1	0.0	0.0	0.0	-	0.2	-
PHF	0.375	0.863	0.934	0.000	-	0.866	0.868	0.000	0.847	0.000	-	0.907	0.694	0.980	0.500	0.250	-	0.975	0.500	0.250	0.250	0.000	-	0.375	0.934
Lights	3	1199	66	0	-	1268	65	0	61	0	-	126	49	1183	2	1	-	1235	4	1	1	0	-	6	2635
% Lights	100.0	97.9	93.0	-	-	97.6	98.5	-	100.0	-	-	99.2	98.0	97.4	100.0	100.0	-	97.4	100.0	100.0	100.0	-	-	100.0	97.6
Mediums	0	23	5	0	-	28	1	0	0	0	-	1	1	30	0	0	-	31	0	0	0	0	-	0	60
% Mediums	0.0	1.9	7.0	-	-	2.2	1.5	-	0.0	-	-	0.8	2.0	2.5	0.0	0.0	-	2.4	0.0	0.0	0.0	-	-	0.0	2.2
Articulated Trucks	0	3	0	0	-	3	0	0	0	0	-	0	0	2	0	0	-	2	0	0	0	0	-	0	5
% Articulated Trucks	0.0	0.2	0.0	-	-	0.2	0.0	-	0.0	-	-	0.0	0.0	0.2	0.0	0.0	-	0.2	0.0	0.0	0.0	-	-	0.0	0.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	4	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	33.3	-	-	-	-	-	0.0	-	-	-	-	-	80.0	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	2	-	-	-	-	-	3	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	66.7	-	-	-	-	-	100.0	-	-	-	-	-	20.0	-	-

Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
Sudbury, Ontario, Canada P3A 5P3
705-674-4455 David.Knutson@greatersudbury.ca

Count Name: John St. @ Paris St.
Site Code: 00829103
Start Date: 07/18/2019
Page No: 9



07/19/2019 12:00 PM
Ending At
07/19/2019 1:00 PM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

Paris St. [N]

Out	In	Total
1249	1268	2517
31	28	59
2	3	5
0	0	0
0	0	0
1282	**1299**	**2581**

R	T	L	U	P
3	1199	66	0	0
0	23	5	0	0
0	3	0	0	0
0	0	0	0	0
0	0	0	0	2
3	**1225**	**71**	**0**	**2**

John St. [W]

Out	In	Total
5	6	11
0	0	0
0	0	0
0	0	0
0	0	0
5	**6**	**11**

U	L	T	R	P
0	1	1	4	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	5
0	**1**	**1**	**4**	**5**

John St. [E]

Out	In	Total
116	126	242
6	1	7
0	0	0
0	0	0
0	0	0
122	**127**	**249**

R	T	L	U	P
65	0	61	0	0
1	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	3
66	**0**	**61**	**0**	**3**

U	L	T	R	P
1	2	1183	49	0
0	0	30	1	0
0	0	2	0	0
0	0	0	0	0
0	0	0	0	3
1	**2**	**1215**	**50**	**3**

Out	In	Total
1265	1235	2500
23	31	54
3	2	5
0	0	0
0	0	0
1291	**1268**	**2559**

Paris St. [S]

Turning Movement Peak Hour Data Plot (12:00 PM)

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:45:00
To: 8:45:00

Municipality: Sudbury
Site #: 2206300002
Intersection: Paris St & McNaughton St
TFR File #: 1
Count date: 20-Apr-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Paris St runs N/S

North Leg Total: 2485
North Entering: 1402
North Peds: 0
Peds Cross: ⋈

Heavys	2	19	0	21
Trucks	0	12	0	12
Cars	4	1365	0	1369
Totals	6	1396	0	

Heavys	29
Trucks	15
Cars	1039
Totals	1083

East Leg Total: 4
East Entering: 4
East Peds: 1
Peds Cross: ⧖

Paris St

Heavys	Trucks	Cars	Totals
2	0	5	7

McNaughton St

Cars	Trucks	Heavys	Totals
1	0	1	2
0	0	0	0
2	0	0	2
3	0	1	

N
W E
S

Heavys	Trucks	Cars	Totals
0	0	3	3
0	0	0	0
0	0	8	8
0	0	11	

McNaughton St

Cars	Trucks	Heavys	Totals
0	0	0	0

Paris St

Peds Cross: ⧖
West Peds: 2
West Entering: 11
West Leg Total: 18

Cars	1375
Trucks	12
Heavys	19
Totals	1406

Cars	1	1035	0	1036
Trucks	0	15	0	15
Heavys	0	28	0	28
Totals	1	1078	0	

Peds Cross: ⋈
South Peds: 0
South Entering: 1079
South Leg Total: 2485

Comments

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 16:00:00
To: 17:00:00

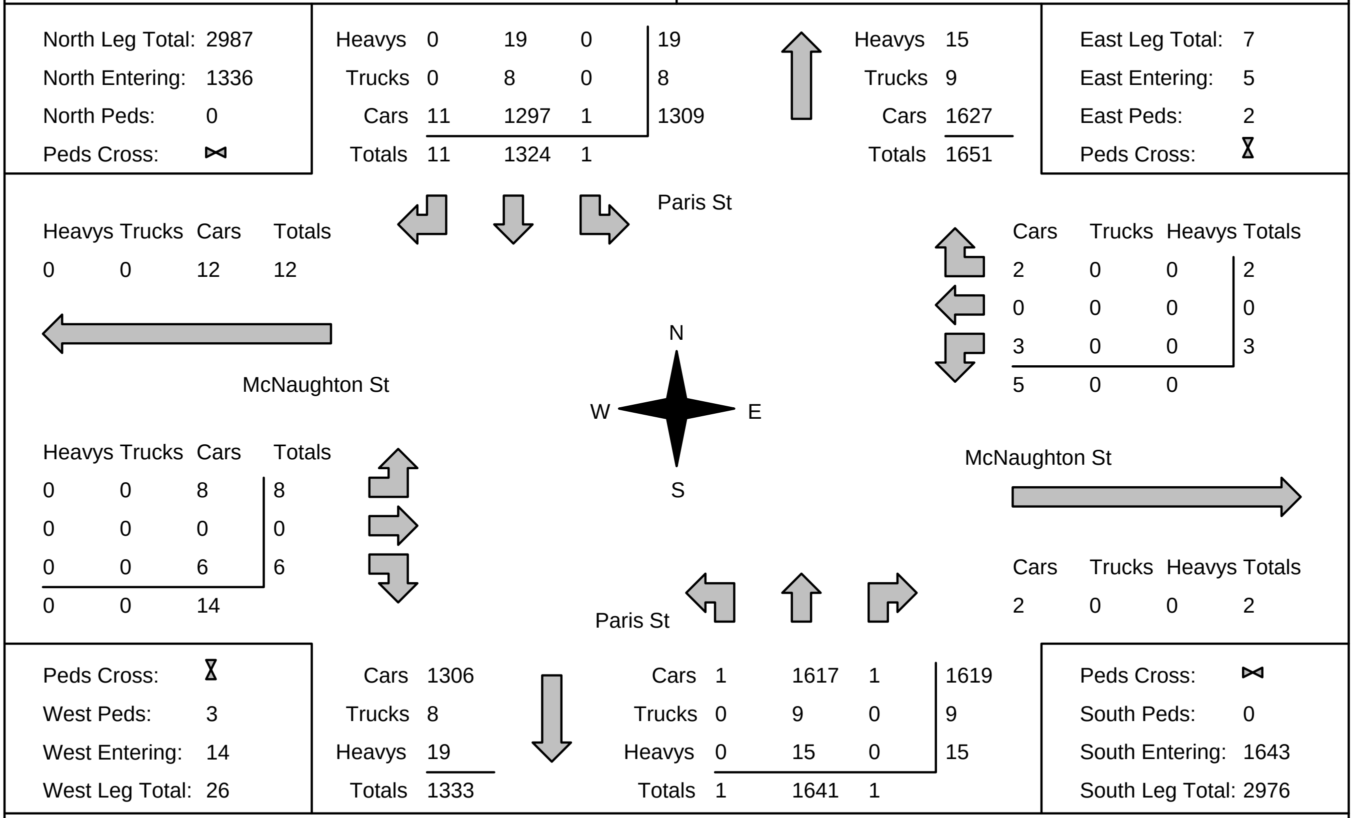
Municipality: Sudbury
Site #: 2206300002
Intersection: Paris St & McNaughton St
TFR File #: 1
Count date: 20-Apr-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Paris St runs N/S



North Leg Total: 2987
North Entering: 1336
North Peds: 0
Peds Cross: ⋈

Heavys	0	19	0	19
Trucks	0	8	0	8
Cars	11	1297	1	1309
Totals	11	1324	1	

Heavys	15
Trucks	9
Cars	1627
Totals	1651

East Leg Total: 7
East Entering: 5
East Peds: 2
Peds Cross: ⧗

Paris St

Heavys	Trucks	Cars	Totals
0	0	12	12

Cars	Trucks	Heavys	Totals
2	0	0	2
0	0	0	0
3	0	0	3
5	0	0	

McNaughton St

Heavys	Trucks	Cars	Totals
0	0	8	8
0	0	0	0
0	0	6	6
0	0	14	

McNaughton St

Cars	Trucks	Heavys	Totals
2	0	0	2

Paris St

Peds Cross: ⧗
West Peds: 3
West Entering: 14
West Leg Total: 26

Cars	1306
Trucks	8
Heavys	19
Totals	1333

Cars	1	1617	1	1619
Trucks	0	9	0	9
Heavys	0	15	0	15
Totals	1	1641	1	

Peds Cross: ⋈
South Peds: 0
South Entering: 1643
South Leg Total: 2976

Comments

Total Count Diagram

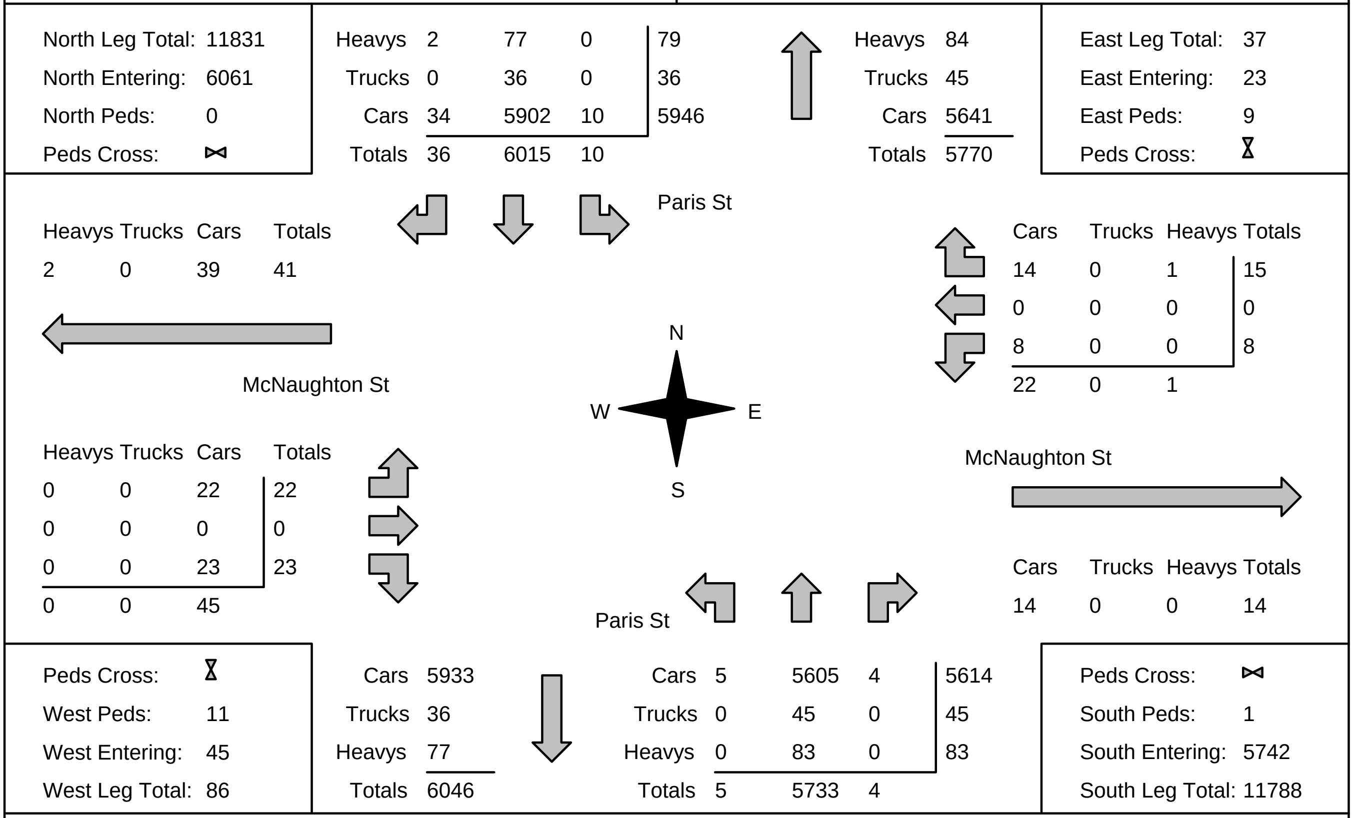
Municipality: Sudbury
Site #: 2206300002
Intersection: Paris St & McNaughton St
TFR File #: 1
Count date: 20-Apr-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Paris St runs N/S



North Leg Total: 11831
North Entering: 6061
North Peds: 0
Peds Cross: ⋈

Heavys	2	77	0	79
Trucks	0	36	0	36
Cars	34	5902	10	5946
Totals	36	6015	10	

Heavys	84
Trucks	45
Cars	5641
Totals	5770

East Leg Total: 37
East Entering: 23
East Peds: 9
Peds Cross: ⧖

Paris St

Heavys	Trucks	Cars	Totals
2	0	39	41

McNaughton St

Cars	Trucks	Heavys	Totals
14	0	1	15
0	0	0	0
8	0	0	8
22	0	1	

Heavys	Trucks	Cars	Totals
0	0	22	22
0	0	0	0
0	0	23	23
0	0	45	

McNaughton St

Cars	Trucks	Heavys	Totals
14	0	0	14

Paris St

Peds Cross: ⧖
West Peds: 11
West Entering: 45
West Leg Total: 86

Cars	5933
Trucks	36
Heavys	77
Totals	6046

Cars	5	5605	4	5614
Trucks	0	45	0	45
Heavys	0	83	0	83
Totals	5	5733	4	

Peds Cross: ⋈
South Peds: 1
South Entering: 5742
South Leg Total: 11788

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Traffic Count Summary

Intersection: Paris St & McNaughton St | **Count Date:** 20-Apr-22 | **Municipality:** Sudbury

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*7:00:00*	*0*	*0*	*0*	*0*	*0*
8:00:00	*1*	*1204*	*2*	*1207*	*0*	*2016*	*8:00:00*	*1*	*808*	*0*	*809*	*0*
9:00:00	*1*	*1339*	*5*	*1345*	*0*	*2402*	*9:00:00*	*2*	*1055*	*0*	*1057*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*16:00:00*	*0*	*0*	*0*	*0*	*0*
17:00:00	*1*	*1324*	*11*	*1336*	*0*	*2979*	*17:00:00*	*1*	*1641*	*1*	*1643*	*0*
18:00:00	*3*	*1149*	*8*	*1160*	*0*	*2499*	*18:00:00*	*0*	*1336*	*3*	*1339*	*0*
19:00:00	*4*	*999*	*10*	*1013*	*0*	*1907*	*19:00:00*	*1*	*893*	*0*	*894*	*1*
Totals:	10	6015	36	6061	0	11803	S Totals:	5	5733	4	5742	1

East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*7:00:00*	*0*	*0*	*0*	*0*	*0*
8:00:00	*3*	*0*	*1*	*4*	*1*	*13*	*8:00:00*	*3*	*0*	*6*	*9*	*1*
9:00:00	*0*	*0*	*2*	*2*	*1*	*9*	*9:00:00*	*1*	*0*	*6*	*7*	*1*
16:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*16:00:00*	*0*	*0*	*0*	*0*	*0*
17:00:00	*3*	*0*	*2*	*5*	*2*	*19*	*17:00:00*	*8*	*0*	*6*	*14*	*3*
18:00:00	*1*	*0*	*4*	*5*	*3*	*9*	*18:00:00*	*2*	*0*	*2*	*4*	*3*
19:00:00	*1*	*0*	*6*	*7*	*2*	*18*	*19:00:00*	*8*	*0*	*3*	*11*	*3*
Totals:	8	0	15	23	9	68	W Totals:	22	0	23	45	11

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*19:00*	*0:00*
Crossing Values:	*0*	*6*	*1*	*0*	*11*	*3*	*10*	*0*

Count Date: 20-Apr-22 Site #: 2206300002

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	1	1	244	244	1	1	0	0	0	0	0	0	0	0	4	4	0	0	0	0
7:30:00	1	0	517	273	1	0	0	0	2	2	0	0	0	0	11	7	0	0	0	0
7:45:00	1	0	796	279	1	0	0	0	2	0	0	0	0	0	15	4	0	0	0	0
8:00:00	1	0	1180	384	2	1	0	0	2	0	0	0	0	0	22	7	0	0	0	0
8:15:00	1	0	1516	336	3	1	0	0	7	5	0	0	0	0	28	6	1	1	0	0
8:30:00	1	0	1845	329	5	2	0	0	10	3	0	0	0	0	31	3	2	1	0	0
8:45:00	1	0	2161	316	5	0	0	0	14	4	0	0	0	0	34	3	2	0	0	0
9:00:00	2	1	2485	324	5	0	0	0	19	5	0	0	0	0	39	5	2	0	0	0
9:15:00	2	0	2485	0	5	0	0	0	19	0	0	0	0	0	39	0	2	0	0	0
16:00:00	2	0	2485	0	5	0	0	0	19	0	0	0	0	0	39	0	2	0	0	0
16:15:00	2	0	2791	306	8	3	0	0	22	3	0	0	0	0	47	8	2	0	0	0
16:30:00	3	1	3131	340	10	2	0	0	24	2	0	0	0	0	50	3	2	0	0	0
16:45:00	3	0	3453	322	14	4	0	0	26	2	0	0	0	0	54	4	2	0	0	0
17:00:00	3	0	3782	329	16	2	0	0	27	1	0	0	0	0	58	4	2	0	0	0
17:15:00	3	0	4100	318	19	3	0	0	28	1	0	0	0	0	60	2	2	0	0	0
17:30:00	4	1	4423	323	22	3	0	0	29	1	0	0	0	0	64	4	2	0	0	0
17:45:00	4	0	4653	230	24	2	0	0	30	1	0	0	0	0	66	2	2	0	0	0
18:00:00	6	2	4914	261	24	0	0	0	31	1	0	0	0	0	71	5	2	0	0	0
18:15:00	8	2	5152	238	25	1	0	0	33	2	0	0	0	0	73	2	2	0	0	0
18:30:00	9	1	5417	265	28	3	0	0	35	2	0	0	0	0	75	2	2	0	0	0
18:45:00	9	0	5672	255	31	3	0	0	36	1	0	0	0	0	76	1	2	0	0	0
19:00:00	10	1	5902	230	34	3	0	0	36	0	0	0	0	0	77	1	2	0	0	0
19:15:00	10	0	5902	0	34	0	0	0	36	0	0	0	0	0	77	0	2	0	0	0
19:15:15	10	0	5902	0	34	0	0	0	36	0	0	0	0	0	77	0	2	0	0	0

Count Date: 20-Apr-22 Site #: 2206300002

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:30:00	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:45:00	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:00:00	3	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:15:00	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:30:00	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
8:45:00	3	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	1	1	2	0
9:00:00	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0
9:15:00	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0
16:00:00	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0
16:15:00	4	1	0	0	3	1	0	0	0	0	0	0	0	0	0	0	1	0	2	0
16:30:00	4	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0
16:45:00	6	2	0	0	4	1	0	0	0	0	0	0	0	0	0	0	1	0	2	0
17:00:00	6	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	1	0	4	2
17:15:00	6	0	0	0	5	1	0	0	0	0	0	0	0	0	0	0	1	0	4	0
17:30:00	6	0	0	0	6	1	0	0	0	0	0	0	0	0	0	0	1	0	6	2
17:45:00	6	0	0	0	7	1	0	0	0	0	0	0	0	0	0	0	1	0	6	0
18:00:00	7	1	0	0	8	1	0	0	0	0	0	0	0	0	0	0	1	0	7	1
18:15:00	7	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	1	0	8	1
18:30:00	8	1	0	0	11	3	0	0	0	0	0	0	0	0	0	0	1	0	8	0
18:45:00	8	0	0	0	12	1	0	0	0	0	0	0	0	0	0	0	1	0	9	1
19:00:00	8	0	0	0	14	2	0	0	0	0	0	0	0	0	0	0	1	0	9	0
19:15:00	8	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	1	0	9	0
19:15:15	8	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	1	0	9	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Count Date: 20-Apr-22 Site #: 2206300002

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	104	104	0	0	0	0	1	1	0	0	0	0	1	1	0	0	0	0
7:30:00	1	1	267	163	0	0	0	0	3	2	0	0	0	0	5	4	0	0	0	0
7:45:00	1	0	500	233	0	0	0	0	3	0	0	0	0	0	15	10	0	0	0	0
8:00:00	1	0	778	278	0	0	0	0	7	4	0	0	0	0	23	8	0	0	0	0
8:15:00	2	1	1029	251	0	0	0	0	9	2	0	0	0	0	29	6	0	0	0	0
8:30:00	2	0	1275	246	0	0	0	0	12	3	0	0	0	0	35	6	0	0	0	0
8:45:00	2	0	1535	260	0	0	0	0	18	6	0	0	0	0	43	8	0	0	0	0
9:00:00	3	1	1793	258	0	0	0	0	20	2	0	0	0	0	50	7	0	0	0	0
9:15:00	3	0	1793	0	0	0	0	0	20	0	0	0	0	0	50	0	0	0	0	0
16:00:00	3	0	1793	0	0	0	0	0	20	0	0	0	0	0	50	0	0	0	0	0
16:15:00	3	0	2246	453	0	0	0	0	24	4	0	0	0	0	52	2	0	0	0	0
16:30:00	3	0	2626	380	0	0	0	0	28	4	0	0	0	0	57	5	0	0	0	0
16:45:00	4	1	3048	422	1	1	0	0	29	1	0	0	0	0	62	5	0	0	0	0
17:00:00	4	0	3410	362	1	0	0	0	29	0	0	0	0	0	65	3	0	0	0	0
17:15:00	4	0	3811	401	1	0	0	0	30	1	0	0	0	0	67	2	0	0	0	0
17:30:00	4	0	4164	353	3	2	0	0	32	2	0	0	0	0	69	2	0	0	0	0
17:45:00	4	0	4461	297	4	1	0	0	35	3	0	0	0	0	72	3	0	0	0	0
18:00:00	4	0	4729	268	4	0	0	0	37	2	0	0	0	0	74	2	0	0	0	0
18:15:00	4	0	4946	217	4	0	0	0	39	2	0	0	0	0	76	2	0	0	0	0
18:30:00	4	0	5178	232	4	0	0	0	40	1	0	0	0	0	79	3	0	0	0	0
18:45:00	4	0	5399	221	4	0	0	0	42	2	0	0	0	0	82	3	0	0	1	1
19:00:00	5	1	5605	206	4	0	0	0	45	3	0	0	0	0	83	1	0	0	1	0
19:15:00	5	0	5605	0	4	0	0	0	45	0	0	0	0	0	83	0	0	0	1	0
19:15:15	5	0	5605	0	4	0	0	0	45	0	0	0	0	0	83	0	0	0	1	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Count Date: 20-Apr-22 Site #: 2206300002

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	1	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	3	2	0	0	6	4	0	0	0	0	0	0	0	0	0	0	0	0	1	1
8:15:00	3	0	0	0	8	2	0	0	0	0	0	0	0	0	0	0	0	0	2	1
8:30:00	4	1	0	0	9	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0
8:45:00	4	0	0	0	10	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0
9:00:00	4	0	0	0	12	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0
9:15:00	4	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
16:00:00	4	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
16:15:00	4	0	0	0	14	2	0	0	0	0	0	0	0	0	0	0	0	0	3	1
16:30:00	6	2	0	0	15	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0
16:45:00	10	4	0	0	17	2	0	0	0	0	0	0	0	0	0	0	0	0	3	0
17:00:00	12	2	0	0	18	1	0	0	0	0	0	0	0	0	0	0	0	0	5	2
17:15:00	12	0	0	0	19	1	0	0	0	0	0	0	0	0	0	0	0	0	5	0
17:30:00	13	1	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	6	1
17:45:00	14	1	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	7	1
18:00:00	14	0	0	0	20	1	0	0	0	0	0	0	0	0	0	0	0	0	8	1
18:15:00	15	1	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0
18:30:00	16	1	0	0	21	1	0	0	0	0	0	0	0	0	0	0	0	0	9	1
18:45:00	19	3	0	0	23	2	0	0	0	0	0	0	0	0	0	0	0	0	9	0
19:00:00	22	3	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	11	2
19:15:00	22	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0
19:15:15	22	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:45:00
To: 8:45:00

Municipality: Sudbury
Site #: 2206300003
Intersection: Paris St & Facer St
TFR File #: 1
Count date: 20-Apr-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Paris St runs N/S

North Leg Total: 2477
North Entering: 1408
North Peds: 1
Peds Cross: ⋈

Heavys	18	1	19
Trucks	12	0	12
Cars	1377	0	1377
Totals	1407	1	

Heavys	28
Trucks	15
Cars	1026
Totals	1069

East Leg Total: 4
East Entering: 2
East Peds: 0
Peds Cross: ⧗

Paris St

Cars	Trucks	Heavys	Totals
0	0	0	0
2	0	0	2
2	0	0	

N
W E
S

Facer St

Cars	Trucks	Heavys	Totals
1	0	1	2

Paris St

Cars	1379
Trucks	12
Heavys	18
Totals	1409

Cars	1026	1	1027
Trucks	15	0	15
Heavys	28	0	28
Totals	1069	1	

Peds Cross: ⋈
South Peds: 0
South Entering: 1070
South Leg Total: 2479

Comments

Afternoon Peak Diagram

Specified Period		One Hour Peak	
From:	16:00:00	**From:**	16:00:00
To:	19:00:00	**To:**	17:00:00

Municipality: Sudbury
Site #: 2206300003
Intersection: Paris St & Facer St
TFR File #: 1
Count date: 20-Apr-22

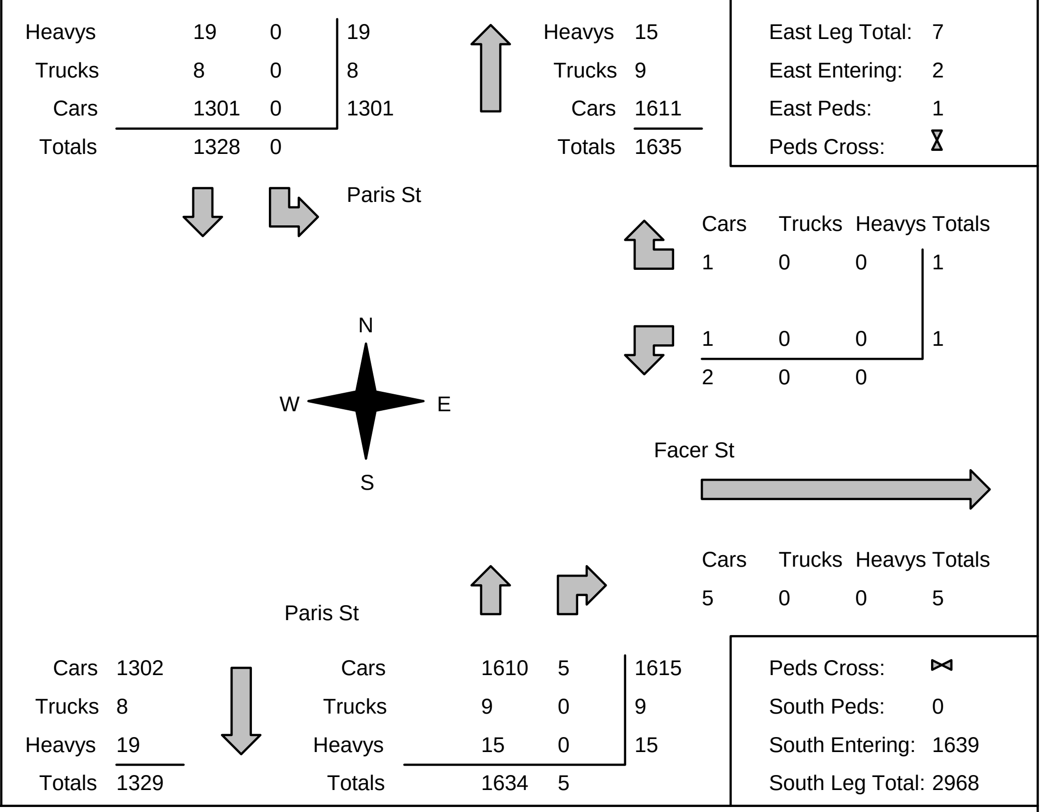
Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Paris St runs N/S

North Leg Total: 2963
North Entering: 1328
North Peds: 0
Peds Cross: ⋈



Heavys	19	0	19
Trucks	8	0	8
Cars	1301	0	1301
Totals	1328	0	

Heavys	15
Trucks	9
Cars	1611
Totals	1635

East Leg Total: 7
East Entering: 2
East Peds: 1
Peds Cross: ⧗

Cars	Trucks	Heavys	Totals
1	0	0	1
1	0	0	1
2	0	0	

Cars	Trucks	Heavys	Totals
5	0	0	5

Cars	1302
Trucks	8
Heavys	19
Totals	1329

Cars	1610	5	1615
Trucks	9	0	9
Heavys	15	0	15
Totals	1634	5	

Peds Cross: ⋈
South Peds: 0
South Entering: 1639
South Leg Total: 2968

Comments

Total Count Diagram

Municipality: Sudbury
Site #: 2206300003
Intersection: Paris St & Facer St
TFR File #: 1
Count date: 20-Apr-22

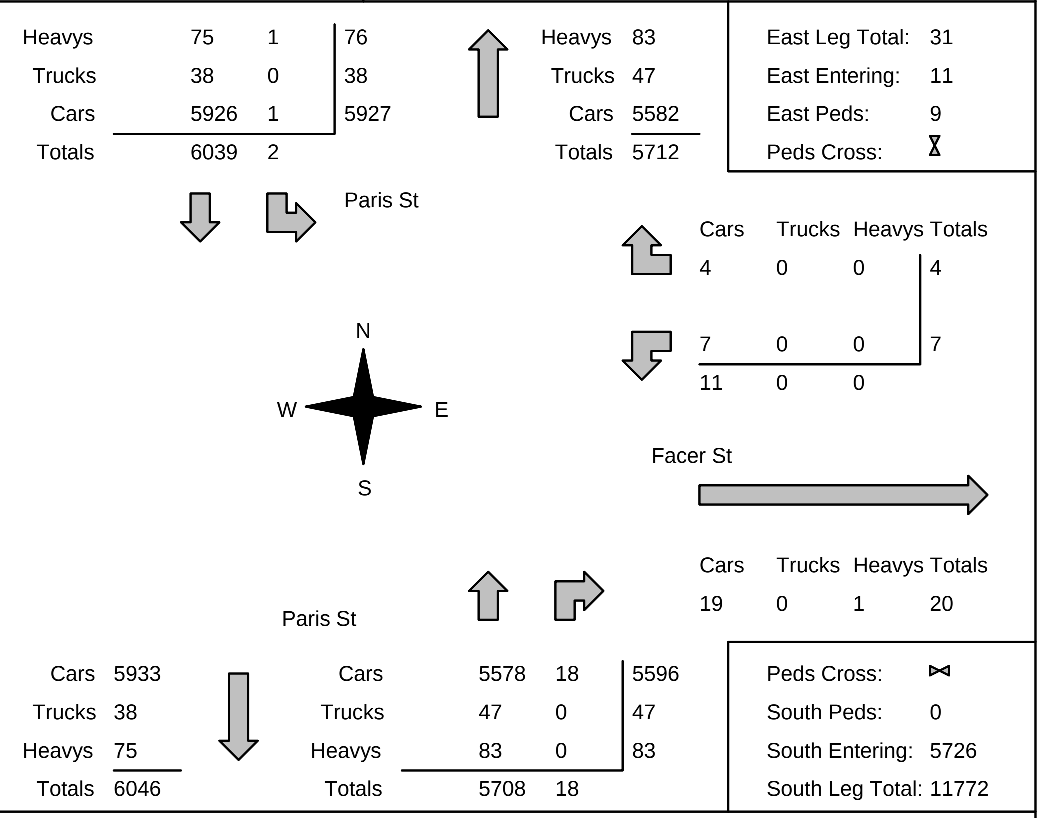
Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Paris St runs N/S

North Leg Total: 11753
North Entering: 6041
North Peds: 1
Peds Cross: ⋈



Heavys	75	1	76
Trucks	38	0	38
Cars	5926	1	5927
Totals	6039	2	

Heavys	83
Trucks	47
Cars	5582
Totals	5712

East Leg Total: 31
East Entering: 11
East Peds: 9
Peds Cross: ⧗

Cars	Trucks	Heavys	Totals
4	0	0	4
7	0	0	7
11	0	0	

Cars	Trucks	Heavys	Totals
19	0	1	20

Cars	5933
Trucks	38
Heavys	75
Totals	6046

Cars	5578	18	5596
Trucks	47	0	47
Heavys	83	0	83
Totals	5708	18	

Peds Cross: ⋈
South Peds: 0
South Entering: 5726
South Leg Total: 11772

Comments

Traffic Count Summary

Intersection: Paris St & Facer St | **Count Date:** 20-Apr-22 | **Municipality:** Sudbury

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*7:00:00*	*0*	*0*	*0*	*0*	*0*
8:00:00	*0*	*1215*	*0*	*1215*	*0*	*2022*	*8:00:00*	*0*	*807*	*0*	*807*	*0*
9:00:00	*2*	*1341*	*0*	*1343*	*1*	*2391*	*9:00:00*	*0*	*1047*	*1*	*1048*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*16:00:00*	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*1328*	*0*	*1328*	*0*	*2967*	*17:00:00*	*0*	*1634*	*5*	*1639*	*0*
18:00:00	*0*	*1148*	*0*	*1148*	*0*	*2484*	*18:00:00*	*0*	*1331*	*5*	*1336*	*0*
19:00:00	*0*	*1007*	*0*	*1007*	*0*	*1903*	*19:00:00*	*0*	*889*	*7*	*896*	*0*
Totals:	2	6039	0	6041	1	11767	S Totals:	0	5708	18	5726	0

East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*7:00:00*	*0*	*0*	*0*	*0*	*0*
8:00:00	*1*	*0*	*0*	*1*	*2*	*1*	*8:00:00*	*0*	*0*	*0*	*0*	*0*
9:00:00	*3*	*0*	*0*	*3*	*0*	*3*	*9:00:00*	*0*	*0*	*0*	*0*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*16:00:00*	*0*	*0*	*0*	*0*	*0*
17:00:00	*1*	*0*	*1*	*2*	*1*	*2*	*17:00:00*	*0*	*0*	*0*	*0*	*0*
18:00:00	*0*	*0*	*1*	*1*	*3*	*1*	*18:00:00*	*0*	*0*	*0*	*0*	*0*
19:00:00	*2*	*0*	*2*	*4*	*3*	*4*	*19:00:00*	*0*	*0*	*0*	*0*	*0*
Totals:	7	0	4	11	9	11	W Totals:	0	0	0	0	0

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*19:00*	*0:00*
Crossing Values:	*0*	*1*	*4*	*0*	*1*	*0*	*2*	*0*

Count Date: 20-Apr-22   Site #: 2206300003

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	244	244	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0
7:30:00	0	0	519	275	0	0	0	0	3	3	0	0	0	0	11	7	0	0	0	0
7:45:00	0	0	797	278	0	0	0	0	3	0	0	0	0	0	15	4	0	0	0	0
8:00:00	0	0	1190	393	0	0	0	0	3	0	0	0	0	0	22	7	0	0	0	0
8:15:00	0	0	1529	339	0	0	0	0	8	5	0	0	0	0	28	6	0	0	1	1
8:30:00	0	0	1860	331	0	0	0	0	11	3	0	0	1	1	30	2	0	0	1	0
8:45:00	0	0	2174	314	0	0	0	0	15	4	0	0	1	0	33	3	0	0	1	0
9:00:00	1	1	2499	325	0	0	0	0	20	5	0	0	1	0	37	4	0	0	1	0
9:15:00	1	0	2499	0	0	0	0	0	20	0	0	0	1	0	37	0	0	0	1	0
16:00:00	1	0	2499	0	0	0	0	0	20	0	0	0	1	0	37	0	0	0	1	0
16:15:00	1	0	2807	308	0	0	0	0	23	3	0	0	1	0	45	8	0	0	1	0
16:30:00	1	0	3147	340	0	0	0	0	25	2	0	0	1	0	48	3	0	0	1	0
16:45:00	1	0	3473	326	0	0	0	0	27	2	0	0	1	0	52	4	0	0	1	0
17:00:00	1	0	3800	327	0	0	0	0	28	1	0	0	1	0	56	4	0	0	1	0
17:15:00	1	0	4118	318	0	0	0	0	29	1	0	0	1	0	58	2	0	0	1	0
17:30:00	1	0	4439	321	0	0	0	0	30	1	0	0	1	0	62	4	0	0	1	0
17:45:00	1	0	4672	233	0	0	0	0	31	1	0	0	1	0	64	2	0	0	1	0
18:00:00	1	0	4930	258	0	0	0	0	33	2	0	0	1	0	69	5	0	0	1	0
18:15:00	1	0	5168	238	0	0	0	0	35	2	0	0	1	0	71	2	0	0	1	0
18:30:00	1	0	5437	269	0	0	0	0	37	2	0	0	1	0	73	2	0	0	1	0
18:45:00	1	0	5695	258	0	0	0	0	38	1	0	0	1	0	74	1	0	0	1	0
19:00:00	1	0	5926	231	0	0	0	0	38	0	0	0	1	0	75	1	0	0	1	0
19:15:00	1	0	5926	0	0	0	0	0	38	0	0	0	1	0	75	0	0	0	1	0
19:15:15	1	0	5926	0	0	0	0	0	38	0	0	0	1	0	75	0	0	0	1	0

Count Date: 20-Apr-22 Site #: 2206300003

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
7:45:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
8:00:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
8:15:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
8:30:00	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
8:45:00	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
9:00:00	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
9:15:00	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
16:00:00	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
16:15:00	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
16:30:00	5	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0
16:45:00	5	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
17:00:00	5	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1
17:15:00	5	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
17:30:00	5	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	5	2
17:45:00	5	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
18:00:00	5	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	6	1
18:15:00	5	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	8	2
18:30:00	5	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	8	0
18:45:00	7	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	9	1
19:00:00	7	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	9	0
19:15:00	7	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0
19:15:15	7	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Count Date: 20-Apr-22 Site #: 2206300003

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	102	102	0	0	0	0	1	1	0	0	0	0	1	1	0	0	0	0
7:30:00	0	0	266	164	0	0	0	0	4	3	0	0	0	0	5	4	0	0	0	0
7:45:00	0	0	500	234	0	0	0	0	4	0	0	0	0	0	15	10	0	0	0	0
8:00:00	0	0	776	276	0	0	0	0	8	4	0	0	0	0	23	8	0	0	0	0
8:15:00	0	0	1027	251	0	0	0	0	10	2	0	0	0	0	29	6	0	0	0	0
8:30:00	0	0	1267	240	1	1	0	0	13	3	0	0	0	0	35	6	0	0	0	0
8:45:00	0	0	1526	259	1	0	0	0	19	6	0	0	0	0	43	8	0	0	0	0
9:00:00	0	0	1783	257	1	0	0	0	21	2	0	0	0	0	50	7	0	0	0	0
9:15:00	0	0	1783	0	1	0	0	0	21	0	0	0	0	0	50	0	0	0	0	0
16:00:00	0	0	1783	0	1	0	0	0	21	0	0	0	0	0	50	0	0	0	0	0
16:15:00	0	0	2239	456	1	0	0	0	25	4	0	0	0	0	52	2	0	0	0	0
16:30:00	0	0	2614	375	2	1	0	0	28	3	0	0	0	0	57	5	0	0	0	0
16:45:00	0	0	3035	421	5	3	0	0	29	1	0	0	0	0	62	5	0	0	0	0
17:00:00	0	0	3393	358	6	1	0	0	30	1	0	0	0	0	65	3	0	0	0	0
17:15:00	0	0	3791	398	7	1	0	0	31	1	0	0	0	0	67	2	0	0	0	0
17:30:00	0	0	4145	354	8	1	0	0	33	2	0	0	0	0	69	2	0	0	0	0
17:45:00	0	0	4441	296	10	2	0	0	36	3	0	0	0	0	72	3	0	0	0	0
18:00:00	0	0	4707	266	11	1	0	0	38	2	0	0	0	0	74	2	0	0	0	0
18:15:00	0	0	4923	216	12	1	0	0	40	2	0	0	0	0	76	2	0	0	0	0
18:30:00	0	0	5152	229	13	1	0	0	41	1	0	0	0	0	79	3	0	0	0	0
18:45:00	0	0	5373	221	15	2	0	0	44	3	0	0	0	0	82	3	0	0	0	0
19:00:00	0	0	5578	205	18	3	0	0	47	3	0	0	0	0	83	1	0	0	0	0
19:15:00	0	0	5578	0	18	0	0	0	47	0	0	0	0	0	83	0	0	0	0	0
19:15:15	0	0	5578	0	18	0	0	0	47	0	0	0	0	0	83	0	0	0	0	0

Count Date: 20-Apr-22 Site #: 2206300003

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

Municipality: Sudbury
Site #: 2206300005
Intersection: Facer St & Bell Park Rd
TFR File #: 1
Count date: 20-Apr-22

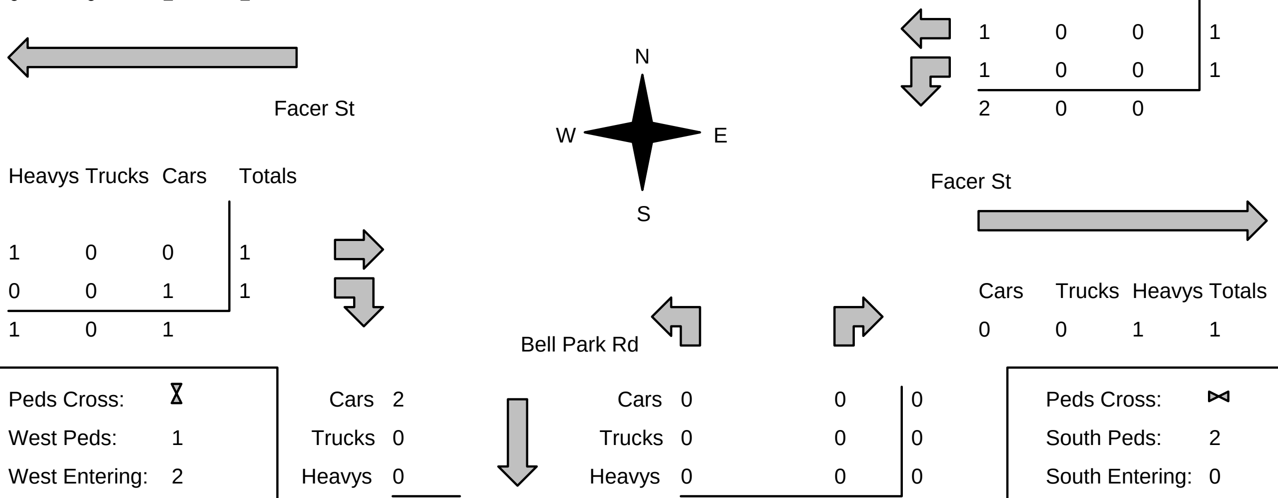
Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Facer St runs W/E

East Leg Total: 3
East Entering: 2
East Peds: 2
Peds Cross: ⧗



Heavys	Trucks	Cars	Totals
0	0	1	1

Heavys	Trucks	Cars	Totals
1	0	0	1
0	0	1	1
1	0	1	

Cars	Trucks	Heavys	Totals
1	0	0	1
1	0	0	1
2	0	0	

Cars	Trucks	Heavys	Totals
0	0	1	1

Peds Cross: ⧗
West Peds: 1
West Entering: 2
West Leg Total: 3

Cars	2
Trucks	0
Heavys	0
Totals	2

Cars	0	0	0
Trucks	0	0	0
Heavys	0	0	0
Totals	0	0	

Peds Cross: ⋈
South Peds: 2
South Entering: 0
South Leg Total: 2

Comments

Afternoon Peak Diagram

Specified Period		**One Hour Peak**	
From:	16:00:00	**From:**	16:15:00
To:	19:00:00	**To:**	17:15:00

Municipality: Sudbury
Site #: 2206300005
Intersection: Facer St & Bell Park Rd
TFR File #: 1
Count date: 20-Apr-22

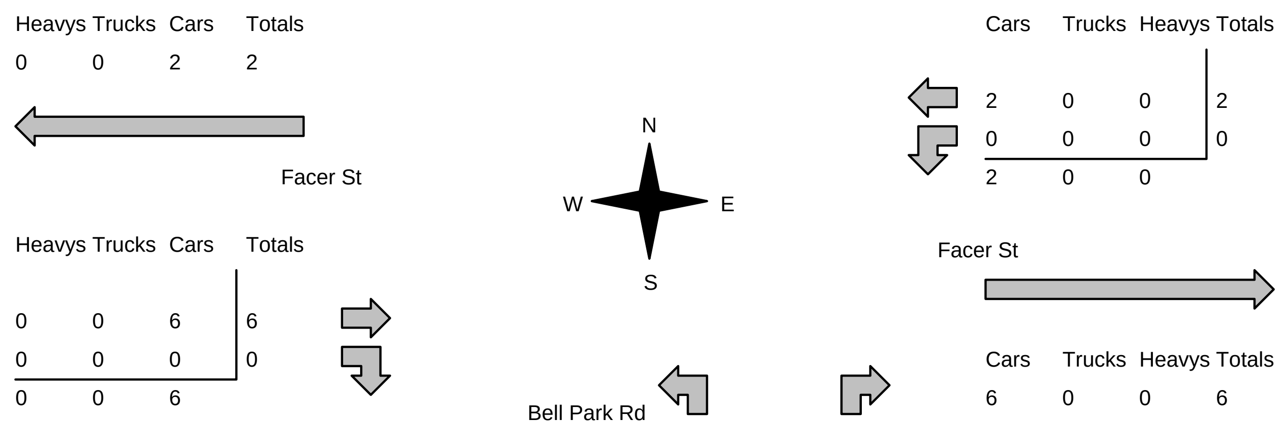
Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Facer St runs W/E

East Leg Total: 8
East Entering: 2
East Peds: 2
Peds Cross: ⧗



Heavys	Trucks	Cars	Totals
0	0	2	2

Cars	Trucks	Heavys	Totals
2	0	0	2
0	0	0	0
2	0	0	

Heavys	Trucks	Cars	Totals
0	0	6	6
0	0	0	0
0	0	6	

Cars	Trucks	Heavys	Totals
6	0	0	6

Peds Cross: ⧗
West Peds: 1
West Entering: 6
West Leg Total: 8

Cars	0
Trucks	0
Heavys	0
Totals	0

Cars	0	0	0
Trucks	0	0	0
Heavys	0	0	0
Totals	0	0	

Peds Cross: ⋈
South Peds: 0
South Entering: 0
South Leg Total: 0

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Total Count Diagram

Municipality: Sudbury
Site #: 2206300005
Intersection: Facer St & Bell Park Rd
TFR File #: 1
Count date: 20-Apr-22

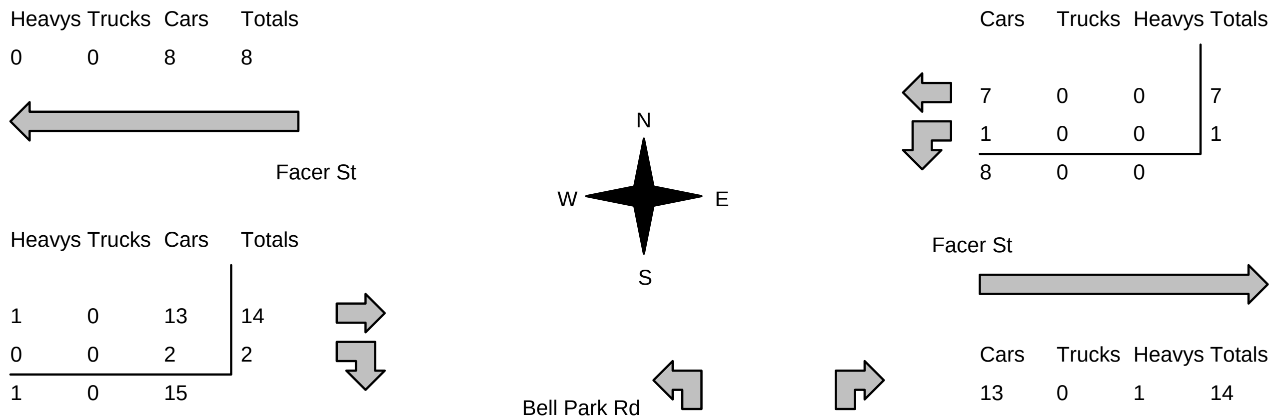
Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Facer St runs W/E

East Leg Total: 22
East Entering: 8
East Peds: 6
Peds Cross: ⧗



Heavys	Trucks	Cars	Totals
0	0	8	8

Facer St

Cars	Trucks	Heavys	Totals
7	0	0	7
1	0	0	1
8	0	0	

Heavys	Trucks	Cars	Totals
1	0	13	14
0	0	2	2
1	0	15	

Facer St

Cars	Trucks	Heavys	Totals
13	0	1	14

Bell Park Rd

Peds Cross: ⧗
West Peds: 3
West Entering: 16
West Leg Total: 24

Cars	3
Trucks	0
Heavys	0
Totals	3

Cars	1	0	1
Trucks	0	0	0
Heavys	0	0	0
Totals	1	0	

Peds Cross: ⋈
South Peds: 5
South Entering: 1
South Leg Total: 4

Comments

Traffic Count Summary

Intersection: Facer St & Bell Park Rd | **Count Date:** 20-Apr-22 | **Municipality:** Sudbury

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	0	0	0	0	0	0	8:00:00	0	0	0	0	0
9:00:00	0	0	0	0	0	0	9:00:00	0	0	0	0	2
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	0	0	0	0	0	0	17:00:00	0	0	0	0	0
18:00:00	0	0	0	0	0	0	18:00:00	0	0	0	0	0
19:00:00	0	0	0	0	0	1	19:00:00	1	0	0	1	3
Totals:	0	0	0	0	0	1	S Totals:	1	0	0	1	5

East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	0	1	0	1	0	1	8:00:00	0	0	0	0	0
9:00:00	1	1	0	2	2	4	9:00:00	0	1	1	2	1
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	0	2	0	2	2	7	17:00:00	0	5	0	5	1
18:00:00	0	1	0	1	1	6	18:00:00	0	4	1	5	0
19:00:00	0	2	0	2	1	6	19:00:00	0	4	0	4	1
Totals:	1	7	0	8	6	24	W Totals:	0	14	2	16	3

Calculated Values for Traffic Crossing Major Street

Hours Ending:	7:00	8:00	9:00	16:00	17:00	18:00	19:00	0:00
Crossing Values:	0	0	3	0	3	1	3	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Count Date: 20-Apr-22 Site #: 2206300005

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Count Date: 20-Apr-22 Site #: 2206300005

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
8:45:00	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
9:00:00	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
9:15:00	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
16:00:00	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
16:15:00	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
16:30:00	1	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	2
16:45:00	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
17:00:00	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
17:15:00	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
17:30:00	1	0	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
17:45:00	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1
18:00:00	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
18:15:00	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
18:30:00	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
18:45:00	1	0	7	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	1
19:00:00	1	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
19:15:00	1	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
19:15:15	1	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0

Count Date: 20-Apr-22 Site #: 2206300005

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
8:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
9:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
9:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
16:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
16:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
16:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
16:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
17:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
17:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
18:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
18:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
18:30:00	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1
18:45:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	2
19:00:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
19:15:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
19:15:15	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0

Count Date: 20-Apr-22 **Site #: 2206300005**

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
8:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0
9:00:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0
9:15:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
16:00:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
16:15:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
16:30:00	0	0	1	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
16:45:00	0	0	4	3	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
17:00:00	0	0	5	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2	1
17:15:00	0	0	6	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
17:30:00	0	0	7	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
17:45:00	0	0	9	2	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
18:00:00	0	0	9	0	2	1	0	0	0	0	0	0	0	0	1	0	0	0	2	0
18:15:00	0	0	10	1	2	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
18:30:00	0	0	10	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	3	1
18:45:00	0	0	11	1	2	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0
19:00:00	0	0	13	2	2	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0
19:15:00	0	0	13	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0
19:15:15	0	0	13	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0

Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
Sudbury, Ontario, Canada P3A 5P3
705-674-4455 David.Knutson@greatersudbury.ca

Count Name: Paris Street @ Boland Avenue
Site Code:
Start Date: 08/09/2021
Page No: 1

Turning Movement Data

Start Time	Paris Street						Westbound Approach						Paris Street						Boland Ave						Int. Total
	Southbound						Westbound						Northbound						Eastbound						
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
11:00 AM	4	243	3	0	0	250	0	0	4	0	1	4	5	284	1	0	0	290	3	0	5	0	1	8	552
11:15 AM	1	243	2	0	0	246	6	1	1	0	2	8	1	252	2	0	0	255	5	0	5	0	0	10	519
11:30 AM	1	279	0	0	0	280	2	0	6	0	1	8	2	303	2	0	0	307	2	0	7	0	0	9	604
11:45 AM	7	294	0	0	0	301	1	0	1	0	2	2	1	326	4	0	0	331	5	0	9	0	0	14	648
Hourly Total	13	1059	5	0	0	1077	9	1	12	0	6	22	9	1165	9	0	0	1183	15	0	26	0	1	41	2323
12:00 PM	4	277	2	0	1	283	1	0	0	0	0	1	2	286	3	0	0	291	8	0	5	0	3	13	588
12:15 PM	4	283	0	0	0	287	3	0	1	0	3	4	2	263	3	0	0	268	2	0	3	0	0	5	564
12:30 PM	5	319	1	0	1	325	1	0	0	0	1	1	3	338	4	0	0	345	4	0	9	0	2	13	684
12:45 PM	4	300	2	0	2	306	3	0	4	0	0	7	2	275	4	0	0	281	2	0	6	0	1	8	602
Hourly Total	17	1179	5	0	4	1201	8	0	5	0	4	13	9	1162	14	0	0	1185	16	0	23	0	6	39	2438
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	6	306	0	0	0	312	1	0	0	0	1	1	0	375	4	0	1	379	2	0	10	0	0	12	704
3:15 PM	7	330	1	0	1	338	0	0	0	0	5	0	2	337	3	0	0	342	1	0	7	0	1	8	688
3:30 PM	8	308	4	0	0	320	3	0	1	0	1	4	0	365	1	0	0	366	4	0	8	0	0	12	702
3:45 PM	7	304	1	0	0	312	2	0	1	0	0	3	1	391	2	0	0	394	5	0	8	0	0	13	722
Hourly Total	28	1248	6	0	1	1282	6	0	2	0	7	8	3	1468	10	0	1	1481	12	0	33	0	1	45	2816
4:00 PM	5	333	1	0	0	339	2	1	3	0	0	6	2	448	6	0	0	456	2	0	5	0	1	7	808
4:15 PM	9	330	1	0	0	340	3	0	2	0	0	5	1	375	4	0	0	380	5	0	6	0	1	11	736
4:30 PM	6	319	1	0	2	326	3	1	0	0	2	4	3	363	9	0	0	375	2	0	4	0	2	6	711
4:45 PM	9	300	1	0	0	310	1	0	0	0	1	1	1	313	5	0	0	319	6	0	11	0	2	17	647
Hourly Total	29	1282	4	0	2	1315	9	2	5	0	3	16	7	1499	24	0	0	1530	15	0	26	0	6	41	2902
5:00 PM	9	299	2	0	0	310	2	0	0	0	0	2	1	362	7	0	0	370	5	0	6	0	0	11	693
5:15 PM	5	282	1	0	0	288	2	0	0	0	1	2	0	269	2	0	0	271	3	0	2	0	1	5	566
5:30 PM	11	214	1	0	4	226	3	0	0	0	0	3	3	289	4	0	0	296	3	1	6	0	6	10	535
5:45 PM	8	251	0	0	0	259	0	1	0	0	0	1	0	279	4	0	0	283	6	0	5	0	0	11	554
Hourly Total	33	1046	4	0	4	1083	7	1	0	0	1	8	4	1199	17	0	0	1220	17	1	19	0	7	37	2348
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM	0	79	2	0	0	81	0	0	0	0	0	0	2	45	0	0	0	47	1	0	2	0	0	3	131
6:15 AM	0	93	0	0	0	93	0	0	0	0	1	0	0	77	0	0	0	77	1	0	0	0	0	1	171
6:30 AM	0	183	0	0	0	183	0	0	0	0	2	0	0	106	0	0	0	106	0	0	1	0	0	1	290
6:45 AM	0	232	1	0	0	233	2	0	0	0	2	2	0	118	0	0	0	118	3	0	0	0	0	3	356
Hourly Total	0	587	3	0	0	590	2	0	0	0	5	2	2	346	0	0	0	348	5	0	3	0	0	8	948
7:00 AM	1	276	1	0	0	278	0	0	1	0	1	1	0	135	0	0	0	135	0	0	1	0	1	1	415

7:15 AM	2	239	1	0	0	242	0	0	0	0	0	0	1	143	0	0	0	144	0	0	2	0	0	2	388
7:30 AM	2	316	0	0	0	318	0	0	0	0	1	0	0	234	0	0	0	234	0	0	4	0	0	4	556
7:45 AM	0	338	0	0	0	338	0	0	1	0	0	1	1	216	0	0	0	217	2	0	4	0	0	6	562
Hourly Total	5	1169	2	0	0	1176	0	0	2	0	2	2	2	728	0	0	0	730	2	0	11	0	1	13	1921
8:00 AM	3	273	0	0	0	276	0	0	0	0	0	0	0	207	1	0	0	208	3	0	3	0	0	6	490
8:15 AM	3	295	0	0	1	298	2	0	1	0	1	3	0	217	3	0	0	220	3	0	7	0	3	10	531
8:30 AM	3	278	0	0	1	281	0	0	0	0	0	0	0	224	4	0	0	228	5	0	12	0	1	17	526
8:45 AM	6	260	0	0	0	266	0	0	1	0	1	1	0	230	7	0	0	237	8	0	6	0	0	14	518
Hourly Total	15	1106	0	0	2	1121	2	0	2	0	2	4	0	878	15	0	0	893	19	0	28	0	4	47	2065
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	140	8676	29	0	13	8845	43	4	28	0	30	75	36	8445	89	0	1	8570	101	1	169	0	26	271	17761
Approach %	1.6	98.1	0.3	0.0	-	-	57.3	5.3	37.3	0.0	-	-	0.4	98.5	1.0	0.0	-	-	37.3	0.4	62.4	0.0	-	-	-
Total %	0.8	48.8	0.2	0.0	-	49.8	0.2	0.0	0.2	0.0	-	0.4	0.2	47.5	0.5	0.0	-	48.3	0.6	0.0	1.0	0.0	-	1.5	-
Lights	140	8489	29	0	-	8658	42	4	28	0	-	74	35	8261	87	0	-	8383	99	1	167	0	-	267	17382
% Lights	100.0	97.8	100.0	-	-	97.9	97.7	100.0	100.0	-	-	98.7	97.2	97.8	97.8	-	-	97.8	98.0	100.0	98.8	-	-	98.5	97.9
Mediums	0	162	0	0	-	162	0	0	0	0	-	0	0	157	1	0	-	158	2	0	2	0	-	4	324
% Mediums	0.0	1.9	0.0	-	-	1.8	0.0	0.0	0.0	-	-	0.0	0.0	1.9	1.1	-	-	1.8	2.0	0.0	1.2	-	-	1.5	1.8
Articulated Trucks	0	25	0	0	-	25	0	0	0	0	-	0	0	26	0	0	-	26	0	0	0	0	-	0	51
% Articulated Trucks	0.0	0.3	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.0	0.3	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.3
Bicycles on Road	0	0	0	0	-	0	1	0	0	0	-	1	1	1	1	0	-	3	0	0	0	0	-	0	4
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	2.3	0.0	0.0	-	-	1.3	2.8	0.0	1.1	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	13	-	-	-	-	-	0	-	-	-	-	-	6	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	43.3	-	-	-	-	-	0.0	-	-	-	-	-	23.1	-	-
Pedestrians	-	-	-	-	13	-	-	-	-	-	17	-	-	-	-	-	1	-	-	-	-	-	20	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	56.7	-	-	-	-	-	100.0	-	-	-	-	-	76.9	-	-

Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
Sudbury, Ontario, Canada P3A 5P3
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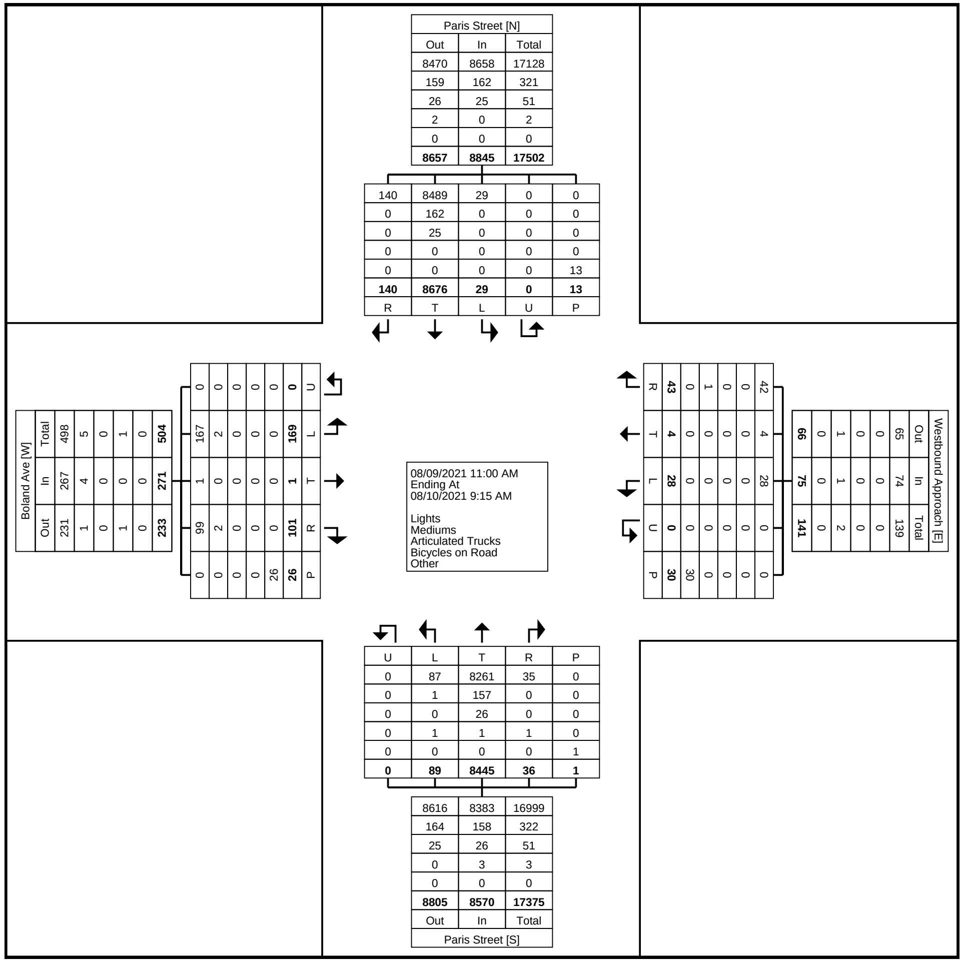
Count Name: Paris Street @ Boland Avenue
Site Code:
Start Date: 08/09/2021
Page No: 3



08/09/2021 11:00 AM
Ending At
08/10/2021 9:15 AM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

Paris Street [N]

Out	In	Total
8470	8658	17128
159	162	321
26	25	51
2	0	2
0	0	0
8657	**8845**	**17502**

R	T	L	U	P
140	8489	29	0	0
0	162	0	0	0
0	25	0	0	0
0	0	0	0	0
0	0	0	0	13
140	**8676**	**29**	**0**	**13**

Boland Ave [W]

Out	In	Total
231	267	498
1	4	5
0	0	0
1	0	1
0	0	0
233	**271**	**504**

U	L	T	R	P
0	167	1	99	0
0	2	0	2	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	26
0	**169**	**1**	**101**	**26**

Westbound Approach [E]

Out	In	Total
65	74	139
0	0	0
0	0	0
1	1	2
0	0	0
66	**75**	**141**

R	T	L	U	P
42	4	28	0	0
0	0	0	0	0
0	0	0	0	0
1	0	0	0	0
0	0	0	0	30
43	**4**	**28**	**0**	**30**

U	L	T	R	P
0	87	8261	35	0
0	1	157	0	0
0	0	26	0	0
0	1	1	1	0
0	0	0	0	1
0	**89**	**8445**	**36**	**1**

Out	In	Total
8616	8383	16999
164	158	322
25	26	51
0	3	3
0	0	0
8805	**8570**	**17375**

Paris Street [S]

Turning Movement Data Plot

Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
Sudbury, Ontario, Canada P3A 5P3
705-674-4455 David.Knutson@greatersudbury.ca

Count Name: Paris Street @ Boland Avenue
Site Code:
Start Date: 08/09/2021

Turning Movement Peak Hour Data (11:00 AM)

Start Time	Paris Street						Westbound Approach						Paris Street						Boland Ave						
	Southbound						Westbound						Northbound						Eastbound						
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
11:00 AM	4	243	3	0	0	250	0	0	4	0	1	4	5	284	1	0	0	290	3	0	5	0	1	8	552
11:15 AM	1	243	2	0	0	246	6	1	1	0	2	8	1	252	2	0	0	255	5	0	5	0	0	10	519
11:30 AM	1	279	0	0	0	280	2	0	6	0	1	8	2	303	2	0	0	307	2	0	7	0	0	9	604
11:45 AM	7	294	0	0	0	301	1	0	1	0	2	2	1	326	4	0	0	331	5	0	9	0	0	14	648
Total	13	1059	5	0	0	1077	9	1	12	0	6	22	9	1165	9	0	0	1183	15	0	26	0	1	41	2323
Approach %	1.2	98.3	0.5	0.0	-	-	40.9	4.5	54.5	0.0	-	-	0.8	98.5	0.8	0.0	-	-	36.6	0.0	63.4	0.0	-	-	-
Total %	0.6	45.6	0.2	0.0	-	46.4	0.4	0.0	0.5	0.0	-	0.9	0.4	50.2	0.4	0.0	-	50.9	0.6	0.0	1.1	0.0	-	1.8	-
PHF	0.464	0.901	0.417	0.000	-	0.895	0.375	0.250	0.500	0.000	-	0.688	0.450	0.893	0.563	0.000	-	0.894	0.750	0.000	0.722	0.000	-	0.732	0.896
Lights	13	1029	5	0	-	1047	9	1	12	0	-	22	8	1138	9	0	-	1155	15	0	26	0	-	41	2265
% Lights	100.0	97.2	100.0	-	-	97.2	100.0	100.0	100.0	-	-	100.0	88.9	97.7	100.0	-	-	97.6	100.0	-	100.0	-	-	100.0	97.5
Mediums	0	24	0	0	-	24	0	0	0	0	-	0	0	26	0	0	-	26	0	0	0	0	-	0	50
% Mediums	0.0	2.3	0.0	-	-	2.2	0.0	0.0	0.0	-	-	0.0	0.0	2.2	0.0	-	-	2.2	0.0	-	0.0	-	-	0.0	2.2
Articulated Trucks	0	6	0	0	-	6	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	7
% Articulated Trucks	0.0	0.6	0.0	-	-	0.6	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.0	-	0.0	-	-	0.0	0.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	11.1	0.0	0.0	-	-	0.1	0.0	-	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	66.7	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	33.3	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-

Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
Sudbury, Ontario, Canada P3A 5P3
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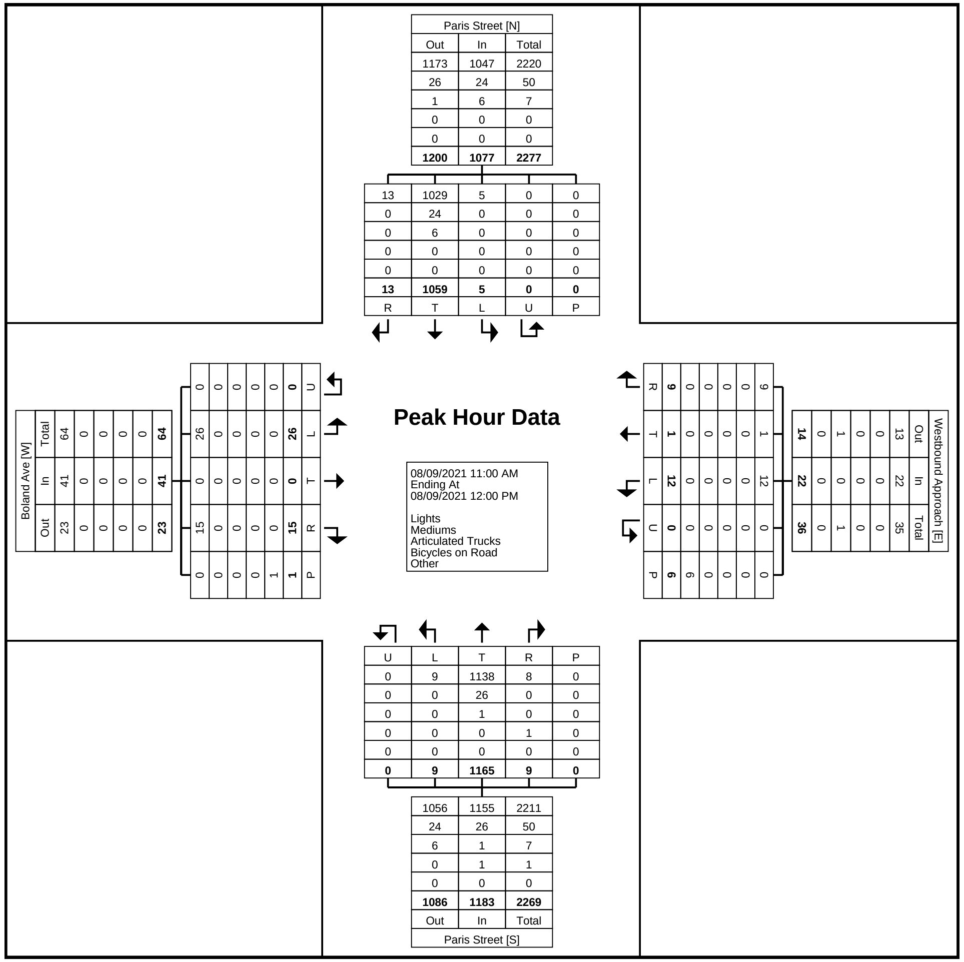
Count Name: Paris Street @ Boland Avenue
Site Code:
Start Date: 08/09/2021
Page No: 5



Peak Hour Data

08/09/2021 11:00 AM
Ending At
08/09/2021 12:00 PM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

Paris Street [N]

Out	In	Total
1173	1047	2220
26	24	50
1	6	7
0	0	0
0	0	0
1200	**1077**	**2277**

R	T	L	U	P
13	1029	5	0	0
0	24	0	0	0
0	6	0	0	0
0	0	0	0	0
0	0	0	0	0
13	**1059**	**5**	**0**	**0**

Boland Ave [W]

Out	In	Total
23	41	64
0	0	0
0	0	0
0	0	0
0	0	0
23	**41**	**64**

U	L	T	R	P
0	26	0	15	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	1
0	**26**	**0**	**15**	**1**

Westbound Approach [E]

Out	In	Total
13	22	35
0	0	0
0	0	0
1	0	1
0	0	0
14	**22**	**36**

R	T	L	U	P
9	1	12	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	6
9	**1**	**12**	**0**	**6**

U	L	T	R	P
0	9	1138	8	0
0	0	26	0	0
0	0	1	0	0
0	0	0	1	0
0	0	0	0	0
0	**9**	**1165**	**9**	**0**

Out	In	Total
1056	1155	2211
24	26	50
6	1	7
0	1	1
0	0	0
1086	**1183**	**2269**

Paris Street [S]

Turning Movement Peak Hour Data Plot (11:00 AM)

Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
Sudbury, Ontario, Canada P3A 5P3
705-674-4455 David.Knutson@greatersudbury.ca

Count Name: Paris Street @ Boland Avenue
Site Code:
Start Date: 08/09/2021
Page No: 6

Turning Movement Peak Hour Data (12:00 PM)

Start Time	Paris Street Southbound						Westbound Approach Westbound						Paris Street Northbound						Boland Ave Eastbound						
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
12:00 PM	4	277	2	0	1	283	1	0	0	0	0	1	2	286	3	0	0	291	8	0	5	0	3	13	588
12:15 PM	4	283	0	0	0	287	3	0	1	0	3	4	2	263	3	0	0	268	2	0	3	0	0	5	564
12:30 PM	5	319	1	0	1	325	1	0	0	0	1	1	3	338	4	0	0	345	4	0	9	0	2	13	684
12:45 PM	4	300	2	0	2	306	3	0	4	0	0	7	2	275	4	0	0	281	2	0	6	0	1	8	602
Total	17	1179	5	0	4	1201	8	0	5	0	4	13	9	1162	14	0	0	1185	16	0	23	0	6	39	2438
Approach %	1.4	98.2	0.4	0.0	-	-	61.5	0.0	38.5	0.0	-	-	0.8	98.1	1.2	0.0	-	-	41.0	0.0	59.0	0.0	-	-	-
Total %	0.7	48.4	0.2	0.0	-	49.3	0.3	0.0	0.2	0.0	-	0.5	0.4	47.7	0.6	0.0	-	48.6	0.7	0.0	0.9	0.0	-	1.6	-
PHF	0.850	0.924	0.625	0.000	-	0.924	0.667	0.000	0.313	0.000	-	0.464	0.750	0.859	0.875	0.000	-	0.859	0.500	0.000	0.639	0.000	-	0.750	0.891
Lights	17	1154	5	0	-	1176	8	0	5	0	-	13	9	1134	14	0	-	1157	16	0	23	0	-	39	2385
% Lights	100.0	97.9	100.0	-	-	97.9	100.0	-	100.0	-	-	100.0	100.0	97.6	100.0	-	-	97.6	100.0	-	100.0	-	-	100.0	97.8
Mediums	0	21	0	0	-	21	0	0	0	0	-	0	0	27	0	0	-	27	0	0	0	0	-	0	48
% Mediums	0.0	1.8	0.0	-	-	1.7	0.0	-	0.0	-	-	0.0	0.0	2.3	0.0	-	-	2.3	0.0	-	0.0	-	-	0.0	2.0
Articulated Trucks	0	4	0	0	-	4	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	5
% Articulated Trucks	0.0	0.3	0.0	-	-	0.3	0.0	-	0.0	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.0	-	0.0	-	-	0.0	0.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	75.0	-	-	-	-	-	-	-	-	-	-	-	16.7	-	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	25.0	-	-	-	-	-	-	-	-	-	-	-	83.3	-	-

Traffic and Transportation Engineering Services
1800 Frobisher Street
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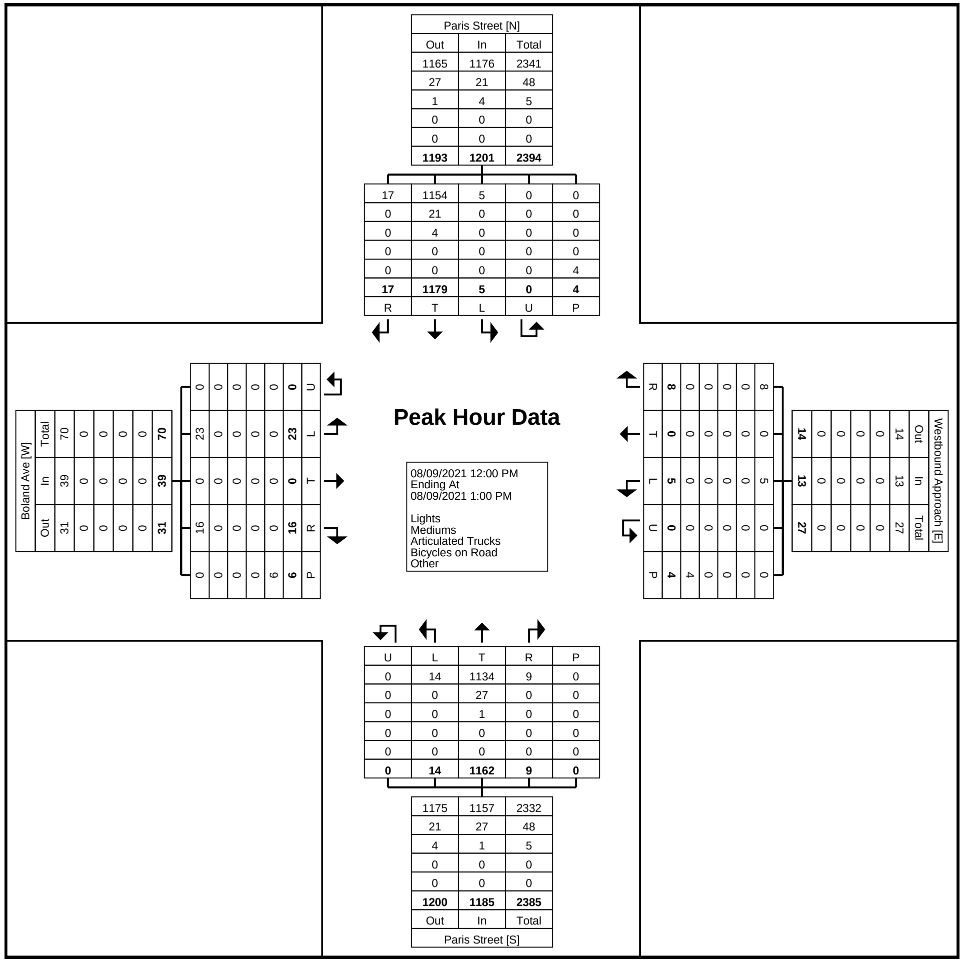
Count Name: Paris Street @ Boland Avenue
Site Code:
Start Date: 08/09/2021
Page No: 7



Peak Hour Data

08/09/2021 12:00 PM
Ending At
08/09/2021 1:00 PM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

Paris Street [N]

Out	In	Total
1165	1176	2341
27	21	48
1	4	5
0	0	0
0	0	0
1193	**1201**	**2394**

R	T	L	U	P
17	1154	5	0	0
0	21	0	0	0
0	4	0	0	0
0	0	0	0	0
0	0	0	0	4
17	**1179**	**5**	**0**	**4**

Boland Ave [W]

Out	In	Total
31	39	70
0	0	0
0	0	0
0	0	0
0	0	0
31	**39**	**70**

U	L	T	R	P
0	23	0	16	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	6
0	**23**	**0**	**16**	**6**

Westbound Approach [E]

Out	In	Total
14	13	27
0	0	0
0	0	0
0	0	0
0	0	0
14	**13**	**27**

R	T	L	U	P
8	0	5	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	4
8	**0**	**5**	**0**	**4**

U	L	T	R	P
0	14	1134	9	0
0	0	27	0	0
0	0	1	0	0
0	0	0	0	0
0	0	0	0	0
0	**14**	**1162**	**9**	**0**

Out	In	Total
1175	1157	2332
21	27	48
4	1	5
0	0	0
0	0	0
1200	**1185**	**2385**

Paris Street [S]

Turning Movement Peak Hour Data Plot (12:00 PM)

Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
Sudbury, Ontario, Canada P3A 5P3
705-674-4455 David.Knutson@greatersudbury.ca

Count Name: Paris Street @ Boland Avenue
Site Code:
Start Date: 08/09/2021
Page No: 8

Turning Movement Peak Hour Data (3:45 PM)

Start Time	Paris Street Southbound						Westbound Approach Westbound						Paris Street Northbound						Boland Ave Eastbound						
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
3:45 PM	7	304	1	0	0	312	2	0	1	0	0	3	1	391	2	0	0	394	5	0	8	0	0	13	722
4:00 PM	5	333	1	0	0	339	2	1	3	0	0	6	2	448	6	0	0	456	2	0	5	0	1	7	808
4:15 PM	9	330	1	0	0	340	3	0	2	0	0	5	1	375	4	0	0	380	5	0	6	0	1	11	736
4:30 PM	6	319	1	0	2	326	3	1	0	0	2	4	3	363	9	0	0	375	2	0	4	0	2	6	711
Total	27	1286	4	0	2	1317	10	2	6	0	2	18	7	1577	21	0	0	1605	14	0	23	0	4	37	2977
Approach %	2.1	97.6	0.3	0.0	-	-	55.6	11.1	33.3	0.0	-	-	0.4	98.3	1.3	0.0	-	-	37.8	0.0	62.2	0.0	-	-	-
Total %	0.9	43.2	0.1	0.0	-	44.2	0.3	0.1	0.2	0.0	-	0.6	0.2	53.0	0.7	0.0	-	53.9	0.5	0.0	0.8	0.0	-	1.2	-
PHF	0.750	0.965	1.000	0.000	-	0.968	0.833	0.500	0.500	0.000	-	0.750	0.583	0.880	0.583	0.000	-	0.880	0.700	0.000	0.719	0.000	-	0.712	0.921
Lights	27	1264	4	0	-	1295	10	2	6	0	-	18	7	1551	21	0	-	1579	12	0	22	0	-	34	2926
% Lights	100.0	98.3	100.0	-	-	98.3	100.0	100.0	100.0	-	-	100.0	100.0	98.4	100.0	-	-	98.4	85.7	-	95.7	-	-	91.9	98.3
Mediums	0	19	0	0	-	19	0	0	0	0	-	0	0	23	0	0	-	23	2	0	1	0	-	3	45
% Mediums	0.0	1.5	0.0	-	-	1.4	0.0	0.0	0.0	-	-	0.0	0.0	1.5	0.0	-	-	1.4	14.3	-	4.3	-	-	8.1	1.5
Articulated Trucks	0	3	0	0	-	3	0	0	0	0	-	0	0	3	0	0	-	3	0	0	0	0	-	0	6
% Articulated Trucks	0.0	0.2	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.2	0.0	-	0.0	-	-	0.0	0.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	50.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	50.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
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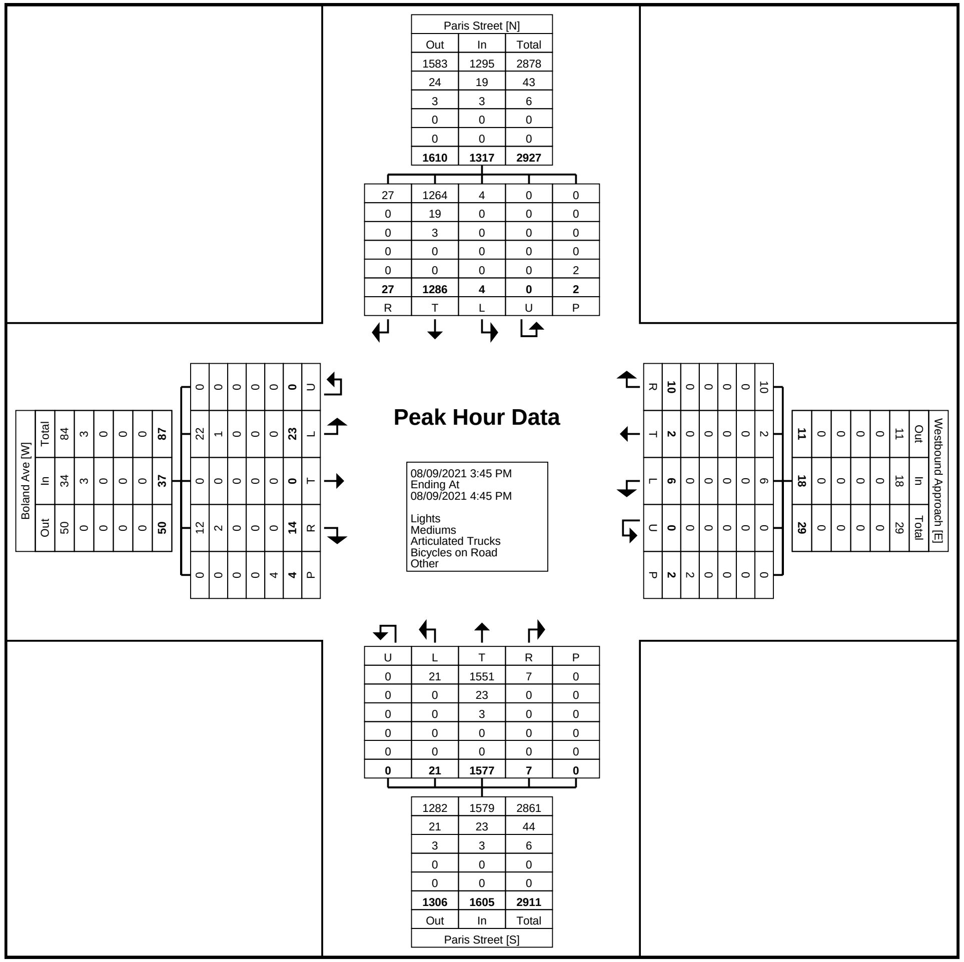
705-674-4455 David.Knutson@greatersudbury.ca

Count Name: Paris Street @ Boland Avenue
Site Code:
Start Date: 08/09/2021
Page No: 9



Paris Street [N]

Out	In	Total
1583	1295	2878
24	19	43
3	3	6
0	0	0
0	0	0
1610	**1317**	**2927**

R	T	L	U	P
27	1264	4	0	0
0	19	0	0	0
0	3	0	0	0
0	0	0	0	0
0	0	0	0	2
27	**1286**	**4**	**0**	**2**

Boland Ave [W]

Out	In	Total
50	34	84
0	3	3
0	0	0
0	0	0
0	0	0
50	**37**	**87**

U	L	T	R	P
0	22	0	12	0
0	1	0	2	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	4
0	**23**	**0**	**14**	**4**

Peak Hour Data

08/09/2021 3:45 PM
Ending At
08/09/2021 4:45 PM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

Westbound Approach [E]

Out	In	Total
11	18	29
0	0	0
0	0	0
0	0	0
0	0	0
11	**18**	**29**

R	T	L	U	P
10	2	6	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	2
10	**2**	**6**	**0**	**2**

U	L	T	R	P
0	21	1551	7	0
0	0	23	0	0
0	0	3	0	0
0	0	0	0	0
0	0	0	0	0
0	**21**	**1577**	**7**	**0**

Out	In	Total
1282	1579	2861
21	23	44
3	3	6
0	0	0
0	0	0
1306	**1605**	**2911**

Paris Street [S]

Turning Movement Peak Hour Data Plot (3:45 PM)

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Paris Street						Westbound Approach						Paris Street						Boland Ave						
	Southbound						Westbound						Northbound						Eastbound						
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
7:30 AM	2	316	0	0	0	318	0	0	0	0	1	0	0	234	0	0	0	234	0	0	4	0	0	4	556
7:45 AM	0	338	0	0	0	338	0	0	1	0	0	1	1	216	0	0	0	217	2	0	4	0	0	6	562
8:00 AM	3	273	0	0	0	276	0	0	0	0	0	0	0	207	1	0	0	208	3	0	3	0	0	6	490
8:15 AM	3	295	0	0	1	298	2	0	1	0	1	3	0	217	3	0	0	220	3	0	7	0	3	10	531
Total	8	1222	0	0	1	1230	2	0	2	0	2	4	1	874	4	0	0	879	8	0	18	0	3	26	2139
Approach %	0.7	99.3	0.0	0.0	-	-	50.0	0.0	50.0	0.0	-	-	0.1	99.4	0.5	0.0	-	-	30.8	0.0	69.2	0.0	-	-	-
Total %	0.4	57.1	0.0	0.0	-	57.5	0.1	0.0	0.1	0.0	-	0.2	0.0	40.9	0.2	0.0	-	41.1	0.4	0.0	0.8	0.0	-	1.2	-
PHF	0.667	0.904	0.000	0.000	-	0.910	0.250	0.000	0.500	0.000	-	0.333	0.250	0.934	0.333	0.000	-	0.939	0.667	0.000	0.643	0.000	-	0.650	0.952
Lights	8	1191	0	0	-	1199	2	0	2	0	-	4	1	844	4	0	-	849	8	0	18	0	-	26	2078
% Lights	100.0	97.5	-	-	-	97.5	100.0	-	100.0	-	-	100.0	100.0	96.6	100.0	-	-	96.6	100.0	-	100.0	-	-	100.0	97.1
Mediums	0	26	0	0	-	26	0	0	0	0	-	0	0	23	0	0	-	23	0	0	0	0	-	0	49
% Mediums	0.0	2.1	-	-	-	2.1	0.0	-	0.0	-	-	0.0	0.0	2.6	0.0	-	-	2.6	0.0	-	0.0	-	-	0.0	2.3
Articulated Trucks	0	5	0	0	-	5	0	0	0	0	-	0	0	7	0	0	-	7	0	0	0	0	-	0	12
% Articulated Trucks	0.0	0.4	-	-	-	0.4	0.0	-	0.0	-	-	0.0	0.0	0.8	0.0	-	-	0.8	0.0	-	0.0	-	-	0.0	0.6
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	33.3	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	66.7	-	-

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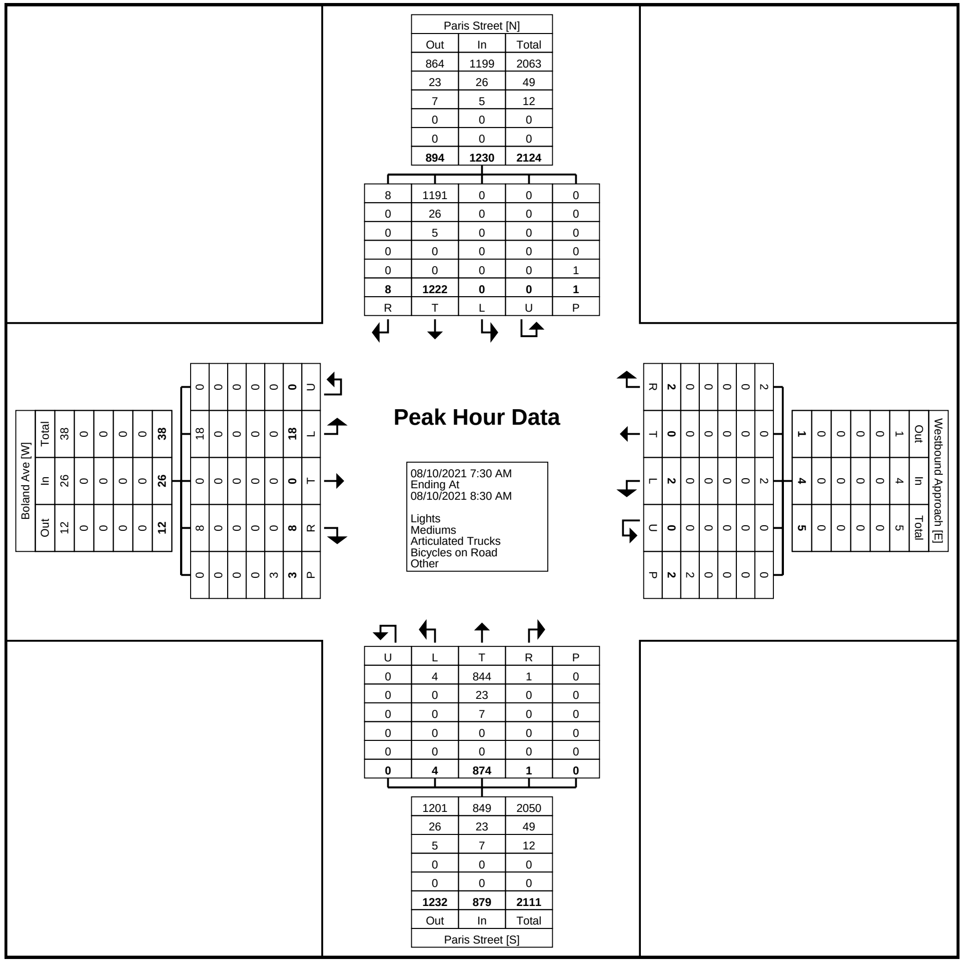
Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
Sudbury, Ontario, Canada P3A 5P3
705-674-4455 David.Knutson@greatersudbury.ca

Count Name: Paris Street @ Boland Avenue
Site Code:
Start Date: 08/09/2021
Page No: 11



Peak Hour Data

08/10/2021 7:30 AM
Ending At
08/10/2021 8:30 AM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

Paris Street [N]

Out	In	Total
864	1199	2063
23	26	49
7	5	12
0	0	0
0	0	0
894	**1230**	**2124**

R	T	L	U	P
8	1191	0	0	0
0	26	0	0	0
0	5	0	0	0
0	0	0	0	0
0	0	0	0	1
8	**1222**	**0**	**0**	**1**

Boland Ave [W]

Out	In	Total
12	26	38
0	0	0
0	0	0
0	0	0
0	0	0
12	**26**	**38**

U	L	T	R	P
0	18	0	8	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	3
0	**18**	**0**	**8**	**3**

Westbound Approach [E]

Out	In	Total
1	4	5
0	0	0
0	0	0
0	0	0
0	0	0
1	**4**	**5**

R	T	L	U	P
2	0	2	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	2
2	**0**	**2**	**0**	**2**

Paris Street [S]

U	L	T	R	P
0	4	844	1	0
0	0	23	0	0
0	0	7	0	0
0	0	0	0	0
0	0	0	0	0
0	**4**	**874**	**1**	**0**

Out	In	Total
1201	849	2050
26	23	49
5	7	12
0	0	0
0	0	0
1232	**879**	**2111**

Turning Movement Peak Hour Data Plot (7:30 AM)

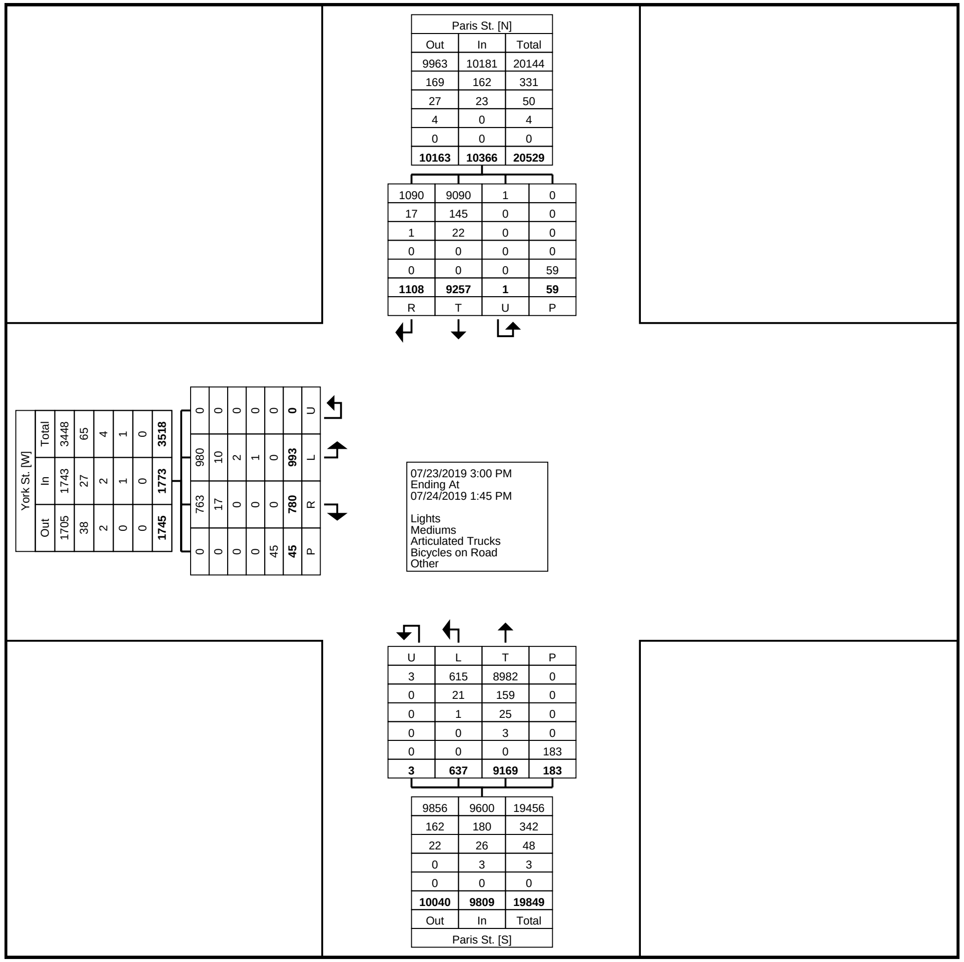
Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
Sudbury, Ontario, Canada P3A 5P3
705-674-4455 David.Knutson@greatersudbury.ca

Count Name: Paris @ York St.
Site Code: 00831103
Start Date: 07/23/2019
Page No: 1

Turning Movement Data

	Paris St.					Paris St.					York St.					
	Southbound					Northbound					Eastbound					
Start Time	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Int. Total
3:00 PM	40	280	0	0	320	378	16	0	6	394	24	50	0	0	74	788
3:15 PM	38	327	0	5	365	325	28	0	6	353	21	23	0	0	44	762
3:30 PM	37	309	0	3	346	392	21	0	8	413	31	38	0	2	69	828
3:45 PM	27	330	0	4	357	352	34	0	5	386	18	35	0	0	53	796
Hourly Total	142	1246	0	12	1388	1447	99	0	25	1546	94	146	0	2	240	3174
4:00 PM	50	332	0	2	382	443	42	0	6	485	21	53	0	2	74	941
4:15 PM	50	327	0	10	377	403	34	0	9	437	22	36	0	0	58	872
4:30 PM	59	355	0	7	414	419	32	0	2	451	28	57	0	1	85	950
4:45 PM	47	331	0	3	378	332	35	0	5	367	17	39	0	1	56	801
Hourly Total	206	1345	0	22	1551	1597	143	0	22	1740	88	185	0	4	273	3564
5:00 PM	41	311	0	0	352	358	24	0	6	382	16	37	0	2	53	787
5:15 PM	31	294	0	1	325	301	27	2	11	330	14	23	0	2	37	692
5:30 PM	33	282	0	1	315	321	21	0	3	342	15	32	0	0	47	704
5:45 PM	21	264	0	0	285	230	13	0	17	243	20	25	0	2	45	573
Hourly Total	126	1151	0	2	1277	1210	85	2	37	1297	65	117	0	6	182	2756
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	20	169	0	1	189	140	8	0	2	148	9	22	0	0	31	368
6:45 AM	26	207	0	0	233	119	15	0	4	134	22	14	0	1	36	403
Hourly Total	46	376	0	1	422	259	23	0	6	282	31	36	0	1	67	771
7:00 AM	26	256	0	0	282	148	14	0	0	162	29	15	0	0	44	488
7:15 AM	33	269	0	1	302	187	10	0	5	197	32	20	0	3	52	551
7:30 AM	47	268	0	0	315	244	11	0	3	255	22	32	0	0	54	624
7:45 AM	59	349	0	0	408	252	14	0	6	266	41	36	0	1	77	751
Hourly Total	165	1142	0	1	1307	831	49	0	14	880	124	103	0	4	227	2414
8:00 AM	40	270	0	0	310	245	10	0	6	255	43	47	0	3	90	655
8:15 AM	32	353	0	0	385	256	18	0	2	274	39	37	0	2	76	735
8:30 AM	22	282	0	1	304	254	17	0	1	271	41	36	0	2	77	652
8:45 AM	33	349	0	1	382	246	16	0	5	262	34	32	0	0	66	710
Hourly Total	127	1254	0	2	1381	1001	61	0	14	1062	157	152	0	7	309	2752
9:00 AM	31	245	0	0	276	229	13	0	4	242	27	24	0	0	51	569
9:15 AM	28	210	0	0	238	236	24	0	3	260	18	25	0	0	43	541
9:30 AM	0	2	0	0	2	1	0	0	0	1	0	0	0	0	0	3
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	59	457	0	0	516	466	37	0	7	503	45	49	0	0	94	1113

11:30 AM	24	294	0	0	318	298	13	0	10	311	30	30	0	6	60	689
11:45 AM	17	282	0	3	299	271	17	0	15	288	26	33	0	3	59	646
Hourly Total	41	576	0	3	617	569	30	0	25	599	56	63	0	9	119	1335
12:00 PM	35	239	1	1	275	293	13	0	4	306	20	18	0	4	38	619
12:15 PM	30	305	0	8	335	310	15	0	6	325	21	23	0	6	44	704
12:30 PM	31	265	0	3	296	296	21	0	1	317	13	23	0	0	36	649
12:45 PM	35	291	0	0	326	319	25	0	7	344	23	31	0	0	54	724
Hourly Total	131	1100	1	12	1232	1218	74	0	18	1292	77	95	0	10	172	2696
1:00 PM	37	302	0	4	339	301	16	0	6	317	31	24	0	2	55	711
1:15 PM	28	307	0	0	335	270	20	1	9	291	12	23	0	0	35	661
1:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Grand Total	1108	9257	1	59	10366	9169	637	3	183	9809	780	993	0	45	1773	21948
Approach %	10.7	89.3	0.0	-	-	93.5	6.5	0.0	-	-	44.0	56.0	0.0	-	-	-
Total %	5.0	42.2	0.0	-	47.2	41.8	2.9	0.0	-	44.7	3.6	4.5	0.0	-	8.1	-
Lights	1090	9090	1	-	10181	8982	615	3	-	9600	763	980	0	-	1743	21524
% Lights	98.4	98.2	100.0	-	98.2	98.0	96.5	100.0	-	97.9	97.8	98.7	-	-	98.3	98.1
Mediums	17	145	0	-	162	159	21	0	-	180	17	10	0	-	27	369
% Mediums	1.5	1.6	0.0	-	1.6	1.7	3.3	0.0	-	1.8	2.2	1.0	-	-	1.5	1.7
Articulated Trucks	1	22	0	-	23	25	1	0	-	26	0	2	0	-	2	51
% Articulated Trucks	0.1	0.2	0.0	-	0.2	0.3	0.2	0.0	-	0.3	0.0	0.2	-	-	0.1	0.2
Bicycles on Road	0	0	0	-	0	3	0	0	-	3	0	1	0	-	1	4
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.1	-	-	0.1	0.0
Bicycles on Crosswalk	-	-	-	6	-	-	-	-	10	-	-	-	-	12	-	-
% Bicycles on Crosswalk	-	-	-	10.2	-	-	-	-	5.5	-	-	-	-	26.7	-	-
Pedestrians	-	-	-	53	-	-	-	-	173	-	-	-	-	33	-	-
% Pedestrians	-	-	-	89.8	-	-	-	-	94.5	-	-	-	-	73.3	-	-



Paris St. [N]

Out	In	Total
9963	10181	20144
169	162	331
27	23	50
4	0	4
0	0	0
10163	**10366**	**20529**

R	T	U	P
1090	9090	1	0
17	145	0	0
1	22	0	0
0	0	0	0
0	0	0	59
1108	**9257**	**1**	**59**

York St. [W]

Out	In	Total
1705	1743	3448
38	27	65
2	2	4
0	1	1
0	0	0
1745	**1773**	**3518**

U	L	R	P
0	980	763	0
0	10	17	0
0	2	0	0
0	1	0	0
0	0	0	45
0	**993**	**780**	**45**

07/23/2019 3:00 PM
Ending At
07/24/2019 1:45 PM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

U	L	T	P
3	615	8982	0
0	21	159	0
0	1	25	0
0	0	3	0
0	0	0	183
3	**637**	**9169**	**183**

Out	In	Total
9856	9600	19456
162	180	342
22	26	48
0	3	3
0	0	0
10040	**9809**	**19849**

Paris St. [S]

Turning Movement Data Plot

Turning Movement Peak Hour Data (4:00 PM)

Start Time	Paris St.					Paris St.					York St.					
	Southbound					Northbound					Eastbound					
	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Int. Total
4:00 PM	50	332	0	2	382	443	42	0	6	485	21	53	0	2	74	941
4:15 PM	50	327	0	10	377	403	34	0	9	437	22	36	0	0	58	872
4:30 PM	59	355	0	7	414	419	32	0	2	451	28	57	0	1	85	950
4:45 PM	47	331	0	3	378	332	35	0	5	367	17	39	0	1	56	801
Total	206	1345	0	22	1551	1597	143	0	22	1740	88	185	0	4	273	3564
Approach %	13.3	86.7	0.0	-	-	91.8	8.2	0.0	-	-	32.2	67.8	0.0	-	-	-
Total %	5.8	37.7	0.0	-	43.5	44.8	4.0	0.0	-	48.8	2.5	5.2	0.0	-	7.7	-
PHF	0.873	0.947	0.000	-	0.937	0.901	0.851	0.000	-	0.897	0.786	0.811	0.000	-	0.803	0.938
Lights	206	1327	0	-	1533	1575	142	0	-	1717	84	183	0	-	267	3517
% Lights	100.0	98.7	-	-	98.8	98.6	99.3	-	-	98.7	95.5	98.9	-	-	97.8	98.7
Mediums	0	17	0	-	17	21	1	0	-	22	4	1	0	-	5	44
% Mediums	0.0	1.3	-	-	1.1	1.3	0.7	-	-	1.3	4.5	0.5	-	-	1.8	1.2
Articulated Trucks	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Articulated Trucks	0.0	0.1	-	-	0.1	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	1	0	0	-	1	0	1	0	-	1	2
% Bicycles on Road	0.0	0.0	-	-	0.0	0.1	0.0	-	-	0.1	0.0	0.5	-	-	0.4	0.1
Bicycles on Crosswalk	-	-	-	2	-	-	-	-	0	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	9.1	-	-	-	-	0.0	-	-	-	-	75.0	-	-
Pedestrians	-	-	-	20	-	-	-	-	22	-	-	-	-	1	-	-
% Pedestrians	-	-	-	90.9	-	-	-	-	100.0	-	-	-	-	25.0	-	-

Traffic and Transportation Engineering Services
1800 Frobisher Street
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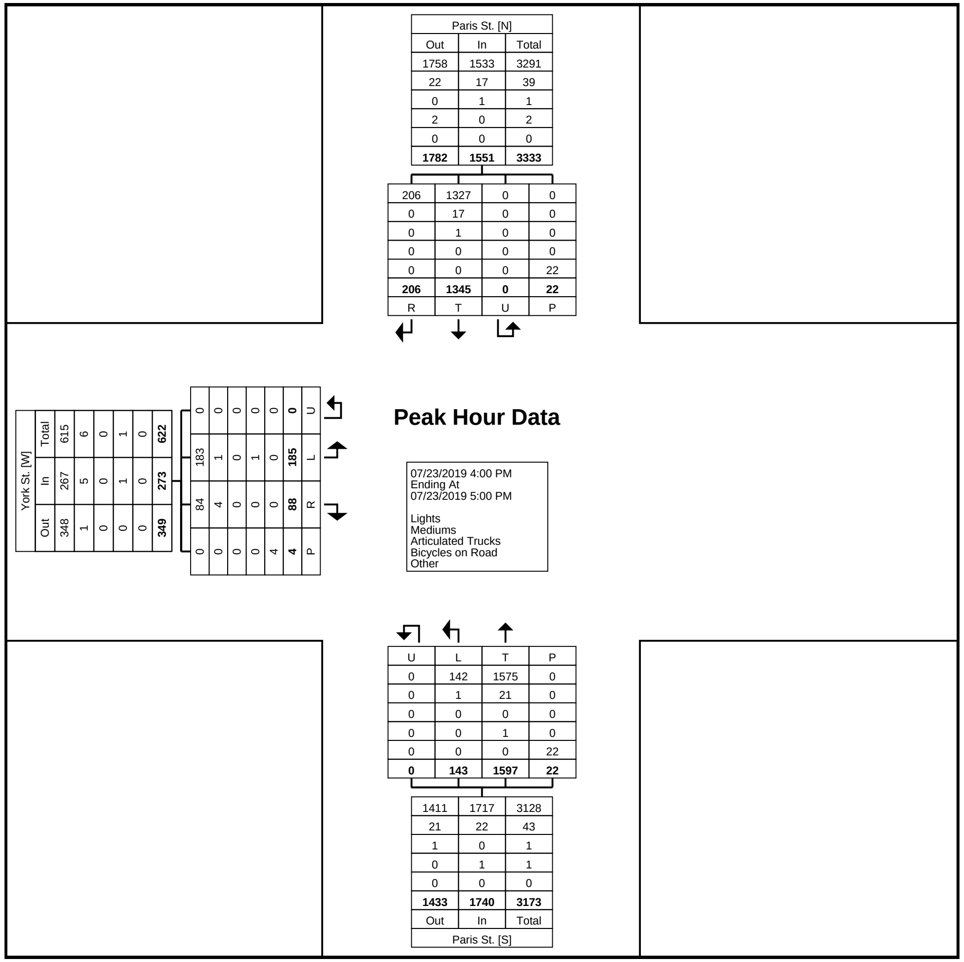
Count Name: Paris @ York St.
Site Code: 00831103
Start Date: 07/23/2019
Page No: 5



Paris St. [N]

Out	In	Total
1758	1533	3291
22	17	39
0	1	1
2	0	2
0	0	0
1782	**1551**	**3333**

206	1327	0	0
0	17	0	0
0	1	0	0
0	0	0	0
0	0	0	22
206	**1345**	**0**	**22**
R	T	U	P

York St. [W]

Out	In	Total
348	267	615
1	5	6
0	0	0
0	1	1
0	0	0
349	**273**	**622**

0	183	84	0
0	1	4	0
0	0	0	0
0	1	0	0
0	0	0	4
0	**185**	**88**	**4**
U	L	R	P

Peak Hour Data

07/23/2019 4:00 PM
Ending At
07/23/2019 5:00 PM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

U	L	T	P
0	142	1575	0
0	1	21	0
0	0	0	0
0	0	1	0
0	0	0	22
0	**143**	**1597**	**22**

1411	1717	3128
21	22	43
1	0	1
0	1	1
0	0	0
1433	**1740**	**3173**
Out	In	Total

Paris St. [S]

Turning Movement Peak Hour Data Plot (4:00 PM)

Turning Movement Peak Hour Data (7:45 AM)

Start Time			Paris St. Southbound					Paris St. Northbound					York St. Eastbound			
	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Int. Total
7:45 AM	59	349	0	0	408	252	14	0	6	266	41	36	0	1	77	751
8:00 AM	40	270	0	0	310	245	10	0	6	255	43	47	0	3	90	655
8:15 AM	32	353	0	0	385	256	18	0	2	274	39	37	0	2	76	735
8:30 AM	22	282	0	1	304	254	17	0	1	271	41	36	0	2	77	652
Total	153	1254	0	1	1407	1007	59	0	15	1066	164	156	0	8	320	2793
Approach %	10.9	89.1	0.0	-	-	94.5	5.5	0.0	-	-	51.3	48.8	0.0	-	-	-
Total %	5.5	44.9	0.0	-	50.4	36.1	2.1	0.0	-	38.2	5.9	5.6	0.0	-	11.5	-
PHF	0.648	0.888	0.000	-	0.862	0.983	0.819	0.000	-	0.973	0.953	0.830	0.000	-	0.889	0.930
Lights	149	1222	0	-	1371	983	55	0	-	1038	161	153	0	-	314	2723
% Lights	97.4	97.4	-	-	97.4	97.6	93.2	-	-	97.4	98.2	98.1	-	-	98.1	97.5
Mediums	4	27	0	-	31	20	3	0	-	23	3	1	0	-	4	58
% Mediums	2.6	2.2	-	-	2.2	2.0	5.1	-	-	2.2	1.8	0.6	-	-	1.3	2.1
Articulated Trucks	0	5	0	-	5	4	1	0	-	5	0	2	0	-	2	12
% Articulated Trucks	0.0	0.4	-	-	0.4	0.4	1.7	-	-	0.5	0.0	1.3	-	-	0.6	0.4
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	4	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	26.7	-	-	-	-	37.5	-	-
Pedestrians	-	-	-	1	-	-	-	-	11	-	-	-	-	5	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	73.3	-	-	-	-	62.5	-	-

Traffic and Transportation Engineering Services
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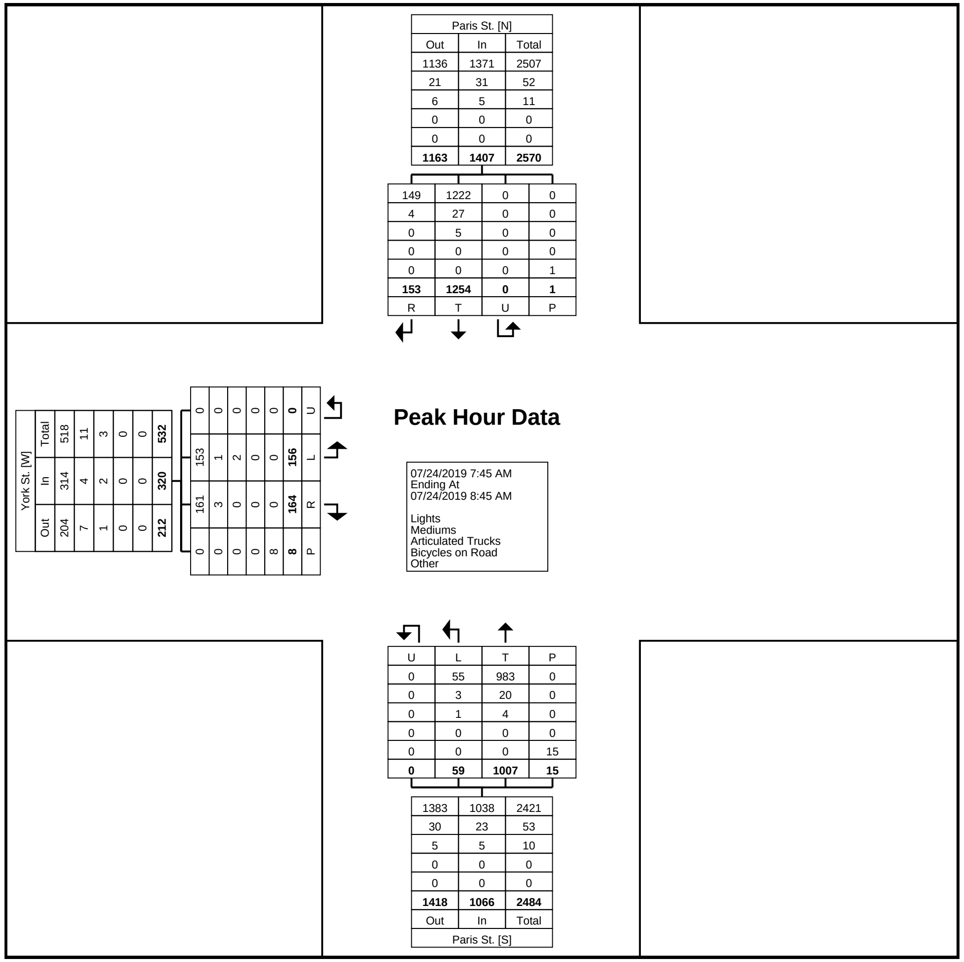
Count Name: Paris @ York St.
Site Code: 00831103
Start Date: 07/23/2019
Page No: 7



Paris St. [N]

Out	In	Total
1136	1371	2507
21	31	52
6	5	11
0	0	0
0	0	0
1163	**1407**	**2570**

R	T	U	P
149	1222	0	0
4	27	0	0
0	5	0	0
0	0	0	0
0	0	0	1
153	**1254**	**0**	**1**

York St. [W]

Out	In	Total
204	314	518
7	4	11
1	2	3
0	0	0
0	0	0
212	**320**	**532**

U	L	R	P
0	153	161	0
0	1	3	0
0	2	0	0
0	0	0	0
0	0	0	8
0	**156**	**164**	**8**

Peak Hour Data

07/24/2019 7:45 AM
Ending At
07/24/2019 8:45 AM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

U	L	T	P
0	55	983	0
0	3	20	0
0	1	4	0
0	0	0	0
0	0	0	15
0	**59**	**1007**	**15**

Out	In	Total
1383	1038	2421
30	23	53
5	5	10
0	0	0
0	0	0
1418	**1066**	**2484**

Paris St. [S]

Turning Movement Peak Hour Data Plot (7:45 AM)

Turning Movement Peak Hour Data (12:15 PM)

Start Time	Paris St. Southbound					Paris St. Northbound					York St. Eastbound					
	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Int. Total
12:15 PM	30	305	0	8	335	310	15	0	6	325	21	23	0	6	44	704
12:30 PM	31	265	0	3	296	296	21	0	1	317	13	23	0	0	36	649
12:45 PM	35	291	0	0	326	319	25	0	7	344	23	31	0	0	54	724
1:00 PM	37	302	0	4	339	301	16	0	6	317	31	24	0	2	55	711
Total	133	1163	0	15	1296	1226	77	0	20	1303	88	101	0	8	189	2788
Approach %	10.3	89.7	0.0	-	-	94.1	5.9	0.0	-	-	46.6	53.4	0.0	-	-	-
Total %	4.8	41.7	0.0	-	46.5	44.0	2.8	0.0	-	46.7	3.2	3.6	0.0	-	6.8	-
PHF	0.899	0.953	0.000	-	0.956	0.961	0.770	0.000	-	0.947	0.710	0.815	0.000	-	0.859	0.963
Lights	129	1143	0	-	1272	1194	76	0	-	1270	87	101	0	-	188	2730
% Lights	97.0	98.3	-	-	98.1	97.4	98.7	-	-	97.5	98.9	100.0	-	-	99.5	97.9
Mediums	4	19	0	-	23	26	1	0	-	27	1	0	0	-	1	51
% Mediums	3.0	1.6	-	-	1.8	2.1	1.3	-	-	2.1	1.1	0.0	-	-	0.5	1.8
Articulated Trucks	0	1	0	-	1	6	0	0	-	6	0	0	0	-	0	7
% Articulated Trucks	0.0	0.1	-	-	0.1	0.5	0.0	-	-	0.5	0.0	0.0	-	-	0.0	0.3
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	2	-	-	-	-	1	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	13.3	-	-	-	-	5.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	13	-	-	-	-	19	-	-	-	-	8	-	-
% Pedestrians	-	-	-	86.7	-	-	-	-	95.0	-	-	-	-	100.0	-	-

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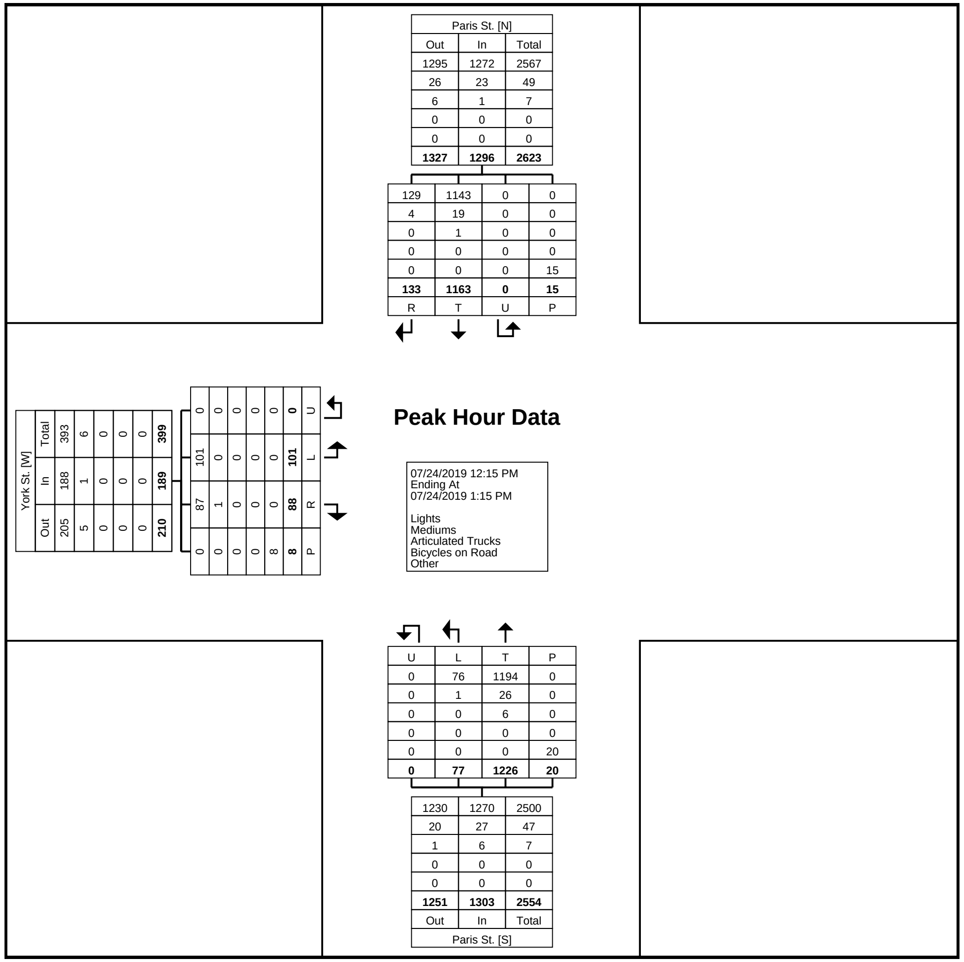
Count Name: Paris @ York St.
Site Code: 00831103
Start Date: 07/23/2019
Page No: 9



Paris St. [N]

Out	In	Total
1295	1272	2567
26	23	49
6	1	7
0	0	0
0	0	0
1327	**1296**	**2623**

R	T	U	P
129	1143	0	0
4	19	0	0
0	1	0	0
0	0	0	0
0	0	0	15
133	**1163**	**0**	**15**

York St. [W]

Out	In	Total
205	188	393
5	1	6
0	0	0
0	0	0
0	0	0
210	**189**	**399**

U	L	R	P
0	101	87	0
0	0	1	0
0	0	0	0
0	0	0	0
0	0	0	8
0	**101**	**88**	**8**

Peak Hour Data

07/24/2019 12:15 PM
Ending At
07/24/2019 1:15 PM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

U	L	T	P
0	76	1194	0
0	1	26	0
0	0	6	0
0	0	0	0
0	0	0	20
0	**77**	**1226**	**20**

Out	In	Total
1230	1270	2500
20	27	47
1	6	7
0	0	0
0	0	0
1251	**1303**	**2554**

Paris St. [S]

Turning Movement Peak Hour Data Plot (12:15 PM)

Morning Peak Diagram

Specified Period		**One Hour Peak**	
From:	7:00:00	**From:**	7:45:00
To:	9:00:00	**To:**	8:45:00

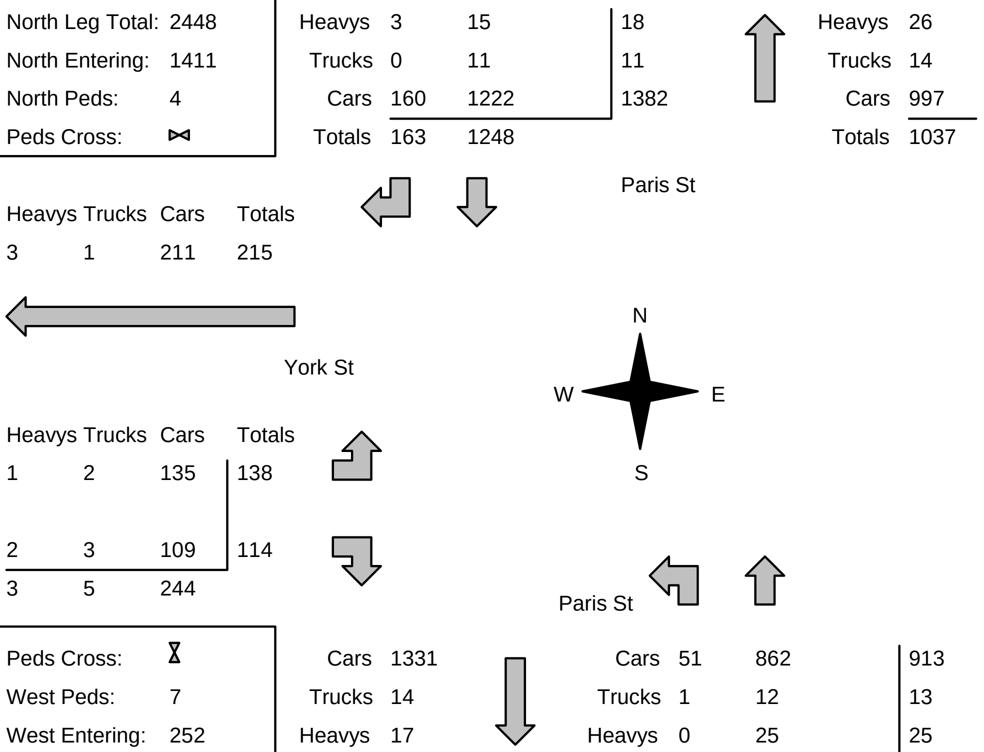
Municipality: Sudbury
Site #: 2206300004
Intersection: Paris St & York St
TFR File #: 1
Count date: 20-Apr-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Paris St runs N/S



North Leg Total: 2448
North Entering: 1411
North Peds: 4
Peds Cross: ⋈

Heavys	3	15	18
Trucks	0	11	11
Cars	160	1222	1382
Totals	163	1248	

Heavys	26
Trucks	14
Cars	997
Totals	1037

Paris St

Heavys	Trucks	Cars	Totals
3	1	211	215

York St

Heavys	Trucks	Cars	Totals
1	2	135	138
2	3	109	114
3	5	244	

Paris St

Peds Cross: ⧖
West Peds: 7
West Entering: 252
West Leg Total: 467

Cars	1331
Trucks	14
Heavys	17
Totals	1362

Cars	51	862	913
Trucks	1	12	13
Heavys	0	25	25
Totals	52	899	

Peds Cross: ⋈
South Peds: 10
South Entering: 951
South Leg Total: 2313

Comments

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 16:00:00
To: 17:00:00

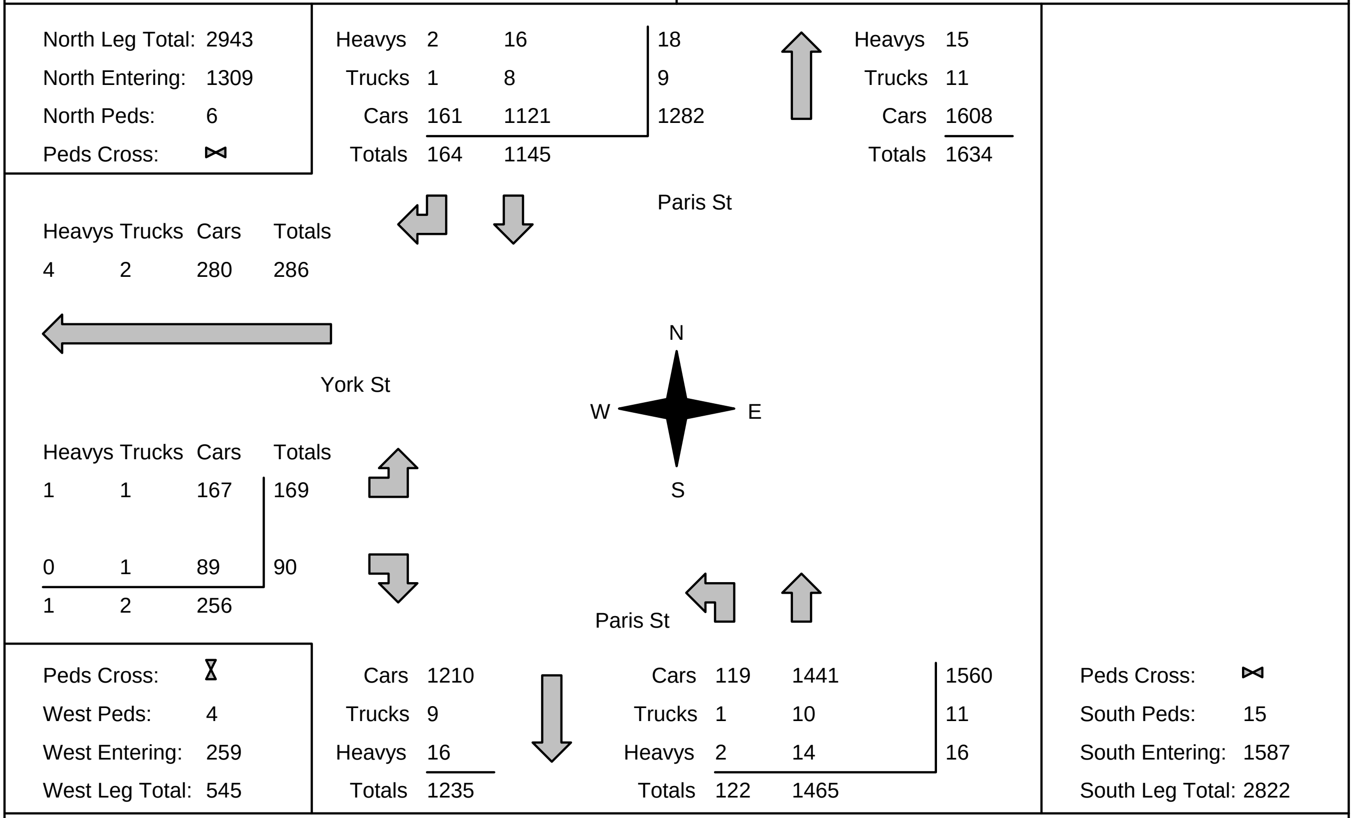
Municipality: Sudbury
Site #: 2206300004
Intersection: Paris St & York St
TFR File #: 1
Count date: 20-Apr-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Paris St runs N/S



North Leg Total: 2943
North Entering: 1309
North Peds: 6
Peds Cross: ⋈

Heavys	2	16	18
Trucks	1	8	9
Cars	161	1121	1282
Totals	164	1145	

Heavys	15
Trucks	11
Cars	1608
Totals	1634

Heavys	Trucks	Cars	Totals
4	2	280	286

Heavys	Trucks	Cars	Totals
1	1	167	169
0	1	89	90
1	2	256	

Peds Cross: ⧗
West Peds: 4
West Entering: 259
West Leg Total: 545

Cars	1210
Trucks	9
Heavys	16
Totals	1235

Cars	119	1441	1560
Trucks	1	10	11
Heavys	2	14	16
Totals	122	1465	

Peds Cross: ⋈
South Peds: 15
South Entering: 1587
South Leg Total: 2822

Comments

Total Count Diagram

Municipality: Sudbury
Site #: 2206300004
Intersection: Paris St & York St
TFR File #: 1
Count date: 20-Apr-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Paris St runs N/S

North Leg Total: 11624
North Entering: 5983
North Peds: 48
Peds Cross: ⋈

Heavys	10	63	73
Trucks	2	37	39
Cars	711	5160	5871
Totals	723	5260	

Heavys	80
Trucks	50
Cars	5511
Totals	5641

Paris St

Heavys	Trucks	Cars	Totals
15	11	1049	1075

York St

N
W E
S

Heavys	Trucks	Cars	Totals
3	7	612	622
5	6	424	435
8	13	1036	

Paris St

Peds Cross: ⧖
West Peds: 23
West Entering: 1057
West Leg Total: 2132

Cars	5584
Trucks	43
Heavys	68
Totals	5695

Cars	338	4899	5237
Trucks	9	43	52
Heavys	5	77	82
Totals	352	5019	

Peds Cross: ⋈
South Peds: 78
South Entering: 5371
South Leg Total: 11066

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Traffic Count Summary

Intersection: Paris St & York St | **Count Date:** 20-Apr-22 | **Municipality:** Sudbury

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*7:00:00*	*0*	*0*	*0*	*0*	*0*
8:00:00	*0*	*1060*	*127*	*1187*	*3*	*1933*	*8:00:00*	*47*	*699*	*0*	*746*	*7*
9:00:00	*0*	*1188*	*158*	*1346*	*7*	*2288*	*9:00:00*	*47*	*895*	*0*	*942*	*8*
16:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*16:00:00*	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*1145*	*164*	*1309*	*6*	*2896*	*17:00:00*	*122*	*1465*	*0*	*1587*	*15*
18:00:00	*0*	*988*	*143*	*1131*	*14*	*2363*	*18:00:00*	*70*	*1162*	*0*	*1232*	*23*
19:00:00	*0*	*879*	*131*	*1010*	*18*	*1874*	*19:00:00*	*66*	*798*	*0*	*864*	*25*
Totals:	0	5260	723	5983	48	11354	S Totals:	352	5019	0	5371	78

East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*7:00:00*	*0*	*0*	*0*	*0*	*0*
8:00:00	*0*	*0*	*0*	*0*	*0*	*210*	*8:00:00*	*96*	*0*	*114*	*210*	*3*
9:00:00	*0*	*0*	*0*	*0*	*0*	*250*	*9:00:00*	*134*	*0*	*116*	*250*	*5*
16:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*16:00:00*	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*0*	*0*	*0*	*0*	*259*	*17:00:00*	*169*	*0*	*90*	*259*	*4*
18:00:00	*0*	*0*	*0*	*0*	*0*	*204*	*18:00:00*	*144*	*0*	*60*	*204*	*7*
19:00:00	*0*	*0*	*0*	*0*	*0*	*134*	*19:00:00*	*79*	*0*	*55*	*134*	*4*
Totals:	0	0	0	0	0	1057	W Totals:	622	0	435	1057	23

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*19:00*	*0:00*
Crossing Values:	*0*	*106*	*149*	*0*	*190*	*181*	*122*	*0*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Count Date: 20-Apr-22 Site #: 2206300004

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	221	221	11	11	0	0	1	1	0	0	0	0	3	3	1	1	0	0
7:30:00	0	0	460	239	39	28	0	0	3	2	0	0	0	0	6	3	5	4	2	2
7:45:00	0	0	693	233	77	38	0	0	4	1	0	0	0	0	9	3	5	0	3	1
8:00:00	0	0	1041	348	121	44	0	0	4	0	0	0	0	0	15	6	6	1	3	0
8:15:00	0	0	1343	302	167	46	0	0	8	4	0	0	0	0	20	5	7	1	5	2
8:30:00	0	0	1637	294	202	35	0	0	10	2	0	0	0	0	21	1	8	1	7	2
8:45:00	0	0	1915	278	237	35	0	0	15	5	0	0	0	0	24	3	8	0	7	0
9:00:00	0	0	2200	285	277	40	0	0	20	5	0	0	0	0	28	4	8	0	10	3
9:15:00	0	0	2200	0	277	0	0	0	20	0	0	0	0	0	28	0	8	0	10	0
16:00:00	0	0	2200	0	277	0	0	0	20	0	0	0	0	0	28	0	8	0	10	0
16:15:00	0	0	2469	269	309	32	0	0	24	4	0	0	0	0	33	5	9	1	13	3
16:30:00	0	0	2760	291	348	39	0	0	25	1	0	0	0	0	36	3	10	1	13	0
16:45:00	0	0	3035	275	397	49	0	0	27	2	1	1	0	0	40	4	10	0	14	1
17:00:00	0	0	3321	286	438	41	0	0	28	1	1	0	0	0	44	4	10	0	16	2
17:15:00	0	0	3608	287	484	46	0	0	30	2	1	0	0	0	46	2	10	0	16	0
17:30:00	0	0	3876	268	521	37	0	0	31	1	1	0	0	0	50	4	10	0	19	3
17:45:00	0	0	4084	208	546	25	0	0	31	0	2	1	0	0	52	2	10	0	26	7
18:00:00	0	0	4293	209	580	34	0	0	33	2	2	0	0	0	55	3	10	0	30	4
18:15:00	0	0	4507	214	609	29	0	0	35	2	2	0	0	0	59	4	10	0	33	3
18:30:00	0	0	4734	227	644	35	0	0	36	1	2	0	0	0	61	2	10	0	37	4
18:45:00	0	0	4949	215	676	32	0	0	37	1	2	0	0	0	62	1	10	0	39	2
19:00:00	0	0	5160	211	711	35	0	0	37	0	2	0	0	0	63	1	10	0	48	9
19:15:00	0	0	5160	0	711	0	0	0	37	0	2	0	0	0	63	0	10	0	48	0
19:15:15	0	0	5160	0	711	0	0	0	37	0	2	0	0	0	63	0	10	0	48	0

Count Date: 20-Apr-22 **Site #: 2206300004**

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Count Date: 20-Apr-22 **Site #: 2206300004**

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	5	5	87	87	0	0	1	1	2	2	0	0	0	0	1	1	0	0	1	1
7:30:00	11	6	230	143	0	0	1	0	5	3	0	0	2	2	5	4	0	0	4	3
7:45:00	31	20	439	209	0	0	1	0	5	0	0	0	3	1	13	8	0	0	4	0
8:00:00	42	11	668	229	0	0	2	1	9	4	0	0	3	0	22	9	0	0	7	3
8:15:00	55	13	888	220	0	0	2	0	10	1	0	0	3	0	28	6	0	0	10	3
8:30:00	66	11	1087	199	0	0	2	0	13	3	0	0	3	0	32	4	0	0	12	2
8:45:00	82	16	1301	214	0	0	2	0	17	4	0	0	3	0	38	6	0	0	14	2
9:00:00	89	7	1530	229	0	0	2	0	19	2	0	0	3	0	45	7	0	0	15	1
9:15:00	89	0	1530	0	0	0	2	0	19	0	0	0	3	0	45	0	0	0	15	0
16:00:00	89	0	1530	0	0	0	2	0	19	0	0	0	3	0	45	0	0	0	15	0
16:15:00	124	35	1945	415	0	0	2	0	22	3	0	0	5	2	47	2	0	0	21	6
16:30:00	153	29	2271	326	0	0	3	1	25	3	0	0	5	0	51	4	0	0	25	4
16:45:00	182	29	2641	370	0	0	3	0	28	3	0	0	5	0	56	5	0	0	30	5
17:00:00	208	26	2971	330	0	0	3	0	29	1	0	0	5	0	59	3	0	0	30	0
17:15:00	228	20	3326	355	0	0	5	2	30	1	0	0	5	0	61	2	0	0	35	5
17:30:00	243	15	3631	305	0	0	6	1	32	2	0	0	5	0	63	2	0	0	40	5
17:45:00	263	20	3894	263	0	0	6	0	35	3	0	0	5	0	66	3	0	0	49	9
18:00:00	275	12	4117	223	0	0	6	0	36	1	0	0	5	0	68	2	0	0	53	4
18:15:00	293	18	4327	210	0	0	8	2	37	1	0	0	5	0	70	2	0	0	59	6
18:30:00	309	16	4525	198	0	0	8	0	38	1	0	0	5	0	73	3	0	0	65	6
18:45:00	324	15	4718	193	0	0	9	1	40	2	0	0	5	0	76	3	0	0	70	5
19:00:00	338	14	4899	181	0	0	9	0	43	3	0	0	5	0	77	1	0	0	78	8
19:15:00	338	0	4899	0	0	0	9	0	43	0	0	0	5	0	77	0	0	0	78	0
19:15:15	338	0	4899	0	0	0	9	0	43	0	0	0	5	0	77	0	0	0	78	0

Count Date: 20-Apr-22 **Site #: 2206300004**

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	12	12	0	0	27	27	0	0	0	0	0	0	0	0	0	0	1	1	0	0
7:30:00	33	21	0	0	52	25	1	1	0	0	1	1	0	0	0	0	3	2	0	0
7:45:00	59	26	0	0	75	23	1	0	0	0	1	0	1	1	0	0	3	0	0	0
8:00:00	94	35	0	0	110	35	1	0	0	0	1	0	1	0	0	0	3	0	3	3
8:15:00	122	28	0	0	140	30	1	0	0	0	1	0	2	1	0	0	3	0	3	0
8:30:00	153	31	0	0	160	20	1	0	0	0	4	3	2	0	0	0	3	0	5	2
8:45:00	194	41	0	0	184	24	3	2	0	0	4	0	2	0	0	0	5	2	7	2
9:00:00	225	31	0	0	221	37	3	0	0	0	4	0	2	0	0	0	5	0	8	1
9:15:00	225	0	0	0	221	0	3	0	0	0	4	0	2	0	0	0	5	0	8	0
16:00:00	225	0	0	0	221	0	3	0	0	0	4	0	2	0	0	0	5	0	8	0
16:15:00	268	43	0	0	243	22	4	1	0	0	4	0	2	0	0	0	5	0	9	1
16:30:00	311	43	0	0	273	30	4	0	0	0	4	0	3	1	0	0	5	0	11	2
16:45:00	358	47	0	0	289	16	4	0	0	0	5	1	3	0	0	0	5	0	12	1
17:00:00	392	34	0	0	310	21	4	0	0	0	5	0	3	0	0	0	5	0	12	0
17:15:00	433	41	0	0	326	16	4	0	0	0	5	0	3	0	0	0	5	0	16	4
17:30:00	470	37	0	0	341	15	4	0	0	0	5	0	3	0	0	0	5	0	17	1
17:45:00	505	35	0	0	360	19	5	1	0	0	5	0	3	0	0	0	5	0	17	0
18:00:00	534	29	0	0	370	10	6	1	0	0	5	0	3	0	0	0	5	0	19	2
18:15:00	546	12	0	0	382	12	6	0	0	0	5	0	3	0	0	0	5	0	19	0
18:30:00	573	27	0	0	397	15	6	0	0	0	5	0	3	0	0	0	5	0	20	1
18:45:00	592	19	0	0	409	12	7	1	0	0	6	1	3	0	0	0	5	0	20	0
19:00:00	612	20	0	0	424	15	7	0	0	0	6	0	3	0	0	0	5	0	23	3
19:15:00	612	0	0	0	424	0	7	0	0	0	6	0	3	0	0	0	5	0	23	0
19:15:15	612	0	0	0	424	0	7	0	0	0	6	0	3	0	0	0	5	0	23	0

Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
Sudbury, Ontario, Canada P3A 5P3
705-674-4455 David.Knutson@greatersudbury.ca

Count Name: Paris @ Ramsey Lake Rd. (Redo)
Site Code:
Start Date: 08/06/2019
Page No: 1

Turning Movement Data

Start Time	Southbound St.					Westbound St.					Northbound St.					
	Southbound					Westbound					Northbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
11:30 AM	222	67	0	2	289	69	43	0	0	112	52	257	0	0	309	710
11:45 AM	280	66	0	0	346	57	59	0	2	116	53	260	0	0	313	775
Hourly Total	502	133	0	2	635	126	102	0	2	228	105	517	0	0	622	1485
12:00 PM	252	74	0	1	326	59	62	0	1	121	31	303	1	0	335	782
12:15 PM	232	67	0	5	299	61	59	0	0	120	65	265	0	0	330	749
12:30 PM	227	87	0	3	314	71	34	0	3	105	59	281	0	0	340	759
12:45 PM	267	83	1	0	351	53	41	0	3	94	63	277	0	0	340	785
Hourly Total	978	311	1	9	1290	244	196	0	7	440	218	1126	1	0	1345	3075
1:00 PM	257	87	0	0	344	64	52	0	0	116	64	269	0	0	333	793
1:15 PM	277	69	0	0	346	73	52	0	4	125	44	289	0	0	333	804
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	534	156	0	0	690	137	104	0	4	241	108	558	0	0	666	1597
3:00 PM	22	1	0	1	23	91	74	0	0	165	40	264	0	0	304	492
3:15 PM	0	0	0	0	0	84	56	0	1	140	73	216	0	0	289	429
3:30 PM	302	110	0	3	412	101	66	0	1	167	60	246	0	0	306	885
3:45 PM	272	100	0	2	372	119	84	0	1	203	57	302	0	0	359	934
Hourly Total	596	211	0	6	807	395	280	0	3	675	230	1028	0	0	1258	2740
4:00 PM	293	80	0	6	373	176	147	0	2	323	69	321	0	0	390	1086
4:15 PM	268	69	0	6	337	148	133	0	2	281	58	263	0	0	321	939
4:30 PM	281	65	0	2	346	146	108	0	0	254	49	295	0	0	344	944
4:45 PM	295	74	0	3	369	74	61	0	3	135	41	248	0	0	289	793
Hourly Total	1137	288	0	17	1425	544	449	0	7	993	217	1127	0	0	1344	3762
5:00 PM	262	55	0	1	317	76	56	0	2	132	41	332	0	0	373	822
5:15 PM	219	50	0	1	269	60	53	0	0	113	34	263	0	0	297	679
5:30 PM	213	38	0	3	251	77	51	0	1	128	47	227	0	0	274	653
5:45 PM	197	50	1	0	248	62	50	0	3	112	38	212	0	0	250	610
Hourly Total	891	193	1	5	1085	275	210	0	6	485	160	1034	0	0	1194	2764
6:00 PM	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	3
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	3
6:30 AM	117	68	0	0	185	8	7	0	1	15	18	121	0	0	139	339
6:45 AM	110	92	0	2	202	22	11	0	0	33	41	110	0	0	151	386
Hourly Total	227	160	0	2	387	30	18	0	1	48	59	231	0	0	290	725
7:00 AM	164	127	0	0	291	26	16	0	1	42	31	118	0	0	149	482
7:15 AM	153	123	0	3	276	53	15	0	1	68	48	175	0	0	223	567

7:30 AM	180	108	0	3	288	59	23	0	2	82	56	216	0	0	272	642
7:45 AM	188	152	0	5	340	55	21	0	1	76	78	197	0	0	275	691
Hourly Total	685	510	0	11	1195	193	75	0	5	268	213	706	0	0	919	2382
8:00 AM	174	148	0	3	322	46	22	0	1	68	82	216	0	0	298	688
8:15 AM	202	170	0	3	372	56	40	0	4	96	97	199	0	0	296	764
8:30 AM	206	123	0	5	329	47	47	0	4	94	77	222	0	0	299	722
8:45 AM	228	127	0	2	355	50	51	0	5	101	71	234	0	0	305	761
Hourly Total	810	568	0	13	1378	199	160	0	14	359	327	871	0	0	1198	2935
9:00 AM	181	87	0	1	268	50	29	0	2	79	66	196	0	0	262	609
9:15 AM	152	79	0	4	231	38	40	0	2	78	57	181	0	0	238	547
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	6693	2696	2	70	9391	2232	1665	0	53	3897	1760	7575	1	0	9336	22624
Approach %	71.3	28.7	0.0	-	-	57.3	42.7	0.0	-	-	18.9	81.1	0.0	-	-	-
Total %	29.6	11.9	0.0	-	41.5	9.9	7.4	0.0	-	17.2	7.8	33.5	0.0	-	41.3	-
Lights	6540	2639	2	-	9181	2169	1632	0	-	3801	1731	7403	1	-	9135	22117
% Lights	97.7	97.9	100.0	-	97.8	97.2	98.0	-	-	97.5	98.4	97.7	100.0	-	97.8	97.8
Mediums	131	51	0	-	182	53	31	0	-	84	28	132	0	-	160	426
% Mediums	2.0	1.9	0.0	-	1.9	2.4	1.9	-	-	2.2	1.6	1.7	0.0	-	1.7	1.9
Articulated Trucks	20	3	0	-	23	3	1	0	-	4	1	26	0	-	27	54
% Articulated Trucks	0.3	0.1	0.0	-	0.2	0.1	0.1	-	-	0.1	0.1	0.3	0.0	-	0.3	0.2
Bicycles on Road	2	3	0	-	5	7	1	0	-	8	0	14	0	-	14	27
% Bicycles on Road	0.0	0.1	0.0	-	0.1	0.3	0.1	-	-	0.2	0.0	0.2	0.0	-	0.1	0.1
Bicycles on Crosswalk	-	-	-	21	-	-	-	-	22	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	30.0	-	-	-	-	41.5	-	-	-	-	-	-	-
Pedestrians	-	-	-	49	-	-	-	-	31	-	-	-	-	0	-	-
% Pedestrians	-	-	-	70.0	-	-	-	-	58.5	-	-	-	-	-	-	-

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Count Name: Paris @ Ramsey Lake Rd. (Redo)
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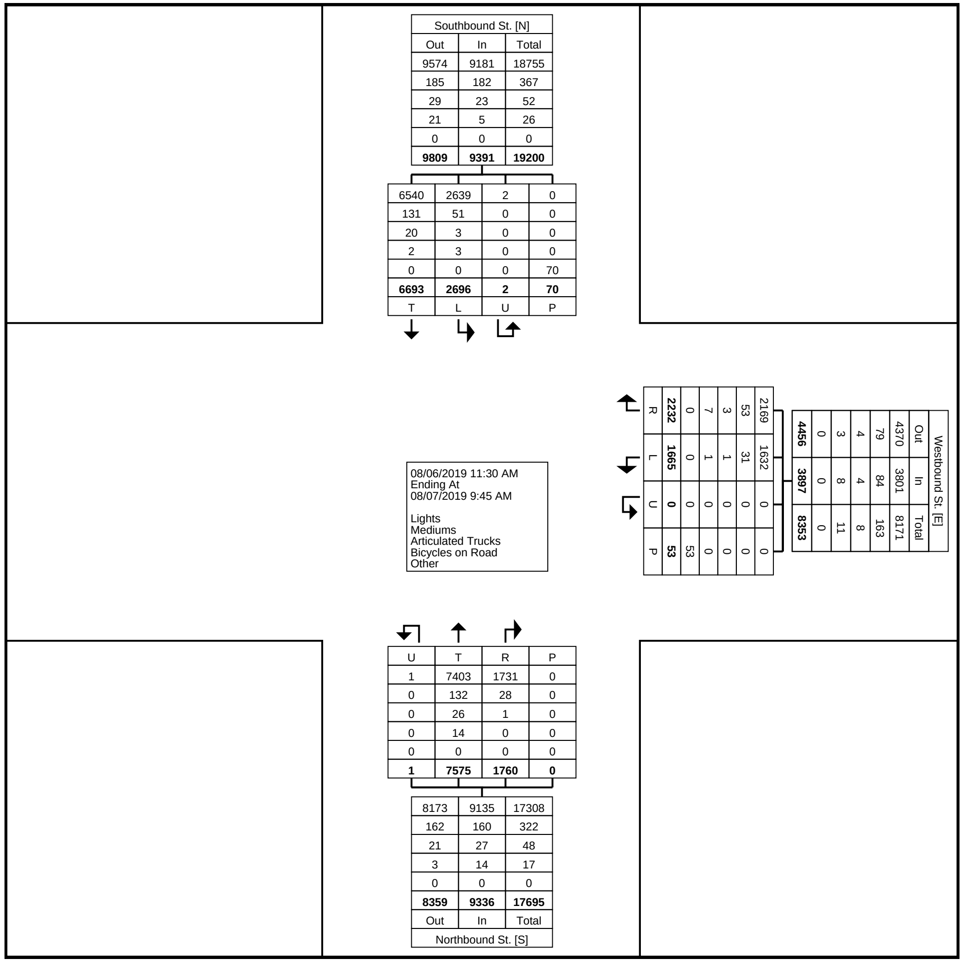


Southbound St. [N]

Out	In	Total
9574	9181	18755
185	182	367
29	23	52
21	5	26
0	0	0
9809	**9391**	**19200**

6540	2639	2	0
131	51	0	0
20	3	0	0
2	3	0	0
0	0	0	70
6693	**2696**	**2**	**70**
T	L	U	P

2169	1632	0	0
53	31	0	0
3	1	0	0
7	1	0	0
0	0	0	53
2232	**1665**	**0**	**53**
R	L	U	P

Westbound St. [E]

Out	In	Total
4370	3801	8171
79	84	163
4	4	8
3	8	11
0	0	0
4456	**3897**	**8353**

08/06/2019 11:30 AM
Ending At
08/07/2019 9:45 AM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

U	T	R	P
1	7403	1731	0
0	132	28	0
0	26	1	0
0	14	0	0
0	0	0	0
1	**7575**	**1760**	**0**

8173	9135	17308
162	160	322
21	27	48
3	14	17
0	0	0
8359	**9336**	**17695**
Out	In	Total

Northbound St. [S]

Turning Movement Data Plot

Turning Movement Peak Hour Data (12:30 PM)

Start Time	Southbound St. Southbound					Westbound St. Westbound					Northbound St. Northbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
12:30 PM	227	87	0	3	314	71	34	0	3	105	59	281	0	0	340	759
12:45 PM	267	83	1	0	351	53	41	0	3	94	63	277	0	0	340	785
1:00 PM	257	87	0	0	344	64	52	0	0	116	64	269	0	0	333	793
1:15 PM	277	69	0	0	346	73	52	0	4	125	44	289	0	0	333	804
Total	1028	326	1	3	1355	261	179	0	10	440	230	1116	0	0	1346	3141
Approach %	75.9	24.1	0.1	-	-	59.3	40.7	0.0	-	-	17.1	82.9	0.0	-	-	-
Total %	32.7	10.4	0.0	-	43.1	8.3	5.7	0.0	-	14.0	7.3	35.5	0.0	-	42.9	-
PHF	0.928	0.937	0.250	-	0.965	0.894	0.861	0.000	-	0.880	0.898	0.965	0.000	-	0.990	0.977
Lights	1008	310	1	-	1319	250	173	0	-	423	227	1095	0	-	1322	3064
% Lights	98.1	95.1	100.0	-	97.3	95.8	96.6	-	-	96.1	98.7	98.1	-	-	98.2	97.5
Mediums	17	15	0	-	32	11	6	0	-	17	3	19	0	-	22	71
% Mediums	1.7	4.6	0.0	-	2.4	4.2	3.4	-	-	3.9	1.3	1.7	-	-	1.6	2.3
Articulated Trucks	3	1	0	-	4	0	0	0	-	0	0	2	0	-	2	6
% Articulated Trucks	0.3	0.3	0.0	-	0.3	0.0	0.0	-	-	0.0	0.0	0.2	-	-	0.1	0.2
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	2	-	-	-	-	6	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	66.7	-	-	-	-	60.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	1	-	-	-	-	4	-	-	-	-	0	-	-
% Pedestrians	-	-	-	33.3	-	-	-	-	40.0	-	-	-	-	-	-	-

Southbound St. [N]

Out	In	Total
1346	1319	2665
30	32	62
2	4	6
0	0	0
0	0	0
1378	**1355**	**2733**

1008	310	1	0
17	15	0	0
3	1	0	0
0	0	0	0
0	0	0	3
1028	**326**	**1**	**3**
T	L	U	P

Peak Hour Data

08/06/2019 12:30 PM
Ending At
08/06/2019 1:30 PM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

Westbound St. [E]

Out	In	Total
537	423	960
18	17	35
1	0	1
0	0	0
0	0	0
556	**440**	**996**

250	173	0	0
11	6	0	0
0	0	0	0
0	0	0	0
0	0	0	10
261	**179**	**0**	**10**
R	L	U	P

U	T	R	P
0	1095	227	0
0	19	3	0
0	2	0	0
0	0	0	0
0	0	0	0
0	**1116**	**230**	**0**

1181	1322	2503
23	22	45
3	2	5
0	0	0
0	0	0
1207	**1346**	**2553**
Out	In	Total

Northbound St. [S]

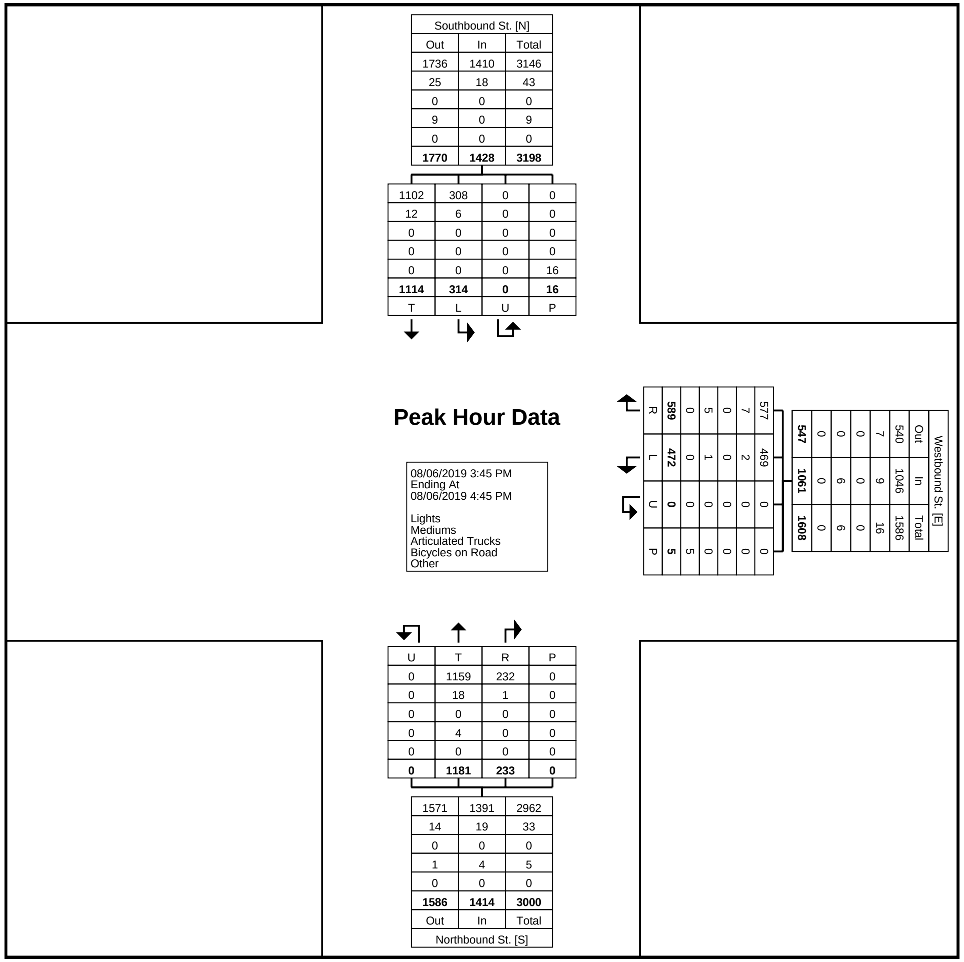
Turning Movement Peak Hour Data Plot (12:30 PM)

Turning Movement Peak Hour Data (3:45 PM)

	Southbound St.					Westbound St.					Northbound St.					
	Southbound					Westbound					Northbound					
Start Time	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
3:45 PM	272	100	0	2	372	119	84	0	1	203	57	302	0	0	359	934
4:00 PM	293	80	0	6	373	176	147	0	2	323	69	321	0	0	390	1086
4:15 PM	268	69	0	6	337	148	133	0	2	281	58	263	0	0	321	939
4:30 PM	281	65	0	2	346	146	108	0	0	254	49	295	0	0	344	944
Total	1114	314	0	16	1428	589	472	0	5	1061	233	1181	0	0	1414	3903
Approach %	78.0	22.0	0.0	-	-	55.5	44.5	0.0	-	-	16.5	83.5	0.0	-	-	-
Total %	28.5	8.0	0.0	-	36.6	15.1	12.1	0.0	-	27.2	6.0	30.3	0.0	-	36.2	-
PHF	0.951	0.785	0.000	-	0.957	0.837	0.803	0.000	-	0.821	0.844	0.920	0.000	-	0.906	0.898
Lights	1102	308	0	-	1410	577	469	0	-	1046	232	1159	0	-	1391	3847
% Lights	98.9	98.1	-	-	98.7	98.0	99.4	-	-	98.6	99.6	98.1	-	-	98.4	98.6
Mediums	12	6	0	-	18	7	2	0	-	9	1	18	0	-	19	46
% Mediums	1.1	1.9	-	-	1.3	1.2	0.4	-	-	0.8	0.4	1.5	-	-	1.3	1.2
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	5	1	0	-	6	0	4	0	-	4	10
% Bicycles on Road	0.0	0.0	-	-	0.0	0.8	0.2	-	-	0.6	0.0	0.3	-	-	0.3	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	40.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	16	-	-	-	-	3	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	60.0	-	-	-	-	-	-	-

Traffic and Transportation Engineering Services
1800 Frobisher Street
PO Box 5000, STN A
Sudbury, Ontario, Canada P3A 5P3
705-674-4455 David.Knutson@greatersudbury.ca

Count Name: Paris @ Ramsey Lake Rd. (Redo)
Site Code:
Start Date: 08/06/2019
Page No: 7



Peak Hour Data

08/06/2019 3:45 PM
Ending At
08/06/2019 4:45 PM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

Southbound St. [N]		
Out	In	Total
1736	1410	3146
25	18	43
0	0	0
9	0	9
0	0	0
1770	**1428**	**3198**

1102	308	0	0
12	6	0	0
0	0	0	0
0	0	0	0
0	0	0	16
1114	**314**	**0**	**16**
T	L	U	P

R	L	U	P
577	469	0	0
7	2	0	0
0	0	0	0
5	1	0	0
0	0	0	5
589	**472**	**0**	**5**

Westbound St. [E]		
Out	In	Total
540	1046	1586
7	9	16
0	0	0
0	6	6
0	0	0
547	**1061**	**1608**

U	T	R	P
0	1159	232	0
0	18	1	0
0	0	0	0
0	4	0	0
0	0	0	0
0	**1181**	**233**	**0**

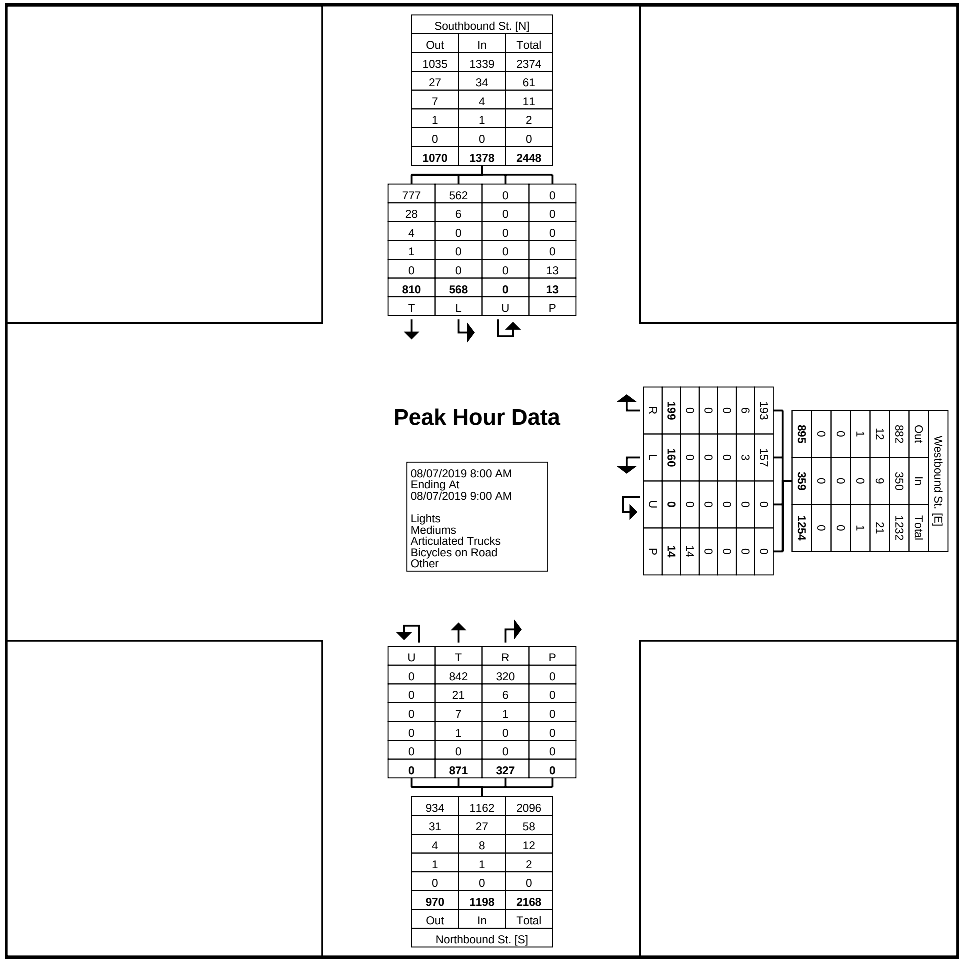
1571	1391	2962
14	19	33
0	0	0
1	4	5
0	0	0
1586	**1414**	**3000**
Out	In	Total
Northbound St. [S]		

Turning Movement Peak Hour Data Plot (3:45 PM)

Turning Movement Peak Hour Data (8:00 AM)

	Southbound St.					Westbound St.					Northbound St.					
	Southbound					Westbound					Northbound					
Start Time	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
8:00 AM	174	148	0	3	322	46	22	0	1	68	82	216	0	0	298	688
8:15 AM	202	170	0	3	372	56	40	0	4	96	97	199	0	0	296	764
8:30 AM	206	123	0	5	329	47	47	0	4	94	77	222	0	0	299	722
8:45 AM	228	127	0	2	355	50	51	0	5	101	71	234	0	0	305	761
Total	810	568	0	13	1378	199	160	0	14	359	327	871	0	0	1198	2935
Approach %	58.8	41.2	0.0	-	-	55.4	44.6	0.0	-	-	27.3	72.7	0.0	-	-	-
Total %	27.6	19.4	0.0	-	47.0	6.8	5.5	0.0	-	12.2	11.1	29.7	0.0	-	40.8	-
PHF	0.888	0.835	0.000	-	0.926	0.888	0.784	0.000	-	0.889	0.843	0.931	0.000	-	0.982	0.960
Lights	777	562	0	-	1339	193	157	0	-	350	320	842	0	-	1162	2851
% Lights	95.9	98.9	-	-	97.2	97.0	98.1	-	-	97.5	97.9	96.7	-	-	97.0	97.1
Mediums	28	6	0	-	34	6	3	0	-	9	6	21	0	-	27	70
% Mediums	3.5	1.1	-	-	2.5	3.0	1.9	-	-	2.5	1.8	2.4	-	-	2.3	2.4
Articulated Trucks	4	0	0	-	4	0	0	0	-	0	1	7	0	-	8	12
% Articulated Trucks	0.5	0.0	-	-	0.3	0.0	0.0	-	-	0.0	0.3	0.8	-	-	0.7	0.4
Bicycles on Road	1	0	0	-	1	0	0	0	-	0	0	1	0	-	1	2
% Bicycles on Road	0.1	0.0	-	-	0.1	0.0	0.0	-	-	0.0	0.0	0.1	-	-	0.1	0.1
Bicycles on Crosswalk	-	-	-	3	-	-	-	-	7	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	23.1	-	-	-	-	50.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	10	-	-	-	-	7	-	-	-	-	0	-	-
% Pedestrians	-	-	-	76.9	-	-	-	-	50.0	-	-	-	-	-	-	-

Count Name: Paris @ Ramsey Lake Rd. (Redo)
Site Code:
Start Date: 08/06/2019
Page No: 9



Peak Hour Data

08/07/2019 8:00 AM
Ending At
08/07/2019 9:00 AM

Lights
Mediums
Articulated Trucks
Bicycles on Road
Other

Southbound St. [N]

Out	In	Total
1035	1339	2374
27	34	61
7	4	11
1	1	2
0	0	0
1070	**1378**	**2448**

T	L	U	P
777	562	0	0
28	6	0	0
4	0	0	0
1	0	0	0
0	0	0	13
810	**568**	**0**	**13**

Westbound St. [E]

Out	In	Total
882	350	1232
12	9	21
1	0	1
0	0	0
0	0	0
895	**359**	**1254**

R	L	U	P
193	157	0	0
6	3	0	0
0	0	0	0
0	0	0	0
0	0	0	14
199	**160**	**0**	**14**

U	T	R	P
0	842	320	0
0	21	6	0
0	7	1	0
0	1	0	0
0	0	0	0
0	**871**	**327**	**0**

Out	In	Total
934	1162	2096
31	27	58
4	8	12
1	1	2
0	0	0
970	**1198**	**2168**

Northbound St. [S]

Turning Movement Peak Hour Data Plot (8:00 AM)

Programmed EPAC Data

4/6/2022
10:09:17AM

Intersection Name: Paris & Brady **Intersection Alias: Brady**

Access Code: 9999 Channel: 7 Address: 0 Revision: 3.32n

Access Data

Port 2 Comm :19200 Baud
Port 3 Comm :4800 Baud

Phase Data

Vehical Basic Timings

Phase	Min_Grn	Passage	Max1	Max2	Yellow	All Red
1	5	2.0	12	14	3.0	2.0
2	15	5.0	40	45	3.7	2.4
3	5	2.0	20	28	3.0	2.0
4	10	3.5	25	25	3.7	2.5
5	5	2.0	15	17	3.0	2.0
6	15	5.0	40	45	3.7	2.4
7	5	2.0	16	20	3.0	2.0
8	10	3.5	25	25	3.7	2.5

Vehical Density Timings

Added Initial	Max_Initial	Time B4 Reduction	Cars Before	Time To Reduce	Min_Gap
0.0	0	0	0	0	0.0
0.0	0	0	0	0	0.0
0.0	0	0	0	0	0.0
0.0	0	0	0	0	0.0
0.0	0	0	0	0	0.0
0.0	0	0	0	0	0.0
0.0	0	0	0	0	0.0
0.0	0	0	0	0	0.0

Pedestrian Timing

Phase	Walk	Ped Clear	Flashing Walk	Extended Actuated Ped Clear	Rest in Walk
1	0	0	No	0	No
2	7	27	No	0	No
3	0	0	No	0	No
4	7	30	No	0	No
5	0	0	No	0	No
6	7	27	No	0	No
7	0	0	No	0	No
8	7	30	No	0	No

General Control

Initialize	Non-Act Response	Veh Recall	Ped Recall	Recall Delay
Inactive	None	None	None	0
Yellow	NonActI	Min	None	0
Inactive	None	None	None	0
Inactive	NonActII	None	None	0
Inactive	None	None	None	0
Yellow	NonActI	Min	None	0
Inactive	None	None	None	0
Inactive	NonActII	None	None	0

Miscellaneous

Non Lock	Dual Entry	Last Car Passage	Conditional Service	No Simultaneous Gap Out
Yes	No	No	No	No
Yes	Yes	No	No	No
Yes	No	No	No	No
Yes	Yes	No	No	No
Yes	No	No	No	No
Yes	Yes	No	No	No
Yes	No	No	No	No
Yes	Yes	No	No	No

Special Sequence
Default Data

Vehical Detector Phase Assignment

Assigned Phase	Mode	Switched Phase	Extend	Delay

Default Data

Pedestrian Detector
Default Data

Special Detector Phase Assignment

Assign Phase	Mode	Switched Phase	Extend	Delay

:
Default Data

Unit Data

General Control

Startup Time: 5sec Startup State: Flash Red Revert: 4sec
Auto Ped Clear: No Stop Time Reset: No Alternate Sequence: 0
ABC connector Input Modes: 0
ABC connector Output Modes: 0
D connector Input Modes: 0
D connector Output Modes: 0

Ring	Input Respons	Output Selection
1	Ring 1	Ring 1
2	Ring 2	Ring 2
3	None	None
4	None	None

Remote Flash
Test A = Flash

Phase	Flash Entry Phase	Flash Exit Phase

Default Data - No Flash

Channel	Flash Color	Flash Alternat

Default Data - No Flash

Overlaps

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Phase(s)																

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Trail Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trail Yellow	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Trail Red	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Plus Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minus Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring

Phase	Ring	Next Phase
1	1	2
2	1	3
3	1	4
4	1	1
5	2	6
6	2	7
7	2	8
8	2	5

Phase(s)

Concurrent Phases	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	1	2	3	4	1	1	3	3	9	10	11	12	13	14	15	16
	5	5	7	7	2	2	4	4								
	6	6	8	8	5	6	7	8								

Alternate Sequences

Alternate Sequences

Phase Pair(s)

No Alternate Sequences

Port 1 Data

BIU Addr	Port Status	Message
		40

Default Data

Channel Assignment

Control	Channel	Hardware Pin Set		Control	Channel	Hardware Pin Set		Control	Channel	Hardware Pin Set	
Ph.1 Veh	1	1 - Ph.1 RYG	1	Ph.2 Veh	2	2 - Ph.2 RYG	2	Ph.3 Veh	3	3 - Ph.3 RYG	3
Ph.4 Veh	4	4 - Ph.4 RYG	4	Ph.5 Veh	5	5 - Ph.5 RYG	5	Ph.6 Veh	6	6 - Ph.6 RYG	6
Ph.7 Veh	7	7 - Ph.7 RYG	7	Ph.8 Veh	8	8 - Ph.8 RYG	8	Ph.2 Ped	9	10 - Ph.2 DPW	10
Ph.4 Ped	10	12 - Ph.4 DPW	12	Ph.6 Ped	11	14 - Ph.6 DPW	14	Ph.8 Ped	12	16 - Ph.8 DPW	16
Ph.1 OLP	13	17 - Ph.1 RYG	17	Ph.2 OLP	14	18 - Ph.2 RYG	18	Ph.3 OLP	15	19 - Ph.3 RYG	19
Ph.4 OLP	16	20 - Ph.4 RYG	20	Ph.1 Ped	17	9 - Ph.1 DPW	9	Ph.3 Ped	18	11 - Ph.3 DPW	11
Ph.5 Ped	19	13 - Ph.5 DPW	13	Ph.7 Ped	20	15 - Ph.7 DPW	15				

Coordination Data

General Coordination Data

Operation Mode: 0=Free

Coordination Mode: 2=Permissive Yield

Maximun Mode: 0=Inhibit

Correction Mode: 2=Short Way

Offset Mode: 0=Beg Grn

Force Mode: 1=Cycle

Max Dwell Time: 15

Yield Period: 0

Manual Dial: 1

Manual Split: 1

Manual Offset: 1

Dial/Split	Cycle
1/1	120
2/1	130
3/1	130

Split Times and Phase Mode

Dial 1 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	11	0=Actuated	2	47	1=Coordinate	3	24	0=Actuated	4	38	0=Actuated
5	14	0=Actuated	6	45	1=Coordinate	7	22	0=Actuated	8	39	0=Actuated

Dial 2 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	10	0=Actuated	2	59	1=Coordinate	3	26	0=Actuated	4	35	0=Actuated
5	17	0=Actuated	6	48	1=Coordinate	7	20	0=Actuated	8	45	0=Actuated

Dial 3 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	10	0=Actuated	2	62	1=Coordinate	3	22	0=Actuated	4	36	0=Actuated
5	15	0=Actuated	6	57	1=Coordinate	7	22	0=Actuated	8	36	0=Actuated

Traffic Plan Data

Plan: **1/1/1** Offset Time: 16 Alt. Sequence: 0 Mode: 0=Normal Rg 2 Lag Time: 0 Rg 3 Lag Time: 0 Rg 4 Lag Time: 0

Plan: **2/1/1** Offset Time: 17 Alt. Sequence: 0 Mode: 0=Normal Rg 2 Lag Time: 0 Rg 3 Lag Time: 0 Rg 4 Lag Time: 0

Plan: **3/1/1** Offset Time: 12 Alt. Sequence: 0 Mode: 0=Normal Rg 2 Lag Time: 0 Rg 3 Lag Time: 0 Rg 4 Lag Time: 0

Local TBC Data

Start of Daylight Saving Month: 3 Week: 2 Cycle Zero Reference Hours: 24 Min: 0

End of Daylight Saving Month: 11 Week: 1

Source	Equate Days						
Day	1	2	3	4	5	6	7
2	3	4	5	6	0	0	0

Traffic Data

PHASE FUNCTION

Event	Day	Time	D/S/O	flash	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1	0:1	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
2	1	9:0	1/0/1		☐	☒	☒	☒	☐	☒	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
3	1	20:0	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
4	2	0:1	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
5	2	6:30	1/0/1		☐	☒	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐
6	2	9:30	1/0/1		☐	☒	☒	☒	☐	☒	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
7	2	15:0	1/0/1		☐	☒	☒	☒	☒	☒	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
8	2	16:0	1/0/1		☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐
9	2	18:0	1/0/1		☐	☒	☒	☒	☐	☒	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
10	2	21:0	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
11	7	0:1	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
12	7	8:30	1/0/1		☐	☒	☒	☒	☐	☒	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
13	7	19:0	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

AUX. Events

Event	Program Day	Hour	Min.	Aux Ouputs 1	2	3	Det. Diag. D1	Det. Rpt. D2	Det. Mult100 D3	Dimming	Special Function Outputs 1	2	3	4	5	6	7	8
1	1	0	0	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
2	2	0	0	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
3	7	0	0	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Default Data - No Special Day(s) or Week(s) Programmed

Special Functions

Function	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8
Special Function 1	☒	☐	☐	☐	☐	☐	☐	☐
Special Function 2	☐	☒	☐	☐	☐	☐	☐	☐
Special Function 3	☐	☐	☒	☐	☐	☐	☐	☐
Special Function 4	☐	☐	☐	☒	☐	☐	☐	☐
Special Function 5	☐	☐	☐	☐	☒	☐	☐	☐
Special Function 6	☐	☐	☐	☐	☐	☒	☐	☐
Special Function 7	☐	☐	☐	☐	☐	☐	☒	☐
Special Function 8	☐	☐	☐	☐	☐	☐	☐	☒

Phase Function

Phase Function Map	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
Phase 1 Max2	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 2 Max2	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 3 Max2	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 4 Max2	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 5 Max2	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 6 Max2	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 7 Max2	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 8 Max2	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
Phase 1 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐
Phase 2 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐
Phase 3 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐
Phase 4 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐
Phase 5 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐
Phase 6 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐
Phase 7 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐
Phase 8 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒

Dimming Data

Channel	Red	Yellow	Green	Alternate
	☐	☐	☐	☐

Default Data - No Dimming Programmed

Preemption Data

General Preemption Data

Ring	Min Grn/Walk Time
1	5
2	5
3	5
4	5

Flash > Preempt 1
Preempt 1 = Preempt 2
Preempt 2 = Preempt 3
Preempt 3 = Preempt 4
Preempt 4 = Preempt 5
Preempt 5 = Preempt 6

Preempt Timers

								Select			Track					Return		
Preempt	Non-Locking	Link to Preempt	Delay	Extend	Duration	MaxCall	Lock-Out	Ped Clear	Yel	Red	Grn	Ped	Yel	Red	Dwell Green	Ped Clear	Yel	Red
1	No	0	0	0	0	0	0	8	4.0	2.0	0	0	4.0	2.0	5	0	4.0	2.0
2	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
3	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
4	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
5	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
6	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0

Preempt 1			Preempt 2			Preempt 3			Preempt 4			Preempt 5			Preempt 6		
Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls
1	No	Yes	1	No	Yes	1	No	Yes	1	No	Yes	1	No	Yes	1	No	Yes
2	No	Yes	2	Yes	Yes	2	Yes	Yes	2	Yes	Yes	2	Yes	Yes	2	Yes	Yes
3	Yes	Yes	3	No	Yes	3	No	Yes	3	No	Yes	3	No	Yes	3	No	Yes
4	No	Yes	4	No	Yes	4	No	Yes	4	No	Yes	4	No	Yes	4	No	Yes
5	No	Yes	5	No	Yes	5	No	Yes	5	No	Yes	5	No	Yes	5	No	Yes
6	No	Yes	6	Yes	Yes	6	Yes	Yes	6	Yes	Yes	6	Yes	Yes	6	Yes	Yes
7	Yes	Yes	7	No	Yes	7	No	Yes	7	No	Yes	7	No	Yes	7	No	Yes
8	No	Yes	8	No	Yes	8	No	Yes	8	No	Yes	8	No	Yes	8	No	Yes

Priority Timers

Priority	Non-Lockin	Delay	Extend	Duration	Dwell	Max_Call	Lock-Out	Skip Phases
1	No	0	0	0	0	0	0	0=Do not Skip Phases
2	No	0	0	0	0	0	0	0=Do not Skip Phases
3	No	0	0	0	0	0	0	0=Do not Skip Phases
4	No	0	0	0	0	0	0	0=Do not Skip Phases
5	No	0	0	0	0	0	0	0=Do not Skip Phases
6	No	0	0	0	0	0	0	0=Do not Skip Phases

Priority 1			Priority 2			Priority 3			Priority 4			Priority 5			Priority 6		
Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls

Preempt 1

Vehical Phases

Ph.	Track	Dwell	Cycle
2	Red	Green	No
6	Red	Green	No

Pedestrian Phases

Ph	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp	Track	Dwell	Cycle

Default Data

Preempt 2

Vehical Phases

Ph.	Track	Dwell	Cycle
4	Red	Green	No
7	Red	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle

Default Data

Preempt 3

Vehical Phases

Ph.	Track	Dwell	Cycle
3	Green	Red	No
4	Red	Green	No
8	Green	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
2	Red	Grn	No
3	Grn	Red	No
4	Grn	Grn	No

Preempt 4

Vehical Phases

Ph.	Track	Dwell	Cycle
4	Green	Green	No
7	Green	Red	No
8	Red	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
4	Red	Grn	No
1	Grn	Red	No
2	Grn	Grn	No

Preempt 5

Vehical Phases

Ph.	Track	Dwell	Cycle
4	Green	Green	No
7	Green	Red	No
8	Red	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
4	Red	Grn	No
1	Grn	Red	No
2	Grn	Grn	No

Preempt 6

Vehical Phases

Ph.	Track	Dwell	Cycle
4	Green	Green	No
7	Green	Red	No
8	Red	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
4	Red	Grn	No
1	Grn	Red	No
2	Grn	Grn	No

System/Detectors Data

Local Critical Alarms

Revert to Backup: 15

1st Phone:

2nd Phone:

Local Free: No

Cycle Failure: No

Coord Failure: No

Conflict Flash: No

Remote Flash: No

Local Fash: No

Cycle Fault: No

Coord Fault: No

Premption: No

Voltage Monitor: No

Special Status 1: No

Special Status 2: No

Special Status 3: No

Special Status 4: No

Special Status 5: No

Special Status 6: No

Traffic Responsive

System Detector	Detector Channel	Veh/Hr	Average Time(mins)	Occupancy Correction/10	Min Volume %
1	65	900	4	1	98
2	66	900	4	1	98
3	67	900	4	1	98
4	68	900	4	1	98
5	69	900	4	1	98
6	70	900	4	1	98
7	71	900	4	1	98

Sample Interval:

Queue 1 Detectors	System Detectors	Weight Factor

Default Data

Queue 2 Detectors	System Detectors	Weight Factor

Default Data

Queue: 1 Input Selection: 0=Average

Detector Failed Level : 0

Queue: 2 Input Selection: 0=Average

Detector Failed Level : 0

Queue:

Level	Enter	Leave	Dial / Split / Offset
			/ /

Default Data

Vehical Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count

Default Data - Diag 0 Values

Vehical Detector

Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Special Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 0 Val

Pedestrian Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 0 Values

Pedestrian Detector

Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Special Detector

Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Speed Trap Data

Speed Trap:

Measurement:

Detector 1	Detector_2	Distance :

Default Data

Dial/Split/Offset	Speed Trap Low Treshold	Speed Trap High Treshold
//		

Default Data

Volume Detector Data

Report Interval

Volume Detector Number	Controller Detector Channel

Default Data

Programmed EPAC Data

4/6/2022
10:06:18AM

Intersection Name: **Paris & Van Horne** **Intersection Alias:** **Van Horne**

Access Code: 9999 Channel: 1 Address: 14 Revision: 3.13b

Access Data

Port 2 Comm :19200 Baud
Port 3 Comm :19200 Baud

Phase Data

Vehical Basic Timings

Phase	Min_Grn	Passage	Max1	Max2	Yellow	All Red
1	5	2.0	15	15	3.0	1.0
2	15	3.5	35	35	3.7	2.4
4	7	2.5	25	25	3.7	3.0
5	5	2.0	6	6	3.0	1.0
6	15	3.5	35	35	3.7	2.4
8	7	2.5	25	25	3.7	3.0

Vehical Density Timings

Added Initial	Max_Initial	Time B4 Reduction	Cars Before	Time To Reduce	Min_Gap
0.0	0	0	0	0	0.0
0.0	0	0	0	0	0.0
0.0	0	0	0	0	0.0
0.0	0	0	0	0	0.0
0.0	0	0	0	0	0.0
0.0	0	0	0	0	0.0

Pedestrian Timing

Phase	Walk	Ped Clear	Flashing Walk	Extended Actuated Ped Clear	Extended Actuated Rest in Walk
1	0	0	No	0	No
2	7	25	No	0	No
4	7	35	No	0	No
5	0	0	No	0	No
6	7	25	No	0	No
8	7	35	No	0	No

General Control

Initialize	Non-Act Response	Veh Recall	Ped Recall	Recall Delay
Inactive	None	None	None	0
Yellow	NonActI	Max	None	0
Inactive	NonActII	None	None	0
Inactive	None	None	None	0
Yellow	NonActI	Max	None	0
Inactive	NonActII	None	None	0

Miscellaneous

Non Lock	Dual Entry	Last Car Passage	Conditional Service	No Simultaneous Gap Out
Yes	No	No	No	No
No	Yes	No	No	No
Yes	Yes	No	No	No
Yes	No	No	No	No
No	Yes	No	No	No
Yes	Yes	No	No	No

Special Sequence

Default Data

Vehical Detector Phase Assignment

	Assigned Phase	Mode	Switched Phase	Extend	Delay
Vehical Detector Channel :3	4	Veh	0	0.0	0
Vehical Detector Channel :6	4	Veh	0	0.0	0
Vehical Detector Channel :7	4	Veh	0	0.0	0

Default Data

Pedestrian Detector

Default Data

Special Detector Phase Assignment

	Assign Phase	Mode	Switched Phase	Extend	Delay
:					

Default Data

Unit Data

General Control

Startup Time: 5sec Startup State: Flash Red Revert: 4sec

Auto Ped Clear: No Stop Time Reset: No Alternate Sequence: 0

ABC connector Input Modes: 0

ABC connector Output Modes: 0

D connector Input Modes: 0

D connector Output Modes: 0

Ring	Input Respons	Output Selection
1	Ring 1	Ring 1
2	Ring 2	Ring 2
3	None	None
4	None	None

Remote Flash

Test A = Flash

Phase	Flash Entry Phase	Flash Exit Phase

Default Data - No Flash

Channel	Flash Color	Flash Alternat

Default Data - No Flash

Overlaps

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Phase(s)																

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Trail Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trail Yellow	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Trail Red	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Plus Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minus Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring

Phase	Ring	Next Phase
1	1	2
2	1	3
4	1	1
5	2	6
6	2	7
8	2	5

Phase(s)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Concurrent Phases	1	2	3	4	1	1	3	3	9	10	11	12	13	14	15	16
	5	5	7	7	2	2	4	4								
	6	6	8	8	5	6	7	8								

Alternate Sequences

Alternate Sequences

Phase Pair(s)

No Alternate Sequences

Port 1 Data

BIU Addr	Port Status	Message 40

Default Data

Channel Assignment

Control	Channel	Hardware Pin Set		Control	Channel	Hardware Pin Set		Control	Channel	Hardware Pin Set	
Ph.1 Veh	1	1 - Ph.1 RYG	1	Ph.2 Veh	2	2 - Ph.2 RYG	2	Ph.3 Veh	3	3 - Ph.3 RYG	3
Ph.4 Veh	4	4 - Ph.4 RYG	4	Ph.5 Veh	5	5 - Ph.5 RYG	5	Ph.6 Veh	6	6 - Ph.6 RYG	6
Ph.7 Veh	7	7 - Ph.7 RYG	7	Ph.8 Veh	8	8 - Ph.8 RYG	8	Ph.2 Ped	9	10 - Ph.2 DPW	10
Ph.4 Ped	10	12 - Ph.4 DPW	12	Ph.6 Ped	11	14 - Ph.6 DPW	14	Ph.8 Ped	12	16 - Ph.8 DPW	16
Ph.1 OLP	13	17 - Ph.1 RYG	17	Ph.2 OLP	14	18 - Ph.2 RYG	18	Ph.3 OLP	15	19 - Ph.3 RYG	19
Ph.4 OLP	16	20 - Ph.4 RYG	20	Ph.1 Ped	17	9 - Ph.1 DPW	9	Ph.3 Ped	18	11 - Ph.3 DPW	11
Ph.5 Ped	19	13 - Ph.5 DPW	13	Ph.7 Ped	20	15 - Ph.7 DPW	15				

Coordination Data

General Coordination Data

Operation Mode: 1=Auto

Coordination Mode: 0=Permissive

Maximun Mode: 0=Inhibit

Correction Mode: 3=Short Way Plus

Offset Mode: 0=Beg Grn

Force Mode: 0=Plan

Max Dwell Time: 15

Yield Period: 0

Manual Dial: 1

Manual Split: 1

Manual Offset: 1

Dial/Split	**Cycle**
1/1	120
2/1	120
3/1	120

Split Times and Phase Modes

Dial 1 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	11	0=Actuated	2	57	1=Coordinate	4	52	0=Actuated	5	18	0=Actuated
6	50	1=Coordinate	8	52	0=Actuated						

Dial 2 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	14	0=Actuated	2	55	1=Coordinate	4	51	0=Actuated	5	14	0=Actuated
6	55	1=Coordinate	8	51	0=Actuated						

Dial 3 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	14	0=Actuated	2	55	1=Coordinate	4	51	0=Actuated	5	14	0=Actuated
6	55	1=Coordinate	8	51	0=Actuated						

Traffic Plan Data

Plan: **4/1/1** Offset Time: 100 Alt. Sequence: 0 Mode: 0=Normal Rg 2 Lag Time: 0 Rg 3 Lag Time: 0 Rg 4 Lag Time: 0

Local TBC Data

Start of Daylight Saving Month: 3 Week: 2 Cycle Zero Reference Hours: 24 Min: 0

End of Daylight Saving Month: 11 Week: 1

Source Day	Equate Days 1	2	3	4	5	6	7
2	3	4	5	6	0	0	0

Traffic Data

Event	Day	Time	D/S/O	flash	PHASE FUNCTION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1	0:1	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
2	1	9:0	1/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
3	1	21:30	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
4	2	0:1	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
5	2	6:30	1/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
6	2	21:30	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
7	7	0:1	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
8	7	8:0	1/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
9	7	21:30	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

AUX. Events

Event	Program Day	Hour	Min.	Aux Ouputs 1	2	3	Det. Diag. D1	Det. Rpt. D2	Det. Mult100 D3	Dimming	Special Function Outputs 1	2	3	4	5	6	7	8
				☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Default Data - No Special Day(s) or Week(s) Programmed

Special Functions

Function	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8
Special Function 1	☒	☐	☐	☐	☐	☐	☐	☐
Special Function 2	☐	☒	☐	☐	☐	☐	☐	☐
Special Function 3	☐	☐	☒	☐	☐	☐	☐	☐
Special Function 4	☐	☐	☐	☒	☐	☐	☐	☐
Special Function 5	☐	☐	☐	☐	☒	☐	☐	☐
Special Function 6	☐	☐	☐	☐	☐	☒	☐	☐
Special Function 7	☐	☐	☐	☐	☐	☐	☒	☐
Special Function 8	☐	☐	☐	☐	☐	☐	☐	☒

Phase Function

Phase Function Map	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
Phase 1 Max2	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 2 Max2	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 3 Max2	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 4 Max2	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 5 Max2	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 6 Max2	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 7 Max2	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 8 Max2	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
Phase 1 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐
Phase 2 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐
Phase 3 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐
Phase 4 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐
Phase 5 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐
Phase 6 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐
Phase 7 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐
Phase 8 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒

Dimming Data

Channel	Red	Yellow	Green	Alternate
	☐	☐	☐	☐

Default Data - No Dimming Programmed

Preemption Data

General Preemption Data

Ring	Min Grn/Walk Time
1	5
2	5
3	5
4	5

Flash > Preempt 1
Preempt 2 = Preempt 3
Preempt 4 = Preempt 5
Preempt 1 = Preempt 2
Preempt 3 = Preempt 4
Preempt 5 = Preempt 6

Preempt Timers

Preempt	Non-Locking	Link to Preempt	Delay	Extend	Duration	MaxCall	Lock-Out	Select			Track					Return		
								Ped Clear	Yel	Red	Grn	Ped	Yel	Red	Dwell Green	Ped Clear	Yel	Red
1	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
2	No	0	0	0	0	0	0	8	4.0	2.0	0	0	4.0	2.0	5	0	4.0	2.0
3	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
4	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
5	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
6	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0

Preempt 1			Preempt 2			Preempt 3			Preempt 4			Preempt 5			Preempt 6		
Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls
1	No	Yes	2	Yes	No	1	No	Yes	1	No	Yes	1	No	Yes	1	No	Yes
2	No	Yes	6	Yes	No	2	Yes	Yes	2	Yes	Yes	2	Yes	Yes	2	Yes	Yes
3	No	Yes				3	No	Yes	3	No	Yes	3	No	Yes	3	No	Yes
4	Yes	Yes				4	No	Yes	4	No	Yes	4	No	Yes	4	No	Yes
5	No	Yes				5	No	Yes	5	No	Yes	5	No	Yes	5	No	Yes
6	No	Yes				6	Yes	Yes	6	Yes	Yes	6	Yes	Yes	6	Yes	Yes
7	No	Yes				7	No	Yes	7	No	Yes	7	No	Yes	7	No	Yes
8	Yes	Yes				8	No	Yes	8	No	Yes	8	No	Yes	8	No	Yes

Priority Timers

Priority	Non-Locking	Delay	Extend	Duration	Dwell	Max_Call	Lock-Out	Skip Phases
1	No	0	0	0	0	0	0	0=Do not Skip Phases
2	No	0	0	0	0	0	0	0=Do not Skip Phases
3	No	0	0	0	0	0	0	0=Do not Skip Phases
4	No	0	0	0	0	0	0	0=Do not Skip Phases
5	No	0	0	0	0	0	0	0=Do not Skip Phases
6	No	0	0	0	0	0	0	0=Do not Skip Phases

Priority 1			Priority 2			Priority 3			Priority 4			Priority 5			Priority 6		
Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls

Preempt 1

Vehical Phases

Ph.	Track	Dwell	Cycle
2	Red	Green	No
6	Red	Green	No

Pedestrian Phases

Ph	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp	Track	Dwell	Cycle
C	Red	Green	No
D	Red	Green	No

Preempt 2

Vehical Phases

Ph.	Track	Dwell	Cycle
4	Red	Green	No
8	Red	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle

Default Data

Preempt 3

Vehical Phases

Ph.	Track	Dwell	Cycle
3	Green	Red	No
4	Red	Green	No
8	Green	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
2	Red	Grn	No
3	Grn	Red	No
4	Grn	Grn	No

Preempt 4

Vehical Phases

Ph.	Track	Dwell	Cycle
4	Green	Green	No
7	Green	Red	No
8	Red	Green	No

Pedestrian Phases

Ph. Track Dwell Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
4	Red	Grn	No
1	Grn	Red	No
2	Grn	Grn	No

Preempt 5

Vehical Phases

Ph.	Track	Dwell	Cycle
4	Green	Green	No
7	Green	Red	No
8	Red	Green	No

Pedestrian Phases

Ph. Track Dwell Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
4	Red	Grn	No
1	Grn	Red	No
2	Grn	Grn	No

Preempt 6

Vehical Phases

Ph.	Track	Dwell	Cycle
4	Green	Green	No
7	Green	Red	No
8	Red	Green	No

Pedestrian Phases

Ph. Track Dwell Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
4	Red	Grn	No
1	Grn	Red	No
2	Grn	Grn	No

System/Detectors Data

Local Critical Alarms

Revert to Backup: 15

1st Phone:

2nd Phone:

Local Free: No
Cycle Failure: No
Coord Failure: No
Conflict Flash: No
Remote Flash: No

Local Fash: No
Cycle Fault: No
Coord Fault: No
Premption: No
Voltage Monitor: No

Special Status 1: No
Special Status 2: No
Special Status 3: No
Special Status 4: No
Special Status 5: No
Special Status 6: No

Traffic Responsive

System Detector	Detector Channel	Veh/Hr	Average Time(mins)	Occupancy Correction/10	Min Volume %	Queue 1 Detectors	System Detectors	Weight Factor	Queue 2 Detectors	System Detectors	Weight Factor
Default Data						**Default Data**			**Default Data**		

Sample Interval:

Queue: 1 Input Selection: 0=Average
Detector Failed Level : 0

Queue: 2 Input Selection: 0=Average
Detector Failed Level : 0

Queue:

Level	Enter	Leave	Dial / Split / Offset
			/ /

Default Data

Vehical Detector

Diagnostic Value 0

Detector Max Presence No Activity Erratic Count

Default Data - Diag 0 Values

Vehical Detector

Diagnostic Value 1

Detector Max Presence No Activity Erratic Count

Default Data - No Diag 1 Values

Special Detector

Diagnostic Value 0

Detector Max Presence No Activity Erratic Count

Default Data - No Diag 0 Val

Pedestrian Detector

Diagnostic Value 0

Detector Max Presence No Activity Erratic Count

Default Data - No Diag 0 Values

Pedestrian Detector

Diagnostic Value 1

Detector Max Presence No Activity Erratic Count

Default Data - No Diag 1 Values

Special Detector

Diagnostic Value 1

Detector Max Presence No Activity Erratic Count

Default Data - No Diag 1 Values

Speed Trap Data

Speed Trap:

Measurement:

Detector 1 Detector_2 Distance :

Default Data

Dial/Split/Offset	Speed Trap Low Treshold	Speed Trap High Treshold
//		

Default Data

Volume Detector Data

Report Interval

Volume Detector Number	Controller Detector Channel

Default Data

Programmed EPAC Data

4/6/2022
10:10:05A

Intersection Name: Paris & John **Intersection Alias: John**

Access Code: 9999 Channel: 7 Address: 16 Revision: 3.13

Access Data

Port 2 Comm :1200 Baud
Port 3 Comm :1200 Baud

Phase Data

Vehical Basic Timings

Phase	Min_Grn	Passage	Max1	Max2	Yellow	All Red
1	5	2.5	10	10	3.0	1.0
2	20	4.0	45	45	3.7	2.1
4	8	3.5	20	20	3.7	2.0
6	20	4.0	45	45	3.7	2.1
8	8	3.5	20	20	3.7	2.0

Vehical Density Timings

Added Initial	Max_Initial	Time B4 Reduction	Cars Before	Time To Reduce	Min_Gap
0.0	0	0	0	0	0.0
0.0	0	0	0	0	0.0
0.0	0	0	0	0	0.0
0.0	0	0	0	0	0.0
0.0	0	0	0	0	0.0

Pedestrian Timing

Phase	Walk	Ped Clear	Flashing Walk	Extended Actuated Ped Clear	Rest in Walk
1	0	0	No	0	No
2	7	13	No	0	No
4	7	22	No	0	No
6	7	13	No	0	No
8	7	22	No	0	No

General Control

Initialize	Non-Act Response	Veh Recall	Ped Recall	Recall Delay
Inactive	None	None	None	0
Yellow	NonActI	Min	None	0
Inactive	NonActII	None	None	0
Yellow	NonActI	Min	None	0
Inactive	NonActII	None	None	0

Miscellaneous

Non Lock	Dual Entry	Last Car Passage	Conditional Service	No Simultaneous Gap Out
Yes	No	No	No	No
Yes	Yes	No	No	No
Yes	Yes	No	No	No
Yes	Yes	No	No	No
Yes	Yes	No	No	No

Special Sequence

Default Data

Vehical Detector Phase Assignment

	Assigned Phase	Mode	Switched Phase	Extend	Delay
Vehical Detector Channel :1	1	Veh	0	0.0	0
Vehical Detector Channel :2	2	Veh	0	0.0	0
Vehical Detector Channel :3	4	Veh	0	0.0	0
Vehical Detector Channel :4	4	Veh	0	0.0	3
Vehical Detector Channel :5	5	Veh	0	0.0	0
Vehical Detector Channel :6	6	Veh	0	0.0	0
Vehical Detector Channel :7	7	Veh	0	0.0	0
Vehical Detector Channel :8	8	Veh	0	0.0	0

Pedestrian Detector

Default Data

Special Detector Phase Assignment

	Assign Phase	Mode	Switched Phase	Extend	Delay
:					

Default Data

Unit Data

General Control

Startup Time: 5sec Startup State: Flash Red Revert: 4sec

Auto Ped Clear: No Stop Time Reset: No Alternate Sequence: 0

ABC connector Input Modes: 0

ABC connector Output Modes: 0

D connector Input Modes: 0

D connector Output Modes: 0

Ring	Input Respons	Output Selection
1	Ring 1	Ring 1
2	Ring 2	Ring 2
3	None	None
4	None	None

Remote Flash

Test A = Flash

Channel	Flash Color	Flash Alternat

Default Data - No Flash

Phase	Flash Entry Phase	Flash Exit Phase

Default Data - No Flash

Overlaps

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Phase(s)	1 2															

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Trail Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trail Yellow	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Trail Red	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Plus Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minus Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring

Phase	Ring	Next Phase
1	1	2
2	1	3
4	1	1
6	2	7
8	2	5

Phase(s)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Concurrent Phases	1	2	3	4	1	1	3	3	9	10	11	12	13	14	15	16
	5	5	7	7	2	2	4	4								
	6	6	8	8	5	6	7	8								

Alternate Sequences

Alternate Sequences

Phase
Pair(s)

No
Alternate
Sequences

Port 1 Data

BIU Addr	Port Status	Message 40

Default Data

Channel Assignment

Control	Channel	Hardware Pin Set		Control	Channel	Hardware Pin Set		Control	Channel	Hardware Pin Set	
Ph.1 Veh	1	1 - Ph.1 RYG	1	Ph.2 Veh	2	2 - Ph.2 RYG	2	Ph.3 Veh	3	3 - Ph.3 RYG	3
Ph.4 Veh	4	4 - Ph.4 RYG	4	Ph.5 Veh	5	5 - Ph.5 RYG	5	Ph.6 Veh	6	6 - Ph.6 RYG	6
Ph.7 Veh	7	7 - Ph.7 RYG	7	Ph.8 Veh	8	8 - Ph.8 RYG	8	Ph.2 Ped	9	10 - Ph.2 DPW	10
Ph.4 Ped	10	12 - Ph.4 DPW	12	Ph.6 Ped	11	14 - Ph.6 DPW	14	Ph.8 Ped	12	16 - Ph.8 DPW	16
Ph.1 OLP	13	17 - Ph.1 RYG	17	Ph.2 OLP	14	18 - Ph.2 RYG	18	Ph.3 OLP	15	19 - Ph.3 RYG	19
Ph.4 OLP	16	20 - Ph.4 RYG	20	Ph.1 Ped	17	9 - Ph.1 DPW	9	Ph.3 Ped	18	11 - Ph.3 DPW	11
Ph.5 Ped	19	13 - Ph.5 DPW	13	Ph.7 Ped	20	15 - Ph.7 DPW	15				

Coordination Data

General Coordination Data

Operation Mode: 1=Auto

Coordination Mode: 0=Permissive

Maximun Mode: 0=Inhibit

Correction Mode: 2=Short Way

Offset Mode: 0=Beg Grn

Force Mode: 0=Plan

Max Dwell Time: 15

Yield Period: 0

Manual Dial: 1

Manual Split: 1

Manual Offset: 1

Dial/Split	Cycle
1/1	110
2/1	110
3/1	110

Split Times and Phase Modes

Dial 1 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	11	0=Actuated	2	62	1=Coordinate	4	37	0=Actuated	6	73	1=Coordinate
8	37	0=Actuated									

Dial 2 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	13	0=Actuated	2	60	1=Coordinate	4	37	0=Actuated	6	73	1=Coordinate
8	37	0=Actuated									

Dial 3 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	13	0=Actuated	2	60	1=Coordinate	4	37	0=Actuated	6	73	1=Coordinate
8	37	0=Actuated									

Traffic Plan Data

Plan: **1/1/1**	Offset Time: 55	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: **1/2/1**	Offset Time: 71	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: **1/3/1**	Offset Time: 71	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: **2/1/1**	Offset Time: 43	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: **2/2/1**	Offset Time: 71	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: **3/1/1**	Offset Time: 8	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: **3/2/1**	Offset Time: 71	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0

Local TBC Data

Start of Daylight Saving Month: 3 Week: 2 Cycle Zero Reference Hours: 24 Min: 0

End of Daylight Saving Month: 11 Week: 1

Source Day	Equate Days 1	2	3	4	5	6	7
2	3	4	5	6	0	0	0

Traffic Data

					PHASE FUNCTION															
Event	Day	Time	D/S/O	flash	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1	0:1	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
2	1	8:30	2/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
3	1	9:30	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
4	2	0:1	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
5	2	6:30	1/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
6	2	9:30	2/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
7	2	15:30	3/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
8	2	18:0	2/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
9	2	21:30	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
10	7	0:1	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
11	7	8:0	2/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
12	7	21:0	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

AUX. Events

Event	Program Day	Hour	Min.	Aux Ouputs 1	2	3	Det. Diag. D1	Det. Rpt. D2	Det. Mult100 D3	Dimming	Special Function Outputs 1	2	3	4	5	6	7	8
				☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Default Data - No Special Day(s) or Week(s) Programmed

Special Functions

Function	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8
Special Function 1	☒	☐	☐	☐	☐	☐	☐	☐
Special Function 2	☐	☒	☐	☐	☐	☐	☐	☐
Special Function 3	☐	☐	☒	☐	☐	☐	☐	☐
Special Function 4	☐	☐	☐	☒	☐	☐	☐	☐
Special Function 5	☐	☐	☐	☐	☒	☐	☐	☐
Special Function 6	☐	☐	☐	☐	☐	☒	☐	☐
Special Function 7	☐	☐	☐	☐	☐	☐	☒	☐
Special Function 8	☐	☐	☐	☐	☐	☐	☐	☒

Phase Function

Phase Function Map	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
Phase 1 Max2	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 2 Max2	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 3 Max2	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 4 Max2	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 5 Max2	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 6 Max2	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 7 Max2	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 8 Max2	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
Phase 1 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐
Phase 2 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐
Phase 3 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐
Phase 4 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐
Phase 5 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐
Phase 6 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐
Phase 7 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐
Phase 8 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒

Dimming Data

Channel	Red	Yellow	Green	Alternate
	☐	☐	☐	☐

Default Data - No Dimming Programmed

Preemption Data

General Preemption Data

Ring	Min Grn/Walk Time
1	5
2	5
3	5
4	5

Flash > Preempt 1	Preempt 2 = Preempt 3	Preempt 4 = Preempt 5
Preempt 1 = Preempt 2	Preempt 3 = Preempt 4	Preempt 5 = Preempt 6

Preempt Timers

								Select			Track					Return		
Preempt	Non-Locking	Link to Preempt	Delay	Extend	Duration	MaxCall	Lock-Out	Ped Clear	Yel	Red	Grn	Ped	Yel	Red	Dwell Green	Ped Clear	Yel	Red
1	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
2	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
3	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
4	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
5	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
6	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0

Preempt 1			Preempt 2			Preempt 3			Preempt 4			Preempt 5			Preempt 6		
Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls
4	Yes	No	1	No	Yes	1	No	Yes	1	No	Yes	1	No	Yes	1	No	Yes
8	Yes	No	2	No	Yes	2	Yes	Yes	2	Yes	Yes	2	Yes	Yes	2	Yes	Yes
			3	No	Yes	3	No	Yes	3	No	Yes	3	No	Yes	3	No	Yes
			4	Yes	Yes	4	No	Yes	4	No	Yes	4	No	Yes	4	No	Yes
			5	No	Yes	5	No	Yes	5	No	Yes	5	No	Yes	5	No	Yes
			6	No	Yes	6	Yes	Yes	6	Yes	Yes	6	Yes	Yes	6	Yes	Yes
			7	No	Yes	7	No	Yes	7	No	Yes	7	No	Yes	7	No	Yes
			8	Yes	Yes	8	No	Yes	8	No	Yes	8	No	Yes	8	No	Yes

Priority Timers

Priority	Non-Lockin;	Delay	Extend	Duration	Dwell	Max_Call	Lock-Out	Skip Phases
1	No	0	0	0	0	0	0	0=Do not Skip Phases
2	No	0	0	0	0	0	0	0=Do not Skip Phases
3	No	0	0	0	0	0	0	0=Do not Skip Phases
4	No	0	0	0	0	0	0	0=Do not Skip Phases
5	No	0	0	0	0	0	0	0=Do not Skip Phases
6	No	0	0	0	0	0	0	0=Do not Skip Phases

Priority 1			Priority 2			Priority 3			Priority 4			Priority 5			Priority 6		
Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls

Preempt 1

Vehical Phases

Ph.	Track	Dwell	Cycle
2	Red	Green	No
6	Red	Green	No

Pedestrian Phases

Ph	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp	Track	Dwell	Cycle

Default Data

Preempt 2

Vehical Phases

Ph.	Track	Dwell	Cycle
2	Green	Green	No
5	Green	Red	No
6	Red	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
1	Red	Grn	No
2	Grn	Red	No
3	Grn	Grn	No

Preempt 3

Vehical Phases

Ph.	Track	Dwell	Cycle
3	Green	Red	No
4	Red	Green	No
8	Green	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
2	Red	Grn	No
3	Grn	Red	No
4	Grn	Grn	No

Preempt 4

Vehical Phases

Ph.	Track	Dwell	Cycle
4	Green	Green	No
7	Green	Red	No
8	Red	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
4	Red	Grn	No
1	Grn	Red	No
2	Grn	Grn	No

Preempt 5

Vehical Phases

Ph.	Track	Dwell	Cycle
4	Green	Green	No
7	Green	Red	No
8	Red	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
4	Red	Grn	No
1	Grn	Red	No
2	Grn	Grn	No

Preempt 6

Vehical Phases

Ph.	Track	Dwell	Cycle
4	Green	Green	No
7	Green	Red	No
8	Red	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
4	Red	Grn	No
1	Grn	Red	No
2	Grn	Grn	No

System/Detectors Data

Local Critical Alarms

Revert to Backup: 15

1st Phone:

2nd Phone:

Local Free: No

Cycle Failure: No

Coord Failure: No

Conflict Flash: No

Remote Flash: No

Local Fash: No

Cycle Fault: No

Coord Fault: No

Premption: No

Voltage Monitor: No

Special Status 1: No

Special Status 2: No

Special Status 3: No

Special Status 4: No

Special Status 5: No

Special Status 6: No

Traffic Responsive

System Detector	Detector Channel	Veh/Hr	Average Time(mins)	Occupancy Correction/10	Min Volume %
1	71	100	1	10	0
2	72	100	1	10	0

Queue 1 Detectors	System Detectors	Weight Factor

Default Data

Queue 2 Detectors	System Detectors	Weight Factor

Default Data

Sample Interval:

Queue: 1 Input Selection: 0=Average

Detector Failed Level : 0

Queue: 2 Input Selection: 0=Average

Detector Failed Level : 0

Queue: 1

Level	Enter	Leave	Dial / Split / Offset
1	1	1	2 / 2 / 1
2	1	1	2 / 2 / 1

Queue: 2

Level	Enter	Leave	Dial / Split / Offset
1	1	1	3 / 2 / 1
2	1	1	3 / 2 / 1

Vehical Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count
1	60	0	0
4	60	0	0

Vehical Detector

Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Special Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count
1	60	0	0
2	60	0	0

Default Data - No Diag 0 Val

Pedestrian Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count
4	60	0	0

Default Data - No Diag 0 Values

Pedestrian Detector

Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Special Detector

Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Speed Trap Data

Speed Trap:

Measurement:

Detector 1	Detector_2	Distance :

Default Data

Dial/Split/Offset	Speed Trap Low Treshold	Speed Trap High Treshold
//		

Default Data

Volume Detector Data

Report Interval

Volume Detector Number	Controller Detector Channel

Default Data

Programmed EPAC Data

4/6/2022
10:10:51A

Intersection Name: Paris & Boland **Intersection Alias: Boland**

Access Code: 9999 Channel: 7 Address: 17 Revision: 3.13

Access Data

Port 2 Comm :1200 Baud
Port 3 Comm :1200 Baud

Phase Data

Vehical Basic Timings

Phase	Min_Grn	Passage	Max1	Max2	Yellow	All Red
2	30	5.0	50	50	3.7	2.2
4	8	3.5	20	20	3.5	2.5
6	30	5.0	50	50	3.7	2.2
8	8	3.5	20	20	3.5	2.5

Vehical Density Timings

Added Initial	Max_Initial	Time B4 Reduction	Cars Before	Time To Reduce	Min_Gap
0.0	0	0	0	0	0.0
0.0	0	0	0	0	0.0
0.0	0	0	0	0	0.0
0.0	0	0	0	0	0.0

Pedestrian Timing

				Extended Actuated	
Phase	Walk	Ped Clear	Flashing Walk	Ped Clear	Rest in Walk
2	7	20	No	0	No
4	7	18	No	0	No
6	7	20	No	0	No
8	7	18	No	0	No

General Control

Initialize	Non-Act Response	Veh Recall	Ped Recall	Recall Delay
Yellow	NonActI	Min	None	0
Inactive	NonActII	None	None	0
Yellow	NonActI	Min	None	0
Inactive	NonActII	None	None	0

Miscellaneous

Non Lock	Dual Entry	Last Car Passage	Conditional Service	No Simultaneous Gap Out
Yes	Yes	No	No	No
Yes	Yes	No	No	No
Yes	Yes	No	No	No
Yes	Yes	No	No	No

Special Sequence

Default Data

Vehical Detector Phase Assignment

Assigned Phase	Mode	Switched Phase	Extend	Delay

Default Data

Pedestrian Detector

Default Data

Special Detector Phase Assignment

Assign Phase	Mode	Switched Phase	Extend	Delay

:

Default Data

Unit Data

General Control

Startup Time: 5sec Startup State: Flash Red Revert: 4sec

Auto Ped Clear: No Stop Time Reset: No Alternate Sequence: 0

ABC connector Input Modes: 0

ABC connector Output Modes: 0

D connector Input Modes: 0

D connector Output Modes: 0

Ring	Input Respons	Output Selection
1	Ring 1	Ring 1
2	Ring 2	Ring 2
3	None	None
4	None	None

Remote Flash

Test A = Flash

Phase	Flash Entry Phase	Flash Exit Phase

Default Data - No Flash

Channel	Flash Color	Flash Alternat

Default Data - No Flash

Overlaps

Overlaps	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Phase(s)																
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Trail Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trail Yellow	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Trail Red	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Plus Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minus Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring

Phase	Ring	Next Phase
2	1	3
4	1	1
6	2	7
8	2	5

Phase(s)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Concurrent Phases	1	2	3	4	1	1	3	3	9	10	11	12	13	14	15	16
	5	5	7	7	2	2	4	4								
	6	6	8	8	5	6	7	8								

Alternate Sequences

Alternate Sequences

Phase Pair(s)

No Alternate Sequences

Port 1 Data

BIU Addr	Port Status	Message 40

Default Data

Channel Assignment

Control	Channel	Hardware Pin Set		Control	Channel	Hardware Pin Set		Control	Channel	Hardware Pin Set	
Ph.1 Veh	1	1 - Ph.1 RYG	1	Ph.2 Veh	2	2 - Ph.2 RYG	2	Ph.3 Veh	3	3 - Ph.3 RYG	3
Ph.4 Veh	4	4 - Ph.4 RYG	4	Ph.5 Veh	5	5 - Ph.5 RYG	5	Ph.6 Veh	6	6 - Ph.6 RYG	6
Ph.7 Veh	7	7 - Ph.7 RYG	7	Ph.8 Veh	8	8 - Ph.8 RYG	8	Ph.2 Ped	9	10 - Ph.2 DPW	10
Ph.4 Ped	10	12 - Ph.4 DPW	12	Ph.6 Ped	11	14 - Ph.6 DPW	14	Ph.8 Ped	12	16 - Ph.8 DPW	16
Ph.1 OLP	13	17 - Ph.1 RYG	17	Ph.2 OLP	14	18 - Ph.2 RYG	18	Ph.3 OLP	15	19 - Ph.3 RYG	19
Ph.4 OLP	16	20 - Ph.4 RYG	20	Ph.1 Ped	17	9 - Ph.1 DPW	9	Ph.3 Ped	18	11 - Ph.3 DPW	11
Ph.5 Ped	19	13 - Ph.5 DPW	13	Ph.7 Ped	20	15 - Ph.7 DPW	15				

Coordination Data

Dial/Split	Cycle
1/1	110
2/1	110
3/1	110

General Coordination Data

Operation Mode: 1=Auto
Coordination Mode: 0=Permissive
Maximun Mode: 0=Inhibit
Correction Mode: 2=Short Way

Offset Mode: 0=Beg Grn
Force Mode: 0=Plan
Max Dwell Time: 15
Yield Period: 0

Manual Dial: 1
Manual Split: 1
Manual Offset: 1

Split Times and Phase Modes

Dial 1 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	10	0=Actuated	2	67	1=Coordinate	4	33	0=Actuated	6	77	1=Coordinate
8	33	0=Actuated									

Dial 2 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	10	0=Actuated	2	67	1=Coordinate	4	33	0=Actuated	6	77	1=Coordinate
8	33	0=Actuated									

Dial 3 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	12	0=Actuated	2	65	1=Coordinate	4	33	0=Actuated	6	77	1=Coordinate
8	33	0=Actuated									

Traffic Plan Data

Plan: **1/1/1**	Offset Time: 8	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: **1/2/1**	Offset Time: 16	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: **1/3/1**	Offset Time: 16	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: **1/4/1**	Offset Time: 6	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: **2/1/1**	Offset Time: 104	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: **2/2/1**	Offset Time: 12	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: **2/3/1**	Offset Time: 16	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: **2/4/1**	Offset Time: 6	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: **3/1/1**	Offset Time: 63	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: **3/2/1**	Offset Time: 12	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: **4/1/1**	Offset Time: 6	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0

Local TBC Data

Start of Daylight Saving Month: 3 Week: 2 Cycle Zero Reference Hours: 24 Min: 0

End of Daylight Saving Month: 11 Week: 1

Source Day	Equate Days 1	2	3	4	5	6	7
2	3	4	5	6	0	0	0

Traffic Data

Event	Day	Time	D/S/O	flash	PHASE FUNCTION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1	0:1	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
2	1	8:30	2/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
3	1	21:30	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
4	2	0:1	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
5	2	6:30	1/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
6	2	9:30	2/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
7	2	15:30	3/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
8	2	18:0	2/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
9	2	21:30	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
10	7	0:1	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
11	7	8:0	2/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
12	7	21:30	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

AUX. Events

Event	Program Day	Hour	Min.	Aux Ouputs 1	2	3	Det. Diag. D1	Det. Rpt. D2	Det. Mult100 D3	Dimming	Special Function Outputs 1	2	3	4	5	6	7	8
				☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Default Data - No Special Day(s) or Week(s) Programmed

Special Functions

Function	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8
Special Function 1	☒	☐	☐	☐	☐	☐	☐	☐
Special Function 2	☐	☒	☐	☐	☐	☐	☐	☐
Special Function 3	☐	☐	☒	☐	☐	☐	☐	☐
Special Function 4	☐	☐	☐	☒	☐	☐	☐	☐
Special Function 5	☐	☐	☐	☐	☒	☐	☐	☐
Special Function 6	☐	☐	☐	☐	☐	☒	☐	☐
Special Function 7	☐	☐	☐	☐	☐	☐	☒	☐
Special Function 8	☐	☐	☐	☐	☐	☐	☐	☒

Phase Function

Phase Function Map	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
Phase 1 Max2	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 2 Max2	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 3 Max2	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 4 Max2	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 5 Max2	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 6 Max2	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 7 Max2	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 8 Max2	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
Phase 1 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐
Phase 2 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐
Phase 3 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐
Phase 4 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐
Phase 5 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐
Phase 6 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐
Phase 7 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐
Phase 8 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒

Dimming Data

Channel	Red	Yellow	Green	Alternate
	☐	☐	☐	☐

Default Data - No Dimming Programmed

Preemption Data

General Preemption Data

Ring	Min Grn/Walk Time
1	5
2	5
3	5
4	5

Flash > Preepmt 1
Preepmt 2 = Preempt 3
Preepmt 4 = Preempt 5
Preepmt 1 = Preempt 2
Preepmt 3 = Preempt 4
Preepmt 5 = Preempt 6

Preempt Timers

								Select			Track				Dwell	Return		
Preempt	Non-Locking	Link to Preempt	Delay	Extend	Duration	MaxCall	Lock-Out	Ped Clear	Yel	Red	Grn	Ped	Yel	Red	Green	Ped Clear	Yel	Red
1	No	0	0	0	0	0	0	17	4.0	2.0	0	0	4.0	2.0	5	0	4.0	2.0
2	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
3	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
4	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
5	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
6	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0

Preempt 1

Phase	Exit Phase	Exit Calls
4	Yes	No
8	Yes	No

Preempt 2

Phase	Exit Phase	Exit Calls
1	No	Yes
2	No	Yes
3	No	Yes
4	Yes	Yes
5	No	Yes
6	No	Yes
7	No	Yes
8	Yes	Yes

Preempt 3

Phase	Exit Phase	Exit Calls
1	No	Yes
2	Yes	Yes
3	No	Yes
4	No	Yes
5	No	Yes
6	Yes	Yes
7	No	Yes
8	No	Yes

Preempt 4

Phase	Exit Phase	Exit Calls
1	No	Yes
2	Yes	Yes
3	No	Yes
4	No	Yes
5	No	Yes
6	Yes	Yes
7	No	Yes
8	No	Yes

Preempt 5

Phase	Exit Phase	Exit Calls
1	No	Yes
2	Yes	Yes
3	No	Yes
4	No	Yes
5	No	Yes
6	Yes	Yes
7	No	Yes
8	No	Yes

Preempt 6

Phase	Exit Phase	Exit Calls
1	No	Yes
2	Yes	Yes
3	No	Yes
4	No	Yes
5	No	Yes
6	Yes	Yes
7	No	Yes
8	No	Yes

Priority Timers

Priority	Non-Lockin	Delay	Extend	Duration	Dwell	Max_Call	Lock-Out	Skip Phases
1	No	0	0	0	0	0	0	0=Do not Skip Phases
2	No	0	0	0	0	0	0	0=Do not Skip Phases
3	No	0	0	0	0	0	0	0=Do not Skip Phases
4	No	0	0	0	0	0	0	0=Do not Skip Phases
5	No	0	0	0	0	0	0	0=Do not Skip Phases
6	No	0	0	0	0	0	0	0=Do not Skip Phases

Priority 1

Phase	Exit Phase	Exit Calls

Priority 2

Phase	Exit Phase	Exit Calls

Priority 3

Phase	Exit Phase	Exit Calls

Priority 4

Phase	Exit Phase	Exit Calls

Priority 5

Phase	Exit Phase	Exit Calls

Priority 6

Phase	Exit Phase	Exit Calls

Preempt 1

Vehical Phases

Ph.	Track	Dwell	Cycle
2	Red	Green	No
6	Red	Green	No

Pedestrian Phases

Ph	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp	Track	Dwell	Cycle

Default Data

Preempt 2

Vehical Phases

Ph.	Track	Dwell	Cycle
2	Green	Green	No
5	Green	Red	No
6	Red	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
1	Red	Grn	No
2	Grn	Red	No
3	Grn	Grn	No

Preempt 3

Vehical Phases

Ph.	Track	Dwell	Cycle
3	Green	Red	No
4	Red	Green	No
8	Green	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
2	Red	Grn	No
3	Grn	Red	No
4	Grn	Grn	No

Preempt 4

Vehical Phases

Ph.	Track	Dwell	Cycle
4	Green	Green	No
7	Green	Red	No
8	Red	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
4	Red	Grn	No
1	Grn	Red	No
2	Grn	Grn	No

Preempt 5

Vehical Phases

Ph.	Track	Dwell	Cycle
4	Green	Green	No
7	Green	Red	No
8	Red	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
4	Red	Grn	No
1	Grn	Red	No
2	Grn	Grn	No

Preempt 6

Vehical Phases

Ph.	Track	Dwell	Cycle
4	Green	Green	No
7	Green	Red	No
8	Red	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
4	Red	Grn	No
1	Grn	Red	No
2	Grn	Grn	No

System/Detectors Data

Local Critical Alarms

Revert to Backup: 15

1st Phone:

2nd Phone:

Local Free: No

Cycle Failure: No

Coord Failure: No

Conflict Flash: No

Remote Flash: No

Local Fash: No

Cycle Fault: No

Coord Fault: No

Premption: No

Voltage Monitor: No

Special Status 1: No

Special Status 2: No

Special Status 3: No

Special Status 4: No

Special Status 5: No

Special Status 6: No

Traffic Responsive

System Detector	Detector Channel	Veh/Hr	Average Time(mins)	Occupancy Correction/10	Min Volume %
1	71	100	1	10	0
2	72	100	1	10	0

Queue 1 Detectors	System Detectors	Weight Factor

Default Data

Queue 2 Detectors	System Detectors	Weight Factor

Default Data

Sample Interval:

Queue: 1 Input Selection: 0=Average

Detector Failed Level : 0

Queue: 2 Input Selection: 0=Average

Detector Failed Level : 0

Queue: 1

Level	Enter	Leave	Dial / Split / Offset
1	1	1	2 / 2 / 1
2	1	1	2 / 2 / 1

Queue: 2

Level	Enter	Leave	Dial / Split / Offset
1	1	1	3 / 2 / 1
2	1	1	3 / 2 / 1

Vehical Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count
1	60	0	0
4	60	0	0

Vehical Detector

Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Special Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count
1	60	0	0
2	60	0	0

Default Data - No Diag 0 Val

Pedestrian Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count
4	60	0	0

Default Data - No Diag 0 Values

Pedestrian Detector

Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Special Detector

Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Speed Trap Data

Speed Trap:

Measurement:				Speed Trap	Speed Trap
Detector 1	Detector_2	Distance :	Dial/Split/Offset	Low Treshold	High Treshold

//

Default Data

Default Data

Volume Detector Data

Report Interval

Volume Detector Number	Controller Detector Channel

Default Data

Programmed EPAC Data

4/6/2022
10:12:08A

Intersection Name: Paris & York **Intersection Alias: York**

Access Code: 9999 Channel: 7 Address: 18 Revision: 3.13

Access Data

Port 2 Comm :1200 Baud
Port 3 Comm :1200 Baud

Phase Data

Vehical Basic Timings / Vehical Density Timings

Phase	Min_Grn	Passage	Max1	Max2	Yellow	All Red	Added Initial	Max_Initial	Time B4 Reduction	Cars Before	Time To Reduce	Min_Gap
2	30	4.0	45	45	4.2	2.0	0.0	0	0	0	0	0.0
4	8	3.0	20	20	3.3	2.2	0.0	0	0	0	0	0.0
5	5	2.5	12	12	3.0	1.0	0.0	0	0	0	0	0.0
6	30	4.0	45	45	4.2	2.0	0.0	0	0	0	0	0.0

Pedestrian Timing / General Control / Miscellaneous

Phase	Walk	Ped Clear	Flashing Walk	Extended Actuated Ped Clear	Rest in Walk	Initialize	Non-Act Response	Veh Recall	Ped Recall	Recall Delay	Non Lock	Dual Entry	Last Car Passage	Conditional Service	No Simultaneous Gap Out
2	7	16	No	0	No	Yellow	NonActI	Min	None	0	Yes	Yes	No	No	No
4	7	22	No	0	No	Inactive	NonActII	None	None	0	Yes	No	No	No	No
5	0	0	No	0	No	Inactive	None	None	None	0	Yes	No	No	No	No
6	7	16	No	0	No	Yellow	None	Min	None	0	Yes	Yes	No	No	No

Special Sequence

Default Data

Vehical Detector Phase Assignment

Assigned Phase	Mode	Switched Phase	Extend	Delay

Default Data

Pedestrian Detector

Pedestrian Detector Channel :8 4 Ped 0 0.0 0

Special Detector Phase Assignment

Assign Phase	Mode	Switched Phase	Extend	Delay

:

Default Data

Unit Data

General Control

Startup Time: 5sec Startup State: Flash Red Revert: 4sec

Auto Ped Clear: No Stop Time Reset: No Alternate Sequence: 0

ABC connector Input Modes: 0

ABC connector Output Modes: 0

D connector Input Modes: 0

D connector Output Modes: 0

Ring	Input Respons	Output Selection
1	Ring 1	Ring 1
2	Ring 2	Ring 2
3	None	None
4	None	None

Remote Flash

Test A = Flash

Phase	Flash Entry Phase	Flash Exit Phase

Default Data - No Flash

Channel	Flash Color	Flash Alternat

Default Data - No Flash

Overlaps

Overlaps	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Phase(s)	1 2															

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Trail Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trail Yellow	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Trail Red	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Plus Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minus Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring

Phase	Ring	Next Phase
2	1	3
4	1	1
5	2	6
6	2	7

Phase(s)

Concurrent Phases	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	1	2	3	4	1	1	3	3	9	10	11	12	13	14	15	16
	5	5	7	7	2	2	4	4								
	6	6	8	8	5	6	7	8								

Alternate Sequences

Alternate Sequences

Phase
Pair(s)

No
Alternate
Sequences

Port 1 Data

BIU Addr	Port Status	Message 40

Default Data

Channel Assignment

Control	Channel	Hardware Pin Set		Control	Channel	Hardware Pin Set		Control	Channel	Hardware Pin Set	
Ph.1 Veh	1	1 - Ph.1 RYG	1	Ph.2 Veh	2	2 - Ph.2 RYG	2	Ph.3 Veh	3	3 - Ph.3 RYG	3
Ph.4 Veh	4	4 - Ph.4 RYG	4	Ph.5 Veh	5	5 - Ph.5 RYG	5	Ph.6 Veh	6	6 - Ph.6 RYG	6
Ph.7 Veh	7	7 - Ph.7 RYG	7	Ph.8 Veh	8	8 - Ph.8 RYG	8	Ph.2 Ped	9	10 - Ph.2 DPW	10
Ph.4 Ped	10	12 - Ph.4 DPW	12	Ph.6 Ped	11	14 - Ph.6 DPW	14	Ph.8 Ped	12	16 - Ph.8 DPW	16
Ph.1 OLP	13	17 - Ph.1 RYG	17	Ph.2 OLP	14	18 - Ph.2 RYG	18	Ph.3 OLP	15	19 - Ph.3 RYG	19
Ph.4 OLP	16	20 - Ph.4 RYG	20	Ph.1 Ped	17	9 - Ph.1 DPW	9	Ph.3 Ped	18	11 - Ph.3 DPW	11
Ph.5 Ped	19	13 - Ph.5 DPW	13	Ph.7 Ped	20	15 - Ph.7 DPW	15				

Coordination Data

Dial/Split	Cycle
1/1	110
2/1	110
3/1	110

General Coordination Data

Operation Mode: 1=Auto
Coordination Mode: 0=Permissive
Maximun Mode: 0=Inhibit
Correction Mode: 2=Short Way

Offset Mode: 0=Beg Grn
Force Mode: 0=Plan
Max Dwell Time: 15
Yield Period: 0

Manual Dial: 1
Manual Split: 1
Manual Offset: 1

Split Times and Phase Modes

Dial 1 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
2	73	1=Coordinate	4	37	0=Actuated	5	15	0=Actuated	6	58	1=Coordinate

Dial 2 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
2	73	1=Coordinate	4	37	0=Actuated	5	15	0=Actuated	6	58	1=Coordinate

Dial 3 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
2	73	1=Coordinate	4	37	0=Actuated	5	15	0=Actuated	6	58	1=Coordinate

Traffic Plan Data

Plan: **1/1/1** Offset Time: 44 Alt. Sequence: 0 Mode: 0=Normal Rg 2 Lag Time: 0 Rg 3 Lag Time: 0 Rg 4 Lag Time: 0
Plan: **1/2/1** Offset Time: 45 Alt. Sequence: 0 Mode: 0=Normal Rg 2 Lag Time: 0 Rg 3 Lag Time: 0 Rg 4 Lag Time: 0
Plan: **1/3/1** Offset Time: 45 Alt. Sequence: 0 Mode: 0=Normal Rg 2 Lag Time: 0 Rg 3 Lag Time: 0 Rg 4 Lag Time: 0
Plan: **1/4/1** Offset Time: 45 Alt. Sequence: 0 Mode: 0=Normal Rg 2 Lag Time: 0 Rg 3 Lag Time: 0 Rg 4 Lag Time: 0
Plan: **2/1/1** Offset Time: 46 Alt. Sequence: 0 Mode: 0=Normal Rg 2 Lag Time: 0 Rg 3 Lag Time: 0 Rg 4 Lag Time: 0
Plan: **2/2/1** Offset Time: 38 Alt. Sequence: 0 Mode: 0=Normal Rg 2 Lag Time: 0 Rg 3 Lag Time: 0 Rg 4 Lag Time: 0
Plan: **3/1/1** Offset Time: 60 Alt. Sequence: 0 Mode: 0=Normal Rg 2 Lag Time: 0 Rg 3 Lag Time: 0 Rg 4 Lag Time: 0
Plan: **3/2/1** Offset Time: 45 Alt. Sequence: 0 Mode: 0=Normal Rg 2 Lag Time: 0 Rg 3 Lag Time: 0 Rg 4 Lag Time: 0

Local TBC Data

Start of Daylight Saving Month: 3 Week: 2 Cycle Zero Reference Hours: 24 Min: 0
End of Daylight Saving Month: 11 Week: 1

Source Day	Equate Days 1	2	3	4	5	6	7
2	3	4	5	6	0	0	0

Traffic Data

Event	Day	Time	D/S/O	flash	PHASE FUNCTION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1	0:1	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
2	1	9:0	1/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
3	1	12:0	2/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
4	1	21:0	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
5	2	0:1	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
6	2	6:30	1/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
7	2	12:0	2/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
8	2	16:0	3/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
9	2	18:0	2/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
10	2	21:0	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
11	7	0:1	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
12	7	8:30	2/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
13	7	12:0	2/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
14	7	21:30	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

AUX. Events

Event	Program Day	Hour	Min.	Aux Ouputs 1	2	3	Det. Diag. D1	Det. Rpt. D2	Det. Mult100 D3	Dimming	Special Function Outputs 1	2	3	4	5	6	7	8
				☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Default Data - No Special Day(s) or Week(s) Programmed

Special Functions

Function	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8
Special Function 1	☒	☐	☐	☐	☐	☐	☐	☐
Special Function 2	☐	☒	☐	☐	☐	☐	☐	☐
Special Function 3	☐	☐	☒	☐	☐	☐	☐	☐
Special Function 4	☐	☐	☐	☒	☐	☐	☐	☐
Special Function 5	☐	☐	☐	☐	☒	☐	☐	☐
Special Function 6	☐	☐	☐	☐	☐	☒	☐	☐
Special Function 7	☐	☐	☐	☐	☐	☐	☒	☐
Special Function 8	☐	☐	☐	☐	☐	☐	☐	☒

Phase Function

Phase Function Map	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
Phase 1 Max2	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 2 Max2	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 3 Max2	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 4 Max2	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 5 Max2	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 6 Max2	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 7 Max2	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 8 Max2	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
Phase 1 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐
Phase 2 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐
Phase 3 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐
Phase 4 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐
Phase 5 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐
Phase 6 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐
Phase 7 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐
Phase 8 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒

Dimming Data

Channel	Red	Yellow	Green	Alternate
	☐	☐	☐	☐

Default Data - No Dimming Programmed

Preemption Data

General Preemption Data

Ring	Min Grn/Walk Time
1	0
2	0
3	0
4	0

Flash > Preepmt 1 Preepmt 2 = Preempt 3 Preepmt 4 = Preempt 5
Preepmt 1 > Preempt 2 Preepmt 3 = Preempt 4 Preepmt 5 = Preempt 6

Preempt Timers

Preempt	Non-Locking	Link to Preempt	Delay	Extend	Duration	MaxCall	Lock-Out	Select			Track				Dwell	Return		
								Ped Clear	Yel	Red	Grn	Ped	Yel	Red	Green	Ped Clear	Yel	Red
1	No	0	0	0	0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0
2	No	0	0	0	0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0
3	No	0	0	0	0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0
4	No	0	0	0	0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0
5	No	0	0	0	0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0
6	No	0	0	0	0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0

Preempt 1			Preempt 2			Preempt 3			Preempt 4			Preempt 5			Preempt 6		
Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls
1	No	Yes	1	No	Yes	1	No	Yes	1	No	Yes	1	No	Yes	1	No	Yes
2	Yes	Yes	2	Yes	Yes	2	Yes	Yes	2	Yes	Yes	2	Yes	Yes	2	Yes	Yes
3	No	Yes	3	No	Yes	3	No	Yes	3	No	Yes	3	No	Yes	3	No	Yes
4	No	Yes	4	No	Yes	4	No	Yes	4	No	Yes	4	No	Yes	4	No	Yes
5	No	Yes	5	No	Yes	5	No	Yes	5	No	Yes	5	No	Yes	5	No	Yes
6	Yes	Yes	6	Yes	Yes	6	Yes	Yes	6	Yes	Yes	6	Yes	Yes	6	Yes	Yes
7	No	Yes	7	No	Yes	7	No	Yes	7	No	Yes	7	No	Yes	7	No	Yes
8	No	Yes	8	No	Yes	8	No	Yes	8	No	Yes	8	No	Yes	8	No	Yes

Priority Timers

Priority	Non-Lockin	Delay	Extend	Duration	Dwell	Max_Call	Lock-Out	Skip Phases
1	No	0	0	0	0	0	0	0=Do not Skip Phases
2	No	0	0	0	0	0	0	0=Do not Skip Phases
3	No	0	0	0	0	0	0	0=Do not Skip Phases
4	No	0	0	0	0	0	0	0=Do not Skip Phases
5	No	0	0	0	0	0	0	0=Do not Skip Phases
6	No	0	0	0	0	0	0	0=Do not Skip Phases

Priority 1			Priority 2			Priority 3			Priority 4			Priority 5			Priority 6		
Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls

Preempt 1

Vehical Phases

Ph.	Track	Dwell	Cycle
2	Red	Green	No
6	Red	Green	No

Pedestrian Phases

Ph	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp	Track	Dwell	Cycle

Default Data

Preempt 2

Vehical Phases

Ph.	Track	Dwell	Cycle

Default Data

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle

Default Data

Preempt 3

Vehical Phases

Ph.	Track	Dwell	Cycle

Default Data

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle

Default Data

Preempt 4

Vehical Phases

Ph. Track Dwell Cycle

Default Data

Pedestrian Phases

Ph. Track Dwell Cycle

Default Data

Overlaps

Ovlp. Track Dwell Cycle

Default Data

Preempt 5

Vehical Phases

Ph. Track Dwell Cycle

Default Data

Pedestrian Phases

Ph. Track Dwell Cycle

Default Data

Overlaps

Ovlp. Track Dwell Cycle

Default Data

Preempt 6

Vehical Phases

Ph. Track Dwell Cycle

Default Data

Pedestrian Phases

Ph. Track Dwell Cycle

Default Data

Overlaps

Ovlp. Track Dwell Cycle

Default Data

System/Detectors Data

Local Critical Alarms

Revert to Backup: 15

1st Phone:

2nd Phone:

Local Free: No

Cycle Failure: No

Coord Failure: No

Conflict Flash: No

Remote Flash: No

Local Fash: No

Cycle Fault: No

Coord Fault: No

Premption: No

Voltage Monitor: No

Special Status 1: No

Special Status 2: No

Special Status 3: No

Special Status 4: No

Special Status 5: No

Special Status 6: No

Traffic Responsive

System Detector	Detector Channel	Veh/Hr	Average Time(mins)	Occupancy Correction/10	Min Volume %
1	71	100	1	10	0
2	72	100	1	10	0

Queue 1 Detectors | System Detectors | Weight Factor

Default Data

Queue 2 Detectors | System Detectors | Weight Factor

Default Data

Sample Interval:

Queue: 1 Input Selection: 0=Average

Detector Failed Level : 0

Queue: 2 Input Selection: 0=Average

Detector Failed Level : 0

Queue: 1

Level	Enter	Leave	Dial / Split / Offset
1	1	1	2 / 2 / 1
2	1	1	2 / 2 / 1

Queue: 2

Level	Enter	Leave	Dial / Split / Offset
1	1	1	3 / 2 / 1
2	1	1	3 / 2 / 1

Vehical Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count
1	60	0	0
4	60	0	0

Vehical Detector

Diagnostic Value 1

Detector | Max Presence | No Activity | Erratic Count

Default Data - No Diag 1 Values

Special Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count
1	60	0	0
2	60	0	0

Default Data - No Diag 0 Val

Pedestrian Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count
4	60	0	0

Default Data - No Diag 0 Values

Pedestrian Detector

Diagnostic Value 1

Detector | Max Presence | No Activity | Erratic Count

Default Data - No Diag 1 Values

Special Detector

Diagnostic Value 1

Detector | Max Presence | No Activity | Erratic Count

Default Data - No Diag 1 Values

Speed Trap Data

Speed Trap:

Measurement:

Detector 1 | Detector_2 | Distance :

Default Data

Dial/Split/Offset | Speed Trap Low Treshold | Speed Trap High Treshold

//

Default Data

Volume Detector Data

Report Interval

Volume Detector Number	Controller Detector Channel

Default Data

Programmed EPAC Data

4/6/2022
10:20:08A

Intersection Name: **Paris & Ramsey Lake** **Intersection Alias:** **Ramsey Lak**

Access Code: 9999 Channel: 7 Address: 19 Revision: 3.13

Access Data

Port 2 Comm :1200 Baud
Port 3 Comm :19200 Baud

Phase Data

Vehical Basic Timings							Vehical Density Timings					
Phase	Min_Grn	Passage	Max1	Max2	Yellow	All Red	Added Initial	Max_Initial	Time B4 Reduction	Cars Before	Time To Reduce	Min_Gap
1	10	3.0	19	28	3.0	2.0	0.0	0	0	0	0	0.0
2	15	5.0	50	50	4.2	2.0	0.0	0	0	0	0	0.0
4	8	2.5	25	25	3.3	2.5	0.0	0	0	0	0	0.0
6	15	3.0	50	50	4.2	2.0	0.0	0	0	0	0	0.0

Pedestrian Timing				Extended Actuated		General Control					Miscellaneous				
Phase	Walk	Ped Clear	Flashing Walk	Ped Clear	Rest in Walk	Initialize	Non-Act Response	Veh Recall	Ped Recall	Recall Delay	Non Lock	Dual Entry	Last Car Passage	Conditional Service	No Simultaneous Gap Out
1	0	0	No	0	No	Inactive	None	None	None	0	Yes	No	No	No	No
2	7	24	No	0	No	Yellow	NonActI	Min	None	0	Yes	Yes	No	No	No
4	7	27	No	0	No	Inactive	NonActII	None	None	0	Yes	No	No	No	No
6	0	0	No	0	No	Yellow	NonActI	Min	None	0	No	Yes	No	No	No

Special Sequence

Default Data

Vehical Detector Phase Assignment

	Assigned Phase	Mode	Switched Phase	Extend	Delay
Vehical Detector Channel :7	4	Veh	0	0.0	0

Default Data

Pedestrian Detector

Default Data

Special Detector Phase Assignment

	Assign Phase	Mode	Switched Phase	Extend	Delay
:					

Default Data

Unit Data

General Control

Startup Time: 5sec Startup State: Flash Red Revert: 2sec

Auto Ped Clear: Yes Stop Time Reset: No Alternate Sequence: 0

ABC connector Input Modes: 0

ABC connector Output Modes: 0

D connector Input Modes: 2

D connector Output Modes: 0

Ring	Input Respons	Output Selection
1	Ring 1	Ring 1
2	Ring 2	Ring 2
3	None	None
4	None	None

Remote Flash

Test A = Flash

Phase	Flash Entry Phase	Flash Exit Phase

Default Data - No Flash

Channel	Flash Color	Flash Alternat

Default Data - No Flash

Overlaps

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Phase(s)																

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Trail Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trail Yellow	3.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Trail Red	0.0	0.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Plus Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minus Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring

Phase	Ring	Next Phase
1	1	2
2	1	3
4	1	1
6	2	7

Phase(s)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Concurrent Phases	1	2	3	4	1	1	3	3	9	10	11	12	13	14	15	16
	5	5	7	7	2	2	4	4								
	6	6	8	8	5	6	7	8								

Alternate Sequences

Alternate Sequences

Phase Pair(s)

No Alternate Sequences

Port 1 Data

BIU Addr	Port Status	Message
		40

Default Data

Channel Assignment

Control	Channel	Hardware Pin Set		Control	Channel	Hardware Pin Set		Control	Channel	Hardware Pin Set	
Ph.1 Veh	1	1 - Ph.1 RYG	1	Ph.2 Veh	2	2 - Ph.2 RYG	2	Ph.3 Veh	3	3 - Ph.3 RYG	3
Ph.4 Veh	4	4 - Ph.4 RYG	4	Ph.5 Veh	5	5 - Ph.5 RYG	5	Ph.6 Veh	6	6 - Ph.6 RYG	6
Ph.7 Veh	7	7 - Ph.7 RYG	7	Ph.8 Veh	8	8 - Ph.8 RYG	8	Ph.2 Ped	9	10 - Ph.2 DPW	10
Ph.4 Ped	10	12 - Ph.4 DPW	12	Ph.6 Ped	11	14 - Ph.6 DPW	14	Ph.8 Ped	12	16 - Ph.8 DPW	16
Ph.1 OLP	13	17 - Ph.1 RYG	17	Ph.2 OLP	14	18 - Ph.2 RYG	18	Ph.3 OLP	15	19 - Ph.3 RYG	19
Ph.4 OLP	16	20 - Ph.4 RYG	20	Ph.1 Ped	17	9 - Ph.1 DPW	9	Ph.3 Ped	18	11 - Ph.3 DPW	11
Ph.5 Ped	19	13 - Ph.5 DPW	13	Ph.7 Ped	20	15 - Ph.7 DPW	15				

Coordination Data

General Coordination Data

Operation Mode: 1=Auto

Coordination Mode: 0=Permissive

Maximun Mode: 0=Inhibit

Correction Mode: 2=Short Way

Offset Mode: 0=Beg Grn

Force Mode: 1=Cycle

Max Dwell Time: 0

Yield Period: 0

Manual Dial: 1

Manual Split: 1

Manual Offset: 1

Dial/Split	Cycle
1/1	110
2/1	110
3/1	110

Split Times and Phase Modes

Dial 1 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	30	0=Actuated	2	39	1=Coordinate	4	41	0=Actuated	6	69	1=Coordinate

Dial 2 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	28	0=Actuated	2	41	0=Actuated	4	41	0=Actuated	6	69	1=Coordinate

Dial 3 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	17	0=Actuated	2	45	1=Coordinate	4	48	0=Actuated	6	72	1=Coordinate

Traffic Plan Data

Plan: **1/1/1** Offset Time: 2 Alt. Sequence: 0 Mode: 0=Normal Rg 2 Lag Time: 0 Rg 3 Lag Time: 0 Rg 4 Lag Time: 0

Plan: **1/2/1** Offset Time: 2 Alt. Sequence: 0 Mode: 0=Normal Rg 2 Lag Time: 0 Rg 3 Lag Time: 0 Rg 4 Lag Time: 0

Plan: **1/3/1** Offset Time: 2 Alt. Sequence: 0 Mode: 0=Normal Rg 2 Lag Time: 0 Rg 3 Lag Time: 0 Rg 4 Lag Time: 0

Plan: **2/1/1** Offset Time: 18 Alt. Sequence: 0 Mode: 0=Normal Rg 2 Lag Time: 0 Rg 3 Lag Time: 0 Rg 4 Lag Time: 0

Plan: **2/2/1** Offset Time: 2 Alt. Sequence: 0 Mode: 0=Normal Rg 2 Lag Time: 0 Rg 3 Lag Time: 0 Rg 4 Lag Time: 0

Plan: **3/1/1** Offset Time: 102 Alt. Sequence: 0 Mode: 0=Normal Rg 2 Lag Time: 0 Rg 3 Lag Time: 0 Rg 4 Lag Time: 0

Plan: **3/2/1** Offset Time: 2 Alt. Sequence: 0 Mode: 0=Normal Rg 2 Lag Time: 0 Rg 3 Lag Time: 0 Rg 4 Lag Time: 0

Local TBC Data

Start of Daylight Saving Month: 3 Week: 2 Cycle Zero Reference Hours: 24 Min: 0
End of Daylight Saving Month: 11 Week: 1

Source Day	Equate Days 1	2	3	4	5	6	7
2	3	4	5	6	0	0	0

Traffic Data

					PHASE FUNCTION															
Event	Day	Time	D/S/O	flash	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1	0:1	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
2	1	9:0	1/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
3	1	12:0	2/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
4	1	21:30	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
5	2	0:1	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
6	2	6:30	1/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
7	2	12:0	2/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
8	2	16:0	3/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
9	2	18:0	2/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
10	2	21:0	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
11	7	0:1	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
12	7	8:30	2/1/1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
13	7	21:0	0/0/4		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

AUX. Events

Event	Program Day	Hour	Min.	Aux Ouputs 1	2	3	Det. Diag. D1	Det. Rpt. D2	Det. Mult100 D3	Dimming	Special Function Outputs 1	2	3	4	5	6	7	8
				☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Default Data - No Special Day(s) or Week(s) Programmed

Special Functions

Function	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8
Special Function 1	☒	☐	☐	☐	☐	☐	☐	☐
Special Function 2	☐	☒	☐	☐	☐	☐	☐	☐
Special Function 3	☐	☐	☒	☐	☐	☐	☐	☐
Special Function 4	☐	☐	☐	☒	☐	☐	☐	☐
Special Function 5	☐	☐	☐	☐	☒	☐	☐	☐
Special Function 6	☐	☐	☐	☐	☐	☒	☐	☐
Special Function 7	☐	☐	☐	☐	☐	☐	☒	☐
Special Function 8	☐	☐	☐	☐	☐	☐	☐	☒

Phase Function

Phase Function Map	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
Phase 1 Max2	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 2 Max2	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 3 Max2	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 4 Max2	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 5 Max2	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 6 Max2	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 7 Max2	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐
Phase 8 Max2	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
Phase 1 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐
Phase 2 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐
Phase 3 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐
Phase 4 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐
Phase 5 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐
Phase 6 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐
Phase 7 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐
Phase 8 Phase Omit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒

Dimming Data

Channel	Red	Yellow	Green	Alternate
	☐	☐	☐	☐

Default Data - No Dimming Programmed

Preemption Data

General Preemption Data

Ring	Min Grn/Walk Time
1	5
2	5
3	5
4	5

Flash > Preepmt 1
Preepmt 2 = Preempt 3
Preepmt 4 = Preempt 5
Preepmt 1 = Preempt 2
Preepmt 3 = Preempt 4
Preepmt 5 = Preempt 6

Preempt Timers

Preempt	Non-Locking	Link to Preempt	Delay	Extend	Duration	MaxCall	Lock-Out	Select			Track				Dwell	Return		
								Ped Clear	Yel	Red	Grn	Ped	Yel	Red	Green	Ped Clear	Yel	Red
1	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
2	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
3	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
4	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
5	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0
6	No	0	0	0	0	0	0	8	4.0	2.0	5	0	4.0	2.0	5	0	4.0	2.0

Preempt 1			Preempt 2			Preempt 3			Preempt 4			Preempt 5			Preempt 6		
Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls
1	No	Yes	1	No	Yes	1	No	Yes	1	No	Yes	1	No	Yes	1	No	Yes
2	No	Yes	2	No	Yes	2	Yes	Yes	2	Yes	Yes	2	Yes	Yes	2	Yes	Yes
3	No	Yes	3	No	Yes	3	No	Yes	3	No	Yes	3	No	Yes	3	No	Yes
4	Yes	Yes	4	Yes	Yes	4	No	Yes	4	No	Yes	4	No	Yes	4	No	Yes
5	No	Yes	5	No	Yes	5	No	Yes	5	No	Yes	5	No	Yes	5	No	Yes
6	No	Yes	6	No	Yes	6	Yes	Yes	6	Yes	Yes	6	Yes	Yes	6	Yes	Yes
7	No	Yes	7	No	Yes	7	No	Yes	7	No	Yes	7	No	Yes	7	No	Yes
8	Yes	Yes	8	Yes	Yes	8	No	Yes	8	No	Yes	8	No	Yes	8	No	Yes

Priority Timers

Priority	Non-Locking	Delay	Extend	Duration	Dwell	Max_Call	Lock-Out	Skip Phases
1	No	0	0	0	0	0	0	0=Do not Skip Phases
2	No	0	0	0	0	0	0	0=Do not Skip Phases
3	No	0	0	0	0	0	0	0=Do not Skip Phases
4	No	0	0	0	0	0	0	0=Do not Skip Phases
5	No	0	0	0	0	0	0	0=Do not Skip Phases
6	No	0	0	0	0	0	0	0=Do not Skip Phases

Priority 1			Priority 2			Priority 3			Priority 4			Priority 5			Priority 6		
Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls

Preempt 1

Vehical Phases

Ph.	Track	Dwell	Cycle
1	Red	Green	No
6	Red	Green	No

Pedestrian Phases

Ph	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp	Track	Dwell	Cycle
C	Red	Green	No
D	Red	Green	No

Preempt 2

Vehical Phases

Ph.	Track	Dwell	Cycle
2	Green	Green	No
5	Green	Red	No
6	Red	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
1	Red	Grn	No
2	Grn	Red	No
3	Grn	Grn	No

Preempt 3

Vehical Phases

Ph.	Track	Dwell	Cycle
3	Green	Red	No
4	Red	Green	No
8	Green	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
2	Red	Grn	No
3	Grn	Red	No
4	Grn	Grn	No

Preempt 4

Vehical Phases

Ph.	Track	Dwell	Cycle
4	Green	Green	No
7	Green	Red	No
8	Red	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
4	Red	Grn	No
1	Grn	Red	No
2	Grn	Grn	No

Preempt 5

Vehical Phases

Ph.	Track	Dwell	Cycle
4	Green	Green	No
7	Green	Red	No
8	Red	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
4	Red	Grn	No
1	Grn	Red	No
2	Grn	Grn	No

Preempt 6

Vehical Phases

Ph.	Track	Dwell	Cycle
4	Green	Green	No
7	Green	Red	No
8	Red	Green	No

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle
4	Red	Grn	No
1	Grn	Red	No
2	Grn	Grn	No

System/Detectors Data

Local Critical Alarms

Revert to Backup: 20
1st Phone:
Local Free: No
Cycle Failure: No
Coord Failure: No
Conflict Flash: No
Remote Flash: No
2nd Phone:
Local Fash: No
Cycle Fault: No
Coord Fault: No
Premption: No
Voltage Monitor: No
Special Status 1: No
Special Status 2: No
Special Status 3: No
Special Status 4: No
Special Status 5: No
Special Status 6: No

Traffic Responsive

System Detector	Detector Channel	Veh/Hr	Average Time(mins)	Occupancy Correction/10	Min Volume %	Queue 1 Detectors	System Detectors	Weight Factor	Queue 2 Detectors	System Detectors	Weight Factor
1	71	2,000	1	10	0	1	1	1	1	2	1
2	72	2,000	1	10	0	2	1	1	2	2	1

Sample Interval:

Queue: 1 Input Selection: 0=Average
Detector Failed Level : 0

Queue: 2 Input Selection: 0=Average
Detector Failed Level : 0

Queue: 1

Level	Enter	Leave	Dial / Split / Offset
1	1	1	2 / 2 / 1
2	1	1	2 / 2 / 1

Queue: 2

Level	Enter	Leave	Dial / Split / Offset
1	1	1	3 / 2 / 1
2	1	1	3 / 2 / 1

Vehical Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count
1	60	0	0
4	60	0	0

Vehical Detector

Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Special Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count
1	60	0	0
2	60	0	0

Default Data - No Diag 0 Val

Pedestrian Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count
4	60	0	0

Default Data - No Diag 0 Values

Pedestrian Detector

Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Special Detector

Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Speed Trap Data

Speed Trap:

Measurement:

Detector 1	Detector_2	Distance :

Default Data

Dial/Split/Offset	Speed Trap Low Treshold	Speed Trap High Treshold
//		

Default Data

Volume Detector Data

Report Interval

Volume Detector Number	Controller Detector Channel

Default Data

Appendix D –
Synchro Analysis Output –
Existing Traffic Volumes

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱	↰↰	↑↱	↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	156	390	458	349	71	520	370	25	764	224
Future Volume (vph)	156	390	458	349	71	520	370	25	764	224
Lane Group Flow (vph)	170	469	498	389	77	565	402	27	830	243
Turn Type	pm+pt	NA	Prot	NA	pm+pt	NA	pt+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	3	8	5	2	2 3	1	6	7
Permitted Phases	4				2			6		6
Detector Phase	7	4	3	8	5	2	2 3	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	15.0		5.0	15.0	5.0
Minimum Split (s)	10.0	31.2	10.0	31.2	10.0	40.1		10.0	40.1	10.0
Total Split (s)	21.0	31.2	25.0	35.2	20.0	49.1		17.0	46.1	21.0
Total Split (%)	17.2%	25.5%	20.4%	28.8%	16.4%	40.1%		13.9%	37.7%	17.2%
Yellow Time (s)	3.0	3.7	3.0	3.7	3.0	3.7		3.0	3.7	3.0
All-Red Time (s)	2.0	2.5	2.0	2.5	2.0	2.4		2.0	2.4	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	6.2	5.0	6.2	5.0	6.1		5.0	6.1	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min		None	Min	None
v/c Ratio	0.40	0.68	0.70	0.40	0.29	0.35	0.39	0.08	0.67	0.37
Control Delay	18.5	38.6	40.2	28.5	20.3	24.2	6.0	17.9	33.8	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.5	38.6	40.2	28.5	20.3	24.2	6.0	17.9	33.8	13.1
Queue Length 50th (m)	17.2	42.0	43.5	29.8	8.6	25.4	10.6	2.9	51.4	18.9
Queue Length 95th (m)	35.6	65.9	#77.5	52.0	19.2	46.4	41.0	8.7	73.8	38.5
Internal Link Dist (m)		364.5		324.4		160.9			177.4	
Turn Bay Length (m)	57.0		85.0		70.0		6.0	24.0		6.0
Base Capacity (vph)	526	1023	813	1212	372	2590	1084	420	2363	753
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	0.32	0.46	0.61	0.32	0.21	0.22	0.37	0.06	0.35	0.32

Intersection Summary

Cycle Length: 122.3

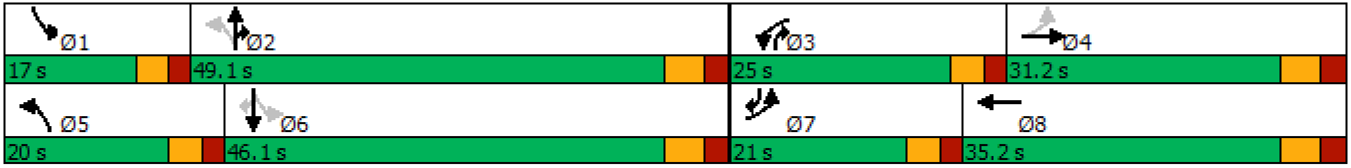
Actuated Cycle Length: 86.9

Natural Cycle: 95

Control Type: Semi Act-Uncoord

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

Splits and Phases: 1: Paris St & Brady St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰↰	↑↱		↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	156	390	41	458	349	9	71	520	370	25	764	224
Future Volume (vph)	156	390	41	458	349	9	71	520	370	25	764	224
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.2		5.0	6.2		5.0	6.1	6.1	5.0	6.1	5.0
Lane Util. Factor	1.00	0.95		0.97	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1684	3368		3367	3460		1670	4988	1568	1717	4893	1555
Flt Permitted	0.52	1.00		0.95	1.00		0.19	1.00	1.00	0.43	1.00	1.00
Satd. Flow (perm)	925	3368		3367	3460		337	4988	1568	776	4893	1555
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	170	424	45	498	379	10	77	565	402	27	830	243
RTOR Reduction (vph)	0	6	0	0	1	0	0	0	92	0	0	47
Lane Group Flow (vph)	170	463	0	498	388	0	77	565	310	27	830	196
Confl. Peds. (#/hr)	7		4	4		7	19		10	10		19
Heavy Vehicles (%)	7%	5%	10%	4%	4%	0%	8%	4%	3%	5%	6%	2%
Turn Type	pm+pt	NA		Prot	NA		pm+pt	NA	pt+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	2 3	1	6	7
Permitted Phases	4						2			6		6
Actuated Green, G (s)	29.1	17.7		18.4	24.7		35.6	28.5	53.0	26.4	23.9	35.3
Effective Green, g (s)	29.1	17.7		18.4	24.7		35.6	28.5	53.0	26.4	23.9	35.3
Actuated g/C Ratio	0.33	0.20		0.21	0.28		0.40	0.32	0.59	0.30	0.27	0.39
Clearance Time (s)	5.0	6.2		5.0	6.2		5.0	6.1		5.0	6.1	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	397	666		692	955		240	1590	929	255	1308	613
v/s Ratio Prot	0.05	c0.14		c0.15	0.11		c0.03	0.11	0.20	0.00	c0.17	0.04
v/s Ratio Perm	0.08						0.10			0.03		0.09
v/c Ratio	0.43	0.69		0.72	0.41		0.32	0.36	0.33	0.11	0.63	0.32
Uniform Delay, d1	22.6	33.3		33.1	26.4		17.9	23.4	9.2	22.6	28.9	18.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	3.1		3.6	0.3		0.8	0.1	0.2	0.2	1.0	0.3
Delay (s)	23.4	36.5		36.7	26.7		18.6	23.5	9.5	22.7	29.9	19.0
Level of Service	C	D		D	C		B	C	A	C	C	B
Approach Delay (s)		33.0			32.3			17.8			27.3	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	89.4	Sum of lost time (s)	22.3
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↰	↑↱	↰	↑	↱	↰	↑↑↱	↰	↑↑↱
Traffic Volume (vph)	13	23	227	54	125	146	870	68	1155
Future Volume (vph)	13	23	227	54	125	146	870	68	1155
Lane Group Flow (vph)	14	111	249	59	137	160	1066	75	1313
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	4.5	5.0	5.0	5.0
Minimum Split (s)	31.7	31.7	31.7	31.7	31.7	9.0	41.1	9.0	41.1
Total Split (s)	31.7	31.7	31.7	31.7	31.7	10.0	41.1	19.0	50.1
Total Split (%)	34.5%	34.5%	34.5%	34.5%	34.5%	10.9%	44.8%	20.7%	54.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.05	0.15	0.80	0.13	0.28	0.62	0.40	0.21	0.48
Control Delay	24.1	8.9	49.6	25.2	6.2	20.5	12.9	7.9	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.1	8.9	49.6	25.2	6.2	20.5	12.9	7.9	13.8
Queue Length 50th (m)	1.9	1.7	40.2	7.9	0.0	9.6	38.1	4.2	49.4
Queue Length 95th (m)	6.5	8.0	67.7	17.4	13.2	#26.6	58.0	10.7	70.6
Internal Link Dist (m)		187.2		465.5			478.0		160.9
Turn Bay Length (m)	21.0		132.0		62.0	34.0		48.0	
Base Capacity (vph)	378	986	413	583	596	258	2690	507	2708
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.11	0.60	0.10	0.23	0.62	0.40	0.15	0.48

Intersection Summary

Cycle Length: 91.8
Actuated Cycle Length: 85.5
Natural Cycle: 85
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Paris St & Van Horne St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑	↱	↰	↑↑↱		↰	↑↑↱	
Traffic Volume (vph)	13	23	78	227	54	125	146	870	100	68	1155	40
Future Volume (vph)	13	23	78	227	54	125	146	870	100	68	1155	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.0	4.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.88		1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1566	2904		1801	1827	1576	1703	4869		1752	5050	
Flt Permitted	0.72	1.00		0.68	1.00	1.00	0.15	1.00		0.22	1.00	
Satd. Flow (perm)	1184	2904		1293	1827	1576	277	4869		411	5050	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	14	25	86	249	59	137	160	956	110	75	1269	44
RTOR Reduction (vph)	0	65	0	0	0	104	0	12	0	0	4	0
Lane Group Flow (vph)	14	46	0	249	59	33	160	1054	0	75	1309	0
Confl. Peds. (#/hr)	4		4	4		4	6		6	6		6
Heavy Vehicles (%)	15%	4%	10%	0%	4%	1%	6%	5%	2%	3%	2%	5%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	20.6	20.6		20.6	20.6	20.6	52.5	47.0		52.4	46.7	
Effective Green, g (s)	20.6	20.6		20.6	20.6	20.6	52.5	47.0		52.4	46.7	
Actuated g/C Ratio	0.24	0.24		0.24	0.24	0.24	0.61	0.54		0.61	0.54	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	282	693		308	436	376	259	2651		338	2732	
v/s Ratio Prot		0.02			0.03		c0.04	0.22		0.01	0.26	
v/s Ratio Perm	0.01			c0.19		0.02	c0.34			0.12		
v/c Ratio	0.05	0.07		0.81	0.14	0.09	0.62	0.40		0.22	0.48	
Uniform Delay, d1	25.3	25.4		31.0	25.8	25.5	8.4	11.4		7.2	12.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0		14.4	0.1	0.1	4.3	0.4		0.3	0.6	
Delay (s)	25.4	25.4		45.4	26.0	25.6	12.8	11.9		7.5	12.9	
Level of Service	C	C		D	C	C	B	B		A	B	
Approach Delay (s)		25.4			36.7			12.0			12.6	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	86.3	Sum of lost time (s)	13.5
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✥		✥	↰	↑↱	↰	↑↱
Traffic Volume (vph)	8	0	40	2	4	1111	46	1388
Future Volume (vph)	8	0	40	2	4	1111	46	1388
Lane Group Flow (vph)	0	14	0	110	4	1192	48	1455
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	20.0	20.0	5.0	20.0
Minimum Split (s)	25.7	25.7	25.7	25.7	34.8	34.8	9.0	34.8
Total Split (s)	25.7	25.7	25.7	25.7	50.8	50.8	14.0	64.8
Total Split (%)	28.4%	28.4%	28.4%	28.4%	56.1%	56.1%	15.5%	71.6%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.7
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	1.0	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.7		5.7	5.8	5.8	4.0	5.8
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	None	Min
v/c Ratio		0.04		0.35	0.02	0.57	0.13	0.59
Control Delay		0.2		15.9	8.8	11.3	4.0	6.9
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		0.2		15.9	8.8	11.3	4.0	6.9
Queue Length 50th (m)		0.0		4.1	0.2	49.2	1.3	39.2
Queue Length 95th (m)		0.0		19.1	1.6	81.1	4.4	68.9
Internal Link Dist (m)		561.8		431.0		175.2		478.0
Turn Bay Length (m)					33.0		23.0	
Base Capacity (vph)		628		622	283	2933	492	3395
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		0.02		0.18	0.01	0.41	0.10	0.43

Intersection Summary

Cycle Length: 90.5
Actuated Cycle Length: 53.9
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Paris St & John St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑↱			↰↑↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (vph)	8	0	6	40	2	63	4	1111	34	46	1388	9
Future Volume (vph)	8	0	6	40	2	63	4	1111	34	46	1388	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.92		1.00	1.00		1.00	1.00	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1727			1696		1802	3490		1769	3536	
Flt Permitted		0.84			0.87		0.18	1.00		0.15	1.00	
Satd. Flow (perm)		1492			1502		337	3490		288	3536	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	8	0	6	42	2	66	4	1157	35	48	1446	9
RTOR Reduction (vph)	0	12	0	0	58	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	2	0	0	52	0	4	1190	0	48	1455	0
Confl. Peds. (#/hr)	5		5	5		5	8		4	4		8
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	2%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.1			7.1		30.9	30.9		38.2	38.2	
Effective Green, g (s)		7.1			7.1		30.9	30.9		38.2	38.2	
Actuated g/C Ratio		0.12			0.12		0.54	0.54		0.67	0.67	
Clearance Time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		186			187		183	1898		279	2378	
v/s Ratio Prot								0.34		0.01	c0.41	
v/s Ratio Perm		0.00			c0.03		0.01			0.11		
v/c Ratio		0.01			0.28		0.02	0.63		0.17	0.61	
Uniform Delay, d1		21.8			22.5		6.0	9.0		4.6	5.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0			0.8		0.0	0.7		0.3	0.5	
Delay (s)		21.8			23.3		6.0	9.6		4.9	5.6	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		21.8			23.3			9.6			5.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	56.8	Sum of lost time (s)	15.5
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			↰↑↑↱			↰↑↑↱	
Traffic Volume (veh/h)	3	0	9	2	0	2	1	1264	0	0	1456	7
Future Volume (Veh/h)	3	0	9	2	0	2	1	1264	0	0	1456	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	0	10	2	0	2	1	1404	0	0	1618	8
Pedestrians		2			1							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								347			199	
pX, platoon unblocked	0.79	0.79	0.74	0.79	0.79	0.89	0.74			0.89		
vC, conflicting volume	2330	3031	815	2226	3035	703	1628			1405		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1555	2437	54	1424	2442	429	1150			1215		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	7.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.8	2.2			2.2		
p0 queue free %	95	100	99	97	100	100	100			100		
cM capacity (veh/h)	62	25	746	76	25	410	455			519		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	13	4	703	702	809	817
Volume Left	3	2	1	0	0	0
Volume Right	10	2	0	0	0	8
cSH	209	129	455	1700	519	1700
Volume to Capacity	0.06	0.03	0.00	0.41	0.00	0.48
Queue Length 95th (m)	1.6	0.8	0.1	0.0	0.0	0.0
Control Delay (s)	23.4	33.9	0.1	0.0	0.0	0.0
Lane LOS	C	D	A			
Approach Delay (s)	23.4	33.9	0.0		0.0	
Approach LOS	C	D				

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

5: Paris St & Facer St

Existing (2022) AM Peak Hour

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑↱			↰↑
Traffic Volume (veh/h)	2	0	1253	1	1	1467
Future Volume (Veh/h)	2	0	1253	1	1	1467
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	2	0	1392	1	1	1630
Pedestrians						1
Lane Width (m)						3.6
Walking Speed (m/s)						1.2
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			226			321
pX, platoon unblocked	0.82	0.85			0.85	
vC, conflicting volume	2210	698			1393	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1231	298			1114	
tC, single (s)	6.8	6.9			6.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			3.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	141	599			229	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	2	928	465	544	1087
Volume Left	2	0	0	1	0
Volume Right	0	0	1	0	0
cSH	141	1700	1700	229	1700
Volume to Capacity	0.01	0.55	0.27	0.00	0.64
Queue Length 95th (m)	0.3	0.0	0.0	0.1	0.0
Control Delay (s)	30.9	0.0	0.0	0.2	0.0
Lane LOS	D			A	
Approach Delay (s)	30.9	0.0		0.1	
Approach LOS	D				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↰	Y	
Traffic Volume (veh/h)	1	1	1	1	0	0
Future Volume (Veh/h)	1	1	1	1	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Hourly flow rate (vph)	2	2	2	2	0	0
Pedestrians	1			2	2	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			6		12	7
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			6		12	7
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1625		1009	1078

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	4	4	0
Volume Left	0	2	0
Volume Right	2	0	0
cSH	1700	1625	1700
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	3.6	0.0
Lane LOS		A	A
Approach Delay (s)	0.0	3.6	0.0
Approach LOS			A

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	14.6%	ICU Level of Service	A
Analysis Period (min)	15		

	↗	→	↙	←	↖	↑	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Configurations		✥	↰	↱	↰	↑↱	↑↱
Traffic Volume (vph)	24	0	2	0	5	1208	1476
Future Volume (vph)	24	0	2	0	5	1208	1476
Lane Group Flow (vph)	0	37	2	2	5	1273	1566
Turn Type	Perm	NA	Perm	NA	Perm	NA	NA
Protected Phases		4		8		2	6
Permitted Phases	4		8		2		
Detector Phase	4	4	8	8	2	2	6
Switch Phase							
Minimum Initial (s)	8.0	8.0	8.0	8.0	30.0	30.0	30.0
Minimum Split (s)	26.0	26.0	26.0	26.0	35.9	35.9	35.9
Total Split (s)	26.0	26.0	26.0	26.0	55.9	55.9	55.9
Total Split (%)	31.7%	31.7%	31.7%	31.7%	68.3%	68.3%	68.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.7	3.7	3.7
All-Red Time (s)	2.5	2.5	2.5	2.5	2.2	2.2	2.2
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0	6.0	5.9	5.9	5.9
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	Min	Min	Min
v/c Ratio		0.12	0.01	0.01	0.02	0.42	0.52
Control Delay		9.5	21.0	0.0	3.6	3.4	4.2
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		9.5	21.0	0.0	3.6	3.4	4.2
Queue Length 50th (m)		0.0	0.2	0.0	0.0	0.0	0.0
Queue Length 95th (m)		6.9	1.9	0.0	1.1	45.5	64.7
Internal Link Dist (m)		198.2		192.5		314.0	201.8
Turn Bay Length (m)					40.0		
Base Capacity (vph)		711	719	653	244	3316	3313
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		0.05	0.00	0.00	0.02	0.38	0.47

Intersection Summary

Cycle Length: 81.9

Actuated Cycle Length: 53.1

Natural Cycle: 65

Control Type: Semi Act-Uncoord

Splits and Phases: 7: Paris St & Boland Ave/Paris Driveway

7: Paris St & Boland Ave/Paris Driveway

Existing (2022) AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	24	0	11	2	0	2	5	1208	1	0	1476	11
Future Volume (vph)	24	0	11	2	0	2	5	1208	1	0	1476	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		5.9	5.9			5.9	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95			0.95	
Frt		0.96		1.00	0.85		1.00	1.00			1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1757		1805	1615		1805	3505			3502	
Flt Permitted		1.00		1.00	1.00		0.14	1.00			1.00	
Satd. Flow (perm)		1817		1900	1615		259	3505			3502	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	25	0	12	2	0	2	5	1272	1	0	1554	12
RTOR Reduction (vph)	0	35	0	0	2	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	2	0	2	0	0	5	1273	0	0	1565	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		3.0		3.0	3.0		41.8	41.8			41.8	
Effective Green, g (s)		3.0		3.0	3.0		41.8	41.8			41.8	
Actuated g/C Ratio		0.05		0.05	0.05		0.74	0.74			0.74	
Clearance Time (s)		6.0		6.0	6.0		5.9	5.9			5.9	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		96		100	85		190	2583			2581	
v/s Ratio Prot					0.00			0.36			c0.45	
v/s Ratio Perm		c0.00		0.00			0.02					
v/c Ratio		0.02		0.02	0.00		0.03	0.49			0.61	
Uniform Delay, d1		25.5		25.5	25.4		2.0	3.1			3.5	
Progression Factor		1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		0.1		0.1	0.0		0.1	0.1			0.4	
Delay (s)		25.5		25.5	25.4		2.1	3.2			3.9	
Level of Service		C		C	C		A	A			A	
Approach Delay (s)		25.5			25.5			3.2			3.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	56.7	Sum of lost time (s)	11.9
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

8: Paris St & York St

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Volume (vph)	160	132	60	1054	1301	188
Future Volume (vph)	160	132	60	1054	1301	188
Lane Group Flow (vph)	178	147	67	1171	1446	209
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	5.0	30.0	30.0	30.0
Minimum Split (s)	25.5	25.5	9.0	36.2	36.2	36.2
Total Split (s)	25.5	25.5	16.0	67.2	51.2	51.2
Total Split (%)	27.5%	27.5%	17.3%	72.5%	55.2%	55.2%
Yellow Time (s)	3.3	3.3	3.0	4.2	4.2	4.2
All-Red Time (s)	2.2	2.2	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Min	Min	Min
v/c Ratio	0.56	0.37	0.24	0.52	0.77	0.23
Control Delay	36.9	8.7	6.2	7.7	18.5	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.9	8.7	6.2	7.7	18.5	2.6
Queue Length 50th (m)	24.5	0.0	2.6	39.3	87.0	0.2
Queue Length 95th (m)	48.7	15.2	7.5	66.1	140.5	10.9
Internal Link Dist (m)	376.5			775.4	314.0	
Turn Bay Length (m)	21.0		123.0			72.0
Base Capacity (vph)	508	539	394	2883	2287	1060
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	0.35	0.27	0.17	0.41	0.63	0.20

Intersection Summary

Cycle Length: 92.7
Actuated Cycle Length: 72.8
Natural Cycle: 75
Control Type: Semi Act-Uncoord

Splits and Phases: 8: Paris St & York St

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Volume (vph)	160	132	60	1054	1301	188
Future Volume (vph)	160	132	60	1054	1301	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1517	1770	3471	3539	1532
Flt Permitted	0.95	1.00	0.09	1.00	1.00	1.00
Satd. Flow (perm)	1770	1517	175	3471	3539	1532
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	178	147	67	1171	1446	209
RTOR Reduction (vph)	0	121	0	0	0	98
Lane Group Flow (vph)	178	26	67	1171	1446	111
Confl. Peds. (#/hr)	1	15	8			8
Heavy Vehicles (%)	2%	4%	2%	4%	2%	2%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	13.1	13.1	48.4	48.4	38.5	38.5
Effective Green, g (s)	13.1	13.1	48.4	48.4	38.5	38.5
Actuated g/C Ratio	0.18	0.18	0.66	0.66	0.53	0.53
Clearance Time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	316	271	244	2295	1861	805
v/s Ratio Prot	c0.10		0.02	c0.34	c0.41	
v/s Ratio Perm		0.02	0.16			0.07
v/c Ratio	0.56	0.10	0.27	0.51	0.78	0.14
Uniform Delay, d1	27.4	25.1	8.8	6.3	13.9	8.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.2	0.6	0.2	2.1	0.1
Delay (s)	29.7	25.3	9.4	6.5	16.0	8.9
Level of Service	C	C	A	A	B	A
Approach Delay (s)	27.7			6.7	15.1	
Approach LOS	C			A	B	

Intersection Summary

HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	73.2	Sum of lost time (s)	15.7
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	167	208	911	342	594	847
Future Volume (vph)	167	208	911	342	594	847
Lane Group Flow (vph)	174	217	949	356	619	882
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Detector Phase	8	8 1	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0		15.0	15.0	10.0	15.0
Minimum Split (s)	30.8		40.2	40.2	15.0	40.2
Total Split (s)	30.8		56.2	56.2	24.0	80.2
Total Split (%)	27.7%		50.6%	50.6%	21.6%	72.3%
Yellow Time (s)	3.3		4.2	4.2	3.0	4.2
All-Red Time (s)	2.5		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8		6.2	6.2	5.0	6.2
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None		Min	Min	None	Min
v/c Ratio	0.35	0.28	0.73	0.50	0.70	0.37
Control Delay	32.3	11.0	24.2	8.7	32.4	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.3	11.0	24.2	8.7	32.4	5.4
Queue Length 50th (m)	11.9	12.7	60.7	11.4	41.0	22.0
Queue Length 95th (m)	24.2	34.0	91.8	34.7	#86.9	40.6
Internal Link Dist (m)	679.1		533.6			775.4
Turn Bay Length (m)	158.0			37.0	175.0	
Base Capacity (vph)	1160	765	2369	1118	890	3288
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	0.15	0.28	0.40	0.32	0.70	0.27

Intersection Summary

Cycle Length: 111

Actuated Cycle Length: 75.2

Natural Cycle: 90

Control Type: Semi Act-Uncoord

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

Splits and Phases: 9: Ramsey Lake Rd & Paris St

HCM Signalized Intersection Capacity Analysis

Existing (2022) AM Peak Hour

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	167	208	911	342	594	847
Future Volume (vph)	167	208	911	342	594	847
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	6.2	6.2	5.0	6.2
Lane Util. Factor	0.97	1.00	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1568	3505	1549	3467	3471
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1568	3505	1549	3467	3471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	174	217	949	356	619	882
RTOR Reduction (vph)	0	31	0	149	0	0
Lane Group Flow (vph)	174	186	949	207	619	882
Confl. Peds. (#/hr)		13		14	14	
Heavy Vehicles (%)	2%	3%	3%	2%	1%	4%
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Actuated Green, G (s)	10.8	35.9	27.9	27.9	19.3	52.2
Effective Green, g (s)	10.8	35.9	27.9	27.9	19.3	52.2
Actuated g/C Ratio	0.14	0.48	0.37	0.37	0.26	0.70
Clearance Time (s)	5.8		6.2	6.2	5.0	6.2
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	494	750	1303	576	892	2415
v/s Ratio Prot	c0.05	0.12	c0.27		c0.18	0.25
v/s Ratio Perm				0.13		
v/c Ratio	0.35	0.25	0.73	0.36	0.69	0.37
Uniform Delay, d1	28.9	11.6	20.3	17.1	25.2	4.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.2	2.1	0.4	2.4	0.1
Delay (s)	29.4	11.7	22.4	17.5	27.5	4.7
Level of Service	C	B	C	B	C	A
Approach Delay (s)	19.6		21.0			14.1
Approach LOS	B		C			B

Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱	↰↰	↑↱	↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	168	523	521	433	91	989	668	24	772	235
Future Volume (vph)	168	523	521	433	91	989	668	24	772	235
Lane Group Flow (vph)	168	579	521	446	91	989	668	24	772	235
Turn Type	pm+pt	NA	Prot	NA	pm+pt	NA	pt+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	3	8	5	2	2 3	1	6	7
Permitted Phases	4				2			6		6
Detector Phase	7	4	3	8	5	2	2 3	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	15.0		5.0	15.0	5.0
Minimum Split (s)	10.0	31.2	10.0	31.2	10.0	40.1		10.0	40.1	10.0
Total Split (s)	25.0	31.2	33.0	39.2	22.0	54.1		19.0	51.1	25.0
Total Split (%)	18.2%	22.7%	24.0%	28.6%	16.0%	39.4%		13.8%	37.2%	18.2%
Yellow Time (s)	3.0	3.7	3.0	3.7	3.0	3.7		3.0	3.7	3.0
All-Red Time (s)	2.0	2.5	2.0	2.5	2.0	2.4		2.0	2.4	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	6.2	5.0	6.2	5.0	6.1		5.0	6.1	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min		None	Min	None
v/c Ratio	0.44	0.76	0.70	0.42	0.31	0.58	0.63	0.11	0.53	0.32
Control Delay	23.2	48.2	45.9	33.1	22.5	31.0	12.5	20.2	33.4	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0
Total Delay	23.2	48.2	45.9	33.1	22.5	31.0	13.0	20.2	33.4	11.0
Queue Length 50th (m)	21.6	65.1	58.0	42.0	12.5	71.1	69.8	3.2	54.7	17.3
Queue Length 95th (m)	43.8	#108.5	88.1	71.5	24.0	91.5	110.5	8.6	73.5	33.6
Internal Link Dist (m)		364.5		324.4		160.9			177.4	
Turn Bay Length (m)	57.0		85.0		70.0		6.0	24.0		6.0
Base Capacity (vph)	506	901	984	1214	401	2474	1150	352	2319	843
Starvation Cap Reductn	0	0	0	0	0	0	179	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	0.33	0.64	0.53	0.37	0.23	0.40	0.69	0.07	0.33	0.28

Intersection Summary

Cycle Length: 137.3

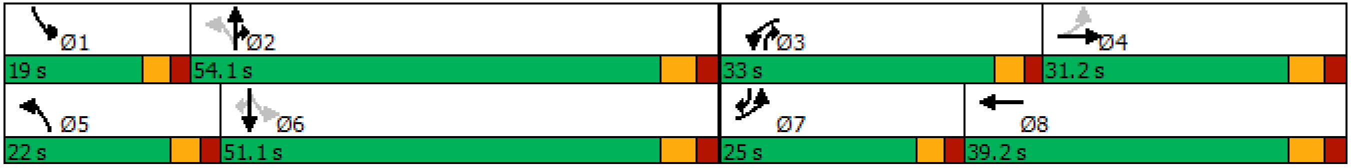
Actuated Cycle Length: 104.7

Natural Cycle: 95

Control Type: Semi Act-Uncoord

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

Splits and Phases: 1: Paris St & Brady St



700 Paris St
1: Paris St & Brady St

HCM Signalized Intersection Capacity Analysis

Existing (2022) PM Peak Hour

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰↰	↑↱		↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	168	523	56	521	433	13	91	989	668	24	772	235
Future Volume (vph)	168	523	56	521	433	13	91	989	668	24	772	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.2		5.0	6.2		5.0	6.1	6.1	5.0	6.1	5.0
Lane Util. Factor	1.00	0.95		0.97	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1580	3538		3467	3491		1750	5085	1615	1785	5085	1575
Flt Permitted	0.49	1.00		0.95	1.00		0.23	1.00	1.00	0.21	1.00	1.00
Satd. Flow (perm)	822	3538		3467	3491		429	5085	1615	389	5085	1575
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	168	523	56	521	433	13	91	989	668	24	772	235
RTOR Reduction (vph)	0	6	0	0	1	0	0	0	82	0	0	61
Lane Group Flow (vph)	168	573	0	521	445	0	91	989	586	24	772	174
Confl. Peds. (#/hr)	9		6	6		9	25		33	33		25
Heavy Vehicles (%)	14%	0%	4%	1%	3%	0%	3%	2%	0%	1%	2%	0%
Turn Type	pm+pt	NA		Prot	NA		pm+pt	NA	pt+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	2 3	1	6	7
Permitted Phases	4						2			6		6
Actuated Green, G (s)	35.6	22.5		22.5	31.9		42.6	35.2	63.8	35.0	31.4	44.5
Effective Green, g (s)	35.6	22.5		22.5	31.9		42.6	35.2	63.8	35.0	31.4	44.5
Actuated g/C Ratio	0.34	0.21		0.21	0.30		0.40	0.33	0.60	0.33	0.30	0.42
Clearance Time (s)	5.0	6.2		5.0	6.2		5.0	6.1		5.0	6.1	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	369	750		735	1049		264	1687	971	175	1504	660
v/s Ratio Prot	0.06	c0.16		c0.15	0.13		c0.02	0.19	c0.36	0.00	0.15	0.03
v/s Ratio Perm	0.10						0.11			0.04		0.08
v/c Ratio	0.46	0.76		0.71	0.42		0.34	0.59	0.60	0.14	0.51	0.26
Uniform Delay, d1	26.2	39.3		38.8	29.7		20.8	29.4	13.2	24.5	31.0	20.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	4.7		3.1	0.3		0.8	0.5	1.1	0.4	0.3	0.2
Delay (s)	27.1	44.0		41.9	30.0		21.6	29.9	14.3	24.8	31.3	20.3
Level of Service	C	D		D	C		C	C	B	C	C	C
Approach Delay (s)		40.2			36.4			23.5			28.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	106.1	Sum of lost time (s)	22.3
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

2: Paris St & Van Horne St

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↰	↑↱	↰	↑	↱	↰	↑↑↱	↰	↑↑↱
Traffic Volume (vph)	41	65	197	63	138	149	1511	109	1201
Future Volume (vph)	41	65	197	63	138	149	1511	109	1201
Lane Group Flow (vph)	42	270	201	64	141	152	1877	111	1266
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	4.5	5.0	5.0	5.0
Minimum Split (s)	31.7	31.7	31.7	31.7	31.7	9.0	41.1	9.0	41.1
Total Split (s)	31.7	31.7	31.7	31.7	31.7	10.0	41.1	19.0	50.1
Total Split (%)	34.5%	34.5%	34.5%	34.5%	34.5%	10.9%	44.8%	20.7%	54.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.14	0.31	0.82	0.14	0.30	0.54	0.69	0.45	0.47
Control Delay	25.6	11.4	56.0	25.2	6.3	15.8	17.7	14.3	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.6	11.4	56.0	25.2	6.3	15.8	17.7	14.3	13.6
Queue Length 50th (m)	5.7	7.7	32.6	8.6	0.0	9.1	85.2	6.3	47.1
Queue Length 95th (m)	13.8	17.3	#60.3	18.3	13.4	#20.5	127.0	18.8	67.5
Internal Link Dist (m)		187.2		465.5			478.0		160.9
Turn Bay Length (m)	21.0		132.0		62.0	34.0		48.0	
Base Capacity (vph)	406	1110	329	607	582	280	2707	396	2714
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.24	0.61	0.11	0.24	0.54	0.69	0.28	0.47

Intersection Summary

Cycle Length: 91.8
Actuated Cycle Length: 85.4
Natural Cycle: 85
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Paris St & Van Horne St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑	↱	↰	↑↑↱		↰	↑↑↱	
Traffic Volume (vph)	41	65	200	197	63	138	149	1511	328	109	1201	39
Future Volume (vph)	41	65	200	197	63	138	149	1511	328	109	1201	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.0	4.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.89		1.00	1.00	0.85	1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1690	3129		1767	1900	1522	1769	4935		1805	5056	
Flt Permitted	0.72	1.00		0.55	1.00	1.00	0.17	1.00		0.09	1.00	
Satd. Flow (perm)	1273	3129		1029	1900	1522	313	4935		162	5056	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	42	66	204	201	64	141	152	1542	335	111	1226	40
RTOR Reduction (vph)	0	123	0	0	0	108	0	29	0	0	3	0
Lane Group Flow (vph)	42	147	0	201	64	33	152	1848	0	111	1263	0
Confl. Peds. (#/hr)	13		3	3		13	3		17	17		3
Heavy Vehicles (%)	6%	2%	1%	2%	0%	4%	2%	2%	1%	0%	2%	3%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	20.5	20.5		20.5	20.5	20.5	51.9	46.4		53.2	46.8	
Effective Green, g (s)	20.5	20.5		20.5	20.5	20.5	51.9	46.4		53.2	46.8	
Actuated g/C Ratio	0.24	0.24		0.24	0.24	0.24	0.60	0.54		0.62	0.54	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	302	743		244	451	361	281	2653		221	2741	
v/s Ratio Prot		0.05			0.03		0.03	c0.37		c0.04	0.25	
v/s Ratio Perm	0.03			c0.20		0.02	0.29			0.27		
v/c Ratio	0.14	0.20		0.82	0.14	0.09	0.54	0.70		0.50	0.46	
Uniform Delay, d1	25.9	26.3		31.2	26.0	25.7	8.2	14.7		10.7	12.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.1		19.7	0.1	0.1	2.1	1.5		1.8	0.6	
Delay (s)	26.2	26.5		50.9	26.1	25.8	10.4	16.3		12.5	12.6	
Level of Service	C	C		D	C	C	B	B		B	B	
Approach Delay (s)		26.4			38.2			15.8			12.6	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	86.3	Sum of lost time (s)	13.5
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✥		✥	↰	↑↱	↰	↑↱
Traffic Volume (vph)	10	3	63	0	8	1857	80	1513
Future Volume (vph)	10	3	63	0	8	1857	80	1513
Lane Group Flow (vph)	0	15	0	174	8	1959	82	1565
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	20.0	20.0	5.0	20.0
Minimum Split (s)	25.7	25.7	25.7	25.7	34.8	34.8	9.0	34.8
Total Split (s)	25.7	25.7	25.7	25.7	50.8	50.8	14.0	64.8
Total Split (%)	28.4%	28.4%	28.4%	28.4%	56.1%	56.1%	15.5%	71.6%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.7
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	1.0	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.7		5.7	5.8	5.8	4.0	5.8
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	None	Min
v/c Ratio		0.07		0.62	0.05	0.93	0.34	0.62
Control Delay		27.1		26.9	10.1	25.8	8.5	7.8
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		27.1		26.9	10.1	25.8	8.5	7.8
Queue Length 50th (m)		1.8		12.7	0.5	135.3	2.7	51.8
Queue Length 95th (m)		6.9		32.8	3.0	#244.8	10.3	96.8
Internal Link Dist (m)		561.8		431.0		175.2		478.0
Turn Bay Length (m)					33.0		23.0	
Base Capacity (vph)		372		435	169	2114	310	2688
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		0.04		0.40	0.05	0.93	0.26	0.58

Intersection Summary

Cycle Length: 90.5

Actuated Cycle Length: 78

Natural Cycle: 90

Control Type: Semi Act-Uncoord

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

Splits and Phases: 3: Paris St & John St

HCM Signalized Intersection Capacity Analysis

Existing (2022) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	10	3	2	63	0	106	8	1857	44	80	1513	5
Future Volume (vph)	10	3	2	63	0	106	8	1857	44	80	1513	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.92		1.00	1.00		1.00	1.00	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1800			1629		1800	3527		1736	3537	
Flt Permitted		0.77			0.87		0.15	1.00		0.08	1.00	
Satd. Flow (perm)		1441			1445		281	3527		144	3537	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	10	3	2	65	0	109	8	1914	45	82	1560	5
RTOR Reduction (vph)	0	2	0	0	74	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	13	0	0	100	0	8	1957	0	82	1565	0
Confl. Peds. (#/hr)	3		4	4		3	14		2	2		14
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%	0%	2%	0%	4%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		11.2			11.2		46.7	46.7		56.1	56.1	
Effective Green, g (s)		11.2			11.2		46.7	46.7		56.1	56.1	
Actuated g/C Ratio		0.14			0.14		0.59	0.59		0.71	0.71	
Clearance Time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		204			205		166	2090		211	2518	
v/s Ratio Prot								c0.56		0.03	c0.44	
v/s Ratio Perm		0.01			c0.07		0.03			0.25		
v/c Ratio		0.07			0.49		0.05	0.94		0.39	0.62	
Uniform Delay, d1		29.3			31.2		6.7	14.7		15.5	5.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			1.8		0.1	8.7		1.2	0.5	
Delay (s)		29.4			33.0		6.9	23.4		16.7	6.3	
Level of Service		C			C		A	C		B	A	
Approach Delay (s)		29.4			33.0			23.3			6.9	
Approach LOS		C			C			C			A	

Intersection Summary			
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	78.8	Sum of lost time (s)	15.5
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			↰↑↑↱			↰↑↑↱	
Traffic Volume (veh/h)	9	0	7	3	0	2	1	1881	1	1	1640	13
Future Volume (Veh/h)	9	0	7	3	0	2	1	1881	1	1	1640	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	9	0	7	3	0	2	1	1959	1	1	1708	14
Pedestrians		3			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								347			199	
pX, platoon unblocked	0.60	0.60	0.74	0.60	0.60	0.47	0.74			0.47		
vC, conflicting volume	2704	3684	864	2826	3690	982	1725			1962		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	532	2171	105	737	2182	0	1272			778		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	99	98	100	100	100			100		
cM capacity (veh/h)	257	28	689	182	28	509	407			395		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	16	5	980	980	855	868
Volume Left	9	3	1	0	1	0
Volume Right	7	2	0	1	0	14
cSH	354	245	407	1700	395	1700
Volume to Capacity	0.05	0.02	0.00	0.58	0.00	0.51
Queue Length 95th (m)	1.1	0.5	0.1	0.0	0.1	0.0
Control Delay (s)	15.7	20.0	0.1	0.0	0.1	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	15.7	20.0	0.0		0.0	
Approach LOS	C	C				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↲↳		↑↱			↰↑
Traffic Volume (veh/h)	1	1	1873	6	0	1645
Future Volume (Veh/h)	1	1	1873	6	0	1645
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	1	1972	6	0	1732
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			225			321
pX, platoon unblocked	0.64	0.51			0.51	
vC, conflicting volume	2842	990			1979	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	869	0			987	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	189	553			359	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	2	1315	663	577	1155
Volume Left	1	0	0	0	0
Volume Right	1	0	6	0	0
cSH	282	1700	1700	359	1700
Volume to Capacity	0.01	0.77	0.39	0.00	0.68
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0
Control Delay (s)	17.9	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	17.9	0.0		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↳			↰	Y	
Traffic Volume (veh/h)	7	0	0	2	0	0
Future Volume (Veh/h)	7	0	0	2	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67
Hourly flow rate (vph)	10	0	0	3	0	0
Pedestrians	1			2		
Lane Width (m)	3.6			3.6		
Walking Speed (m/s)	1.2			1.2		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			10		14	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			10		14	12
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1009	1073

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	10	3	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1623	1700
Volume to Capacity	0.01	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	14.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✣	↰	↱	↰	↑↱	↰	↑↱
Traffic Volume (vph)	23	0	6	2	21	1848	4	1589
Future Volume (vph)	23	0	6	2	21	1848	4	1589
Lane Group Flow (vph)	0	40	7	13	23	2017	4	1756
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	30.0	30.0	30.0	30.0
Minimum Split (s)	26.0	26.0	26.0	26.0	35.9	35.9	35.9	35.9
Total Split (s)	26.0	26.0	26.0	26.0	55.9	55.9	55.9	55.9
Total Split (%)	31.7%	31.7%	31.7%	31.7%	68.3%	68.3%	68.3%	68.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.7	3.7	3.7	3.7
All-Red Time (s)	2.5	2.5	2.5	2.5	2.2	2.2	2.2	2.2
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0	6.0	5.9	5.9	5.9	5.9
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Min	Min	Min	Min
v/c Ratio		0.19	0.03	0.06	0.14	0.69	0.03	0.60
Control Delay		13.4	28.3	17.8	5.6	6.4	3.8	5.1
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		13.4	28.3	17.8	5.6	6.4	3.8	5.1
Queue Length 50th (m)		0.1	0.9	0.3	0.8	76.5	0.1	56.6
Queue Length 95th (m)		8.5	4.3	5.0	3.5	106.7	0.9	77.7
Internal Link Dist (m)		192.5		282.1		313.9		201.2
Turn Bay Length (m)					40.0		100.0	
Base Capacity (vph)		462	574	540	161	2918	125	2915
Starvation Cap Reductn		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0
Reduced v/c Ratio		0.09	0.01	0.02	0.14	0.69	0.03	0.60

Intersection Summary

Cycle Length: 81.9
Actuated Cycle Length: 63.2
Natural Cycle: 80
Control Type: Semi Act-Uncoord

Splits and Phases: 7: Paris St & Boland Ave/Paris Driveway

7: Paris St & Boland Ave/Paris Driveway

Existing (2022) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	23	0	14	6	2	10	21	1848	7	4	1589	27
Future Volume (vph)	23	0	14	6	2	10	21	1848	7	4	1589	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		5.9	5.9		5.9	5.9	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.95		1.00	0.87		1.00	1.00		1.00	1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1622		1805	1640		1804	3537		1805	3530	
Flt Permitted		0.80		0.93	1.00		0.10	1.00		0.08	1.00	
Satd. Flow (perm)		1342		1767	1640		196	3537		153	3530	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	0	15	7	2	11	23	2009	8	4	1727	29
RTOR Reduction (vph)	0	36	0	0	10	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	4	0	7	3	0	23	2017	0	4	1755	0
Confl. Peds. (#/hr)	2					2	4		2	2		4
Heavy Vehicles (%)	4%	0%	14%	0%	0%	0%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		4.3		4.3	4.3		49.7	49.7		49.7	49.7	
Effective Green, g (s)		4.3		4.3	4.3		49.7	49.7		49.7	49.7	
Actuated g/C Ratio		0.07		0.07	0.07		0.75	0.75		0.75	0.75	
Clearance Time (s)		6.0		6.0	6.0		5.9	5.9		5.9	5.9	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		87		115	107		147	2667		115	2662	
v/s Ratio Prot					0.00			c0.57			0.50	
v/s Ratio Perm		0.00		c0.00			0.12			0.03		
v/c Ratio		0.04		0.06	0.03		0.16	0.76		0.03	0.66	
Uniform Delay, d1		28.9		28.9	28.8		2.3	4.6		2.0	4.0	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2		0.2	0.1		0.5	1.3		0.1	0.6	
Delay (s)		29.1		29.1	28.9		2.8	5.9		2.2	4.6	
Level of Service		C		C	C		A	A		A	A	
Approach Delay (s)		29.1			29.0			5.9			4.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	65.9	Sum of lost time (s)	11.9
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

	↗	↘	↖	↑	↓	↙
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Volume (vph)	196	104	141	1680	1419	190
Future Volume (vph)	196	104	141	1680	1419	190
Lane Group Flow (vph)	206	109	148	1768	1494	200
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	5.0	30.0	30.0	30.0
Minimum Split (s)	25.5	25.5	9.0	36.2	36.2	36.2
Total Split (s)	25.5	25.5	16.0	67.2	51.2	51.2
Total Split (%)	27.5%	27.5%	17.3%	72.5%	55.2%	55.2%
Yellow Time (s)	3.3	3.3	3.0	4.2	4.2	4.2
All-Red Time (s)	2.2	2.2	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Min	Min	Min
v/c Ratio	0.64	0.29	0.49	0.75	0.84	0.23
Control Delay	41.2	8.8	14.4	11.6	23.5	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.2	8.8	14.4	11.6	23.5	3.0
Queue Length 50th (m)	31.8	0.0	6.6	84.4	101.4	0.6
Queue Length 95th (m)	57.4	13.3	25.0	135.0	159.8	12.0
Internal Link Dist (m)	376.5			774.4	313.9	
Turn Bay Length (m)	21.0		123.0			72.0
Base Capacity (vph)	461	483	366	2787	2058	975
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.23	0.40	0.63	0.73	0.21

Intersection Summary

Cycle Length: 92.7

Actuated Cycle Length: 79.2

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Splits and Phases: 8: Paris St & York St

	↗	↘	↖	↑	↓	↙
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Volume (vph)	196	104	141	1680	1419	190
Future Volume (vph)	196	104	141	1680	1419	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	1561	1770	3539	3539	1541
Flt Permitted	0.95	1.00	0.09	1.00	1.00	1.00
Satd. Flow (perm)	1787	1561	170	3539	3539	1541
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	206	109	148	1768	1494	200
RTOR Reduction (vph)	0	89	0	0	0	95
Lane Group Flow (vph)	206	20	148	1768	1494	105
Confl. Peds. (#/hr)	6	15	4			4
Heavy Vehicles (%)	1%	1%	2%	2%	2%	2%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	14.3	14.3	53.0	53.0	39.8	39.8
Effective Green, g (s)	14.3	14.3	53.0	53.0	39.8	39.8
Actuated g/C Ratio	0.18	0.18	0.67	0.67	0.50	0.50
Clearance Time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	323	282	300	2374	1782	776
v/s Ratio Prot	c0.12		0.06	c0.50	c0.42	
v/s Ratio Perm		0.01	0.27			0.07
v/c Ratio	0.64	0.07	0.49	0.74	0.84	0.13
Uniform Delay, d1	30.0	26.8	12.0	8.6	16.8	10.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.1	0.1	1.3	1.3	3.6	0.1
Delay (s)	34.0	26.9	13.2	9.9	20.5	10.5
Level of Service	C	C	B	A	C	B
Approach Delay (s)	31.6			10.1	19.3	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	79.0	Sum of lost time (s)	15.7
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	494	616	1235	244	328	1165
Future Volume (vph)	494	616	1235	244	328	1165
Lane Group Flow (vph)	549	684	1372	271	364	1294
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Detector Phase	8	8 1	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0		15.0	15.0	10.0	15.0
Minimum Split (s)	30.8		40.2	40.2	15.0	40.2
Total Split (s)	30.8		56.2	56.2	33.0	89.2
Total Split (%)	25.7%		46.8%	46.8%	27.5%	74.3%
Yellow Time (s)	3.3		4.2	4.2	3.0	4.2
All-Red Time (s)	2.5		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8		6.2	6.2	5.0	6.2
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None		Min	Min	None	Min
v/c Ratio	0.72	0.90	0.93	0.37	0.50	0.54
Control Delay	48.9	43.7	44.7	15.4	42.1	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.9	43.7	44.7	15.4	42.1	10.4
Queue Length 50th (m)	66.4	147.4	167.9	26.1	40.1	74.1
Queue Length 95th (m)	86.8	#227.3	#216.5	48.1	55.2	89.8
Internal Link Dist (m)	679.1		533.6			774.4
Turn Bay Length (m)	158.0			37.0	175.0	
Base Capacity (vph)	764	815	1561	760	848	2591
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	0.72	0.84	0.88	0.36	0.43	0.50

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 114.5
Natural Cycle: 90
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Ramsey Lake Rd & Paris St

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	494	616	1235	244	328	1165
Future Volume (vph)	494	616	1235	244	328	1165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	6.2	6.2	5.0	6.2
Lane Util. Factor	0.97	1.00	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3467	1583	3539	1587	3433	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3467	1583	3539	1587	3433	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	549	684	1372	271	364	1294
RTOR Reduction (vph)	0	6	0	64	0	0
Lane Group Flow (vph)	549	678	1372	207	364	1294
Confl. Peds. (#/hr)		16		5	5	
Heavy Vehicles (%)	1%	2%	2%	0%	2%	2%
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Actuated Green, G (s)	25.3	55.5	47.7	47.7	24.4	77.1
Effective Green, g (s)	25.3	55.5	47.7	47.7	24.4	77.1
Actuated g/C Ratio	0.22	0.49	0.42	0.42	0.21	0.67
Clearance Time (s)	5.8		6.2	6.2	5.0	6.2
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	766	767	1475	661	732	2385
v/s Ratio Prot	0.16	c0.43	c0.39		0.11	0.37
v/s Ratio Perm				0.13		
v/c Ratio	0.72	0.88	0.93	0.31	0.50	0.54
Uniform Delay, d1	41.2	26.6	31.8	22.4	39.6	9.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.2	11.8	10.8	0.3	0.5	0.3
Delay (s)	44.4	38.4	42.5	22.6	40.1	9.8
Level of Service	D	D	D	C	D	A
Approach Delay (s)	41.1		39.2			16.5
Approach LOS	D		D			B

Intersection Summary			
HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	114.4	Sum of lost time (s)	17.0
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✥		✥	↰	↑↱	↰	↑↱
Traffic Volume (vph)	10	3	63	0	8	1857	80	1513
Future Volume (vph)	10	3	63	0	8	1857	80	1513
Lane Group Flow (vph)	0	15	0	174	8	1959	82	1565
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	20.0	20.0	5.0	20.0
Minimum Split (s)	25.7	25.7	25.7	25.7	34.8	34.8	9.0	34.8
Total Split (s)	25.7	25.7	25.7	25.7	85.3	85.3	9.0	94.3
Total Split (%)	21.4%	21.4%	21.4%	21.4%	71.1%	71.1%	7.5%	78.6%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.7
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	1.0	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.7		5.7	5.8	5.8	4.0	5.8
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	None	Min
v/c Ratio		0.07		0.65	0.05	0.87	0.45	0.62
Control Delay		38.1		40.0	7.8	18.8	15.3	7.8
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		38.1		40.0	7.8	18.8	15.3	7.8
Queue Length 50th (m)		2.2		20.5	0.5	144.0	3.3	62.4
Queue Length 95th (m)		9.3		50.7	2.6	214.6	15.0	101.0
Internal Link Dist (m)		561.8		431.0		175.2		478.0
Turn Bay Length (m)					33.0		23.0	
Base Capacity (vph)		359		393	224	2961	183	3151
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		0.04		0.44	0.04	0.66	0.45	0.50

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 91.6
Natural Cycle: 90
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Paris St & John St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	10	3	2	63	0	106	8	1857	44	80	1513	5
Future Volume (vph)	10	3	2	63	0	106	8	1857	44	80	1513	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.92		1.00	1.00		1.00	1.00	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1799			1628		1800	3527		1736	3537	
Flt Permitted		0.80			0.87		0.14	1.00		0.06	1.00	
Satd. Flow (perm)		1488			1444		266	3527		117	3537	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	10	3	2	65	0	109	8	1914	45	82	1560	5
RTOR Reduction (vph)	0	2	0	0	53	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	13	0	0	121	0	8	1958	0	82	1565	0
Confl. Peds. (#/hr)	3		4	4		3	14		2	2		14
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%	0%	2%	0%	4%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		13.8			13.8		58.6	58.6		66.3	66.3	
Effective Green, g (s)		13.8			13.8		58.6	58.6		66.3	66.3	
Actuated g/C Ratio		0.15			0.15		0.64	0.64		0.72	0.72	
Clearance Time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		224			217		170	2256		150	2560	
v/s Ratio Prot								c0.56		0.02	c0.44	
v/s Ratio Perm		0.01			c0.08		0.03			0.37		
v/c Ratio		0.06			0.56		0.05	0.87		0.55	0.61	
Uniform Delay, d1		33.3			36.1		6.1	13.4		16.4	6.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			3.1		0.1	3.8		4.0	0.4	
Delay (s)		33.4			39.2		6.2	17.2		20.4	6.7	
Level of Service		C			D		A	B		C	A	
Approach Delay (s)		33.4			39.2			17.1			7.4	
Approach LOS		C			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	91.6	Sum of lost time (s)	15.5
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	494	616	1235	244	328	1165
Future Volume (vph)	494	616	1235	244	328	1165
Lane Group Flow (vph)	549	684	1372	271	364	1294
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Detector Phase	8	8 1	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0		15.0	15.0	10.0	15.0
Minimum Split (s)	30.8		40.2	40.2	15.0	40.2
Total Split (s)	36.0		62.0	62.0	22.0	84.0
Total Split (%)	30.0%		51.7%	51.7%	18.3%	70.0%
Yellow Time (s)	3.3		4.2	4.2	3.0	4.2
All-Red Time (s)	2.5		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8		6.2	6.2	5.0	6.2
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None		Min	Min	None	Min
v/c Ratio	0.60	0.93	0.89	0.36	0.71	0.58
Control Delay	41.0	50.9	37.4	12.6	56.0	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.0	50.9	37.4	12.6	56.0	13.4
Queue Length 50th (m)	61.0	154.9	152.6	22.0	44.2	86.5
Queue Length 95th (m)	81.7	#245.0	184.6	41.9	62.3	104.8
Internal Link Dist (m)	679.1		533.6			774.4
Turn Bay Length (m)	158.0			37.0	175.0	
Base Capacity (vph)	916	734	1729	835	511	2410
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	0.60	0.93	0.79	0.32	0.71	0.54

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 114.6

Natural Cycle: 90

Control Type: Semi Act-Uncoord

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

Splits and Phases: 9: Ramsey Lake Rd & Paris St

HCM Signalized Intersection Capacity Analysis

Existing (2022) PM Peak Hour w/ Improvements

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	494	616	1235	244	328	1165
Future Volume (vph)	494	616	1235	244	328	1165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	6.2	6.2	5.0	6.2
Lane Util. Factor	0.97	1.00	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3467	1583	3539	1587	3433	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3467	1583	3539	1587	3433	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	549	684	1372	271	364	1294
RTOR Reduction (vph)	0	10	0	66	0	0
Lane Group Flow (vph)	549	674	1372	205	364	1294
Confl. Peds. (#/hr)		16		5	5	
Heavy Vehicles (%)	1%	2%	2%	0%	2%	2%
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Actuated Green, G (s)	30.3	53.2	50.2	50.2	17.1	72.3
Effective Green, g (s)	30.3	53.2	50.2	50.2	17.1	72.3
Actuated g/C Ratio	0.26	0.46	0.44	0.44	0.15	0.63
Clearance Time (s)	5.8		6.2	6.2	5.0	6.2
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	916	734	1550	695	512	2232
v/s Ratio Prot	0.16	c0.43	c0.39		0.11	0.37
v/s Ratio Perm				0.13		
v/c Ratio	0.60	0.92	0.89	0.29	0.71	0.58
Uniform Delay, d1	36.8	28.7	29.6	20.8	46.4	12.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	16.3	6.4	0.2	4.6	0.4
Delay (s)	37.9	45.0	36.0	21.0	51.0	12.7
Level of Service	D	D	D	C	D	B
Approach Delay (s)	41.8		33.5			21.1
Approach LOS	D		C			C

Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	114.6	Sum of lost time (s)	17.0
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Appendix E –
Synchro Analysis Output –
Background Traffic Volumes

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱	↰↰	↑↱	↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	168	424	534	393	76	560	415	27	823	241
Future Volume (vph)	168	424	534	393	76	560	415	27	823	241
Lane Group Flow (vph)	183	509	580	438	83	609	451	29	895	262
Turn Type	pm+pt	NA	Prot	NA	pm+pt	NA	pt+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	3	8	5	2	2 3	1	6	7
Permitted Phases	4				2			6		6
Detector Phase	7	4	3	8	5	2	2 3	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	15.0		5.0	15.0	5.0
Minimum Split (s)	10.0	31.2	10.0	31.2	10.0	40.1		10.0	40.1	10.0
Total Split (s)	26.1	31.2	34.0	39.1	20.0	44.0		17.0	41.0	26.1
Total Split (%)	20.7%	24.7%	26.9%	31.0%	15.8%	34.9%		13.5%	32.5%	20.7%
Yellow Time (s)	3.0	3.7	3.0	3.7	3.0	3.7		3.0	3.7	3.0
All-Red Time (s)	2.0	2.5	2.0	2.5	2.0	2.4		2.0	2.4	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	6.2	5.0	6.2	5.0	6.1		5.0	6.1	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min		None	Min	None
v/c Ratio	0.45	0.73	0.73	0.41	0.34	0.40	0.44	0.09	0.71	0.38
Control Delay	20.9	45.5	43.1	29.8	24.5	29.5	6.9	21.2	38.5	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	20.9	45.5	43.1	29.8	24.5	29.5	7.1	21.2	38.5	13.0
Queue Length 50th (m)	20.6	51.8	57.8	37.2	10.7	38.3	21.8	3.6	63.1	18.9
Queue Length 95th (m)	41.2	83.8	91.7	63.3	23.2	56.0	48.5	10.3	90.2	41.1
Internal Link Dist (m)		364.5		324.4		160.9			177.4	
Turn Bay Length (m)	57.0		85.0		70.0		6.0	24.0		6.0
Base Capacity (vph)	571	921	1060	1295	335	2059	1121	393	1855	831
Starvation Cap Reductn	0	0	0	0	0	0	154	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	0.32	0.55	0.55	0.34	0.25	0.30	0.47	0.07	0.48	0.32

Intersection Summary

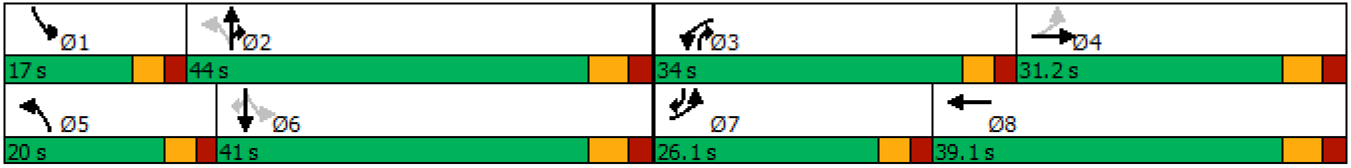
Cycle Length: 126.2

Actuated Cycle Length: 98.5

Natural Cycle: 95

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Paris St & Brady St



700 Paris St
1: Paris St & Brady St

HCM Signalized Intersection Capacity Analysis
Background (2027) AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰↰	↑↱		↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	168	424	44	534	393	10	76	560	415	27	823	241
Future Volume (vph)	168	424	44	534	393	10	76	560	415	27	823	241
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.2		5.0	6.2		5.0	6.1	6.1	5.0	6.1	5.0
Lane Util. Factor	1.00	0.95		0.97	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1684	3369		3367	3460		1671	4988	1568	1717	4893	1553
Flt Permitted	0.50	1.00		0.95	1.00		0.16	1.00	1.00	0.41	1.00	1.00
Satd. Flow (perm)	883	3369		3367	3460		288	4988	1568	742	4893	1553
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	183	461	48	580	427	11	83	609	451	29	895	262
RTOR Reduction (vph)	0	6	0	0	1	0	0	0	95	0	0	69
Lane Group Flow (vph)	183	503	0	580	437	0	83	609	356	29	895	193
Confl. Peds. (#/hr)	7		4	4		7	19		10	10		19
Heavy Vehicles (%)	7%	5%	10%	4%	4%	0%	8%	4%	3%	5%	6%	2%
Turn Type	pm+pt	NA		Prot	NA		pm+pt	NA	pt+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	2 3	1	6	7
Permitted Phases	4						2			6		6
Actuated Green, G (s)	32.8	20.2		23.2	30.8		37.8	30.2	59.5	30.2	26.4	39.0
Effective Green, g (s)	32.8	20.2		23.2	30.8		37.8	30.2	59.5	30.2	26.4	39.0
Actuated g/C Ratio	0.33	0.20		0.23	0.31		0.38	0.30	0.60	0.30	0.26	0.39
Clearance Time (s)	5.0	6.2		5.0	6.2		5.0	6.1		5.0	6.1	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	391	682		783	1068		214	1510	935	261	1295	607
v/s Ratio Prot	0.06	c0.15		c0.17	0.13		c0.03	0.12	0.23	0.00	c0.18	0.04
v/s Ratio Perm	0.09						0.12			0.03		0.08
v/c Ratio	0.47	0.74		0.74	0.41		0.39	0.40	0.38	0.11	0.69	0.32
Uniform Delay, d1	25.2	37.3		35.5	27.2		21.4	27.6	10.5	24.6	33.0	21.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	4.2		3.8	0.3		1.2	0.2	0.3	0.2	1.6	0.3
Delay (s)	26.1	41.4		39.3	27.5		22.6	27.8	10.8	24.8	34.6	21.4
Level of Service	C	D		D	C		C	C	B	C	C	C
Approach Delay (s)		37.4			34.2			20.7			31.4	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	99.7	Sum of lost time (s)	22.3
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↰	↑↱	↰	↑	↱	↰	↑↑↱	↰	↑↑↱
Traffic Volume (vph)	15	25	245	58	138	157	949	76	1278
Future Volume (vph)	15	25	245	58	138	157	949	76	1278
Lane Group Flow (vph)	16	119	269	64	152	173	1162	84	1456
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	4.5	5.0	5.0	5.0
Minimum Split (s)	31.7	31.7	31.7	31.7	31.7	9.0	41.1	9.0	41.1
Total Split (s)	37.0	37.0	37.0	37.0	37.0	19.0	41.1	19.0	41.1
Total Split (%)	38.1%	38.1%	38.1%	38.1%	38.1%	19.6%	42.3%	19.6%	42.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.05	0.14	0.79	0.13	0.29	0.60	0.46	0.26	0.64
Control Delay	22.5	8.1	45.4	23.4	5.6	22.8	15.2	10.1	21.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.5	8.1	45.4	23.4	5.6	22.8	15.2	10.1	21.0
Queue Length 50th (m)	1.9	1.7	40.6	7.9	0.0	11.9	44.1	4.9	65.0
Queue Length 95th (m)	6.8	8.0	73.0	18.2	13.3	37.6	73.2	13.5	108.6
Internal Link Dist (m)		187.2		465.5			478.0		160.9
Turn Bay Length (m)	21.0		133.0		62.0	34.0		48.0	
Base Capacity (vph)	468	1209	509	725	717	377	2521	489	2262
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.10	0.53	0.09	0.21	0.46	0.46	0.17	0.64

Intersection Summary

Cycle Length: 97.1
Actuated Cycle Length: 82.9
Natural Cycle: 85
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Paris St & Van Horne St

HCM Signalized Intersection Capacity Analysis

Background (2027) AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑	↱	↰	↑↑↱		↰	↑↑↱	
Traffic Volume (vph)	15	25	84	245	58	138	157	949	108	76	1278	47
Future Volume (vph)	15	25	84	245	58	138	157	949	108	76	1278	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.0	4.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.88		1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1566	2905		1801	1827	1576	1703	4870		1752	5048	
Flt Permitted	0.72	1.00		0.68	1.00	1.00	0.09	1.00		0.21	1.00	
Satd. Flow (perm)	1179	2905		1283	1827	1576	169	4870		388	5048	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	16	27	92	269	64	152	173	1043	119	84	1404	52
RTOR Reduction (vph)	0	68	0	0	0	112	0	11	0	0	3	0
Lane Group Flow (vph)	16	51	0	269	64	40	173	1151	0	84	1453	0
Confl. Peds. (#/hr)	4		4	4		4	6		6	6		6
Heavy Vehicles (%)	15%	4%	10%	0%	4%	1%	6%	5%	2%	3%	2%	5%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	22.1	22.1		22.1	22.1	22.1	52.6	42.7		43.9	38.0	
Effective Green, g (s)	22.1	22.1		22.1	22.1	22.1	52.6	42.7		43.9	38.0	
Actuated g/C Ratio	0.26	0.26		0.26	0.26	0.26	0.63	0.51		0.52	0.45	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	311	767		338	482	416	291	2484		299	2291	
v/s Ratio Prot		0.02			0.04		c0.07	0.24		0.02	c0.29	
v/s Ratio Perm	0.01			c0.21		0.03	0.30			0.13		
v/c Ratio	0.05	0.07		0.80	0.13	0.10	0.59	0.46		0.28	0.63	
Uniform Delay, d1	23.0	23.1		28.7	23.5	23.3	11.9	13.1		10.0	17.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0		12.2	0.1	0.1	3.2	0.6		0.5	1.4	
Delay (s)	23.0	23.1		40.9	23.6	23.4	15.1	13.8		10.5	18.9	
Level of Service	C	C		D	C	C	B	B		B	B	
Approach Delay (s)		23.1			33.1			14.0			18.4	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	83.7	Sum of lost time (s)	13.5
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

	↗	→	↙	←	↖	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✥		✥	↰	↑↱	↰	↑↱
Traffic Volume (vph)	8	0	40	2	4	1209	46	1529
Future Volume (vph)	8	0	40	2	4	1209	46	1529
Lane Group Flow (vph)	0	14	0	110	4	1294	48	1602
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	20.0	20.0	5.0	20.0
Minimum Split (s)	25.7	25.7	25.7	25.7	34.8	34.8	9.0	34.8
Total Split (s)	25.7	25.7	25.7	25.7	50.8	50.8	14.0	64.8
Total Split (%)	28.4%	28.4%	28.4%	28.4%	56.1%	56.1%	15.5%	71.6%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.7
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	1.0	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.7		5.7	5.8	5.8	4.0	5.8
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	None	Min
v/c Ratio		0.04		0.36	0.02	0.60	0.14	0.63
Control Delay		0.2		16.9	8.5	11.4	4.0	7.3
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		0.2		16.9	8.5	11.4	4.0	7.3
Queue Length 50th (m)		0.0		4.3	0.2	56.1	1.3	46.3
Queue Length 95th (m)		0.0		19.8	1.7	91.0	4.3	80.5
Internal Link Dist (m)		561.8		431.0		175.2		478.0
Turn Bay Length (m)					33.0		23.0	
Base Capacity (vph)		610		601	218	2854	463	3321
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		0.02		0.18	0.02	0.45	0.10	0.48

Intersection Summary

Cycle Length: 90.5

Actuated Cycle Length: 56.5

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Splits and Phases: 3: Paris St & John St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	8	0	6	40	2	63	4	1209	34	46	1529	9
Future Volume (vph)	8	0	6	40	2	63	4	1209	34	46	1529	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.92		1.00	1.00		1.00	1.00	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1727			1696		1803	3491		1770	3536	
Flt Permitted		0.84			0.87		0.14	1.00		0.13	1.00	
Satd. Flow (perm)		1498			1501		267	3491		250	3536	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	8	0	6	42	2	66	4	1259	35	48	1593	9
RTOR Reduction (vph)	0	12	0	0	58	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	2	0	0	52	0	4	1292	0	48	1602	0
Confl. Peds. (#/hr)	5		5	5		5	8		4	4		8
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	2%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.1			7.1		33.5	33.5		40.8	40.8	
Effective Green, g (s)		7.1			7.1		33.5	33.5		40.8	40.8	
Actuated g/C Ratio		0.12			0.12		0.56	0.56		0.69	0.69	
Clearance Time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		179			179		150	1968		256	2428	
v/s Ratio Prot								0.37		0.01	c0.45	
v/s Ratio Perm		0.00			c0.03		0.01			0.12		
v/c Ratio		0.01			0.29		0.03	0.66		0.19	0.66	
Uniform Delay, d1		23.1			23.9		5.7	9.0		4.9	5.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0			0.9		0.1	0.8		0.4	0.7	
Delay (s)		23.1			24.8		5.8	9.8		5.2	6.0	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		23.1			24.8			9.8			6.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	15.5
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			↰↑↑↱			↰↑↑↱	
Traffic Volume (veh/h)	3	0	9	2	0	2	1	1374	0	0	1603	7
Future Volume (Veh/h)	3	0	9	2	0	2	1	1374	0	0	1603	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	0	10	2	0	2	1	1527	0	0	1781	8
Pedestrians		2			1							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								347			199	
pX, platoon unblocked	0.78	0.78	0.69	0.78	0.78	0.84	0.69			0.84		
vC, conflicting volume	2554	3317	896	2430	3321	764	1791			1528		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1471	2454	0	1312	2459	324	1257			1238		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	7.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.8	2.2			2.2		
p0 queue free %	96	100	99	98	100	100	100			100		
cM capacity (veh/h)	69	24	755	90	24	459	388			475		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	13	4	764	764	890	898
Volume Left	3	2	1	0	0	0
Volume Right	10	2	0	0	0	8
cSH	230	151	388	1700	475	1700
Volume to Capacity	0.06	0.03	0.00	0.45	0.00	0.53
Queue Length 95th (m)	1.4	0.7	0.1	0.0	0.0	0.0
Control Delay (s)	21.6	29.5	0.1	0.0	0.0	0.0
Lane LOS	C	D	A			
Approach Delay (s)	21.6	29.5	0.0		0.0	
Approach LOS	C	D				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑↱			↰↑
Traffic Volume (veh/h)	2	0	1362	1	1	1614
Future Volume (Veh/h)	2	0	1362	1	1	1614
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	2	0	1513	1	1	1793
Pedestrians						1
Lane Width (m)						3.6
Walking Speed (m/s)						1.2
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			226			321
pX, platoon unblocked	0.78	0.81			0.81	
vC, conflicting volume	2412	758			1514	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1169	244			1173	
tC, single (s)	6.8	6.9			6.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			3.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	147	620			202	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	2	1009	505	599	1195
Volume Left	2	0	0	1	0
Volume Right	0	0	1	0	0
cSH	147	1700	1700	202	1700
Volume to Capacity	0.01	0.59	0.30	0.00	0.70
Queue Length 95th (m)	0.3	0.0	0.0	0.1	0.0
Control Delay (s)	29.9	0.0	0.0	0.2	0.0
Lane LOS	D			A	
Approach Delay (s)	29.9	0.0		0.1	
Approach LOS	D				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↰	Y	
Traffic Volume (veh/h)	1	1	1	1	0	0
Future Volume (Veh/h)	1	1	1	1	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Hourly flow rate (vph)	2	2	2	2	0	0
Pedestrians	1			2	2	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			6		12	7
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			6		12	7
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1625		1009	1078

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	4	4	0
Volume Left	0	2	0
Volume Right	2	0	0
cSH	1700	1625	1700
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	3.6	0.0
Lane LOS		A	A
Approach Delay (s)	0.0	3.6	0.0
Approach LOS			A

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	14.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Configurations		✥	↰	↱	↰	↑↱	↑↱
Traffic Volume (vph)	26	0	2	0	5	1313	1624
Future Volume (vph)	26	0	2	0	5	1313	1624
Lane Group Flow (vph)	0	40	2	2	5	1383	1722
Turn Type	Perm	NA	Perm	NA	Perm	NA	NA
Protected Phases		4		8		2	6
Permitted Phases	4		8		2		
Detector Phase	4	4	8	8	2	2	6
Switch Phase							
Minimum Initial (s)	8.0	8.0	8.0	8.0	30.0	30.0	30.0
Minimum Split (s)	26.0	26.0	26.0	26.0	35.9	35.9	35.9
Total Split (s)	26.0	26.0	26.0	26.0	55.9	55.9	55.9
Total Split (%)	31.7%	31.7%	31.7%	31.7%	68.3%	68.3%	68.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.7	3.7	3.7
All-Red Time (s)	2.5	2.5	2.5	2.5	2.2	2.2	2.2
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0	6.0	5.9	5.9	5.9
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	Min	Min	Min
v/c Ratio		0.17	0.01	0.01	0.03	0.48	0.60
Control Delay		12.1	25.5	0.0	3.8	4.4	5.5
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		12.1	25.5	0.0	3.8	4.4	5.5
Queue Length 50th (m)		0.1	0.3	0.0	0.2	37.1	55.0
Queue Length 95th (m)		8.2	2.1	0.0	1.0	50.5	75.5
Internal Link Dist (m)		198.2		192.5		314.0	201.8
Turn Bay Length (m)					40.0		
Base Capacity (vph)		522	591	587	172	3004	3001
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		0.08	0.00	0.00	0.03	0.46	0.57

Intersection Summary

Cycle Length: 81.9

Actuated Cycle Length: 59.3

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Splits and Phases: 7: Paris St & Boland Ave/Paris Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	26	0	12	2	0	2	5	1313	1	0	1624	12
Future Volume (vph)	26	0	12	2	0	2	5	1313	1	0	1624	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		5.9	5.9			5.9	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95			0.95	
Frt		0.96		1.00	0.85		1.00	1.00			1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1757		1805	1615		1805	3505			3502	
Flt Permitted		0.80		0.91	1.00		0.11	1.00			1.00	
Satd. Flow (perm)		1447		1727	1615		201	3505			3502	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	27	0	13	2	0	2	5	1382	1	0	1709	13
RTOR Reduction (vph)	0	36	0	0	2	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	4	0	2	0	0	5	1383	0	0	1721	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		4.4		4.4	4.4		45.6	45.6			45.6	
Effective Green, g (s)		4.4		4.4	4.4		45.6	45.6			45.6	
Actuated g/C Ratio		0.07		0.07	0.07		0.74	0.74			0.74	
Clearance Time (s)		6.0		6.0	6.0		5.9	5.9			5.9	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		102		122	114		148	2582			2579	
v/s Ratio Prot					0.00			0.39			c0.49	
v/s Ratio Perm		c0.00		0.00			0.02					
v/c Ratio		0.04		0.02	0.00		0.03	0.54			0.67	
Uniform Delay, d1		26.8		26.7	26.7		2.2	3.5			4.2	
Progression Factor		1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		0.1		0.1	0.0		0.1	0.2			0.7	
Delay (s)		26.9		26.8	26.7		2.3	3.8			4.9	
Level of Service		C		C	C		A	A			A	
Approach Delay (s)		26.9			26.8			3.8			4.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	61.9	Sum of lost time (s)	11.9
Intersection Capacity Utilization	64.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Volume (vph)	174	142	65	1145	1432	207
Future Volume (vph)	174	142	65	1145	1432	207
Lane Group Flow (vph)	193	158	72	1272	1591	230
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	5.0	30.0	30.0	30.0
Minimum Split (s)	25.5	25.5	9.0	36.2	36.2	36.2
Total Split (s)	25.5	25.5	9.0	79.0	70.0	70.0
Total Split (%)	24.4%	24.4%	8.6%	75.6%	67.0%	67.0%
Yellow Time (s)	3.3	3.3	3.0	4.2	4.2	4.2
All-Red Time (s)	2.2	2.2	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Min	Min	Min
v/c Ratio	0.62	0.44	0.34	0.55	0.78	0.23
Control Delay	42.6	17.4	8.4	8.0	16.5	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.6	17.4	8.4	8.0	16.5	1.8
Queue Length 50th (m)	28.5	6.8	3.0	46.4	97.4	0.0
Queue Length 95th (m)	61.5	28.2	7.9	75.2	145.0	9.0
Internal Link Dist (m)	376.5			775.4	314.0	
Turn Bay Length (m)	21.0		123.0			72.0
Base Capacity (vph)	477	486	212	3058	2847	1270
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	0.40	0.33	0.34	0.42	0.56	0.18

Intersection Summary

Cycle Length: 104.5

Actuated Cycle Length: 79.1

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Splits and Phases: 8: Paris St & York St

	↗	↘	↖	↑	↓	↙
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Volume (vph)	174	142	65	1145	1432	207
Future Volume (vph)	174	142	65	1145	1432	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1516	1770	3471	3539	1530
Flt Permitted	0.95	1.00	0.08	1.00	1.00	1.00
Satd. Flow (perm)	1770	1516	150	3471	3539	1530
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	193	158	72	1272	1591	230
RTOR Reduction (vph)	0	89	0	0	0	97
Lane Group Flow (vph)	193	69	72	1272	1591	133
Confl. Peds. (#/hr)	1	15	8			8
Heavy Vehicles (%)	2%	4%	2%	4%	2%	2%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	14.0	14.0	53.5	53.5	45.8	45.8
Effective Green, g (s)	14.0	14.0	53.5	53.5	45.8	45.8
Actuated g/C Ratio	0.18	0.18	0.68	0.68	0.58	0.58
Clearance Time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	312	267	177	2344	2046	884
v/s Ratio Prot	c0.11		0.02	c0.37	c0.45	
v/s Ratio Perm		0.05	0.26			0.09
v/c Ratio	0.62	0.26	0.41	0.54	0.78	0.15
Uniform Delay, d1	30.1	28.1	10.2	6.6	12.8	7.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	0.5	1.5	0.3	1.9	0.1
Delay (s)	33.8	28.6	11.7	6.8	14.7	7.8
Level of Service	C	C	B	A	B	A
Approach Delay (s)	31.5			7.1	13.8	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	79.2	Sum of lost time (s)	15.7
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	180	226	989	368	655	927
Future Volume (vph)	180	226	989	368	655	927
Lane Group Flow (vph)	188	235	1030	383	682	966
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Detector Phase	8	8 1	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0		15.0	15.0	10.0	15.0
Minimum Split (s)	30.8		40.2	40.2	15.0	40.2
Total Split (s)	30.8		56.2	56.2	33.0	89.2
Total Split (%)	25.7%		46.8%	46.8%	27.5%	74.3%
Yellow Time (s)	3.3		4.2	4.2	3.0	4.2
All-Red Time (s)	2.5		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8		6.2	6.2	5.0	6.2
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None		Min	Min	None	Min
v/c Ratio	0.37	0.31	0.75	0.53	0.75	0.39
Control Delay	38.9	14.8	27.8	12.6	38.0	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.9	14.8	27.8	12.6	38.0	5.7
Queue Length 50th (m)	16.0	20.7	82.3	22.0	56.5	29.0
Queue Length 95th (m)	31.4	47.5	126.7	55.9	102.3	52.7
Internal Link Dist (m)	679.1		533.6			775.4
Turn Bay Length (m)	158.0			37.0	175.0	
Base Capacity (vph)	1010	851	2064	990	1143	3104
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	0.19	0.28	0.50	0.39	0.60	0.31

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 88.9
Natural Cycle: 90
Control Type: Semi Act-Uncoord

Splits and Phases: 9: Ramsey Lake Rd & Paris St

700 Paris St
9: Ramsey Lake Rd & Paris St

HCM Signalized Intersection Capacity Analysis
Background (2027) AM Peak Hour

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	180	226	989	368	655	927
Future Volume (vph)	180	226	989	368	655	927
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	6.2	6.2	5.0	6.2
Lane Util. Factor	0.97	1.00	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1568	3505	1546	3467	3471
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1568	3505	1546	3467	3471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	188	235	1030	383	682	966
RTOR Reduction (vph)	0	18	0	123	0	0
Lane Group Flow (vph)	188	217	1030	260	682	966
Confl. Peds. (#/hr)		13		14	14	
Heavy Vehicles (%)	2%	3%	3%	2%	1%	4%
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Actuated Green, G (s)	13.1	42.1	35.1	35.1	23.2	63.3
Effective Green, g (s)	13.1	42.1	35.1	35.1	23.2	63.3
Actuated g/C Ratio	0.15	0.48	0.40	0.40	0.26	0.72
Clearance Time (s)	5.8		6.2	6.2	5.0	6.2
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	508	746	1391	613	909	2485
v/s Ratio Prot	c0.05	0.14	c0.29		c0.20	0.28
v/s Ratio Perm				0.17		
v/c Ratio	0.37	0.29	0.74	0.42	0.75	0.39
Uniform Delay, d1	33.9	14.1	22.8	19.3	29.9	4.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.2	2.2	0.5	3.5	0.1
Delay (s)	34.4	14.3	24.9	19.8	33.5	5.0
Level of Service	C	B	C	B	C	A
Approach Delay (s)	23.2		23.5			16.8
Approach LOS	C		C			B

Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	88.4	Sum of lost time (s)	17.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱	↰↰	↑↱	↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	181	575	589	478	98	1065	762	26	832	253
Future Volume (vph)	181	575	589	478	98	1065	762	26	832	253
Lane Group Flow (vph)	181	635	589	492	98	1065	762	26	832	253
Turn Type	pm+pt	NA	Prot	NA	pm+pt	NA	pt+ov	Perm	NA	pm+ov
Protected Phases	7	4	3	8	5	2	2 3		6	7
Permitted Phases	4				2			6		6
Detector Phase	7	4	3	8	5	2	2 3	6	6	7
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	15.0		15.0	15.0	5.0
Minimum Split (s)	10.0	31.2	10.0	31.2	10.0	40.1		40.1	40.1	10.0
Total Split (s)	35.1	40.3	34.0	39.2	22.0	63.0		41.0	41.0	35.1
Total Split (%)	25.6%	29.4%	24.8%	28.6%	16.0%	45.9%		29.9%	29.9%	25.6%
Yellow Time (s)	3.0	3.7	3.0	3.7	3.0	3.7		3.7	3.7	3.0
All-Red Time (s)	2.0	2.5	2.0	2.5	2.0	2.4		2.4	2.4	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	6.2	5.0	6.2	5.0	6.1		6.1	6.1	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead			Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min		Min	Min	None
v/c Ratio	0.48	0.77	0.77	0.43	0.39	0.54	0.71	0.21	0.64	0.39
Control Delay	23.0	49.4	51.3	32.5	27.7	28.3	16.4	41.3	40.6	17.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0
Total Delay	23.0	49.4	51.3	32.5	27.7	28.3	18.6	41.3	40.6	17.4
Queue Length 50th (m)	23.4	76.6	69.0	47.7	15.1	72.7	99.5	5.0	66.0	28.1
Queue Length 95th (m)	43.9	109.2	105.4	75.5	29.3	95.7	170.2	14.7	90.5	51.4
Internal Link Dist (m)		364.5		324.4		160.9			177.4	
Turn Bay Length (m)	57.0		85.0		70.0		6.0	24.0		6.0
Base Capacity (vph)	605	1106	917	1225	350	2638	1145	158	1685	890
Starvation Cap Reductn	0	0	0	0	0	0	243	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	0.30	0.57	0.64	0.40	0.28	0.40	0.84	0.16	0.49	0.28

Intersection Summary

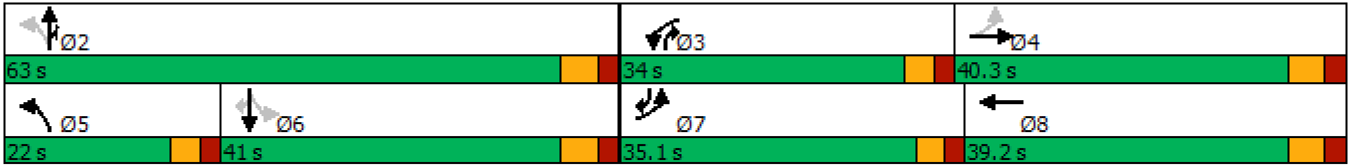
Cycle Length: 137.3

Actuated Cycle Length: 114.4

Natural Cycle: 95

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Paris St & Brady St



1: Paris St & Brady St

Background (2027) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰↰	↑↱		↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	181	575	60	589	478	14	98	1065	762	26	832	253
Future Volume (vph)	181	575	60	589	478	14	98	1065	762	26	832	253
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.2		5.0	6.2		5.0	6.1	6.1	6.1	6.1	5.0
Lane Util. Factor	1.00	0.95		0.97	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1580	3540		3467	3491		1751	5085	1615	1774	5085	1575
Flt Permitted	0.47	1.00		0.95	1.00		0.18	1.00	1.00	0.26	1.00	1.00
Satd. Flow (perm)	786	3540		3467	3491		323	5085	1615	479	5085	1575
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	181	575	60	589	478	14	98	1065	762	26	832	253
RTOR Reduction (vph)	0	6	0	0	1	0	0	0	15	0	0	45
Lane Group Flow (vph)	181	629	0	589	491	0	98	1065	747	26	832	208
Confl. Peds. (#/hr)	9		6	6		9	25		33	33		25
Heavy Vehicles (%)	14%	0%	4%	1%	3%	0%	3%	2%	0%	1%	2%	0%
Turn Type	pm+pt	NA		Prot	NA		pm+pt	NA	pt+ov	Perm	NA	pm+ov
Protected Phases	7	4		3	8		5	2	2 3		6	7
Permitted Phases	4						2			6		6
Actuated Green, G (s)	40.1	26.3		25.4	37.9		44.6	44.6	76.1	29.6	29.6	43.4
Effective Green, g (s)	40.1	26.3		25.4	37.9		44.6	44.6	76.1	29.6	29.6	43.4
Actuated g/C Ratio	0.35	0.23		0.22	0.33		0.39	0.39	0.67	0.26	0.26	0.38
Clearance Time (s)	5.0	6.2		5.0	6.2		5.0	6.1		6.1	6.1	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	373	819		775	1164		252	1996	1081	124	1324	601
v/s Ratio Prot	0.06	c0.18		c0.17	0.14		0.03	0.21	c0.46		0.16	0.04
v/s Ratio Perm	0.11						0.12			0.05		0.09
v/c Ratio	0.49	0.77		0.76	0.42		0.39	0.53	0.69	0.21	0.63	0.35
Uniform Delay, d1	26.9	40.8		41.2	29.3		23.5	26.5	11.5	32.9	37.1	25.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	4.4		4.4	0.2		1.0	0.3	1.9	0.8	0.9	0.3
Delay (s)	27.8	45.2		45.7	29.6		24.5	26.8	13.4	33.7	38.1	25.3
Level of Service	C	D		D	C		C	C	B	C	D	C
Approach Delay (s)		41.3			38.3			21.4			35.1	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	31.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	113.6	Sum of lost time (s)	22.3
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		

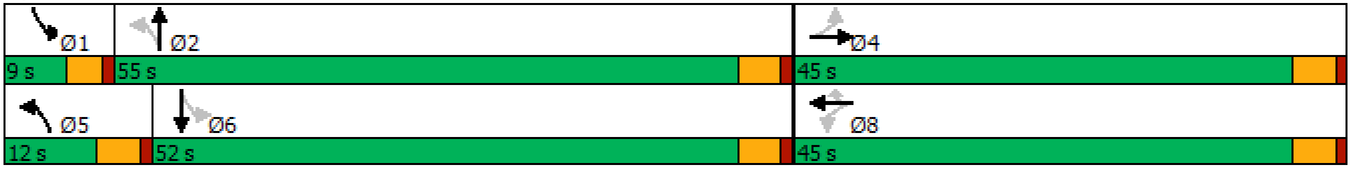
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↰	↑↱	↰	↑	↱	↰	↑↑↱	↰	↑↑↱
Traffic Volume (vph)	48	70	212	68	154	161	1661	121	1315
Future Volume (vph)	48	70	212	68	154	161	1661	121	1315
Lane Group Flow (vph)	49	290	216	69	157	164	2055	123	1387
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	4.5	5.0	5.0	5.0
Minimum Split (s)	31.7	31.7	31.7	31.7	31.7	9.0	41.1	9.0	41.1
Total Split (s)	45.0	45.0	45.0	45.0	45.0	12.0	55.0	9.0	52.0
Total Split (%)	41.3%	41.3%	41.3%	41.3%	41.3%	11.0%	50.5%	8.3%	47.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.15	0.32	0.82	0.14	0.33	0.62	0.76	0.69	0.54
Control Delay	25.9	16.0	57.0	25.4	10.8	21.2	20.2	35.4	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.9	16.0	57.0	25.4	10.8	21.2	20.2	35.4	17.7
Queue Length 50th (m)	7.1	13.3	38.4	10.0	6.7	11.1	101.3	7.9	61.1
Queue Length 95th (m)	15.8	23.3	65.8	19.9	21.2	#40.2	166.8	#42.4	100.4
Internal Link Dist (m)		187.2		465.5			478.0		160.9
Turn Bay Length (m)	21.0		133.0		62.0	34.0		48.0	
Base Capacity (vph)	549	1426	429	825	722	266	2699	178	2579
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.20	0.50	0.08	0.22	0.62	0.76	0.69	0.54

Intersection Summary

Cycle Length: 109
Actuated Cycle Length: 94
Natural Cycle: 85
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Paris St & Van Horne St



HCM Signalized Intersection Capacity Analysis

Background (2027) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑	↱	↰	↑↑↱		↰	↑↑↱	
Traffic Volume (vph)	48	70	215	212	68	154	161	1661	353	121	1315	44
Future Volume (vph)	48	70	215	212	68	154	161	1661	353	121	1315	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.0	4.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.89		1.00	1.00	0.85	1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1689	3128		1767	1900	1521	1770	4937		1805	5055	
Flt Permitted	0.71	1.00		0.53	1.00	1.00	0.12	1.00		0.08	1.00	
Satd. Flow (perm)	1266	3128		987	1900	1521	230	4937		159	5055	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	49	71	219	216	69	157	164	1695	360	123	1342	45
RTOR Reduction (vph)	0	87	0	0	0	81	0	26	0	0	3	0
Lane Group Flow (vph)	49	203	0	216	69	76	164	2029	0	123	1384	0
Confl. Peds. (#/hr)	13		3	3		13	3		17	17		3
Heavy Vehicles (%)	6%	2%	1%	2%	0%	4%	2%	2%	1%	0%	2%	3%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	24.9	24.9		24.9	24.9	24.9	58.4	50.9		52.9	47.9	
Effective Green, g (s)	24.9	24.9		24.9	24.9	24.9	58.4	50.9		52.9	47.9	
Actuated g/C Ratio	0.27	0.27		0.27	0.27	0.27	0.62	0.54		0.56	0.51	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	336	830		262	504	403	266	2679		177	2581	
v/s Ratio Prot		0.06			0.04		c0.05	c0.41		0.04	0.27	
v/s Ratio Perm	0.04			c0.22		0.05	0.33			0.35		
v/c Ratio	0.15	0.24		0.82	0.14	0.19	0.62	0.76		0.69	0.54	
Uniform Delay, d1	26.3	27.1		32.4	26.3	26.6	10.2	16.7		14.4	15.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2		18.6	0.1	0.2	4.2	2.1		11.2	0.8	
Delay (s)	26.5	27.2		51.0	26.4	26.9	14.4	18.7		25.6	16.3	
Level of Service	C	C		D	C	C	B	B		C	B	
Approach Delay (s)		27.1			38.6			18.4			17.0	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	93.8	Sum of lost time (s)	13.5
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

	↗	→	↙	←	↖	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✥		✥	↰	↑↱	↰	↑↱
Traffic Volume (vph)	10	3	63	0	8	2034	80	1651
Future Volume (vph)	10	3	63	0	8	2034	80	1651
Lane Group Flow (vph)	0	15	0	174	8	2142	82	1707
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	20.0	20.0	5.0	20.0
Minimum Split (s)	25.7	25.7	25.7	25.7	34.8	34.8	9.0	34.8
Total Split (s)	25.7	25.7	25.7	25.7	85.3	85.3	9.0	94.3
Total Split (%)	21.4%	21.4%	21.4%	21.4%	71.1%	71.1%	7.5%	78.6%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.7
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	1.0	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.7		5.7	5.8	5.8	4.0	5.8
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	None	Min
v/c Ratio		0.07		0.68	0.06	0.91	0.50	0.66
Control Delay		39.6		44.0	7.9	21.5	20.8	8.1
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		39.6		44.0	7.9	21.5	20.8	8.1
Queue Length 50th (m)		2.7		25.0	0.6	184.5	3.5	77.3
Queue Length 95th (m)		9.3		50.7	2.7	267.4	#19.7	118.4
Internal Link Dist (m)		561.8		431.0		175.2		478.0
Turn Bay Length (m)					33.0		23.0	
Base Capacity (vph)		311		359	169	2748	164	2988
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		0.05		0.48	0.05	0.78	0.50	0.57

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 100.3
Natural Cycle: 100
Control Type: Semi Act-Uncoord
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Paris St & John St

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	10	3	2	63	0	106	8	2034	44	80	1651	5
Future Volume (vph)	10	3	2	63	0	106	8	2034	44	80	1651	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.92		1.00	1.00		1.00	1.00	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1799			1628		1801	3528		1736	3537	
Flt Permitted		0.77			0.87		0.12	1.00		0.06	1.00	
Satd. Flow (perm)		1437			1444		218	3528		103	3537	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	10	3	2	65	0	109	8	2097	45	82	1702	5
RTOR Reduction (vph)	0	2	0	0	53	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	13	0	0	121	0	8	2141	0	82	1707	0
Confl. Peds. (#/hr)	3		4	4		3	14		2	2		14
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%	0%	2%	0%	4%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		14.1			14.1		67.2	67.2		74.8	74.8	
Effective Green, g (s)		14.1			14.1		67.2	67.2		74.8	74.8	
Actuated g/C Ratio		0.14			0.14		0.67	0.67		0.75	0.75	
Clearance Time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		201			202		145	2361		135	2635	
v/s Ratio Prot								c0.61		0.02	c0.48	
v/s Ratio Perm		0.01			c0.08		0.04			0.43		
v/c Ratio		0.07			0.60		0.06	0.91		0.61	0.65	
Uniform Delay, d1		37.4			40.5		5.7	14.0		21.4	6.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			4.7		0.2	5.5		7.5	0.6	
Delay (s)		37.6			45.2		5.9	19.5		28.9	6.9	
Level of Service		D			D		A	B		C	A	
Approach Delay (s)		37.6			45.2			19.4			7.9	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.4	Sum of lost time (s)	15.5
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			↰↑↱			↰↓↱	
Traffic Volume (veh/h)	9	0	7	3	0	2	1	2059	1	1	1788	13
Future Volume (Veh/h)	9	0	7	3	0	2	1	2059	1	1	1788	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	9	0	7	3	0	2	1	2145	1	1	1862	14
Pedestrians		3			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								347			199	
pX, platoon unblocked	0.43	0.43	0.72	0.43	0.43	0.29	0.72			0.29		
vC, conflicting volume	2950	4024	941	3090	4030	1075	1879			2148		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	2464	147	269	2480	0	1447			27		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	99	99	100	99	100			100		
cM capacity (veh/h)	431	13	633	278	13	312	342			458		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	16	5	1074	1074	932	945
Volume Left	9	3	1	0	1	0
Volume Right	7	2	0	1	0	14
cSH	501	291	342	1700	458	1700
Volume to Capacity	0.03	0.02	0.00	0.63	0.00	0.56
Queue Length 95th (m)	0.8	0.4	0.1	0.0	0.1	0.0
Control Delay (s)	12.4	17.6	0.1	0.0	0.1	0.0
Lane LOS	B	C	A		A	
Approach Delay (s)	12.4	17.6	0.1		0.0	
Approach LOS	B	C				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑↱			↰↑
Traffic Volume (veh/h)	1	1	2051	6	0	1793
Future Volume (Veh/h)	1	1	2051	6	0	1793
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	1	2159	6	0	1887
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			225			321
pX, platoon unblocked	0.41	0.26			0.26	
vC, conflicting volume	3106	1084			2166	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	24	0			0	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	405	284			427	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	2	1439	726	629	1258
Volume Left	1	0	0	0	0
Volume Right	1	0	6	0	0
cSH	334	1700	1700	427	1700
Volume to Capacity	0.01	0.85	0.43	0.00	0.74
Queue Length 95th (m)	0.1	0.0	0.0	0.0	0.0
Control Delay (s)	15.8	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	15.8	0.0		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	66.9%	ICU Level of Service	C
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→↘			↙←	↖↗	
Traffic Volume (veh/h)	7	0	0	2	0	0
Future Volume (Veh/h)	7	0	0	2	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67
Hourly flow rate (vph)	10	0	0	3	0	0
Pedestrians	1			2		
Lane Width (m)	3.6			3.6		
Walking Speed (m/s)	1.2			1.2		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			10		14	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			10		14	12
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1009	1073

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	10	3	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1623	1700
Volume to Capacity	0.01	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	14.0%	ICU Level of Service	A
Analysis Period (min)	15		

7: Paris St & Boland Ave/Paris Driveway

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✥	↰	↱	↰	↑↱	↰	↑↱
Traffic Volume (vph)	25	0	6	2	23	2024	4	1733
Future Volume (vph)	25	0	6	2	23	2024	4	1733
Lane Group Flow (vph)	0	43	7	13	25	2208	4	1916
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	30.0	30.0	30.0	30.0
Minimum Split (s)	26.0	26.0	26.0	26.0	35.9	35.9	35.9	35.9
Total Split (s)	26.0	26.0	26.0	26.0	94.0	94.0	94.0	94.0
Total Split (%)	21.7%	21.7%	21.7%	21.7%	78.3%	78.3%	78.3%	78.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.7	3.7	3.7	3.7
All-Red Time (s)	2.5	2.5	2.5	2.5	2.2	2.2	2.2	2.2
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0	6.0	5.9	5.9	5.9	5.9
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Min	Min	Min	Min
v/c Ratio		0.23	0.03	0.06	0.18	0.73	0.04	0.63
Control Delay		26.4	40.3	24.3	6.1	6.4	3.2	4.9
Queue Delay		0.0	0.0	0.0	0.0	0.5	0.0	0.0
Total Delay		26.4	40.3	24.3	6.1	6.9	3.2	4.9
Queue Length 50th (m)		2.4	1.0	0.3	0.9	95.9	0.1	68.1
Queue Length 95th (m)		15.1	6.1	6.6	3.9	140.2	0.9	98.2
Internal Link Dist (m)		192.5		282.1		313.9		201.2
Turn Bay Length (m)					40.0		100.0	
Base Capacity (vph)		410	504	486	156	3396	120	3389
Starvation Cap Reductn		0	0	0	0	657	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0
Reduced v/c Ratio		0.10	0.01	0.03	0.16	0.81	0.03	0.57

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 74.8

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Splits and Phases: 7: Paris St & Boland Ave/Paris Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	25	0	15	6	2	10	23	2024	7	4	1733	29
Future Volume (vph)	25	0	15	6	2	10	23	2024	7	4	1733	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		5.9	5.9		5.9	5.9	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.95		1.00	0.87		1.00	1.00		1.00	1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1622		1805	1639		1804	3537		1805	3530	
Flt Permitted		0.80		0.91	1.00		0.09	1.00		0.07	1.00	
Satd. Flow (perm)		1341		1727	1639		163	3537		125	3530	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	0	16	7	2	11	25	2200	8	4	1884	32
RTOR Reduction (vph)	0	25	0	0	10	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	18	0	7	3	0	25	2208	0	4	1915	0
Confl. Peds. (#/hr)	2					2	4		2	2		4
Heavy Vehicles (%)	4%	0%	14%	0%	0%	0%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		4.4		4.4	4.4		60.9	60.9		60.9	60.9	
Effective Green, g (s)		4.4		4.4	4.4		60.9	60.9		60.9	60.9	
Actuated g/C Ratio		0.06		0.06	0.06		0.79	0.79		0.79	0.79	
Clearance Time (s)		6.0		6.0	6.0		5.9	5.9		5.9	5.9	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		76		98	93		128	2790		98	2784	
v/s Ratio Prot					0.00			c0.62			0.54	
v/s Ratio Perm		c0.01		0.00			0.15			0.03		
v/c Ratio		0.24		0.07	0.03		0.20	0.79		0.04	0.69	
Uniform Delay, d1		34.8		34.5	34.4		2.0	4.6		1.8	3.8	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.7		0.3	0.1		0.7	1.6		0.2	0.7	
Delay (s)		36.5		34.8	34.5		2.8	6.2		1.9	4.5	
Level of Service		D		C	C		A	A		A	A	
Approach Delay (s)		36.5			34.6			6.1			4.5	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	77.2	Sum of lost time (s)	11.9
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Volume (vph)	214	112	152	1840	1547	208
Future Volume (vph)	214	112	152	1840	1547	208
Lane Group Flow (vph)	225	118	160	1937	1628	219
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	5.0	30.0	30.0	30.0
Minimum Split (s)	25.5	25.5	9.0	36.2	36.2	36.2
Total Split (s)	25.5	25.5	12.0	94.5	82.5	82.5
Total Split (%)	21.3%	21.3%	10.0%	78.8%	68.8%	68.8%
Yellow Time (s)	3.3	3.3	3.0	4.2	4.2	4.2
All-Red Time (s)	2.2	2.2	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Min	Min	Min
v/c Ratio	0.71	0.32	0.67	0.79	0.82	0.23
Control Delay	51.8	10.1	30.8	12.7	20.6	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.8	10.1	30.8	12.7	20.6	2.1
Queue Length 50th (m)	40.4	0.0	12.0	116.3	124.2	0.6
Queue Length 95th (m)	#85.3	16.3	#47.2	156.6	161.2	9.8
Internal Link Dist (m)	376.5			774.4	313.9	
Turn Bay Length (m)	21.0		123.0			72.0
Base Capacity (vph)	401	439	242	3228	2932	1308
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	0.56	0.27	0.66	0.60	0.56	0.17

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 92.3

Natural Cycle: 80

Control Type: Semi Act-Uncoord

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

Splits and Phases: 8: Paris St & York St

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Volume (vph)	214	112	152	1840	1547	208
Future Volume (vph)	214	112	152	1840	1547	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	1557	1770	3539	3539	1539
Flt Permitted	0.95	1.00	0.07	1.00	1.00	1.00
Satd. Flow (perm)	1787	1557	134	3539	3539	1539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	225	118	160	1937	1628	219
RTOR Reduction (vph)	0	97	0	0	0	92
Lane Group Flow (vph)	225	21	160	1937	1628	127
Confl. Peds. (#/hr)	6	15	4			4
Heavy Vehicles (%)	1%	1%	2%	2%	2%	2%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	16.3	16.3	63.8	63.8	51.7	51.7
Effective Green, g (s)	16.3	16.3	63.8	63.8	51.7	51.7
Actuated g/C Ratio	0.18	0.18	0.69	0.69	0.56	0.56
Clearance Time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	317	276	237	2459	1993	866
v/s Ratio Prot	c0.13		0.06	c0.55	0.46	
v/s Ratio Perm		0.01	0.41			0.08
v/c Ratio	0.71	0.08	0.68	0.79	0.82	0.15
Uniform Delay, d1	35.5	31.5	19.3	9.4	16.2	9.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.1	0.1	7.4	1.7	2.7	0.1
Delay (s)	42.6	31.6	26.6	11.2	18.9	9.6
Level of Service	D	C	C	B	B	A
Approach Delay (s)	38.8			12.4	17.8	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	91.8	Sum of lost time (s)	15.7
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	532	677	1347	263	358	1268
Future Volume (vph)	532	677	1347	263	358	1268
Lane Group Flow (vph)	591	752	1497	292	398	1409
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Detector Phase	8	8 1	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0		15.0	15.0	10.0	15.0
Minimum Split (s)	30.8		40.2	40.2	15.0	40.2
Total Split (s)	36.0		62.0	62.0	22.0	84.0
Total Split (%)	30.0%		51.7%	51.7%	18.3%	70.0%
Yellow Time (s)	3.3		4.2	4.2	3.0	4.2
All-Red Time (s)	2.5		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8		6.2	6.2	5.0	6.2
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None		Min	Min	None	Min
v/c Ratio	0.67	1.06	0.93	0.37	0.81	0.62
Control Delay	44.1	84.9	41.4	13.4	62.9	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.1	84.9	41.4	13.4	62.9	14.0
Queue Length 50th (m)	68.4	~206.9	176.7	25.9	50.0	99.1
Queue Length 95th (m)	88.6	#284.0	#216.9	47.1	#73.6	119.9
Internal Link Dist (m)	679.1		533.6			774.4
Turn Bay Length (m)	158.0			37.0	175.0	
Base Capacity (vph)	887	707	1673	812	494	2333
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	0.67	1.06	0.89	0.36	0.81	0.60

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 118.1

Natural Cycle: 100

Control Type: Semi Act-Uncoord

~ 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: 9: Ramsey Lake Rd & Paris St

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	532	677	1347	263	358	1268
Future Volume (vph)	532	677	1347	263	358	1268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	6.2	6.2	5.0	6.2
Lane Util. Factor	0.97	1.00	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3467	1583	3539	1587	3433	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3467	1583	3539	1587	3433	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	591	752	1497	292	398	1409
RTOR Reduction (vph)	0	7	0	64	0	0
Lane Group Flow (vph)	591	745	1497	228	398	1409
Confl. Peds. (#/hr)		16		5	5	
Heavy Vehicles (%)	1%	2%	2%	0%	2%	2%
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Actuated Green, G (s)	30.2	53.0	53.9	53.9	17.0	75.9
Effective Green, g (s)	30.2	53.0	53.9	53.9	17.0	75.9
Actuated g/C Ratio	0.26	0.45	0.46	0.46	0.14	0.64
Clearance Time (s)	5.8		6.2	6.2	5.0	6.2
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	886	710	1615	724	494	2274
v/s Ratio Prot	0.17	c0.47	c0.42		0.12	0.40
v/s Ratio Perm				0.14		
v/c Ratio	0.67	1.05	0.93	0.32	0.81	0.62
Uniform Delay, d1	39.4	32.5	30.2	20.4	49.0	12.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	47.4	9.6	0.3	9.3	0.5
Delay (s)	41.4	79.9	39.8	20.6	58.2	13.0
Level of Service	D	E	D	C	E	B
Approach Delay (s)	62.9		36.7			23.0
Approach LOS	E		D			C

Intersection Summary			
HCM 2000 Control Delay	38.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	118.1	Sum of lost time (s)	17.0
Intersection Capacity Utilization	90.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱	↰↰	↑↱	↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	181	457	573	422	82	603	445	29	887	260
Future Volume (vph)	181	457	573	422	82	603	445	29	887	260
Lane Group Flow (vph)	197	549	623	470	89	655	484	32	964	283
Turn Type	pm+pt	NA	Prot	NA	pm+pt	NA	pt+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	3	8	5	2	2 3	1	6	7
Permitted Phases	4				2			6		6
Detector Phase	7	4	3	8	5	2	2 3	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	15.0		5.0	15.0	5.0
Minimum Split (s)	10.0	31.2	10.0	31.2	10.0	40.1		10.0	40.1	10.0
Total Split (s)	26.1	31.2	34.0	39.1	20.0	44.0		17.0	41.0	26.1
Total Split (%)	20.7%	24.7%	26.9%	31.0%	15.8%	34.9%		13.5%	32.5%	20.7%
Yellow Time (s)	3.0	3.7	3.0	3.7	3.0	3.7		3.0	3.7	3.0
All-Red Time (s)	2.0	2.5	2.0	2.5	2.0	2.4		2.0	2.4	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	6.2	5.0	6.2	5.0	6.1		5.0	6.1	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min		None	Min	None
v/c Ratio	0.49	0.77	0.77	0.42	0.39	0.42	0.47	0.11	0.74	0.41
Control Delay	22.3	48.9	46.7	31.4	26.1	30.5	7.7	21.7	40.5	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Total Delay	22.3	48.9	46.7	31.4	26.1	30.5	8.0	21.7	40.5	13.8
Queue Length 50th (m)	24.5	62.3	69.4	43.6	12.8	45.4	29.3	4.4	75.6	24.7
Queue Length 95th (m)	45.3	92.1	100.7	70.0	24.4	60.5	56.5	11.0	98.3	45.7
Internal Link Dist (m)		364.5		324.4		160.9			177.4	
Turn Bay Length (m)	57.0		85.0		70.0		6.0	24.0		6.0
Base Capacity (vph)	543	845	973	1211	308	1903	1095	370	1702	816
Starvation Cap Reductn	0	0	0	0	0	0	189	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	0.36	0.65	0.64	0.39	0.29	0.34	0.53	0.09	0.57	0.35

Intersection Summary

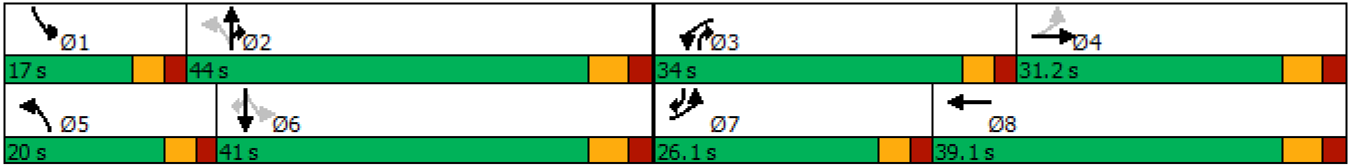
Cycle Length: 126.2

Actuated Cycle Length: 104.9

Natural Cycle: 105

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Paris St & Brady St



HCM Signalized Intersection Capacity Analysis
Background (2032) AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰↰	↑↱		↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	181	457	48	573	422	10	82	603	445	29	887	260
Future Volume (vph)	181	457	48	573	422	10	82	603	445	29	887	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.2		5.0	6.2		5.0	6.1	6.1	5.0	6.1	5.0
Lane Util. Factor	1.00	0.95		0.97	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1684	3369		3367	3461		1671	4988	1568	1717	4893	1551
Flt Permitted	0.48	1.00		0.95	1.00		0.14	1.00	1.00	0.38	1.00	1.00
Satd. Flow (perm)	856	3369		3367	3461		245	4988	1568	681	4893	1551
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	497	52	623	459	11	89	655	484	32	964	283
RTOR Reduction (vph)	0	6	0	0	1	0	0	0	93	0	0	69
Lane Group Flow (vph)	197	543	0	623	469	0	89	655	391	32	964	214
Confl. Peds. (#/hr)	7		4	4		7	19		10	10		19
Heavy Vehicles (%)	7%	5%	10%	4%	4%	0%	8%	4%	3%	5%	6%	2%
Turn Type	pm+pt	NA		Prot	NA		pm+pt	NA	pt+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	2 3	1	6	7
Permitted Phases	4						2			6		6
Actuated Green, G (s)	35.4	22.0		25.1	33.7		41.2	33.1	64.3	33.0	29.0	42.4
Effective Green, g (s)	35.4	22.0		25.1	33.7		41.2	33.1	64.3	33.0	29.0	42.4
Actuated g/C Ratio	0.33	0.21		0.24	0.32		0.39	0.31	0.60	0.31	0.27	0.40
Clearance Time (s)	5.0	6.2		5.0	6.2		5.0	6.1		5.0	6.1	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	388	695		793	1095		203	1550	946	249	1332	617
v/s Ratio Prot	0.06	c0.16		c0.19	0.14		c0.03	0.13	0.25	0.00	c0.20	0.04
v/s Ratio Perm	0.10						0.14			0.03		0.09
v/c Ratio	0.51	0.78		0.79	0.43		0.44	0.42	0.41	0.13	0.72	0.35
Uniform Delay, d1	26.9	40.0		38.2	28.8		22.8	29.1	11.1	25.9	35.1	22.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	5.7		5.1	0.3		1.5	0.2	0.3	0.2	2.0	0.3
Delay (s)	27.9	45.7		43.3	29.0		24.3	29.3	11.4	26.1	37.1	22.7
Level of Service	C	D		D	C		C	C	B	C	D	C
Approach Delay (s)		41.0			37.2			21.9			33.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	106.5	Sum of lost time (s)	22.3
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↰	↑↱	↰	↑	↱	↰	↑↑↱	↰	↑↑↱
Traffic Volume (vph)	16	27	263	63	148	169	1022	82	1374
Future Volume (vph)	16	27	263	63	148	169	1022	82	1374
Lane Group Flow (vph)	18	130	289	69	163	186	1250	90	1565
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	4.5	5.0	5.0	5.0
Minimum Split (s)	31.7	31.7	31.7	31.7	31.7	9.0	41.1	9.0	41.1
Total Split (s)	37.0	37.0	37.0	37.0	37.0	19.0	41.1	19.0	41.1
Total Split (%)	38.1%	38.1%	38.1%	38.1%	38.1%	19.6%	42.3%	19.6%	42.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.06	0.15	0.82	0.14	0.29	0.63	0.50	0.30	0.71
Control Delay	22.6	8.0	48.2	23.4	5.4	25.4	16.5	11.2	23.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.6	8.0	48.2	23.4	5.4	25.4	16.5	11.2	23.3
Queue Length 50th (m)	2.2	1.9	45.2	8.7	0.0	14.9	51.6	5.6	77.2
Queue Length 95th (m)	7.4	8.5	79.7	19.3	13.8	41.3	80.7	14.4	119.8
Internal Link Dist (m)		187.2		465.5			478.0		160.9
Turn Bay Length (m)	21.0		133.0		62.0	34.0		48.0	
Base Capacity (vph)	454	1188	492	708	710	368	2481	457	2208
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.11	0.59	0.10	0.23	0.51	0.50	0.20	0.71

Intersection Summary

Cycle Length: 97.1

Actuated Cycle Length: 84.9

Natural Cycle: 85

Control Type: Semi Act-Uncoord

Splits and Phases: 2: Paris St & Van Horne St

HCM Signalized Intersection Capacity Analysis

Background (2032) AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑	↱	↰	↑↑↱		↰	↑↑↱	
Traffic Volume (vph)	16	27	91	263	63	148	169	1022	116	82	1374	50
Future Volume (vph)	16	27	91	263	63	148	169	1022	116	82	1374	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.0	4.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.88		1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1566	2908		1801	1827	1576	1703	4871		1752	5048	
Flt Permitted	0.71	1.00		0.67	1.00	1.00	0.09	1.00		0.18	1.00	
Satd. Flow (perm)	1174	2908		1270	1827	1576	168	4871		338	5048	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	18	30	100	289	69	163	186	1123	127	90	1510	55
RTOR Reduction (vph)	0	72	0	0	0	118	0	11	0	0	3	0
Lane Group Flow (vph)	18	58	0	289	69	45	186	1239	0	90	1562	0
Confl. Peds. (#/hr)	4		4	4		4	6		6	6		6
Heavy Vehicles (%)	15%	4%	10%	0%	4%	1%	6%	5%	2%	3%	2%	5%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	23.6	23.6		23.6	23.6	23.6	53.2	43.1		44.2	38.1	
Effective Green, g (s)	23.6	23.6		23.6	23.6	23.6	53.2	43.1		44.2	38.1	
Actuated g/C Ratio	0.28	0.28		0.28	0.28	0.28	0.62	0.50		0.52	0.44	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	322	799		349	502	433	293	2446		274	2241	
v/s Ratio Prot		0.02			0.04		c0.08	0.25		0.02	c0.31	
v/s Ratio Perm	0.02			c0.23		0.03	0.31			0.15		
v/c Ratio	0.06	0.07		0.83	0.14	0.10	0.63	0.51		0.33	0.70	
Uniform Delay, d1	22.9	23.0		29.2	23.4	23.2	14.7	14.2		10.8	19.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0		14.8	0.1	0.1	4.5	0.8		0.7	1.8	
Delay (s)	23.0	23.0		44.0	23.6	23.3	19.2	15.0		11.5	21.0	
Level of Service	C	C		D	C	C	B	B		B	C	
Approach Delay (s)		23.0			34.8			15.5			20.5	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	85.8	Sum of lost time (s)	13.5
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✥		✥	↰	↑↱	↰	↑↱
Traffic Volume (vph)	8	0	40	2	4	1301	46	1645
Future Volume (vph)	8	0	40	2	4	1301	46	1645
Lane Group Flow (vph)	0	14	0	110	4	1390	48	1723
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	20.0	20.0	5.0	20.0
Minimum Split (s)	25.7	25.7	25.7	25.7	34.8	34.8	9.0	34.8
Total Split (s)	25.7	25.7	25.7	25.7	50.8	50.8	14.0	64.8
Total Split (%)	28.4%	28.4%	28.4%	28.4%	56.1%	56.1%	15.5%	71.6%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.7
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	1.0	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.7		5.7	5.8	5.8	4.0	5.8
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	None	Min
v/c Ratio		0.05		0.38	0.03	0.62	0.15	0.67
Control Delay		0.3		18.0	8.2	11.4	4.0	7.6
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		0.3		18.0	8.2	11.4	4.0	7.6
Queue Length 50th (m)		0.0		4.7	0.2	63.0	1.3	53.1
Queue Length 95th (m)		0.0		20.6	1.6	101.7	4.4	92.8
Internal Link Dist (m)		561.8		431.0		175.2		478.0
Turn Bay Length (m)					33.0		23.0	
Base Capacity (vph)		586		578	172	2735	437	3245
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		0.02		0.19	0.02	0.51	0.11	0.53

Intersection Summary

Cycle Length: 90.5

Actuated Cycle Length: 59.3

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Splits and Phases: 3: Paris St & John St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	8	0	6	40	2	63	4	1301	34	46	1645	9
Future Volume (vph)	8	0	6	40	2	63	4	1301	34	46	1645	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.92		1.00	1.00		1.00	1.00	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1726			1696		1803	3492		1770	3536	
Flt Permitted		0.84			0.87		0.12	1.00		0.12	1.00	
Satd. Flow (perm)		1496			1501		220	3492		218	3536	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	8	0	6	42	2	66	4	1355	35	48	1714	9
RTOR Reduction (vph)	0	12	0	0	58	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	2	0	0	52	0	4	1388	0	48	1723	0
Confl. Peds. (#/hr)	5		5	5		5	8		4	4		8
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	2%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.1			7.1		36.3	36.3		43.6	43.6	
Effective Green, g (s)		7.1			7.1		36.3	36.3		43.6	43.6	
Actuated g/C Ratio		0.11			0.11		0.58	0.58		0.70	0.70	
Clearance Time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		170			171		128	2037		235	2478	
v/s Ratio Prot								0.40		0.01	c0.49	
v/s Ratio Perm		0.00			c0.03		0.02			0.13		
v/c Ratio		0.01			0.30		0.03	0.68		0.20	0.70	
Uniform Delay, d1		24.4			25.3		5.5	9.0		5.2	5.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0			1.0		0.1	1.0		0.4	0.9	
Delay (s)		24.5			26.3		5.6	9.9		5.6	6.3	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		24.5			26.3			9.9			6.3	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	62.2	Sum of lost time (s)	15.5
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

4: Paris St & McNaughton St

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			↰↑↱			↰↑↱	
Traffic Volume (veh/h)	3	0	9	2	0	2	1	1479	0	0	1724	7
Future Volume (Veh/h)	3	0	9	2	0	2	1	1479	0	0	1724	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	0	10	2	0	2	1	1643	0	0	1916	8
Pedestrians		2			1							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								347			199	
pX, platoon unblocked	0.75	0.75	0.65	0.75	0.75	0.80	0.65			0.80		
vC, conflicting volume	2748	3568	964	2614	3572	822	1926			1644		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1465	2559	0	1287	2564	279	1348			1306		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	7.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.8	2.2			2.2		
p0 queue free %	96	100	99	98	100	100	100			100		
cM capacity (veh/h)	68	20	708	91	20	474	336			429		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	13	4	822	822	958	966
Volume Left	3	2	1	0	0	0
Volume Right	10	2	0	0	0	8
cSH	222	152	336	1700	429	1700
Volume to Capacity	0.06	0.03	0.00	0.48	0.00	0.57
Queue Length 95th (m)	1.5	0.6	0.1	0.0	0.0	0.0
Control Delay (s)	22.2	29.2	0.1	0.0	0.0	0.0
Lane LOS	C	D	A			
Approach Delay (s)	22.2	29.2	0.1		0.0	
Approach LOS	C	D				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑↱			↰↑
Traffic Volume (veh/h)	2	0	1466	1	1	1737
Future Volume (Veh/h)	2	0	1466	1	1	1737
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	2	0	1629	1	1	1930
Pedestrians						1
Lane Width (m)						3.6
Walking Speed (m/s)						1.2
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			226			321
pX, platoon unblocked	0.74	0.79			0.79	
vC, conflicting volume	2596	816			1630	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1157	231			1263	
tC, single (s)	6.8	6.9			6.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			3.2	
p0 queue free %	99	100			99	
cM capacity (veh/h)	141	613			174	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	2	1086	544	644	1287
Volume Left	2	0	0	1	0
Volume Right	0	0	1	0	0
cSH	141	1700	1700	174	1700
Volume to Capacity	0.01	0.64	0.32	0.01	0.76
Queue Length 95th (m)	0.3	0.0	0.0	0.1	0.0
Control Delay (s)	31.0	0.0	0.0	0.3	0.0
Lane LOS	D			A	
Approach Delay (s)	31.0	0.0		0.1	
Approach LOS	D				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

6: Bell Park Rd & Facer St

Background (2032) AM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↰	Y	
Traffic Volume (veh/h)	1	1	1	1	0	0
Future Volume (Veh/h)	1	1	1	1	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Hourly flow rate (vph)	2	2	2	2	0	0
Pedestrians	1			2	2	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			6		12	7
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			6		12	7
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1625		1009	1078

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	4	4	0
Volume Left	0	2	0
Volume Right	2	0	0
cSH	1700	1625	1700
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	3.6	0.0
Lane LOS		A	A
Approach Delay (s)	0.0	3.6	0.0
Approach LOS			A

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	14.6%	ICU Level of Service	A
Analysis Period (min)	15		

	↰	→	↰	←	↰	↑	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Configurations		↰↑↱	↰	↱	↰	↑↱	↑↱
Traffic Volume (vph)	28	0	2	0	6	1414	1747
Future Volume (vph)	28	0	2	0	6	1414	1747
Lane Group Flow (vph)	0	43	2	2	6	1489	1853
Turn Type	Perm	NA	Perm	NA	Perm	NA	NA
Protected Phases		4		8		2	6
Permitted Phases	4		8		2		
Detector Phase	4	4	8	8	2	2	6
Switch Phase							
Minimum Initial (s)	8.0	8.0	8.0	8.0	30.0	30.0	30.0
Minimum Split (s)	26.0	26.0	26.0	26.0	35.9	35.9	35.9
Total Split (s)	26.0	26.0	26.0	26.0	55.9	55.9	55.9
Total Split (%)	31.7%	31.7%	31.7%	31.7%	68.3%	68.3%	68.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.7	3.7	3.7
All-Red Time (s)	2.5	2.5	2.5	2.5	2.2	2.2	2.2
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0	6.0	5.9	5.9	5.9
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	Min	Min	Min
v/c Ratio		0.19	0.01	0.01	0.04	0.51	0.64
Control Delay		13.8	27.0	0.0	4.0	4.4	5.8
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		13.8	27.0	0.0	4.0	4.4	5.8
Queue Length 50th (m)		0.6	0.3	0.0	0.2	42.0	64.0
Queue Length 95th (m)		9.0	2.1	0.0	1.3	57.8	89.2
Internal Link Dist (m)		198.2		192.5		314.0	201.8
Turn Bay Length (m)					40.0		
Base Capacity (vph)		502	581	559	139	2927	2924
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		0.09	0.00	0.00	0.04	0.51	0.63

Intersection Summary

Cycle Length: 81.9
Actuated Cycle Length: 62.4
Natural Cycle: 75
Control Type: Semi Act-Uncoord

Splits and Phases: 7: Paris St & Boland Ave/Paris Driveway

HCM Signalized Intersection Capacity Analysis

Background (2032) AM Peak Hour

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	28	0	13	2	0	2	6	1414	1	0	1747	13
Future Volume (vph)	28	0	13	2	0	2	6	1414	1	0	1747	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		5.9	5.9			5.9	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95			0.95	
Frt		0.96		1.00	0.85		1.00	1.00			1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1757		1805	1615		1805	3505			3502	
Flt Permitted		0.80		0.93	1.00		0.09	1.00			1.00	
Satd. Flow (perm)		1448		1767	1615		167	3505			3502	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	29	0	14	2	0	2	6	1488	1	0	1839	14
RTOR Reduction (vph)	0	36	0	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	7	0	2	0	0	6	1489	0	0	1853	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		4.3		4.3	4.3		48.8	48.8			48.8	
Effective Green, g (s)		4.3		4.3	4.3		48.8	48.8			48.8	
Actuated g/C Ratio		0.07		0.07	0.07		0.75	0.75			0.75	
Clearance Time (s)		6.0		6.0	6.0		5.9	5.9			5.9	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		95		116	106		125	2631			2629	
v/s Ratio Prot					0.00			0.42			c0.53	
v/s Ratio Perm		c0.00		0.00			0.04					
v/c Ratio		0.07		0.02	0.00		0.05	0.57			0.70	
Uniform Delay, d1		28.5		28.4	28.3		2.1	3.5			4.3	
Progression Factor		1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		0.3		0.1	0.0		0.2	0.3			0.9	
Delay (s)		28.8		28.4	28.3		2.3	3.8			5.2	
Level of Service		C		C	C		A	A			A	
Approach Delay (s)		28.8			28.4			3.8			5.2	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	11.9
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Volume (vph)	188	153	70	1233	1540	222
Future Volume (vph)	188	153	70	1233	1540	222
Lane Group Flow (vph)	209	170	78	1370	1711	247
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	5.0	30.0	30.0	30.0
Minimum Split (s)	25.5	25.5	9.0	36.2	36.2	36.2
Total Split (s)	25.5	25.5	9.0	79.0	70.0	70.0
Total Split (%)	24.4%	24.4%	8.6%	75.6%	67.0%	67.0%
Yellow Time (s)	3.3	3.3	3.0	4.2	4.2	4.2
All-Red Time (s)	2.2	2.2	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Min	Min	Min
v/c Ratio	0.66	0.48	0.39	0.59	0.82	0.25
Control Delay	46.4	21.1	10.6	8.6	18.1	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.4	21.1	10.6	8.6	18.1	1.9
Queue Length 50th (m)	35.2	10.8	3.5	57.3	118.7	0.3
Queue Length 95th (m)	66.6	33.3	9.9	84.6	166.4	9.8
Internal Link Dist (m)	376.5			775.4	314.0	
Turn Bay Length (m)	21.0		123.0			72.0
Base Capacity (vph)	449	458	200	2897	2676	1211
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	0.47	0.37	0.39	0.47	0.64	0.20

Intersection Summary

Cycle Length: 104.5

Actuated Cycle Length: 84.7

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Splits and Phases: 8: Paris St & York St

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Volume (vph)	188	153	70	1233	1540	222
Future Volume (vph)	188	153	70	1233	1540	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1514	1770	3471	3539	1529
Flt Permitted	0.95	1.00	0.07	1.00	1.00	1.00
Satd. Flow (perm)	1770	1514	137	3471	3539	1529
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	209	170	78	1370	1711	247
RTOR Reduction (vph)	0	83	0	0	0	99
Lane Group Flow (vph)	209	87	78	1370	1711	148
Confl. Peds. (#/hr)	1	15	8			8
Heavy Vehicles (%)	2%	4%	2%	4%	2%	2%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	15.2	15.2	57.9	57.9	50.2	50.2
Effective Green, g (s)	15.2	15.2	57.9	57.9	50.2	50.2
Actuated g/C Ratio	0.18	0.18	0.68	0.68	0.59	0.59
Clearance Time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	317	271	164	2369	2095	905
v/s Ratio Prot	c0.12		0.02	c0.39	c0.48	
v/s Ratio Perm		0.06	0.30			0.10
v/c Ratio	0.66	0.32	0.48	0.58	0.82	0.16
Uniform Delay, d1	32.4	30.3	12.5	7.1	13.7	7.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.9	0.7	2.2	0.3	2.6	0.1
Delay (s)	37.3	31.0	14.7	7.4	16.2	7.9
Level of Service	D	C	B	A	B	A
Approach Delay (s)	34.5			7.8	15.2	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	84.8	Sum of lost time (s)	15.7
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

9: Ramsey Lake Rd & Paris St

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	194	243	1065	397	704	998
Future Volume (vph)	194	243	1065	397	704	998
Lane Group Flow (vph)	202	253	1109	414	733	1040
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Detector Phase	8	8 1	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0		15.0	15.0	10.0	15.0
Minimum Split (s)	30.8		40.2	40.2	15.0	40.2
Total Split (s)	30.8		56.2	56.2	33.0	89.2
Total Split (%)	25.7%		46.8%	46.8%	27.5%	74.3%
Yellow Time (s)	3.3		4.2	4.2	3.0	4.2
All-Red Time (s)	2.5		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8		6.2	6.2	5.0	6.2
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None		Min	Min	None	Min
v/c Ratio	0.39	0.34	0.79	0.56	0.80	0.42
Control Delay	40.9	16.7	30.5	14.3	42.4	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.9	16.7	30.5	14.3	42.4	6.2
Queue Length 50th (m)	19.2	26.8	101.2	30.2	68.9	35.3
Queue Length 95th (m)	33.2	53.0	144.4	66.5	#122.5	62.1
Internal Link Dist (m)	679.1		533.6			775.4
Turn Bay Length (m)	158.0			37.0	175.0	
Base Capacity (vph)	920	796	1879	920	1040	2959
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	0.22	0.32	0.59	0.45	0.70	0.35

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 96.5

Natural Cycle: 90

Control Type: Semi Act-Uncoord

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

Splits and Phases: 9: Ramsey Lake Rd & Paris St

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	194	243	1065	397	704	998
Future Volume (vph)	194	243	1065	397	704	998
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	6.2	6.2	5.0	6.2
Lane Util. Factor	0.97	1.00	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1568	3505	1544	3467	3471
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1568	3505	1544	3467	3471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	202	253	1109	414	733	1040
RTOR Reduction (vph)	0	14	0	122	0	0
Lane Group Flow (vph)	202	239	1109	292	733	1040
Confl. Peds. (#/hr)		13		14	14	
Heavy Vehicles (%)	2%	3%	3%	2%	1%	4%
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Actuated Green, G (s)	14.6	46.0	38.8	38.8	25.6	69.4
Effective Green, g (s)	14.6	46.0	38.8	38.8	25.6	69.4
Actuated g/C Ratio	0.15	0.48	0.40	0.40	0.27	0.72
Clearance Time (s)	5.8		6.2	6.2	5.0	6.2
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	522	751	1416	624	924	2509
v/s Ratio Prot	0.06	c0.15	c0.32		c0.21	0.30
v/s Ratio Perm				0.19		
v/c Ratio	0.39	0.32	0.78	0.47	0.79	0.41
Uniform Delay, d1	36.7	15.4	24.9	21.0	32.7	5.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.2	2.9	0.6	4.7	0.1
Delay (s)	37.1	15.6	27.8	21.6	37.5	5.4
Level of Service	D	B	C	C	D	A
Approach Delay (s)	25.2		26.1			18.6
Approach LOS	C		C			B

Intersection Summary			
HCM 2000 Control Delay	22.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱	↰↰	↑↱	↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	195	619	633	515	106	1148	817	28	896	273
Future Volume (vph)	195	619	633	515	106	1148	817	28	896	273
Lane Group Flow (vph)	195	684	633	530	106	1148	817	28	896	273
Turn Type	pm+pt	NA	Prot	NA	pm+pt	NA	pt+ov	Perm	NA	pm+ov
Protected Phases	7	4	3	8	5	2	2 3		6	7
Permitted Phases	4				2			6		6
Detector Phase	7	4	3	8	5	2	2 3	6	6	7
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	15.0		15.0	15.0	5.0
Minimum Split (s)	10.0	31.2	10.0	31.2	10.0	40.1		40.1	40.1	10.0
Total Split (s)	35.1	40.3	34.0	39.2	22.0	63.0		41.0	41.0	35.1
Total Split (%)	25.6%	29.4%	24.8%	28.6%	16.0%	45.9%		29.9%	29.9%	25.6%
Yellow Time (s)	3.0	3.7	3.0	3.7	3.0	3.7		3.7	3.7	3.0
All-Red Time (s)	2.0	2.5	2.0	2.5	2.0	2.4		2.4	2.4	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	6.2	5.0	6.2	5.0	6.1		6.1	6.1	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead			Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min		Min	Min	None
v/c Ratio	0.52	0.82	0.83	0.45	0.44	0.56	0.76	0.24	0.65	0.41
Control Delay	25.0	53.8	57.8	34.8	29.6	29.9	19.4	43.6	42.3	18.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	6.5	0.0	0.0	0.0
Total Delay	25.0	53.8	57.8	34.8	29.6	29.9	25.9	43.6	42.3	18.4
Queue Length 50th (m)	30.7	95.2	88.5	60.5	17.7	86.6	132.1	5.8	77.2	34.0
Queue Length 95th (m)	47.3	118.9	#120.6	82.8	31.5	104.7	199.6	16.2	98.7	56.1
Internal Link Dist (m)		364.5		324.4		160.9			177.4	
Turn Bay Length (m)	57.0		85.0		70.0		6.0	24.0		6.0
Base Capacity (vph)	577	1021	845	1195	326	2434	1118	134	1600	878
Starvation Cap Reductn	0	0	0	0	0	0	251	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	0.34	0.67	0.75	0.44	0.33	0.47	0.94	0.21	0.56	0.31

Intersection Summary

Cycle Length: 137.3

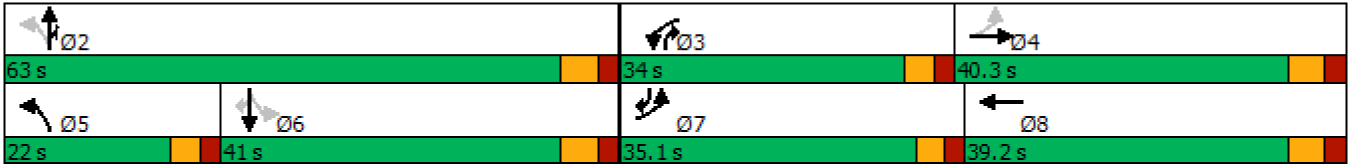
Actuated Cycle Length: 122.4

Natural Cycle: 105

Control Type: Semi Act-Uncoord

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

Splits and Phases: 1: Paris St & Brady St



	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰↰	↑↱		↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	195	619	65	633	515	15	106	1148	817	28	896	273
Future Volume (vph)	195	619	65	633	515	15	106	1148	817	28	896	273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.2		5.0	6.2		5.0	6.1	6.1	6.1	6.1	5.0
Lane Util. Factor	1.00	0.95		0.97	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1580	3539		3467	3491		1751	5085	1615	1774	5085	1572
Flt Permitted	0.46	1.00		0.95	1.00		0.16	1.00	1.00	0.23	1.00	1.00
Satd. Flow (perm)	757	3539		3467	3491		290	5085	1615	430	5085	1572
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	195	619	65	633	515	15	106	1148	817	28	896	273
RTOR Reduction (vph)	0	6	0	0	1	0	0	0	11	0	0	45
Lane Group Flow (vph)	195	678	0	633	529	0	106	1148	806	28	896	228
Confl. Peds. (#/hr)	9		6	6		9	25		33	33		25
Heavy Vehicles (%)	14%	0%	4%	1%	3%	0%	3%	2%	0%	1%	2%	0%
Turn Type	pm+pt	NA		Prot	NA		pm+pt	NA	pt+ov	Perm	NA	pm+ov
Protected Phases	7	4		3	8		5	2	2 3		6	7
Permitted Phases	4						2			6		6
Actuated Green, G (s)	43.6	28.8		26.9	40.9		48.9	48.9	81.9	33.4	33.4	48.2
Effective Green, g (s)	43.6	28.8		26.9	40.9		48.9	48.9	81.9	33.4	33.4	48.2
Actuated g/C Ratio	0.36	0.24		0.22	0.34		0.40	0.40	0.67	0.27	0.27	0.40
Clearance Time (s)	5.0	6.2		5.0	6.2		5.0	6.1		6.1	6.1	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	370	836		765	1171		242	2039	1085	117	1393	621
v/s Ratio Prot	0.06	c0.19		c0.18	0.15		0.04	0.23	c0.50		0.18	0.04
v/s Ratio Perm	0.12						0.14			0.07		0.10
v/c Ratio	0.53	0.81		0.83	0.45		0.44	0.56	0.74	0.24	0.64	0.37
Uniform Delay, d1	28.7	44.0		45.3	31.7		25.0	28.2	13.1	34.4	39.0	26.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	6.0		7.3	0.3		1.3	0.4	2.8	1.1	1.0	0.4
Delay (s)	30.0	50.0		52.6	32.0		26.3	28.6	15.9	35.4	40.0	26.4
Level of Service	C	D		D	C		C	C	B	D	D	C
Approach Delay (s)		45.6			43.2			23.5			36.8	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	34.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	121.9	Sum of lost time (s)	22.3
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↰	↑↱	↰	↑	↱	↰	↑↑↱	↰	↑↑↱
Traffic Volume (vph)	52	75	229	73	165	173	1787	130	1415
Future Volume (vph)	52	75	229	73	165	173	1787	130	1415
Lane Group Flow (vph)	53	314	234	74	168	177	2212	133	1492
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	4.5	5.0	5.0	5.0
Minimum Split (s)	31.7	31.7	31.7	31.7	31.7	9.0	41.1	9.0	41.1
Total Split (s)	31.7	31.7	31.7	31.7	31.7	12.0	55.0	9.0	52.0
Total Split (%)	33.1%	33.1%	33.1%	33.1%	33.1%	12.5%	57.5%	9.4%	54.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.16	0.34	0.92	0.14	0.34	0.73	0.82	0.75	0.58
Control Delay	27.2	17.3	74.5	26.6	12.3	31.0	20.9	40.9	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.2	17.3	74.5	26.6	12.3	31.0	20.9	40.9	17.6
Queue Length 50th (m)	7.7	14.9	43.2	10.7	8.1	13.2	123.0	9.5	72.3
Queue Length 95th (m)	17.2	26.4	#87.7	21.8	24.7	#44.1	145.9	#39.1	87.2
Internal Link Dist (m)		187.2		465.5			478.0		160.9
Turn Bay Length (m)	21.0		133.0		62.0	34.0		48.0	
Base Capacity (vph)	365	994	273	551	520	245	2693	178	2565
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.32	0.86	0.13	0.32	0.72	0.82	0.75	0.58

Intersection Summary

Cycle Length: 95.7

Actuated Cycle Length: 93.9

Natural Cycle: 85

Control Type: Semi Act-Uncoord

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

Splits and Phases: 2: Paris St & Van Horne St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑	↱	↰	↑↑↱		↰	↑↑↱	
Traffic Volume (vph)	52	75	232	229	73	165	173	1787	381	130	1415	47
Future Volume (vph)	52	75	232	229	73	165	173	1787	381	130	1415	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.0	4.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.89		1.00	1.00	0.85	1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1689	3129		1767	1900	1521	1770	4936		1805	5055	
Flt Permitted	0.71	1.00		0.51	1.00	1.00	0.10	1.00		0.08	1.00	
Satd. Flow (perm)	1261	3129		943	1900	1521	192	4936		160	5055	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	53	77	237	234	74	168	177	1823	389	133	1444	48
RTOR Reduction (vph)	0	89	0	0	0	82	0	34	0	0	3	0
Lane Group Flow (vph)	53	225	0	234	74	86	177	2178	0	133	1489	0
Confl. Peds. (#/hr)	13		3	3		13	3		17	17		3
Heavy Vehicles (%)	6%	2%	1%	2%	0%	4%	2%	2%	1%	0%	2%	3%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	25.3	25.3		25.3	25.3	25.3	58.1	50.6		52.6	47.6	
Effective Green, g (s)	25.3	25.3		25.3	25.3	25.3	58.1	50.6		52.6	47.6	
Actuated g/C Ratio	0.27	0.27		0.27	0.27	0.27	0.62	0.54		0.56	0.51	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	339	843		254	511	409	244	2659		177	2562	
v/s Ratio Prot		0.07			0.04		c0.06	c0.44		0.04	0.29	
v/s Ratio Perm	0.04			c0.25		0.06	0.39			0.38		
v/c Ratio	0.16	0.27		0.92	0.14	0.21	0.73	0.82		0.75	0.58	
Uniform Delay, d1	26.2	27.0		33.3	26.1	26.6	12.0	17.9		16.1	16.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2		35.9	0.1	0.3	10.2	3.0		16.4	1.0	
Delay (s)	26.4	27.2		69.2	26.2	26.8	22.2	20.8		32.5	17.1	
Level of Service	C	C		E	C	C	C	C		C	B	
Approach Delay (s)		27.1			47.6			20.9			18.4	
Approach LOS		C			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	93.9	Sum of lost time (s)	13.5
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✥		✥	↰	↑↱	↰	↑↱
Traffic Volume (vph)	10	3	63	0	8	2188	80	1777
Future Volume (vph)	10	3	63	0	8	2188	80	1777
Lane Group Flow (vph)	0	15	0	174	8	2301	82	1837
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	20.0	20.0	5.0	20.0
Minimum Split (s)	25.7	25.7	25.7	25.7	34.8	34.8	9.0	34.8
Total Split (s)	25.7	25.7	25.7	25.7	85.3	85.3	9.0	94.3
Total Split (%)	21.4%	21.4%	21.4%	21.4%	71.1%	71.1%	7.5%	78.6%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.7
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	1.0	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.7		5.7	5.8	5.8	4.0	5.8
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	None	Min
v/c Ratio		0.08		0.72	0.06	0.93	0.55	0.68
Control Delay		40.1		47.5	8.2	24.4	27.1	8.4
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		40.1		47.5	8.2	24.4	27.1	8.4
Queue Length 50th (m)		2.8		25.7	0.6	224.2	3.5	89.4
Queue Length 95th (m)		9.3		50.7	2.8	#350.8	#23.9	137.4
Internal Link Dist (m)		561.8		431.0		175.2		478.0
Turn Bay Length (m)					33.0		23.0	
Base Capacity (vph)		264		325	136	2643	149	2870
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		0.06		0.54	0.06	0.87	0.55	0.64

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 108
Natural Cycle: 110
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Paris St & John St

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	10	3	2	63	0	106	8	2188	44	80	1777	5
Future Volume (vph)	10	3	2	63	0	106	8	2188	44	80	1777	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.92		1.00	1.00		1.00	1.00	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1799			1627		1802	3528		1736	3537	
Flt Permitted		0.74			0.87		0.10	1.00		0.05	1.00	
Satd. Flow (perm)		1377			1443		183	3528		92	3537	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	10	3	2	65	0	109	8	2256	45	82	1832	5
RTOR Reduction (vph)	0	2	0	0	54	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	13	0	0	120	0	8	2300	0	82	1837	0
Confl. Peds. (#/hr)	3		4	4		3	14		2	2		14
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%	0%	2%	0%	4%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		14.1			14.1		75.3	75.3		83.0	83.0	
Effective Green, g (s)		14.1			14.1		75.3	75.3		83.0	83.0	
Actuated g/C Ratio		0.13			0.13		0.69	0.69		0.76	0.76	
Clearance Time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		178			187		126	2446		126	2703	
v/s Ratio Prot								c0.65		0.02	c0.52	
v/s Ratio Perm		0.01			c0.08		0.04			0.47		
v/c Ratio		0.07			0.64		0.06	0.94		0.65	0.68	
Uniform Delay, d1		41.5			44.9		5.3	14.7		27.0	6.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			7.3		0.2	8.1		11.4	0.7	
Delay (s)		41.7			52.2		5.6	22.7		38.4	7.0	
Level of Service		D			D		A	C		D	A	
Approach Delay (s)		41.7			52.2			22.7			8.3	
Approach LOS		D			D			C			A	

Intersection Summary			
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	108.6	Sum of lost time (s)	15.5
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			↰↑↱			↰↓↱	
Traffic Volume (veh/h)	9	0	7	3	0	2	1	2216	1	1	1924	13
Future Volume (Veh/h)	9	0	7	3	0	2	1	2216	1	1	1924	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	9	0	7	3	0	2	1	2308	1	1	2004	14
Pedestrians		3			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								347			199	
pX, platoon unblocked	0.41	0.41	0.69	0.41	0.41	0.26	0.69			0.26		
vC, conflicting volume	3174	4329	1012	3324	4336	1156	2021			2311		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	39	2827	114	400	2843	0	1579			336		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	99	99	100	99	100			100		
cM capacity (veh/h)	393	7	635	219	7	282	290			319		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	16	5	1155	1155	1003	1016
Volume Left	9	3	1	0	1	0
Volume Right	7	2	0	1	0	14
cSH	472	240	290	1700	319	1700
Volume to Capacity	0.03	0.02	0.00	0.68	0.00	0.60
Queue Length 95th (m)	0.8	0.5	0.1	0.0	0.1	0.0
Control Delay (s)	12.9	20.3	0.2	0.0	0.1	0.0
Lane LOS	B	C	A		A	
Approach Delay (s)	12.9	20.3	0.1		0.1	
Approach LOS	B	C				

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑↱			↰↑
Traffic Volume (veh/h)	1	1	2207	6	0	1930
Future Volume (Veh/h)	1	1	2207	6	0	1930
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	1	2323	6	0	2032
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			225			321
pX, platoon unblocked	0.41	0.24			0.24	
vC, conflicting volume	3343	1166			2330	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	135	0			194	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	345	260			332	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	2	1549	780	677	1355
Volume Left	1	0	0	0	0
Volume Right	1	0	6	0	0
cSH	297	1700	1700	332	1700
Volume to Capacity	0.01	0.91	0.46	0.00	0.80
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0
Control Delay (s)	17.2	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	17.2	0.0		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→↘			↙←	↖↗	
Traffic Volume (veh/h)	7	0	0	2	0	0
Future Volume (Veh/h)	7	0	0	2	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67
Hourly flow rate (vph)	10	0	0	3	0	0
Pedestrians	1			2		
Lane Width (m)	3.6			3.6		
Walking Speed (m/s)	1.2			1.2		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			10		14	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			10		14	12
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1009	1073

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	10	3	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1623	1700
Volume to Capacity	0.01	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	14.0%	ICU Level of Service	A
Analysis Period (min)	15		

	↗	→	↙	←	↖	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✥	↰	↱	↰	↑↱	↰	↑↱
Traffic Volume (vph)	27	0	6	2	24	2178	4	1865
Future Volume (vph)	27	0	6	2	24	2178	4	1865
Lane Group Flow (vph)	0	46	7	13	26	2375	4	2061
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	30.0	30.0	30.0	30.0
Minimum Split (s)	26.0	26.0	26.0	26.0	35.9	35.9	35.9	35.9
Total Split (s)	26.0	26.0	26.0	26.0	94.0	94.0	94.0	94.0
Total Split (%)	21.7%	21.7%	21.7%	21.7%	78.3%	78.3%	78.3%	78.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.7	3.7	3.7	3.7
All-Red Time (s)	2.5	2.5	2.5	2.5	2.2	2.2	2.2	2.2
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0	6.0	5.9	5.9	5.9	5.9
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Min	Min	Min	Min
v/c Ratio		0.29	0.05	0.07	0.24	0.81	0.05	0.70
Control Delay		30.0	44.8	25.9	8.9	8.8	3.5	6.2
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		30.0	44.8	25.9	8.9	8.8	3.5	6.2
Queue Length 50th (m)		3.4	1.2	0.3	1.0	117.6	0.1	80.5
Queue Length 95th (m)		16.1	6.2	6.6	5.2	179.8	1.0	120.1
Internal Link Dist (m)		192.5		282.1		313.9		201.2
Turn Bay Length (m)					40.0		100.0	
Base Capacity (vph)		340	330	400	117	3223	94	3219
Starvation Cap Reductn		0	0	0	0	21	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0
Reduced v/c Ratio		0.14	0.02	0.03	0.22	0.74	0.04	0.64

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 90.1

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Splits and Phases: 7: Paris St & Boland Ave/Paris Driveway

7: Paris St & Boland Ave/Paris Driveway

Background (2032) PM Peak Hour

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	27	0	16	6	2	10	24	2178	7	4	1865	31
Future Volume (vph)	27	0	16	6	2	10	24	2178	7	4	1865	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		5.9	5.9		5.9	5.9	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.95		1.00	0.87		1.00	1.00		1.00	1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1623		1805	1639		1805	3537		1805	3530	
Flt Permitted		0.80		0.73	1.00		0.07	1.00		0.05	1.00	
Satd. Flow (perm)		1341		1381	1639		130	3537		104	3530	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	0	17	7	2	11	26	2367	8	4	2027	34
RTOR Reduction (vph)	0	24	0	0	10	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	22	0	7	3	0	26	2375	0	4	2060	0
Confl. Peds. (#/hr)	2					2	4		2	2		4
Heavy Vehicles (%)	4%	0%	14%	0%	0%	0%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		6.4		6.4	6.4		73.0	73.0		73.0	73.0	
Effective Green, g (s)		6.4		6.4	6.4		73.0	73.0		73.0	73.0	
Actuated g/C Ratio		0.07		0.07	0.07		0.80	0.80		0.80	0.80	
Clearance Time (s)		6.0		6.0	6.0		5.9	5.9		5.9	5.9	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		94		96	114		103	2828		83	2822	
v/s Ratio Prot					0.00			c0.67			0.58	
v/s Ratio Perm		c0.02		0.01			0.20			0.04		
v/c Ratio		0.23		0.07	0.02		0.25	0.84		0.05	0.73	
Uniform Delay, d1		40.1		39.7	39.5		2.3	5.6		1.9	4.4	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.3		0.3	0.1		1.3	2.4		0.2	1.0	
Delay (s)		41.4		40.0	39.6		3.6	7.9		2.1	5.4	
Level of Service		D		D	D		A	A		A	A	
Approach Delay (s)		41.4			39.8			7.9			5.4	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	91.3	Sum of lost time (s)	11.9
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Volume (vph)	230	121	164	1980	1665	224
Future Volume (vph)	230	121	164	1980	1665	224
Lane Group Flow (vph)	242	127	173	2084	1753	236
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	5.0	30.0	30.0	30.0
Minimum Split (s)	25.5	25.5	9.0	36.2	36.2	36.2
Total Split (s)	25.5	25.5	12.0	94.5	82.5	82.5
Total Split (%)	21.3%	21.3%	10.0%	78.8%	68.8%	68.8%
Yellow Time (s)	3.3	3.3	3.0	4.2	4.2	4.2
All-Red Time (s)	2.2	2.2	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Min	Min	Min
v/c Ratio	0.77	0.34	0.78	0.84	0.85	0.24
Control Delay	59.3	10.3	45.9	14.4	22.0	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	10.3	45.9	14.4	22.0	2.4
Queue Length 50th (m)	48.2	0.0	18.8	152.6	153.2	2.1
Queue Length 95th (m)	#100.6	17.4	#62.9	185.0	184.4	11.5
Internal Link Dist (m)	376.5			774.4	313.9	
Turn Bay Length (m)	21.0		123.0			72.0
Base Capacity (vph)	365	418	221	3074	2752	1241
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	0.66	0.30	0.78	0.68	0.64	0.19

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 100.4
Natural Cycle: 90
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: Paris St & York St

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Volume (vph)	230	121	164	1980	1665	224
Future Volume (vph)	230	121	164	1980	1665	224
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	1556	1770	3539	3539	1538
Flt Permitted	0.95	1.00	0.06	1.00	1.00	1.00
Satd. Flow (perm)	1787	1556	119	3539	3539	1538
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	242	127	173	2084	1753	236
RTOR Reduction (vph)	0	105	0	0	0	88
Lane Group Flow (vph)	242	22	173	2084	1753	148
Confl. Peds. (#/hr)	6	15	4			4
Heavy Vehicles (%)	1%	1%	2%	2%	2%	2%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	17.6	17.6	70.7	70.7	58.5	58.5
Effective Green, g (s)	17.6	17.6	70.7	70.7	58.5	58.5
Actuated g/C Ratio	0.18	0.18	0.71	0.71	0.58	0.58
Clearance Time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	314	273	219	2502	2070	899
v/s Ratio Prot	c0.14		0.06	c0.59	0.50	
v/s Ratio Perm		0.01	0.49			0.10
v/c Ratio	0.77	0.08	0.79	0.83	0.85	0.17
Uniform Delay, d1	39.3	34.4	26.3	10.4	17.1	9.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.1	0.1	17.1	2.5	3.4	0.1
Delay (s)	50.4	34.6	43.3	13.0	20.5	9.6
Level of Service	D	C	D	B	C	A
Approach Delay (s)	44.9			15.3	19.2	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.7
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	573	728	1450	283	386	1365
Future Volume (vph)	573	728	1450	283	386	1365
Lane Group Flow (vph)	637	809	1611	314	429	1517
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Detector Phase	8	8 1	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0		15.0	15.0	10.0	15.0
Minimum Split (s)	30.8		40.2	40.2	15.0	40.2
Total Split (s)	36.0		62.0	62.0	22.0	84.0
Total Split (%)	30.0%		51.7%	51.7%	18.3%	70.0%
Yellow Time (s)	3.3		4.2	4.2	3.0	4.2
All-Red Time (s)	2.5		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8		6.2	6.2	5.0	6.2
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None		Min	Min	None	Min
v/c Ratio	0.73	1.17	0.98	0.39	0.88	0.66
Control Delay	46.9	122.4	49.7	14.3	71.0	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.9	122.4	49.7	14.3	71.0	14.8
Queue Length 50th (m)	75.0	~238.0	201.3	29.8	54.5	112.4
Queue Length 95th (m)	96.2	#316.7	#258.7	52.7	#82.6	135.5
Internal Link Dist (m)	679.1		533.6			774.4
Turn Bay Length (m)	158.0			37.0	175.0	
Base Capacity (vph)	872	693	1645	800	486	2294
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	0.73	1.17	0.98	0.39	0.88	0.66

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 120

Control Type: Semi Act-Uncoord

~ 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: 9: Ramsey Lake Rd & Paris St

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	573	728	1450	283	386	1365
Future Volume (vph)	573	728	1450	283	386	1365
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	6.2	6.2	5.0	6.2
Lane Util. Factor	0.97	1.00	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3467	1583	3539	1586	3433	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3467	1583	3539	1586	3433	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	637	809	1611	314	429	1517
RTOR Reduction (vph)	0	5	0	63	0	0
Lane Group Flow (vph)	637	804	1611	251	429	1517
Confl. Peds. (#/hr)		16		5	5	
Heavy Vehicles (%)	1%	2%	2%	0%	2%	2%
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Actuated Green, G (s)	30.2	53.0	55.8	55.8	17.0	77.8
Effective Green, g (s)	30.2	53.0	55.8	55.8	17.0	77.8
Actuated g/C Ratio	0.25	0.44	0.46	0.46	0.14	0.65
Clearance Time (s)	5.8		6.2	6.2	5.0	6.2
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	872	699	1645	737	486	2294
v/s Ratio Prot	0.18	c0.51	c0.46		0.12	0.43
v/s Ratio Perm				0.16		
v/c Ratio	0.73	1.15	0.98	0.34	0.88	0.66
Uniform Delay, d1	41.2	33.5	31.5	20.4	50.5	13.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.2	83.5	17.3	0.3	17.0	0.7
Delay (s)	44.3	117.0	48.8	20.7	67.6	13.7
Level of Service	D	F	D	C	E	B
Approach Delay (s)	85.0		44.2			25.6
Approach LOS	F		D			C

Intersection Summary			
HCM 2000 Control Delay	48.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	96.7%	ICU Level of Service	F
Analysis Period (min)	15		

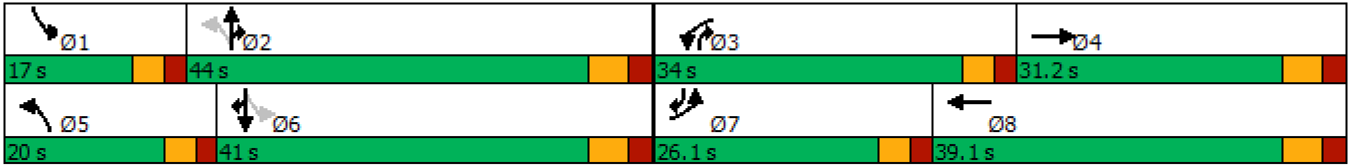
c Critical Lane Group

	↗	→	↙	←	↖	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱	↰↰	↑↱	↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	181	457	573	422	82	603	445	29	887	260
Future Volume (vph)	181	457	573	422	82	603	445	29	887	260
Lane Group Flow (vph)	197	549	623	470	89	655	484	32	964	283
Turn Type	Prot	NA	Prot	NA	pm+pt	NA	pt+ov	pm+pt	NA	pt+ov
Protected Phases	7	4	3	8	5	2	2 3	1	6	6 7
Permitted Phases					2			6		
Detector Phase	7	4	3	8	5	2	2 3	1	6	6 7
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	15.0		5.0	15.0	
Minimum Split (s)	10.0	31.2	10.0	31.2	10.0	40.1		10.0	40.1	
Total Split (s)	26.1	31.2	34.0	39.1	20.0	44.0		17.0	41.0	
Total Split (%)	20.7%	24.7%	26.9%	31.0%	15.8%	34.9%		13.5%	32.5%	
Yellow Time (s)	3.0	3.7	3.0	3.7	3.0	3.7		3.0	3.7	
All-Red Time (s)	2.0	2.5	2.0	2.5	2.0	2.4		2.0	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.2	5.0	6.2	5.0	6.1		5.0	6.1	
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	Min		None	Min	
v/c Ratio	0.52	0.78	0.78	0.41	0.38	0.41	0.46	0.11	0.73	0.38
Control Delay	52.7	49.7	47.4	30.6	25.8	30.3	7.7	21.5	40.0	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Total Delay	52.7	49.7	47.4	30.6	25.8	30.3	8.0	21.5	40.0	14.3
Queue Length 50th (m)	22.9	63.3	70.6	43.6	12.9	45.6	29.4	4.5	76.0	25.8
Queue Length 95th (m)	37.1	92.1	100.7	67.9	24.4	60.5	56.5	11.0	98.3	48.6
Internal Link Dist (m)		364.5		324.4		160.9			177.4	
Turn Bay Length (m)	57.0		85.0		70.0		6.0	24.0		6.0
Base Capacity (vph)	682	838	965	1230	308	1900	1105	371	1688	875
Starvation Cap Reductn	0	0	0	0	0	0	195	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	0.66	0.65	0.38	0.29	0.34	0.53	0.09	0.57	0.32

Intersection Summary

Cycle Length: 126.2
Actuated Cycle Length: 106
Natural Cycle: 105
Control Type: Semi Act-Uncoord

Splits and Phases: 1: Paris St & Brady St



HCM Signalized Intersection Capacity Analysis

Background (2032) AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱		↰↰	↑↱		↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	181	457	48	573	422	10	82	603	445	29	887	260
Future Volume (vph)	181	457	48	573	422	10	82	603	445	29	887	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.2		5.0	6.2		5.0	6.1	6.1	5.0	6.1	6.1
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3273	3369		3367	3461		1671	4988	1568	1717	4893	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.14	1.00	1.00	0.38	1.00	1.00
Satd. Flow (perm)	3273	3369		3367	3461		250	4988	1568	681	4893	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	497	52	623	459	11	89	655	484	32	964	283
RTOR Reduction (vph)	0	6	0	0	1	0	0	0	92	0	0	63
Lane Group Flow (vph)	197	543	0	623	469	0	89	655	392	32	964	220
Confl. Peds. (#/hr)	7		4	4		7	19		10	10		19
Heavy Vehicles (%)	7%	5%	10%	4%	4%	0%	8%	4%	3%	5%	6%	2%
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	pt+ov	pm+pt	NA	pt+ov
Protected Phases	7	4		3	8		5	2	2 3	1	6	6 7
Permitted Phases							2			6		
Actuated Green, G (s)	12.2	22.1		25.2	35.1		42.0	33.9	65.2	33.8	29.8	48.1
Effective Green, g (s)	12.2	22.1		25.2	35.1		42.0	33.9	65.2	33.8	29.8	48.1
Actuated g/C Ratio	0.11	0.21		0.23	0.33		0.39	0.32	0.61	0.31	0.28	0.45
Clearance Time (s)	5.0	6.2		5.0	6.2		5.0	6.1		5.0	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	371	692		789	1130		204	1572	951	252	1356	708
v/s Ratio Prot	0.06	c0.16		c0.19	0.14		c0.03	0.13	0.25	0.00	c0.20	0.14
v/s Ratio Perm							0.14			0.04		
v/c Ratio	0.53	0.78		0.79	0.41		0.44	0.42	0.41	0.13	0.71	0.31
Uniform Delay, d1	45.0	40.4		38.7	28.2		22.7	29.0	11.1	25.7	35.0	19.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.5	5.8		5.3	0.2		1.5	0.2	0.3	0.2	1.8	0.3
Delay (s)	46.4	46.3		43.9	28.4		24.2	29.2	11.4	26.0	36.8	19.3
Level of Service	D	D		D	C		C	C	B	C	D	B
Approach Delay (s)		46.3			37.3			21.8			32.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	107.5	Sum of lost time (s)	22.3
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

9: Ramsey Lake Rd & Paris St

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	194	243	1065	397	704	998
Future Volume (vph)	194	243	1065	397	704	998
Lane Group Flow (vph)	202	253	1109	414	733	1040
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Detector Phase	8	8 1	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0		15.0	15.0	10.0	15.0
Minimum Split (s)	30.8		40.2	40.2	15.0	40.2
Total Split (s)	30.8		56.2	56.2	33.0	89.2
Total Split (%)	25.7%		46.8%	46.8%	27.5%	74.3%
Yellow Time (s)	3.3		4.2	4.2	3.0	4.2
All-Red Time (s)	2.5		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8		6.2	6.2	5.0	6.2
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None		Min	Min	None	Min
v/c Ratio	0.48	0.20	0.77	0.55	0.77	0.40
Control Delay	43.8	13.4	27.7	13.0	37.9	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.8	13.4	27.7	13.0	37.9	4.8
Queue Length 50th (m)	18.8	12.2	95.4	28.2	63.8	30.0
Queue Length 95th (m)	33.7	25.2	127.4	58.9	#104.8	45.3
Internal Link Dist (m)	679.1		533.6			775.4
Turn Bay Length (m)	158.0			37.0	175.0	
Base Capacity (vph)	962	1383	1964	952	1088	3090
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	0.21	0.18	0.56	0.43	0.67	0.34

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 91.5

Natural Cycle: 90

Control Type: Semi Act-Uncoord

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

Splits and Phases: 9: Ramsey Lake Rd & Paris St

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	194	243	1065	397	704	998
Future Volume (vph)	194	243	1065	397	704	998
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	6.2	6.2	5.0	6.2
Lane Util. Factor	0.97	0.88	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	2760	3505	1545	3467	3471
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	2760	3505	1545	3467	3471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	202	253	1109	414	733	1040
RTOR Reduction (vph)	0	26	0	120	0	0
Lane Group Flow (vph)	202	227	1109	294	733	1040
Confl. Peds. (#/hr)		13		14	14	
Heavy Vehicles (%)	2%	3%	3%	2%	1%	4%
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Actuated Green, G (s)	11.2	42.3	37.7	37.7	25.3	68.0
Effective Green, g (s)	11.2	42.3	37.7	37.7	25.3	68.0
Actuated g/C Ratio	0.12	0.46	0.41	0.41	0.28	0.75
Clearance Time (s)	5.8		6.2	6.2	5.0	6.2
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	421	1280	1448	638	961	2588
v/s Ratio Prot	c0.06	0.08	c0.32		c0.21	0.30
v/s Ratio Perm				0.19		
v/c Ratio	0.48	0.18	0.77	0.46	0.76	0.40
Uniform Delay, d1	37.3	14.3	23.0	19.4	30.2	4.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	0.1	2.5	0.5	3.6	0.1
Delay (s)	38.1	14.4	25.4	19.9	33.8	4.3
Level of Service	D	B	C	B	C	A
Approach Delay (s)	24.9		23.9			16.5
Approach LOS	C		C			B

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	91.2	Sum of lost time (s)	17.0
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱	↰↰	↑↱	↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	195	619	633	515	106	1148	817	28	896	273
Future Volume (vph)	195	619	633	515	106	1148	817	28	896	273
Lane Group Flow (vph)	195	684	633	530	106	1148	817	28	896	273
Turn Type	Prot	NA	Prot	NA	pm+pt	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	7	4	3	8	5	2	2 3		6	6 7
Permitted Phases					2			6		
Detector Phase	7	4	3	8	5	2	2 3	6	6	6 7
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	15.0		15.0	15.0	
Minimum Split (s)	10.0	31.2	10.0	31.2	10.0	40.1		40.1	40.1	
Total Split (s)	35.1	40.3	34.0	39.2	22.0	63.0		41.0	41.0	
Total Split (%)	25.6%	29.4%	24.8%	28.6%	16.0%	45.9%		29.9%	29.9%	
Yellow Time (s)	3.0	3.7	3.0	3.7	3.0	3.7		3.7	3.7	
All-Red Time (s)	2.0	2.5	2.0	2.5	2.0	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	
Total Lost Time (s)	5.0	6.2	5.0	6.2	5.0	6.1		6.1	6.1	
Lead/Lag	Lead	Lag	Lead	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	None	None	None	None	None	Min		Min	Min	
v/c Ratio	0.58	0.82	0.83	0.44	0.44	0.56	0.76	0.24	0.65	0.37
Control Delay	61.4	53.8	57.8	33.6	29.6	29.9	19.4	43.6	42.3	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	6.5	0.0	0.0	0.0
Total Delay	61.4	53.8	57.8	33.6	29.6	29.9	25.9	43.6	42.3	18.7
Queue Length 50th (m)	27.3	95.2	88.5	59.7	17.7	86.6	132.1	5.8	77.2	34.4
Queue Length 95th (m)	40.2	118.9	#120.6	80.6	31.5	104.7	199.6	16.2	98.7	58.3
Internal Link Dist (m)		364.5		324.4		160.9			177.4	
Turn Bay Length (m)	57.0		85.0		70.0		6.0	24.0		6.0
Base Capacity (vph)	777	1021	845	1226	326	2434	1118	134	1600	946
Starvation Cap Reductn	0	0	0	0	0	0	251	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	0.25	0.67	0.75	0.43	0.33	0.47	0.94	0.21	0.56	0.29

Intersection Summary

Cycle Length: 137.3

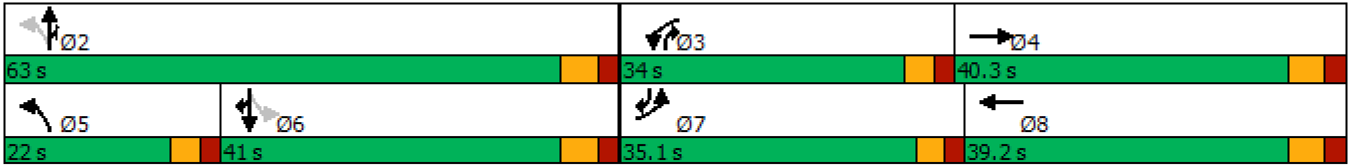
Actuated Cycle Length: 122.4

Natural Cycle: 105

Control Type: Semi Act-Uncoord

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

Splits and Phases: 1: Paris St & Brady St



HCM Signalized Intersection Capacity Analysis

Background (2032) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱		↰↰	↑↱		↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	195	619	65	633	515	15	106	1148	817	28	896	273
Future Volume (vph)	195	619	65	633	515	15	106	1148	817	28	896	273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.2		5.0	6.2		5.0	6.1	6.1	6.1	6.1	6.1
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3072	3539		3467	3491		1751	5085	1615	1774	5085	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.16	1.00	1.00	0.23	1.00	1.00
Satd. Flow (perm)	3072	3539		3467	3491		290	5085	1615	430	5085	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	195	619	65	633	515	15	106	1148	817	28	896	273
RTOR Reduction (vph)	0	6	0	0	1	0	0	0	11	0	0	44
Lane Group Flow (vph)	195	678	0	633	529	0	106	1148	806	28	896	229
Confl. Peds. (#/hr)	9		6	6		9	25		33	33		25
Heavy Vehicles (%)	14%	0%	4%	1%	3%	0%	3%	2%	0%	1%	2%	0%
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	7	4		3	8		5	2	2 3		6	6 7
Permitted Phases							2			6		
Actuated Green, G (s)	13.5	28.8		26.9	42.2		48.9	48.9	81.9	33.4	33.4	53.0
Effective Green, g (s)	13.5	28.8		26.9	42.2		48.9	48.9	81.9	33.4	33.4	53.0
Actuated g/C Ratio	0.11	0.24		0.22	0.35		0.40	0.40	0.67	0.27	0.27	0.43
Clearance Time (s)	5.0	6.2		5.0	6.2		5.0	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	340	836		765	1208		242	2039	1085	117	1393	702
v/s Ratio Prot	0.06	c0.19		c0.18	0.15		0.04	0.23	c0.50		0.18	0.14
v/s Ratio Perm							0.14			0.07		
v/c Ratio	0.57	0.81		0.83	0.44		0.44	0.56	0.74	0.24	0.64	0.33
Uniform Delay, d1	51.5	44.0		45.3	30.7		25.0	28.2	13.1	34.4	39.0	22.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	6.0		7.3	0.3		1.3	0.4	2.8	1.1	1.0	0.3
Delay (s)	53.8	50.0		52.6	31.0		26.3	28.6	15.9	35.4	40.0	23.0
Level of Service	D	D		D	C		C	C	B	D	D	C
Approach Delay (s)		50.8			42.8			23.5			36.0	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	35.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	121.9	Sum of lost time (s)	22.3
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	573	728	1450	283	386	1365
Future Volume (vph)	573	728	1450	283	386	1365
Lane Group Flow (vph)	637	809	1611	314	429	1517
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Detector Phase	8	8 1	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0		15.0	15.0	10.0	15.0
Minimum Split (s)	30.8		40.2	40.2	15.0	40.2
Total Split (s)	32.0		64.5	64.5	23.5	88.0
Total Split (%)	26.7%		53.8%	53.8%	19.6%	73.3%
Yellow Time (s)	3.3		4.2	4.2	3.0	4.2
All-Red Time (s)	2.5		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8		6.2	6.2	5.0	6.2
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None		Min	Min	None	Min
v/c Ratio	0.84	0.69	0.94	0.38	0.82	0.63
Control Delay	55.5	31.5	41.2	12.8	62.1	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.5	31.5	41.2	12.8	62.1	12.1
Queue Length 50th (m)	78.5	90.1	192.6	27.6	53.6	100.0
Queue Length 95th (m)	#106.2	116.1	#248.7	49.5	#76.9	120.6
Internal Link Dist (m)	679.1		533.6			774.4
Turn Bay Length (m)	158.0			37.0	175.0	
Base Capacity (vph)	778	1168	1770	854	545	2483
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	0.82	0.69	0.91	0.37	0.79	0.61

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 116.9

Natural Cycle: 100

Control Type: Semi Act-Uncoord

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

Splits and Phases: 9: Ramsey Lake Rd & Paris St

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	573	728	1450	283	386	1365
Future Volume (vph)	573	728	1450	283	386	1365
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	6.2	6.2	5.0	6.2
Lane Util. Factor	0.97	0.88	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3467	2787	3539	1587	3433	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3467	2787	3539	1587	3433	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	637	809	1611	314	429	1517
RTOR Reduction (vph)	0	12	0	63	0	0
Lane Group Flow (vph)	637	797	1611	251	429	1517
Confl. Peds. (#/hr)		16		5	5	
Heavy Vehicles (%)	1%	2%	2%	0%	2%	2%
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Actuated Green, G (s)	25.6	49.3	56.4	56.4	17.9	79.3
Effective Green, g (s)	25.6	49.3	56.4	56.4	17.9	79.3
Actuated g/C Ratio	0.22	0.42	0.48	0.48	0.15	0.68
Clearance Time (s)	5.8		6.2	6.2	5.0	6.2
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	759	1175	1707	765	525	2400
v/s Ratio Prot	c0.18	0.29	c0.46		c0.12	0.43
v/s Ratio Perm				0.16		
v/c Ratio	0.84	0.68	0.94	0.33	0.82	0.63
Uniform Delay, d1	43.7	27.4	28.7	18.6	47.9	10.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.1	1.6	11.1	0.3	9.6	0.5
Delay (s)	51.8	29.0	39.9	18.9	57.5	11.1
Level of Service	D	C	D	B	E	B
Approach Delay (s)	39.0		36.4			21.4
Approach LOS	D		D			C

Intersection Summary			
HCM 2000 Control Delay	31.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	116.9	Sum of lost time (s)	17.0
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Appendix F – Synchro Analysis Output – Total Traffic Volumes

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱	↰↰	↑↱	↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	168	424	547	393	93	578	435	27	840	241
Future Volume (vph)	168	424	547	393	93	578	435	27	840	241
Lane Group Flow (vph)	183	519	595	438	101	628	473	29	913	262
Turn Type	pm+pt	NA	Prot	NA	pm+pt	NA	pt+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	3	8	5	2	2 3	1	6	7
Permitted Phases	4				2			6		6
Detector Phase	7	4	3	8	5	2	2 3	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	15.0		5.0	15.0	5.0
Minimum Split (s)	10.0	31.2	10.0	31.2	10.0	40.1		10.0	40.1	10.0
Total Split (s)	26.1	31.2	34.0	39.1	20.0	44.0		17.0	41.0	26.1
Total Split (%)	20.7%	24.7%	26.9%	31.0%	15.8%	34.9%		13.5%	32.5%	20.7%
Yellow Time (s)	3.0	3.7	3.0	3.7	3.0	3.7		3.0	3.7	3.0
All-Red Time (s)	2.0	2.5	2.0	2.5	2.0	2.4		2.0	2.4	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	6.2	5.0	6.2	5.0	6.1		5.0	6.1	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min		None	Min	None
v/c Ratio	0.47	0.77	0.77	0.41	0.40	0.37	0.45	0.10	0.74	0.40
Control Delay	22.3	48.9	46.8	31.3	25.4	29.0	7.1	21.2	41.1	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	22.3	48.9	46.8	31.3	25.4	29.0	7.4	21.2	41.1	13.3
Queue Length 50th (m)	21.5	55.1	62.2	38.4	13.6	40.8	25.1	3.8	67.4	20.0
Queue Length 95th (m)	42.8	87.4	96.5	65.0	27.2	57.7	52.5	10.1	93.5	42.0
Internal Link Dist (m)		364.5		324.4		160.9			177.4	
Turn Bay Length (m)	57.0		85.0		70.0		6.0	24.0		6.0
Base Capacity (vph)	535	834	962	1188	318	1888	1110	393	1683	791
Starvation Cap Reductn	0	0	0	0	0	0	173	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	0.34	0.62	0.62	0.37	0.32	0.33	0.50	0.07	0.54	0.33

Intersection Summary

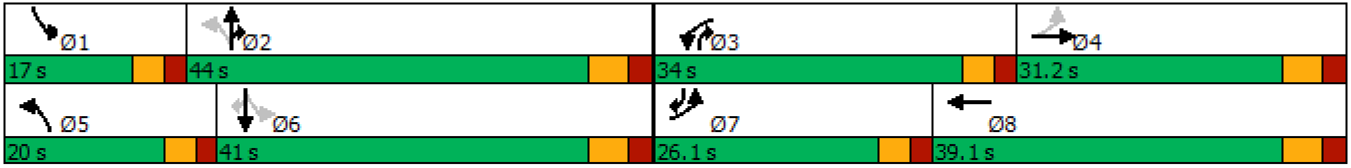
Cycle Length: 126.2

Actuated Cycle Length: 104.5

Natural Cycle: 95

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Paris St & Brady St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰↰	↑↱		↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	168	424	53	547	393	10	93	578	435	27	840	241
Future Volume (vph)	168	424	53	547	393	10	93	578	435	27	840	241
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.2		5.0	6.2		5.0	6.1	6.1	5.0	6.1	5.0
Lane Util. Factor	1.00	0.95		0.97	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1684	3357		3367	3460		1671	4988	1568	1717	4893	1551
Flt Permitted	0.50	1.00		0.95	1.00		0.15	1.00	1.00	0.40	1.00	1.00
Satd. Flow (perm)	882	3357		3367	3460		269	4988	1568	727	4893	1551
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	183	461	58	595	427	11	101	628	473	29	913	262
RTOR Reduction (vph)	0	8	0	0	1	0	0	0	92	0	0	70
Lane Group Flow (vph)	183	511	0	595	437	0	101	628	381	29	913	192
Confl. Peds. (#/hr)	7		4	4		7	19		10	10		19
Heavy Vehicles (%)	7%	5%	10%	4%	4%	0%	8%	4%	3%	5%	6%	2%
Turn Type	pm+pt	NA		Prot	NA		pm+pt	NA	pt+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	2 3	1	6	7
Permitted Phases	4						2			6		6
Actuated Green, G (s)	33.5	20.8		23.9	32.0		44.4	35.4	65.4	32.8	28.8	41.5
Effective Green, g (s)	33.5	20.8		23.9	32.0		44.4	35.4	65.4	32.8	28.8	41.5
Actuated g/C Ratio	0.31	0.20		0.22	0.30		0.42	0.33	0.61	0.31	0.27	0.39
Clearance Time (s)	5.0	6.2		5.0	6.2		5.0	6.1		5.0	6.1	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	373	656		756	1040		251	1659	963	261	1324	604
v/s Ratio Prot	0.06	c0.15		c0.18	0.13		c0.04	0.13	0.24	0.00	c0.19	0.04
v/s Ratio Perm	0.10						0.13			0.03		0.09
v/c Ratio	0.49	0.78		0.79	0.42		0.40	0.38	0.40	0.11	0.69	0.32
Uniform Delay, d1	28.0	40.6		38.9	29.8		20.8	27.1	10.4	25.9	34.8	22.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	5.8		5.4	0.3		1.1	0.1	0.3	0.2	1.5	0.3
Delay (s)	29.0	46.4		44.3	30.0		21.9	27.2	10.7	26.1	36.3	22.9
Level of Service	C	D		D	C		C	C	B	C	D	C
Approach Delay (s)		41.9			38.2			20.3			33.1	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	106.4	Sum of lost time (s)	22.3
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↰	↑↱	↰	↑	↱	↰	↑↑↱	↰	↑↑↱
Traffic Volume (vph)	15	25	251	58	138	163	1004	76	1317
Future Volume (vph)	15	25	251	58	138	163	1004	76	1317
Lane Group Flow (vph)	16	122	276	64	152	179	1227	84	1499
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	4.5	5.0	5.0	5.0
Minimum Split (s)	31.7	31.7	31.7	31.7	31.7	9.0	41.1	9.0	41.1
Total Split (s)	37.0	37.0	37.0	37.0	37.0	19.0	41.1	19.0	41.1
Total Split (%)	38.1%	38.1%	38.1%	38.1%	38.1%	19.6%	42.3%	19.6%	42.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.05	0.14	0.80	0.13	0.28	0.62	0.49	0.27	0.67
Control Delay	22.5	8.0	46.4	23.3	5.6	23.9	15.8	10.6	21.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.5	8.0	46.4	23.3	5.6	23.9	15.8	10.6	21.8
Queue Length 50th (m)	2.0	1.7	42.2	7.9	0.0	13.2	48.3	5.0	69.5
Queue Length 95th (m)	6.8	8.2	75.2	18.2	13.3	39.2	78.5	13.5	113.1
Internal Link Dist (m)		187.2		465.5			478.0		160.9
Turn Bay Length (m)	21.0		133.0		62.0	34.0		48.0	
Base Capacity (vph)	463	1199	503	719	712	374	2509	470	2242
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.10	0.55	0.09	0.21	0.48	0.49	0.18	0.67

Intersection Summary

Cycle Length: 97.1
Actuated Cycle Length: 83.7
Natural Cycle: 85
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Paris St & Van Horne St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑	↱	↰	↑↑↱		↰	↑↑↱	
Traffic Volume (vph)	15	25	86	251	58	138	163	1004	113	76	1317	47
Future Volume (vph)	15	25	86	251	58	138	163	1004	113	76	1317	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.0	4.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.88		1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1566	2901		1801	1827	1576	1703	4871		1752	5049	
Flt Permitted	0.72	1.00		0.67	1.00	1.00	0.09	1.00		0.19	1.00	
Satd. Flow (perm)	1179	2901		1279	1827	1576	169	4871		353	5049	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	16	27	95	276	64	152	179	1103	124	84	1447	52
RTOR Reduction (vph)	0	70	0	0	0	111	0	11	0	0	3	0
Lane Group Flow (vph)	16	52	0	276	64	41	179	1216	0	84	1496	0
Confl. Peds. (#/hr)	4		4	4		4	6		6	6		6
Heavy Vehicles (%)	15%	4%	10%	0%	4%	1%	6%	5%	2%	3%	2%	5%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	22.6	22.6		22.6	22.6	22.6	52.8	42.9		43.9	38.0	
Effective Green, g (s)	22.6	22.6		22.6	22.6	22.6	52.8	42.9		43.9	38.0	
Actuated g/C Ratio	0.27	0.27		0.27	0.27	0.27	0.63	0.51		0.52	0.45	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	315	776		342	489	422	292	2475		281	2273	
v/s Ratio Prot		0.02			0.04		c0.07	0.25		0.02	c0.30	
v/s Ratio Perm	0.01			c0.22		0.03	0.31			0.13		
v/c Ratio	0.05	0.07		0.81	0.13	0.10	0.61	0.49		0.30	0.66	
Uniform Delay, d1	22.9	23.0		28.9	23.4	23.2	13.1	13.6		10.4	18.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0		13.0	0.1	0.1	3.8	0.7		0.6	1.5	
Delay (s)	23.0	23.1		41.9	23.6	23.3	16.9	14.3		11.0	19.6	
Level of Service	C	C		D	C	C	B	B		B	B	
Approach Delay (s)		23.1			33.8			14.6			19.2	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	84.4	Sum of lost time (s)	13.5
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✣		✣	↰	↑↱	↰	↑↱
Traffic Volume (vph)	8	0	40	2	4	1275	46	1576
Future Volume (vph)	8	0	40	2	4	1275	46	1576
Lane Group Flow (vph)	0	14	0	110	4	1363	48	1651
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	20.0	20.0	5.0	20.0
Minimum Split (s)	25.7	25.7	25.7	25.7	34.8	34.8	9.0	34.8
Total Split (s)	25.7	25.7	25.7	25.7	50.8	50.8	14.0	64.8
Total Split (%)	28.4%	28.4%	28.4%	28.4%	56.1%	56.1%	15.5%	71.6%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.7
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	1.0	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.7		5.7	5.8	5.8	4.0	5.8
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	None	Min
v/c Ratio		0.05		0.37	0.03	0.61	0.15	0.64
Control Delay		0.3		17.8	8.2	11.3	4.0	7.2
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		0.3		17.8	8.2	11.3	4.0	7.2
Queue Length 50th (m)		0.0		4.6	0.2	61.0	1.3	48.9
Queue Length 95th (m)		0.0		20.6	1.6	98.2	4.3	85.2
Internal Link Dist (m)		561.8		431.0		175.2		478.0
Turn Bay Length (m)					33.0		23.0	
Base Capacity (vph)		592		583	197	2766	444	3261
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		0.02		0.19	0.02	0.49	0.11	0.51

Intersection Summary

Cycle Length: 90.5
Actuated Cycle Length: 58.7
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Paris St & John St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	8	0	6	40	2	63	4	1275	34	46	1576	9
Future Volume (vph)	8	0	6	40	2	63	4	1275	34	46	1576	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.92		1.00	1.00		1.00	1.00	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1726			1696		1803	3492		1770	3536	
Flt Permitted		0.84			0.87		0.13	1.00		0.12	1.00	
Satd. Flow (perm)		1497			1501		248	3492		227	3536	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	8	0	6	42	2	66	4	1328	35	48	1642	9
RTOR Reduction (vph)	0	12	0	0	58	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	2	0	0	52	0	4	1361	0	48	1651	0
Confl. Peds. (#/hr)	5		5	5		5	8		4	4		8
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	2%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.1			7.1		35.7	35.7		43.0	43.0	
Effective Green, g (s)		7.1			7.1		35.7	35.7		43.0	43.0	
Actuated g/C Ratio		0.12			0.12		0.58	0.58		0.70	0.70	
Clearance Time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		172			173		143	2023		241	2468	
v/s Ratio Prot								0.39		0.01	c0.47	
v/s Ratio Perm		0.00			c0.03		0.02			0.13		
v/c Ratio		0.01			0.30		0.03	0.67		0.20	0.67	
Uniform Delay, d1		24.1			25.0		5.5	8.9		5.1	5.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0			1.0		0.1	0.9		0.4	0.7	
Delay (s)		24.2			25.9		5.6	9.8		5.5	6.0	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		24.2			25.9			9.8			6.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	61.6	Sum of lost time (s)	15.5
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			↰↑↱			↰↑↱	
Traffic Volume (veh/h)	3	0	9	2	0	2	1	1440	0	0	1650	7
Future Volume (Veh/h)	3	0	9	2	0	2	1	1440	0	0	1650	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	0	10	2	0	2	1	1600	0	0	1833	8
Pedestrians		2			1							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								347			199	
pX, platoon unblocked	0.79	0.79	0.68	0.79	0.79	0.78	0.68			0.78		
vC, conflicting volume	2643	3442	922	2530	3446	801	1843			1601		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1295	2302	0	1152	2307	176	1305			1203		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	7.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.8	2.2			2.2		
p0 queue free %	97	100	99	98	100	100	100			100		
cM capacity (veh/h)	96	31	744	121	31	549	366			457		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	13	4	801	800	916	924
Volume Left	3	2	1	0	0	0
Volume Right	10	2	0	0	0	8
cSH	290	198	366	1700	457	1700
Volume to Capacity	0.04	0.02	0.00	0.47	0.00	0.54
Queue Length 95th (m)	1.1	0.5	0.1	0.0	0.0	0.0
Control Delay (s)	18.0	23.5	0.1	0.0	0.0	0.0
Lane LOS	C	C	A			
Approach Delay (s)	18.0	23.5	0.0		0.0	
Approach LOS	C	C				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑↱			↰↑
Traffic Volume (veh/h)	2	20	1408	1	16	1646
Future Volume (Veh/h)	2	20	1408	1	16	1646
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	2	22	1564	1	18	1829
Pedestrians						1
Lane Width (m)						3.6
Walking Speed (m/s)						1.2
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			226			321
pX, platoon unblocked	0.79	0.76			0.76	
vC, conflicting volume	2515	784			1565	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1038	99			1122	
tC, single (s)	6.8	6.9			6.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			3.2	
p0 queue free %	99	97			91	
cM capacity (veh/h)	165	720			203	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	24	1043	522	628	1219
Volume Left	2	0	0	18	0
Volume Right	22	0	1	0	0
cSH	563	1700	1700	203	1700
Volume to Capacity	0.04	0.61	0.31	0.09	0.72
Queue Length 95th (m)	1.1	0.0	0.0	2.3	0.0
Control Delay (s)	11.7	0.0	0.0	4.0	0.0
Lane LOS	B			A	
Approach Delay (s)	11.7	0.0		1.4	
Approach LOS	B				

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↰	Y	
Traffic Volume (veh/h)	1	16	1	1	20	0
Future Volume (Veh/h)	1	16	1	1	20	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Hourly flow rate (vph)	2	32	2	2	40	0
Pedestrians	1			2	2	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			36		27	22
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			36		27	22
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		96	100
cM capacity (veh/h)			1585		990	1057

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	34	4	40
Volume Left	0	2	40
Volume Right	32	0	0
cSH	1700	1585	990
Volume to Capacity	0.02	0.00	0.04
Queue Length 95th (m)	0.0	0.0	1.0
Control Delay (s)	0.0	3.6	8.8
Lane LOS		A	A
Approach Delay (s)	0.0	3.6	8.8
Approach LOS			A

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	14.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✥	↰	↱	↰	↑↱	↰	↑↱
Traffic Volume (vph)	26	0	60	0	5	1313	32	1624
Future Volume (vph)	26	0	60	0	5	1313	32	1624
Lane Group Flow (vph)	0	40	63	51	5	1416	34	1722
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	30.0	30.0	30.0	30.0
Minimum Split (s)	26.0	26.0	26.0	26.0	35.9	35.9	35.9	35.9
Total Split (s)	26.0	26.0	26.0	26.0	55.9	55.9	55.9	55.9
Total Split (%)	31.7%	31.7%	31.7%	31.7%	68.3%	68.3%	68.3%	68.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.7	3.7	3.7	3.7
All-Red Time (s)	2.5	2.5	2.5	2.5	2.2	2.2	2.2	2.2
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0	6.0	5.9	5.9	5.9	5.9
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Min	Min	Min	Min
v/c Ratio		0.16	0.29	0.17	0.04	0.57	0.16	0.69
Control Delay		11.5	28.0	10.0	4.8	6.8	6.7	8.5
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		11.5	28.0	10.0	4.8	6.8	6.7	8.5
Queue Length 50th (m)		0.1	5.9	0.0	0.2	39.3	1.2	56.2
Queue Length 95th (m)		8.2	19.2	8.8	1.3	66.6	5.3	95.8
Internal Link Dist (m)		198.2		192.5		314.0		201.8
Turn Bay Length (m)					40.0		100.0	
Base Capacity (vph)		510	484	597	164	3047	253	3055
Starvation Cap Reductn		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0
Reduced v/c Ratio		0.08	0.13	0.09	0.03	0.46	0.13	0.56

Intersection Summary

Cycle Length: 81.9

Actuated Cycle Length: 58.6

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Splits and Phases: 7: Paris St & Boland Ave/Paris Driveway

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	26	0	12	60	0	48	5	1313	32	32	1624	12
Future Volume (vph)	26	0	12	60	0	48	5	1313	32	32	1624	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		5.9	5.9		5.9	5.9	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt		0.96		1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1757		1805	1615		1805	3495		1805	3502	
Flt Permitted		0.77		0.73	1.00		0.10	1.00		0.15	1.00	
Satd. Flow (perm)		1392		1389	1615		188	3495		290	3502	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	27	0	13	63	0	51	5	1382	34	34	1709	13
RTOR Reduction (vph)	0	34	0	0	45	0	0	2	0	0	1	0
Lane Group Flow (vph)	0	6	0	63	6	0	5	1414	0	34	1721	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.4		7.4	7.4		40.4	40.4		40.4	40.4	
Effective Green, g (s)		7.4		7.4	7.4		40.4	40.4		40.4	40.4	
Actuated g/C Ratio		0.12		0.12	0.12		0.68	0.68		0.68	0.68	
Clearance Time (s)		6.0		6.0	6.0		5.9	5.9		5.9	5.9	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		172		172	200		127	2365		196	2369	
v/s Ratio Prot					0.00			0.40			c0.49	
v/s Ratio Perm		0.00		c0.05			0.03			0.12		
v/c Ratio		0.03		0.37	0.03		0.04	0.60		0.17	0.73	
Uniform Delay, d1		23.0		24.0	23.0		3.2	5.2		3.5	6.1	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1		1.3	0.1		0.1	0.4		0.4	1.1	
Delay (s)		23.1		25.3	23.1		3.3	5.7		4.0	7.3	
Level of Service		C		C	C		A	A		A	A	
Approach Delay (s)		23.1			24.3			5.6			7.2	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	11.9
Intersection Capacity Utilization	64.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Volume (vph)	179	142	65	1171	1484	213
Future Volume (vph)	179	142	65	1171	1484	213
Lane Group Flow (vph)	199	158	72	1301	1649	237
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	5.0	30.0	30.0	30.0
Minimum Split (s)	25.5	25.5	9.0	36.2	36.2	36.2
Total Split (s)	25.5	25.5	9.0	79.0	70.0	70.0
Total Split (%)	24.4%	24.4%	8.6%	75.6%	67.0%	67.0%
Yellow Time (s)	3.3	3.3	3.0	4.2	4.2	4.2
All-Red Time (s)	2.2	2.2	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Min	Min	Min
v/c Ratio	0.63	0.45	0.35	0.56	0.80	0.24
Control Delay	44.2	18.4	8.7	8.1	17.2	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	18.4	8.7	8.1	17.2	1.8
Queue Length 50th (m)	31.3	7.8	3.1	50.1	106.9	0.0
Queue Length 95th (m)	63.5	29.1	7.9	78.0	155.2	9.2
Internal Link Dist (m)	376.5			775.4	314.0	
Turn Bay Length (m)	21.0		123.0			72.0
Base Capacity (vph)	464	473	206	2995	2769	1243
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	0.43	0.33	0.35	0.43	0.60	0.19

Intersection Summary

Cycle Length: 104.5
Actuated Cycle Length: 81.5
Natural Cycle: 80
Control Type: Semi Act-Uncoord

Splits and Phases: 8: Paris St & York St

8: Paris St & York St

Total (2027) AM Peak Hour

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Volume (vph)	179	142	65	1171	1484	213
Future Volume (vph)	179	142	65	1171	1484	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1515	1770	3471	3539	1530
Flt Permitted	0.95	1.00	0.08	1.00	1.00	1.00
Satd. Flow (perm)	1770	1515	144	3471	3539	1530
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	199	158	72	1301	1649	237
RTOR Reduction (vph)	0	86	0	0	0	98
Lane Group Flow (vph)	199	72	72	1301	1649	139
Confl. Peds. (#/hr)	1	15	8			8
Heavy Vehicles (%)	2%	4%	2%	4%	2%	2%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	14.5	14.5	55.5	55.5	47.8	47.8
Effective Green, g (s)	14.5	14.5	55.5	55.5	47.8	47.8
Actuated g/C Ratio	0.18	0.18	0.68	0.68	0.59	0.59
Clearance Time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	314	268	171	2357	2070	895
v/s Ratio Prot	c0.11		0.02	c0.37	c0.47	
v/s Ratio Perm		0.05	0.27			0.09
v/c Ratio	0.63	0.27	0.42	0.55	0.80	0.15
Uniform Delay, d1	31.1	29.0	11.1	6.7	13.2	7.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.1	0.5	1.7	0.3	2.2	0.1
Delay (s)	35.3	29.6	12.8	7.0	15.4	7.8
Level of Service	D	C	B	A	B	A
Approach Delay (s)	32.8			7.3	14.4	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	81.7	Sum of lost time (s)	15.7
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	180	232	1009	368	680	954
Future Volume (vph)	180	232	1009	368	680	954
Lane Group Flow (vph)	188	242	1051	383	708	994
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Detector Phase	8	8 1	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0		15.0	15.0	10.0	15.0
Minimum Split (s)	30.8		40.2	40.2	15.0	40.2
Total Split (s)	30.8		56.2	56.2	33.0	89.2
Total Split (%)	25.7%		46.8%	46.8%	27.5%	74.3%
Yellow Time (s)	3.3		4.2	4.2	3.0	4.2
All-Red Time (s)	2.5		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8		6.2	6.2	5.0	6.2
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None		Min	Min	None	Min
v/c Ratio	0.37	0.32	0.77	0.53	0.77	0.40
Control Delay	39.4	15.3	28.8	13.0	39.2	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	15.3	28.8	13.0	39.2	5.9
Queue Length 50th (m)	16.6	22.4	88.4	23.7	60.8	31.0
Queue Length 95th (m)	31.3	49.4	131.6	57.6	#113.6	56.1
Internal Link Dist (m)	679.1		533.6			775.4
Turn Bay Length (m)	158.0			37.0	175.0	
Base Capacity (vph)	980	832	2003	965	1109	3069
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	0.19	0.29	0.52	0.40	0.64	0.32

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 91.2
Natural Cycle: 90
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Ramsey Lake Rd & Paris St

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	180	232	1009	368	680	954
Future Volume (vph)	180	232	1009	368	680	954
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	6.2	6.2	5.0	6.2
Lane Util. Factor	0.97	1.00	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1568	3505	1545	3467	3471
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1568	3505	1545	3467	3471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	188	242	1051	383	708	994
RTOR Reduction (vph)	0	17	0	121	0	0
Lane Group Flow (vph)	188	225	1051	262	708	994
Confl. Peds. (#/hr)		13		14	14	
Heavy Vehicles (%)	2%	3%	3%	2%	1%	4%
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Actuated Green, G (s)	13.5	43.6	35.9	35.9	24.3	65.2
Effective Green, g (s)	13.5	43.6	35.9	35.9	24.3	65.2
Actuated g/C Ratio	0.15	0.48	0.40	0.40	0.27	0.72
Clearance Time (s)	5.8		6.2	6.2	5.0	6.2
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	510	753	1387	611	928	2495
v/s Ratio Prot	0.05	c0.14	c0.30		c0.20	0.29
v/s Ratio Perm				0.17		
v/c Ratio	0.37	0.30	0.76	0.43	0.76	0.40
Uniform Delay, d1	34.8	14.3	23.6	19.9	30.5	5.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.2	2.4	0.5	3.8	0.1
Delay (s)	35.2	14.5	26.1	20.4	34.3	5.1
Level of Service	D	B	C	C	C	A
Approach Delay (s)	23.6		24.6			17.3
Approach LOS	C		C			B

Intersection Summary			
HCM 2000 Control Delay	21.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	90.7	Sum of lost time (s)	17.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱	↰↰	↑↱	↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	181	575	608	478	108	1080	778	26	852	253
Future Volume (vph)	181	575	608	478	108	1080	778	26	852	253
Lane Group Flow (vph)	181	649	608	492	108	1080	778	26	852	253
Turn Type	pm+pt	NA	Prot	NA	pm+pt	NA	pt+ov	Perm	NA	pm+ov
Protected Phases	7	4	3	8	5	2	2 3		6	7
Permitted Phases	4				2			6		6
Detector Phase	7	4	3	8	5	2	2 3	6	6	7
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	15.0		15.0	15.0	5.0
Minimum Split (s)	10.0	31.2	10.0	31.2	10.0	40.1		40.1	40.1	10.0
Total Split (s)	35.1	40.3	34.0	39.2	22.0	63.0		41.0	41.0	35.1
Total Split (%)	25.6%	29.4%	24.8%	28.6%	16.0%	45.9%		29.9%	29.9%	25.6%
Yellow Time (s)	3.0	3.7	3.0	3.7	3.0	3.7		3.7	3.7	3.0
All-Red Time (s)	2.0	2.5	2.0	2.5	2.0	2.4		2.4	2.4	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	6.2	5.0	6.2	5.0	6.1		6.1	6.1	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead			Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min		Min	Min	None
v/c Ratio	0.48	0.79	0.79	0.42	0.43	0.54	0.72	0.22	0.65	0.39
Control Delay	23.4	50.6	53.0	32.7	28.9	28.8	17.1	42.2	41.8	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	3.1	0.0	0.0	0.0
Total Delay	23.4	50.6	53.0	32.7	28.9	28.8	20.2	42.2	41.8	18.0
Queue Length 50th (m)	24.8	82.2	75.2	49.7	17.3	76.6	107.6	5.2	70.1	29.5
Queue Length 95th (m)	43.9	111.9	#109.5	75.5	31.9	97.3	177.4	14.9	93.5	52.1
Internal Link Dist (m)		364.5		324.4		160.9			177.4	
Turn Bay Length (m)	57.0		85.0		70.0		6.0	24.0		6.0
Base Capacity (vph)	599	1076	894	1227	340	2573	1134	151	1635	878
Starvation Cap Reductn	0	0	0	0	0	0	249	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	0.30	0.60	0.68	0.40	0.32	0.42	0.88	0.17	0.52	0.29

Intersection Summary

Cycle Length: 137.3

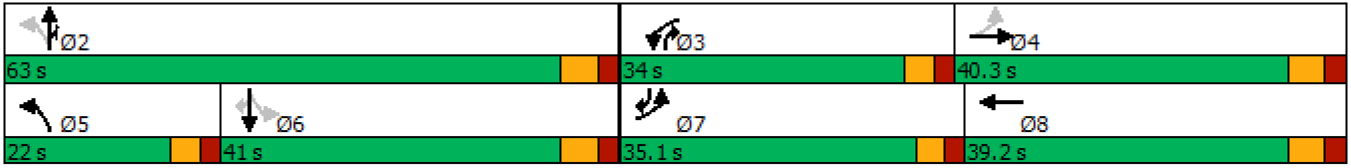
Actuated Cycle Length: 116.8

Natural Cycle: 95

Control Type: Semi Act-Uncoord

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

Splits and Phases: 1: Paris St & Brady St



700 Paris St
1: Paris St & Brady St

HCM Signalized Intersection Capacity Analysis
Total (2027) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰↰	↑↱		↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	181	575	74	608	478	14	108	1080	778	26	852	253
Future Volume (vph)	181	575	74	608	478	14	108	1080	778	26	852	253
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.2		5.0	6.2		5.0	6.1	6.1	6.1	6.1	5.0
Lane Util. Factor	1.00	0.95		0.97	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1580	3525		3467	3491		1751	5085	1615	1774	5085	1574
Flt Permitted	0.47	1.00		0.95	1.00		0.17	1.00	1.00	0.25	1.00	1.00
Satd. Flow (perm)	786	3525		3467	3491		306	5085	1615	471	5085	1574
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	181	575	74	608	478	14	108	1080	778	26	852	253
RTOR Reduction (vph)	0	8	0	0	1	0	0	0	15	0	0	45
Lane Group Flow (vph)	181	641	0	608	491	0	108	1080	763	26	852	208
Confl. Peds. (#/hr)	9		6	6		9	25		33	33		25
Heavy Vehicles (%)	14%	0%	4%	1%	3%	0%	3%	2%	0%	1%	2%	0%
Turn Type	pm+pt	NA		Prot	NA		pm+pt	NA	pt+ov	Perm	NA	pm+ov
Protected Phases	7	4		3	8		5	2	2 3		6	7
Permitted Phases	4						2			6		6
Actuated Green, G (s)	41.0	27.1		26.1	39.3		45.7	45.7	77.9	30.2	30.2	44.1
Effective Green, g (s)	41.0	27.1		26.1	39.3		45.7	45.7	77.9	30.2	30.2	44.1
Actuated g/C Ratio	0.35	0.23		0.22	0.34		0.39	0.39	0.67	0.26	0.26	0.38
Clearance Time (s)	5.0	6.2		5.0	6.2		5.0	6.1		6.1	6.1	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	372	822		778	1180		250	1999	1082	122	1321	597
v/s Ratio Prot	0.06	c0.18		c0.18	0.14		0.04	0.21	c0.47		0.17	0.04
v/s Ratio Perm	0.11						0.13			0.06		0.09
v/c Ratio	0.49	0.78		0.78	0.42		0.43	0.54	0.71	0.21	0.64	0.35
Uniform Delay, d1	27.5	41.8		42.4	29.6		24.3	27.2	12.0	33.7	38.2	25.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	4.8		5.1	0.2		1.2	0.3	2.1	0.9	1.1	0.4
Delay (s)	28.5	46.6		47.5	29.8		25.5	27.5	14.1	34.6	39.3	26.1
Level of Service	C	D		D	C		C	C	B	C	D	C
Approach Delay (s)		42.6			39.6			22.1			36.3	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	116.2	Sum of lost time (s)	22.3
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↰	↑↱	↰	↑	↱	↰	↑↑↱	↰	↑↑↱
Traffic Volume (vph)	48	70	219	68	154	164	1702	121	1368
Future Volume (vph)	48	70	219	68	154	164	1702	121	1368
Lane Group Flow (vph)	49	297	223	69	157	167	2103	123	1441
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	4.5	5.0	5.0	5.0
Minimum Split (s)	31.7	31.7	31.7	31.7	31.7	9.0	41.1	9.0	41.1
Total Split (s)	45.0	45.0	45.0	45.0	45.0	12.0	55.0	9.0	52.0
Total Split (%)	41.3%	41.3%	41.3%	41.3%	41.3%	11.0%	50.5%	8.3%	47.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.14	0.32	0.84	0.13	0.32	0.66	0.79	0.69	0.56
Control Delay	25.6	16.3	58.5	25.1	10.7	25.8	21.5	36.2	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.6	16.3	58.5	25.1	10.7	25.8	21.5	36.2	18.6
Queue Length 50th (m)	7.1	14.0	40.2	10.0	6.9	11.8	108.8	8.2	66.3
Queue Length 95th (m)	15.8	24.2	68.6	19.9	21.4	#47.7	176.7	#43.3	107.4
Internal Link Dist (m)		187.2		465.5			478.0		160.9
Turn Bay Length (m)	21.0		133.0		62.0	34.0		48.0	
Base Capacity (vph)	543	1410	419	817	715	252	2673	177	2552
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.21	0.53	0.08	0.22	0.66	0.79	0.69	0.56

Intersection Summary

Cycle Length: 109

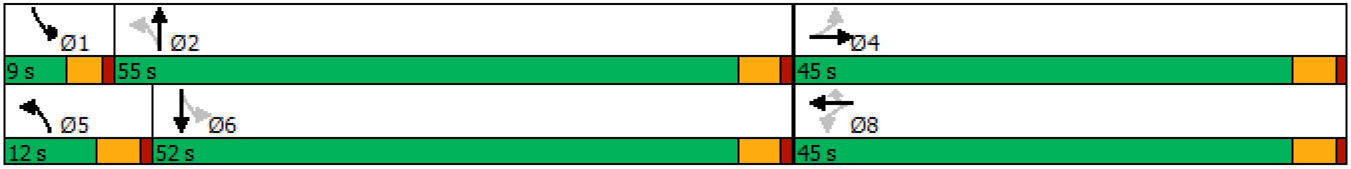
Actuated Cycle Length: 95

Natural Cycle: 85

Control Type: Semi Act-Uncoord

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

Splits and Phases: 2: Paris St & Van Horne St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑	↱	↰	↑↑↱		↰	↑↑↱	
Traffic Volume (vph)	48	70	221	219	68	154	164	1702	359	121	1368	44
Future Volume (vph)	48	70	221	219	68	154	164	1702	359	121	1368	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.0	4.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.89		1.00	1.00	0.85	1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1689	3125		1767	1900	1521	1770	4938		1805	5056	
Flt Permitted	0.71	1.00		0.52	1.00	1.00	0.11	1.00		0.08	1.00	
Satd. Flow (perm)	1266	3125		977	1900	1521	207	4938		159	5056	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	49	71	226	223	69	157	167	1737	366	123	1396	45
RTOR Reduction (vph)	0	84	0	0	0	79	0	26	0	0	2	0
Lane Group Flow (vph)	49	213	0	223	69	78	167	2077	0	123	1439	0
Confl. Peds. (#/hr)	13		3	3		13	3		17	17		3
Heavy Vehicles (%)	6%	2%	1%	2%	0%	4%	2%	2%	1%	0%	2%	3%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	25.9	25.9		25.9	25.9	25.9	58.6	51.0		52.9	47.9	
Effective Green, g (s)	25.9	25.9		25.9	25.9	25.9	58.6	51.0		52.9	47.9	
Actuated g/C Ratio	0.27	0.27		0.27	0.27	0.27	0.62	0.54		0.56	0.50	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	345	852		266	518	415	252	2653		175	2551	
v/s Ratio Prot		0.07			0.04		c0.05	c0.42		0.04	0.28	
v/s Ratio Perm	0.04			c0.23		0.05	0.35			0.35		
v/c Ratio	0.14	0.25		0.84	0.13	0.19	0.66	0.78		0.70	0.56	
Uniform Delay, d1	26.1	26.9		32.5	26.0	26.4	11.3	17.5		15.3	16.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2		20.0	0.1	0.2	6.4	2.4		12.1	0.9	
Delay (s)	26.3	27.1		52.6	26.1	26.7	17.7	19.9		27.3	17.2	
Level of Service	C	C		D	C	C	B	B		C	B	
Approach Delay (s)		27.0			39.4			19.8			18.0	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	94.9	Sum of lost time (s)	13.5
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✥		✥	↰	↑↱	↰	↑↱
Traffic Volume (vph)	10	3	63	0	8	2084	80	1717
Future Volume (vph)	10	3	63	0	8	2084	80	1717
Lane Group Flow (vph)	0	15	0	174	8	2193	82	1775
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	20.0	20.0	5.0	20.0
Minimum Split (s)	25.7	25.7	25.7	25.7	34.8	34.8	9.0	34.8
Total Split (s)	25.7	25.7	25.7	25.7	85.3	85.3	9.0	94.3
Total Split (%)	21.4%	21.4%	21.4%	21.4%	71.1%	71.1%	7.5%	78.6%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.7
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	1.0	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.7		5.7	5.8	5.8	4.0	5.8
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	None	Min
v/c Ratio		0.08		0.69	0.06	0.91	0.51	0.67
Control Delay		39.8		45.1	8.1	22.3	22.4	8.4
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		39.8		45.1	8.1	22.3	22.4	8.4
Queue Length 50th (m)		2.8		25.7	0.6	196.4	3.5	83.3
Queue Length 95th (m)		9.3		50.7	2.7	#291.7	#20.8	128.0
Internal Link Dist (m)		561.8		431.0		175.2		478.0
Turn Bay Length (m)					33.0		23.0	
Base Capacity (vph)		296		347	150	2700	160	2935
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		0.05		0.50	0.05	0.81	0.51	0.60

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 102.8

Natural Cycle: 100

Control Type: Semi Act-Uncoord

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

Splits and Phases: 3: Paris St & John St

HCM Signalized Intersection Capacity Analysis
Total (2027) PM Peak Hour

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	10	3	2	63	0	106	8	2084	44	80	1717	5
Future Volume (vph)	10	3	2	63	0	106	8	2084	44	80	1717	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.92		1.00	1.00		1.00	1.00	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1799			1627		1801	3528		1736	3537	
Flt Permitted		0.76			0.87		0.10	1.00		0.05	1.00	
Satd. Flow (perm)		1422			1444		198	3528		99	3537	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	10	3	2	65	0	109	8	2148	45	82	1770	5
RTOR Reduction (vph)	0	2	0	0	53	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	13	0	0	121	0	8	2192	0	82	1775	0
Confl. Peds. (#/hr)	3		4	4		3	14		2	2		14
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%	0%	2%	0%	4%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		14.2			14.2		69.8	69.8		77.5	77.5	
Effective Green, g (s)		14.2			14.2		69.8	69.8		77.5	77.5	
Actuated g/C Ratio		0.14			0.14		0.68	0.68		0.75	0.75	
Clearance Time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		195			198		133	2386		133	2656	
v/s Ratio Prot								c0.62		0.02	c0.50	
v/s Ratio Perm		0.01			c0.08		0.04			0.44		
v/c Ratio		0.07			0.61		0.06	0.92		0.62	0.67	
Uniform Delay, d1		38.7			41.9		5.6	14.3		23.1	6.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			5.2		0.2	6.2		8.2	0.6	
Delay (s)		38.9			47.1		5.8	20.5		31.4	7.1	
Level of Service		D			D		A	C		C	A	
Approach Delay (s)		38.9			47.1			20.4			8.1	
Approach LOS		D			D			C			A	

Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	103.2	Sum of lost time (s)	15.5
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			↰↑↱			↰↑↱	
Traffic Volume (veh/h)	9	0	7	3	0	2	1	2109	1	1	1854	13
Future Volume (Veh/h)	9	0	7	3	0	2	1	2109	1	1	1854	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	9	0	7	3	0	2	1	2197	1	1	1931	14
Pedestrians		3			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								347			199	
pX, platoon unblocked	0.39	0.39	0.70	0.39	0.39	0.24	0.70			0.24		
vC, conflicting volume	3046	4145	976	3176	4152	1101	1948			2200		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	2488	112	17	2505	0	1499			0		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	99	99	100	99	100			100		
cM capacity (veh/h)	396	12	648	384	11	264	317			396		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	16	5	1100	1100	966	980
Volume Left	9	3	1	0	1	0
Volume Right	7	2	0	1	0	14
cSH	477	325	317	1700	396	1700
Volume to Capacity	0.03	0.02	0.00	0.65	0.00	0.58
Queue Length 95th (m)	0.8	0.4	0.1	0.0	0.1	0.0
Control Delay (s)	12.8	16.2	0.2	0.0	0.1	0.0
Lane LOS	B	C	A		A	
Approach Delay (s)	12.8	16.2	0.1		0.0	
Approach LOS	B	C				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑↱			↰↑
Traffic Volume (veh/h)	1	16	2086	6	21	1838
Future Volume (Veh/h)	1	16	2086	6	21	1838
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	17	2196	6	22	1935
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			225			321
pX, platoon unblocked	0.38	0.22			0.22	
vC, conflicting volume	3212	1102			2203	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0			0	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	93			94	
cM capacity (veh/h)	369	243			364	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	18	1464	738	667	1290
Volume Left	1	0	0	22	0
Volume Right	17	0	6	0	0
cSH	248	1700	1700	364	1700
Volume to Capacity	0.07	0.86	0.43	0.06	0.76
Queue Length 95th (m)	1.9	0.0	0.0	1.5	0.0
Control Delay (s)	20.7	0.0	0.0	2.0	0.0
Lane LOS	C			A	
Approach Delay (s)	20.7	0.0		0.7	
Approach LOS	C				

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		

6: Bell Park Rd & Facer St

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↰	Y	
Traffic Volume (veh/h)	7	21	0	2	15	0
Future Volume (Veh/h)	7	21	0	2	15	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67
Hourly flow rate (vph)	10	31	0	3	22	0
Pedestrians	1			2		
Lane Width (m)	3.6			3.6		
Walking Speed (m/s)	1.2			1.2		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			41		30	28
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			41		30	28
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	100
cM capacity (veh/h)			1581		989	1052

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	41	3	22
Volume Left	0	0	22
Volume Right	31	0	0
cSH	1700	1581	989
Volume to Capacity	0.02	0.00	0.02
Queue Length 95th (m)	0.0	0.0	0.5
Control Delay (s)	0.0	0.0	8.7
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.7
Approach LOS			A

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	14.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✥	↰	↱	↰	↑↱	↰	↑↱
Traffic Volume (vph)	25	1	44	3	23	2020	54	1728
Future Volume (vph)	25	1	44	3	23	2020	54	1728
Lane Group Flow (vph)	0	44	48	56	25	2268	59	1910
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	30.0	30.0	30.0	30.0
Minimum Split (s)	26.0	26.0	26.0	26.0	35.9	35.9	35.9	35.9
Total Split (s)	26.0	26.0	26.0	26.0	94.0	94.0	94.0	94.0
Total Split (%)	21.7%	21.7%	21.7%	21.7%	78.3%	78.3%	78.3%	78.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.7	3.7	3.7	3.7
All-Red Time (s)	2.5	2.5	2.5	2.5	2.2	2.2	2.2	2.2
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0	6.0	5.9	5.9	5.9	5.9
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Min	Min	Min	Min
v/c Ratio		0.33	0.38	0.34	0.18	0.77	0.76	0.65
Control Delay		39.8	55.8	40.2	6.1	8.0	68.1	5.6
Queue Delay		0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay		39.8	55.8	40.2	6.1	8.1	68.1	5.6
Queue Length 50th (m)		6.0	10.4	8.1	1.0	111.6	5.4	73.0
Queue Length 95th (m)		17.6	22.7	21.1	4.4	177.3	#22.2	113.5
Internal Link Dist (m)		192.5		282.1		313.9		201.2
Turn Bay Length (m)					40.0		100.0	
Base Capacity (vph)		262	263	320	141	2955	77	2961
Starvation Cap Reductn		0	0	0	0	86	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0
Reduced v/c Ratio		0.17	0.18	0.17	0.18	0.79	0.77	0.65

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 105.9

Natural Cycle: 90

Control Type: Semi Act-Uncoord

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

Splits and Phases: 7: Paris St & Boland Ave/Paris Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	25	1	15	44	3	49	23	2020	66	54	1728	29
Future Volume (vph)	25	1	15	44	3	49	23	2020	66	54	1728	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		5.9	5.9		5.9	5.9	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.95		1.00	0.86		1.00	1.00		1.00	1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1628		1805	1608		1804	3522		1805	3530	
Flt Permitted		0.78		0.73	1.00		0.09	1.00		0.05	1.00	
Satd. Flow (perm)		1308		1384	1608		169	3522		93	3530	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	1	16	48	3	53	25	2196	72	59	1878	32
RTOR Reduction (vph)	0	15	0	0	17	0	0	1	0	0	1	0
Lane Group Flow (vph)	0	29	0	48	39	0	25	2267	0	59	1909	0
Confl. Peds. (#/hr)	2					2	4		2	2		4
Heavy Vehicles (%)	4%	0%	14%	0%	0%	0%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.9		7.9	7.9		87.4	87.4		87.4	87.4	
Effective Green, g (s)		7.9		7.9	7.9		87.4	87.4		87.4	87.4	
Actuated g/C Ratio		0.07		0.07	0.07		0.82	0.82		0.82	0.82	
Clearance Time (s)		6.0		6.0	6.0		5.9	5.9		5.9	5.9	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		96		101	118		137	2871		75	2878	
v/s Ratio Prot					0.02			c0.64			0.54	
v/s Ratio Perm		0.02		c0.03			0.15			0.64		
v/c Ratio		0.30		0.48	0.33		0.18	0.79		0.79	0.66	
Uniform Delay, d1		47.0		47.7	47.1		2.1	5.1		5.1	4.0	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.8		3.5	1.7		0.6	1.5		40.6	0.6	
Delay (s)		48.8		51.2	48.8		2.8	6.6		45.7	4.6	
Level of Service		D		D	D		A	A		D	A	
Approach Delay (s)		48.8			49.9			6.6			5.8	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	107.2	Sum of lost time (s)	11.9
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Volume (vph)	220	112	152	1889	1576	212
Future Volume (vph)	220	112	152	1889	1576	212
Lane Group Flow (vph)	232	118	160	1988	1659	223
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	5.0	30.0	30.0	30.0
Minimum Split (s)	25.5	25.5	9.0	36.2	36.2	36.2
Total Split (s)	25.5	25.5	12.0	94.5	82.5	82.5
Total Split (%)	21.3%	21.3%	10.0%	78.8%	68.8%	68.8%
Yellow Time (s)	3.3	3.3	3.0	4.2	4.2	4.2
All-Red Time (s)	2.2	2.2	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Min	Min	Min
v/c Ratio	0.74	0.32	0.68	0.81	0.83	0.23
Control Delay	54.4	10.2	33.3	13.2	20.8	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.4	10.2	33.3	13.2	20.8	2.2
Queue Length 50th (m)	42.6	0.0	13.1	127.5	131.4	1.1
Queue Length 95th (m)	#92.8	16.5	#50.6	165.3	166.3	10.2
Internal Link Dist (m)	376.5			774.4	313.9	
Turn Bay Length (m)	21.0		123.0			72.0
Base Capacity (vph)	389	430	236	3184	2875	1286
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	0.60	0.27	0.68	0.62	0.58	0.17

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 94.9

Natural Cycle: 80

Control Type: Semi Act-Uncoord

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

Splits and Phases: 8: Paris St & York St

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Volume (vph)	220	112	152	1889	1576	212
Future Volume (vph)	220	112	152	1889	1576	212
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	1557	1770	3539	3539	1539
Flt Permitted	0.95	1.00	0.07	1.00	1.00	1.00
Satd. Flow (perm)	1787	1557	129	3539	3539	1539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	232	118	160	1988	1659	223
RTOR Reduction (vph)	0	97	0	0	0	90
Lane Group Flow (vph)	232	21	160	1988	1659	133
Confl. Peds. (#/hr)	6	15	4			4
Heavy Vehicles (%)	1%	1%	2%	2%	2%	2%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	16.8	16.8	66.0	66.0	53.8	53.8
Effective Green, g (s)	16.8	16.8	66.0	66.0	53.8	53.8
Actuated g/C Ratio	0.18	0.18	0.70	0.70	0.57	0.57
Clearance Time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	317	276	232	2471	2014	876
v/s Ratio Prot	c0.13		0.06	c0.56	0.47	
v/s Ratio Perm		0.01	0.42			0.09
v/c Ratio	0.73	0.08	0.69	0.80	0.82	0.15
Uniform Delay, d1	36.7	32.4	20.9	9.8	16.5	9.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.4	0.1	8.3	2.0	2.9	0.1
Delay (s)	45.2	32.5	29.1	11.8	19.4	9.7
Level of Service	D	C	C	B	B	A
Approach Delay (s)	40.9			13.1	18.2	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	17.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	94.5	Sum of lost time (s)	15.7
Intersection Capacity Utilization	82.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	532	698	1375	263	365	1290
Future Volume (vph)	532	698	1375	263	365	1290
Lane Group Flow (vph)	591	776	1528	292	406	1433
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Detector Phase	8	8 1	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0		15.0	15.0	10.0	15.0
Minimum Split (s)	30.8		40.2	40.2	15.0	40.2
Total Split (s)	36.0		62.0	62.0	22.0	84.0
Total Split (%)	30.0%		51.7%	51.7%	18.3%	70.0%
Yellow Time (s)	3.3		4.2	4.2	3.0	4.2
All-Red Time (s)	2.5		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8		6.2	6.2	5.0	6.2
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None		Min	Min	None	Min
v/c Ratio	0.67	1.10	0.94	0.37	0.83	0.63
Control Delay	44.4	97.9	43.3	13.6	64.6	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	97.9	43.3	13.6	64.6	14.1
Queue Length 50th (m)	68.4	~219.8	183.1	26.2	51.1	102.0
Queue Length 95th (m)	88.6	#297.5	#235.9	47.5	#75.9	123.3
Internal Link Dist (m)	679.1		533.6			774.4
Turn Bay Length (m)	158.0			37.0	175.0	
Base Capacity (vph)	883	704	1666	808	492	2323
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	0.67	1.10	0.92	0.36	0.83	0.62

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 118.6
Natural Cycle: 110
Control Type: Semi Act-Uncoord
~ 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: 9: Ramsey Lake Rd & Paris St

	↙	↖	↑	↗	↘	↓
Movement	**WBL**	**WBR**	**NBT**	**NBR**	**SBL**	**SBT**
Lane Configurations	↰↰	↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	532	698	1375	263	365	1290
Future Volume (vph)	532	698	1375	263	365	1290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	6.2	6.2	5.0	6.2
Lane Util. Factor	0.97	1.00	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3467	1583	3539	1587	3433	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3467	1583	3539	1587	3433	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	591	776	1528	292	406	1433
RTOR Reduction (vph)	0	7	0	62	0	0
Lane Group Flow (vph)	591	769	1528	230	406	1433
Confl. Peds. (#/hr)		16		5	5	
Heavy Vehicles (%)	1%	2%	2%	0%	2%	2%
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Actuated Green, G (s)	30.2	53.0	54.4	54.4	17.0	76.4
Effective Green, g (s)	30.2	53.0	54.4	54.4	17.0	76.4
Actuated g/C Ratio	0.25	0.45	0.46	0.46	0.14	0.64
Clearance Time (s)	5.8		6.2	6.2	5.0	6.2
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	882	707	1623	727	492	2279
v/s Ratio Prot	0.17	c0.49	c0.43		0.12	0.40
v/s Ratio Perm				0.14		
v/c Ratio	0.67	1.09	0.94	0.32	0.83	0.63
Uniform Delay, d1	39.7	32.8	30.6	20.3	49.4	12.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	60.4	11.3	0.3	10.8	0.5
Delay (s)	41.7	93.2	41.9	20.6	60.2	13.2
Level of Service	D	F	D	C	E	B
Approach Delay (s)	70.9		38.5			23.5
Approach LOS	E		D			C

Intersection Summary			
HCM 2000 Control Delay	41.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	118.6	Sum of lost time (s)	17.0
Intersection Capacity Utilization	92.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱	↰↰	↑↱	↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	181	457	586	422	99	621	465	29	904	260
Future Volume (vph)	181	457	586	422	99	621	465	29	904	260
Lane Group Flow (vph)	197	559	637	470	108	675	505	32	983	283
Turn Type	Prot	NA	Prot	NA	pm+pt	NA	pt+ov	pm+pt	NA	pt+ov
Protected Phases	7	4	3	8	5	2	2 3	1	6	6 7
Permitted Phases					2			6		
Detector Phase	7	4	3	8	5	2	2 3	1	6	6 7
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	15.0		5.0	15.0	
Minimum Split (s)	10.0	31.2	10.0	31.2	10.0	40.1		10.0	40.1	
Total Split (s)	26.1	31.2	34.0	39.1	20.0	44.0		17.0	41.0	
Total Split (%)	20.7%	24.7%	26.9%	31.0%	15.8%	34.9%		13.5%	32.5%	
Yellow Time (s)	3.0	3.7	3.0	3.7	3.0	3.7		3.0	3.7	
All-Red Time (s)	2.0	2.5	2.0	2.5	2.0	2.4		2.0	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.2	5.0	6.2	5.0	6.1		5.0	6.1	
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	Min		None	Min	
v/c Ratio	0.55	0.82	0.81	0.42	0.45	0.39	0.47	0.11	0.76	0.39
Control Delay	55.2	54.2	51.1	32.0	27.3	30.0	7.9	21.6	42.9	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0
Total Delay	55.2	54.2	51.1	32.0	27.3	30.0	8.2	21.6	42.9	15.0
Queue Length 50th (m)	23.9	67.2	75.0	44.8	16.5	48.9	33.2	4.7	81.5	27.5
Queue Length 95th (m)	37.5	#99.3	104.3	68.8	28.6	62.3	61.0	11.0	101.8	49.3
Internal Link Dist (m)		364.5		324.4		160.9			177.4	
Turn Bay Length (m)	57.0		85.0		70.0		6.0	24.0		6.0
Base Capacity (vph)	631	774	892	1167	294	1804	1099	378	1560	832
Starvation Cap Reductn	0	0	0	0	0	0	210	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	0.72	0.71	0.40	0.37	0.37	0.57	0.08	0.63	0.34

Intersection Summary

Cycle Length: 126.2

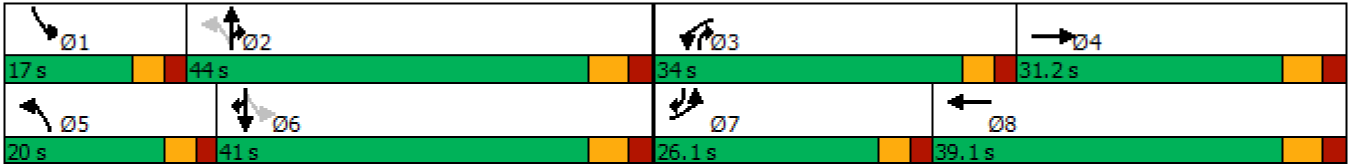
Actuated Cycle Length: 111.6

Natural Cycle: 105

Control Type: Semi Act-Uncoord

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

Splits and Phases: 1: Paris St & Brady St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱		↰↰	↑↱		↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	181	457	57	586	422	10	99	621	465	29	904	260
Future Volume (vph)	181	457	57	586	422	10	99	621	465	29	904	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.2		5.0	6.2		5.0	6.1	6.1	5.0	6.1	6.1
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3273	3357		3367	3461		1671	4988	1568	1717	4893	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.13	1.00	1.00	0.38	1.00	1.00
Satd. Flow (perm)	3273	3357		3367	3461		233	4988	1568	693	4893	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	497	62	637	459	11	108	675	505	32	983	283
RTOR Reduction (vph)	0	8	0	0	1	0	0	0	89	0	0	64
Lane Group Flow (vph)	197	551	0	637	469	0	108	675	416	32	983	219
Confl. Peds. (#/hr)	7		4	4		7	19		10	10		19
Heavy Vehicles (%)	7%	5%	10%	4%	4%	0%	8%	4%	3%	5%	6%	2%
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	pt+ov	pm+pt	NA	pt+ov
Protected Phases	7	4		3	8		5	2	2 3	1	6	6 7
Permitted Phases							2			6		
Actuated Green, G (s)	12.2	22.4		26.0	36.2		47.9	38.8	70.9	35.9	31.8	50.1
Effective Green, g (s)	12.2	22.4		26.0	36.2		47.9	38.8	70.9	35.9	31.8	50.1
Actuated g/C Ratio	0.11	0.20		0.23	0.32		0.42	0.34	0.62	0.32	0.28	0.44
Clearance Time (s)	5.0	6.2		5.0	6.2		5.0	6.1		5.0	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	351	661		770	1102		238	1703	978	255	1369	698
v/s Ratio Prot	0.06	c0.16		c0.19	0.14		c0.04	0.14	0.27	0.00	c0.20	0.14
v/s Ratio Perm							0.15			0.03		
v/c Ratio	0.56	0.83		0.83	0.43		0.45	0.40	0.43	0.13	0.72	0.31
Uniform Delay, d1	48.2	43.8		41.7	30.5		22.4	28.5	10.9	27.1	36.9	20.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	8.9		7.3	0.3		1.4	0.2	0.3	0.2	1.8	0.3
Delay (s)	50.2	52.7		49.0	30.8		23.8	28.6	11.2	27.3	38.7	20.9
Level of Service	D	D		D	C		C	C	B	C	D	C
Approach Delay (s)		52.0			41.2			21.4			34.5	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	35.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	113.6	Sum of lost time (s)	22.3
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↰	↑↱	↰	↑	↱	↰	↑↑↱	↰	↑↑↱
Traffic Volume (vph)	16	27	269	63	148	175	1077	82	1413
Future Volume (vph)	16	27	269	63	148	175	1077	82	1413
Lane Group Flow (vph)	18	132	296	69	163	192	1317	90	1608
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	4.5	5.0	5.0	5.0
Minimum Split (s)	31.7	31.7	31.7	31.7	31.7	9.0	41.1	9.0	41.1
Total Split (s)	37.0	37.0	37.0	37.0	37.0	19.0	41.1	19.0	41.1
Total Split (%)	38.1%	38.1%	38.1%	38.1%	38.1%	19.6%	42.3%	19.6%	42.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.05	0.15	0.83	0.13	0.29	0.65	0.53	0.31	0.74
Control Delay	22.6	7.9	49.1	23.3	5.4	26.6	17.2	11.9	24.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.6	7.9	49.1	23.3	5.4	26.6	17.2	11.9	24.4
Queue Length 50th (m)	2.2	1.9	47.1	8.7	0.0	16.3	56.8	5.9	82.9
Queue Length 95th (m)	7.4	8.5	82.1	19.3	13.8	42.9	86.9	14.4	124.6
Internal Link Dist (m)		187.2		465.5			478.0		160.9
Turn Bay Length (m)	21.0		133.0		62.0	34.0		48.0	
Base Capacity (vph)	449	1176	485	700	704	365	2465	438	2183
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.11	0.61	0.10	0.23	0.53	0.53	0.21	0.74

Intersection Summary

Cycle Length: 97.1

Actuated Cycle Length: 85.9

Natural Cycle: 85

Control Type: Semi Act-Uncoord

Splits and Phases: 2: Paris St & Van Horne St

HCM Signalized Intersection Capacity Analysis
Total (2032) AM Peak Hour w/ Improvements

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑	↱	↰	↑↑↱		↰	↑↑↱	
Traffic Volume (vph)	16	27	93	269	63	148	175	1077	121	82	1413	50
Future Volume (vph)	16	27	93	269	63	148	175	1077	121	82	1413	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.0	4.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.88		1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1566	2905		1801	1827	1576	1703	4871		1752	5049	
Flt Permitted	0.71	1.00		0.67	1.00	1.00	0.09	1.00		0.16	1.00	
Satd. Flow (perm)	1174	2905		1267	1827	1576	168	4871		304	5049	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	18	30	102	296	69	163	192	1184	133	90	1553	55
RTOR Reduction (vph)	0	74	0	0	0	118	0	12	0	0	3	0
Lane Group Flow (vph)	18	58	0	296	69	45	192	1305	0	90	1605	0
Confl. Peds. (#/hr)	4		4	4		4	6		6	6		6
Heavy Vehicles (%)	15%	4%	10%	0%	4%	1%	6%	5%	2%	3%	2%	5%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	24.2	24.2		24.2	24.2	24.2	53.5	43.3		44.3	38.1	
Effective Green, g (s)	24.2	24.2		24.2	24.2	24.2	53.5	43.3		44.3	38.1	
Actuated g/C Ratio	0.28	0.28		0.28	0.28	0.28	0.62	0.50		0.51	0.44	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	327	810		353	509	439	296	2432		258	2218	
v/s Ratio Prot		0.02			0.04		c0.08	0.27		0.02	c0.32	
v/s Ratio Perm	0.02			c0.23		0.03	0.32			0.15		
v/c Ratio	0.06	0.07		0.84	0.14	0.10	0.65	0.54		0.35	0.72	
Uniform Delay, d1	22.9	23.0		29.4	23.4	23.2	15.8	14.8		11.2	20.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0		15.8	0.1	0.1	4.8	0.9		0.8	2.1	
Delay (s)	22.9	23.0		45.2	23.5	23.3	20.7	15.7		12.0	22.1	
Level of Service	C	C		D	C	C	C	B		B	C	
Approach Delay (s)		23.0			35.6			16.3			21.5	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	21.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	86.7	Sum of lost time (s)	13.5
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✣		✣	↰	↑↱	↰	↑↱
Traffic Volume (vph)	8	0	40	2	4	1367	46	1692
Future Volume (vph)	8	0	40	2	4	1367	46	1692
Lane Group Flow (vph)	0	14	0	110	4	1459	48	1772
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	20.0	20.0	5.0	20.0
Minimum Split (s)	25.7	25.7	25.7	25.7	34.8	34.8	9.0	34.8
Total Split (s)	25.7	25.7	25.7	25.7	50.8	50.8	14.0	64.8
Total Split (%)	28.4%	28.4%	28.4%	28.4%	56.1%	56.1%	15.5%	71.6%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.7
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	1.0	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.7		5.7	5.8	5.8	4.0	5.8
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	None	Min
v/c Ratio		0.05		0.38	0.03	0.64	0.16	0.68
Control Delay		0.3		18.4	8.2	11.6	4.0	7.7
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		0.3		18.4	8.2	11.6	4.0	7.7
Queue Length 50th (m)		0.0		4.9	0.2	68.5	1.3	56.2
Queue Length 95th (m)		0.0		20.6	1.7	110.6	4.4	98.5
Internal Link Dist (m)		561.8		431.0		175.2		478.0
Turn Bay Length (m)					33.0		23.0	
Base Capacity (vph)		574		566	157	2673	421	3198
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		0.02		0.19	0.03	0.55	0.11	0.55

Intersection Summary

Cycle Length: 90.5
Actuated Cycle Length: 60.6
Natural Cycle: 75
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Paris St & John St

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	8	0	6	40	2	63	4	1367	34	46	1692	9
Future Volume (vph)	8	0	6	40	2	63	4	1367	34	46	1692	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.92		1.00	1.00		1.00	1.00	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1726			1696		1803	3492		1770	3536	
Flt Permitted		0.84			0.87		0.11	1.00		0.11	1.00	
Satd. Flow (perm)		1493			1501		204	3492		197	3536	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	8	0	6	42	2	66	4	1424	35	48	1762	9
RTOR Reduction (vph)	0	12	0	0	59	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	2	0	0	51	0	4	1457	0	48	1772	0
Confl. Peds. (#/hr)	5		5	5		5	8		4	4		8
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	2%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.0			7.0		37.8	37.8		45.1	45.1	
Effective Green, g (s)		7.0			7.0		37.8	37.8		45.1	45.1	
Actuated g/C Ratio		0.11			0.11		0.59	0.59		0.71	0.71	
Clearance Time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		164			165		121	2075		221	2507	
v/s Ratio Prot								0.42		0.01	c0.50	
v/s Ratio Perm		0.00			c0.03		0.02			0.14		
v/c Ratio		0.01			0.31		0.03	0.70		0.22	0.71	
Uniform Delay, d1		25.2			26.1		5.3	9.0		5.5	5.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0			1.1		0.1	1.1		0.5	0.9	
Delay (s)		25.2			27.2		5.4	10.1		6.0	6.3	
Level of Service		C			C		A	B		A	A	
Approach Delay (s)		25.2			27.2			10.1			6.3	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	63.6	Sum of lost time (s)	15.5
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			↰↑↱			↰↑↱	
Traffic Volume (veh/h)	3	0	9	2	0	2	1	1545	0	0	1771	7
Future Volume (Veh/h)	3	0	9	2	0	2	1	1545	0	0	1771	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	0	10	2	0	2	1	1717	0	0	1968	8
Pedestrians		2			1							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								347			199	
pX, platoon unblocked	0.76	0.76	0.63	0.76	0.76	0.74	0.63			0.74		
vC, conflicting volume	2836	3694	990	2714	3698	860	1978			1718		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1259	2384	0	1098	2389	113	1385			1271		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	7.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.8	2.2			2.2		
p0 queue free %	97	100	99	98	100	100	100			100		
cM capacity (veh/h)	98	26	689	127	26	581	316			410		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	13	4	860	858	984	992
Volume Left	3	2	1	0	0	0
Volume Right	10	2	0	0	0	8
cSH	288	208	316	1700	410	1700
Volume to Capacity	0.05	0.02	0.00	0.51	0.00	0.58
Queue Length 95th (m)	1.1	0.5	0.1	0.0	0.0	0.0
Control Delay (s)	18.1	22.6	0.1	0.0	0.0	0.0
Lane LOS	C	C	A			
Approach Delay (s)	18.1	22.6	0.1		0.0	
Approach LOS	C	C				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

5: Paris St & Facer St

HCM Unsignalized Intersection Capacity Analysis

Total (2032) AM Peak Hour w/ Improvements

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑↱			↰↑
Traffic Volume (veh/h)	2	20	1512	1	16	1769
Future Volume (Veh/h)	2	20	1512	1	16	1769
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	2	22	1680	1	18	1966
Pedestrians						1
Lane Width (m)						3.6
Walking Speed (m/s)						1.2
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			226			321
pX, platoon unblocked	0.74	0.74			0.74	
vC, conflicting volume	2700	842			1681	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	988	72			1211	
tC, single (s)	6.8	6.9			6.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			3.2	
p0 queue free %	99	97			90	
cM capacity (veh/h)	164	724			174	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	24	1120	561	673	1311
Volume Left	2	0	0	18	0
Volume Right	22	0	1	0	0
cSH	563	1700	1700	174	1700
Volume to Capacity	0.04	0.66	0.33	0.10	0.77
Queue Length 95th (m)	1.1	0.0	0.0	2.7	0.0
Control Delay (s)	11.7	0.0	0.0	5.3	0.0
Lane LOS	B			A	
Approach Delay (s)	11.7	0.0		1.8	
Approach LOS	B				

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↰	↖↗	
Traffic Volume (veh/h)	1	16	1	1	20	0
Future Volume (Veh/h)	1	16	1	1	20	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Hourly flow rate (vph)	2	32	2	2	40	0
Pedestrians	1			2	2	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			36		27	22
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			36		27	22
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		96	100
cM capacity (veh/h)			1585		990	1057

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	34	4	40
Volume Left	0	2	40
Volume Right	32	0	0
cSH	1700	1585	990
Volume to Capacity	0.02	0.00	0.04
Queue Length 95th (m)	0.0	0.0	1.0
Control Delay (s)	0.0	3.6	8.8
Lane LOS		A	A
Approach Delay (s)	0.0	3.6	8.8
Approach LOS			A

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	14.6%	ICU Level of Service	A
Analysis Period (min)	15		

7: Paris St & Boland Ave/Paris Driveway

Total (2032) AM Peak Hour w/ Improvements

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✥	↰	↱	↰	↑↱	↰	↑↱
Traffic Volume (vph)	28	0	60	0	6	1414	32	1747
Future Volume (vph)	28	0	60	0	6	1414	32	1747
Lane Group Flow (vph)	0	43	63	51	6	1522	34	1853
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	30.0	30.0	30.0	30.0
Minimum Split (s)	26.0	26.0	26.0	26.0	35.9	35.9	35.9	35.9
Total Split (s)	26.0	26.0	26.0	26.0	55.9	55.9	55.9	55.9
Total Split (%)	31.7%	31.7%	31.7%	31.7%	68.3%	68.3%	68.3%	68.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.7	3.7	3.7	3.7
All-Red Time (s)	2.5	2.5	2.5	2.5	2.2	2.2	2.2	2.2
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0	6.0	5.9	5.9	5.9	5.9
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Min	Min	Min	Min
v/c Ratio		0.18	0.30	0.18	0.05	0.59	0.18	0.72
Control Delay		12.9	30.4	13.7	5.0	6.8	7.2	8.9
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		12.9	30.4	13.7	5.0	6.8	7.2	8.9
Queue Length 50th (m)		0.4	6.8	1.0	0.2	45.2	1.3	66.1
Queue Length 95th (m)		8.7	19.2	10.3	1.5	75.6	5.7	112.2
Internal Link Dist (m)		198.2		192.5		314.0		201.8
Turn Bay Length (m)					40.0		100.0	
Base Capacity (vph)		484	456	560	142	2883	208	2887
Starvation Cap Reductn		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0
Reduced v/c Ratio		0.09	0.14	0.09	0.04	0.53	0.16	0.64

Intersection Summary

Cycle Length: 81.9

Actuated Cycle Length: 62

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Splits and Phases: 7: Paris St & Boland Ave/Paris Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	28	0	13	60	0	48	6	1414	32	32	1747	13
Future Volume (vph)	28	0	13	60	0	48	6	1414	32	32	1747	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		5.9	5.9		5.9	5.9	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt		0.96		1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1757		1805	1615		1805	3495		1805	3502	
Flt Permitted		0.77		0.73	1.00		0.09	1.00		0.13	1.00	
Satd. Flow (perm)		1392		1385	1615		173	3495		252	3502	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	29	0	14	63	0	51	6	1488	34	34	1839	14
RTOR Reduction (vph)	0	34	0	0	36	0	0	2	0	0	1	0
Lane Group Flow (vph)	0	9	0	63	15	0	6	1520	0	34	1852	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.4		7.4	7.4		43.9	43.9		43.9	43.9	
Effective Green, g (s)		7.4		7.4	7.4		43.9	43.9		43.9	43.9	
Actuated g/C Ratio		0.12		0.12	0.12		0.69	0.69		0.69	0.69	
Clearance Time (s)		6.0		6.0	6.0		5.9	5.9		5.9	5.9	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		162		162	189		120	2427		175	2432	
v/s Ratio Prot					0.01			0.43			c0.53	
v/s Ratio Perm		0.01		c0.05			0.03			0.13		
v/c Ratio		0.05		0.39	0.08		0.05	0.63		0.19	0.76	
Uniform Delay, d1		24.8		25.8	24.9		3.1	5.2		3.4	6.3	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1		1.5	0.2		0.2	0.5		0.5	1.5	
Delay (s)		24.9		27.4	25.0		3.2	5.7		4.0	7.7	
Level of Service		C		C	C		A	A		A	A	
Approach Delay (s)		24.9			26.3			5.7			7.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	11.9
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Volume (vph)	193	153	70	1259	1592	228
Future Volume (vph)	193	153	70	1259	1592	228
Lane Group Flow (vph)	214	170	78	1399	1769	253
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	5.0	30.0	30.0	30.0
Minimum Split (s)	25.5	25.5	9.0	36.2	36.2	36.2
Total Split (s)	25.5	25.5	9.0	79.0	70.0	70.0
Total Split (%)	24.4%	24.4%	8.6%	75.6%	67.0%	67.0%
Yellow Time (s)	3.3	3.3	3.0	4.2	4.2	4.2
All-Red Time (s)	2.2	2.2	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Min	Min	Min
v/c Ratio	0.67	0.48	0.40	0.60	0.84	0.25
Control Delay	47.5	21.9	11.4	8.8	19.1	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.5	21.9	11.4	8.8	19.1	2.1
Queue Length 50th (m)	37.7	11.7	3.7	61.2	129.6	0.9
Queue Length 95th (m)	68.2	34.0	10.6	87.7	178.2	10.6
Internal Link Dist (m)	376.5			775.4	314.0	
Turn Bay Length (m)	21.0		123.0			72.0
Base Capacity (vph)	440	449	195	2840	2625	1191
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	0.49	0.38	0.40	0.49	0.67	0.21

Intersection Summary

Cycle Length: 104.5

Actuated Cycle Length: 86.4

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Splits and Phases: 8: Paris St & York St

	↗	↘	↖	↑	↓	↙
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Volume (vph)	193	153	70	1259	1592	228
Future Volume (vph)	193	153	70	1259	1592	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1514	1770	3471	3539	1528
Flt Permitted	0.95	1.00	0.07	1.00	1.00	1.00
Satd. Flow (perm)	1770	1514	134	3471	3539	1528
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	214	170	78	1399	1769	253
RTOR Reduction (vph)	0	80	0	0	0	97
Lane Group Flow (vph)	214	90	78	1399	1769	156
Confl. Peds. (#/hr)	1	15	8			8
Heavy Vehicles (%)	2%	4%	2%	4%	2%	2%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	15.6	15.6	59.3	59.3	51.6	51.6
Effective Green, g (s)	15.6	15.6	59.3	59.3	51.6	51.6
Actuated g/C Ratio	0.18	0.18	0.68	0.68	0.60	0.60
Clearance Time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	318	272	161	2376	2108	910
v/s Ratio Prot	c0.12		0.02	c0.40	c0.50	
v/s Ratio Perm		0.06	0.31			0.10
v/c Ratio	0.67	0.33	0.48	0.59	0.84	0.17
Uniform Delay, d1	33.1	30.9	13.6	7.2	14.1	7.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.5	0.7	2.3	0.4	3.1	0.1
Delay (s)	38.6	31.7	15.9	7.6	17.3	8.0
Level of Service	D	C	B	A	B	A
Approach Delay (s)	35.6			8.0	16.1	
Approach LOS	D			A	B	

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	86.6	Sum of lost time (s)	15.7
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	194	249	1085	397	729	1025
Future Volume (vph)	194	249	1085	397	729	1025
Lane Group Flow (vph)	202	259	1130	414	759	1068
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Detector Phase	8	8 1	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0		15.0	15.0	10.0	15.0
Minimum Split (s)	30.8		40.2	40.2	15.0	40.2
Total Split (s)	30.8		56.2	56.2	33.0	89.2
Total Split (%)	25.7%		46.8%	46.8%	27.5%	74.3%
Yellow Time (s)	3.3		4.2	4.2	3.0	4.2
All-Red Time (s)	2.5		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8		6.2	6.2	5.0	6.2
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None		Min	Min	None	Min
v/c Ratio	0.49	0.20	0.78	0.55	0.78	0.41
Control Delay	44.4	13.9	28.4	13.3	38.8	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	13.9	28.4	13.3	38.8	4.8
Queue Length 50th (m)	19.0	13.1	97.8	28.9	67.5	31.1
Queue Length 95th (m)	33.7	26.2	130.4	59.8	#115.1	47.1
Internal Link Dist (m)	679.1		533.6			775.4
Turn Bay Length (m)	158.0			37.0	175.0	
Base Capacity (vph)	942	1356	1924	935	1066	3059
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	0.21	0.19	0.59	0.44	0.71	0.35

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 93

Natural Cycle: 90

Control Type: Semi Act-Uncoord

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

Splits and Phases: 9: Ramsey Lake Rd & Paris St

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	194	249	1085	397	729	1025
Future Volume (vph)	194	249	1085	397	729	1025
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	6.2	6.2	5.0	6.2
Lane Util. Factor	0.97	0.88	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	2760	3505	1545	3467	3471
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	2760	3505	1545	3467	3471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	202	259	1130	414	759	1068
RTOR Reduction (vph)	0	24	0	118	0	0
Lane Group Flow (vph)	202	235	1130	296	759	1068
Confl. Peds. (#/hr)		13		14	14	
Heavy Vehicles (%)	2%	3%	3%	2%	1%	4%
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Actuated Green, G (s)	11.2	43.1	38.4	38.4	26.1	69.5
Effective Green, g (s)	11.2	43.1	38.4	38.4	26.1	69.5
Actuated g/C Ratio	0.12	0.46	0.41	0.41	0.28	0.75
Clearance Time (s)	5.8		6.2	6.2	5.0	6.2
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	414	1283	1451	640	976	2602
v/s Ratio Prot	c0.06	0.09	c0.32		c0.22	0.31
v/s Ratio Perm				0.19		
v/c Ratio	0.49	0.18	0.78	0.46	0.78	0.41
Uniform Delay, d1	38.1	14.5	23.5	19.7	30.6	4.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	0.1	2.7	0.5	4.0	0.1
Delay (s)	39.0	14.6	26.2	20.2	34.6	4.3
Level of Service	D	B	C	C	C	A
Approach Delay (s)	25.3		24.6			16.9
Approach LOS	C		C			B

Intersection Summary			
HCM 2000 Control Delay	21.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	92.7	Sum of lost time (s)	17.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

700 Paris St
1: Paris St & Brady St

Queues
Total (2032) PM Peak Hour w/ Improvements

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱	↰↰	↑↱	↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	195	619	652	515	116	1163	833	28	916	273
Future Volume (vph)	195	619	652	515	116	1163	833	28	916	273
Lane Group Flow (vph)	195	698	652	530	116	1163	833	28	916	273
Turn Type	Prot	NA	Prot	NA	pm+pt	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	7	4	3	8	5	2	2 3		6	6 7
Permitted Phases					2			6		
Detector Phase	7	4	3	8	5	2	2 3	6	6	6 7
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	15.0		15.0	15.0	
Minimum Split (s)	10.0	31.2	10.0	31.2	10.0	40.1		40.1	40.1	
Total Split (s)	35.1	40.3	34.0	39.2	22.0	63.0		41.0	41.0	
Total Split (%)	25.6%	29.4%	24.8%	28.6%	16.0%	45.9%		29.9%	29.9%	
Yellow Time (s)	3.0	3.7	3.0	3.7	3.0	3.7		3.7	3.7	
All-Red Time (s)	2.0	2.5	2.0	2.5	2.0	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	
Total Lost Time (s)	5.0	6.2	5.0	6.2	5.0	6.1		6.1	6.1	
Lead/Lag	Lead	Lag	Lead	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	None	None	None	None	None	Min		Min	Min	
v/c Ratio	0.59	0.83	0.84	0.43	0.48	0.57	0.77	0.25	0.67	0.38
Control Delay	62.3	55.2	58.9	33.5	31.1	30.5	20.2	44.6	43.6	19.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	9.0	0.0	0.0	0.0
Total Delay	62.3	55.2	58.9	33.5	31.1	30.5	29.1	44.6	43.6	19.4
Queue Length 50th (m)	27.5	97.4	92.3	59.7	19.7	88.9	140.3	5.9	80.4	35.4
Queue Length 95th (m)	40.2	121.6	#126.4	80.6	33.9	106.3	208.2	16.4	102.0	59.3
Internal Link Dist (m)		364.5		324.4		160.9			177.4	
Turn Bay Length (m)	57.0		85.0		70.0		6.0	24.0		6.0
Base Capacity (vph)	761	996	827	1224	317	2381	1107	128	1554	927
Starvation Cap Reductn	0	0	0	0	0	0	244	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	0.26	0.70	0.79	0.43	0.37	0.49	0.97	0.22	0.59	0.29

Intersection Summary

Cycle Length: 137.3

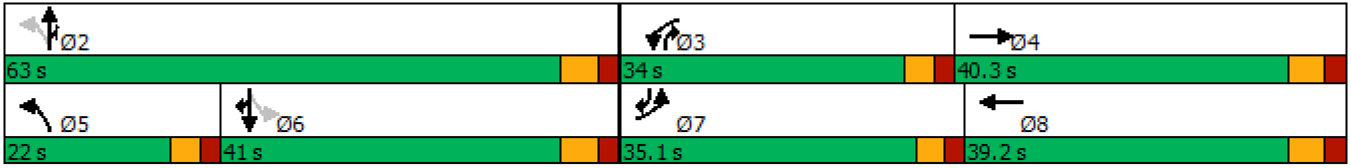
Actuated Cycle Length: 124.3

Natural Cycle: 105

Control Type: Semi Act-Uncoord

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

Splits and Phases: 1: Paris St & Brady St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱		↰↰	↑↱		↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	195	619	79	652	515	15	116	1163	833	28	916	273
Future Volume (vph)	195	619	79	652	515	15	116	1163	833	28	916	273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.2		5.0	6.2		5.0	6.1	6.1	6.1	6.1	6.1
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3072	3526		3467	3491		1751	5085	1615	1774	5085	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.15	1.00	1.00	0.22	1.00	1.00
Satd. Flow (perm)	3072	3526		3467	3491		271	5085	1615	420	5085	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	195	619	79	652	515	15	116	1163	833	28	916	273
RTOR Reduction (vph)	0	8	0	0	1	0	0	0	11	0	0	43
Lane Group Flow (vph)	195	690	0	652	529	0	116	1163	822	28	916	230
Confl. Peds. (#/hr)	9		6	6		9	25		33	33		25
Heavy Vehicles (%)	14%	0%	4%	1%	3%	0%	3%	2%	0%	1%	2%	0%
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	7	4		3	8		5	2	2 3		6	6 7
Permitted Phases							2			6		
Actuated Green, G (s)	13.5	29.3		27.8	43.6		49.6	49.6	83.5	33.6	33.6	53.2
Effective Green, g (s)	13.5	29.3		27.8	43.6		49.6	49.6	83.5	33.6	33.6	53.2
Actuated g/C Ratio	0.11	0.24		0.22	0.35		0.40	0.40	0.67	0.27	0.27	0.43
Clearance Time (s)	5.0	6.2		5.0	6.2		5.0	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	334	833		777	1227		239	2034	1087	113	1377	692
v/s Ratio Prot	0.06	c0.20		c0.19	0.15		0.04	0.23	c0.51		0.18	0.14
v/s Ratio Perm							0.15			0.07		
v/c Ratio	0.58	0.83		0.84	0.43		0.49	0.57	0.76	0.25	0.67	0.33
Uniform Delay, d1	52.6	45.0		46.0	30.7		25.9	28.9	13.5	35.3	40.2	23.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.6	6.8		7.9	0.2		1.6	0.4	3.0	1.2	1.2	0.3
Delay (s)	55.2	51.8		53.9	31.0		27.4	29.3	16.5	36.5	41.4	23.9
Level of Service	E	D		D	C		C	C	B	D	D	C
Approach Delay (s)		52.5			43.6			24.2			37.4	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	36.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	124.0	Sum of lost time (s)	22.3
Intersection Capacity Utilization	104.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

	↗	→	↙	←	↖	↖	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↰	↑↱	↰	↑	↱	↰	↑↑↱	↰	↑↑↱
Traffic Volume (vph)	52	75	236	73	165	176	1828	130	1468
Future Volume (vph)	52	75	236	73	165	176	1828	130	1468
Lane Group Flow (vph)	53	320	241	74	168	180	2260	133	1546
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	4.5	5.0	5.0	5.0
Minimum Split (s)	31.7	31.7	31.7	31.7	31.7	9.0	41.1	9.0	41.1
Total Split (s)	31.7	31.7	31.7	31.7	31.7	12.0	55.0	9.0	52.0
Total Split (%)	33.1%	33.1%	33.1%	33.1%	33.1%	12.5%	57.5%	9.4%	54.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.15	0.34	0.94	0.14	0.34	0.77	0.85	0.76	0.61
Control Delay	27.1	17.7	77.6	26.5	12.4	38.0	22.1	41.7	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.1	17.7	77.6	26.5	12.4	38.0	22.1	41.7	18.2
Queue Length 50th (m)	7.7	15.6	45.1	10.7	8.2	15.0	128.2	9.5	76.1
Queue Length 95th (m)	17.2	27.2	#91.8	21.8	24.9	#50.0	151.7	#39.1	91.5
Internal Link Dist (m)		187.2		465.5			478.0		160.9
Turn Bay Length (m)	21.0		133.0		62.0	34.0		48.0	
Base Capacity (vph)	363	985	269	547	516	233	2673	176	2544
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.32	0.90	0.14	0.33	0.77	0.85	0.76	0.61

Intersection Summary

Cycle Length: 95.7

Actuated Cycle Length: 94.5

Natural Cycle: 85

Control Type: Semi Act-Uncoord

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

Splits and Phases: 2: Paris St & Van Horne St

2: Paris St & Van Horne St

Total (2032) PM Peak Hour w/ Improvements

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑	↱	↰	↑↑↱		↰	↑↑↱	
Traffic Volume (vph)	52	75	238	236	73	165	176	1828	387	130	1468	47
Future Volume (vph)	52	75	238	236	73	165	176	1828	387	130	1468	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.0	4.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.89		1.00	1.00	0.85	1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1689	3126		1767	1900	1521	1770	4937		1805	5056	
Flt Permitted	0.71	1.00		0.50	1.00	1.00	0.09	1.00		0.08	1.00	
Satd. Flow (perm)	1261	3126		935	1900	1521	173	4937		160	5056	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	53	77	243	241	74	168	180	1865	395	133	1498	48
RTOR Reduction (vph)	0	87	0	0	0	80	0	34	0	0	3	0
Lane Group Flow (vph)	53	233	0	241	74	88	180	2226	0	133	1543	0
Confl. Peds. (#/hr)	13		3	3		13	3		17	17		3
Heavy Vehicles (%)	6%	2%	1%	2%	0%	4%	2%	2%	1%	0%	2%	3%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	26.0	26.0		26.0	26.0	26.0	58.0	50.5		52.5	47.5	
Effective Green, g (s)	26.0	26.0		26.0	26.0	26.0	58.0	50.5		52.5	47.5	
Actuated g/C Ratio	0.28	0.28		0.28	0.28	0.28	0.61	0.53		0.56	0.50	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	346	860		257	522	418	232	2638		175	2541	
v/s Ratio Prot		0.07			0.04		c0.06	c0.45		0.04	0.31	
v/s Ratio Perm	0.04			c0.26		0.06	0.41			0.38		
v/c Ratio	0.15	0.27		0.94	0.14	0.21	0.78	0.84		0.76	0.61	
Uniform Delay, d1	25.9	26.8		33.5	25.8	26.3	14.3	18.7		16.9	16.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2		39.1	0.1	0.3	14.9	3.5		17.5	1.1	
Delay (s)	26.1	27.0		72.6	26.0	26.6	29.3	22.2		34.4	17.9	
Level of Service	C	C		E	C	C	C	C		C	B	
Approach Delay (s)		26.9			49.4			22.7			19.2	
Approach LOS		C			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	94.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	91.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✣		✣	↰	↑↱	↰	↑↱
Traffic Volume (vph)	10	3	63	0	8	2238	80	1843
Future Volume (vph)	10	3	63	0	8	2238	80	1843
Lane Group Flow (vph)	0	15	0	174	8	2352	82	1905
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	20.0	20.0	5.0	20.0
Minimum Split (s)	25.7	25.7	25.7	25.7	34.8	34.8	9.0	34.8
Total Split (s)	25.7	25.7	25.7	25.7	85.3	85.3	9.0	94.3
Total Split (%)	21.4%	21.4%	21.4%	21.4%	71.1%	71.1%	7.5%	78.6%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.7
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	1.0	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.7		5.7	5.8	5.8	4.0	5.8
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	None	Min
v/c Ratio		0.09		0.74	0.07	0.94	0.57	0.70
Control Delay		40.2		49.1	8.5	25.4	29.4	8.7
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		40.2		49.1	8.5	25.4	29.4	8.7
Queue Length 50th (m)		2.8		25.7	0.6	239.6	3.5	96.5
Queue Length 95th (m)		9.3		50.7	2.8	#364.6	#25.0	148.3
Internal Link Dist (m)		561.8		431.0		175.2		478.0
Turn Bay Length (m)					33.0		23.0	
Base Capacity (vph)		245		311	119	2531	143	2825
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		0.06		0.56	0.07	0.93	0.57	0.67

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 111.7
Natural Cycle: 120
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Paris St & John St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	10	3	2	63	0	106	8	2238	44	80	1843	5
Future Volume (vph)	10	3	2	63	0	106	8	2238	44	80	1843	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.92		1.00	1.00		1.00	1.00	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1799			1627		1802	3529		1736	3537	
Flt Permitted		0.73			0.87		0.09	1.00		0.05	1.00	
Satd. Flow (perm)		1349			1443		166	3529		88	3537	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	10	3	2	65	0	109	8	2307	45	82	1900	5
RTOR Reduction (vph)	0	2	0	0	54	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	13	0	0	120	0	8	2351	0	82	1905	0
Confl. Peds. (#/hr)	3		4	4		3	14		2	2		14
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%	0%	2%	0%	4%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		14.1			14.1		79.0	79.0		86.9	86.9	
Effective Green, g (s)		14.1			14.1		79.0	79.0		86.9	86.9	
Actuated g/C Ratio		0.13			0.13		0.70	0.70		0.77	0.77	
Clearance Time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		169			180		116	2478		125	2732	
v/s Ratio Prot								c0.67		0.02	c0.54	
v/s Ratio Perm		0.01			c0.08		0.05			0.48		
v/c Ratio		0.08			0.67		0.07	0.95		0.66	0.70	
Uniform Delay, d1		43.5			46.9		5.2	14.9		29.3	6.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			8.9		0.3	8.8		11.7	0.8	
Delay (s)		43.7			55.9		5.5	23.7		41.1	7.1	
Level of Service		D			E		A	C		D	A	
Approach Delay (s)		43.7			55.9			23.7			8.5	
Approach LOS		D			E			C			A	

Intersection Summary			
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	112.5	Sum of lost time (s)	15.5
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

4: Paris St & McNaughton St

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			↰↑↑↱			↰↓↓↱	
Traffic Volume (veh/h)	9	0	7	3	0	2	1	2266	1	1	1990	13
Future Volume (Veh/h)	9	0	7	3	0	2	1	2266	1	1	1990	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	9	0	7	3	0	2	1	2360	1	1	2073	14
Pedestrians		3			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								347			199	
pX, platoon unblocked	0.41	0.41	0.66	0.41	0.41	0.24	0.66			0.24		
vC, conflicting volume	3269	4450	1046	3410	4456	1182	2090			2363		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	2826	49	261	2842	0	1625			308		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	99	99	100	99	100			100		
cM capacity (veh/h)	409	7	670	268	7	258	268			299		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	16	5	1181	1181	1038	1050
Volume Left	9	3	1	0	1	0
Volume Right	7	2	0	1	0	14
cSH	493	264	268	1700	299	1700
Volume to Capacity	0.03	0.02	0.00	0.69	0.00	0.62
Queue Length 95th (m)	0.8	0.5	0.1	0.0	0.1	0.0
Control Delay (s)	12.5	18.9	0.2	0.0	0.2	0.0
Lane LOS	B	C	A		A	
Approach Delay (s)	12.5	18.9	0.1		0.1	
Approach LOS	B	C				

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
	↙	↖	↑	↗	↘	↓
Lane Configurations	↰↱		↑↱			↰↑
Traffic Volume (veh/h)	1	16	2242	6	21	1975
Future Volume (Veh/h)	1	16	2242	6	21	1975
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	17	2360	6	22	2079
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			225			321
pX, platoon unblocked	0.40	0.22			0.22	
vC, conflicting volume	3448	1184			2367	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0			103	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	93			93	
cM capacity (veh/h)	386	238			328	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	18	1573	793	715	1386
Volume Left	1	0	0	22	0
Volume Right	17	0	6	0	0
cSH	243	1700	1700	328	1700
Volume to Capacity	0.07	0.93	0.47	0.07	0.82
Queue Length 95th (m)	1.9	0.0	0.0	1.7	0.0
Control Delay (s)	21.0	0.0	0.0	2.4	0.0
Lane LOS	C			A	
Approach Delay (s)	21.0	0.0		0.8	
Approach LOS	C				

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↰	⋎	
Traffic Volume (veh/h)	7	21	0	2	15	0
Future Volume (Veh/h)	7	21	0	2	15	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67
Hourly flow rate (vph)	10	31	0	3	22	0
Pedestrians	1			2		
Lane Width (m)	3.6			3.6		
Walking Speed (m/s)	1.2			1.2		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			41		30	28
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			41		30	28
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	100
cM capacity (veh/h)			1581		989	1052

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	41	3	22
Volume Left	0	0	22
Volume Right	31	0	0
cSH	1700	1581	989
Volume to Capacity	0.02	0.00	0.02
Queue Length 95th (m)	0.0	0.0	0.5
Control Delay (s)	0.0	0.0	8.7
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.7
Approach LOS			A

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	14.0%	ICU Level of Service	A
Analysis Period (min)	15		

	↗	→	↙	←	↖	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✥	↰	↱	↰	↑↱	↰	↑↱
Traffic Volume (vph)	27	1	44	3	24	2174	54	1860
Future Volume (vph)	27	1	44	3	24	2174	54	1860
Lane Group Flow (vph)	0	47	48	56	26	2435	59	2056
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	30.0	30.0	30.0	30.0
Minimum Split (s)	26.0	26.0	26.0	26.0	35.9	35.9	35.9	35.9
Total Split (s)	26.0	26.0	26.0	26.0	94.0	94.0	94.0	94.0
Total Split (%)	21.7%	21.7%	21.7%	21.7%	78.3%	78.3%	78.3%	78.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.7	3.7	3.7	3.7
All-Red Time (s)	2.5	2.5	2.5	2.5	2.2	2.2	2.2	2.2
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0	6.0	5.9	5.9	5.9	5.9
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Min	Min	Min	Min
v/c Ratio		0.35	0.38	0.35	0.23	0.82	0.81	0.69
Control Delay		40.5	55.9	44.2	8.6	9.9	81.6	6.4
Queue Delay		0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay		40.5	55.9	44.2	8.6	10.1	81.6	6.4
Queue Length 50th (m)		6.4	10.4	9.2	1.1	137.7	6.1	86.1
Queue Length 95th (m)		18.5	22.8	22.3	5.5	222.5	#24.6	135.0
Internal Link Dist (m)		192.5		282.1		313.9		201.2
Turn Bay Length (m)					40.0		100.0	
Base Capacity (vph)		261	261	315	112	2943	72	2948
Starvation Cap Reductn		0	0	0	0	74	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0
Reduced v/c Ratio		0.18	0.18	0.18	0.23	0.85	0.82	0.70

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 106.3

Natural Cycle: 100

Control Type: Semi Act-Uncoord

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

Splits and Phases: 7: Paris St & Boland Ave/Paris Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	27	1	16	44	3	49	24	2174	66	54	1860	31
Future Volume (vph)	27	1	16	44	3	49	24	2174	66	54	1860	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		5.9	5.9		5.9	5.9	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.95		1.00	0.86		1.00	1.00		1.00	1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1628		1805	1608		1805	3523		1805	3530	
Flt Permitted		0.78		0.73	1.00		0.07	1.00		0.05	1.00	
Satd. Flow (perm)		1307		1380	1608		135	3523		87	3530	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	1	17	48	3	53	26	2363	72	59	2022	34
RTOR Reduction (vph)	0	16	0	0	12	0	0	1	0	0	1	0
Lane Group Flow (vph)	0	31	0	48	44	0	26	2434	0	59	2055	0
Confl. Peds. (#/hr)	2					2	4		2	2		4
Heavy Vehicles (%)	4%	0%	14%	0%	0%	0%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.9		7.9	7.9		87.8	87.8		87.8	87.8	
Effective Green, g (s)		7.9		7.9	7.9		87.8	87.8		87.8	87.8	
Actuated g/C Ratio		0.07		0.07	0.07		0.82	0.82		0.82	0.82	
Clearance Time (s)		6.0		6.0	6.0		5.9	5.9		5.9	5.9	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		95		101	118		110	2874		70	2880	
v/s Ratio Prot					0.03			c0.69			0.58	
v/s Ratio Perm		0.02		c0.03			0.19			0.68		
v/c Ratio		0.33		0.48	0.37		0.24	0.85		0.84	0.71	
Uniform Delay, d1		47.3		47.9	47.5		2.3	5.9		5.8	4.4	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.0		3.5	2.0		1.1	2.5		56.9	0.9	
Delay (s)		49.4		51.4	49.5		3.4	8.4		62.7	5.2	
Level of Service		D		D	D		A	A		E	A	
Approach Delay (s)		49.4			50.3			8.3			6.8	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	107.6	Sum of lost time (s)	11.9
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Volume (vph)	236	121	164	2029	1694	228
Future Volume (vph)	236	121	164	2029	1694	228
Lane Group Flow (vph)	248	127	173	2136	1783	240
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	5.0	30.0	30.0	30.0
Minimum Split (s)	25.5	25.5	9.0	36.2	36.2	36.2
Total Split (s)	25.5	25.5	12.0	94.5	82.5	82.5
Total Split (%)	21.3%	21.3%	10.0%	78.8%	68.8%	68.8%
Yellow Time (s)	3.3	3.3	3.0	4.2	4.2	4.2
All-Red Time (s)	2.2	2.2	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Min	Min	Min
v/c Ratio	0.79	0.34	0.80	0.85	0.86	0.24
Control Delay	62.1	10.7	49.7	15.3	22.2	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.1	10.7	49.7	15.3	22.2	2.4
Queue Length 50th (m)	50.6	0.4	19.7	162.2	158.5	2.5
Queue Length 95th (m)	#104.2	17.9	#64.3	197.0	191.1	12.0
Internal Link Dist (m)	376.5			774.4	313.9	
Turn Bay Length (m)	21.0		123.0			72.0
Base Capacity (vph)	356	409	215	3022	2691	1218
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	0.70	0.31	0.80	0.71	0.66	0.20

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 102.7

Natural Cycle: 90

Control Type: Semi Act-Uncoord

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

Splits and Phases: 8: Paris St & York St

	↗	↘	↖	↑	↓	↙
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Volume (vph)	236	121	164	2029	1694	228
Future Volume (vph)	236	121	164	2029	1694	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	1555	1770	3539	3539	1538
Flt Permitted	0.95	1.00	0.06	1.00	1.00	1.00
Satd. Flow (perm)	1787	1555	116	3539	3539	1538
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	248	127	173	2136	1783	240
RTOR Reduction (vph)	0	103	0	0	0	86
Lane Group Flow (vph)	248	24	173	2136	1783	154
Confl. Peds. (#/hr)	6	15	4			4
Heavy Vehicles (%)	1%	1%	2%	2%	2%	2%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	18.0	18.0	72.7	72.7	60.5	60.5
Effective Green, g (s)	18.0	18.0	72.7	72.7	60.5	60.5
Actuated g/C Ratio	0.18	0.18	0.71	0.71	0.59	0.59
Clearance Time (s)	5.5	5.5	4.0	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	314	273	214	2512	2090	908
v/s Ratio Prot	c0.14		0.06	c0.60	0.50	
v/s Ratio Perm		0.02	0.51			0.10
v/c Ratio	0.79	0.09	0.81	0.85	0.85	0.17
Uniform Delay, d1	40.4	35.3	27.8	10.9	17.3	9.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.4	0.1	19.7	3.0	3.6	0.1
Delay (s)	52.8	35.5	47.4	13.8	20.9	9.6
Level of Service	D	D	D	B	C	A
Approach Delay (s)	46.9			16.3	19.6	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	102.4	Sum of lost time (s)	15.7
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	573	749	1478	283	393	1387
Future Volume (vph)	573	749	1478	283	393	1387
Lane Group Flow (vph)	637	832	1642	314	437	1541
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Detector Phase	8	8 1	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0		15.0	15.0	10.0	15.0
Minimum Split (s)	30.8		40.2	40.2	15.0	40.2
Total Split (s)	32.0		64.5	64.5	23.5	88.0
Total Split (%)	26.7%		53.8%	53.8%	19.6%	73.3%
Yellow Time (s)	3.3		4.2	4.2	3.0	4.2
All-Red Time (s)	2.5		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8		6.2	6.2	5.0	6.2
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None		Min	Min	None	Min
v/c Ratio	0.84	0.71	0.96	0.38	0.84	0.64
Control Delay	55.5	32.5	43.8	13.0	63.8	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.5	32.5	43.8	13.0	63.8	12.3
Queue Length 50th (m)	78.5	94.0	199.8	28.2	54.7	102.8
Queue Length 95th (m)	#106.2	120.9	#256.8	50.0	#79.3	124.2
Internal Link Dist (m)	679.1		533.6			774.4
Turn Bay Length (m)	158.0			37.0	175.0	
Base Capacity (vph)	768	1153	1746	842	537	2450
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	0.83	0.72	0.94	0.37	0.81	0.63

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 118.2
Natural Cycle: 100
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Ramsey Lake Rd & Paris St

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱↱	↑↑	↱	↰↰	↑↑
Traffic Volume (vph)	573	749	1478	283	393	1387
Future Volume (vph)	573	749	1478	283	393	1387
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	6.2	6.2	5.0	6.2
Lane Util. Factor	0.97	0.88	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3467	2787	3539	1587	3433	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3467	2787	3539	1587	3433	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	637	832	1642	314	437	1541
RTOR Reduction (vph)	0	10	0	61	0	0
Lane Group Flow (vph)	637	822	1642	253	437	1541
Confl. Peds. (#/hr)		16		5	5	
Heavy Vehicles (%)	1%	2%	2%	0%	2%	2%
Turn Type	Prot	pt+ov	NA	Perm	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				2		
Actuated Green, G (s)	25.9	49.7	57.3	57.3	18.0	80.3
Effective Green, g (s)	25.9	49.7	57.3	57.3	18.0	80.3
Actuated g/C Ratio	0.22	0.42	0.48	0.48	0.15	0.68
Clearance Time (s)	5.8		6.2	6.2	5.0	6.2
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	759	1171	1715	769	522	2404
v/s Ratio Prot	c0.18	0.29	c0.46		c0.13	0.44
v/s Ratio Perm				0.16		
v/c Ratio	0.84	0.70	0.96	0.33	0.84	0.64
Uniform Delay, d1	44.2	28.2	29.3	18.7	48.7	10.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.1	1.9	13.0	0.3	11.2	0.6
Delay (s)	52.3	30.1	42.2	18.9	59.9	11.4
Level of Service	D	C	D	B	E	B
Approach Delay (s)	39.7		38.5			22.1
Approach LOS	D		D			C

Intersection Summary			
HCM 2000 Control Delay	32.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	118.2	Sum of lost time (s)	17.0
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Appendix G – MTO Left Turn Analysis

Bell Park Road / Facer Street

2032 Total - Westbound

Critical Case - AM Peak Hour

Exhibit 9A-6

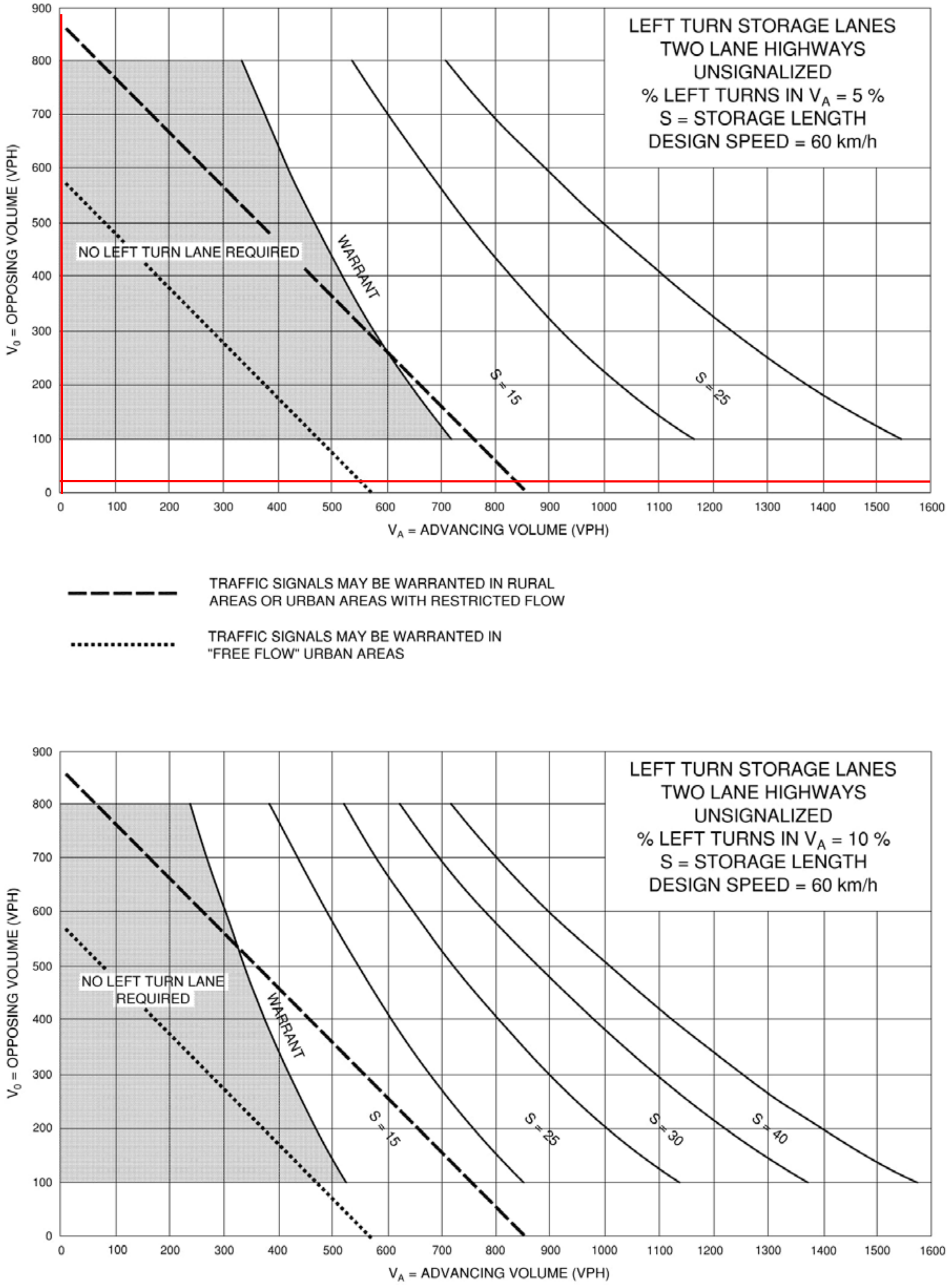


Exhibit 9A-30

Paris Street / McNaughton Street

2032 Total - Southbound
Critical Case - PM Peak Hour

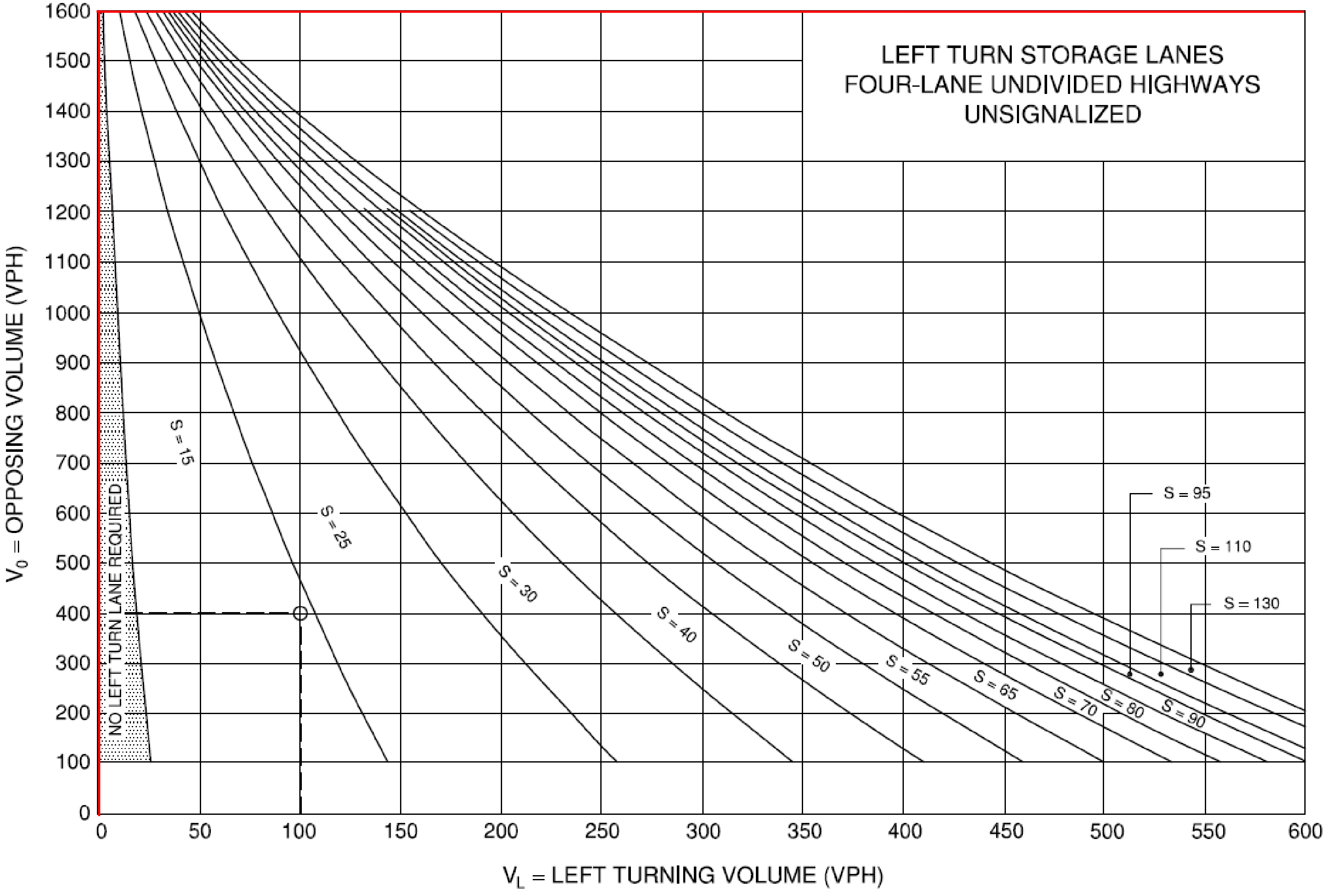
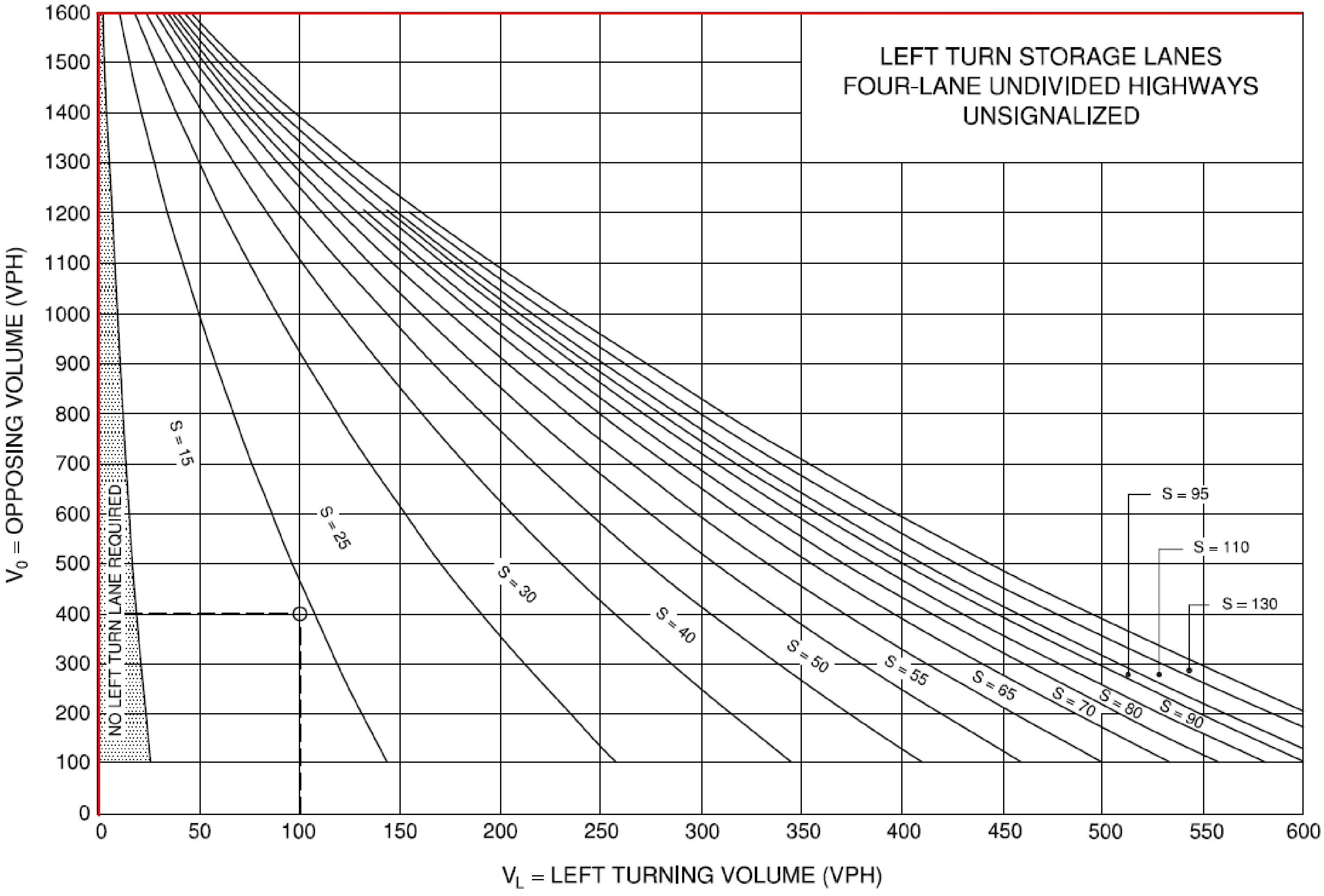


Exhibit 9A-30

Paris Street / McNaughton Street

2032 Total - Northbound

Critical Case - PM Peak Hour



Paris Street / Facer Street
2027 Total - Southbound
Critical Case - PM Peak Hour

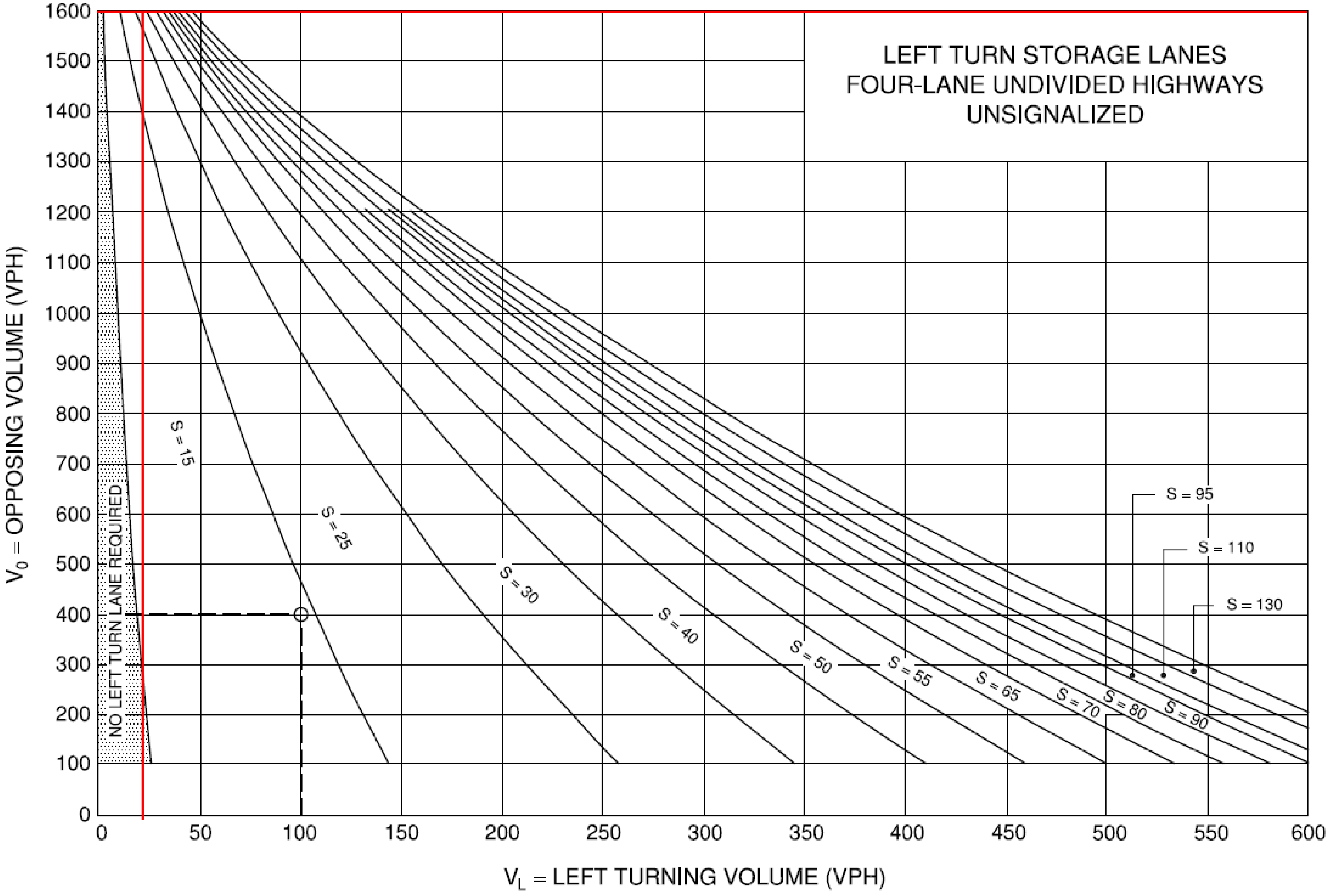


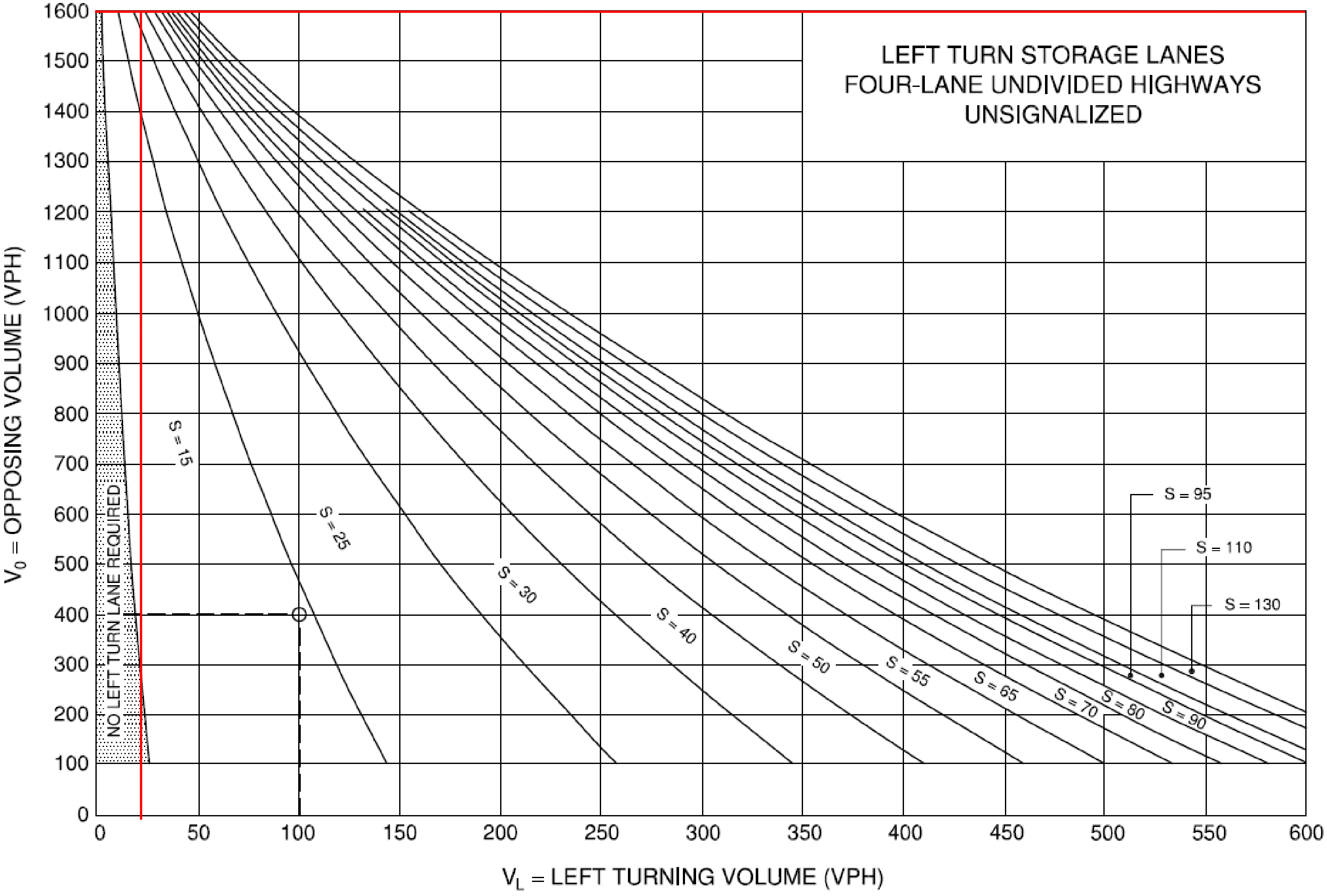
Exhibit 9A-30

Exhibit 9A-30

Paris Street / Facer Street

2032 Total - Southbound

Critical Case - PM Peak Hour



Appendix H – OTM Signal Justification Sheets

Justification No. 7 - 2032 Total Traffic (Critical Case)

Paris Street / McNaughton Street

Justification	Description		Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
		Rest. Flow	Numerical	%			
1. Minimum Vehicluar Volume	A. Vehicle volume, all aproaches (average hour)	900	1908	212%	5%	YES	YES
	B. Vehicle volume, along minor streets (average hour)	170	9	5%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	900	1894	210%	2%	YES	YES
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	170	4	3%		NO	NO

Justification No. 7 - 2032 Total Traffic (Critical Case)

Paris Street / Facer Street

Justification	Description		Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
		Rest. Flow	Numerical	%			
1. Minimum Vehicluar Volume	A. Vehicle volume, all aproaches (average hour)	900	1895	211%	3%	YES	YES
	B. Vehicle volume, along minor streets (average hour)	255	10	4%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	900	1884	209%	0%	YES	YES
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	170	1	1%		NO	NO

Justification No. 7 - 2032 Total Traffic (Critical Case)

Bell Park Road / Facer Street

Justification	Description		Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
		Rest. Flow	Numerical	%			
1. Minimum Vehicluar Volume	A. Vehicle volume, all aproaches (average hour)	720	21	3%	2%	NO	NO
	B. Vehicle volume, along minor streets (average hour)	255	9	3%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	720	3	0%	0%	NO	NO
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	75	10	14%		NO	NO

Appendix I –
NCHRP Internal Capture Reports

NCHRP 684 Internal Trip Capture Estimation Tool

Project Name:	700 Paris Street	**Organization:**	JD Engineering
Project Location:	City of Greater Sudbury	**Performed By:**	Allister Aresta
Scenario Description:	Build-Out	**Date:**	Friday, December 23 / 2022
Analysis Year:	2027	**Checked By:**	John Northcote
Analysis Period:	**AM Street Peak Hour**	**Date:**	Friday, December 23 / 2022

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				0		
Restaurant				84	43	41
Cinema/Entertainment				0		
Residential				36	9	27
Hotel				0		
All Other Land Uses[2]				0		
				120	52	68

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office						
Retail						
Restaurant	1.00	0%	0%	1.00	0%	0%
Cinema/Entertainment						
Residential	1.00	0%	0%	1.00	0%	0%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	5	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	120	52	68
Internal Capture Percentage	8%	10%	7%
External Vehicle-Trips[5]	110	47	63
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	N/A	N/A
Restaurant	12%	0%
Cinema/Entertainment	N/A	N/A
Residential	0%	19%
Hotel	N/A	N/A

[1] Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2] Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3] Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4] Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

[5] Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[6] Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	700 Paris Street
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	0	0	1.00	0	0
Restaurant	1.00	43	43	1.00	41	41
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	9	9	1.00	27	27
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	13	6		0	2	1
Cinema/Entertainment	0	0	0		0	0
Residential	1	0	5	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	10	0	0	0
Retail	0		22	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	9	0		0
Hotel	0	0	3	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	5	38	43	38	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	9	9	9	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	0	41	41	41	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	5	22	27	22	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1] Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2] Person-Trips

[3] Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool

Project Name:	700 Paris Street	**Organization:**	JD Engineering
Project Location:	City of Greater Sudbury	**Performed By:**	Allister Aresta
Scenario Description:	Build-Out	**Date:**	Friday, December 23 / 2022
Analysis Year:	2027	**Checked By:**	John Northcote
Analysis Period:	**PM Street Peak Hour**	**Date:**	Friday, December 23 / 2022

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				0		
Restaurant				62	32	30
Cinema/Entertainment				0		
Residential				38	24	14
Hotel				0		
All Other Land Uses[2]				0		
				100	56	44

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office						
Retail						
Restaurant	1.00	0%	0%	1.00	0%	0%
Cinema/Entertainment						
Residential	1.00	0%	0%	1.00	0%	0%
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	4	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	3	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	100	56	44
Internal Capture Percentage	14%	13%	16%
External Vehicle-Trips[5]	86	49	37
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	N/A	N/A
Restaurant	9%	13%
Cinema/Entertainment	N/A	N/A
Residential	17%	21%
Hotel	N/A	N/A

[1] Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2] Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3] Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4] Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made

[5] Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[6] Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	700 Paris Street
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	0	0	1.00	0	0
Restaurant	1.00	32	32	1.00	30	30
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	24	24	1.00	14	14
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	1	12		2	5	2
Cinema/Entertainment	0	0	0		0	0
Residential	1	6	3	0		0
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	1	0	1	0
Retail	0		9	0	11	0
Restaurant	0	0		0	4	0
Cinema/Entertainment	0	0	1		1	0
Residential	0	0	4	0		0
Hotel	0	0	2	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	3	29	32	29	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	4	20	24	20	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

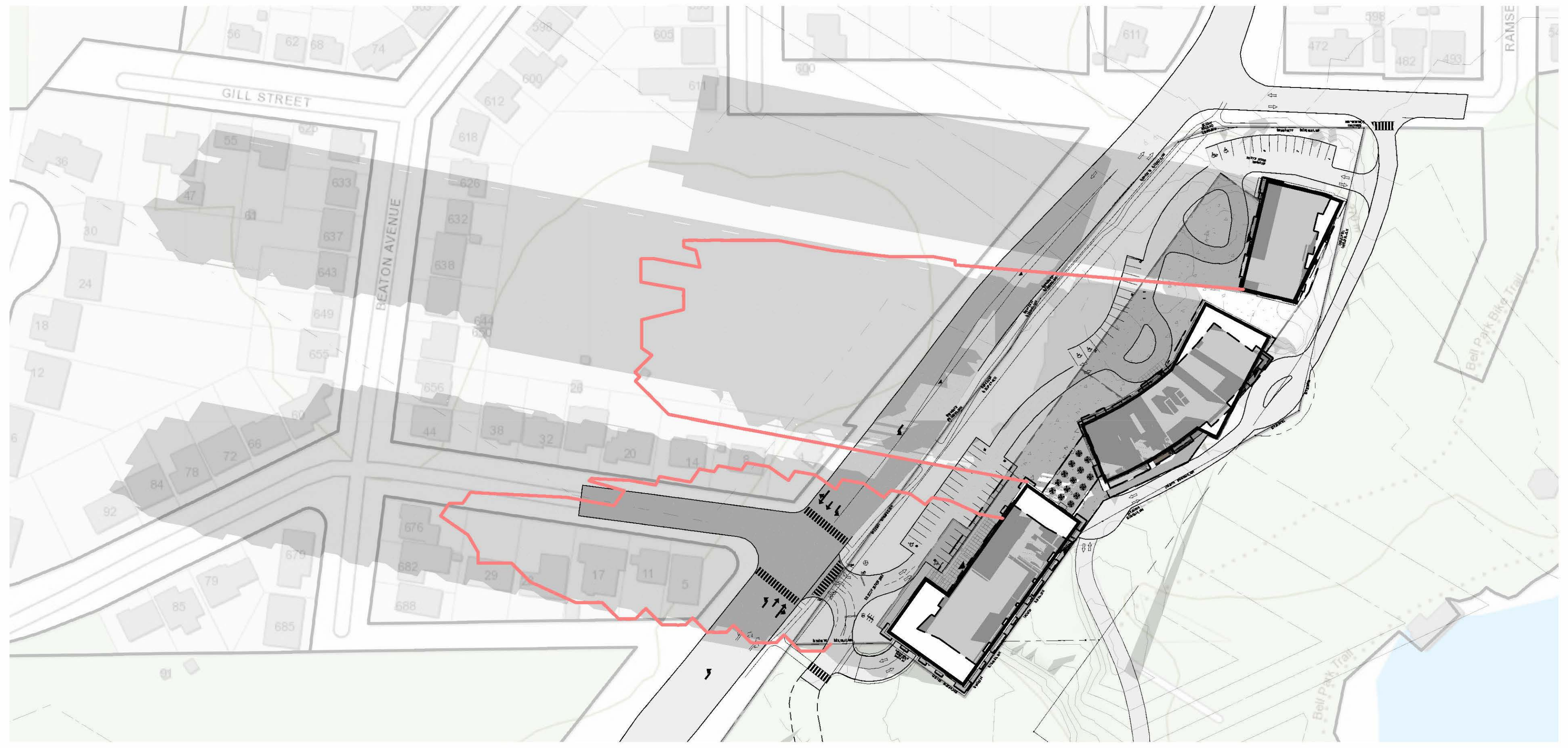
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	4	26	30	26	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	3	11	14	11	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1] Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2] Person-Trips

[3] Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.



MARCH 21 7.30AM

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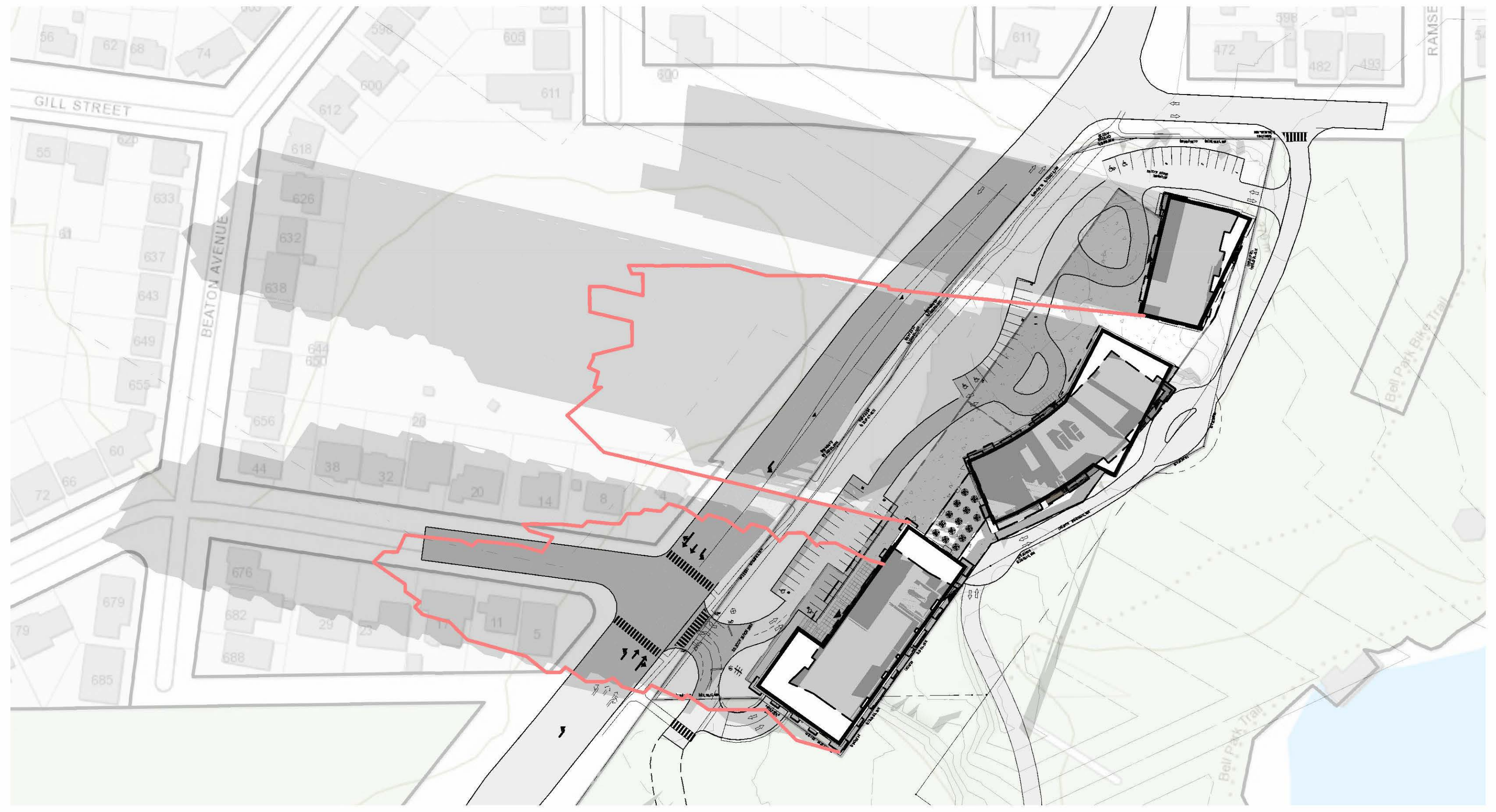

SEPTEMBER 21 7.30AM

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NO.	DATE:	REVISION:	BY:
1	JULY 29 2019	SCHEMATIC CONCEPTS	JMR/MDA
2	AUG. 7 2019	SCHEMATIC CONCEPTS	JMR/MDA
3	MAY 7 2021	PARKING GARAGE LAYOUT	CH
4	JUNE 18 2021	REVISED BLD. HEIGHTS	CH
5	AUG. 4 2022	SHADOW STUDIES	CH
6	JULY 2023	JULY SHADOWS ADDED	CH

COMMISSION:

PROPOSED MIXED USE DEVELOPMENT

700 PARIS STREET, SUDBURY, ONTARIO

N

A·C·K
architects
STUDIO INC.

Architectural Office:

290 Glendale Ave. St. Catharines, ON, L2T 2L3
905 984 5545

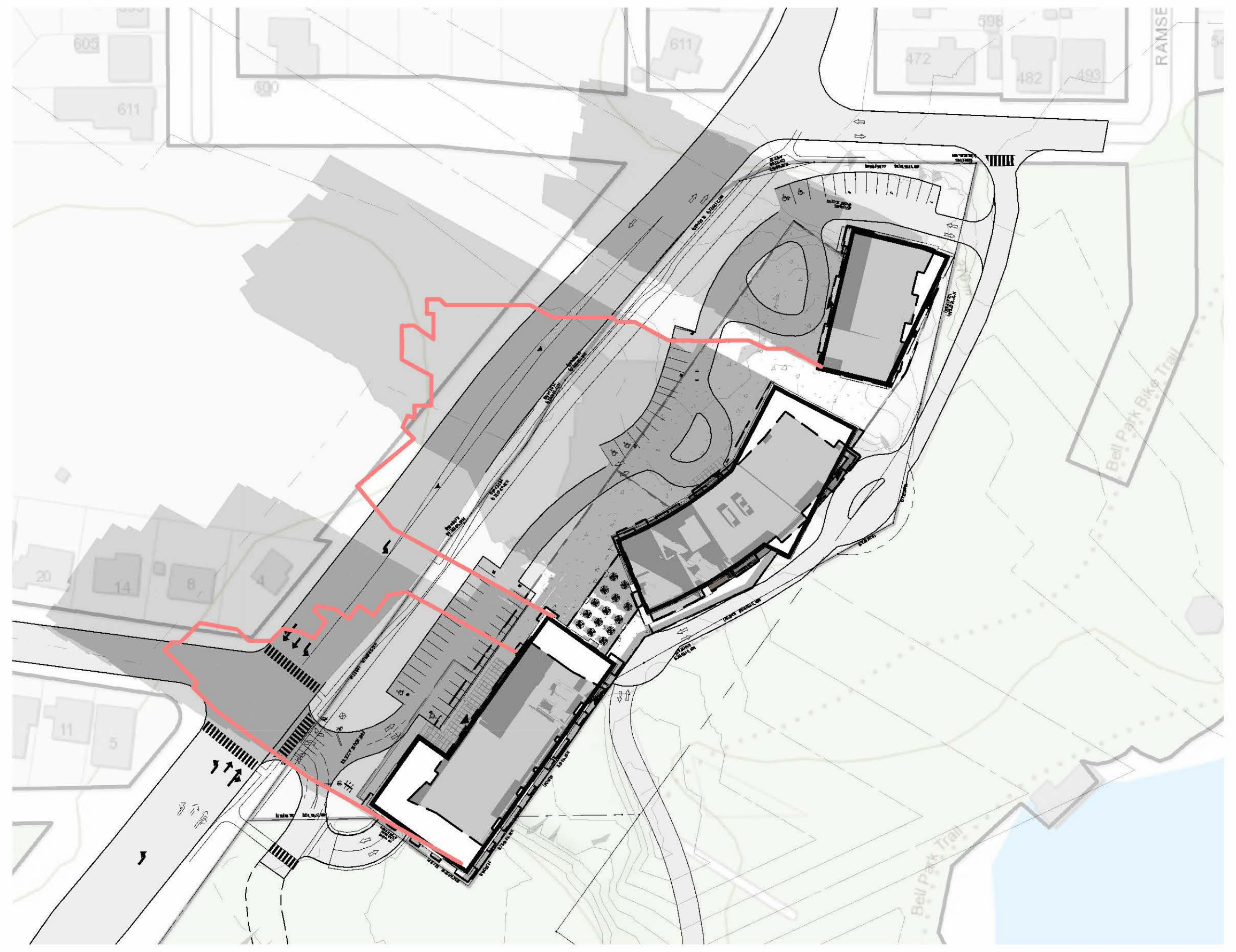
SHEET TITLE:

SHADOW STUDY

Issued for Re-Zoning
Issued for Site Plan Agreement:
Issued for Permit:
Issued for Tender:
Issued for Construction:

DRAWN BY:	JMR
CHECKED BY:	MDA
DATE:	JULY 2019
SCALE:	AS SHOWN
PROJECT No.:	2010-210

DWG. No.
SS0



MARCH 21 9AM

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MARCH 21 12PM

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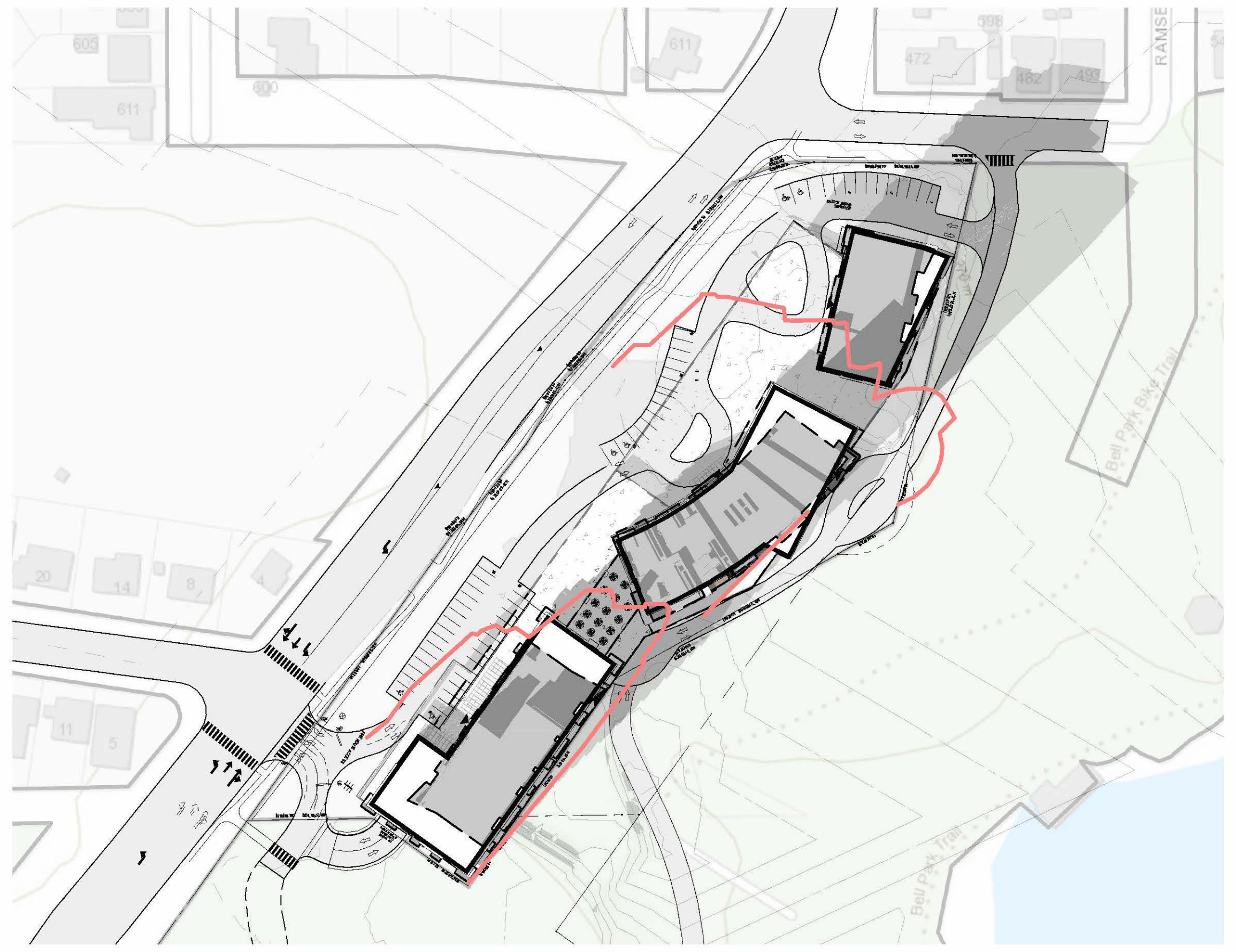

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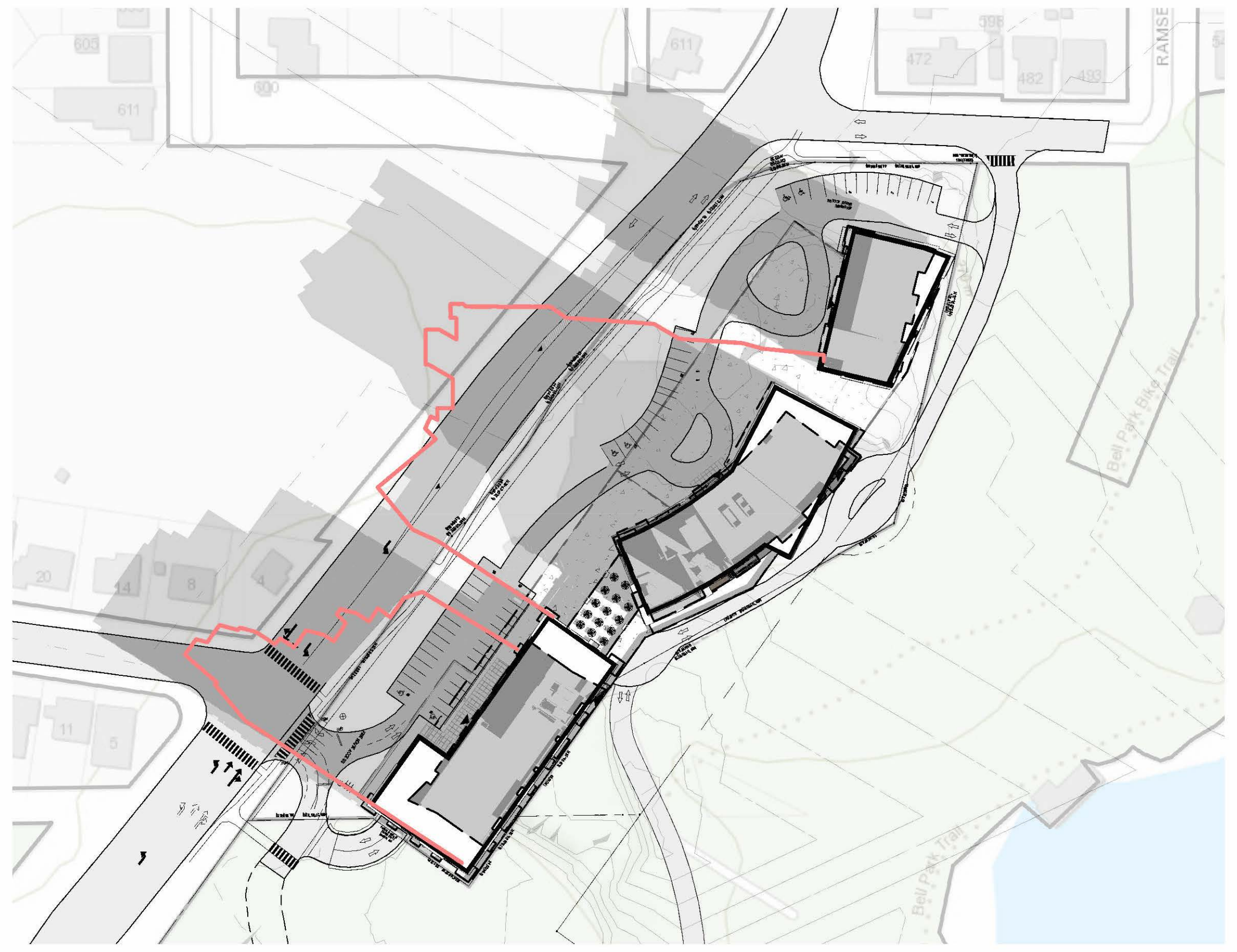

SEPTEMBER 21 9AM

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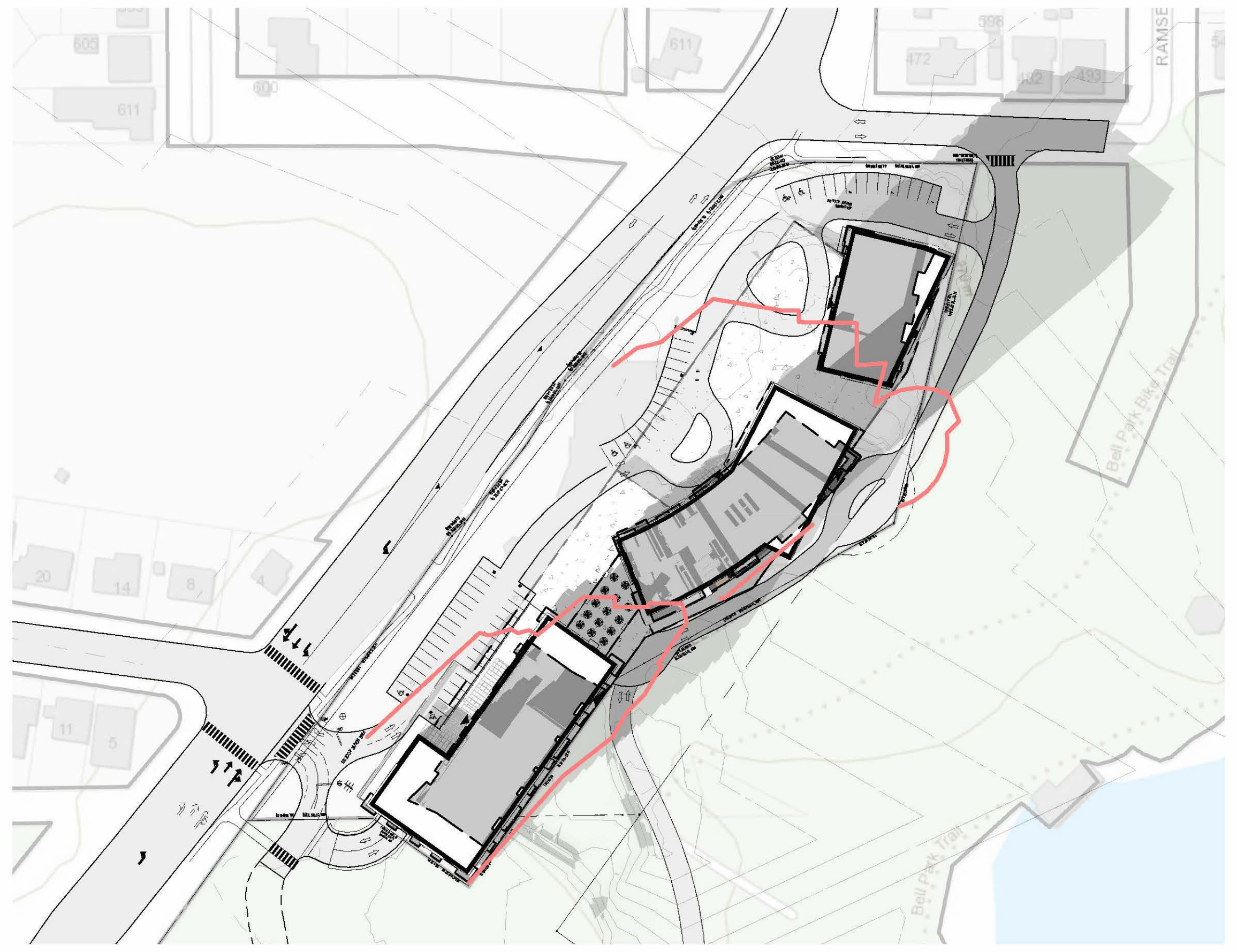

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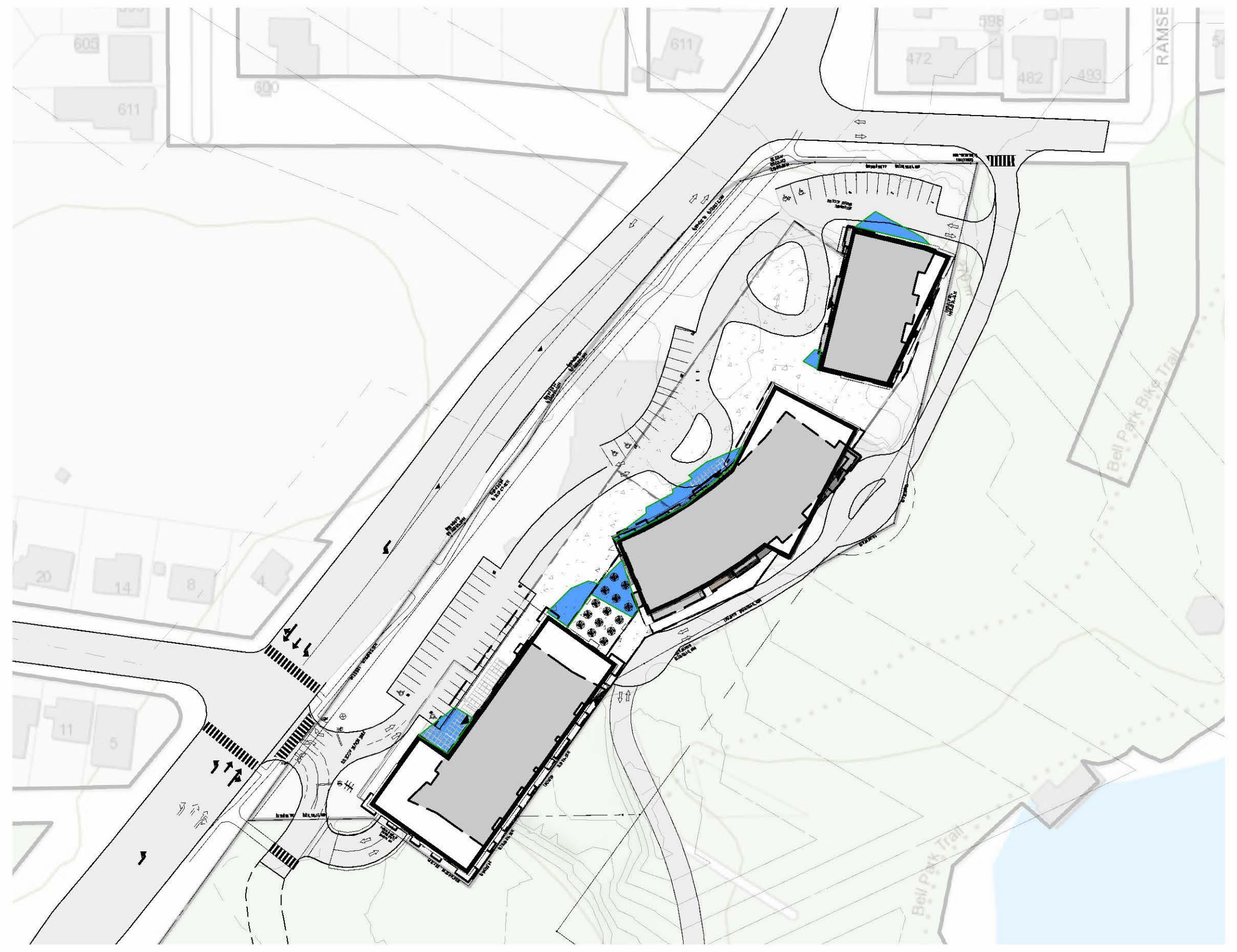

ALWAYS SHADED (DECEMBER - FEBRUARY)

1 : 1750

BASED ON OVERLAID SHADING OF THE FOLLOWING DATES/TIMES:
DECEMBER 1ST 9AM, 12PM, 3PM
FEBRUARY 21ST 9AM, 12PM, 3PM

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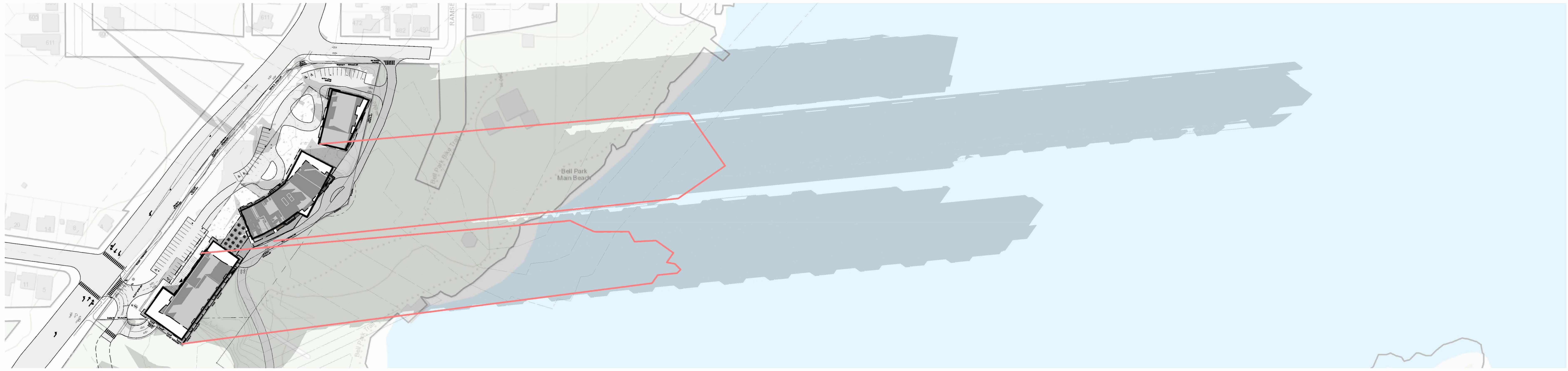
PROJECT No.: 2010-210

DWG. No. SS1



MARCH 21 6PM

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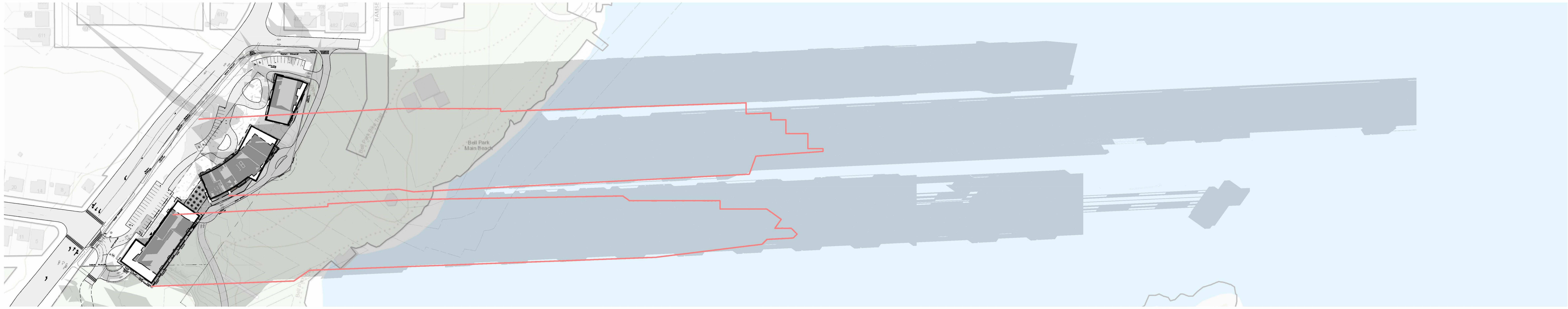

SEPTEMBER 21 6PM

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CHECKED BY: MDA
DATE: JULY 2019
SCALE: AS SHOWN
PROJECT No.: 2010-210

DWG. No. SS2

THEAKSTON ENVIRONMENTAL
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596 Glengarry Cr., P.O. Box 390
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September 19, 2023

Preliminary Pedestrian Level Wind Assessment

700 Paris Street
Sudbury, Ontario

Theakston Project No. 23037 (22898)

Submitted To:

Panoramic Properties
Angelo Butera, President
9582 Beaverdam Road
Niagara Falls, ON
L2E 6S4

Submitted By:

Theakston Environmental
Consulting Engineers
596 Glengarry Crescent
Fergus, Ontario
N1M 3E2

Stephen Pollock, P.Eng.

An International Reputation for Excellence

1. EXECUTIVE SUMMARY

Based upon our analysis, wind conditions on and around the proposed 700 Paris Street Development site are considered mainly suitable for standing, or better, throughout the year in the existing setting.

The proposed 700 Paris Street Development occupies a portion of a block of land bound by Facer Street to the north, Bell Park Road to the east, and Paris Street to the west, within the City of Sudbury, Ontario. The former St. Joseph's Health Centre currently occupies the site and will be removed.

The 700 Paris Street Development involves a proposal to construct 3 residential buildings, 20, 16 and 12 storeys in height. Outdoor Amenity Space is proposed on the 13th floor of Building A, the 13th, 14th, and 20th floors of Building B, and at-grade and at the 3rd floor of Building C.

With inclusion of the proposed Development, prevailing pedestrian comfort conditions are predicted to remain comfortable and suitable for mainly standing, or better, under normal to high ambient wind conditions. Localised areas proximate to the north and southmost corners of the Development and in the gaps between the buildings will realise windier conditions on occasion. Additional mitigation is recommended for the Main Entrances and Outdoor Amenity Spaces to improve pedestrian comfort conditions and extend the useability of the areas into the shoulder seasons. To the extent mitigation may be warranted is best assessed through quantitative analysis.

The overall upset to pedestrian comfort conditions with inclusion of the proposed Development is well managed by the proposed Development's wind mitigative design features, resulting in conditions that are, in many cases, similar to the existing setting.

Should you have questions or comments, please do not hesitate to call.

Kindest regards,

C. Prevost

Emily Prevost, EIT

Stephen Pollock, P.Eng

2. INTRODUCTION

Panoramic Properties has retained Theakston Environmental Consulting Engineers to conduct a preliminary pedestrian level wind assessment for the proposed residential development at 700 Paris Street, Sudbury, Ontario, herein referred to as the proposed Development. The assessment is based upon project plans prepared by ACK Architects Studio Inc. The objective of this preliminary analysis is to estimate pedestrian level wind conditions resulting from inclusion of the proposed Development, relative to comfort and safety. The analysis is based upon the historical wind conditions and our experience with similar microclimatic analyses that were conducted on other properties in the area and/or on similar projects. The qualitative assessment utilises numerical analysis of local wind data predicted at the site and provides a synopsis of pedestrian comfort conditions anticipated on, and adjacent to, the property.

3. SITE INFORMATION & PROPOSED DEVELOPMENT

The proposed Development occupies a block of land south of Facer Street, bounded by Paris Street to the west and Bell Park Road to the east, within the City of Sudbury, Ontario. The site is currently occupied by the former St. Joseph's Health Care, pictured below, which will be removed.

700 Paris Street existing site, looking north from adjacent parking lot

The Development involves a proposal to construct 3 residential buildings, denoted Building A, Building B, and Building C. The buildings are 16, 20, and 12 storeys in height, respectively. Outdoor Amenity Spaces are proposed at the 13th floor of Building A, 13th, 14th, and 20th floors of Building B, and at-grade and at the 3rd floor of building C. The Main Residential Entrances to the buildings are proposed along the northwest façades, accessed via a private driveway parallel to Paris and Facer Streets. The site plan is shown in Figure 2.

4. SURROUNDING AREA

Low-rise residential buildings, open spaces, and mature vegetation, for all intents and purposes, surround the site, as indicated in Figure 1.

Lands to the immediate north of the proposed Development are occupied by low-rise, single detached houses and mature vegetation. Mature vegetation, low rise concession buildings and open spaces associated with Bell Park occupy the land to the immediate east through south of the proposed Development which slopes down towards Ramsey Lake. A municipal parking lot occupies the land southwest of the proposed Development, accessed via Paris Street. Lands to the immediate west of Paris Street are comprised of rocky hillside and vegetation, with low-rise, single detached houses beyond.

The suburban landscape has mitigative effects upon the wind climate to varying degrees, providing surface roughness that reduces the wind's energy at the pedestrian level. Conversely, the more open areas of Ramsey Lake present a relatively smooth surface to approaching winds, affording wind the opportunity to accelerate.

5. METEOROLOGICAL DATA

Historical weather data recorded at the Greater Sudbury Airport were analysed for the seasons, and the resulting wind roses presented as velocity and percent frequency in Figure 3. The airport is approximately 21km to the northeast of the site, which, considered in concert with the site's distance from Ramsey Lake, indicate the wind climate at the proposed Development is well represented by said airport. From the historical wind data, it is apparent that winds can occur from any direction, however, the data indicates the directional characteristics of strong winds at Greater Sudbury Airport are most likely to occur from the southwest and the northwest through northeast quadrant, with a far less significant northeast through southeast component.

The historical meteorological data presented in the wind roses is measured at an elevation of 10m. This data is numerically processed with AERMET, a meteorological processor that considers wind speed and direction. Thus, representative ground level velocities at a height of 2m, for a suburban macroclimate, are 63% of the mean values indicated on the wind rose. For urban and rural macroclimates, the values are 52% and 78%, respectively.

The macroclimate for the subject site is considered suburban. Figure 3 depicts wind velocity categories relative to directionality at the airport with strong winds, greater than 31.7km/h, occurring approximately 1.3% of the time during the summer and 5.5% during the winter, and emanating from the aforementioned quadrants during both the winter and summer seasons, with calm conditions occurring approximately 0.27% of the time during the summer and 0.32% of the time during winter.

6. COMFORT CRITERIA

The assignment of pedestrian comfort takes into consideration pedestrian safety and comfort attributable to mean and gust wind speeds. Gusts have a significant bearing on safety, while winds flowing at or near mean velocities have a greater influence upon comfort. The effects of mean and gust wind conditions are described as suitable for Sitting, Standing, Walking, or Uncomfortable over 80% of the time.

In order for a point to be rated as suitable for Sitting, for example, the wind conditions must be less than 10 km/h. The rating would include conditions ranging from calm up to wind speeds that would rustle tree leaves or wave flags slightly. As the name infers, the category is recommended for outdoor space such as terraces and patios where people might sit for extended periods and generally applied to the summer months.

The Standing category is slightly more tolerant of wind, including wind speeds from calm up to 15km/h. In this situation, the wind would rustle tree leaves and, on occasion, move smaller branches while flags would be partially extended. This category would be suitable for locations where people might sit for short periods or stand in relative comfort, such as building entrances and drop-off areas.

The Walking category includes wind speeds from calm up to 20km/h. These winds would set tree limbs in motion, lift leaves, litter and dust, and the locations are suitable for sidewalks and parking.

The Uncomfortable category covers a broad range of wind conditions, including wind speeds above 20km/h. These winds would set trees in motion, cause inconvenience when walking, and are not generally suitable to activities. Safety concerns are associated with wind speeds that are beyond the uncomfortable category, being sufficient to affect a person's balance.

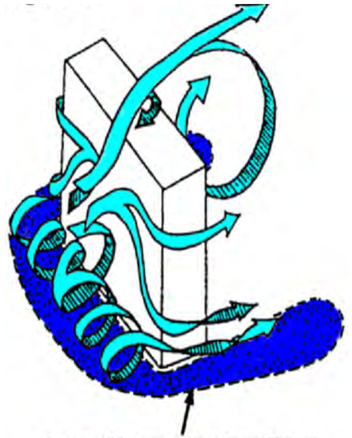
Many variables contribute to a person's perception of the wind environment beyond the seasonal variations presented. While people are generally more tolerant of wind during the summer months, than during the winter, due to the wind cooling effect, people become acclimatized to a particular wind environment. Persons dwelling near the shore of an ocean, large lake or open field are more tolerant of wind than someone residing in a sheltered wind environment.

7. PEDESTRIAN LEVEL WIND ASSESSMENT

Variables beyond the orientation and conformation of a proposed development must be considered in predicting wind speed and occurrence at a given location. These include the previously discussed historical wind climate, surrounding terrain, and neighbouring buildings, each of which is quantified and/or analysed in the microclimatic analysis of pedestrian level winds. The results of such quantitative analyses have afforded a knowledge base that allows an estimation of pedestrian level wind conditions.

The site and surrounds, in the present circumstances as a mix of suburban residential neighbourhoods, mature vegetation, and open spaces, have a sympathetic relationship with the existing wind climate. Suburban development provides turbulence inducing surface roughness that can be wind friendly, while open settings afford wind the opportunity to accelerate as the wind's boundary layer profile thickens at the pedestrian level, owing to lack of surface roughness. Transition zones from open to suburban settings can prove problematic, as winds exacerbated by the open setting are redirected to flow over, down, around and between buildings.

High-rise buildings may exacerbate wind conditions within their immediate vicinity, to varying degrees, by redirecting wind currents to the ground level and along streets and open areas. Wind tends to split upon impact with a high-rise building, as pictured, with portions flowing up and over the building without consequence to the pedestrian level, along the facades of the building, around the corners and beyond, or down the face of the building to the pedestrian level as downwash, where it is deflected, or otherwise redirected to flow along the building and around its corners, creating localized zones of increased pedestrian level wind. Conversely, points situated to the leeside, or in the wake of buildings will often enjoy an improvement in pedestrian comfort. It is reasonable to expect the inclusion of the proposed development will alter wind conditions under specific wind directions and velocities from those of the existing



site condition, resulting in an improvement over the existing conditions at some points, with more windy conditions at others.

Wind approaching façades at skewed angles will, for the most part, split upon contact with the building and flow along the façades. Wind approaching at near right angles to the building generally result in the propensity for a downwash of wind to the pedestrian level, the magnitude of which is dependent upon several variables. Those variables commanding primary consideration are the building height, and the effective width of the presented façade.

Discussion of Northerly Winds

Northerly winds make up a moderate percentage of the prevailing wind climate, tend to be of mid- to high velocity, with a higher percentage of stronger winds expected in the winter and spring seasons. Northerly winds are preconditioned upon approach by low-rise residential houses, associated open spaces, mature vegetation, and a rock cut, that will induce some turbulence into the wind's approach flow, reducing the wind's energy realized at the pedestrian level.

Proposed Setting

Northerly winds approaching the site at higher streamlines will come into contact with the upper levels of the north and northwest façades of the proposed Development. The winds will display a propensity to split upon contact with the building's northmost corners to flow up and over the rooftops, along the façades of the buildings, around the corners and beyond, with portions, depending upon the angle of incidence, downwashing towards the pedestrian level. The winds that deflect to flow up and around the proposed Development at elevations above the pedestrian level will have little consequence on the pedestrian level wind climate. Downwash to the pedestrian level is well mitigated by the skewed angle of northerly winds impact, balconies, podiums, stepped façades and canopies, however, downwash that finds its' way to the pedestrian level will be redirected along the façades of the buildings, around the corners, and through the gaps between, before dissipating over the coarser terrain of Bell Park.

Northerly winds approaching the site in lower streamlines will similarly contact the north façade of Building C and, the northmost corners and adjacent façades of Buildings A and B, where the wind streamlines will split and flow along the northwest façades of the buildings, around corners, in gaps, and beyond.

As a result, conditions along the northwest façades of the buildings are mainly predicted suitable for standing on the occasion of northerly winds, with localised conditions suitable for walking near the northeast corner of Building C, the southwest corners of Building B and Building A, and in the gaps between the buildings. Areas along the southeast façades of the proposed Development, as well as south of Building A, are within the aerodynamic shade region of the Development for northerly winds and as a result will realise conditions suitable for sitting throughout much of the year.

The Main Entrances to the proposed Development are located centrally along the northwest façades of the buildings and are subjected to northerly winds that are redirected to flow along the buildings' façades. The Entrances are well removed from the corners and are protected from downwash by canopies, balconies, and/or podiums, and will be suitable for standing most of the time, walking on the occasion of high ambient northerly winds, and are considered appropriate for their intended use most of the time. Mitigation is recommended in order to achieve more comfortable conditions throughout the year and can include recessing the Entrances into their façades such that wind cannot act upon the door leaves, utilizing revolving or sliding doors, incorporating wind screens perpendicular to the façades, including coniferous and/or marcescent vegetation, raised planter beds populated with dense vegetation, trellises, and others.

The proposed Development is well removed from Paris Street and Facer Street and, as such, sidewalk conditions are predicted to remain similar to those of the existing setting, suitable for standing or walking, appropriate to their intended use with the inclusion of the proposed Development. Bell Park Road will realise protection from northerly winds with the inclusion of the proposed Development. Localized areas near the northeast corner of Building C, and near the gaps between the buildings, will experience windier conditions, suitable for standing or walking, however they remain appropriate for their intended use.

Discussion of Westerly Winds

Westerly winds make up a smaller percentage of the prevailing wind climate, occurring slightly more frequently during the summer and fall months. They tend to be of lower velocity and are preconditioned upon approach by rocky terrain with mature vegetation and low-rise residential houses with mature vegetation beyond, providing some surface roughness to winds, decreasing the wind's energy realised at the pedestrian level upon approach.

Proposed Setting

Westerly winds approaching in higher streamlines will similarly contact the westmost corners of the buildings, and/or the northwest façades of the buildings at a skewed angle. These winds will split to flow along the adjacent façades, around the corners and beyond, and to a lesser extent up and over the buildings. Portions of the westerly wind climate will also downwash towards the pedestrian level, however this is well mitigated by the skewed angle of approach, stepped façades, podiums, balconies and canopies that will interrupt winds before reaching the pedestrian level. Downwash that does reach the pedestrian level will be limited, but that which does occur will be redirected to flow along the façades of the buildings, around the corners, between the gaps, and beyond over Bell Park.

Winds approaching the site in lower streamlines similarly contact the westmost corners and façades of the buildings and will split to flow along the respective façades, around the corners and through the gaps between, resulting in localised windy conditions.

As a result, conditions along the Paris Street façades of the buildings are mainly predicted suitable for standing on the occasion of westerly winds, with localised conditions suitable for walking at the northwest corners of Buildings A, B, and C, the southmost corners of Building A, and in the gaps between the buildings. Areas along the eastern Bell Park façades of the proposed Development are within the aerodynamic shade region of the Development and will realise conditions suitable for sitting throughout much of the year. Areas leeward to the gaps or near Building A’s southmost corners will be windy, but are expected to remain suitable to the intended purpose.

The Main Entrances located along the northwest façades of the buildings will be subjected to winds redirected to flow along the façades and, as a result, will be windy at times, however, they are predicted suitable for standing most of the time, and appropriate for their intended use. This rating is partially attributed to the Entrances being well removed from the corners and protected from downwash by the balconies, canopies, and/or stepped condition at the podium. Mitigation, as described above, is recommended at the Main Entrances.

Similar to northerly winds, the proposed Development is well removed from Paris Street and Facer Street and, as such, sidewalk conditions are expected to remain similar to the existing setting, suitable for their intended use, with inclusion of the proposed Development on the occasion of westerly winds. Bell Park Road will be in the aerodynamic shade region of the proposed Development for westerly winds, resulting in sitting conditions in these areas, with localized sections near the gaps in buildings experiencing higher wind speeds due to the funneling of winds between the buildings, resulting in conditions predicted suitable for walking.

Discussion of Southerly Winds

Southerly winds make up a moderate percentage of the prevailing wind climate, tend to be of lower velocity, and are preconditioned on approach by an open parking lot to the southwest, affording wind the opportunity to accelerate, and mature vegetation and low-rise building to the southeast, introducing some turbulence to the approaching wind and reducing the wind's energy at the pedestrian level.

Proposed Setting

Southerly winds approaching the site in higher streamlines will contact the southmost corners of the buildings and southeast façades at a skewed angle where they will split to varying degrees to flow along the adjacent façades. Downwash acting upon Buildings A and C will be limited due to the angle of incidence. Building B presents a broader façade to southerly winds, making it slightly more susceptible, however it features stepped conditions to the southwest, resulting in a modest contribution to winds realised at the pedestrian level.

Southerly winds, approaching at or near the pedestrian level will be significantly moderated upon approach by the landscape of Bell Park, comprised of a mature mix of deciduous and coniferous trees. Southerly winds, once upon Building A, will be redirected along the southeast and southwest façades of Building A, through the gap between Buildings A and B, and beyond. This will result in windy conditions in the gap between Buildings A and B and at the westmost corner of Building A. The gap between Buildings B and C is for the most part within the aerodynamic shade region of Building B and as such will be more comfortable, suitable for the intended purpose most of the time, on the occasion of southerly winds.

As such, conditions along the Bell Park Road façades of the buildings are mainly predicted suitable for standing on the occasion of southerly winds, with localised conditions suitable for walking near the southeast corner of Building A, the northeast corner of Building C, and the gaps between the buildings. Areas along the Paris Street façades of the proposed Development are within the aerodynamic shade region of the Development for southerly winds and as such will realise conditions suitable for sitting throughout much of the year, with localized areas near the west corner of Building A and between the buildings experiencing windier conditions, expected to be suitable for walking.

The Main Entrances located along the Paris Street façades of the buildings are in the aerodynamic shade region of the proposed Development, for southerly winds, and as such, are expected to be comfortable, suitable for sitting, and appropriate for their intended use.

Conditions along Bell Park Road will be exposed to larger portions of the southerly wind climate that are directed to flow around the proposed Development, resulting in conditions that are windy from time to time, but are expected to remain suitable for standing through most of the year. Paris Street and Facer Street are predominantly in the aerodynamic shade region of the proposed development for southerly winds, and as such, will realize conditions suitable for their intended purpose.

Discussion of Easterly Winds

Easterly winds are infrequent and, as indicated by the historical weather data, are of moderate velocity, however they are often associated with storms. The approach terrain over Bell Park consists of mainly mature vegetation, a few low-rise buildings, open spaces, and Ramsey Lake beyond. Although easterly winds are afforded the opportunity to accelerate over Ramsey Lake, the mature vegetation induces turbulence, reducing the wind's energy at the pedestrian level.

Proposed Setting

Easterly winds approaching the proposed Development in upper streamlines will contact the eastmost corners and southeast façades of the proposed Development where they will split to flow around the façades or downwash towards the pedestrian level below. Downwash will similarly be well mitigated by the wind's skewed angle of incidence, and the buildings' stepped façades, podiums and balconies.

Easterly winds approaching near the pedestrian level will similarly split upon contact with the proposed Development, flowing along the southeast façades, around the corners, between the buildings, and beyond towards Paris Street.

As a result, conditions along the southeast façades of the buildings are mainly predicted suitable for standing on the occasion of easterly winds, with localised conditions suitable for walking between the buildings, around the northeast corner of Building C and the southmost corner of Building A. Areas along the Paris Street façades of the proposed Development are within the aerodynamic shade region of the Development for easterly winds and as such will realise conditions suitable for sitting.

The Main Entrances along the southwest façades of the buildings are located within the aerodynamic shade region of the Development for easterly winds, and as such will be suitable for sitting and appropriate for their intended use.

Bell Park Road will be exposed to easterly winds that are directed to flow along the proposed Development, resulting in windier conditions than the existing site, but are considered suitable for standing most of the time, and appropriate for the intended use.

Paris Street is in the aerodynamic shade region of the proposed Development for easterly winds and will realize comfortable conditions also suitable for its' intended purpose.

Discussion of Ordinal Winds

Ordinal Winds approaching from the northwest, northeast, southeast, and southwest also make up an appreciable percentage of the prevailing wind climate, particularly from the southwest and to a lesser degree, northeast, and can be of higher velocity, as depicted in Figure 3.

The proposed Development considered as a whole, is orientated with the long axis nearly parallel with the southwest and northeast wind directions, resulting in said winds coming into contact with relatively narrow façades, with the balance of the site being in the aerodynamic shade region of the windward building. Windy conditions would be expected along the southwest façade of Building A, in the event of high ambient southwesterly winds, as winds split upon impact and flow along the façade, around the corners and beyond. Similarly, the windward façade of Building C will experience windy conditions in the event of high ambient northeasterly winds, as wind splits upon contact to flow along the façade and around the corners, with the remainder of the site being situated in the aerodynamic shade region, experiencing much calmer conditions, once beyond the respective corners. As such, wind conditions resulting from said ordinal winds are expected to pose a less significant influence upon pedestrian comfort than the cardinal winds discussed above.

Winds approaching from the northwest and southeast make up a considerably smaller percentage of the wind climate, and are of mid - to higher velocity, particularly from the northwest. Northwesterly and southeasterly winds will contact the proposed Development at nearly right angles, to a lesser extent for Buildings B and C, increasing the propensity of downwash to the pedestrian level. However, downwash was effectively mitigated by the buildings being punctuated with balconies, stepped podiums and canopies above the entrances. Downwash that reaches the pedestrian level will be redirected along the respective façades, around the corners, between the buildings, and beyond, resulting in pedestrian comfort conditions that are very similar to those discussed for the cardinal directions.

Discussion of Outdoor Amenity Space

Outdoor Amenity Space is proposed on the 13th floor of Building A, the 13th, 14th, and 20th floors on Building B, and at-grade and at the 3rd floor of Building C. The amenity spaces are, for the most part, higher than the neighbouring surroundings and, as a result, are exposed to large portions of the wind climate that are not as effectively moderated upon approach compared to the windward ground level.

The proposed rooftop amenity space on the 13th floor of Building A is located along the northeast façade within the eastmost corner. The Amenity Space is located within the aerodynamic shade region of the 14th through 16th floors of Building A on the occasion of winds emanating from the near northwest through southwest, which make up a significant portion of the wind climate. The Amenity Space is similarly within the aerodynamic shade region of Building B for winds emanating from the near northeast, which make up a considerable portion of the wind climate, particularly in the spring and summer. As a result, the Amenity Space is predicted to experience comfortable conditions, suitable for sitting, under these wind conditions.

Conversely, the Amenity Space will be exposed to winds from the near north as well as southeast quadrant being redirected by the windward façades of Building A and Building B to flow along the façades and through the gap, resulting in windy conditions at times. Winds from the southeast quadrant occur less frequently, tend to be of lower velocity, and are not predicted to have a significant influence on the Amenity Space overall. Northerly winds will result in windy conditions from time to time and, as a result, 2.0m high wind screens are recommended around the perimeter of the space. The need for and extent of mitigation necessary is best determined through quantitative analysis.

Outdoor Amenity Spaces are proposed for Building B at the 13th and 14th floors along the southwest façade and a covered Roof Top Terrace at the 20th floor along the southeast façade, at the southmost corner of the building. Similar to above, the Amenity Spaces are located within the aerodynamic shade region of Building B for winds emanating from the northeast, which makes up a considerable portion of the wind climate, particularly in the spring and summer. They will also realise protection from Building A on the occasion of winds from the southwest, which make up a significant portion of the wind climate. The Amenity Space is predicted to experience comfortable conditions, suitable for sitting, under these wind conditions. Conversely, they will be exposed to winds from the remaining directions flowing along the northwest and southeast façades of Buildings A and B and through the gap between and, as a result, 2.0m high wind screens situated around the perimeter of the Amenity Spaces is recommended.

The 20th floor Covered Roof Top Terrace of Building B is located within the aerodynamic shade region of Building B for winds emanating from the west through north to northeast. The Rooftop Terrace will be exposed to winds emanating from the remaining compass points, unmitigated as it approaches over the lower surrounds. The Roof Top Terrace is covered, reducing exposure, however, 2.0m high wind screens are recommended to achieve conditions seasonally appropriate for the area's intended use. If more comfortable conditions are desired, coniferous vegetation, raised planter beds populated with coarse plantings, trellises, and/or others can be included in the mitigation plan.

Outdoor Amenity Spaces are proposed for Building C at-grade along the northwest façade, proximate to the northmost corner, and at the 3rd floor, along the southeast façade. The at-grade Patio Area will be protected by the Development for winds emanating from the east through south to southwest, however it is exposed to the remaining directions, which makes up much of the prevailing wind climate. Locating Amenity Spaces away from corners is preferrable when practical. Consideration of existing and proposed landscape features will result in more comfortable conditions, however, the area is expected to be windy, and mitigation including wind screens, coniferous plantings, raised planter beds populated with coarse plantings, trellises, and others is recommended to achieve seasonally appropriate conditions for the area's intended use.

The Outdoor Amenity Space proposed along the southeast façade of Building C is located within the aerodynamic shade region of Building C for winds emanating from the north through west to southwest, making up a significant portion of the prevailing wind climate, resulting in comfortable conditions suitable for sitting, much of the time. The Amenity Space will be exposed to northeasterly winds flowing along the façade, which are common in the spring and summer. Incorporating a porous screen wall along the northeast façade of the building across the width of the Amenity Space would redirect northeasterly winds to flow around the Amenity Space, resulting in more comfortable conditions throughout the year. Winds emanating from the remaining compass points occur less frequently and are not likely to significantly influence comfort conditions.

Discussion of Residential Entrances

The Main Residential Entrances to the proposed Development are located centrally along the northwest, Paris Street, façades of the buildings. Downwash is moderated by balconies, overhangs, stepped façades, and canopies. The Entrances will be exposed to winds from the northwest quadrant, while they are sheltered by the proposed

Development for winds emanating from the southeast quadrant. They are well removed from the buildings' corners, reducing the impact of winds from the remaining directions flowing along the façades, and around the corners. As a result, pedestrian comfort conditions at the Entrances are generally predicted to be suitable for standing most of the time, walking on the occasion of high ambient winds, and are considered appropriate for their intended use most of the time.

Comfort conditions appropriate for standing or better are preferable at building Entrances, and conditions suitable for walking are appropriate for the related sidewalks. A mitigation plan is recommended for the Entrances in order to achieve conditions more appropriate for their intended use throughout the year and can include recessing the entrances into the façades, utilizing revolving or sliding doors, incorporating wind screens perpendicular to the facades, including coniferous/marcescent vegetation, raised planter beds populated with dense plantings, trellises, and/or others.

With consideration of the aforementioned mitigative features, the Main Residential Entrances to the proposed Development are predicted to be comfortable and suitable for their intended use throughout the year.

8. MITIGATION STRATEGIES

The proposed 700 Paris Street Development plans establish a context for development in terms of height, massing, and location that allow the prediction of wind issues/problems that may persist once built.

The proposed Development employs an overall wind mitigative design that assists in moderating the upset in winds with inclusion of the building, causing limited influence upon pedestrian comfort conditions realised along the flanking streets and at neighbouring properties. The proposed Development's wind mitigative design features include:

- podiums,
- stepped massing,
- textured façades,
- balconies,
- overhangs,
- canopies,
- landscaping,

and others, that will increase surface roughness apparent to the wind.

Additional mitigation is recommended for the Main Entrances and Outdoor Amenity Spaces to achieve conditions that are suitable for the intended uses, as described within.

Comfort conditions expected at, and around, the proposed Development site are considered suitable to the context, based upon qualitative analysis.

Figure 1: Site Aerial Photo

Figure 2: Site Plan

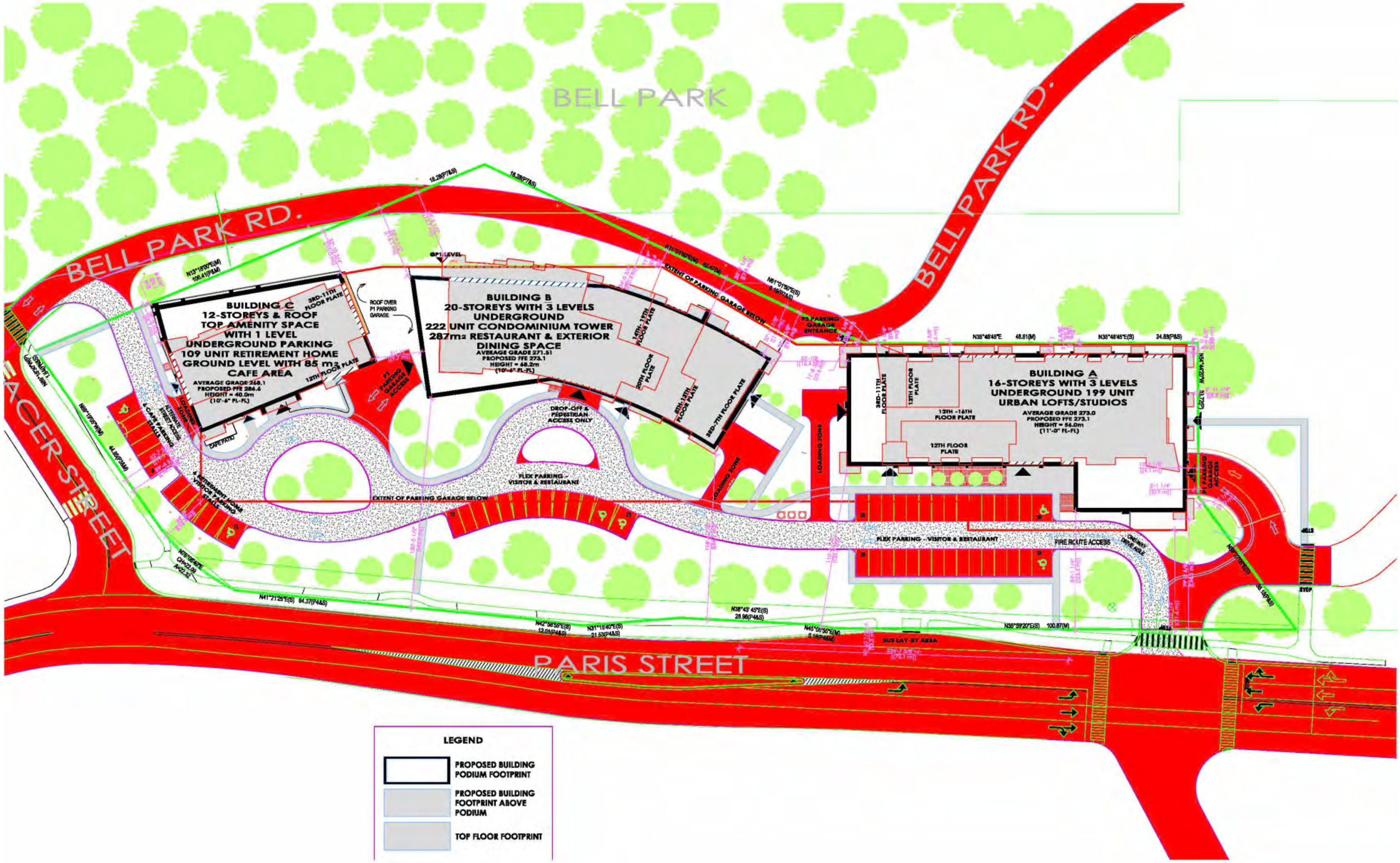
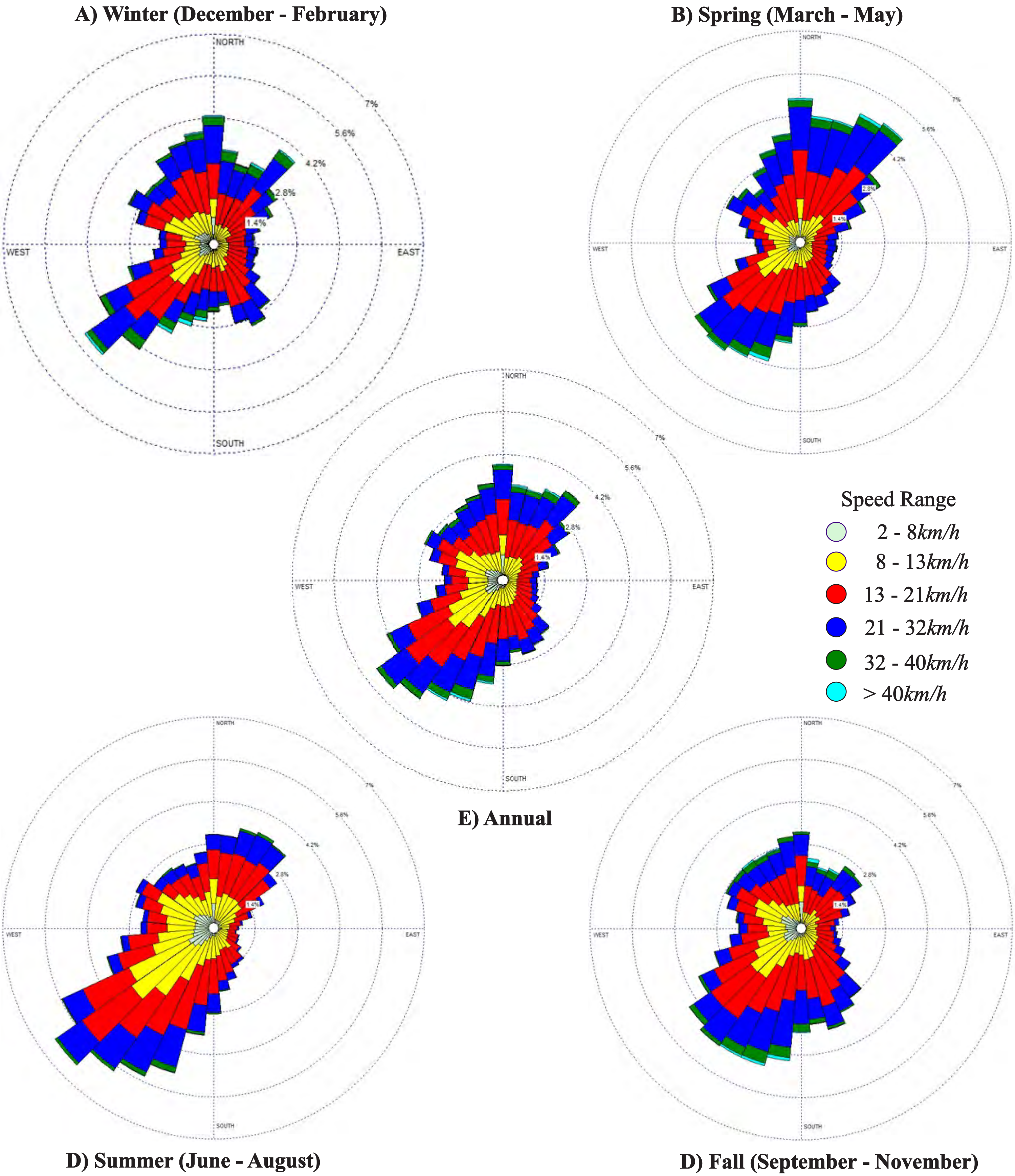


Figure 3: Wind Roses - Greater Sudbury Airport



A) Winter (December - February)

B) Spring (March - May)

E) Annual

D) Summer (June - August)

D) Fall (September - November)

Terraprobe
Consulting Geotechnical & Environmental Engineering
Construction Materials Inspection & Testing

GEOTECHNICAL AND ROCK PROBE INVESTIGATION
CONDOMINIUM DEVELOPMENT
700 PARIS STREET
SUDBURY, ONTARIO

Prepared for: Michael D. Allen Architect c/o
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File No. 5-16-0115-01

August 10th, 2016

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1.0 INTRODUCTION

Terraprobe Inc. (Terraprobe) was retained by Michael D. Allen Architect c/o 2226553 Ontario Inc. to carry out a geotechnical and rock probe investigation for a proposed condominium development. The subject property is located at 700 Paris Street in the City of Greater Sudbury, Ontario (see Figure 1).

This report is a revisio0on of our previous rock probe report (File No. 51-14-9026, December 3rd, 2014) entitled:

ROCK PROBE INVESTIGATION
PROPOSED CONDOMINIUM DEVELOPMENT
700 PARIS STREET
SUDBURY, ONTARIO

This revisions provides additional information with respect to the subgrade soils and the underlying bedrock Rock Quality Designation (RQD).

The exploratory geotechnical and rock probe investigation program was devised to collect subgrade soil samples and map the bedrock profile at the site by advancing two exploratory boreholes and eighteen rock probes. Based on the results of the exploratory borehole and rock probe investigation, geotechnical engineering recommendations are presented for the following items:

- Frost depth;
- Bearing capacity of the sub-strata;
- Appropriate types of foundations;
- Foundation factors for earthquake forces;
- Excavation procedures;
- Trench stability;
- Bedding and compaction requirements;
- Dewatering and drainage requirements;
- Geotechnical Construction Implications; suitability of on site soil to reuse as backfill;
- Unit density of soil and coefficients for lateral load design;
- Considerations for constructibility.

2.0 SITE AND BRIEF PROJECT DESCRIPTION

The property was the former site of the General Hospital. The south of the existing building was demolished consist to permit the construction of an underground parking garage and condominium building. The terrain at the site generally slopes in a easterly direction towards Ramsey Lake.

For discussion purposes, Paris Street is assumed to be running in a north-south direction at this location.

The subject property is bound by the following:

North - Facer Street, residential properties;
West - Paris Street, residential properties;
South - Municipal parking lot;
East - Bell Park, Ramsey Lake.

It is proposed to construct an eight floor condominium building that would be supported by a three storey underground parking garage. The condominium building will be serviced by the City of Greater Sudbury municipal services consisting of storm and sanitary sewers and municipal drinking water system.

3.0 FIELD INVESTIGATION

3.1 Rock Probes

The initial field investigation to advance rock probes was conducted on November 5th, 2014. The proposed initial rock probe program consisted of advancing twenty six (26) exploratory rock probes. Based on the depth of the current existing excavation and the rock probes locations along the east and south sections were not accessible. The final field investigation program consisted of advancing eighteen (18) exploratory rock probes to depths of up to 10.67 metres within the building footprint (See figure 2 for the location of the rock probes).

Prior to conducing the exploratory Rock Probes investigation, the underground services locates were provided by all members of Ontario One.

The rock probe location were marked in the field by Tulloch based on the building layout provided by Michael D. Allen Architect. The geodetic elevations of the borings were determined by Tulloch relative to the City of Greater Sudbury vertical controls and UTM Zone 17 NAD 83 CSRS datum.

The drilling work was carried out by Belanger Construction utilizing a hydrotrack drill rig. The operation was monitored by a Terraprobe technician who logged the probable bedrock depth.

3.2 Boreholes

The exploratory borehole investigation was carried out by Terraprobe between July 25 to 26th, 2016. The geotechnical investigation consisted of advancing the following exploratory boreholes (see figure 3 for the borehole locations):

1. Borehole 1 was advanced in close proximity of RP 72.
2. Borehole 2 was advanced in close proximity of RP 64.

Prior to conducing the exploratory borehole investigation, the underground services locates were provided by Ontario One.

The location of the boreholes were located in the field by Tulloch Geomatics. The elevations of the borings were determined relative to the City of Greater Sudbury vertical controls and UTM Zone 17 NAD 83 CSRS datum.

The drilling work was carried out by Landcore Drilling utilizing a truck mounted drill rig, equipped with conventional soil sampling equipment and rock coring equipment (NQ cores). The operation was monitored by a Terraprobe Engineer in Training (EIT) whom logged the borings and examined the samples as they were obtained. All samples obtained from these boreholes were sealed into plastic jars, and transported to the Terraprobe laboratory for detailed inspection and testing. All of the borehole samples were examined (tactile) in detail by the project engineer, and classified according to visual and index properties. The boreholes were backfilled once the soil samples were retrieved.

The Standard Penetration Test (SPT) was used to obtain samples of the strata penetrated in the exploratory boreholes, using the Split-Barrel Method technique as outlined in ASTM D1586. The soil samples were taken with a conventional 50 mm diameter split barrel sampler at 0.75 m intervals for the entire length of the boreholes. The conventional interval sampling procedure used for this investigation does not recover continuous samples of soil at any borehole locations. There is consequently some interpolation of the borehole layering between samples and indications of changes in stratigraphy as shown on the borehole logs are therefore approximate.

The rock cores (NQ) were retrieved from each location and were placed in rock core boxes and transported to the Terraprobe laboratory for detailed inspection and classified according to visual and index properties.

Groundwater level observations are noted on the borehole logs in Appendix A.

4.0 SUBSURFACE CONDITIONS

4.1 Rock Probes

Details of the subsurface conditions encountered at the site are summarized below. The bedrock depth encountered in the rock probes are presented on the attached Rock Probe Log sheets in Appendix A.

It should be noted that the subsurface conditions are confirmed at the rock probe locations only. The stratigraphic boundaries indicated on the Rock Probe Log sheets are inferred from non-continuous samples and observations of drilling resistance and typically represent a transition from one soil or rock type to another. These boundaries should not be interpreted to represent exact planes of geological change. The subsurface conditions have been confirmed in a series of widely spaced rock probes and will vary between and beyond the rock probe locations. The following discussion has been simplified in terms of the major soil and rock strata for the purposes of geotechnical design. It may not be possible to drill a sufficient number of rock probes and report them in a way that would provide all the subsurface information that could affect construction costs, techniques, equipment and scheduling.

For this soil investigation, no soil samples were retrieved.

4.1.1 Probable Bedrock Subgrade Elevation

The following table presents the exploratory rock probe elevations and recorded depths:

Probable Bedrock Subgrade Elevation

Rock Probe Location	Surface Elevation (m)	Depth to Probable Bedrock (m)	Probable Bedrock Subgrade Elevation (m)
60	264.26	3.05	261.21
61	263.73	3.05	260.68
62	263.39	4.57	258.82
63	263.52	10.67	252.85
64	264.17	6.10	258.07

Rock Probe Location	Surface Elevation (m)	Depth to Probable Bedrock (m)	Probable Bedrock Subgrade Elevation (m)
65	265.13	3.96	261.17
66	265.17	2.44	262.73
67	266.09	2.44	263.65
68	264.94	1.22	263.72
70	264.96	1.83	263.13
71	264.11	1.52	262.59
72	264.01	2.44	261.57
73	264.14	3.96	260.18
74	264.43	3.05	261.38
75	263.89	9.75	254.14
76	264.00	1.22	262.78
77	265.04	0.00	265.04
78	264.13	1.22	262.91

The rock probes indicate that the underlying probable bedrock depth varies between 1.22 metres (RP 68,76 & 78) to 10.67 metres (RP 67) below the existing grades within the proposed building footprint. At RP 77, the bedrock was exposed.

It also indicates that the underlying probable bedrock subgrade generally slopes in a south east direction (towards RP63) dropping from a high of 262.91 m (RP78) to a low of 252.58 m (RP63) with some peaks (RP 77) and valleys (RP 75) that were noted.

The average depth of the probable bedrock is in the range of 3.47 metres (elevation 260.92 metres).

4.2 Boreholes

Details of the subsurface conditions encountered at the site are summarized below. The subsurface soil and groundwater conditions encountered in the boreholes are presented on the attached Log of Borehole sheets in Appendix B.

It should be noted that the subsurface conditions are confirmed at the borehole locations only. The stratigraphic boundaries indicated on the Log of Borehole sheets are inferred from non-continuous samples and observations of drilling resistance typically represent a transition from one soil or rock type to another. These boundaries should not be interpreted to represent exact planes of geological change. The subsurface conditions have been confirmed in a series of widely spaced boreholes, and will vary between and beyond the borehole locations. The following discussion has been simplified in terms of the major soil and rock strata for the purposes of geotechnical design. It may not be possible to drill a sufficient number of boreholes or sample and report them in a way that would provide all the subsurface information that could affect construction costs, techniques, equipment and scheduling.

All of the soil samples that were retrieved from this geotechnical investigation were tested in our soils laboratory to determine the water contents. In addition, grain size analysis and Atterberg Limits were conducted on selected soil samples. The results of this soil testing is presented in Appendix C.

4.2.1 Soil Stratigraphy

In general, fill materials were encountered in both boreholes. The fill materials extended up to 1.52 metres below the existing grades.

BH1 The upper stratum of fill material consisted of a brown to red compact dry SAND, GRAVEL and pieces of brick which extended up to 0.76 metres below the existing grades. The upper stratum of fill was underlain by a dense dark brown gravelly, silty SAND, trace clay Fill stratum that was moist and approximately 0.61 metres thick. Split spoon refusal was recorded at a depth of 1.37 metres. The gravelly, silty SAND stratum was underlain by bedrock consisting of dark grey Gabbro that had a good (RQD = 90%) to fair (RQD = 60%) quality and extended to the full depth of the borehole of 4.42 metres.

BH 2 The upper stratum of fill material consisted of a dark brown loose dry Sand, Gravel some silt which extended up to 0.76 metres below the existing grades. The upper stratum of fill was underlain by a loose brown sandy, silty GRAVEL, trace clay fill stratum that was moist and approximately 0.76 metres thick. The sandy, silty GRAVEL stratum was underlain by a loose light grey Clayey SILT, trace gravel, trace sand stratum that was wet and approximately 0.77 metres thick. The Clayey SILT stratum was underlain by a compact to dense brown SILT, trace clay, trace sand, trace gravel stratum that was wet and approximately 1.37 metres thick. Split spoon refusal was recorded at a depth of 3.66 metres. The Silt, trace clay, trace sand stratum was underlain by bedrock consisting of medium grey coloured Gabbro that had a fair (RQD = 62%) to good (RQD = 82%) quality and extended to the full depth of the borehole of 6.71 metres.

The following testing was conducted on representative soil samples:

1. Moisture contents.
2. Soil Gradations (hydrometers).

The following table presents the soil stratigraphy encountered at each borehole location:

Borehole Soil Stratigraphy

Borehole (Elev.)	Depth (m)	Subgrade Description	SPT Values 'N' or RQD %	Water Content %
BH1 (264.06)	0.00 - 0.76 0.76 - 1.37 1.37 - 2.90 2.90 - 4.42	1 - Fill - SAND, GRAVEL, brick, brown, moist, compact 2 - Fill - Gravelly, silty SAND, trace clay, dark brown, moist, dense 3 - Bedrock - Good quality dark grey Gabbro 4 - Bedrock - Fair quality dark grey Gabbro	49 90 % 60 %	16 18

Borehole (Elev.)	Depth (m)	Subgrade Description	SPT Values 'N' or RQD %	Water Content %
BH2 (264.08)	0.00 - 0.76	1 - Fill - SAND, GRAVEL, some silt, dark brown, dry, loose		14 17
	0.76 - 1.52	2 - Fill - Sandy, silty GRAVEL, trace clay, trace roots, brown, moist, loose.	8	22
	1.52 - 2.29	3 - Clayey SILT, trace gravel, trace sand, light grey, wet, loose	7	23
	2.29 - 3.66	4 - SILT, trace to some clay, trace sand, trace gravel, brown, wet, compact to dense	14 - 37	
	3.66 - 5.18	5 - Bedrock - Fair quality medium grey Gabbro	62 %	
	5.18 - 6.71	6 - Bedrock - Good quality medium grey Gabbro	82 %	

4.2.2 Bedrock Cores

The bedrock core retrieved from BH1 generally consist of an excellent to fair quality dark grey Gabbro (Sudbury Event, Mafic Intrusive Rocks, Nipissing Intrusive Rocks Group formation [1]).

The bedrock core retrieved from BH2 generally consist of a fair to good quality medium coloured grey Gabbro (Sudbury Event, Mafic Intrusive Rocks, Nipissing Intrusive Rocks Group formation[1]) that had been cleaned with compressed air to remove all loose debris and rock.

4.4 Groundwater

Based on the current site conditions, the current excavation filled up with surface water based on the depth of the excavation located up to 9.24 metes or more below Paris Street. We would estimate the groundwater table to be located approximately 1.45 metres (in BH 2) below the existing grade to near the bedrock surface interface (BH 1) with local perched areas depending on the permeability of the underlying native soils.

It should be noted that the ground water table is expected to fluctuate seasonally with higher levels expected during the spring and fall seasons.

[1] Ministry of Natural Resources, Ontario Geological Survey, Map 2491, Sudbury Geological Compilation, 1984.

5.0 GEOTECHNICAL DESIGN

The following discussions and recommendations are based on the factual data obtained from the investigation, and are presented for guidance of the design professionals only. The comments pertain to a specific project and location. This report is provided on the basis of these terms of reference and on the assumption that the preliminary design features relevant to the geotechnical analyses will be in accordance with applicable codes, standards and guidelines of practice. If there are any changes to the site development features relevant to the interpretation made of the subsurface information with respect to the geotechnical analyses or other recommendations, then Terraprobe should be retained to review the implications of these changes with respect to the contents of this report.

Comments about construction are presented only to bring attention to aspects which might impact the design. Contractors bidding on or conducting work associated with this project should review the factual data presented in the preceding sections of the report, to assess their effect on proposed construction methods and scheduling.

5.1 Frost Protection

For the Sudbury area, the required frost protection is 1.80 metres of soil cover. As such, all exterior foundations and grade beams in unheated and heated areas constructed on undisturbed native soils or engineered fills must be provided with a minimum of 1.80 metres of earth cover for frost protection or alternative equivalent insulation in the City of Greater Sudbury. If required, Terraprobe can provide recommendations on the required equivalent insulation.

Footings and exterior columns placed on bedrock surfaces are not subjected to frost heave provided the footings are doweled into the bedrock.

5.2 Foundation Design - Underground Parking Garage Building

For this project, the proposed elevation for the underground parking garage first floor is in the range of 264.00 metres. The current excavation plateau elevation (based on the rock probe locations) was in the range of 263.39 metres (RP62) to 266.09 metres (RP67). This indicate that some excavation will be required to construct the underground parking garage foundation system.

For this project, we anticipate that some drilling and blasting will be required along the west and south sections of the building footprint. Allowances should be made for overbreak conditions. Due consideration should also be given to controlled blasting procedures in order to prevent potential damage to the surrounding environment. All blasts must be monitored and conducted as per the latest version of the Occupational Health and Safety Act and Regulations for Construction Projects (Part II- General Construction, Sections 196- 206).

In addition, we would recommend that a pre-blast survey (as per OPSS 120.07.03) of all neighbouring properties should be undertaken prior to conducting some drilling and blasting activities. The preconstruction survey will serve to protect the client from claims unrelated to the construction activities in the development of this property.

For this project, we recommend placing the underground garage and condominium building foundation system on:

A. On a series of micro piles advanced into the underlying bedrock subgrade in the deep bedrock areas. In the case of the micro pile, a steel casing is advanced and socketed into the underlying bedrock subgrade. The bedrock is then cored to a pre-determined depth based on the building loads and the entire column is filled with a grout mixture and reinforced with a Dywidag Threadbar® sized for the application.

   The number and size of the piles (and type) are determined based on the building loads and configuration. The design of the micro piles would be provided by the supplier in conjunction with the probable bedrock subgrade depth provided by Terraprobe in this report. Depending on the micro pile supplier, the grade beam and pile caps can also be designed from their engineer team.

B. Directly on the exposed bedrock in the areas of the exposed shallow bedrock subgrade.

5.3 Underlying Bedrock Characteristics

As noted in section 4.3, and based on local geological maps produced by the Ontario Geological Survey the local bedrock in the vicinity of the condominium development consist of a medium grey coloured to dark grey Gabbro.

The Gabbro bedrock can be assumed to have a unit weight, γ, of 26.50 kN/m^3 and a buoyant unit weight, γ' (γ_{Gabbro} - γ_{water}), of 16.70 kN/m^3.

The Bulk Modulus of a Gabbro that can be utilized for design would be in the range of 50 GPa.

5.3.1 Coefficient of Friction on Bedrock

The coefficient of friction angle between the underside of a cast in place concrete footing and a relatively rough bedrock surface can be taken as tan φ of 43^0 (0.93) and for a smooth bedrock surface can be taken as tan φ of 30^0 (0.577).

5.3.2 Rock Anchors - Allowable Bond Stress

If rock anchors are required to provide additional uplift or lateral capacity, then the structural engineer will design the length and diameter of the rock anchors based on the bedrock characteristics. For rock anchors established in bedrock, three predominant modes of failures can occur:

1. Failure can occur between the grout and the dowel;
2. Or failure can occur between the grout and the rock.
3. The third mode would consist of a quasi-conical rock mass failure.

Field testing (pull out tests) have indicated that the bond developed between the grout and the dowel is typically twice that of the bond developed between the grout and the rock. Therefore, the design analysis should be based on the failure between the grout and the bedrock interface.

The allowable bond stress should be smaller than 1/30 times the unconfined compressive strength of the bedrock and the compressive strength of the grout material whichever is less and should not exceed 1.3 MPa. From previous knowledge of the bedrock in this area, a relatively conservative unconfined compressive strength of approximately 1.0 MPa may be used. The required bond length (L) for the anchor is a function of the core hole diameter (d) and can be calculated as follows:

$$\mathbf{L = P / (\pi) \, x(d) \, x(\tau_b)}$$

$L =$ length (m)
$P =$ working capacity of the anchor (kN)
$\tau_b =$ working bond stress (kPa)
$d =$ diameter of core hole (m)

Usually, the upper 300 mm of the bedrock, is not normally considered part of the bond length since this area is usually weathered/fractured. In this region, we usually assume that the ultimate bond strength will not develop based on the above calculation.

During construction, we recommend testing up to 10% of the rock anchors by conducting a pull out test to confirm the design strengths.

5.3.4 Bedrock Bearing Capacity

Some footings or grade beams may bear directly on the exposed shallow bedrock subgrade.

Foundations placed directly on bedrock should be established on a relatively level rock surface, i.e. generally sloping at an angle of less than approximately 10^0 from the horizontal. In some instances, foundation bases can be placed on bedrock sloping at angles up to 25^0 to 30^0 from the horizontal, provided dowels are incorporated to resist shear. Dowels should consist of a minimum 25M bar embedded a minimum of 1.0 metres into the underlying bedrock subgrade and grouted or epoxied. The spacing of the anchors can vary between 600 mm to 800 mm depending on the slope. Where rock slopes are at steeper angles, the rock surface is to be levelled to provide a stepped footing base.

As an alternative to levelling the bedrock, where the bedrock surface is irregular and jagged, it may be more practical to provide level benching over these areas by pouring lean concrete (minimum 10 MPa) prior to constructing the foundations. This decision is made on site, since each situation will depend on site specific bedrock conditions.

The Rock Quality Designation (RQD) of the cores that were retrieved ranged between 60% (fair) to 90% (good). Based on the lower bound RQD, the bearing capacity of the underlying bedrock would be in the range of 35 MPa (ULS).

Serviceability Limit States (SLS) does not apply for shallow foundations bearing directly on bedrock since the loads required for unacceptable settlements to occur would be much larger than the factored resistance at the Ultimate Limit States (ULS). Foundations installed in accordance with the above recommendations would be expected to experience very little settlements limited to the elastic deformation of the concrete.

5.4 Underground Parking Garage Foundation Grade Beams

It is anticipated that the grade beams will be supported by pile caps cast over the micro piles. In certain locations, it is anticipated that the bedrock will need to be drilled and blasted to accommodate the underground garage basement slab and foundation system. At these locations, the grade beams could bear upon exposed bedrock or on concrete columns bearing on the exposed bedrock. These transition zones would need to be designed once the final excavation elevation is completed.

Prior to pouring the concrete for the grade beams, the footing areas (original ground or engineered fill pad if applicable) should be cleaned of all deleterious materials such as topsoil, fill, softened, disturbed or caved materials, as well as any standing water.

If construction proceeds during freezing weather conditions, adequate temporary frost protection for the footing bases and concrete must be provided.

5.5 Underground Parking Garage Basement Slab

The current overburden soil that were assessed from the borehole investigation indicate some loose fill materials underlying some compact Silt soils. We are also aware that some of the fill materials consists of deleterious fill materials (bricks, concrete blocks) that were placed in the centre of the excavation to permit access to the site to enable the drilling of the rock probes.

We recommend that the underground garage basement slab should be designed as a structural slab (not bearing on the subgrade soils) by transferring the weight to the grade beams.

In areas were shallow bedrock is exposed, a section of the underground garage basement slab may be designed to bear upon an engineered fill placed over dense till soils or exposed sound bedrock.

5.5.1 Engineered Fill Placement

The engineered fill should consist of a Granular B Type II (OPSS MUNI 1010) placed in 150 mm lifts and compacted to 100% of its Standard Proctor Maximum Dry Density (SPMDD).

The engineered fill would be placed over the undisturbed dense till soils or bedrock subgrade. At the foundation level, sufficient engineered fill shall be constructed to ensure that it extends at least a distance equal to the full depth of the engineered fill laterally beyond the edge of any foundations, and that it extends outward within an area defined by a 1 to 1 line downward from the edge of any engineered fill.

Full time monitoring of the placement and compaction of the engineered fill is required for each lift of engineered fill. For a well graded blast rock fill and Granular B Type II, witnessing the chinking on a full time basis would be utilized to verify and approve the compactive effort.

5.6 Building Foundation Drainage

To assist in maintaining the building foundations dry from surface water seepage, it is recommended that exterior grades around the building be sloped away at a 2% gradient or more, for a distance of at least 2.0 metres. Roof drains should discharge a minimum of 1.5 metres away from the structure to a drainage swale or appropriate drainage outlet.

Since the underground garage building will consist of a basement, exterior perimeter foundation drains are required to drain the south west and north sides of the building. The foundation drains should consist of a minimum 150 mm diameter fabric wrapped perforated pipe surrounded by a 19 mm diameter clearstone gravel (OPSS 1004) with a minimum cover of 150 mm (OBC section 9.14.3, Division B, pg B9-60). The perimeter weeping tile would drain into a sump pit located in the basement area of the underground garage. The perimeter foundation drains should discharge towards the rear section of the property to a swale or suitable drainage outlet. The perimeter drain installation and outlet considerations must conform to the Ontario Building Code and plumbing code requirements.

The exterior foundation backfill should extend a minimum lateral distance of 600 mm out from the foundation wall and grade beam and should consist of free-draining granular material, such as a Granular B Type I (OPSS 1010) or suitable alternative drainage cellular media. Since the garage parking structure will be constructed underground, the foundation walls will need to be water proofed (water stop detail).

5.7 Re-use of Excavated Material & General Backfill

Any topsoil/organic, fill and deleterious materials (building materials such as brick, concrete blocks, etc.) encountered at the site should not be reused as backfill in settlement sensitive areas, such as beneath the floor slabs, pavements and trench backfill areas. Theses material may be stockpiled and reused for landscaping purposes provide it is environmentally suitable to do so or removed from the site for disposal.

All backfill materials should consist of free draining material such as a Granular B Type I or Granular B Type II (OPSS MUNI 1010) which can be readily compacted. In settlement sensitive areas, such as beneath pavements and trenches, the backfill should be placed in lifts of 150 mm or less and compacted to a minimum of 100% of its SPMDD. It is recommended that inspection and testing be carried out during construction to confirm trench backfill quality, thickness and to ensure adequate compaction.

Should construction be conducted during the winter season, it is imperative to ensure that frozen material is not utilized as trench backfill.

5.8 Pipe Bedding

The buried services should be placed on conventional Class 'B' granular bedding as per the City of Greater Sudbury GSSD-1227.010 specifications for sewer pipes & water mains for good ground conditions. The granular bedding would be placed over an engineered fill or undisturbed native soils. In the case of a soil trench, where disturbance of the trench base has occurred, such as due to groundwater seepage, or construction traffic, the disturbed soils should be sub-excavated and replaced with suitably compacted granular fill.

Bedding details should conform to the latest version of the City of Greater Sudbury GSSD-1227.010 specifications.

5.9 Trench Backfill

Trench backfill above the springline of the pipe should conform to the latest version of the City of Greater Sudbury GSSD-1227.010 specifications. Backfilling of narrow trenches can be accomplished by reusing the excavated soils (provided they are not too wet) above the springline of the pipe to the underside of the roadway subbase materials provided the moisture content is maintained within 2% of optimum moisture content. If the native soils prove difficulty to compact with vibratory compaction equipment, it is recommended that a free draining material such as Granular B Type I (OPSS MUNI 1010) be used.

All fill should be placed in 150 mm lifts and compacted to a minimum of 95 percent Standard Proctor Maximum Dry Density (SPMDD). It needs to be noted that post-compaction settlement of fine grained fills on the order of 0.5 to 1.0 percent of the total height are common, even when adequately placed to specified compaction. It is best to schedule deep fill placement as far in advance of finish surfacing as possible for best grade integrity.

5.10 Earthquake Design Parameters

The current Ontario Building Code stipulates the methodology for earthquake design analysis, as set out in Subsection 4.1.8.7. The determination of the type of analysis is predicated on the importance of the structure, the spectral response acceleration and the site classification. The parameters for determination of Site Classification for Seismic Site Response are set out in Table 4.1.8.4A of the OBC (2006).

The classification is based on the determination of the average shear wave velocity in the top 30 metres of the site stratigraphy, where shear wave velocity measurements have been taken or alternatively estimated on the basis of rational analysis of undrained shear strength or penetration resistance.

$$\upsilon_{s\text{-avg}} = \frac{\sum_{i=1}^{n} d_i}{\sum_{i=1}^{n} \frac{d_i}{\upsilon_{si}}} \qquad s_{u\text{-avg}} = \frac{\sum_{i=1}^{n} d_i}{\sum_{i=1}^{n} \frac{d_i}{s_{ui}}} \qquad N_{avg} = \frac{\sum_{i=1}^{n} d_i}{\sum_{i=1}^{n} \frac{d_i}{N_i}}$$

Shear wave velocity **Undrained shear strength** **SPT N-values**

At this site, it is known the upper soil stratigraphy consists up to 3.0 metres or greater of soil with a loose to compact relative density with estimated average standard penetration resistance N values of less than 15. It is known that the deeper stratigraphy in this area is at least as competent as the existing stratum and that the competent bedrock consisting of igneous and metamorphic rocks could lie at depths of up to 10.67 metres (RP information) or greater below the existing grades.

In order to classify the bedrock as a Class A or B, the shear wave velocity of the actual bedrock formation must be measured on the site or on profiles of the same bedrock with equal or greater degree of weathering and fracturing. For this project, Terraprobe did not measure the shear wave velocity as part of the scope of work.

For a building designed to bear on micro piles driven into the underlying bedrock subgrade, the site designation for seismic analysis is Class C.

According to Tables 4.1.8.4.B and 4.1.8.4.C. of the same code, the applicable acceleration and velocity based site coefficients are tabulated below.

Site Class	Values of F_a				
	$S_a(0.2) \leq 0.25$	$S_a(0.2) = 0.50$	$S_a(0.2) = 0.75$	$S_a(0.2) = 1.00$	$S_a(0.2) = 1.25$
C	1.0	1.0	1.0	1.0	1.0

Site Class	**Values of F_v**				
	$S_a(1.0) \leq 0.1$	$S_a(1.0) = 0.2$	$S_a(1.0) = 0.3$	$S_a(1.0) = 0.4$	$S_a(1.0) \geq 0.5$
C	1.0	1.0	1.0	1.0	1.0

Values of F_a and F_v can be linearly interpolated for intermediate values of S_a between 0.2 and 1.0.

6.0 DESIGN CONSIDERATIONS FOR CONSTRUCTIBILITY

6.1 Site Work

It is recommended that the geotechnical aspects of the proposed works outlined within, be completed under appropriate geotechnical supervision to routinely check such items as subgrade preparation, fill compaction and material physical characteristics for compliance with the various recommendations and specifications presented within.

As noted, it is anticipated that some excavation for the services and underground parking garage foundations will require drilling and blasting in bedrock. Allowances should be made for overbreak conditions. Due consideration should also be given to controlled blasting procedures in order to prevent potential damage to the surrounding environment. All blasts must be monitored and conducted as per the latest Occupational Health and Safety Act and Regulations for Construction Projects (currently Nov. 1993, Part II- General Construction, Sections 196- 206).

In addition, we would recommend that a preconstruction survey of all neighbouring properties should be undertaken prior to conducting some drilling and blasting activities. The preconstruction survey will serve to protect the client from building damage claims unrelated to the construction activities in the development of this property.

If construction proceeds during freezing weather conditions, adequate temporary frost protection for the exposed soil in the foundation excavations and concrete must be provided.

6.2 Excavations

Where workmen must enter excavations carried deeper than 1.20 metres, the trench excavations should be suitably sloped and/or braced in accordance with the latest version of the Occupational Health and Safety Act and Regulations for Construction Projects (Part III - Excavations, Section 226). Alternatively, the excavation walls may be supported by bracing or close shoring or a trench box.

The Occupational Health and Safety Act recognizes four (4) broad classifications of soils, which are summarized as follows:

TYPE 1 SOIL

a. is hard, very dense, and only able to be penetrated with difficulty by a small sharp object;
b. has a low natural moisture content and a high degree of internal strength;
c. has no signs of water seepage; and
d. can be excavated only by mechanical equipment.

TYPE 2 SOIL

a. is very stiff, dense and can be penetrated with moderate difficulty by a small sharp object;
b. has a low to medium natural moisture content and a medium degree of internal strength; and
c. has a damp appearance after it is excavated.

TYPE 3 SOIL

a. is stiff to firm and compact to loose in consistency or is previously excavated soil;
b. exhibits signs of surface cracking;
c. exhibits signs of water seepage;
d. if it is dry, may run easily into a well-defined conical pile; and
e. has a low degree of internal strength.

TYPE 4 SOIL

a. is soft to very soft and very loose in consistency, very sensitive and upon disturbance is significantly reduced in natural strength;
b. runs easily or flows, unless completely supported before excavating procedures;
c. has almost no internal strength
d. is wet or muddy; and
e. exerts substantial fluid pressure on its supporting system.

Based on our previous test pit investigation report conducted at the site on October 1, 2013 (File No. 52-13-8196) and entitled:

Proposed Excavation Slope Stability Comments
St Joseph Hospital Building Demolition
700 Paris Street, Sudbury, Ontario

we would classify the compact fill materials (sand & gravel) and native soils (Silt and Sand) as a Type 3 soils above the groundwater table and Type 4 soils below under these guidelines.

Based on Type 3 soils; the excavations will need to be sloped at a minimum gradient of 1 horizontal to 1 vertical from the bottom of the excavation.

Based on Type 4 soils;	the excavations will need to be sloped at a minimum gradient of 3 horizontal to 1 vertical from the bottom of the excavation.

Alternatively, the excavations may be shored by a support system complying with sections 235, 236, 237, 238, 239 and 241 under O. Reg. 231/91, s 234(1).

6.3 Anticipated Ground Water Management

From the observed water levels located in the middle section of the site, it is expected that some surface water could enter any temporary excavations for the grade beam and pile installations depending on the time of the year the construction takes place.

Generally, groundwater inflow can be controlled to a depth of up to approximately 600 mm below the water table by installing strategically placed sumps and pumping the collected water out of the excavations. Deeper excavations in this type of material will require more positive control, such as through well points and/or interlocking steel sheet piles. It is noted that excavations carried below the water table in cohesionless soil (silt, sand, sand and gravel) will experience loosening and sloughing of the base and sides, unless the ground water level is lowered first.

It is the responsibility of the contractor to propose a suitable dewatering system based on the groundwater elevation at the time of construction. The method used should not undermine any adjacent structures. The contractor should submit their proposal to the prime consultant for review and approval prior to construction. A permit to take water may be required from the Ministry of the Environment. It is the responsibility of the contractor to make this application as required and any other applications from other Ministries or authorities as required (DFO, Conservation authorities, etc.).

All collected water is to discharge a sufficient distance away from the excavation to prevent re-entry. Sediment control measures, such as a silt fence should be installed at the discharge point of the dewatering system. The utmost care should be taken to avoid any potential adverse impacts on the environment.

It should be noted that the water table is expected to fluctuate seasonally with higher levels expected during the spring and fall seasons.

6.4 Temporary Shoring

For this project, it is anticipated that a temporary shoring design will be required to construct the underground parking garage structure along the west and south sides of the excavation limits. Once the building design is finalised, Terraprobe Design can provide this service.

6.5 Horizontal Earth Pressure

If required, walls or bracings subject to unbalanced earth pressures must be designed to resist a pressure that can be calculated based on the following equation:

$$P = K [\gamma (h-h_w) + \gamma' h_w + q] + \gamma_w h_w$$

where:
P = the horizontal pressure at depth, h (m)
K = the earth pressure coefficient,
h_w = the depth below the ground water level (m)
γ = the bulk unit weight of soil, (kN/m^3)
γ' = the submerged unit weight of the exterior soil, (γ - 9.8 kN/m^3)
q = the complete surcharge loading (kPa)

Where the wall backfill can be drained effectively to eliminate hydrostatic pressures on the wall, this equation can be simplified to:

$$P = K[\gamma h + q]$$

This equation assumes that free-draining granular backfill is used and positive drainage is provided to ensure that there is no hydrostatic pressure acting in conjunction with the earth pressure.

Resistance to sliding of earth retaining structures is developed by friction between the base of the footing and the soil. This friction (**R**) depends on the normal load on the soil contact (N) and the frictional resistance of the soil ($\tan \varphi$) expressed as $R = N \tan \varphi$. This is an ultimate resistance value and does not contain a factor of safety.

Passive earth pressure resistance is generally not considered as a resisting force against sliding for conventional retaining structure design because a structure must deflect significantly to develop the full passive resistance.

The average values for use in the design of structure subjected to unbalanced earth pressures at this site are tabulated as follows:

Parameter	Definition	Units
φ	internal angle of friction	degrees
γ	bulk unit weight of soil	kN/ m^3
K_a	active earth pressure coefficient (Rankin)	dimensionless
K_o	at-rest earth pressure coefficient (Rankin)	dimensionless
K_p	passive earth pressure coefficient (Rankin)	dimensionless

Material Types and Strength Properties

Stratum/Parameter	φ	γ	K_a	K_o	K_p
Silt and Clay	26	18.5	0.39	0.56	2.56
Clayey/Sandy Silt or similar Fill	30	18.5	0.35	0.5	3
Silt and Sand/Sand	32	21.5	0.3	0.47	3.22
Granular B Type I (OPSS 1010)	34	21	0.28	0.44	3.54
Granular A (OPSS 1010)	38	22	0.24	0.38	4.2
Granular B Type II (OPSS 1010)	40	23	0.22	0.36	4.6

The values of the earth pressure coefficients noted above are for a horizontal grade behind the wall. The earth pressure coefficients for an inclined grade (retained soil) will vary based on its inclination.

Where permanent drainage for earth retaining walls is not install, hydrostatic pressure acting on the walls must be included in the above calculation; the unit weight of water, $\gamma_w = 9.81$ kN/m^3. For sloping backfill, the Canadian Highway Bridge Design Code, section C 6.9 should be consulted for the design recommendations.

The surcharge effect from compaction equipment during construction must be taken into account. Where lighter compaction equipment and smaller lifts are used the surcharge effect will be minimized. This should be reviewed in detail by a structural engineer. Permanent earth retaining wall designs are to be carried out in accordance with the latest edition of the Canadian Foundation Engineering Manual and/or the Canadian Bridge Design Code.

6.6 Quality Control

The installation of the piles for the condominium building and any foundation excavations must be monitored by Terraprobe to ensure that the founding bearing capacities achieved are consistent with the design bearing capacity intended by the geotechnical engineer.

The on-site review of the condition of the foundation soil as the foundations are constructed is an integral part of the geotechnical design function and is required by Section 4.2.2.2, Division B, of the 2006 Ontario Building Code. If Terraprobe is not retained to carry out foundation evaluations during construction, then Terraprobe accepts no responsibility for the performance or non-performance of the foundations, even if they are ostensibly constructed in accordance with the design recommendations contained in this report.

The requirements for fill placement on this project have been stipulated relative to Standard Proctor Maximum Dry Density as determined by ASTM D698. Terraprobe operates a CCIL (Canadian Council of Independent Laboratories) certified aggregates laboratory. In situ determinations of density during fill placement on site are recommended to demonstrate that the specified densities are achieved. Terraprobe is a CNSC licensed operator of appropriate nuclear density gauges for this work and can provide sampling and testing services for the project as necessary, with our qualified technical staff. For a Granular B Type II (OPSS 1010) witnessing the proof rolling on a full time basis would be utilised to verify and approve the compactive effort.

It has been assumed that concrete for the this structure will be specified in accordance with the requirements of CAN3 - CSA A23.1. Terraprobe maintains a CSA certified concrete laboratory and can provide concrete sampling and testing services for the project as necessary.

7.0 STATEMENT OF LIMITATIONS AND RISK

7.1 Procedures

This reports presents geotechnical design recommendations for the constructibility of the proposed condominium development. It does not consider any environmental issues that may or not be present on the site. It is the responsibility of the client to assess any environmental potential issues on this property and was not part of the scope of work for this investigation.

This investigation has been carried out using investigation techniques and engineering analysis methods consistent with those ordinarily exercised by Terraprobe and other engineering practitioners, working under similar conditions and subject to the time, financial and physical constraints applicable to this project. The geotechnical engineering discussions and recommendations that have been presented are based on the factual data obtained from this investigation.

Any bedrock elevation and ground water observations discrepancies in relation to the findings in the field are not the responsibility of Terraprobe. The client must assume the risk of such description discrepancies findings and be prepared to adjust to potential extra costs to remedy the findings under the direction of Terraprobe. The data presented in the rock probe logs are based on non continuous sampling. There is consequently some interpolation of the probable bedrock depth and indications of changes in stratigraphy as described are therefore approximate.

It must be recognized that there are special risks whenever engineering or related disciplines are applied to identify subsurface conditions. Even a comprehensive sampling and testing program implemented in accordance with the most stringent level of care may fail to detect certain conditions. Terraprobe has assumed for the purposes of providing design parameters and advice, that the conditions that exist between rock probes are similar to those found at the rock probe locations. The conditions that Terraprobe has interpreted to existing between rock probes may differ from those that actually exist.

It may not be possible to advance a sufficient number of rock probes and boreholes and report them in a way that would provide all the subsurface information that could affect construction costs, techniques, equipment and scheduling. Contractors bidding on or undertaking work on the project should be directed to draw their own conclusions as to how the subsurface conditions may affect them, based on their own investigations and their own interpretations of the factual investigation results, cognizant of the risks implicit in the subsurface investigation activities.

7.2 Changes In Site And Scope

It must also be recognized that the passage of time, natural occurrences, and direct or indirect human intervention at or near the site have the potential to alter subsurface conditions. Ground water conditions are particularly susceptible to change as a result of season variation and alterations in drainage conditions.

The engineering discussion and design parameters recommendations that have been provided are based on the factual data obtained from the site investigation (consisting of rock probes and exploratory boreholes) conducted by Terraprobe and are intended for use by the owner and their retained designers in the design phase of the project.

Since the project is still in the design stage, all aspects of the project relative to the subsurface conditions cannot be anticipated. If there are changes to the project scope and development features the interpretations made of the subsurface information, the geotechnical design parameters and comments relating to constructibility issues and quality control may not be relevant to the revised project or complete.

Terraprobe must be retained to review the implications of changes with respect to the contents of this report and must be retained to review the design drawings and specifications prior to construction.

8.0 CLOSURE

This report was prepared for the express use of our client Michael D. Allen Architect c/o 2226553 Ontario Inc. and their retained design consultants. This report is copyright of Terraprobe and no part of this report may be reproduced by any means, in any form, without the prior written permission of Terraprobe.

Michael D. Allen Architect c/o 2226553 Ontario Inc. and their retained design consultants are authorized users.

We trust that the foregoing is sufficient for your present requirements. If you have any questions or if we can be of further assistance, please do not hesitate to contact us.

Yours truly,

Terraprobe Inc.

Denis Paquette, P.Eng.
Principal, Sudbury Branch Manager

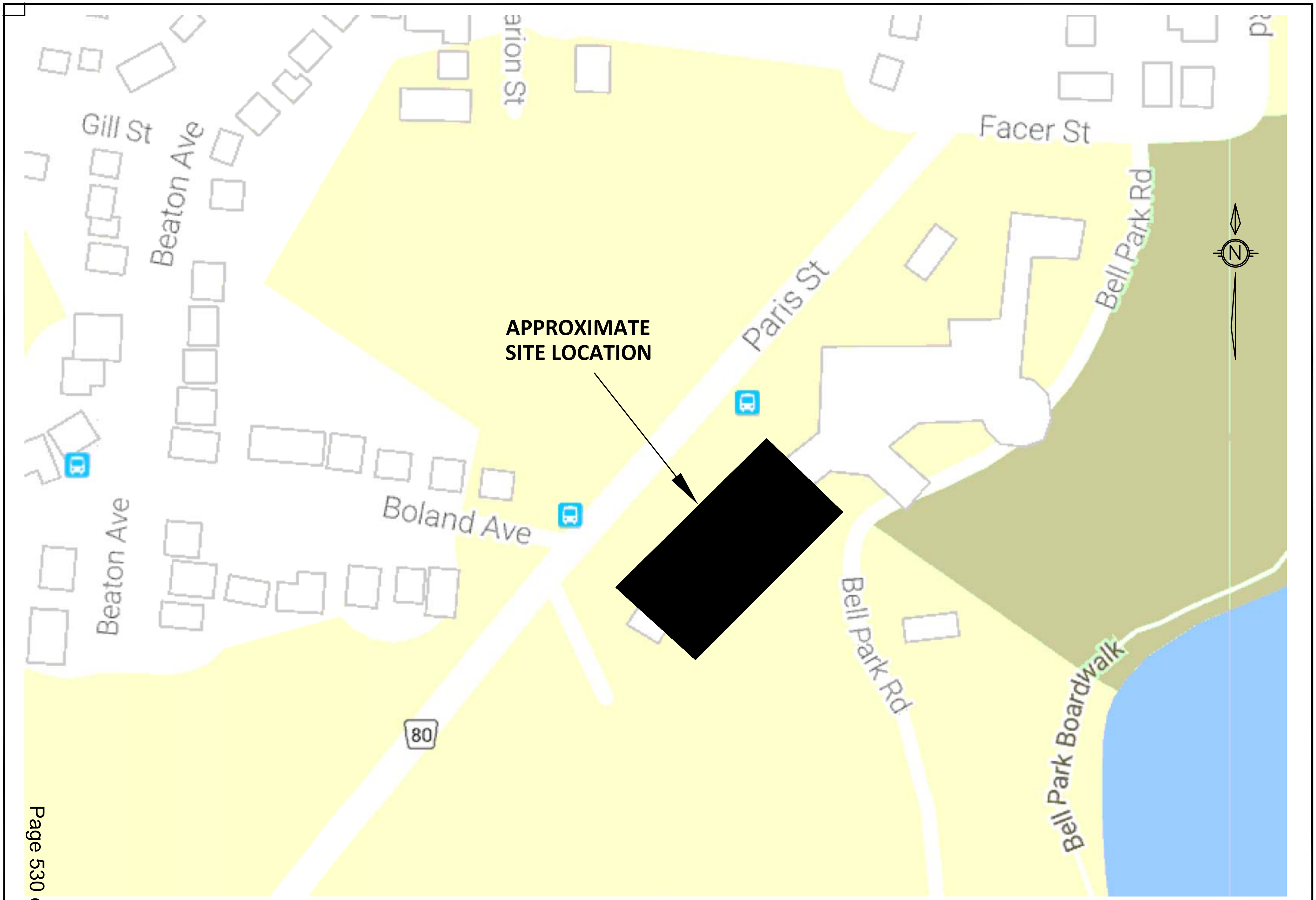
Denis Paquette

Digitally signed by Denis Paquette
DN: cn=Denis Paquette, o=Terraprobe Inc., ou, email=dpaquette@terraprobe.ca, c=CA
Date: 2016.08.10 22:49:38 -04'00'

LICENSED PROFESSIONAL ENGINEER
August 10, 2016
D.G. PAQUETTE
35380302
PROVINCE OF ONTARIO

FIGURES

TERRAPROBE INC.

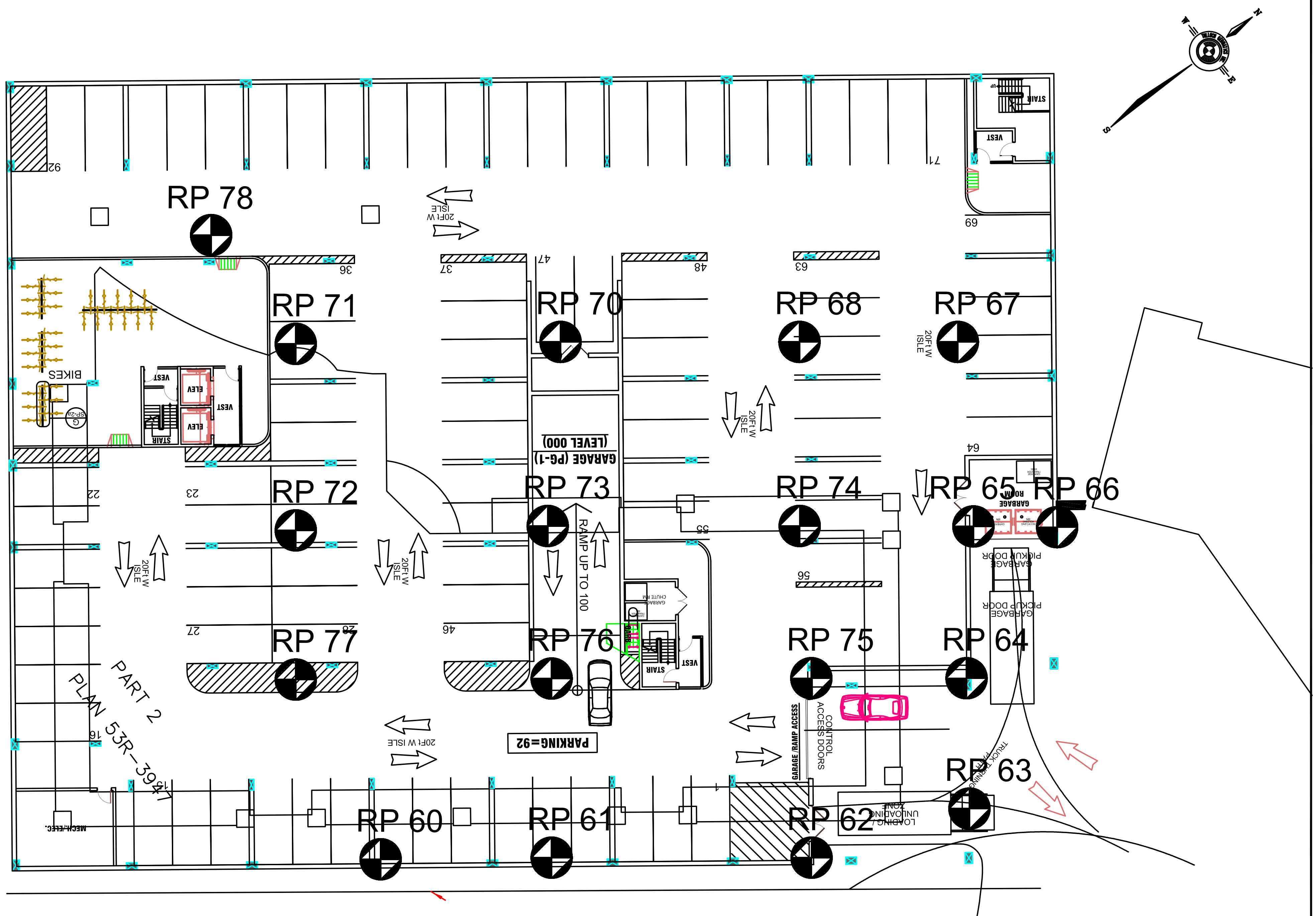


APPROXIMATE SITE LOCATION

Map provided by Google Maps

NTS

Terraprobe	Title/Name Location: Site Location Plan – Proposed Condominium Development 700 Paris Street, Sudbury, Ontario	Date: July 25, 2016	Project No.: 5–16–0115–01	Figure: 1

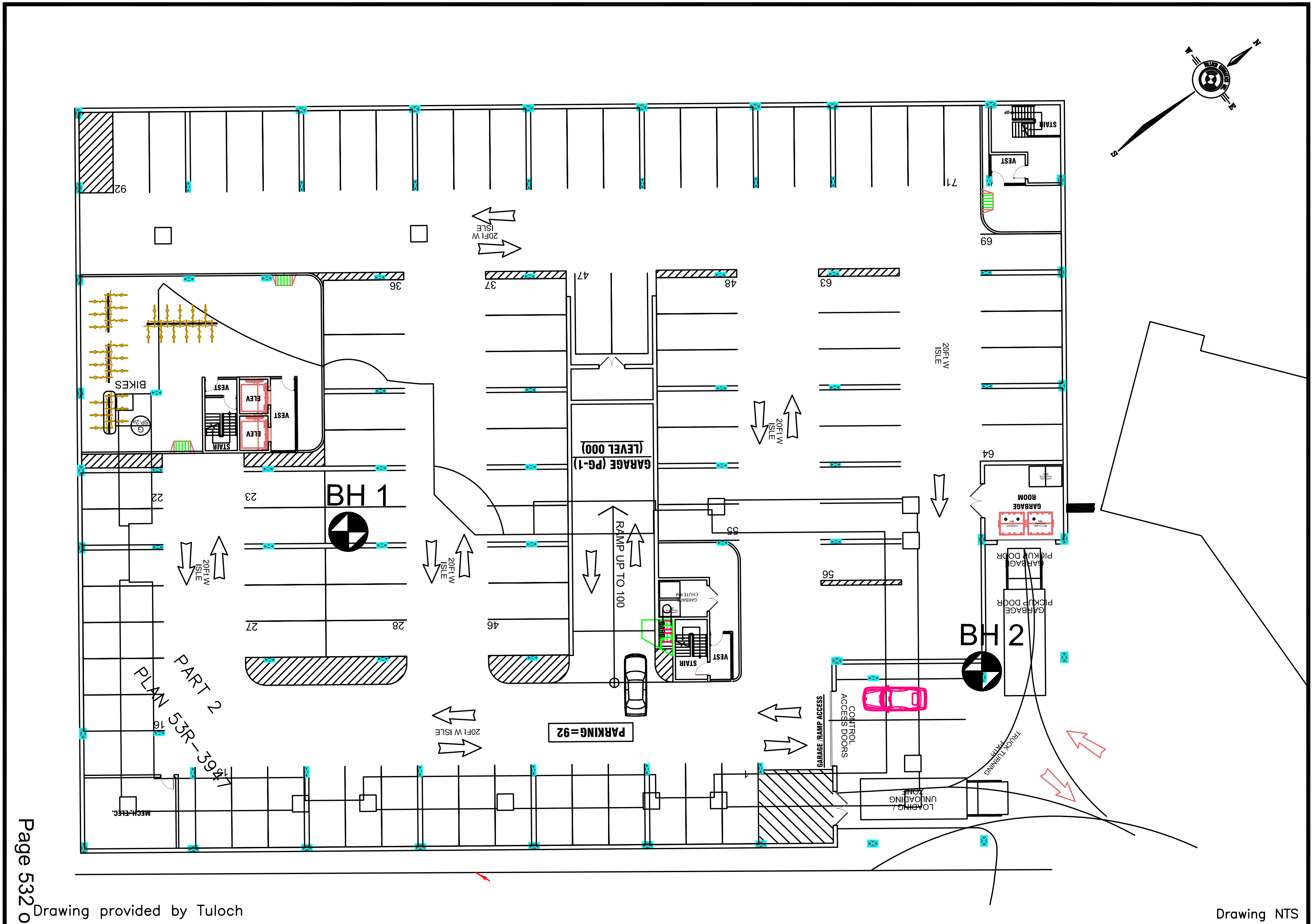


Drawing provided by Tuloch

Drawing NTS

Terraprobe

Title/Name Location: Rock Probe Location Plan – Proposed Codominium Development 700 Paris Street, Sudbury, Ontario	Date: November 5, 2014	Project No.: 51–14–9026	Figure: 2



Drawing provided by Tuloch

Drawing NTS

Terraprobe

Title/Name Location: BH Location Plan – Proposed Codominium Development
700 Paris Street, Sudbury, Ontario

Date: June 23, 2016

Project No.: 5–16–0115–01

Figure: 3

APPENDIX A

Rock Probe Logs

Terraprobe Inc.

GEOTECHNICAL INVESTIGATION
Rock Probe Logs
Proposed Condominium Development
700 Paris Street
Sudbury, Ontario

ROCK PROBE 60

Location: See Figure 2
Elevation: 264.26 m

DEPTH	DESCRIPTION
0.00 to 3.05 m	Interpreted as granular fill underlain by native soils
3.05 m	Probable bedrock

ROCK PROBE 61

Location: See Figure 2
Elevation: 263.73 m

DEPTH	DESCRIPTION
0.00 to 3.05 m	Interpreted as granular fill underlain by native soils
3.05 m	Probable bedrock

ROCK PROBE 62

Location: See Figure 2
Elevation: 263.39 m

DEPTH	DESCRIPTION
0.00 to 4.57 m	Interpreted as granular fill underlain by native soils
4.57 m	Probable bedrock

ROCK PROBE 63

Location: See Figure 2
Elevation: 263.52 m

DEPTH	DESCRIPTION
0.00 to 10.67 m	Interpreted as granular fill underlain by native soils
10.67 m	Probable bedrock

ROCK PROBE 64

Location: See Figure 2
Elevation: 264.17 m

DEPTH	**DESCRIPTION**
0.00 to 6.10 m	Interpreted as granular fill underlain by native soils
6.10 m	Probable bedrock

ROCK PROBE 65

Location: See Figure 2
Elevation: 265.13 m

DEPTH	**DESCRIPTION**
0.00 to 3.96 m	Interpreted as granular fill underlain by native soils
3.96 m	Probable bedrock

ROCK PROBE 66

Location: See Figure 2
Elevation: 265.17 m

DEPTH	**DESCRIPTION**
0.00 to 2.44 m	Interpreted as granular fill underlain by native soils
2.44 m	Probable bedrock

ROCK PROBE 67

Location: See Figure 2
Elevation: 266.09 m

DEPTH	**DESCRIPTION**
0.00 to 2.44 m	Interpreted as granular fill underlain by native soils
2.44 m	Probable bedrock

ROCK PROBE 68

Location: See Figure 2
Elevation: 264.94 m

DEPTH	**DESCRIPTION**
0.00 to 1.22 m	Interpreted as granular fill underlain by native soils
1.22 m	Probable bedrock

ROCK PROBE 70

Location: See Figure 2
Elevation: 264.96 m

DEPTH	**DESCRIPTION**
0.00 to 1.83 m	Interpreted as granular fill underlain by native soils
1.83 m	Probable bedrock

ROCK PROBE 71

Location: See Figure 2
Elevation: 264.11 m

DEPTH	**DESCRIPTION**
0.00 to 1.52 m	Interpreted as granular fill/native soils
1.52 m	Probable bedrock

ROCK PROBE 72

Location: See Figure 2
Elevation: 264.01 m

DEPTH	**DESCRIPTION**
0.00 to 2.44 m	Interpreted as granular fill underlain by native soils
2.44 m	Probable bedrock

ROCK PROBE 73

Location: See Figure 2
Elevation: 264.14 m

DEPTH	**DESCRIPTION**
0.00 to 3.96 m	Interpreted as granular fill underlain by native soils
3.96 m	Probable bedrock

ROCK PROBE 74

Location: See Figure 2
Elevation: 264.43 m

DEPTH	**DESCRIPTION**
0.00 to 3.05 m	Interpreted as granular fill underlain by native soils
3.05 m	Probable bedrock

ROCK PROBE 75

Location: See Figure 2
Elevation: 263.89 m

DEPTH	**DESCRIPTION**
0.00 to 9.75 m	Interpreted as granular fill underlain by native soils
9.75 m	Probable bedrock

ROCK PROBE 76

Location: See Figure 2
Elevation: 264.00 m

DEPTH	**DESCRIPTION**
0.00 to 1.22 m	Interpreted as granular fill underlain by native soils
1.22 m	Probable bedrock

ROCK PROBE 77

Location: See Figure 2
Elevation: 265.04 m

DEPTH	**DESCRIPTION**
0.00	Exposed Bedrock

ROCK PROBE 78

Location: See Figure 2
Elevation: 264.13 m

DEPTH	**DESCRIPTION**
0.00 to 1.22 m	Interpreted as granular fill underlain by native soils
1.22 m	Probable bedrock

APPENDIX B

Borehole Logs

TERRAPROBE INC.

ABBREVIATIONS, TERMINOLOGY, GENERAL INFORMATION

BOREHOLE AND TEST PIT LOGS

SAMPLING METHOD

SS	split spoon
ST	Shelby tube
AS	auger sample
WS	wash sample
RC	rock core
WH	weight of hammer
PH	pressure, hydraulic

PENETRATION RESISTANCE

Standard Penetration Test (SPT) resistance ('N' values) is defined as the number of blows by a hammer weighing 63.6 kg (140 lb.) falling freely for a distance of 0.76 m (30 in.) required to advance a standard 50 mm (2 in.) diameter split spoon sampler for a distance of 0.3 m (12 in.).

Dynamic Cone Test (DCT) resistance is defined as the number of blows by a hammer weighing 63.6 kg (140 lb.) falling freely for a distance of 0.76 m (30 in.) required to advance a conical steel point of 50 mm (2 in.) diameter and with 60° sides on 'A' size drill rods for a distance of 0.3 m (12 in.).

SOIL DESCRIPTION - COHESIONLESS SOILS

Relative Density	'N' value
very loose	< 4
loose	4 - 10
compact	10 - 30
dense	30 - 50
very dense	> 50

SOIL DESCRIPTION - COHESIVE SOILS

Consistency	Undrained Shear Strength, kPa	'N' value
very soft	< 12	< 2
soft	12 - 25	2 - 4
firm	25 - 50	4 - 8
stiff	50 - 100	8 - 16
very stiff	100 - 200	16 - 32
hard	> 200	> 32

SOIL COMPOSITION

	% by weight
'trace' (e.g. trace silt)	< 10
'some' (e.g. some gravel)	10 - 20
adjective (e.g. sandy)	20 - 35
'and' (e.g. sand and gravel)	35 - 50

TESTS, SYMBOLS

MH	mechanical sieve and hydrometer analysis
w, w_c	water content
w_l	liquid limit
w_p	plastic limit
I_p	plasticity index
k	coefficient of permeability
γ	soil unit weight, bulk
φ'	angle of internal friction
c'	cohesion shear strength
C_c	compression index

GENERAL INFORMATION, LIMITATIONS

The conclusions and recommendations provided in this report are based on the factual information obtained from the boreholes and/or test pits. Subsurface conditions between the test holes may vary.

The engineering interpretation and report recommendations are given only for the specific project detailed within, and only for the original client. Any third party decision, reliance, or use of this report is the sole and exclusive responsibility of such third party. The number and siting of boreholes and/or test pits may not be sufficient to determine all factors required for different purposes.

It is recommended Terraprobe be retained to review the project final design and to provide construction inspection and testing.

Terraprobe

ROCK CORE TERMINOLOGY

RECOVERY

TCR **Total Core Recovery** is the total length of core pieces, irrespective of their individual lengths obtained in a core run, and expressed as a percentage of the length of that core run.

SCR **Solid Core Recovery** is the total length of sound full-diameter core pieces obtained in a core run, expressed as a percentage of the length of that core run .

RQD **Rock Quality Designation** pertains to the sum of those pieces of sound core which are 10 cm or greater in length obtained in a core run, expressed as a percentage of the length of that core run.

RQD (%)	0 - 25	25 - 50	50 - 75	75 - 90	90 - 100
QUALITY	**very poor**	**poor**	**fair**	**good**	**excellent**

JOINT CHARACTERISTICS

Joint Spacing (adapted from *Bieniawski 1989, ISRM 1981*)

Classification	Spacing
very close	< 60 mm
close	60 – 200 mm
moderately close	0.2 to 0.6 m
wide	0.6 to 2 m
very wide	> 2 m

Natural Fracture Frequency (per 0.3 m)
Refers to the number of natural fractures (joints, faults, etc.) which are present per 0.3m. Ignores mechanical or drill-induced breaks, and closed discontinuities (e.g. bedding planes).

Orientation

Orientation	Angle from horiz.
horizontal/flat	0 - 20°
dipping	20 - 50°
vertical	50 - 90°

Joint Filling

Description	Approx. φ`
tight, hard, non-softening	25 - 35
oxidation, surface staining only	25 - 30
slightly altered, clay-free	25 - 30
sandy particles, clay-free	2□ - 25
sandy□and silty, minor clay	1□ - 24
non-softening clays	6 - 12
swelling clay fillings	n/a

Joint Aperture

Classification	Aperture
closed / tight	< 0.5 mm
gapped	0.5 to 10 mm
open	> 10 mm

Planarity

- Planar
- Undulating
- Stepped
- Irregular
- Discontinuous

Roughness

- Very rough
- Rough
- Smooth
- Slickensided
- Polished

Coating	Description
clean	no filling
veneer	< 1 mm filling
coating / infill	> 1 mm filling

GENERAL

Degree of Weathering (*after MTO, RR229 Evaluation of Shales for Construction Projects*)

Zone	Degree	Description
Z1	unweathered	shale, regular jointing
Z2	partially weathered	angular blocks of unweathered shale, no matrix, with chemically weathered but intact shale
Z3		soil-like matrix with frequent angular shale fragments < 25mm diameter
Z4a		soil-like matrix with occasional shale fragments < 3mm diameter
Z4b	fully weathered	soil-like matrix only

Strength classification (*after Marinos and Hoek, 2001*)

Grade	Term	UCS (MPa)	Field Estimate (Description)
R6	extremely strong	> 250	can only be chipped by geological hammer
R5	very strong	100 - 250	requires many blows from geological hammer
R4	strong	50 - 100	requires more than one blow from geological hammer
R3	medium strong	25 - 50	can't be scraped, breaks under one blow from geological hammer
R2	weak	5 - 25	can be peeled / scraped with knife with difficulty
R1	very weak	1 - 5	easily scraped / peeled, crumbles under firm blow of geo. hammer
R0	extremely weak	< 1	indented by thumbnail

Bedding Thickness (*Quarterly Journal of Engineering Geology, Vol 3, 1970*)

Very thickly bedded	> 2 m	Medium bedded	200 – 600mm	Very thinly bedded	20 – 60mm	Thinly Laminated < 6mm
Thickly bedded	0.6 – 2m	Thinly bedded	60 – 200mm	Laminated	6 – 20mm	

Bedrock Graphic Legend

▨	Inferred bedrock	≡	Shale	▦	Limestone

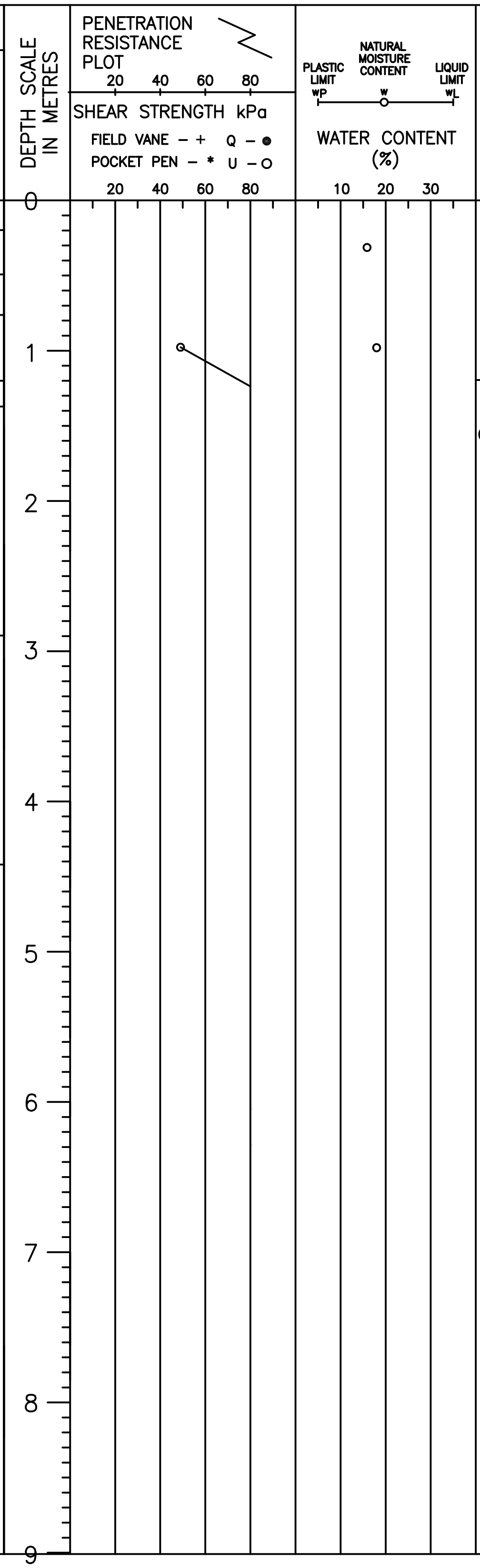
Terraprobe

LOG OF BOREHOLE 1

PROJECT: Condo Development
CLIENT: Panoramic
LOCATION: 700 Paris Street, Sudbury, Ontario

DATE: June 25 & 26, 2016
EQUIPMENT: CME 850 Track Mounted
ELEVATION DATUM: Geodetic FILE: 5-16-0115-01

DEPTH (m) 264.06	SOIL PROFILE DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" VALUE	CORE RECOVERY %	R.Q.D %	STANDPIPE INSTALLATION OR REMARKS
0.00	Compact Brown/ red Moist FILL: Sand, gravel, pieces of brick	▨	1	AS				
263.30 0.76	Dense Dark Brown Moist Fill – Gravelly, Silty SAND, trace clay	▨	2	SS	49			▽ Estimated Groundwater Table 1.20 metres
262.69 1.37	SS refusal at 1.37m on infered bedrock Bedrock coring commence at the depth of 1.37 m below grade RUN 1 – Good quality Dark grey Gabbro	▨	1	NQ		100%	90%	
261.16 2.90	RUN 2 – Fair quality Dark grey Gabbro	▨	2	NQ		80%	60%	
259.64 4.42	End of Borehole							



NOTES: Ground water level not recorded in consideration of use of water for bedrock coring procedures

Terraprobe

LOG OF BOREHOLE 2

PROJECT: Condo Development

CLIENT: Panoramic

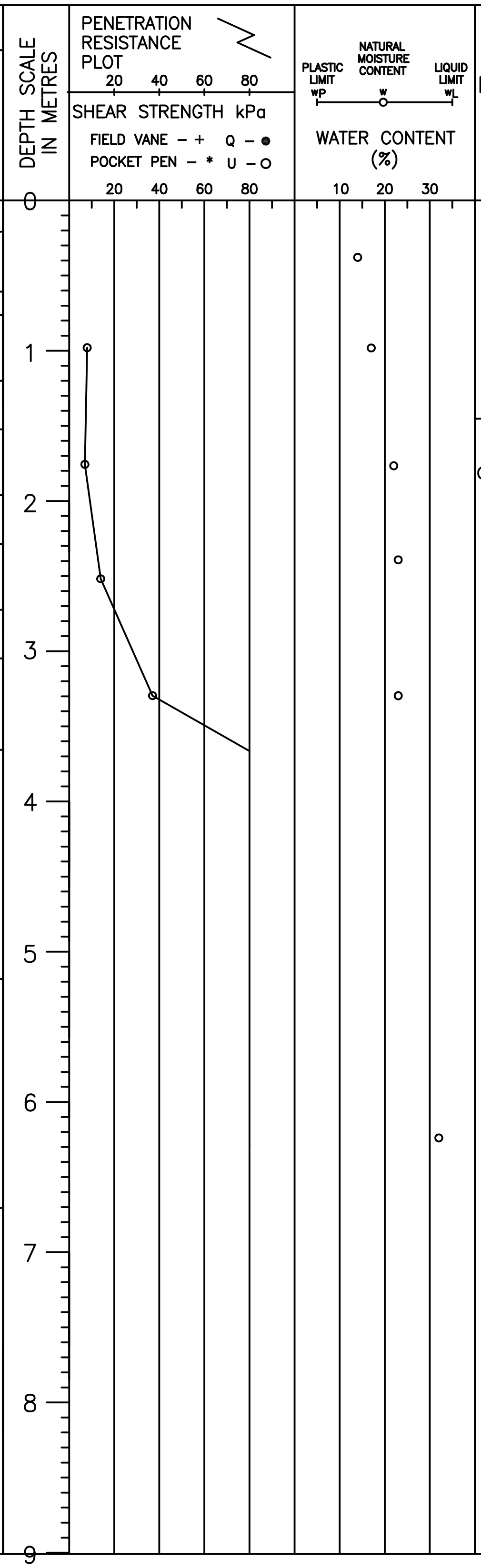
LOCATION: 700 Paris Street, Sudbury, Ontario

DATE: June 25, 2016

EQUIPMENT: CME 850 Track Mounted

ELEVATION DATUM: Geodetic FILE: 5-16-0115-01

DEPTH (m) 264.08	SOIL PROFILE DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" VALUE	CORE RECOVERY %	R.Q.D %	STANDPIPE INSTALLATION OR REMARKS
0.00	Loose Dark Brown Dry FILL: Sand, gravel, some silt		1	AS				
263.32 0.76	Loose Brown Moist Fiil – Sandy, Silty GRAVEL, trace clay, trace roots		2	SS	8			
262.56 1.52	Loose Light grey Wet Clayey SILT, trace gravel, trace sand		3	SS	7			Estimated Groundwater Table 1.45 metres
261.79 2.29	Compact Brown Wet SILT, some clay, trace sand		4	SS	14			
	Dense trace clay, trace gravel		5	SS	37			
260.42 3.66	SS refusal at 3.66m on infered bedrock Bedrock coring commence at 3.66 m RUN 1– Fair quality Medium grey Gabbro		1	NQ		89%	62%	
258.90 5.18	RUN 2– Good quality Medium grey Gabbro		2	NQ		91%	82%	
257.37 6.71	End of Borehole							



NOTES:

APPENDIX C

Soil Laboratory Results

TERRAPROBE INC.

Terraprobe

WATER CONTENT TEST FORM

PROJECT: **Condominium Development**
LOCATION: **700 Paris Street, Sudbury, Ontario**
CLIENT: **Michael D. Allen Architect c/o 2226553 Ontario Inc.**

FILE NO.: **5-16-0155-01**
LAB NO.: **6270**
SAMPLE DATE: **July 25, 2016**
SAMPLE BY: **D.T.**
TEST DATE: **August 2, 2016**
TESTED BY: **T.E.**

BOREHOLE NUMBER		**1**	**1**
SAMPLE NUMBER		**1**	**2**
DEPTH OF SAMPLE (m)		**0.2 - 0.5**	**0.76 - 1.22**
WT. OF WET SOIL + TARE (g)	A	101.41	669.90
WT. OF DRY SOIL + TARE (g)	B	91.90	630.80
WEIGHT OF TARE (g)	C	30.65	410.90
WATER CONTENT (%)	A-B/B-C*100	**16%**	**18%**

BOREHOLE NUMBER		**2**	**2**	**2**	**2**	**2**
SAMPLE NUMBER		**1**	**2**	**3**	**4**	**5**
DEPTH OF SAMPLE (m)		**0.2 - 0.6**	**0.76 - 1.22**	**1.52 - 1.98**	**2.29 - 2.75**	**3.05 - 3.51**
WT. OF WET SOIL + TARE (g)	A	83.32	650.80	664.70	668.00	658.80
WT. OF DRY SOIL + TARE (g)	B	76.83	614.80	618.60	619.40	612.40
WEIGHT OF TARE (g)	C	30.55	407.40	411.00	410.70	407.80
WATER CONTENT (%)	A-B/B-C*100	**14%**	**17%**	**22%**	**23%**	**23%**

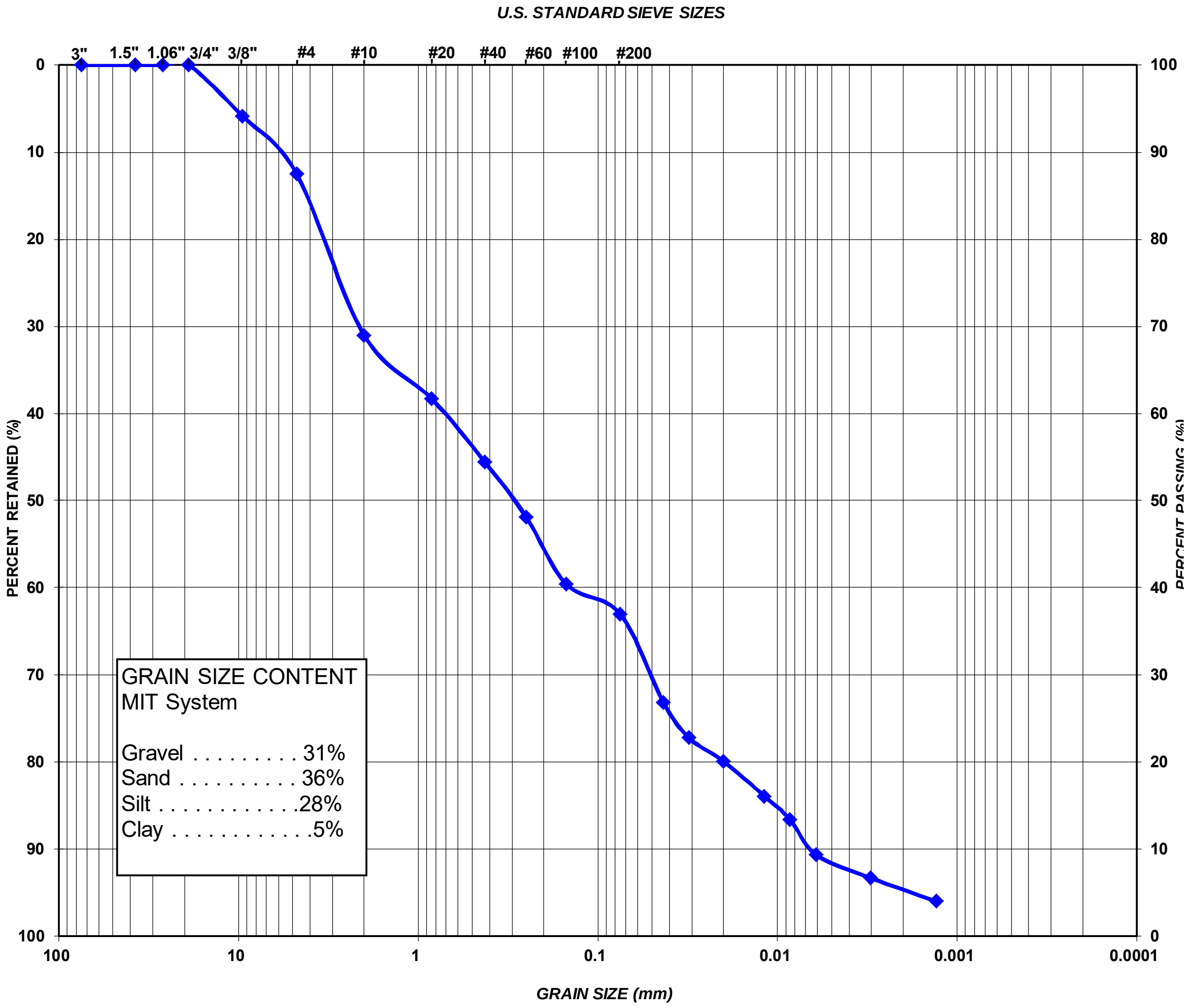
COMMENT:

Terraprobe

HYDROMETER ANALYSIS TEST REPORT

PROJECT:	**Condominium Development**	FILE NO.:	**5-16-0115-01**
LOCATION:	**700 Paris Street, Sudbury, Ontario**	SAMPLE DATE:	**July 25, 2016**
CLIENT:	**Michael D. Allen Architect c/o 2226553 Ontario Inc.**	SAMPLED BY:	**D.T.**
BOREHOLE NUMBER:	**1**	TEST DATE:	**August 3, 2016**
SAMPLE NUMBER:	**2**	TESTED BY:	**T.E.**
SAMPLE DEPTH (m):	**0.76 - 1.22**	LAB NO.:	**6270**
SAMPLE DESCRIPTION:	**Gravelly, Silty SAND, trace clay**		

GRAIN SIZE DISTRIBUTION



MIT SYSTEM	CBBLS	COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
		GRAVEL			SAND				

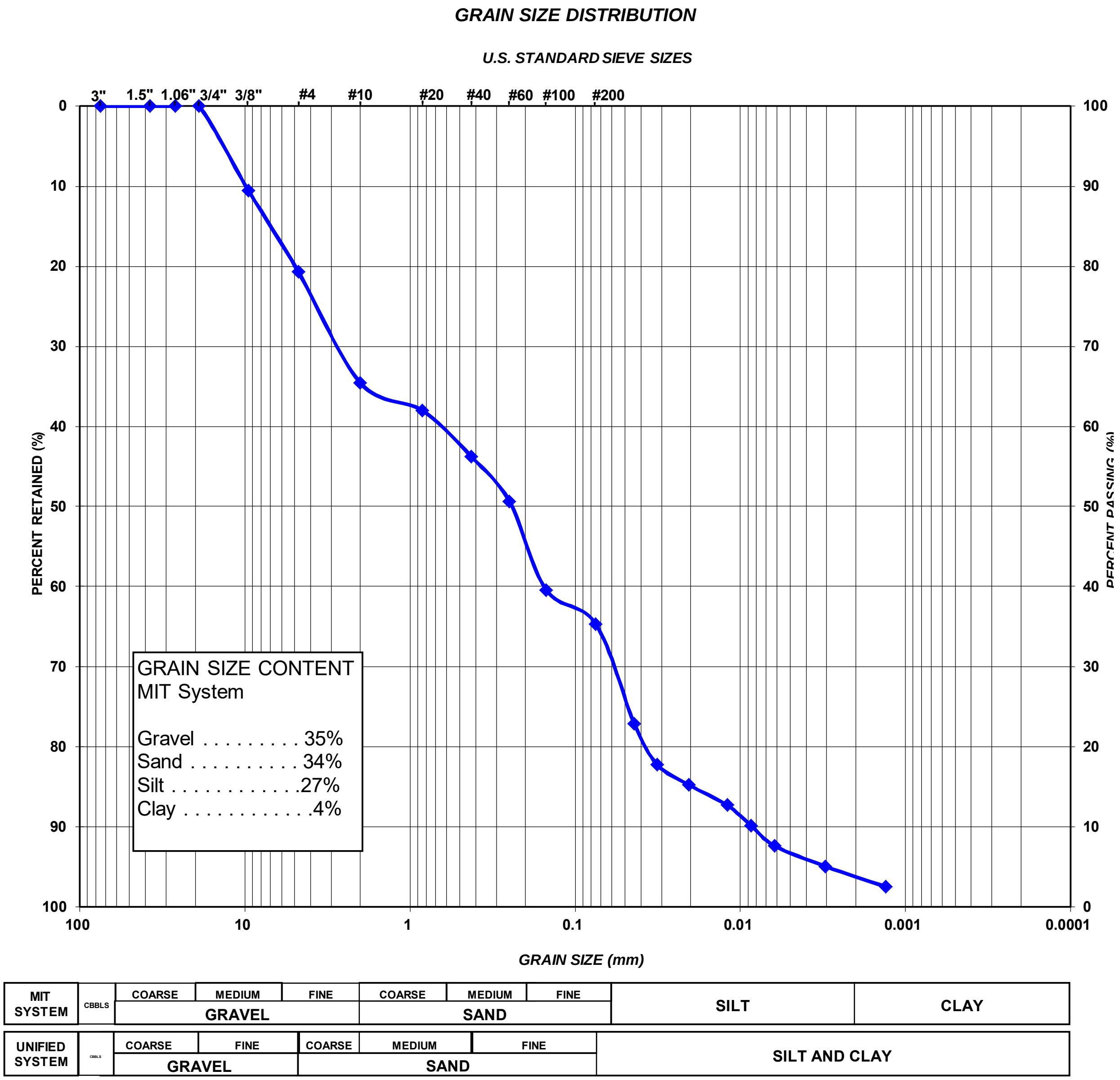
UNIFIED SYSTEM	CBBLS	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY
		GRAVEL		SAND			

Terraprobe

HYDROMETER ANALYSIS TEST REPORT

PROJECT: **Condominium Development**
LOCATION: **700 Paris Street, Sudbury, Ontario**
CLIENT: **Michael D. Allen Architect c/o 2226553 Ontario Inc.**
BOREHOLE NUMBER: **2**
SAMPLE NUMBER: **2**
SAMPLE DEPTH (m): **0.76 - 1.22**
SAMPLE DESCRIPTION: **Sandy, Silty GRAVEL, trace clay**

FILE NO.: **5-16-0115-01**
SAMPLE DATE: **July 25, 2016**
SAMPLED BY: **D.T.**
TEST DATE: **August 3, 2016**
TESTED BY: **T.E.**
LAB NO.: **6270**



GRAIN SIZE CONTENT
MIT System

Gravel 35%
Sand 34%
Silt 27%
Clay 4%

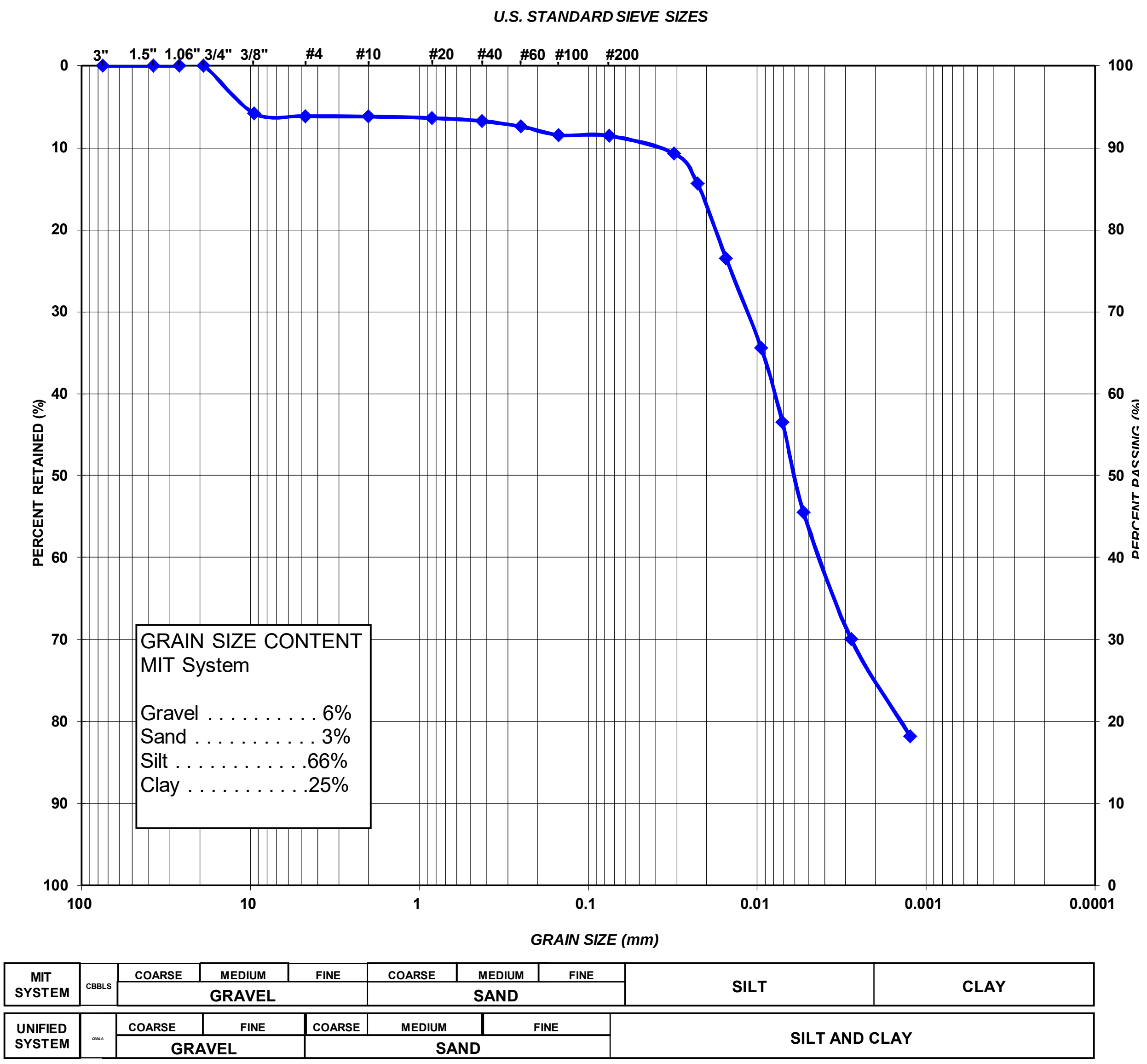
Terraprobe

HYDROMETER ANALYSIS TEST REPORT

PROJECT: **Condominium Development**
LOCATION: **700 Paris Street, Sudbury, Ontario**
CLIENT: **Michael D. Allen Architect c/o 2226553 Ontario Inc.**
BOREHOLE NUMBER: **2**
SAMPLE NUMBER: **3**
SAMPLE DEPTH (m): **1.52 - 1.98**
SAMPLE DESCRIPTION: **Clayey SILT, trace gravel, trace sand**

FILE NO.: **5-16-0115-01**
SAMPLE DATE: **July 25, 2016**
SAMPLED BY: **D.T.**
TEST DATE: **August 3, 2016**
TESTED BY: **T.E.**
LAB NO.: **6270**

GRAIN SIZE DISTRIBUTION



GRAIN SIZE CONTENT
MIT System

Gravel 6%
Sand 3%
Silt 66%
Clay 25%

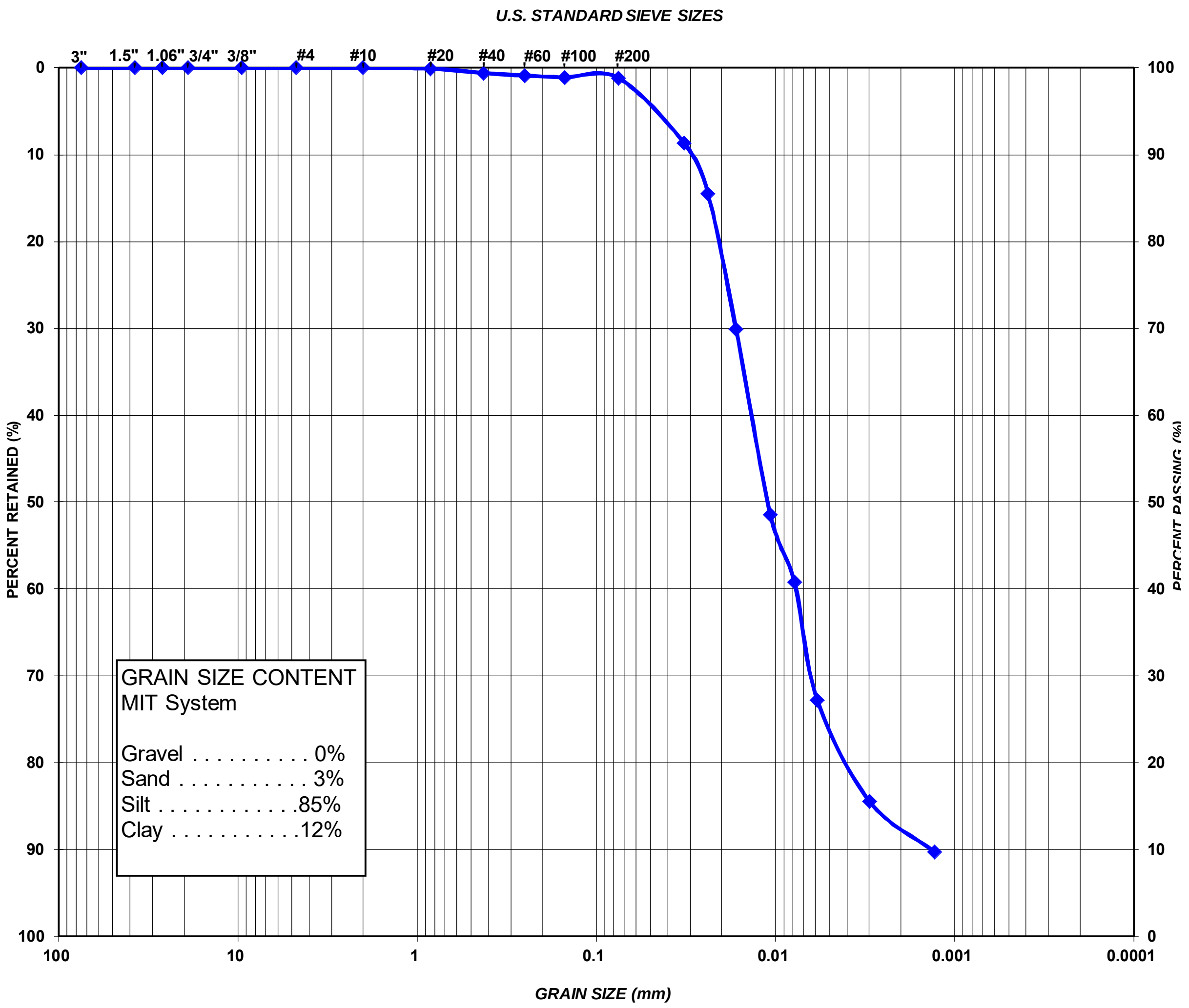
Terraprobe

HYDROMETER ANALYSIS
TEST REPORT

PROJECT: **Condominium Development**
LOCATION: **700 Paris Street, Sudbury, Ontario**
CLIENT: **Michael D. Allen Architect c/o 2226553 Ontario Inc.**
BOREHOLE NUMBER: **2**
SAMPLE NUMBER: **4**
SAMPLE DEPTH (m): **2.29 - 2.75**
SAMPLE DESCRIPTION: **SILT, some clay, trace sand**

FILE NO.: **5-16-0115-01**
SAMPLE DATE: **July 25, 2016**
SAMPLED BY: **D.T.**
TEST DATE: **August 3, 2016**
TESTED BY: **T.E.**
LAB NO.: **6270**

GRAIN SIZE DISTRIBUTION



GRAIN SIZE CONTENT
MIT System

Gravel 0%
Sand 3%
Silt 85%
Clay 12%

MIT SYSTEM	CBBLS	COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
		GRAVEL			SAND				

UNIFIED SYSTEM	CBBLS	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY
		GRAVEL		SAND			

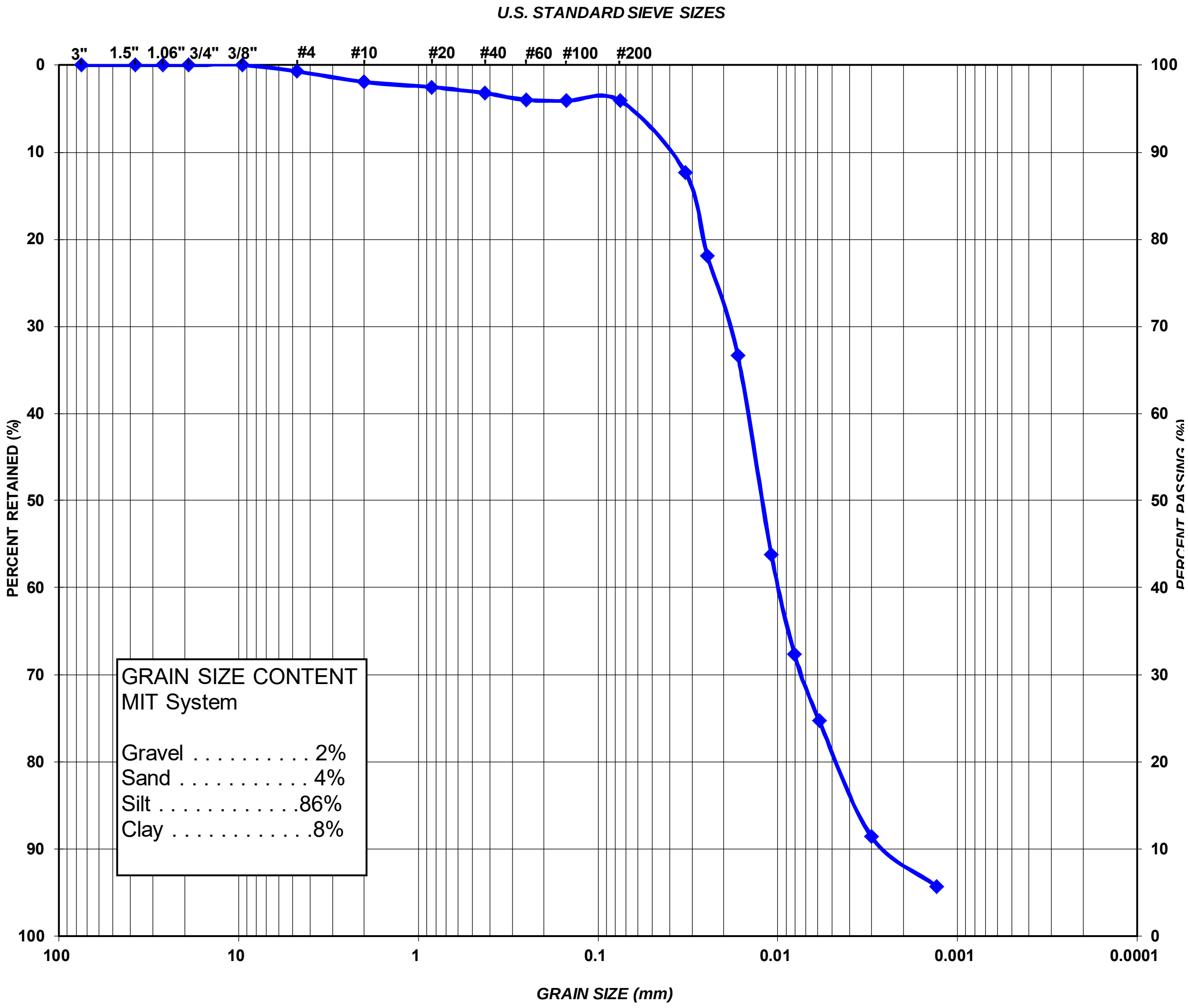
Terraprobe

HYDROMETER ANALYSIS TEST REPORT

PROJECT: **Condominium Development**
LOCATION: **700 Paris Street, Sudbury, Ontario**
CLIENT: **Michael D. Allen Architect c/o 2226553 Ontario Inc.**
BOREHOLE NUMBER: **2**
SAMPLE NUMBER: **5**
SAMPLE DEPTH (m): **3.05 - 3.51**
SAMPLE DESCRIPTION: **SILT, trace clay, trace sand, trace gravel**

FILE NO.: **5-16-0115-01**
SAMPLE DATE: **July 25, 2016**
SAMPLED BY: **D.T.**
TEST DATE: **August 3, 2016**
TESTED BY: **T.E.**
LAB NO.: **6270**

GRAIN SIZE DISTRIBUTION



GRAIN SIZE CONTENT
MIT System

Gravel 2%
Sand 4%
Silt 86%
Clay 8%

MIT SYSTEM	CBBLS	COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
		GRAVEL			SAND				

UNIFIED SYSTEM	CBBLS	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY
		GRAVEL		SAND			

Vanessa Smith

From: Glen Ferguson <Glen.Ferguson@greatersudbury.ca>
Sent: April 14, 2023 5:08 PM
To: Kevin Jarus; Carol Skanes
Cc: Vanessa Smith
Subject: Re: Geotech- 700 Paris Street

Caution! This message was sent from outside your organization.

Hi Kevin.

Thanks for copying me on this and please include a printed copy with the rest of the application form and materials.

Take care.

Glen

—
Glen Ferguson

Get Outlook for iOS

From: Kevin Jarus <kevin.jarus@tulloch.ca>
Sent: Friday, April 14, 2023 12:49:31 PM
To: Carol Skanes <Carol.Skanes@greatersudbury.ca>
Cc: Glen Ferguson <Glen.Ferguson@greatersudbury.ca>; Vanessa Smith <vanessa.smith@tulloch.ca>
Subject: RE: Geotech- 700 Paris Street

Many thanks Carol.

Glen – see below re: need for Geotech only at site plan/BP stage for subject property. The MOU showed as required at ZBLA.

Kevin

TULLOCH

Kevin Jarus, M.Pl., RPP
Project Manager | Senior Land Use Planner
Sr. Associate

Phone: 705-671-2295 ext 606
Mobile: 416-856-7935
Sudbury Office | www.TULLOCH.ca

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Certified
JUN 2022 - MAY 2023
CANADA

From: Carol Skanes <Carol.Skanes@greatersudbury.ca>
Sent: April-14-23 12:11 PM
To: Vanessa Smith <vanessa.smith@tulloch.ca>
Cc: Sherri Budgell <Sherri.Budgell@greatersudbury.ca>; Guido Mazza <Guido.Mazza@greatersudbury.ca>; Kevin Jarus

<kevin.jarus@tulloch.ca>
Subject: RE: Geotech- 700 Paris Street

Good afternoon,

I've discussed the comments with the Plans Examiner in attendance at the meeting, and the intent for geotechnical review was to be for information moving forward to Site Plan Agreement and Building Permit.

Regards,

Carol Skanes, CBCO
Manager of Plans Examination, Building Services
City of Greater Sudbury
705-674-4455 ext 4321
Carol.Skanes@greatersudbury.ca

Greater | Grand Sudbury
www.greatersudbury.ca

From: Vanessa Smith <vanessa.smith@tulloch.ca>
Sent: Tuesday, April 11, 2023 3:10 PM
To: Carol Skanes <Carol.Skanes@greatersudbury.ca>
Cc: Sherri Budgell <Sherri.Budgell@greatersudbury.ca>; Guido Mazza <Guido.Mazza@greatersudbury.ca>; Kevin Jarus <kevin.jarus@tulloch.ca>
Subject: Geotech- 700 Paris Street

Hi Carol,

Just wanted to confirm whether the geotechnical report is required at the rezoning stage or if such can be provided at site plan control.
Geotech was included as part of complete rezoning application at pre-con. See MOU attached.

Many thanks,

TULLOCH

Vanessa Smith, M.Pl., RPP

Land Use Planner

Phone: 705-671-2295 ext 604

Mobile: 705-618-2898

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Chelsea Streich

From: Kevin Jarus
Sent: December 13, 2023 1:55 PM
To: Vanessa Smith
Cc: Chelsea Streich
Subject: FW: 700 Paris St (General Hospital) - NDCA SPART MOU
Attachments: PCUA (PC2021-073 - 700 Paris Street, Sudbury - 2226553 Ontario Inc.).pdf; 5160115-01 700 Paris St Condos Geo Report 2016-08-10 TC SIGNED.pdf

Kevin Jarus, M.Pl., RPP
Planning Manager
Sr. Associate

Sudbury Office
Phone: 705-671-2295 ext 606
Mobile: 416-856-7935

We want to build an organization where everyone loves their job and their leaders care fo

From: Sarah Woods <Sarah.Woods@ConservationSudbury.ca>
Sent: Friday, June 16, 2023 10:57 AM
To: Kevin Jarus <kevin.jarus@tulloch.ca>
Cc: Glen Ferguson <Glen.Ferguson@greatersudbury.ca>; Melanie Venne <Melanie.Venne@ConservationSudbury.ca>
Subject: RE: 700 Paris St (General Hospital) - NDCA SPART MOU

Hello Kevin,

Conservation Sudbury's comments on this parcel, as described in the attached Pre-Consultation MOU (CGS file no. PC2021-073, January 10, 2019), are focused on the potential erosion hazard associated with Ramsey Lake. Erosion hazards are sometimes associated with shoreline development, and understanding the nature and location of the hazard is important to understand risk to the development. The hazard is identified, in part, based on topography. It is also dependent on underlying materials – and in cases where the site is dominated by sound bedrock the hazard is fully mitigated.

To better understand the underlying materials you supplied the attached Geotechnical and Rock Probe Investigation by Terraprobe, dated August 10, 2016. The rock probe results show that the bedrock elevation (in those areas that were sampled) varies from 252.85 to 265.04 masl, all above the elevation of the lake and the flood elevation. These results fully mitigate any concerns about the erosion hazard within the location of the study, which was focused on the southwest of the existing building.

The sketches provided as part of the MOU show one proposed building in the location covered by the Rock Probe Investigation, and two additional buildings (within the footprint of the existing hospital, and one to the northeast). I have reviewed available topographic information in the location of the two additional buildings, and I find the slopes to be sufficiently shallow to conclude that they are not within an erosion hazard associated with Ramsey Lake.

Given all of the above, I am comfortable confirming that no additional information is required to address our concerns, as expressed in the Pre-Consultation MOU. Conservation Sudbury does not require any further circulation on this file.

TULLOCH

Kevin Jarus, M.Pl., RPP
Project Manager | Senior Land Use Planner
Sr. Associate

Phone: 705-671-2295 ext 606
Mobile: 416-856-7935
Sudbury Office | www.TULLOCH.ca

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From: Kevin Jarus
Sent: April-14-23 10:36 AM
To: Sarah Woods <Sarah.Woods@ConservationSudbury.ca>
Cc: Vanessa Smith <vanessa.smith@tulloch.ca>
Subject: 700 Paris St (General Hospital) - NDCA SPART MOU

Hi Sarah,

Just left you a voicemail. If you could call me back on my cell regarding the attached SPART MOU comments would be much appreciated. Will be a brief discussion.

Thanks as always,
Kevin

TULLOCH

Kevin Jarus, M.Pl., RPP
Project Manager | Senior Land Use Planner
Sr. Associate

Phone: 705-671-2295 ext 606
Mobile: 416-856-7935
Sudbury Office | www.TULLOCH.ca

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Greater | Grand
Sudbury

City of Greater Sudbury
Ville du Grand Sudbury

October 17, 2023

Tulloch Engineering
1942 Regent Street, Unit L
Sudbury, ON
P3E 5V5

Attention: Rebecca Dawson, EIT

PO BOX 5000 STN A
200 BRADY STREET
SUDBURY ON P3A 5P3

CP 5000 SUCC A
200, RUE BRADY
SUDBURY ON P3A 5P3

705.671.2489

www.greatersudbury.ca
www.grandsudbury.ca

Re: Sewer and Water Capacity Analysis
700 Paris, Sudbury
Township of Balfour

The Development Engineering Section has reviewed your request for a Sewer and Water Capacity Analysis at the above noted location and have the following to report:

A review of the sewage mains downstream from the proposed connection at MH-MCK-07-09-1122 700 Paris, revealed that the mains are capable of conveying the additional 25.7 L/s of flow expected from your development.

A capacity analysis performed by our WaterCAD model, developed the following results at the 200mm watermain junction J_S_5558 at an elevation of 272.26m

Values Obtained from Model	C.G.S. Minimum Requirements
Max Hour: 70 psi	• 40 psi
Max Day: 71 psi	• 50 psi
Fire Flow: 400 + l/s	

The results of the WaterCAD analysis indicate that sufficient water capacity and pressure exist for the proposal in question.

It should be noted that these results are derived at by using a theoretical computer model based on our best available data. In the event that these developments do not proceed within a one (1) year period, then you should make the necessary arrangements to have a current analysis carried out to take into account any changes made in our sewer or WaterCAD models and to ensure that there is sufficient Sewage, Fire Flows and/or Domestic Pressures available for your proposal(s).

Should you have any questions or concerns please contact me at 671-2489 ext 2409.

Yours truly,

David Longarini
Development Engineering Technician

DVL/ds

cc: Akli BenAnteur, Wastewater Project Engineer, (Kelly Lake)

PLANNING

JUSTIFICATION REPORT

700 PARIS STREET, SUDBURY

OFFICIAL PLAN & ZONING BY-LAW AMENDMENT APPLICATIONS

DECEMBER 2023

TULLOCH

CONTENTS

1.0 | INTRODUCTION

1.0 INTRODUCTION

PROJECT OVERVIEW

TULLOCH has been retained by 2226553 ONTARIO INC. (Panoramic Properties Inc.), the owner of 700 Paris Street in the City of Greater Sudbury, to prepare a Planning Justification Report as part of complete applications to amend the *City of Greater Sudbury Official Pla*n and the *City of Greater Sudbury Zoning By-Law 2010-100Z.*

The proposed development and associated amendments seek to redevelop the site through the delivery of three new residential buildings along with limited commercial (restaurant) uses on a ±1.78-hectare site generally situated between Paris Street and Bell Park on the eastern edge of Sudbury's Kingsmount-Bell Park neighbourhood.

The proposed development will positively contribute to Sudbury's Ramsey Lake waterfront as well as is responsive to provincial and municipal targets of creating 3,800 more homes in Greater Sudbury by 2031, through the delivery of a distinctive urban waterfront development that provides a total of 421-residential units, 109-retirement guest suites, and 380m^2 of restaurant floorspace. The development has been designed to respond to the surrounding natural and built context, which is evident in the architecture, site design, and related public realm and landscaped improvements (*See Figure 1*).

To permit the proposed redevelopment, amendments to the City's *Official Plan* and to the *Zoning By-Law 2010-100Z* are required. This report provides a land use planning analysis and justification for the Official Plan Amendment needed to permit a density of 237-units per hectare where densities above 150 units per hectare are only permitted in the Downtown land use designation and to permit 380m^2 of commercial space (i.e. restaurant uses) where a maximum of 150m^2 is permitted in the Living Area 1 designation, and the Zoning By-law Amendment required to rezone the subject lands from the existing "R4(3)", High Density Residential Special Zone to an amended "R4(3)", High Density Residential Special Zone with revised site standards for height, setbacks, etc., and an added land use permission in the form of a Restaurant use.

The legal description of lands is as follows:

PIN 73584-0652, PT S1/2 LT 5 CON 3 MCKIM AS IN S116343; GREATER SUDBURY
PIN 735910047, PT N1/2 LT 5 CON 2 MCKIM PT 2, 53R3947; GREATER SUDBURY

This Planning Justification Report reviews the consistency and the conformity of the planning applications within the context of applicable land use policies found within the:

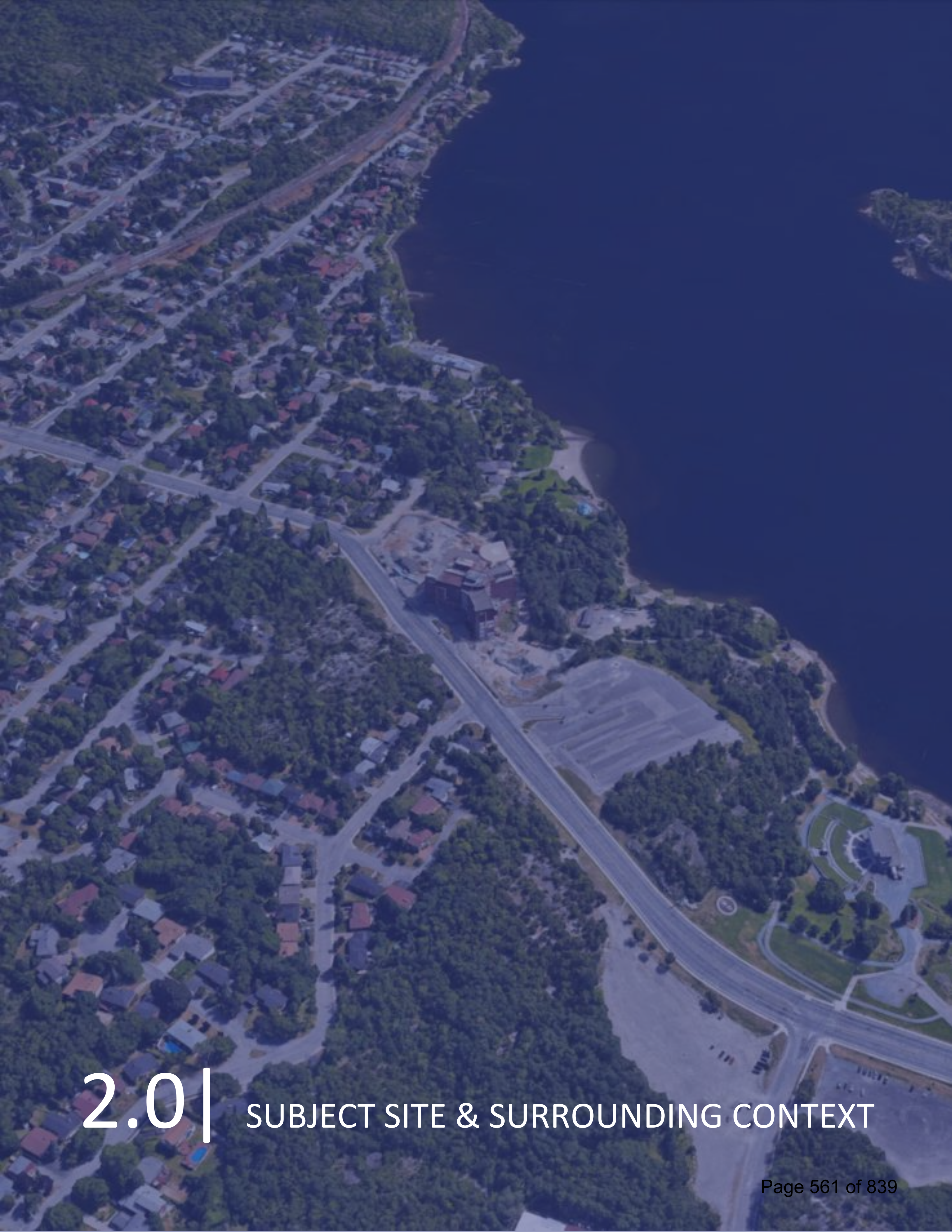
- *2020 Provincial Policy Statement;*
- *Growth Plan for Northern Ontario;*
- *City of Greater Sudbury Strategic Plan;*
- *City of Greater Sudbury Official Plan;*
- *Greater Sudbury Community Energy and Emissions Plan;*
- *Ramsey Lake Community Improvement Plan; and,*
- *City of Greater Sudbury Zoning By-Law 2010-100Z.*

REPORT INTENT

The Planning Justification Report comprises the following sections:

- **Section 1.0** introduces the development proposal and describes the purpose of this report.
- **Section 2.0** introduces the subject site and the surrounding area context.
- **Section 3.0** describes the proposed development in detail including several architectural renderings.
- **Section 4.0** outlines all supporting technical studies that have been completed in support of the development proposal and the required applications for Official Plan and Zoning By-law Amendment.
- **Section 5.0** describes the land use planning policy context applicable to the subject site including provincial, and municipal planning policy, and the development proposal's response to these policies.
- **Section 6.0** provides a summary of the land use planning rationale in support of the development proposal and conclusions of the report.

Figure 1: Proposed Development from Paris Street/ East Perspective (ACK Architects).



2.0| SUBJECT SITE & SURROUNDING CONTEXT

2.0 SUBJECT SITE & SURROUNDING CONTEXT

This section describes the subject site including its topography and other site features, the surrounding neighbourhood context, transit and transportation network access, along with a description of the property's historic context.

SUBJECT SITE

The subject parcel is located at the corner of Paris Street and Facer Street in the Kingsmount-Bell Park neighbourhood abutting Bell Park. The subject property has an area of approximately 1.78ha with approximately 69.0-metres of frontage on Facer Street and approximately 233.0-metres frontage on Paris Street (see *Figure 2*).

Figure 2: Approximate Location of Subject Lands

EXISTING BUILDING & USE

The subject site was originally used as the location of the *Sudbury General Hospital of the Immaculate Heart of Mary* (i.e. St. Joseph's Health Centre or 'the General Hospital'), which opened in 1950 *(See Figures 3-4*). The existing building is recognizable by its brick façade along with a steel beam grid system and a building height that varies between a 6-storey building face along Paris Street and an 8-storey building face along Bell Park Road.

At the time of the hospital's closing in March 2010, it accommodated 326-beds. The subject site was then acquired by the existing property owner in July 2010 and has remained largely in it's existing state (other than limited structure demolitions) since that time.

Figure 3: View of the former St. Joseph's Hospital from Paris Street (Image: Google Maps, August 2012).

Figure 4: View of the former St. Joseph's Hospital from Facer Street (Image: Google Maps, May 2012).

From 2013 through 2014, portions of the former hospital were demolished including the Mason Residence located at the north end of the site next to Facer Street and the southerly wing and chimney stack of the hospital located to the south of the site.

In August of 2019, the property owner agreed for the building to be used as a canvas for the creation of a 687m^2 mural as part of Up Here Festival - an annual art and music festival. The mural created by graffiti artist RISK seen in is now the largest mural in Canada (*See Figure 5-9).*

TOPOGRAPHY AND SITE FEATURES

The subject site is largely unvegetated with a sloping topography and grade change between its Paris Street and Bell Park Road (*See Figure 10).* The site does not contain any floodplain, watercourses or other natural features and as such is not subject to Conservation Sudbury's regulations for fill or construction. The site is however located within the Ramsey Lake Watershed and a *Section 59 Source Water Protection Application* will be submitted as part of the Official Plan and Zoning By-law Amendment applications.

Figure 5: View of existing building from Bell Park Road

Figure 6: View of Subject Lands from Bell Park Road

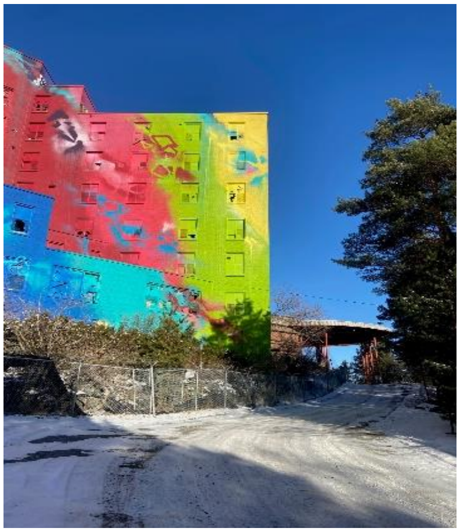


Figure 7: View of rear of existing building looking north towards Facer Street

Figure 8: View of existing building looking south along Paris Street

Figure 9: View of existing building looking North along Paris Street

Figure 10: Southerly side of the subject lands

SURROUNDING NEIGHBOURHOOD CONTEXT

The subject site is located within a wider area known as the Kingsmount-Bell Park neighbourhood. Surrounding land uses can be described as follows (*see Table 1*):

Table 1: Surrounding Land Uses

NORTH	Low to Medium Density Residential & Downtown Sudbury
SOUTH	Municipal Parking Lot and Bell Park

EAST	Bell Park & Ramsey Lake
WEST	Vacant Lands and Low Density Residential

To the west of Paris Street and north of Facer Street is an established low density residential neighbourhood dating from the early 1900s (*See Figures 11-16).* These single detached homes vary in height from 1-3 storeys.

Figure 11: View of new Single Detached Dwelling along Ramsey Road

Figure 12: View of single detached dwellings along Facer Street looking north

Figure 13: View of single detached dwellings along Boland Avenue looking northwest

Figure 14: View of single detached dwelling and personal service shop west of subject lands

Figure 15: View of single detached dwellings north of subject lands (East side of Paris Street)

Figure 16: View of single detached dwellings and bed and breakfast north of subject lands (west side of Paris Street)

To the south and east are City owned parklands known as Bell Park (*See Figures 17-19*). Bell Park is located on the western shores of Ramsey Lake and is the City's largest urban waterfront park. The park includes many recreational opportunities including the Grace Hartman Amphitheatre, Ramsey Lake boardwalk, gazebos, flowerbeds, children's play structures, outdoor workout equipment, and supervised and unsupervised beaches. The park is the site of many cultural and recreational events in the City.

Figure 17: View of Bell Park Gazebo looking southeast over Ramsey Lake

Figure 18: View of Bell Park Beach looking east towards Ramsey Lake

Figure 19: View of Pitter Patter Park (outdoor exercise equipment) looking west towards subject lands

A City owned parking lot consisting of approximately 290-parking spaces abuts immediately to the south of the subject lands (See *Figure 20-22*). Access to the City parking lot currently traverses a southerly portion of the subject site at the driveway entrance on Paris Street.

Figure 20: View of City owned parking lot/lands looking south

Figure 21: View of entrance to City owned parking lot/lands looking west along Paris Street

Figure 22: View of City owned parking lot/lands looking north

Sudbury's Downtown is located approximately 800-metres from the subject site. Downtown Sudbury is the urban heart of the city and is regarded as a centre for business, culture, retail, dining, entertainment, and government activities.

TRANSPORTATION, TRANSIT & ACTIVE TRANSPORTATION

The subject site fronts on the east side of Paris Street which is categorized as a Primary Arterial Road under *Schedule 7* of the *City of Greater Sudbury's Official Plan*. Facer Street is categorized as a Local Road and Bell Park Road is classified as a Private Road.

The site abuts and is serviced by two bus routes on the City's GOVA Transit system - Transit Route #1 (Main Line) is a high frequency service line connecting Sudbury's South End to the New Sudbury Centre and Transit Route #4 (Laurentian U via Paris) is a high frequency line connecting Downtown Sudbury to Health Sciences North and Laurentian University.

- Route #1 travels from the South End Walmart to New Sudbury Centre via Long Lake Road, Paris Street, Notre Dame Avenue and LaSalle Boulevard and includes a bus stop at the Downtown Transit Hub and Health Sciences North. The route provides service:
    - On weekdays with buses running every 15 minutes between 6:15 a.m. and 8:45 p.m. then every 30 minutes until the end of the service day

    - On weekends with buses running every 30 minutes between 7:15 a.m. and 10:15 a.m., every 15 minutes between 10:15 a.m. and 6:45 p.m. then every 30 minutes to the end of the service day. To the South End, buses run every 30 minutes between 7:30 a.m. and 10:30 a.m., every 15 minutes between 10:30 a.m. and 6:30 p.m. then every 30 minutes to the end of the service day.
- Route #4 travels from the Downtown Transit Hub to Laurentian University via Cedar Street, Elgin Street and Paris Street and includes a bus stop at Health Sciences North. The route provides service:
    - On weekdays with buses running every 30 minutes between 7:15 a.m. and 9:45 a.m. and 1:45 p.m. and 5:45 p.m.

There is an existing bus stop along the property's Paris Street frontage as well as a bus stop located at the corner of Boland Avenue and Paris Street.

The site is well connected to the City's active transportation network with sidewalks located along both sides of Paris Street, and future bike lanes proposed along the property's direct frontage through the City's Paris-Notre Dame Bikeway project. Construction of this portion of the bikeway is planned through 2024-2025.

Further opportunities for active transportation and passive recreation can be found in Bell Park, which features a range of pedestrian trails in addition to the Ramsey Lake Boardwalk, Bell Park beach, playgrounds, outdoor workout equipment, Bell Park Skating Path and programmable space that can host community events. These trails also act as connecting active transportation links between the Downtown, York Street, and Science North/the current Hospital.

FORMER ZONING BY-LAW AMENDMENT

In 2012, the existing property owner applied for a Zoning By-law Amendment to rezone the property from "I", Institutional and "P", Park to "R4", Residential High Density to permit the development of a total of 190 dwelling units, a 3,691m^2 wellness centre comprised of a wellness clinic, exercise rooms, pool and fitness facility and a 418m^2 restaurant on the former helipad.

Following public consultation efforts and public concern regarding the proposed commercial uses, the applicant revised the proposal to remove the restaurant and wellness centre and increased the number of dwelling units to 210 units with a 332-space parking garage and a further 20 parking spaces at grade.

In October 2012, Planning Committee approved the rezoning application and Council enacted an amending zoning by-law to facilitate the development with the following site-specific development standards:

> *R4(3)* *Notwithstanding any other provision hereof to the contrary, within any area designated R4(3) on the Zone Maps, all provisions of this By-law applicable to the* ***R4*** *Zone shall apply subject to the following modifications:*
>
> *i) The lot line abutting Paris Street shall be deemed to be the front lot line.*
>
> *ii) The only permitted uses shall be multiple dwellings with a maximum of 210 dwelling units of which, a maximum of 85 dwelling units shall be permitted in a new building to be located on the lot after November 20, 2012.*
>
> *iii) The maximum number of multiple dwelling buildings permitted on the lot shall be two.*
>
> *iv) The existing building as located on the lot shall be permitted and the enlargement of the existing building shall be permitted within the setbacks to the existing building.*
>
> *v) Notwithstanding (iv) above, the maximum addition permitted to the existing helipad structure shall be one storey located above the helipad platform.*
>
> *vi) The minimum setback from Facer Street to a multiple dwelling shall be 55 metres.*

vii) The minimum setback from the rear lot line and interior side lot line to a parking structure shall be 2 metres.

viii) The minimum setback from the rear lot line and interior side lot line to multiple dwelling units in a building located above a parking structure shall be 7.5 metres.

ix) The maximum building height shall be eight storeys and 32 metres.

x) The minimum setback from the front lot line to a multiple dwelling comprising a new building to be located on the lot after November 20, 2012, shall be 11.3 metres.

xi) The maximum number of surface parking spaces on the lot not including loading spaces shall be 20.

xii) The minimum width of a landscape strip abutting Paris Street shall be 2.6 metres and from Paris Street to the existing building the minimum width of the landscape strip shall be 1.3 metres.

xiii) Loading spaces shall also be permitted in the corner side yard.

Following the approved rezoning, the applicant then proceeded through the City’s site plan control application process.

3.0| DEVELOPMENT PROPOSAL

3.0 DEVELOPMENT PROPOSAL

This section describes the proposed development in detail, including a discussion of the residential and commercial uses, public realm improvements and design, massing, and height considerations.

PLANNING APPLICATIONS

The lands are proposed to be developed to accommodate a mixed-use, high-rise development of varying residential tenure and type along with 380m^2 of restaurant space (*See Figure 24*).

To advance the proposed redevelopment, amendments to both the City's *Official Plan* and to the *Zoning By-Law 2010-100Z* are required.

An Official Plan Amendment is required to permit a density of 237-units per hectare (421 units/ 1.78ha) where such is only permitted in the Downtown land use designation and to permit 380m^2 of restaurant use where a maximum of 150m^2 local commercial use is permitted.

A Zoning By-Law Amendment is required to rezone the subject lands from "R4(3)", High Density Residential Special to an amended "R4(3)", High Density Residential Special Zone with site-specific development standards to accommodate the proposed built-form, and permission to add a restaurant use.

To promote land use compatibility and place the buildings most appropriately on the site, the following development standards are proposed as part of the amending zoning by-law:

- That a maximum of three building be permitted on the lands, consisting of the following:
    - A 109-guest room Retirement Home with maximum building height of 40.0-metres (12-storeys);
    - A 199-unit Multiple Dwelling with a maximum building height of 56.0-metres (16-storeys);
    - A 222-unit Multiple Dwelling with a maximum building height of 68.2-metres (20-storeys); and,
    - With all buildings having permission for 1-3 levels of below grade shared parking levels (storeys).
- To require a minimum corner side yard setback (along Facer Street) of 18.0-metres

In addition to the above the development proposal requires the following site-specific relief:

- To permit a lot area of 41m^2 per multiple dwelling unit where 65.0m^2 is required;
- To permit a rear yard setback of 0.0-metres where 25.0-metres would be required;
- To permit an interior side yard setback of 0.0-metres where 21.0-metres would be required;
- To only require a minimum court of 15.0-metres between multiple dwellings where typically 50% of the height of the higher of such walls would be required and,
- To permit a maximum building height for a 222-unit multiple dwelling (i.e. Building B) of 20-storeys and 69-metres where a maximum height of 63.0-metres is permitted.

RESIDENTIAL AND COMMERCIAL USES

The proposed development provides for an urban residential development with ancillary restaurant uses.

199-UNIT MULTIPLE DWELLING BUILDING (URBAN LOFT/ STUDIO APARTMENTS)

Referred to as Building A, the 16-storey (56.0m) building situated at the southern end of the parcel is proposed to have 199 multiple dwelling units intended for market rental purposes. The residential apartment units will be located on floors 1 to 16 of which at this time, 32.5% (64-units) are proposed to be 1-bedroom units, 66.5% (133units) are proposed as 2-bedroom units, and 1.0% (2-units) will be 3-bedroom units. Each residential unit will benefit from a private balcony. Common amenity spaces for residents will be provided on the 1st floor (i.e. common area, gym, games room), 2nd floor (i.e. common area), and 13th floor (i.e. outdoor amenity space).

Pedestrian access to Building A is provided via the residential lobby area at grade along Paris Street and via an entrance to the east along Bell Park Road.

222-UNIT MULTIPLE DWELLING BUILDING (CONDOMINIUM)

Referred to as Building B, the 20-storey (68.2m) building is proposed to have 222 condominium units for freehold tenure. The residential condominium units will be located on floors 1 to 20 of which 17.1% (38-units) will be 1-bedroom units, 68.0% (151-units) will be 2-bedroom units, and 14.9% (33-units) will be 3-bedroom units. Each residential unit will benefit from private amenity space in the form of a balcony. In addition to private balconies, common amenity space for residents will be provided on the 1st floor (i.e. common area), 13th floor (i.e. outdoor amenity space), 14th floor (i.e. outdoor amenity space), and 20th floor (i.e. common area).

Pedestrian access to the building is provided via the residential lobby at grade along Paris Street and via an entrance along Bell Park Road.

109-GUEST ROOM RETIREMENT HOME

Referred to as Building C, this 12-storey (40.0m) building is proposed as a 109-guest room retirement home, situated at the north/central area of the parcel facing both Paris St and Facer St. Each guest room will benefit from a private balcony. A total of 123.8m^2 of accessory health/medical space is proposed.

Parking for the building will be provided via a 1-storey underground parking garage, which is connected to the rest of the residential development. Visitor parking for the retirement home is provided via 6 surface-level parking spaces. Pedestrian access to the building is provided via the residential lobby on the ground floor along Paris Street.

RESTAURANT USE

The development proposal also requires permission for 380m^2 of Restaurant use across the site, where only 150m^2 of Local Commercial use is permitted in the Living Area 1 designation.

BUILDING B RESTAURANT

A 288m^2 restaurant with ±149m^2 of indoor dining is proposed on the 20th floor of Building B. The restaurant will be open to the public and will feature panoramic views of Ramsey Lake with capabilities for outdoor dining and private events via a ±139m^2 covered rooftop terrace.

Pedestrian access to the restaurant will be provided through Building B via the main lobby at grade along Paris Street.

BUILDING C CAFE

The development proposal also includes ±85.0m^2 of restaurant space on the ground floor of Building C which is anticipated to take the form of a small café/restaurant open to the public. Six surface-level parking spaces are dedicated for the proposed use.

PARKING

The majority of the vehicle parking will be located below grade in a 3-storey underground parking garage which can be accessed from Bell Park Road and Paris Street. A total of 647-vehicle parking spaces will be provided within the parking structure. Entrance and exit to the underground parking structure will be accessed via three points - first via the southerly entrance at Building A, the second via the Bell Park Road entrance between Buildings A and B, and the third via a northerly entrance to Building B.

Parking spaces that are required for the proposed restaurant uses and visitor parking for the retirement home will be provided via surface parking with a total of 55-spaces. A breakdown of the parking across the entire site can be found in *Table 2.*

No relief from zoning by-law parking requirements for vehicle parking, accessible parking, loading spaces, and bicycle parking is required. **Section 5.5.1.1** of the City's Zoning By-Law states *that, "… where a Multiple Dwelling, Long Term Care Facility or Retirement Home is permitted and the lot is directly abutting a GOVA route, the number of required parking spaces may be reduced by 10% of the minimum required parking spaces."* **5.3.1** of the City's Zoning By-Law states that, *"… where a commercial use is permitted and the lot is directly abutting GOVA Routes, the number of required parking spaces associated with commercial uses are permitted to be reduced by 10% of the minimum required parking spaces."*

Table 2: Parking Spaces Breakdown

PROPOSED PARKING			
BUILDING	**USE**	**REQUIRED PARKING**	**# OF PARKING SPACES PROVIDED**
Building A	199-residential dwelling units Urban Lofts/ Studio Apartments (i.e. Multiple Dwelling)	1.35 spaces/unit 199 x 1.35 = 269 Spaces (inc. 10% GOVA reduction)	269 Spaces
Building B	222-residential dwelling units Condominium Building (i.e. Multiple Dwelling)	1.35 spaces/unit 222 x 1.35 = 300 Spaces (inc. 10% GOVA reduction)	300 Spaces
	288m^2 Restaurant Use	1/12.5m^2 287.4/12.5 = 21 spaces (inc. 10% GOVA reduction)	21 Spaces (at grade)
Building C	109-guest rooms Seniors Residence (i.e. Retirement Home)	109-guest rooms = 51 Spaces (inc. 10% GOVA reduction)	51 Spaces (6 visitor spaces at grade)
	85.0m^2 Restaurant Use (i.e. Café)	1/12.5m^2 85.0/12.5= 6 spaces (inc. 10% GOVA reduction)	6 Spaces (at grade)
TOTAL		647 Spaces	647 Spaces

PUBLIC REALM

Significant public realm improvements will also be provided along the Paris Street and Facer Street frontages, through the implementation of streetscape/landscaping and road improvements. The integration of these public realm improvements will promote a strong sense of place, foster social interaction, and support a positive pedestrian experience. Significant streetscape improvements such as the widening of sidewalks, bike lanes, and introduction of a bus lay-by are proposed. The introduction of landscaped areas and vegetated strips along the property's outer boundaries will enhance this stretch of Paris Street, promote sustainability, and a healthier, more beautiful and climate friendly neighborhood. The benefits will be experienced by both new residents living within the development, as well as the neighbourhood's existing residents and make a positive contribution towards the building of a healthy and complete local community.

DESIGN, MASSING & HEIGHT

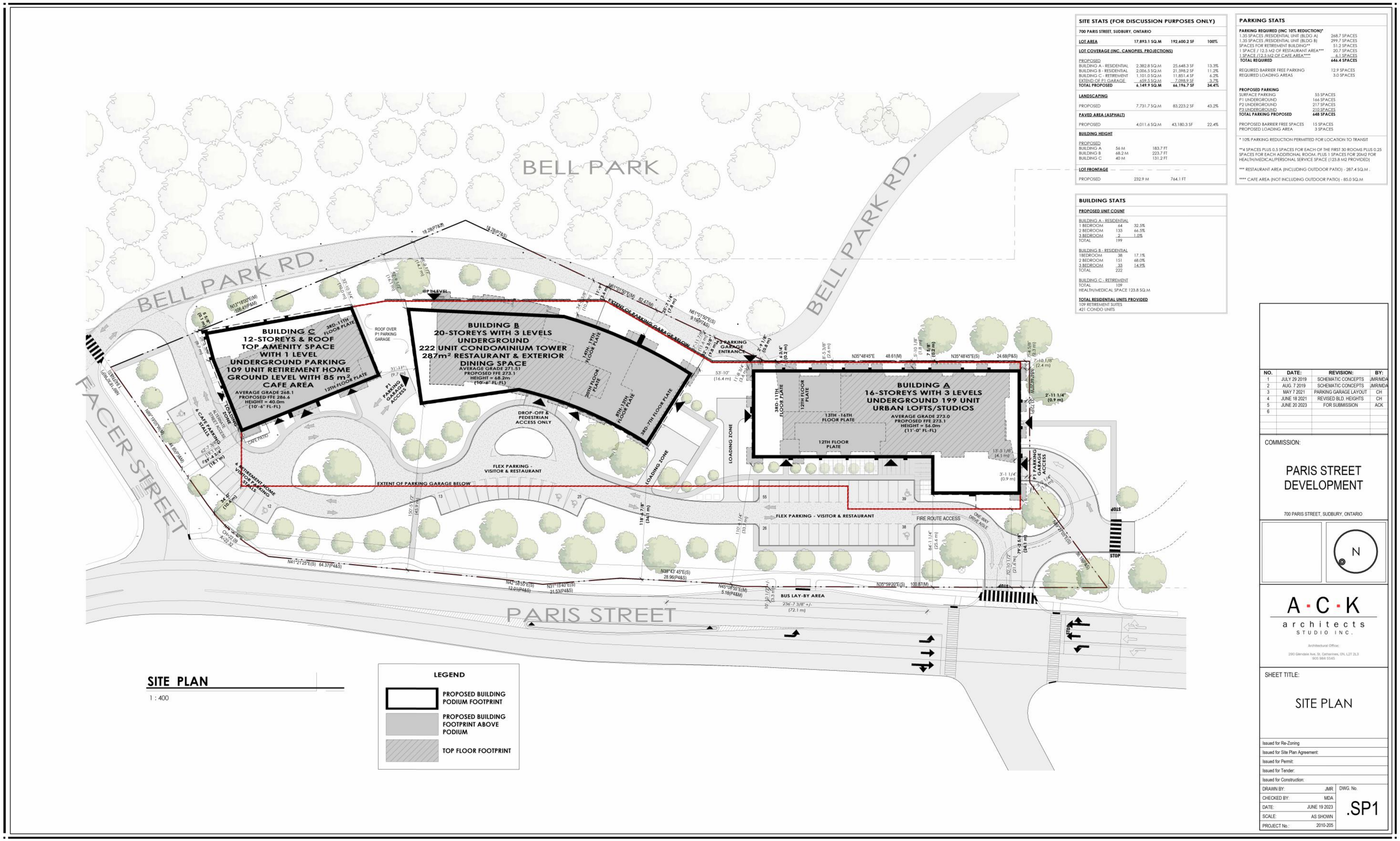
The proposed development incorporates a context-sensitive approach to its design and massing. The proposed massing and orientation have been designed to respond to the surrounding urban context while at the same time balancing its proximity to a large urban park.

The combined effect of the arrangement, volume and shape of the buildings on the subject site is an important consideration as it relates to good urban design and the development of high-quality spaces. To reduce impacts related to massing, the development proposal is comprised of three buildings, which have been articulated using step-backs and enhanced corner side yard setbacks to the adjacent low-density properties (*See Figure 23.)*

Height determines the impact of development on views, vistas and skylines. The development features three buildings at varying heights (i.e. 12-storeys, 16-storeys and 20-storeys). The three-building design results in floor plate sizes that lead to slimmer buildings. This along with other innovative design solutions assist in reducing the visual and physical impact (i.e. massing) that are sometimes associated with tall buildings. Such building design with podiums and step-backs tend to be preferred over slab-style building design where important views need to be protected. Most significantly, the buildings have been positioned to ensure that views toward Ramsey Lake from and along the Paris Street corridor are maintained, which was an integral design component within the context of the overall site design.

The buildings have been architecturally massed and detailed in ways that animate and lighten their facades through a range of building materials and façade treatments, such as brick, concrete, metal, and glass. The development will include sustainable building design measures as well as high quality and durable materials - ensuring the longevity of the development and its resilience to climate change over time.

Figure 23: Conceptual Rendering of the Development looking west ((ACK Architects).



SITE STATS (FOR DISCUSSION PURPOSES ONLY)

700 PARIS STREET, SUDBURY, ONTARIO

LOT AREA	**17,893.1 SQ.M**	**192,600.2 SF**	**100%**
LOT COVERAGE (INC. CANOPIES, PROJECTIONS)			
PROPOSED			
BUILDING A - RESIDENTIAL	2,382.8 SQ.M	25,648.3 SF	13.3%
BUILDING B - RESIDENTIAL	2,006.5 SQ.M	21,598.2 SF	11.2%
BUILDING C - RETIREMENT	1,101.0 SQ.M	11,851.4 SF	6.2%
EXTEND OF P1 GARAGE	659.5 SQ.M	7,098.9 SF	3.7%
TOTAL PROPOSED	**6,149.9 SQ.M**	**66,196.7 SF**	**34.4%**
LANDSCAPING			
PROPOSED	7,731.7 SQ.M	83,223.2 SF	43.2%
PAVED AREA (ASPHALT)			
PROPOSED	4,011.6 SQ.M	43,180.3 SF	22.4%
BUILDING HEIGHT			
PROPOSED			
BUILDING A	56 M	183.7 FT	
BUILDING B	68.2 M	223.7 FT	
BUILDING C	40 M	131.2 FT	
LOT FRONTAGE			
PROPOSED	232.9 M	764.1 FT	

PARKING STATS

PARKING REQUIRED (INC 10% REDUCTION)*	
1.35 SPACES /RESIDENTIAL UNIT (BLDG A)	268.7 SPACES
1.35 SPACES /RESIDENTIAL UNIT (BLDG B)	299.7 SPACES
SPACES FOR RETIREMENT BUILDING**	51.2 SPACES
1 SPACE / 12.5 M2 OF RESTAURANT AREA***	20.7 SPACES
1 SPACE /12.5 M2 OF CAFE AREA****	6.1 SPACES
TOTAL REQUIRED	**646.4 SPACES**
REQUIRED BARRIER FREE PARKING	12.9 SPACES
REQUIRED LOADING AREAS	3.0 SPACES
PROPOSED PARKING	
SURFACE PARKING	55 SPACES
P1 UNDERGROUND	166 SPACES
P2 UNDERGROUND	217 SPACES
P3 UNDERGROUND	210 SPACES
TOTAL PARKING PROPOSED	**648 SPACES**
PROPOSED BARRIER FREE SPACES	15 SPACES
PROPOSED LOADING AREA	3 SPACES

* 10% PARKING REDUCTION PERMITTED FOR LOCATION TO TRANSIT

**4 SPACES PLUS 0.5 SPACES FOR EACH OF THE FIRST 30 ROOMS PLUS 0.25 SPACES FOR EACH ADDITIONAL ROOM. PLUS 1 SPACES FOR 20M2 FOR HEALTH/MEDICAL/PERSONAL SERVICE SPACE (123.8 M2 PROVIDED)

*** RESTAURANT AREA (INCLUDING OUTDOOR PATIO) - 287.4 SQ.M .

**** CAFE AREA (NOT INCLUDING OUTDOOR PATIO) - 85.0 SQ.M

BUILDING STATS

PROPOSED UNIT COUNT

BUILDING A - RESIDENTIAL		
1 BEDROOM	64	32.5%
2 BEDROOM	133	66.5%
3 BEDROOM	2	1.0%
TOTAL	199	
BUILDING B - RESIDENTIAL		
1BEDROOM	38	17.1%
2 BEDROOM	151	68.0%
3 BEDROOM	33	14.9%
TOTAL	222	
BUILDING C - RETIREMENT		
TOTAL	109	
HEALTH/MEDICAL SPACE 123.8 SQ.M		

TOTAL RESIDENTIAL UNITS PROVIDED
109 RETIREMENT SUITES
421 CONDO UNITS

NO.	DATE:	REVISION:	BY:
1	JULY 29 2019	SCHEMATIC CONCEPTS	JMR/MDA
2	AUG. 7 2019	SCHEMATIC CONCEPTS	JMR/MDA
3	MAY 7 2021	PARKING GARAGE LAYOUT	CH
4	JUNE 18 2021	REVISED BLD. HEIGHTS	CH
5	JUNE 20 2023	FOR SUBMISSION	ACK
6			

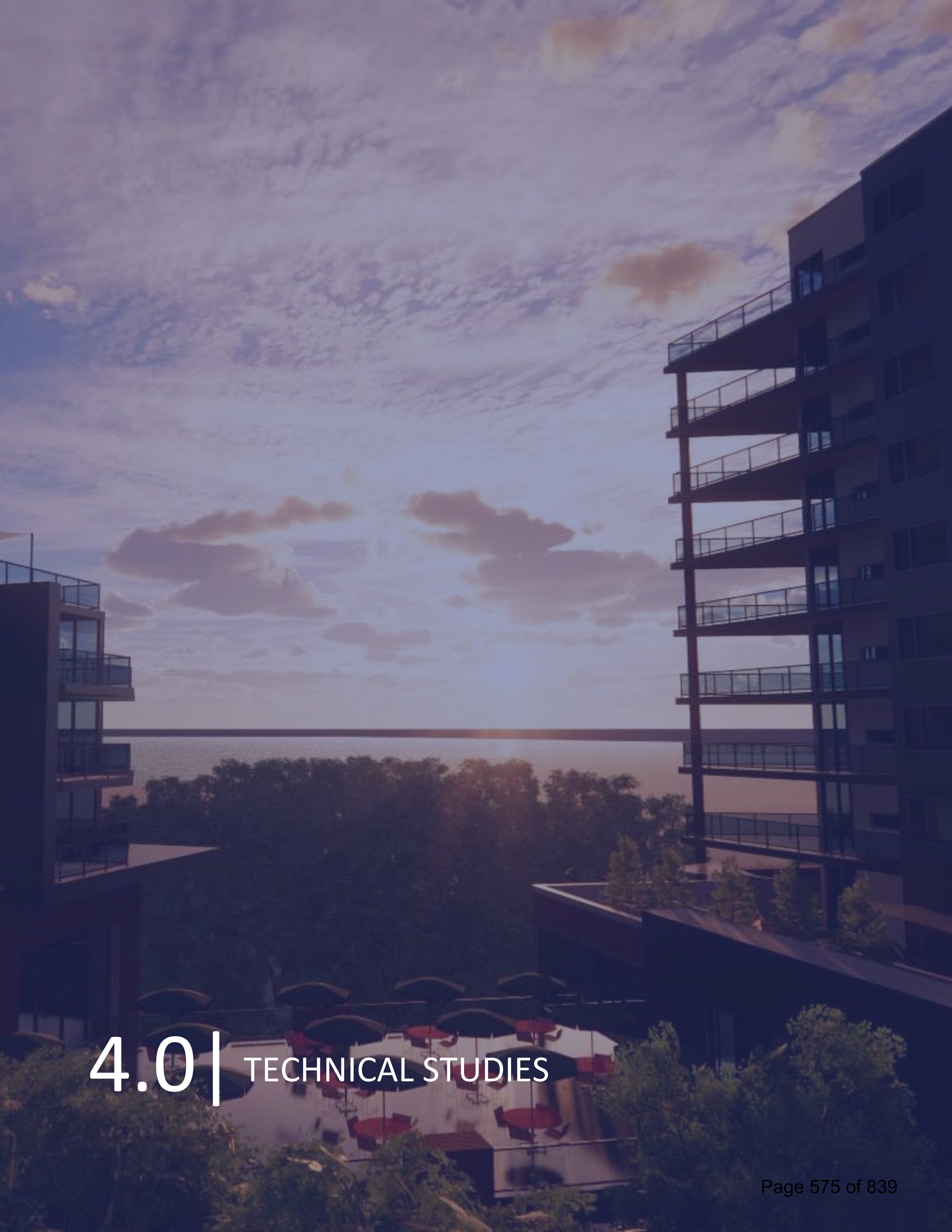
COMMISSION:
PARIS STREET DEVELOPMENT
700 PARIS STREET, SUDBURY, ONTARIO

SHEET TITLE:
SITE PLAN

Issued for Re-Zoning
Issued for Site Plan Agreement:
Issued for Permit:
Issued for Tender:
Issued for Construction:

DRAWN BY:	JMR	DWG. No.
CHECKED BY:	MDA	.SP1
DATE:	JUNE 19 2023	
SCALE:	AS SHOWN	
PROJECT No.:	2010-205	

Figure 24: Concept Pla



4.0| TECHNICAL STUDIES

4.0 TECHNICAL STUDIES

The following technical studies and documents were prepared in support of the applications and include information that was identified by the City as being required on the pre-consultation understanding document (CGS File #: PC2021-073) and from feedback provided at the City's SPART meeting on September 8, 2021.

- Architectural Drawings and Renderings by ACK Architects (dated June 19th, 2023):
  - A1, EL.1, EL.2, EL.3, EL.3b, EL.4, EL.5, EL.6, EL.7
  - SP1, SP1.1, UG1, UG2
  - A1.1, A1.2, A1.3, A1.4, A1.5
  - A2.1, A2.2, A2.3, A2.4, A2.5, A2.6; and,
  - A3.1, A3.2, A3.3, A3.4, A3.5
- Preliminary Pedestrian Level Wind Assessment prepared by Theakston Environmental (dated September 19, 2023)
- Sanitary & Water Capacity Analysis prepared by TULLOCH (dated September 18, 2023)
- Traffic Impact Study prepared by JD Engineering (dated December 23, 2022)
- Sun Shadow Study prepared by ACK Architects

PRELIMINARY PEDESTRIAN LEVEL WIND ASSESSMENT

A *Preliminary Pedestrian Level Wind Assessment* dated September 19th, 2023, was prepared by Theakston Environmental to support the proposed development. The assessment concluded the following:

> *"With inclusion of the proposed Development, prevailing pedestrian comfort conditions are predicted to remain comfortable and suitable for mainly standing, or better, under normal to high ambient wind conditions. Localised areas proximate to the north and southmost corners of the Development and in the gaps between the buildings will realise windier conditions on occasion. Additional mitigation is recommended for the Main Entrances and Outdoor Amenity Spaces to improve pedestrian comfort conditions and extend the useability of the areas into the shoulder seasons. To the extent mitigation may be warranted is best assessed through quantitative analysis.*
>
> *The overall upset to pedestrian comfort conditions with inclusion of the proposed Development is well managed by the proposed Development's wind mitigative design features, resulting in conditions that are, in many cases, similar to the existing setting."*

SANITARY & WATER CAPACITY ANALYSIS

TULLOCH Engineering Inc. was retained to evaluate the servicing demand associated with the development of the property located at 700 Paris Street to identify the anticipated servicing demand needed to support the proposed development. The results of the analysis were reviewed by the Development Engineering Section at the City of Greater Sudbury to confirm adequate capacities/flows are available within the existing municipal infrastructure system.

Based on the analysis the City of Greater Sudbury has confirmed that:

- A review of the sewage mains downstream from the proposed connection at MH-MCK-07-09-1122 700 Paris, revealed that the mains are capable of conveying the additional 25.7 L/s of flow expected from the development; and,

- The results of the WaterCAD analysis indicate that sufficient water capacity and pressure exist in order to properly service the development proposal, as presented.

TRAFFIC IMPACT STUDY

A Traffic Impact Study (TIS) dated December 23rd, 2022, was prepared by JD Engineering to assess the impact of traffic related to the development.

The TIS included a of the capacity of the Paris St corridor, including an analysis of the following intersections:

- Paris Street / Brady Street;
- Paris Street / Van Horne Street;
- Paris Street / John Street;
- Paris Street / McNaughton Street;
- Paris Street / Facer Street;
- Facer Street / Bell Park Road;
- Paris Street / Boland Avenue & Paris Driveway;
- Paris Street / York Street; and
- Paris Street / Ramsey Lake Road.

A summary of the conclusions of the TIS– as they relate to the impacts on the proposal on the existing condition of the Paris St corridor - is as follows:

- *The proposed development is expected to generate a total of 202 AM and 206 PM peak hour primary trips and 18 PM peak hour pass-by trips*;
- *Background traffic and pedestrian counts were commissioned for the existing intersections of Paris Street / Van Horne Street, Paris Street / McNaughton Street, Paris Street / Facer Street, Facer Street / Bell Park Road and Paris Street / York Street and were completed on Wednesday, April 20th, 2022. Background traffic and pedestrian counts at the study area intersections were also obtained from the City*; and,
- *An intersection operation analysis was completed at the study area intersections, using the existing (2022) and background (2027 & 2032) traffic volumes, with the adjacent development traffic. This enabled a review of existing and future traffic deficiencies that would be present without the influence of the proposed development. These improvements are warranted based on the anticipated growth in the city and traffic generated by future developments in the study area without the proposed development. The following improvements are recommended.*

Existing (2022) Traffic Volumes

- ***Paris Street / John Street and Paris Street / Ramsey Lake Road***
    - *Optimize signal timing plan.*

Background (2027) Traffic Volume

- ***Paris Street / Van Horne Street, Paris Street / McNaughton Street, Paris Street / Boland Avenue & Paris Driveway and Paris Street / York Street***
    - *Optimize signal timing plan.*

Background (2032) Traffic Volumes

- ***Paris Street / Brady Street***
    - *Adjust eastbound pavement markings to accommodate a double left-turn lane.*
    - *Adjust eastbound signal heads to accommodate a protected eastbound left-turn phase.*
    - *Optimize signal timing plan.*
- ***Paris Street / Ramsey Lake Road***
    - *Widen Ramsey Lake Road to accommodate westbound double right-turn lane with a 100-metre storage length and 60 metre taper length.*
    - *Optimize signal timing plan.*
- *An estimate of the amount of traffic that would be generated by the Subject Site was prepared and assigned to the study area streets and intersections.*
- *An intersection operation analysis was completed under total (2027 & 2032) traffic volumes with the proposed development operational at the study area intersections. The following improvements are recommended prior to build-out of the proposed development.*

Opening Day (2027) Traffic Volumes

- ***Paris Street / Boland Avenue & Paris Driveway***
    - *Shift the Paris Driveway to align with Boland Avenue.*
    - *The westbound configuration of Paris Driveway at the intersection shall include a left turn lane and through-right lane.*
- ***Facer Street***
    - *Construct sidewalk on the south side of the road between Paris Street and Bell Park Road.*
- ***Bell Park Road***
    - *Reconstruct Bell Park Road south of Facer Street to a 6.0-metre-wide paved condominium road.*
    - *Bell Park Road shall have a posted speed limit of 20 km/h once Bell Park Road is reconstructed.*
- *The proposed development will shift the location of the Paris Driveway slightly further north at the intersection to align with Boland Avenue. It is recommended the westbound lane configuration at the Paris Street / Boland Avenue & Paris Driveway intersection include a left turn lane and through-right lane. A single ingress and egress lane at the Paris Driveway will provide the necessary capacity to service the proposed development. The Paris Driveway will provide ingress and egress access to the underground parking and surface parking.*
- *The Bell Park Access will operate as full-movement access driveway. A single ingress and egress lane at the Bell Park Access will provide the necessary capacity to service the proposed development. The Bell Park Ingress will operate efficiently with a single ingress only driveway. A single ingress lane at the Bell Park Ingress will provide the necessary capacity to service the proposed development. Bell Park Access will provide ingress and egress access to the surface parking and the Bell Park Ingress will provide ingress only access to the underground parking.*
- *There are no issues regarding the sight distance available for the proposed Paris Driveway and Bell Park Access.*
- *The proposed parking supply for the proposed development meets the minimum parking requirement specified in the City's Zoning By-law 2010–100Z.*

- *In summary the proposed development will not cause any operational issues and will not add significant delay or congestion to the local roadway network.*

TRAFFIC DEMAND MANAGEMENT

As noted in Section 3.4 and 5.2 of the TIS, the traffic volumes along Paris Street in the study area are reaching overcapacity thresholds and further widening of the road itself is not feasible. It is recommended that the City implement TDM measures to reduce the number of residents relying upon single-occupancy vehicles and to improve the accessibility of transit and non-automotive modes of transportation. The following TDM measures are recommended as part of the proposed development:

- *Construct sidewalk on the south side of Facer Street extending from Facer Street to Bell Park Road;*
- *The proposed development includes an internal sidewalk network with pedestrian connections to the proposed sidewalk on Facer Street and the existing municipal pedestrian infrastructure on Paris Street;*
- *The proposed development includes 227 bicycle parking spaces;*
- *An information display board will be provided in a central location in the apartment buildings to display travel information such as bicycle maps, local transit map/schedule and other relevant information;*
- *Information packages will be distributed to new residents including transit and cycling maps; and*
- *Subsidized transit passes be provided to residents.*

SUN SHADOW ANALYSIS

ACK Architects Studio Inc was retained to provide a Sun Shadow Analysis, which assessed the impact of the proposed developments height, mass, and location of shadows cast on adjacent residential areas, public sidewalks, and surrounding parklands.

The City's pre-consultation understanding required that the Sun Shadow Analysis tests be done for March 21 and September 21 between the hours of 9:00AM and 6:00PM and include the identification of permanently shaded areas between the start of December to the end of February.

The Sun Shadow Analysis also included an analysis of the existing sun shadowing that would result from the existing in-force "R4(3)" zoning permissions, to show the difference between existing permission shadowing conditions and proposed development shadowing conditions.

Given the sun shadow renderings it can be concluded that the:

- Majority of the proposed building's sun shadowing is contained within the subject site and municipal right-of-way during the late morning and early afternoon;
- There is an increase in shadowing over portions of Bell Park and Ramsey Lake in late afternoon and evening primarily caused by the addition of the 109-guest room retirement home and an increase in shadowing over single-detached dwellings along Boland Avenue and adjacent open space areas caused by the additional height and 109-guest room retirement home during the morning hours; and
- Year-round a sun-shadow would be observed over the entrances to each of the proposed buildings.

5.0| POLICY OVERVIEW & ANALYSIS

5.0 POLICY OVERVIEW AND ANALYSIS

The following section sets out the relevant land use planning policy framework to assess the appropriateness of the development proposal within the context of applicable provincial and municipal policies and regulations. Each sub-section outlines relevant policies and provide a land use planning analysis with respect to how the proposed Official Plan and Zoning By-law Amendments are consistent with or conforms to such policies.

PROVINCIAL POLICY STATEMENT (PPS)

The *2020 Provincial Policy Statement (PPS)* provides a high-level provincial land use policy direction for planning approval authorities to consider in preparing municipal land use planning documents, and in making decisions on applications under the *Planning Act*. Those policies applicable to the proposed Official Plan and Zoning By-law Amendments are outlined and discussed below.

Section 1.0 of the PPS speaks to managing and directing land use to achieve efficient and resilient development and land use patterns. **Section 1.1.1** states, in part:

> ***1.1.1*** *Healthy, liveable, and safe communities are sustained by:*
>
> ***a)*** *promoting efficient development and land use patterns which sustain the financial well-being of the province and municipalities over the long term;*
>
> ***b)*** *accommodating an appropriate affordable and market-based range and mix of residential types (including single-detached, additional residential units, multi-unit housing, affordable housing and housing for older persons), employment (including industrial and commercial), institutional (including places of worship, cemeteries and long-term care homes), recreation, park and open space, and other uses to meet long-term needs;*
>
> ***c)*** *avoiding development and land use patterns which may cause environmental or public health and safety concerns;*
>
> ***e)*** *promoting the integration of land use planning, growth management, transit-supportive development, intensification, and infrastructure planning to achieve cost-effective development patterns, optimization of transit investments, and standards to minimize land consumption and servicing costs;*
>
> ***f)*** *improving accessibility for persons with disabilities and older persons by addressing land use barriers which restrict their full participation in society*
>
> ***i)*** *preparing for the regional and local impacts of a changing climate.*

RESPONSE

The proposed development promotes efficient development and land use patterns by proposing high density residential land uses on a site well suited for such. The subject site is fully serviced by municipal water and sanitary sewer infrastructure with available capacity to support a density of 237-units per hectare and as such the development proposal makes better use of the existing available services thereby promoting the financial wellbeing of both the City and the Province.

Under **Section 1.1.1** of the PPS, municipalities shall accommodate an appropriate range and mix of residential uses to meet long-term needs, including housing for older persons. The development proposal supports **Section 1.1.1(b) & (f**) by permitting additional multi-unit housing options to the community and supporting a mix of residential housing types and tenures through the addition of retirement guest rooms, freehold condominium units and rental apartment dwelling units that contributes positively toward meeting the needs of changing demographics, while being cognisant of building massing, and appropriate landscaping to mitigate impacts between the development and surrounding urban residential neighbourhood.

The development of a range of housing types to meet long term needs is consistent with the intent of **Section 1.1.1(b)**. Similarly, the mix of housing forms are conducive to the needs of older adult than traditional single detached dwellings and will act to support accessibility with older persons and those with mobility constraints.

The development proposal is also consistent with **Section 1.1.1(e)** through the integration of land use planning, growth management, transit-supportive development, intensification, and infrastructure planning to achieve cost-effective development patterns, optimization of transit investments, and standards to minimize land consumption and servicing cost given that it provides for residential intensification of an underutilized site along a primary arterial within walking distance to the Downtown.

Section 1.1.3 of the PPS states that Settlement Areas shall be the focus of growth and development and their vitality and regeneration shall be promoted. Given that the subject site is located within the Sudbury Settlement Area, the following policies are applicable:

1.1.3.1 *Settlement areas shall be the focus of growth and development.*

1.1.3.2 *Land use patterns within settlement areas shall be based on densities and a mix of land uses which:*

a) *efficiently use land and resources;*

b) *are appropriate for, and efficiently use, the infrastructure and public service facilities which are planned or available, and avoid the need for their unjustified and/or uneconomical expansion;*

c) *minimize negative impacts to air quality and climate change, and promote energy efficiency;*

d) *prepare for the impacts of a changing climate;*

e) *support active transportation;*

f) *are transit-supportive, where transit is planned, exists or may be developed.*

1.1.3.3 *Planning authorities shall identify appropriate locations and promote opportunities for transit-supportive development, accommodating a significant supply and range of housing options through intensification and redevelopment where this can be accommodated taking into account existing building stock or areas, including brownfield sites, and the availability of suitable existing or planned infrastructure and public service facilities required to accommodate projected needs*

1.1.3.4 *Appropriate development standards should be promoted which facilitate intensification, redevelopment and compact form, while avoiding or mitigating risks to public health and safety.*

1.1.3.5 *Planning authorities shall establish and implement minimum targets for intensification and redevelopment within built-up areas, based on local conditions. However, where provincial targets are established through provincial plans, the provincial target shall represent the minimum target for affected areas..*

RESPONSE

The subject site is located within the City's identified settlement area boundary, which under **Section 1.1.3.1** shall be the focus of growth and development. Per **Section 1.1.3.2** the proposed development promotes growth and a mix of uses and densities within Sudbury's existing settlement area, which is suitable for and effectively uses existing municipal infrastructure, public service facilities and incorporates a mix of housing types and tenures in an area predominated by single-detached dwellings and parkland. Further, the development proposal represents the efficient use of land, infrastructure, and resources, given residential uses in this location would better utilize existing established soft and hard municipal services at the proposed density of 237-dwelling units per hectare.

The development appropriately locates a high-density residential use in a location which is adequately set back from existing adjacent low density urban residential development, in order to mitigate sun-shadowing and other impacts on neighbouring uses. The proposed transition in height as one moves inward to the centre of the subject site is a key design element to mitigate such impacts.

The development proposal is further consistent with **Section 1.1.3.3** of the PPS given that the redevelopment of the subject site will accommodate a range of housing built-forms and will serve to support the nearby GOVA transit system as well as nearby active transportation routes. The proposed development can also be supported by existing and planned public service facilities. Per **Section 1.1.3.4** of the PPS, the amending zoning by-law to facilitate the development proposal will also be utilized to establish appropriate development standards that balances the needs and demands for residential intensification within existing settlement areas within the context of the existing surrounding neighbourhood. Per **Section 1.1.3.5** of the PPS, the development proposal would also contribute positively to meeting the intensification target identified in the City's Official Plan of accommodating 20% of its future residential growth within the built-up area.

Section 1.3 of the PPS outlines policies related to employment. The following policies are relevant to the applications:

1.3.1 *Planning authorities shall promote economic development and competitiveness by:*

a) *providing for an appropriate mix and range of employment, institutional, and broader mixed uses to meet long-term needs;*

b) *providing opportunities for a diversified economic base, including maintaining a range and choice of suitable sites for employment uses which support a wide range of economic activities and ancillary uses, and take into account the needs of existing and future businesses; and,*

d) *encouraging compact, mixed-use development that incorporates compatible employment uses to support liveable and resilient communities, with consideration of housing policy 1.4.*

RESPONSE

The proposed development offers a compact development that incorporates a contextually-sensitive and appropriate ancillary employment generating uses (i.e. restaurant and retirement home) that are compatible with the existing neighbourhood, the proposed residential uses and the subject site's proximity to Sudbury's urban waterfront. These new business and employment opportunities are consistent with the PPS's intent of building liveable and resilient communities and promoting economic development and competitiveness, given the resulting ability for future residents to live, work, and play within this neighbourhood and/or have appropriate access to other areas of Sudbury that also provide such opportunity.

Section 1.4 of the PPS outlines policies associated with housing and states that:

> ***1.4.3*** *Planning authorities shall provide for an appropriate range and mix of housing options and densities to meet projected market-based and affordable housing needs of current and future residents of the regional market area by:*
>
> ***b)*** *permitting and facilitating:*
>
> *1. all housing options required to meet the social, health, economic and well-being requirements of current and future residents, including special needs requirements and needs arising from demographic changes and employment opportunities; and*
>
> *2. all types of residential intensification, including additional residential units, and redevelopment in accordance with policy 1.1.3.3;*
>
> ***c)*** *directing the development of new housing towards locations where appropriate levels of infrastructure and public service facilities are or will be available to support current and projected needs;*
>
> ***d)*** *promoting densities for new housing which efficiently use land, resources, infrastructure and public service facilities, and support the use of active transportation and transit in areas where it exists or is to be developed*
>
> ***e)*** *requiring transit-supportive development and prioritizing intensification, including potential air rights development, in proximity to transit, including corridors and stations; and*
>
> ***f)*** *establishing development standards for residential intensification, redevelopment and new residential development which minimize the cost of housing and facilitate compact form, while maintaining appropriate levels of public health and safety.*

RESPONSE

The proposed development represents residential intensification that is appropriate and serves to direct growth to lands situated within the City's settlement boundary. Further to **Section 1.4.3**, the development proposal will aid in providing an appropriate and varied mix of housing tenure to the area through the addition of rental and freehold multi-unit housing and retirement home guest rooms. The development will propose to:

- Provide for a transit-supportive residential density that will be compact in form and represents an efficient use of land and resources including the use of existing and planned nearby transit (i.e. GOVA).
- Assist in meeting the social, health, economic and well-being of current and future residents and respond to demographic changes through the addition of varied housing tenures and types (i.e., retirement guest suites, apartment units, and freehold condominium units).
- Introduces a retirement home use to the neighbourhood in order to accommodate the housing needs of Sudbury's aging population and allow for aging in proximity to transit, amenities and active park spaces.
- Provide high density residential intensification at a scale that is respectful of the existing residential neighbourhood by using setbacks, landscape buffering and placement of the buildings closer to the easterly and southerly lot lines while still building upon and leveraging the central location, and historic use as a regional draw/community facility (Sudbury General Hospital).
- Assist the City of Greater Sudbury in meeting its municipal housing target of creating 3,800 more homes by 2031 via contributing 421 those units in addition to 109 retirement guest suites.
- Direct high density/new housing development to a location that efficiently uses land, infrastructure, and public service facilities given that the subject site is fully serviced with municipal infrastructure that has sufficient servicing capacity available.

Section 1.5 of the PPS outlines policies regarding public spaces, recreation, parks, trails, and open space. The following policies are relevant to the application:

1.5.1 *Healthy, active communities should be promoted by:*

a) *planning public streets, spaces and facilities to be safe, meet the needs of pedestrians, foster social interaction and facilitate active transportation and community connectivity;*

b) *planning and providing for a full range and equitable distribution of publicly accessible built and natural settings for recreation, including facilities, parklands, public spaces, open space areas, trails and linkages, and, where practical, water-based resources; and,*

c) *providing opportunities for public access to shorelines.*

RESPONSE

The proposed development promotes healthy and active communities given its location and the significant enhancements to the public realm and streetscapes along both Paris Street and Facer Street. The proposed enhancements serve to assist in creating a safer and more pedestrian-friendly environment by providing an internal pedestrian circulation network that is well connected externally to the site.

The subject site is also well-connected to many publicly accessible built and natural settings for recreation, including facilities, parks and open spaces that are supportive of the principles of healthy community planning. Specifically, the site directly abuts Bell Park, which features a range of recreational opportunities including trails, the Ramsey Lake Boardwalk, Bell Park beach, programmable outdoor recreational space (i.e. Splash N Go Adventure Park, community/private events etc.), playgrounds, outdoor workout equipment, the Bell Park Skating Path during the winter months and the other waterfront-related recreational activities that foster social interaction.

Section 1.6.6 of the PPS addresses the provision of sewage, water and stormwater infrastructure, and states in part that:

> ***1.6.6.1*** *Planning for sewage and water services shall:*
>
> ***a)*** *accommodate forecasted growth in a manner that promotes the efficient use and optimization of existing:*
>
> *1. municipal sewage services and municipal water services;*
>
> ***b)*** *ensure that these systems are provided in a manner that:*
>
> *1. can be sustained by the water resources upon which such services rely;*
>
> *2. prepares for the impacts of a changing climate;*
>
> *3. is feasible and financially viable over their lifecycle;*
>
> ***c)*** *promote water conservation and water use efficiency; and,*
>
> ***d)*** *integrate servicing and land use considerations at all stages of the planning process.*
>
> ***1.6.6.2*** *Municipal sewage services and municipal water services are the preferred form of servicing for settlement areas to support protection of the environment and minimize potential risks to human health and safety. Within settlement areas with existing municipal sewage services and municipal water services, intensification and redevelopment shall be promoted wherever feasible to optimize the use of the services.*
>
> ***1.6.6.7*** *Planning for stormwater management shall:*
>
> ***a)*** *be integrated with planning for sewage and water services and ensure that systems are optimized, feasible and financially viable over the long term;*
>
> ***c)*** *minimize erosion and changes in water balance, and prepare for the impacts of a changing climate through the effective management of stormwater, including the use of green infrastructure;*
>
> ***d)*** *mitigate risks to human health, safety, property and the environment;*
>
> ***e)*** *maximize the extent and function of vegetative and pervious surfaces; and,*
>
> ***f)*** *promote stormwater management best practices, including stormwater attenuation and re-use, water conservation and efficiency, and low impact development.*

RESPONSE

The development proposal is consistent with **Section 1.6.6** of the PPS as it promotes the efficient use of existing municipal infrastructure and provides new housing options in a location which does not require the extension of municipal infrastructure. The proposed development will be connected to full municipal water and sanitary sewer infrastructure along Paris Street, which is the preferred method of servicing the City's settlement areas. Sufficient sewer and water capacity to support the proposed development has also been confirmed by the City's Development Engineering Section.

Site plan control will require a comprehensive stormwater management approach to address the quality and quantity of stormwater. The proposed underground parking structure has significantly reduced the amount of surface parking (and road salt and snow storage required to maintain large surface parking areas) thus leading to better stormwater management and lake quality outcomes.

The PPS also provides policy direction for matters related to transportation in **Section 1.6.7.** The 2020 PPS states that:

> ***1.6.7.1*** *Transportation systems should be provided which are safe, energy efficient, facilitate the movement of people and goods, and are appropriate to address projected needs.*
>
> ***1.6.7.2*** *Efficient use should be made of existing and planned infrastructure, including through the use of transportation demand management strategies, where feasible.*
>
> ***1.6.7.4*** *A land use pattern, density and mix of uses should be promoted that minimize the length and number of vehicle trips and support current and future use of transit and active transportation.*

RESPONSE

Locating a mix of uses and higher density housing along arterial roads is encouraged as it supports feasibility of transit services, which increases ridership/utilization of a public investment, alleviates traffic congestion, and reduces reliance on the automobile. The proposed residential and limited restaurant uses will have direct access to the GOVA public transit system and nearby active transportation networks, thereby encouraging the use of public transit per **1.6.7.4** of the PPS. The subject site is also optimally connected to the Downtown via public transit service, thereby reducing the need for personal vehicle usage as per **1.6.7.4** of the PPS**.** The housing mix and densities along with their proximity to transit and future bike lanes on Paris Street will also assist in reducing the number of vehicle trips and will support alternative transportation methods.

The Traffic Impact Study concluded that, "… *the proposed development will not cause any operational issues and will not add significant delay or congestion to the local roadway network.*", thus responding to PPS policy **1.6.7** that requires transportation systems provide the safe movement of people and goods. Transportation Demand Management (TDM) considerations were also included with the TIS, which detail several TDM initiatives that will reduce automobile travel demand from the development.

Section 1.7 of the PPS provides a policy direction for municipalities to pursue and achieve long-term economic prosperity. The following policies are relevant:

> ***1.7.1*** *Long-term economic prosperity should be supported by:*
>
> ***a)*** *promoting opportunities for economic development and community investment-readiness;*
>
> ***b)*** *encouraging residential uses to respond to dynamic market-based needs and provide necessary housing supply and range of housing options for a diverse workforce*

c) *optimizing the long-term availability and use of land, resources, infrastructure and public service facilities;*

d) *maintaining and, where possible, enhancing the vitality and viability of downtowns and mainstreets;*

e) *encouraging a sense of place, by promoting well-designed built form and cultural planning, and by conserving features that help define character, including built heritage resources and cultural heritage landscapes*

RESPONSE

The proposed development will support long-term economic prosperity through the redevelopment of an underutilized site to provide the opportunity for new housing (i.e. 530-units), businesses and public realm enhancements that will create a sense of place and bring vitality to the site. The applications are consistent with **1.7.1(a)** as they enable an opportunity for economic development (and respond directly to a community investment opportunity).

The applications encourage residential uses which respond to market-based housing needs (i.e. more affordable housing options and changing demographics) and aid in providing necessary housing supply and a range of housing options through the addition of rental apartments, freehold condominiums and retirement home guest rooms in the City per **1.7.1(b)**. The proposed residential built-form has been designed to mitigate impact to the neighbourhood and complement the adjacent parklands via landscaping, setbacks, careful massing, and the buffering provided via increased setbacks and the Facer Street right-of-way.

Section 1.8 of the PPS speaks to energy conservation, air quality and climate change. It states in part:

1.8.1 *Planning authorities shall support energy conservation and efficiency, improved air quality, reduced greenhouse gas emissions, and preparing for the impacts of changing climate through land use and development patterns which:*

a) *promote compact form and a structure of nodes and corridors;*

b) *promote the use of active transportation and transit in and between residential, employment (including commercial and industrial) and institutional uses and other areas;*

e) *encourage transit-supportive development and intensification to improve the mix of employment and housing uses to shorten commute journeys and decrease transportation congestion;*

g) *maximize vegetation within settlement areas, where feasible.*

RESPONSE

The proposed development enables transit-supportive intensification and improves the mix of employment and housing uses to shorten commute journeys and decrease transportation congestion via the site's connectivity and location.

The proposed development will support improved air quality, reduced greenhouse emissions and respond to the impacts of climate change by promoting the use of active transportation and transit for new residents, as the development is located adjacent to existing public transit routes and active transportation options.

The new sidewalks and future bicycle lanes proposed along Paris Street will further enhance active transportation and safety as it relates to accessing the transit system.

Section 2.2.1 provides a policy direction respecting the quantity and quality of water resources and states in part**:**

> ***2.2.1*** *Planning authorities shall protect, improve or restore the quality and quantity of water by:*
>
> ***f)*** *implementing necessary restrictions on development and site alteration to:*
>
> *1. protect all municipal drinking water supplies and designated vulnerable areas; and,*
>
> *2. protect, improve or restore vulnerable surface and ground water, sensitive surface water features and sensitive ground water features, and their hydrologic functions*

RESPONSE

Per **Section 2.2.1** of the PPS, the subject site is located within the Ramsey Lake Intake Protection Zone 1 and 2 Area and has a vulnerability score of 10. It is noted that in such areas the preparation of a Risk Management Plan may be required to address the 'significant threat activities' that are associated with the application of road salt and the storage of snow if the exterior parking lot is equal to or greater than 1 hectare in area. The handling and storage of road salt (i.e. 0.5 tonnes or greater) is prohibited. The proposed underground parking structure has significantly eliminated the amount of surface parking required to service the proposed housing units, which would otherwise require significant road salt and snow storage. The proposed at-grade parking spaces do not have a total area greater than one hectare and therefore a Risk Management Plan is not required. A *Section 59 Source Water Protection Application* will be submitted as part of the Official Plan and Zoning By-law Amendment applications.

PPS SUMMARY

The proposed development and its implementing Official Plan and Zoning By-law Amendments are consistent with the 2020 Provincial Policy Statement. The proposed development provides a compact urban development which more efficiently uses land and existing municipal services and infrastructure along a primary arterial road adjacent to existing public transit routes.

The provision of a total of 530-residential units will serve to diversify the supply of housing in the City, support housing affordability, provide housing choices that respond to market demands and facilitate the creation of housing options for Sudbury's aging demographic and smaller household sizes.

The subject lands connectivity to the Downtown, and broader City allows its residents to have easy access to employment centres, public service facilities and commercial centres. The proposal also supports and provides future residents access to parks and open space amenities supporting healthy living. Moreover, the introduction of contextually appropriate commercial (restaurant) use to this area will aid in building liveable and resilient communities, given the resulting ability for future residents to live, work, and play within their neighbourhood.

GROWTH PLAN FOR NORTHERN ONTARIO

The *Growth Plan for Northern Ontario* (GPNO) is a 25-year plan that provides guidance in aligning provincial decisions and investment in Northern Ontario. It contains policies to guide decision-making surrounding growth that promotes economic prosperity, sound environmental stewardship, and strong, sustainable communities that offer northerners a high quality of life. It also recognizes that a holistic approach is needed to plan for growth in Northern Ontario.

Section 3.4.3 of the GPNO promotes a diverse mix of land uses within northern communities. The GPNO states that:

> ***3.4.3*** *Municipalities are encouraged to support and promote healthy living by providing for communities with a diverse mix of land uses, a range and mix of employment and housing types, high-quality public open spaces, and easy access to local stores and services.*

RESPONSE

Per **Section 3.4.3** the development proposal introduces a further range of housing types in the community by increasing freehold and rental housing stock and introducing a more diverse urban residential built form in an appropriate location. The development also introduces a limited amount of non-residential use (i.e. restaurant) that aims to contribute to a healthy and high-quality urban space. Further, the proposed development is appropriate given that the lands are located adjacent to public open space (Bell Park) and will contribute to the park's usage.

The site's connectivity to the City's Downtown, South End, and broader City via active transportation, transit, and other mobility means, allows for easy access to stores and services.

Section 4.3 of the GPNO provides that economic and service hubs such as the City of Greater Sudbury shall develop strategies for developing a diverse mix of land uses and encouraging future residential development in certain areas. **Section 4.4** speaks to the City of Greater Sudbury as a municipality with strategic core areas.

The GPNO states in part that:

> ***4.4.2*** *Municipalities that contain strategic core areas are encouraged to plan for these areas to function as vibrant, walkable, mixed-use districts that can:*
>
> ***a.*** *attract employment uses and clusters, including office and retail*
>
> ***b.*** *accommodate higher densities*
>
> ***c.*** *provide a broad range of amenities accessible to residents and visitors including vibrant streetscapes, shopping, entertainment, transportation connections, lodging, and educational, health, social and cultural services.*

RESPONSE

Intensification Corridors are defined in the GPNO as: *Areas along major roads, arterials or transit corridors that have the potential to provide a focus for higher density mixed-use development.* Per **Section 4.3.3** the development proposal will add to the range of housing types available in this core area, as it is designated as a Primary Arterial Road in the City's Official Plan with transit and has the potential to accommodate higher density mixed use developments.

The development of high-density residential uses in this location will help promote a vibrant, walkable, mixed-use area which is near the Downtown and its shopping, entertainment, transportation connections, educational, services, and other health, social, and cultural service amenities.

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CITY OF GREATER SUDBURY STRATEGIC PLAN

The City of Greater Sudbury's Strategic Plan was updated in 2023. It states that *'the City of Greater Sudbury operates approximately 60 lines of service…The plan highlights the changes City Council wants to make, which it believes are fundamentally important for the community's sustainability, economic competitiveness, and quality of life'*.

The development proposal assists in contributing positively to the strategic directions endorsed by City Council. Specifically, it aligns with the Strategic Plans objectives and goals **2.4, 3.2, 4.1, 4.3, 5.5** and **5.6.**

STRATEGIC INITIATIVE 3.2	*Complete and implement Community Energy and Emissions Plan that will provide guidance to reduce greenhouse gas emissions.*

RESPONSE

The proposed development assists with achieving Goals 1, 2, and 7 of the CEEP as outlined later in this report through promoting the use of active transportation and facilitating compact infill development with varied housing tenure.

STRATEGIC INITIATIVE 4.1	*Evaluate potential to partner with private sector developers through CIPs or directly to increase or accelerate mixed use rental housing projects*
STRATEGIC INITIATIVE 4.3	*Improve services/housing for all those living or seeking to live in Greater Sudbury*

RESPONSE

The proposed development will be eligible for, and benefit from the City's Strategic Core Areas CIP which has been recently amended to encourage multi-residential development along the City's Strategic Corridors (including Paris Street).

The proposed development supports housing for all those living or seeking to live in Greater Sudbury via developing a range of housing types and tenures - including a retirement residence - along a major transportation corridor and near Sudbury's Downtown.

STRATEGIC INITIATIVE 5.5	*Support a local culture of embracing the different lifestyles available (urban, suburban and rural) that make up Greater Sudbury* *Examine options for appropriate commercial development in Bell Park and around Ramsey Lake*

RESPONSE

The proposed development supports urban living by establishing high density residential uses near the heart of the City, and adjacent to Bell Park and its numerous cultural and lifestyle amenities.

Modern waterfront development settings often promote the establishment of mixed-use communities that allow for non-residential development, such as restaurant and dining opportunities, as a means of tourism support, economic development and cultivating vibrant public spaces. The development introduces restaurant uses which are appropriate and compatible with both the proposal and the surrounding area and represents and appropriate commercial development per Strategic Initiative **5.5.**

CITY OF GREATER SUDBURY OFFICIAL PLAN

The *City of Greater Sudbury's Official Plan* is the principal and guiding land use planning policy document for the City of Greater Sudbury. The City's Official Plan (OP) establishes objectives and policies that guide both public and private development/decision-making. The subject site is designated 'Living Area 1' per *Schedule 1B* of the City's OP. The lands are also located within the 'Settlement Area' and 'Built Boundary' on *Schedule 3* of the City's OP.

Section 2.3.2 speaks to the City's settlement area and states in-part:

> ***2.3.2.1*** *Future growth and development will be focused in the Settlement Area through intensification, redevelopment and, if necessary, development in designated growth areas.*
>
> ***2.3.2.2*** *Settlement Area land use patterns will be based on densities and land uses that make the most efficient use of land, resources, infrastructure, and public service facilities, minimize negative impacts on air quality and climate change, promote energy efficiency and support public transit, active transportation and the efficient movement of goods.*
>
> ***2.3.2.3*** *Intensification and development within the Built Boundary is encouraged in accordance with the policies of this Plan. Development outside of the Built Boundary may be considered in accordance with the policies of this Plan.*

RESPONSE

Per **Sections 2.3.2.1** and **2.3.2.3** the subject site is located within the City's built boundary and settlement area which is intended to accommodate the focus of intensification, future growth, and development in the City. With respect to **Section 2.3.2.2**, it is noted that the development represents the efficient use of land, infrastructure and public service facilities, and will support the public transit system and active transportation options and in doing so will aid in minimizing impacts on air quality.

Section 2.3.3 addresses intensification and states in-part:

> ***2.3.3.1*** *All forms of intensification are encouraged in accordance with the policies of this Plan.*
>
> ***2.3.3.2*** *The City will aim to accommodate 20 percent of future residential growth and development through intensification within the Built Boundary.*
>
> ***2.3.3.3*** *Large scale intensification and development is permitted in strategic core areas such as the Downtown, Regional Centres and major public institutions, in accordance with the policies of this Plan.*
>
> ***2.3.3.5*** *Intensification and development is permitted in established Living Area I lands, in accordance with the policies of this Plan.*
>
> ***2.3.3.6*** *Intensification will be encouraged on sites that are no longer viable for the purpose for which they were intended such as former commercial, industrial and institutional sites. It will also be encouraged where the present use is maintained but the addition of residential uses can be added in a complementary manner.*

2.3.3.7 *Intensification will be encouraged on sites with suitable existing or planned infrastructure and public service facilities.*

2.3.3.8 *Intensification will be compatible with the existing and planned character of an area in terms of the size and shape of the lot, as well as the siting, coverage, massing, height, traffic, parking, servicing, landscaping, and amenity areas of the proposal.*

2.3.3.9 *The following criteria, amongst other matters, may be used to evaluate applications for intensification:*

a. *the suitability of the site in terms of size and shape of the lot, soil conditions, topography and drainage;*

b. *the compatibility proposed development on the existing and planned character of the area;*

c. *the provision of on-site landscaping, fencing, planting and other measures to lessen any impact the proposed development may have on the character of the area;*

d. *the availability of existing and planned infrastructure and public service facilities;*

e. *the provision of adequate ingress/egress, off street parking and loading facilities, and safe and convenient vehicular circulation;*

f. *the impact of traffic generated by the proposed development on the road network and surrounding land uses;*

g. *the availability of existing or planned, or potential to enhance, public transit and active transportation infrastructure;*

h. *the level of sun -shadowing and wind impact on the surrounding public realm;*

i. *impacts of the proposed development of surrounding natural features and areas and cultural heritage resources;*

j. *the relationship between the proposed development and any natural or man - made hazards; and,*

k. *the provision of any facilities, services and matters if the application is made pursuant to Section 37 of the Planning Act. Where applicable, applications for intensification of difficult sites may be subject to Section 19.7.*

2.3.3.10 *Residential intensification proposals will be assessed so that the concerns of the community and the need to provide opportunities for residential intensification are balanced.*

RESPONSE

Per **Sections 2.3.3.5** and **2.3.3.6**, the lands are located within the Living Area 1 designation. The proposed addition of 530-units (including retirement residence) assist in meeting the City's target of accommodating 20% of future residential growth and development through intensification within the City's built boundary. Further, the development proposes to introduce 421 of the 3800 homes that the City has committed to achieving by 2031.

Section 2.3.3.9 of the Official Plan sets out the criteria for evaluating whether a location is appropriate for intensification. The development proposal is an appropriate location for high density intensification given its location, sufficient infrastructure and services, availability of transit and active transportation, proximity to the City's largest urban park, and appropriate compatibility mitigation measures (i.e., buffering, below grade parking, landscaping, and setbacks) provided.

Specifically, the development meets the intensification criteria and proposes appropriate high-density infill given:

- The site has a shape, size, and topography that is appropriate to accommodate a high-density residential use given:
  - The site has a large area and significant frontage (±1.78 hectares with ±233.0 metres of frontage) to accommodate appropriate landscaping, outdoor amenity space, and parking.
  - The ability to utilize the site's topography to locate the 3-storey parking garage below grade thereby allowing for ground-oriented uses to activate the site's Paris and Facer Street frontage and reducing impervious surfaces resulting from large at-grade parking lots.
- The proposed buildings will have heights of 12-storeys, 20-storeys and 16-storeys from the north of the site to the south respectively. Setbacks and building step-backs have been provided to aid in reducing the impacts of the proposed development on surrounding low density residential uses while enabling an appropriate level of intensification given the site's location.
- The development will provide and, in many areas, exceed the minimum 3.0-metre-wide landscaping strip requirements of the City's Zoning By-law. Landscaping along the frontage will be improved from its existing condition with the addition of new landscaped open space, tree planting and pedestrian linkages to the City's transit and active transportation systems.
- The site will be fully serviced and efficiently using existing municipal infrastructure. Preliminary servicing information indicates that no extension of services is required and no upgrades to sewer and water servicing are required for the development. The City's Development Engineering Section has confirmed that there is sufficient domestic water pressure, and that the downstream sanitary sewer system has sufficient capacity to accommodate the proposed redevelopment.
- The development will provide all required parking and loading per zoning requirements and no site-specific relief from such are required to accommodate the land uses proposed.
- The TIS concluded that the proposed development will not cause any operational issues and will not add significant delay or congestion to the local roadway network;
- The development of the site will contribute to increased transit ridership and active transportation use in the area, all of which is sited and available near trails, schools and the Downtown and is well connected to the broader City of Greater Sudbury.
- The development is setback and screened by existing mature vegetation from the main recreational trails/areas along Bell Park's waterfront and therefore the increased height/density's impact to Bell Park's natural and cultural resources are being mitigated. The increase in residents living in proximity to the park should increase the usage of both the park and attendance at its numerous cultural and recreational events;
- There will be an increase in sun-shadowing caused by the three buildings from what the present zoning permissions allow as described in Section 4.0 of this Report;
- The Preliminary Wind Assessment determined that any upset to pedestrian comfort conditions is within a normal range and will be well managed by the proposed development's wind mitigative design features and no impacts are anticipated.
- No natural features or cultural heritage resources have been identified on the subject site; and
- No natural or man-made hazards such as floodplains have been identified on the subject site.

With respect to **Section 2.3.3.8** and **2.3.3.10** of the City's Official Plan, the design, density and layout of the proposed development responds to potential compatibility concerns by physically separating but socially integrating the existing neighbourhood. The building closest to the neighbouring properties on Facer Street is limited to 12-storeys with the 16 and 20-storey buildings being located closer to the interior/southerly portion of the site. The proposed development also incorporates landscaped open space to lessen the impact of the three proposed buildings. Improvements to the landscaping and parking areas in the front and corner yard will enhance the appearance of the subject site from Facer Street and Paris Street as well as from other nearby properties.

The condominium, apartment and retirement guest room units will assist the City in meeting the current and future demand for these type of residential dwelling units, in an appropriate location.

Section 3.2 outlines general policies for Living Areas.

3.2.2 *Medium density housing is permitted in all Living Area I designations where full municipal services are available. High density housing is permitted only in the community of Sudbury.*

3.2.3 *New residential development must be compatible with the existing physical character of established neighbourhoods, with consideration given to the size and configuration of lots, predominant built form, building setbacks, building heights and other provisions applied to nearby properties under the Zoning Bylaw.*

3.2.9 *Small-scale commercial uses that are intended to serve the convenience needs of local residents are permitted in all Living Areas by rezoning. Such uses are intended to be isolated rather than forming a group or cluster that could potentially change the residential character of an area. These uses, which may include confectionary stores, laundromats, and other personal service establishments, are limited to a maximum of 150 m2 of floor space per location. Zoning applications for local commercial uses will be reviewed on the basis of general conformity with the following policies:*

a. *access to and traffic generated by the site will not create adverse traffic problems on surrounding roads;*

b. *lighting and signage are located so as not to create any adverse visual impact on the surrounding residences;*

c. *the use will provide landscaping and buffering in a manner that is in harmony with adjoining and nearby residential properties; and,*

d. *the proposed small-scale commercial use must form a good fit with the existing neighbourhood fabric.*

RESPONSE

As stated above the building closest to the neighbouring properties on Facer Street is limited to 12-storeys with the 16 and 20-storey buildings being located closer to the interior/southerly portion of the site. The proposed development also incorporates landscaped open space to lessen the impact of the three proposed buildings.

A public restaurant is proposed on the 20th floor of Building B. The development proposal also includes ±85.0m^2 of public restaurant space on the ground floor of Building C, which is anticipated to take the form of a small café/restaurant.

The introduction of such restaurant uses is considered limited, appropriate and compatible given the availability of sufficient parking and public transit to the site, the location of the commercial uses on the site, and the site's proximity to Bell Park and Ramsey Lake. Further, **Section 5.5** of the City's Strategic Plan requests that the City '*examine options for appropriate commercial development in Bell Park and around Ramsey Lake'.* The proposal incorporates small scale, commercial uses (consistent with the intent of OP 3.2.9 policy) with the Strategic Plans desire to explore appropriate waterfront-related commercial uses. This demonstrates that the proposed limited commercial use aligns with the intent of the Strategic Plan.

Section 3.2.1 establishes more detailed policies in the Living Area 1 land use designation:

3.2.1.3 *High density housing is permitted only in the community of Sudbury. All housing types, excluding single detached dwellings, are permitted in high density residential areas to a maximum net density of 150 units per hectare. Densities in the downtown may exceed this maximum, as set out in the Zoning By-law.*

3.2.1.4 *Medium and high-density housing should be located on sites in close proximity to Arterial Roads, public transit, main employment and commercial areas, open space areas, and community/recreational services.*

3.2.1.5 *Medium and high-density housing are to be located in areas with adequate servicing capacity and a road system that can accommodate growth. Sites should be of a suitable size to provide adequate landscaping and amenity features*.

3.2.1.6 *In considering applications to rezone land in Living Area I, Council will ensure amongst other matters that:*

a*. the site is suitable in terms of size and shape to accommodate the proposed density and building form;*

b. *the proposed development is compatible with the surrounding neighbourhood in terms of scale, massing, height, siting, setbacks, and the location of parking and amenity areas;*

c. *adequate on-site parking, lighting, landscaping, and amenity areas are provided; and,*

d. *the impact of traffic on local streets is minimal.*

Applications for intensification in established Living Area I lands are also subject to Section 2.3.3.

RESPONSE

The proposed development conforms to policies under **Section 3.2.1** of the OP by delivering a mixed-use development which is in close proximity to arterial roads, has the benefit of public transit at its frontage, and is well connected to main employment, commercial, and open space areas.

The proposed high-density housing is located in an area with adequate servicing capacity and the Traffic Impact Study concluded that the proposed development will not cause any operational issues and will not add significant delay or congestion to the local roadway network.

The 1.78-hectare site will allow for extensive landscaped open spaces and amenity areas with approximately 43.2% of the subject site proposed to be landscaped, which will be detailed (along with on-site lighting) through the required site plan control agreement. As discussed previously the proposed development massing, siting, and setbacks are cognizant of the surrounding context.

Section 8.3 addresses Source Water Protection Areas, intended to protect the City's municipal drinking water sources. The policies in the Section state in part:

8.3.1 *Development, certain land use activities and public works within the vulnerable areas will conform with the policies on List A of the Greater Sudbury Source Protection Plan.*

RESPONSE

With respect to **Section 8.3**, the proposed use of the lands does not present any conformity issues with the City's Official Plan as the proposed development does not include any significant threats as set out in the City's Source Protection Plan which is reviewed later in this report.

Section 11.3.2 outlines land use policies that are intended to support public transit needs and options. Applicable policies to the development proposal includes:

11.3.2.1 *Urban design and community development that facilitate the provision of public transit will be promoted.*

11.3.2.2 *Development proposals will be reviewed to ensure efficient transit routing so that all dwellings in the development are ideally within 500 metres walking distance of a bus stop.*

11.3.2.3 *Mixed uses and higher density housing along Arterial Roads and at other strategic locations are encouraged as a means of enhancing the feasibility of transit services, increasing ridership, alleviating traffic congestion, and reducing reliance on the automobile.*

11.3.2.4 *Buildings should be sited as close to the street as possible to reduce walking* distances for transit users

11.3.2.6 *Pedestrian walkways, intersections of major roads, and pedestrian access systems are to be integrated with transit stops, and wherever possible, connected to trail systems*

RESPONSE

The development proposes a high-density residential/retirement development with scoped commercial uses along a primary arterial road and assists in enhancing the feasibility of transit services, increasing ridership, alleviating traffic congestion, and reducing reliance on the automobile. It does so by being directly adjacent to public transit that is well connected to major community destinations (i.e. the Downtown Transit Hub and points of interest such as Health Sciences North, Laurentian University, and the Larch Street Medical Centre). The development proposal also includes a public transit lay-by along Paris Street with pedestrian connections from all three of the residential buildings to the public right-of-way. The TIS also proposes TDM measures, such as subsidized transit passes, and the installation of an information display board with bicycle maps, local transit map/schedule and other relevant information, which will aid in encouraging the use of public transit services, alleviating traffic congestion, and reducing reliance on the automobile.

Section 11.4 details policies related to parking and provides in part as follows:

> ***11.4.1*** *New developments generally must provide an adequate supply of parking to meet anticipated demands.*

RESPONSE

The development includes 647-parking spaces with no site-specific parking relief being necessary under the City's Zoning By-law. Given that the development proposes to provide all required parking spaces on-site an adequate supply to meet anticipated demands (pursuant to the By-law anticipated parking needs for each use) is provided.

Section 11.7 speaks to active transportation, the pedestrian and bicycle network and provides in part as follows:

> ***11.7.2*** *Development proposals will be reviewed to ensure that there is adequate pedestrian access in new developments. The City may acquire lands to provide pedestrian facilities as a condition of approval. Wherever possible, the provision of adequate bicycle facilities will be encouraged.*

RESPONSE

The development incorporates streetscape improvements along road frontages and the provision of bicycle parking (in conformity with the zoning by-law's requirements), which complements the existing and planned active transportation infrastructure in this area and will encourage both pedestrian and bicycle active transportation mobility, as well as connectivity to the wider public transit system.

The City's Roads, Transportation and Innovation staff have previously advised that a 3.0-metre road widening is required along Paris Street and that additional lands may be required to construct a new sidewalk, along with the Paris-Notre Dame Bikeway and a GOVA bus lay-by along the property's frontage. The new sidewalk will provide safe and convenient pedestrian access from the development to transit on Paris Street. An on-site pedestrian circulation network will also be designed as part of the site planning process to link the internal pathways and sidewalk network to Paris and Facer Street.

Section 12.2.2, outlines policies related to the servicing of new development.

> ***12.2.2.1*** *Development in urban areas is permitted provided that existing and planned public sewage and water services have confirmed capacity to accommodate the demands of the proposed development. Alternatively, the proponent of the development will upgrade, at their own expense, the existing sewage and water systems to ensure adequate delivery and treatment facilities consistent with City standards, including the adequacy of fire flows.*

RESPONSE

With respect to **Sections 12.2.2.1,** preliminary servicing information indicates that no extension of any municipal services is required and no upgrades to sewer and water infrastructure are required for the development. The City has also confirmed that there is sufficient water pressure and downstream sanitary sewer capacity to accommodate the proposed redevelopment of the subject site.

Section 14.3 addresses policies respecting Community and Neighbourhood design and states in part:

14.3.1 *The City will encourage community and neighbourhood design that:*

a*. creates a distinctive community character and strong sense of place;*

b. *integrates a mix of land uses such as living areas, employment areas, institutional uses and parks and open spaces;*

c*. fosters active transportation and public transit;*

d*. incorporates natural and cultural heritage features and areas;*

e. *provides an interconnected network of parks and open spaces; and,*

f*. creates accessible, safe, sustainable and climate change resilient places.*

14.3.2 *Buildings, structures and other design elements that complement the surrounding built form and character are encouraged.*

14.3.4 *Area streetscapes are to be improved over time to provide safe, attractive, interesting and comfortable spaces through appropriate upgrades, such as landscaping, lighting, sidewalks, paving, street furniture and public art. These treatments should complement adjacent built form and open spaces, adding to a neighbourhood's character*.

RESPONSE

The intent of **Section 14.3.1** of the OP is to encourage high-quality community and neighbourhood design that creates a distinctive community character, strong sense of place, integrates a mix of land uses, promotes active transportation and public transit, and provides connectivity to parks and open spaces.

This development incorporates architectural design features including tower and podium-style configurations to reduce the visual and physical impact of height through facade articulation and fenestration techniques to mitigate impact to the existing neighbourhood and adjacent urban waterfront park setting. It will also foster a strong sense of place by integrating the development with the broader area through active transportation connections and including community-oriented uses (restaurants) at an appropriate scale. Further the development integrates a mix of land uses (i.e., restaurant, retirement and residential uses), that encourage the integration of private spaces with the existing public realm given the proximity to Bell Park and the café and restaurant use being accessible to the public.

The property's direct connectivity to the GOVA transit system and future Paris-Notre Dame bikeway will encourage the use of both active transportation and public transit with climate change resiliency in mind.

Area streetscapes are proposed to be improved to provide safe, attractive and comfortable spaces through the introduction of appropriate landscaping, lighting and new sidewalks/active transportation infrastructure.

Section 14.4 outlines policies related to site and building design, which states in part:

> ***14.4.1*** *Development and intensification will be located and organized to fit with its existing or planned context. It will frame and support adjacent streets, parks and open spaces to improve activity, comfort and safety by:*
>
> ***a****. generally locating buildings parallel to the street or along the edge of a park or open space with a consistent front yard setback. On a corner site, development and intensification should be located along both street frontages and give prominence to the corner. On a site that terminates a street corridor, the development should acknowledge the prominence of that site;*
>
> ***b.*** *massing buildings to define the edges of streets, parks and open spaces in good proportion;*
>
> ***c.*** *creating appropriate transitions in scale to neighbouring existing or planned buildings;*
>
> ***d.*** *locating main building entrances so that they are clearly visible and easily accessible from the public sidewalk;*
>
> ***e****. providing ground floor uses that have views into surrounding streets, parks and open spaces; and,*
>
> ***f.*** *minimizing shadowing and uncomfortable wind conditions on surrounding streets, parks and open spaces to preserve their utility.*

RESPONSE

Regarding **14.4.1**, the development will:

- Introduce a café and retirement home in the northerly portion of the site (close to the corner) which will aid in giving prominence on the corner of Paris and Facer Street.
- Locate buildings along the edge of abutting open spaces and provide an appropriate transition in scale to existing buildings.
- Provide ground-floor uses that have views on to surrounding streets and introduce resident views on the park/open space.
- Introduce additional shadowing impact but which preserves the utility of the surrounding streets, parks and open spaces.
- The development proposal intends to provide setbacks along the public boulevard (i.e. Paris Street) that contribute to a desirable streetscape.
- Provide building entrances that will be clearly visible and easily accessible from the public sidewalk.
- Not introduce wind conditions that negatively impact the public realm (surrounding streets, parks and open and their utility).

Section 14.4.2 address the design of vehicle parking, access, service areas and utilities and states:

> ***14.4.2*** *Development and intensification will locate and organize vehicle parking, vehicular access, service areas and utilities to minimize their impact on the property and on surrounding properties and the public realm by:*
>
> ***a.*** *minimizing the number of curb cuts and driveways that cross the public sidewalk;*
>
> ***b.*** *limiting surface parking between the front face of the building and the public street and sidewalk;*
>
> ***c.*** *locating servicing and utilities towards the sides or rear of the building and screening the servicing from views from adjacent streets;*
>
> ***d.*** *integrating servicing and utility functions within the building, where possible; and,*
>
> ***e.*** *providing adequate landscaping and buffering between adjacent properties.*

RESPONSE

The majority of the parking spaces servicing the development will be provided through three levels of underground parking located at the rear of the property and provides an opportunity for utilities and service functions (e.g. loading, etc.) to be appropriately screened from Paris Street. This screening will assist in maintaining a street-facing ground level that enhances the aesthetics and compatibility of the proposed development. The natural vegetative areas between the east property line and those areas of Bell Park more actively used (i.e. directly along the waterfront) will also act to screen the rear parking structure (1-3 storeys) from the most publicly-active areas of the Park.

Per **Section 14.4.2**, only two driveways are proposed to provide access to the site which represents the same number of curb cuts/driveways as the existing condition. The siting of the buildings provides for significant setbacks and areas around the periphery of the site for tree planting between the proposal and adjacent properties.

Section 14.7 of the OP discusses design features, views, and corridors. It states that:

> ***14.7.1*** *New land uses or design features that would detract from the enhancement of major focal point areas within the City, such as Science North, the Big Nickel, Bell Park, Tom Davies Square and Laurentian University are discouraged. The open space character and natural aesthetic environment of the Paris Street corridor, especially that section between Walford Road and York Street, will be preserved and enhanced. In particular, the view corridor to and from Science North will be protected.*
>
> ***14.7.3*** *Landscaping will be used to frame desired views or focal points, direct pedestrian movement, and satisfy functional requirements, such as providing shade and buffering. All new development proposals will be evaluated for their opportunity to create, maximize or enhance existing views through landscaping.*
>
> ***14.7.4*** *This Plan encourages the design and layout of streets, pedestrian walkways and bicycle routes such that they provide vantage points for significant views and vistas along their lengths, including trails and bike path*
>
> ***14.7.5*** *View corridors to lakes should be preserved.*

RESPONSE

The City's OP identifies the Paris Street corridor, including views to Ramsey Lake, Bell Park, and Downtown as important view corridors. Impacts to views along the corridor and through the development to Ramsey Lake have been mitigated through the use of architectural techniques previously discussed (i.e., setbacks and building separation). Landscaping will be used to frame this stretch of Paris Street, direct pedestrian movement, and re-green this presently barren site to better mirror Bell Park and Paris Street's open space character and natural aesthetic.

Changes to viewpoints/vistas along Paris St will result from the development, however the development's design will maintain views (and in some instances improve such), from the condition the property experienced when it was actively used as a General Hospital (prior-to the demolition of some portions of the former building complex). In some areas, view corridors to the lake will be opened given the three-building configuration, proposed building separation and placement of the parking structure below grade.

Views to and from Downtown along Paris Street will change through the addition of this development. Specifically heading south along Paris Street from the Bridge of Nations where the development will be featured on the horizon and heading north along Paris Street towards Downtown as a landmark. This new land use will not detract from major focal points given its location and will introduce new landscaping to the Paris Street corridor as called for in **14.7.**

Section 14.9 sets out policies respecting energy efficiency and climate change resiliency and states in part:

> ***14.9.1*** *The City will encourage urban design solutions that minimize non-renewable resource consumption, maximize the use of renewable energy and takes into account the impact of climate change by:*
>
> ***a.*** *encouraging compact, mixed use and infill developments that concentrate complementary land uses and support active transportation and public transit.*

RESPONSE

With respect to **Section 14.9.1**, as discussed previously the proposed development represents a compact, contextually sensitive mixed-use infill development that will complement and support the existing GOVA transit lines and existing and future active transportation investments in the area.

Section 16.2 of the City's OP promotes policies which plan for and are supportive of Sudbury's aging population. Those applicable policies include:

> ***16.2*** *PLANNING FOR AN AGING POPULATION*
>
> ***1)*** *Support development that is age-friendly including the creation of smaller, unique, shared and transitional housing opportunities for an aging population through the rezoning process, where necessary, promotes 'aging in place' and is in close proximity to amenities and services in the Downtown, Regional Centres, Town Centres and Mixed Use Commercial areas.*

__2)__ Create a safe and secure physical and social environment for Greater Sudbury's aging population with supportive design standards such as sidewalk policies, curb heights, park facilities.

__4)__ Support the creation of more affordable housing and long-term care facilities with support services for an aging population.

__5)__ Facilitate 'aging in place' to allow residents to live healthy, independent lives in the comfort and dignity of their own homes.

__6)__ Support an active lifestyle for an aging population by increasing the availability and accessibility of social and recreational opportunities.

RESPONSE

Per the policies in **Section 16.2.1**, the proposed development is age friendly and will allow its residents to live healthy, active, and independent lives. It proposes the creation of smaller and more affordable residential dwelling units and the establishment of a 109-guest room retirement home, which will provide the opportunity for aging in place in a location well connected to local amenities, recreational opportunities, and services in the Downtown and broader City of Greater Sudbury. The proposed retirement home's proximity to Sudbury's largest urban park will support an active lifestyle and increase the availability of accessibility of social and recreational opportunities.

Section 17.2 of the City's OP details policies related to housing:

17.2.1 *To encourage a greater mix of housing types and tenure, it is policy of this Plan to:*

__a.__ encourage a wide range of housing types and forms suitable to meet the housing needs of all current and future residents;

__b.__ encourage production of smaller (one and two bedroom) units to accommodate the growing number of smaller households;

__c.__ promote a range of housing types suitable to the needs of senior citizens;

__d.__ discourage downzoning to support increased diversity of housing options; and,

__e.__ support new development that is planned, designated, zoned and designed in a manner that contributes to creating complete communities – designed to have a mix of land uses, supportive of transit development, the provision of a full range of housing including affordable housing, inclusive of all ages and abilities, and meet the daily and lifetime needs of all residents.

RESPONSE

The development proposal is consistent with **Section 17.2.1** as the proposed mix of residential uses will enhance and promote complete communities that will better meet the daily and lifetime needs of Sudbury residents. With respect to the policies in **17.2.1**, the proposed development will contribute to providing a mix of housing types and tenures in the area. The proposed development includes 109 retirement home guest rooms, 102 one-bedroom units, 284-two-bedroom units and 35-three-bedroom units, which are suitable for senior citizens, smaller households and other current and future residents.

The proposed development will also contribute to creating complete communities given its mix of land uses, its transit supportive nature and provision of range of housing types and tenures that better meet the daily and lifetime needs of all residents.

Section 17.2.2 speaks to the intersection of housing and economic development:

> ***17.2.2.*** ***a.*** *promote residential development in the Downtown as a stimulus to downtown revitalization and small business development;*
>
> ***b.*** *support a range of housing types available to seniors, retirees, and younger cohorts by encouraging the development of alternative housing options and exploring opportunities for lifestyle housing targeted to niche markets; and,*
>
> ***c.*** *promote intensified residential development at main commercial nodes in the City as a means of promoting urban redevelopment and achieving effective residential intensification*

RESPONSE

The development proposal promotes residential intensification near the Downtown which may assist with revitalization and the support of small businesses/the City's commercial core.

The development proposal provides a range of housing types which are appropriate for seniors, retirees and younger age cohorts given that three distinct housing types and tenures that are proposed (i.e. retirement guest rooms, freehold condos, and rental apartments).

The subject site falls within the Paris Street corridor. The City-wide Nodes and Corridors Strategy states that, 'Corridors are significant connections either leading to a node or connecting one node to another. These significant corridors are made up of mixed-use areas and are priority areas for long-term investment and revitalization'. Given the proposal represents an intensified residential development on a corridor leading to the Downtown, it may promote urban redevelopment in the City's main commercial node.

OFFICIAL PLAN SUMMARY

The redevelopment of the former hospital site as a high-density residential development with limited commercial use addresses many of the City's Official Plan objectives, including residential intensification, transit supportive development, the efficient use of infrastructure and services, and increasing the mix of housing types and tenures to respond to changing demographic needs.

The proposed development has been designed to be mitigate impact with the existing uses in the surrounding area through good urban design and public realm and landscaping improvements to the site and Bell Park property lines. Future residents will benefit from the development's connectivity, nearby recreational and active transportation opportunities thereby promoting healthy, livable and complete communities. Given all the above the proposal conforms to the City of Greater Sudbury's Official Plan.

GREATER SUDBURY SOURCE PROTECTION PLAN

Pursuant to the *Clean Water Act, 2006,* the Greater Sudbury Source Protection Plan, sets out Source Protection policies addressing existing and potential threats to drinking water. The subject lands are located within the Ramsey Lake Intake Protection Zone 2(IPZ2) which forms part of the Ramsey Lake Issue Contributing Area which is comprised of all three of the Intake Protection Zone (IPZ) areas (i.e. 1, 2 and 3).

Threats associated with phosphorus are:

- The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act
- The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage
- The application of agricultural source material to land
- The storage of agricultural source material
- The application of non-agricultural source material to land
- The handling and storage of non-agricultural source material
- The application of commercial fertilizer to land
- The handling and storage of commercial fertilizer
- The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm animal yard

The threats that are associated with the sodium issue in the Ramsey Lake Issue Contributing Area are:

- The application of road salt
- The handling and storage of road salt
- The storage of snow

As per the City's Source Protection Plan's salt and snow policies, Risk Management Plans may be required for the application of road salt and storage of snow if the exterior parking lot is equal to or greater than 1 hectare in area. The handling and storage of road salt at volumes of 0.5 tonnes or greater is also prohibited. It is noted that the parking area on the subject site is smaller than 1 hectare with majority of the parking being contained within an underground parking structure. It appears there are no significant threats to the drinking water of Ramsey Lake resulting from the proposed development, however, a Sourcewater Protection Plan Application will be submitted as part of complete applications.

COMMUNITY ENERGY AND EMISSIONS PLAN (CEEP)

The *Community Energy and Emissions Plan* (CEEP) is the long-term plan to reduce carbon emissions and pollution in Greater Sudbury. It responds to City Council's *Climate Emergency Declaration* in May 2019, which included a commitment to achieve net-zero emissions by 2050. That means reducing greenhouse gas emissions (GHG) caused by human activity to as close to zero as possible and removing remaining emissions from the atmosphere.

The proposed development assists with achieving Goals **1, 2, and 7** of the CEEP.

GOAL 1: *Achieve energy efficiency and emissions reductions by creating compact, complete communities through infill developments, decreasing dwelling size through an increase in multi-family buildings, and increasing building type mix.*

GOAL 2: *Periodically increase the energy efficiency of new buildings until all new buildings in 2030 onward are Passive House energy efficiency compliant.*

GOAL 7: *Enhance transit service to increase transit mode share to 25% by 2050.*

RESPONSE

The proposed development supports **Goal 1** given that infill and compact, complete communities intrinsically reduce greenhouse gas emissions through being transit and active transportation supportive. The CEEP states that through *'its implementation, it is expected that residential development would focus on multi-family and mixed-use buildings. Apartment and condominium buildings are typically more energy efficient than single family homes. This is in part due to smaller dwelling sizes. The focus on multi-family and mixed-use housing would also result in fewer new single-family homes. By 2050, the share of new single-family homes being built would decrease to 10% of total housing starts'.* The proposed compact development will add 530-units on to an existing primary arterial, increasing the building and type mix as set out in **Goal 1** of the CEEP.

The proposed development supports **Goal 2** given that the development proposes to demolish the existing building and replace such with three new energy efficient buildings.

As transportation is responsible for the most emissions of all sectors in Greater Sudbury, replacing trips made by car with transit trips is an important emissions reductions action. The proposed development supports **Goal 7** given that the development proposes a high-density development on the existing GOVA transit Main Line. As new building and land-use actions are coordinated, enhanced transit services will become increasingly viable with increasing transit frequency, and usage. Additionally, the completion of the Paris-Notre Dame Bikeway and Bell Park's trail network will increase the use of bicycling infrastructure.

RAMSEY LAKE COMMUNITY IMPROVEMENT PLAN

The *Ramsey Lake Community Improvement Plan* was adopted by the Regional Municipality in 1992 to establish a long-term vision for the Ramsey Lake Area and proposed a set of programmes and development projects to guide future development within the Plan area. The CIP included the St. Joseph's Hospital site should enhance its landscaping and better integrate the site with Bell Park and the Paris Street corridor. The plan emphasized the importance of regenerating the natural landscape.

RESPONSE

The development proposal assists in achieving the objectives of the CIP through re-naturalizing a site which is presently vacant of vegetation. Landscaped improvements are proposed along the Paris Street and Facer Street frontages as well as between the interface of Bell Park and the residential development (*See Figure 25*).

Specifically, the development's design proposes to include:

- 43.2% (0.77ha) of landscaped open space where 30% is required per the R4 zone standards
- 3.0-metre-wide landscaped strips (or greater) along all street frontages
- Pedestrian connectivity from Bell Park into the site and to the adjacent Paris Street corridor

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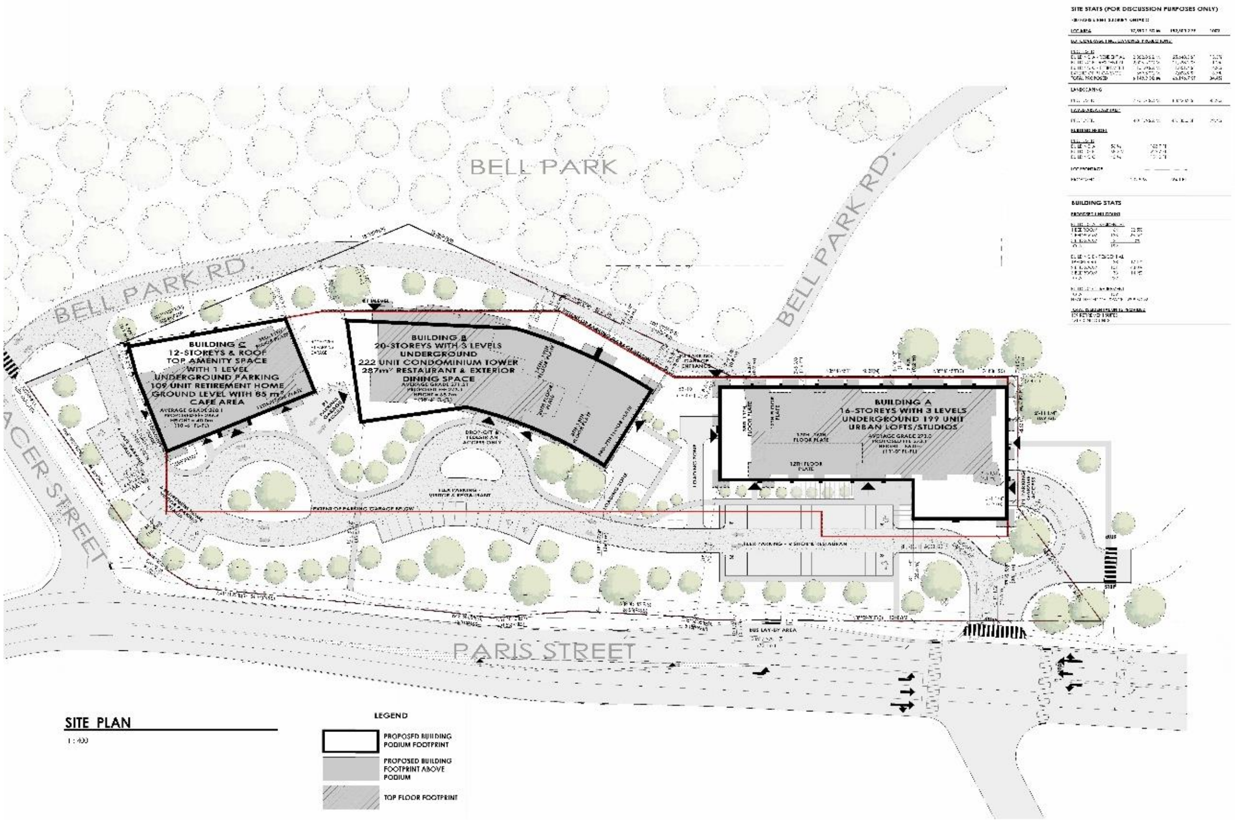


Figure 25: Site Plan showing proposed extent of introduced landscaping

CITY OF GREATER SUDBURY ZONING BY-LAW 2010-100Z

The subject site is presently zoned ‘R4(3)’ in the *City of Greater Sudbury Zoning By-law 2010-100Z (See Figure 26).*

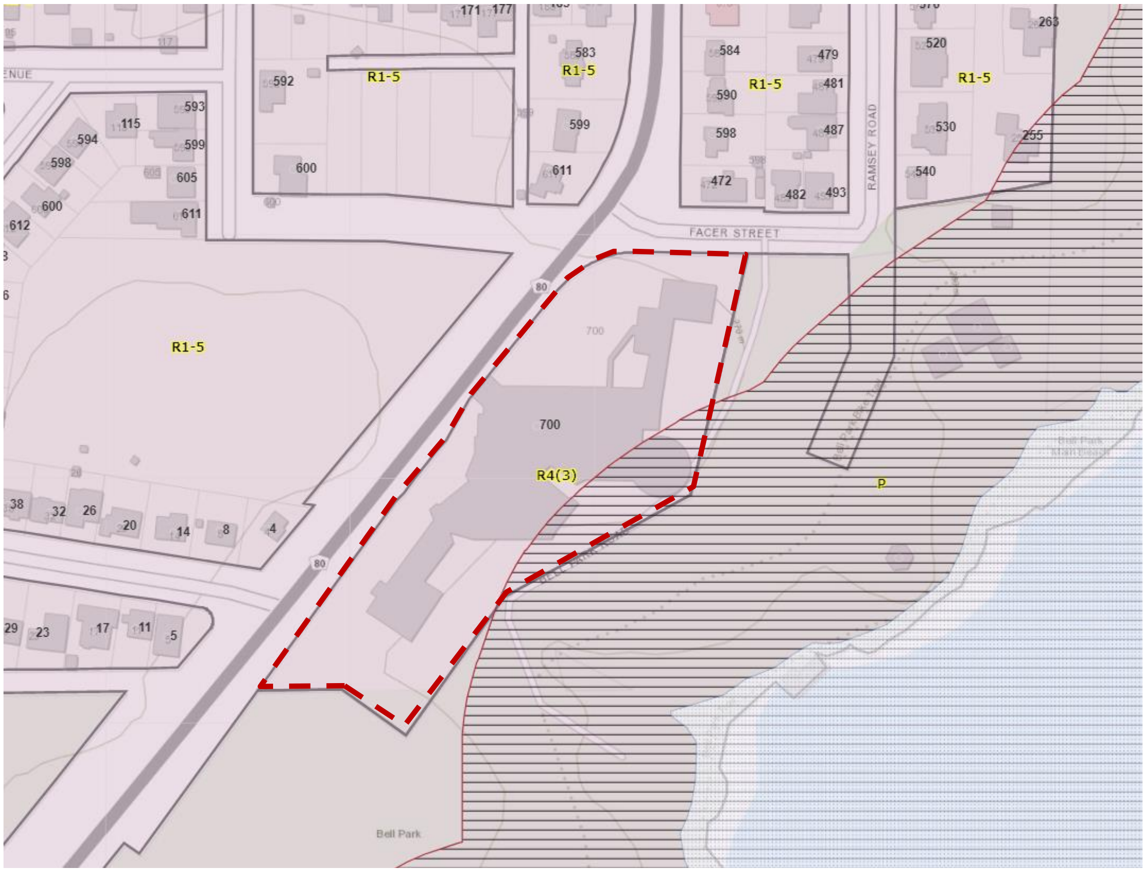


Figure 26: Existing Zoning Map

(210 MULTIPLE DWELLING UNITS)

(c) R4(3) ***McKim Township Maps Lot 5, Con 2; Lot 5, Con 3***

*Notwithstanding any other provision hereof to the contrary, within any area designated R4(3) on the Zone Maps, all provisions of this By-law applicable to the **R4** Zone shall apply subject to the following modifications:*

i) The lot line abutting Paris Street shall be deemed to be the front lot line;

ii) The only permitted uses shall be multiple dwellings with a maximum of 210 dwelling units of which, a maximum of 85 dwelling units shall be permitted in a new building to be located on the lot after November 20, 2012;

iii) The maximum number of multiple dwelling buildings permitted on the lot shall be two;

iv) The existing building as located on the lot shall be permitted and the enlargement of the existing building shall be permitted within the setbacks to the existing building;

v) Notwithstanding (iv) above, the maximum addition permitted to the existing helipad structure shall be one storey located above the helipad platform;

vi) The minimum setback from Facer Street to a multiple dwelling shall be 55 metres;

vii) The minimum setback from the rear lot line and interior side lot line to a parking structure shall be 2 metres;

viii) The minimum setback from the rear lot line and interior side lot line to multiple dwelling units in a building located above a parking structure shall be 7.5 metres;

ix) The maximum building height shall be eight storeys and 32 metres;

x) The minimum setback from the front lot line to a multiple dwelling comprising a new building to be located on the lot after November 20, 2012, shall be 11.3 metres;

xi) The maximum number of surface parking spaces on the lot not including loading spaces shall be 20;

xii) The minimum width of a landscape strip abutting Paris Street shall be 2.6 metres and from Paris Street to the existing building the minimum width of the landscape strip shall be 1.3 metres;

xiii) Loading spaces shall also be permitted in the corner side yard.

To facilitate the development, the lands are proposed to be rezoned to an amended 'R4-Special'. To maintain land use compatibility and place the buildings most appropriately on the site, the following development standards are proposed as part of the amending zoning by-law:

- The maximum number of buildings on the lot shall be three:
    - A 109-guest room retirement home with maximum building height of 40.0-metres (12-storeys);
    - A 199-unit multiple dwelling with a maximum building height of 56.0-metres (16-storeys);
    - A 222-unit multiple dwelling with a maximum building height of 68.2-metres (20-storeys); and,
    - All with a 1-3 storey below grade parking structure.
- To require a minimum corner side yard setback (along Facer Street) of 18.0-metres.

In addition to the above standards the development requires the following site-specific relief:

- To permit a lot area of 41m^2 per unit where 65.0m^2 would be required for multiple dwellings;
- To permit a rear yard setback of 0.0-metres where 25.0-metres would be required;
- To permit an interior side yard setback of 0.0-metres 21.0-metres would be required;
- To only require at minimum court of 15.0-metres between multiple dwellings where typically 50% of the height of the higher of such walls would be required and,
- To permit a maximum building height for the 222-unit multiple dwelling (Building B only) of 20-storeys and 68.20-metres where a maximum height of 63.0-metres is permitted.

Table 3 compares the proposed development's standards with the Zoning By-Law's High Density Residential (R4) Zone, the Former Hospital's historic condition, and the current R4(3) site-specific zone standards.

Table 3: Zoning Matrix Comparison Table

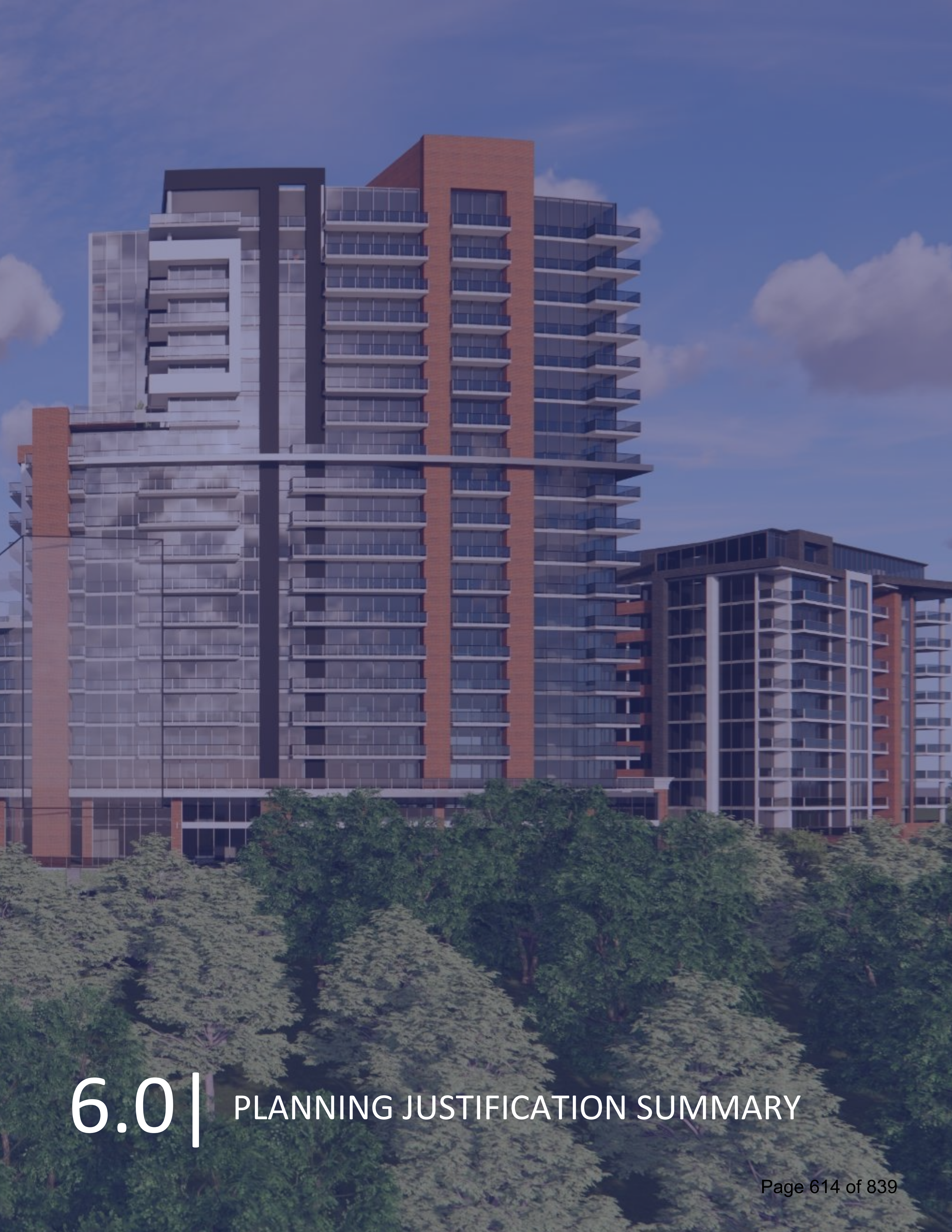
	R4 ZONE	FORMER 360-BED HOSPITAL	CURRENT R4(3) APPROVED SITE PLAN	PROPOSED DEVELOPMENT
Min Lot Area	Multiple Dwelling: 65.0m² per unit Retirement Home: 1350.0m²	1.75ha	1.75ha	Multiple Dwellings: 41m² per multiple dwelling unit (Area: 1.615ha) Retirement Home: 1350.0m²
Min Frontage	30.0m	232.92m	232.92m	232.92m
Min Lot Depth	45.0m	66.94m	66.94m	66.94m
Min Front Yard (Paris St)	15.0m	7.50m	11.3m	24.1m
Min Rear Yard (Bell Park)	28.0m	4.2m	2.0m (parking structure) 7.5m (for a multiple dwelling located above a parking structure)	0.0m
Min Interior Side Yard (South Lot Line)	21.0m	6.3m	2.0m (for a parking structure) 7.5m (for a multiple dwelling located above a parking structure)	0.0m
Min Corner Side Yard (Facer Street)	10.0m	17.5m	55.0m	18.1m
Minimum Building Separation	15.0m	N/A	N/A	9.7m
Max Lot Coverage	50%	N/A	34.1%	34.4%
Max Height	63.0m	32.5m	32.5m (8-storeys)	Building A: 56.0m (16-storey) Building B: 68.2m (20-storey) Building C: 40.0m (12-storey)
Min Landscaped Open Space	30%	N/A	40.9%	43%

The existing site-specific zoning does not permit a density/level of residential intensification that is appropriate for this unique site. When reviewing all applicable policies against the development proposal, it is this authors opinion that the reliefs required are appropriate to facilitate the highest and best use of the lands, leveraging the site's infrastructure availability, connectivity to abutting resources and other areas of the City, better utilization of transit investments and housing potential, while being cognizant of the surrounding urban residential context and recreational character of the area.

Specifically:

- The reduction in interior side yard and rear yard setbacks to 0.0-metres is appropriate as the adjacent properties are City owned lands (i.e. Bell Park and municipal parking lot) and therefore impacts typically associated with reducing side yard setbacks to other land uses is minimal (thus the preservation of the R4 zone's required setbacks to such boundaries is unnecessary to maintain compatibility of the proposal, while the retention of such setbacks would represent the underutilization of lands).
- The reduction in lot area per unit is appropriate given that the lands abut a large municipal park providing recreational opportunities to residents, and speciality amenity areas are provided in each building.
- The reduction in the minimum courts between the multiple dwellings is appropriate as building separation is still being provided, while enabling the more efficient use of the lands through a taller built form;
- The increase in height from the existing permissions to 68.2-metre was partially assessed via the Preliminary Pedestrian Wind Assessment and Sun Shadow Study. The Wind Study did not identify issues with the proposed height beyond limited wind reduction measures applicable to taller buildings, and the increased height did not result in sun shadow impacts over residential areas significantly greater than what would be generated by the existing R4(3) zoning permissions between the hours of 9:00am and 6:00pm

Based on the foregoing, the proposed amendment to the zoning by-law is appropriate in implementing the intended land use framework and policy directions of the City's Official Plan and maintains the general intent of the parent zone category (R4) under *Zoning By-law 2010-100Z*.



6.0| PLANNING JUSTIFICATION SUMMARY

6.0 PLANNING JUSTIFICATION SUMMARY

The proposed Official Plan Amendment and Zoning By-law Amendment will facilitate a development that integrates an appropriate and reasonable mix of uses that is primarily urban residential in nature, along with an enhanced public realm while providing new housing that will help to meet changing demographics/market demands and provincial and municipal intensification targets of creating 3,800 more homes by 2031.

The proposed development represents good land use planning that is in the public interest as it will revitalize a currently underutilized site to provide a high-quality urban development near Sudbury's Downtown and the Ramsey Lake waterfront.

CONSISTENCY WITH PROVINCIAL AND MUNICIPAL PLANNING POLICY

The proposed amendments will facilitate development on a fully serviced site, significantly enhance both the private and public realm, and diversify the neighbourhoods existing housing tenure by provide new housing that assists in meeting projected demographic housing needs and municipal growth and density targets. The site is situated on the City's GOVA main transit line and is directly abutting a large urban park, trails, and other recreational opportunities which promote healthy community living, while better utilizing existing infrastructure. The proposed development is consistent with and conforms with provincial and municipal policy.

COMPATIBILITY/NEIGHBOURHOOD SENSITIVITY

The proposed development is contextually sensitive and appropriately designed with increased setbacks from Facer Street, well sited buildings, step-backs and transitions in height and multiple buildings to reduce effects associated with block-massing.

The use of an underground parking structure to provide an appropriate amount of (non-intrusive/screened) user parking, the proposed streetscape improvements and new landscaping will enhance the street frontages and act to mitigate impacts of the development to the existing community.

The proposed mix of uses will aid in building complete communities and the introduction of scoped restaurant uses serves to maintain compatibility with the surrounding area, while leveraging Bell Park's Ramsey Lake Waterfront.

A RANGE OF HOUSING OPTIONS AND CHOICE

The development proposal incorporates a mix of contextually appropriate housing types and tenures being rental apartments, retirement guest suites and freehold condominium units into a predominately low-density urban residential neighbourhood**.** The proposed development will therefore support the municipalities target of creating 3800 more units while also diversifying the housing mix of the area and improving the availability of varying housing forms suitable for all demographics in an appropriate location.

TRANSIT ORIENTED & ACTIVE TRANSPORTATION SUPPORTIVE DEVELOPMENT

The proposed development represents transit-oriented development at a transit supportive density. The site benefits from two GOVA transit stops located along the property's frontage, proximity to the Main Downtown Bus Terminal and the future Paris-Notre Dame Bikeway project that will run along the property's Paris Street frontage.

CONNECTIVITY TO THE DOWNTOWN & GREATER SUDBURY

The proposed development is located approximately 800-metres from the City's Downtown which already benefits from having a strong mixed-use urban context. Residents of the development will benefit from proximity to nearby amenities, services and commercial centres within the Downtown, while its location on a corridor is indicative of the connectivity of the site with the broader Sudbury community, allowing residents to have easy access to employment opportunities and everyday needs.

CONCLUSION

Given the land use planning analysis provide herein, it is the author's opinions that the proposed Official Plan Amendment and Zoning By-law Amendment to permit 530-housing units (including retirement residence), along with 380m^2 of contextually appropriate commercial (restaurant) use is consistent with the 2020 PPS, conforms with the Growth Plan for Northern Ontario and the City of Greater Sudbury Official Plan, represents good planning and is in the public interest.

Respectfully submitted,

Prepared By:	Reviewed By:
Vanessa Smith, M.Pl., RPP. Project Manager | Land Use Planner	**Kevin Jarus, M.Pl., RPP** Planning Manager | Senior Associate

August 26th, 2024 **JDE** Project 21192

2226553 Ontario Inc.
8485 Montrose Road
Niagara Falls, ON L2H 3L7

RE: Traffic Impact Study Addendum
700 Paris Street, City of Sudbury

This letter was prepared by **JD Northcote Engineering Inc.** [JD Engineering] for the account of **2226553 Ontario Inc.** [The Client].

1.0 BACKGROUND

The subject site is municipally known as 700 Paris Street, located on the east side of Paris Street between Boland Avenue and Facer Street, in the City of Greater Sudbury [City]. The proposed development includes a 16-storey building with 198 residential units, a 20-storey building with 250 residential units and a ground-floor restaurant (500 sq.m. of GFA) and a 10-storey retirement home with 100 rooms.

JD Engineering prepared a traffic impact study for the proposed development (dated December 2022) [TIS]. Subsequently, the City has provided comments related to their review of the TIS [City Comments], which are included in the **Appendix.**

This letter is intended as an update the TIS to review the impact on the revised driveway layout and address the City Comments.

The following intersections will be analysed as part of the TIS Addendum:

- Paris Street / Brady Street;
- Paris Street / John Street;
- Paris Street / McNaughton Street;
- Paris Street / Facer Street;
- Paris Steet / Boland Ave & Paris Driveway; and
- Facer Street / Bell Park Road.

2.0 SITE PLAN

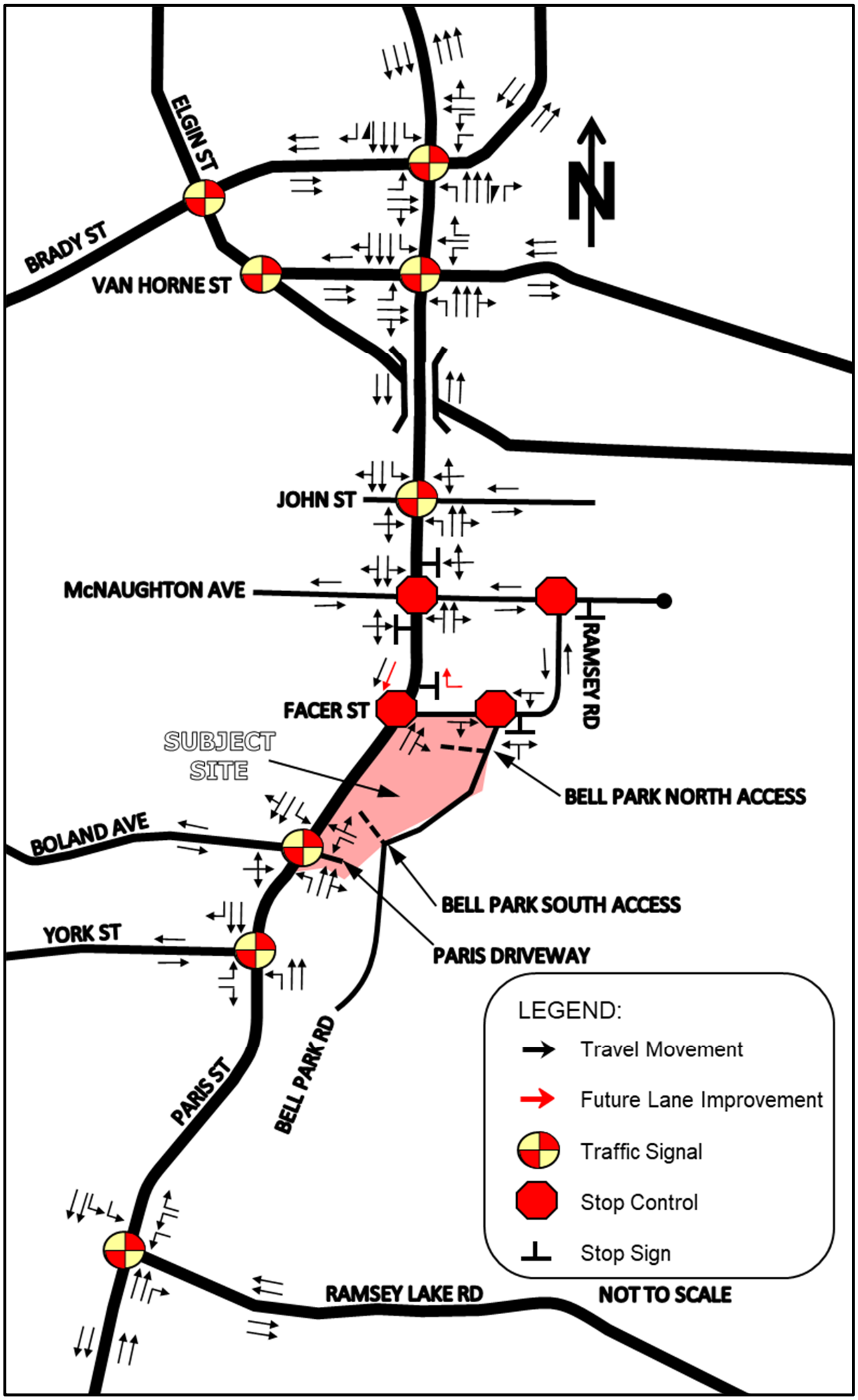
A revised Site Plan is provided the **Appendix**. The development statistics in the revised Site Plan have not changed; however, the driveway layout has been revised. Access to the development is proposed via full-movement connection to Paris Street, opposite Boland Avenue [Paris Driveway]. The Paris Driveway will provide ingress and egress access to the underground parking and surface parking.

The proposed development will include a full-movement access driveway onto Bell Park Road [Bell Park North Access]. The Bell Park North Access will provide ingress and egress access to surface parking only. A secondary full-movement access driveway onto Bell Park Road [Bell Park South Access] will be limited to service vehicles only.

As part of the proposed development, Facer Street will be converted from an unsignalized full-movement intersection at Paris Street into a unsignalized right-in right-out [RIRO] intersection, for westbound movements.

The future intersection lane configuration within the study area is illustrated in **Figure 1**.

Figure 1 – Future Lane Configuration within Study Area



3.0 BACKGROUND (2032) TRAFFIC VOLUMES - PARIS STREET / FACER STREET

As noted in Section 2, as part of the proposed development, Facer Street will be converted from an unsignalized full-movement intersection at Paris Street into a unsignalized RIRO intersection. For the background (2032) scenario, the unsignalized full-movement configuration at Paris Street / Facer Street has been maintained in our analysis. The resulting background (2032) horizon year traffic volumes for the AM and PM peak hour is illustrated in **Figure 2**.

4.0 PROPOSED DEVELOPMENT

The trip generation and distribution for the proposed development was obtained from Table 8 and 9 in the TIS (excerpts provided in the **Appendix**). The traffic assignment was updated based on the driveway configuration noted in Section 2 and the RIRO restriction at the Paris Street / Facer Street intersection.

Figures 3 to **5** illustrates the traffic assignment for the residential and restaurant (primary and pass-by trips) components for the proposed development, during the AM and PM peak hour.

5.0 TOTAL HORIZON YEAR TRAFFIC VOLUMES WITH THE PROPOSED DEVELOPMENT

As noted in Section 2, as part of the proposed development, Facer Street will be converted from an unsignalized full-movement intersection at Paris Street into a unsignalized RIRO intersection. The traffic movements at the Paris Street / Facer Street intersection in the background (2032) traffic volumes were adjusted in the analysis to reflect this revised traffic restriction. The existing southbound left and westbound left movements at the Paris Street / Facer Street intersection have been redistributed to the Paris Street / McNaughton Street intersection. **Figure 6** illustrates the redistributed traffic for the background (2032) scenario.

For the total (2032) horizon year traffic volumes, the development traffic was added to the redistributed background (2032) traffic volumes and adjacent traffic volumes from the TIS (excerpts provided in the **Appendix**). The resulting total (2032) horizon year traffic volumes for the AM and PM peak hour is illustrated in **Figure 7**.

Figure 2 – Background (2032) Traffic Volumes

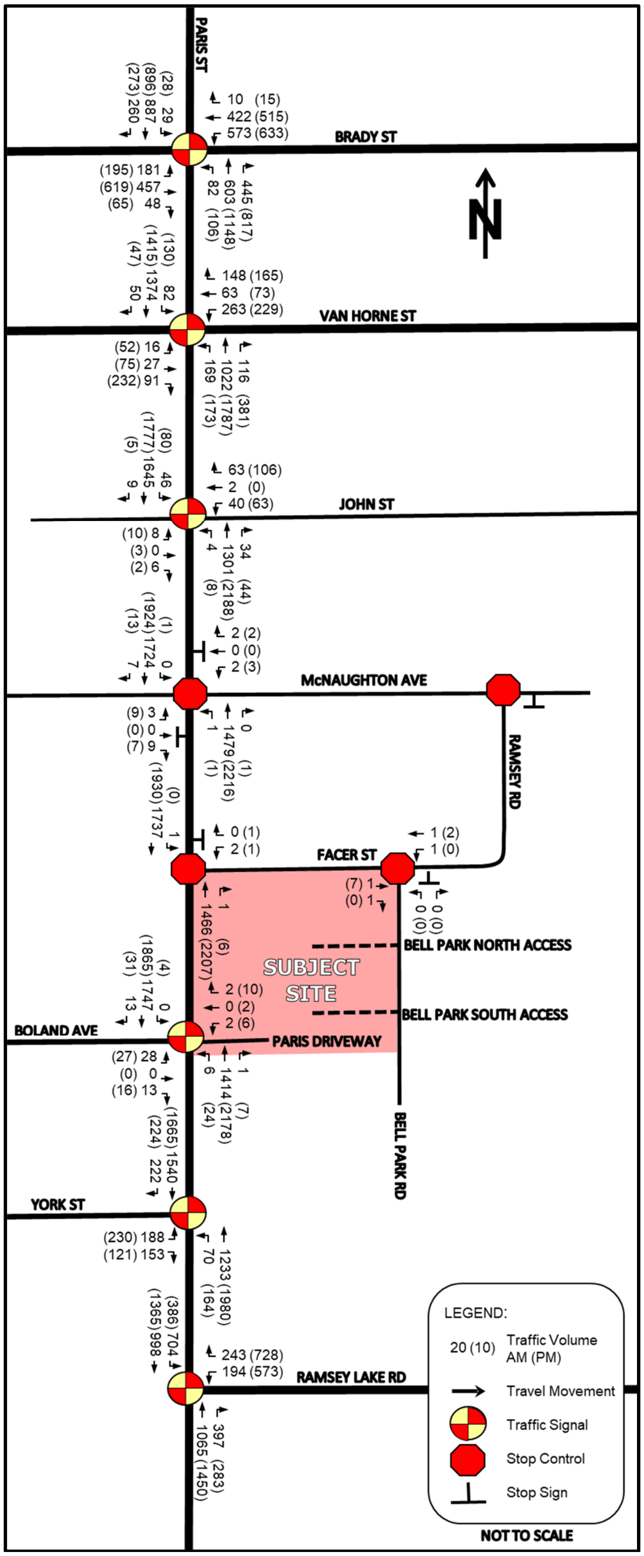


Figure 3 – Proposed Development Traffic Assignment - Residential Trips

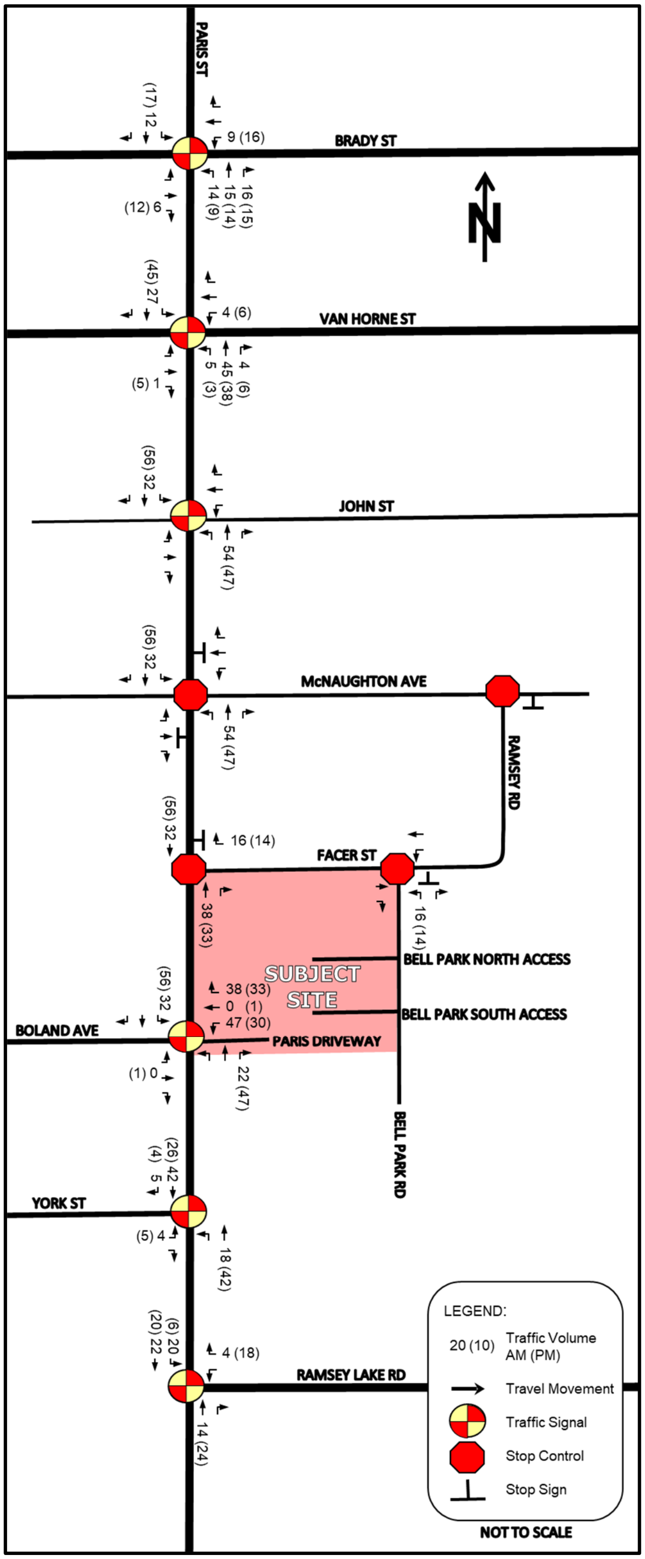


Figure 4 – Proposed Development Traffic Assignment - Restaurant Primary Trips

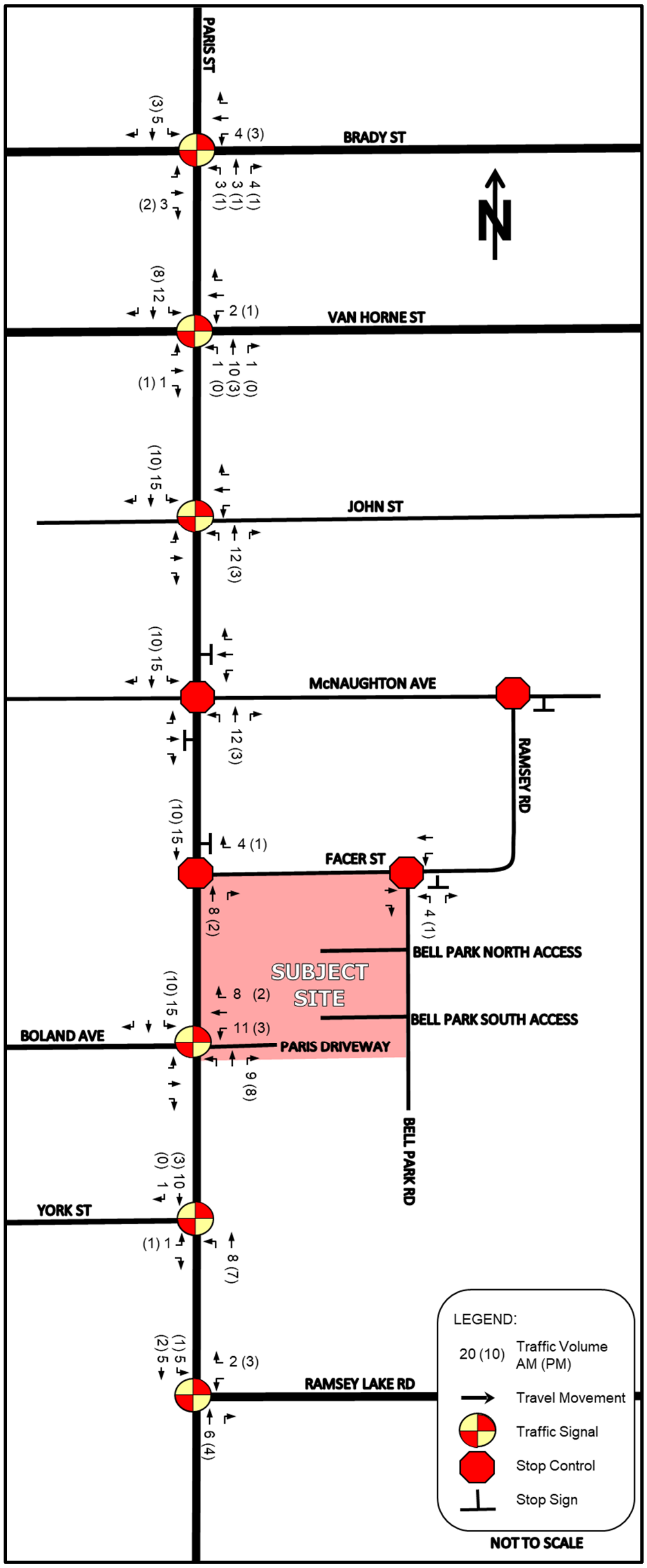


Figure 5 – Proposed Development Traffic Assignment - Restaurant Pass-by Trips

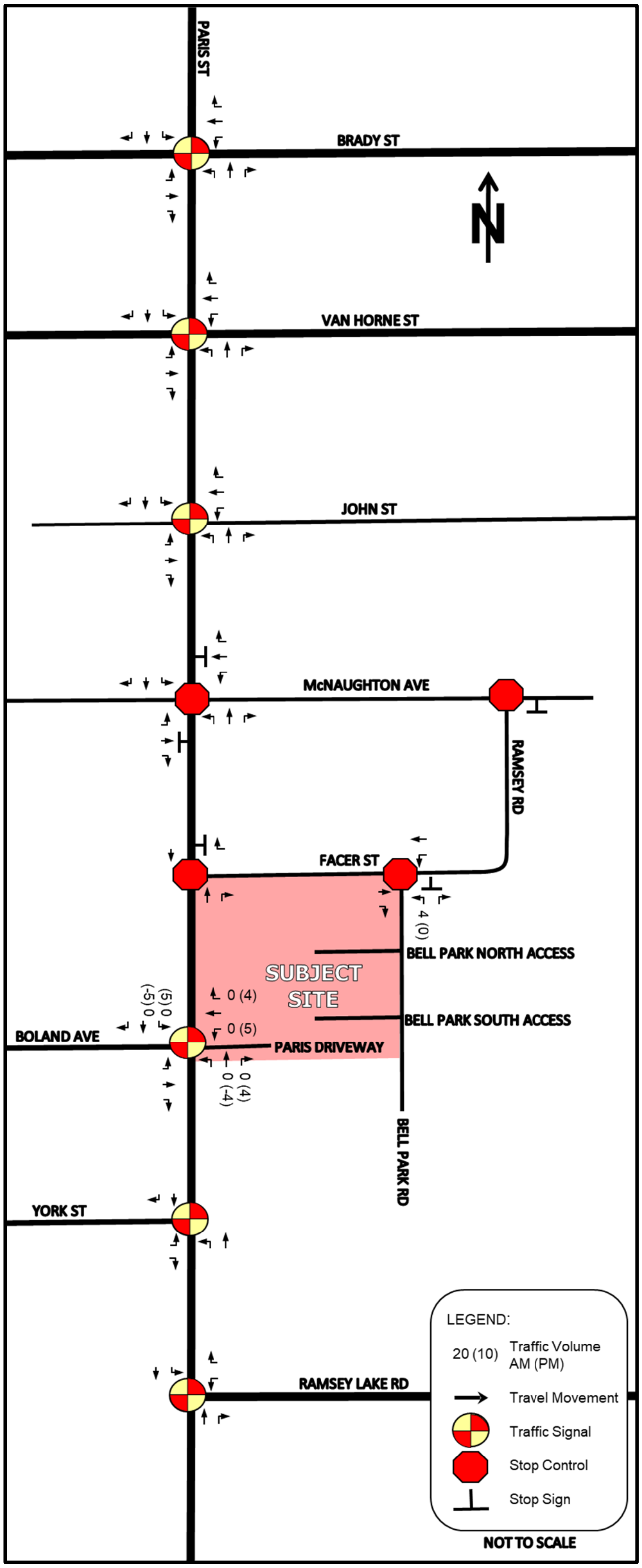


Figure 6 – Background (2032) Traffic Redistribution

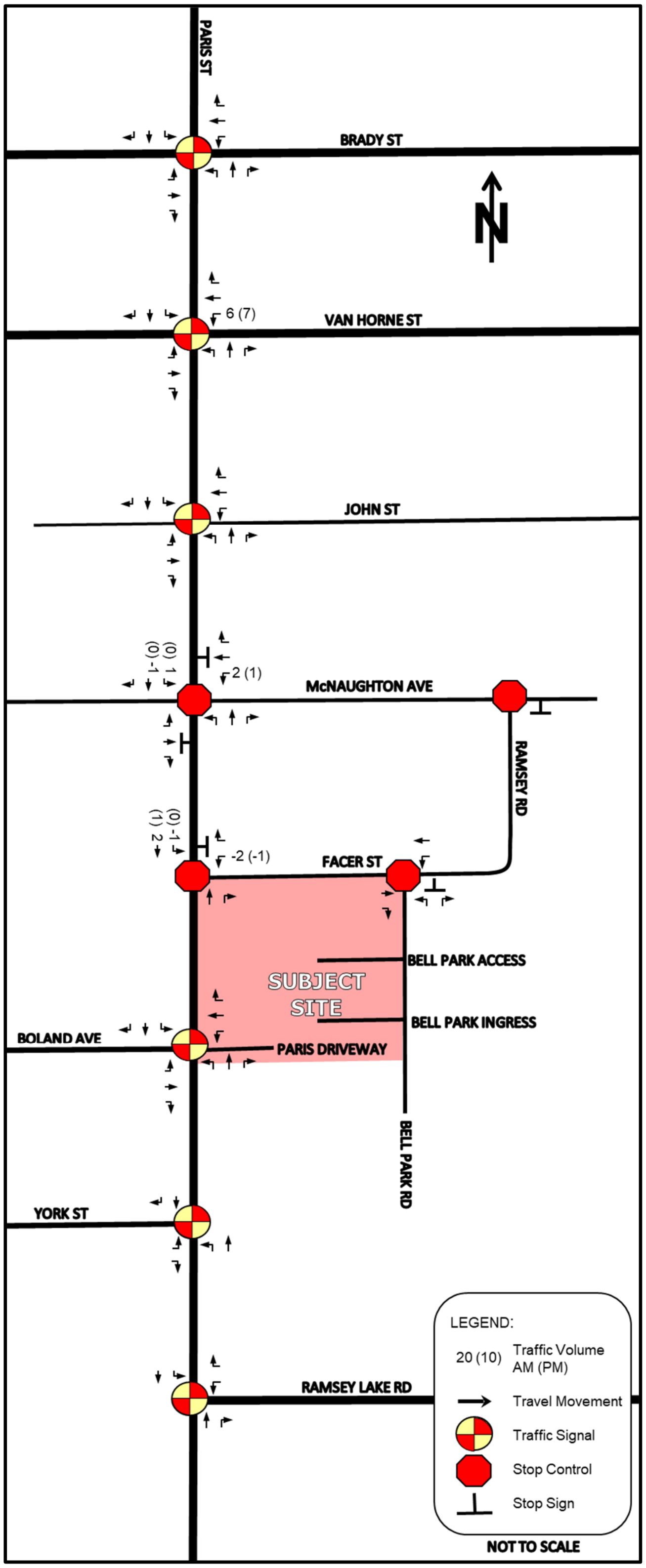
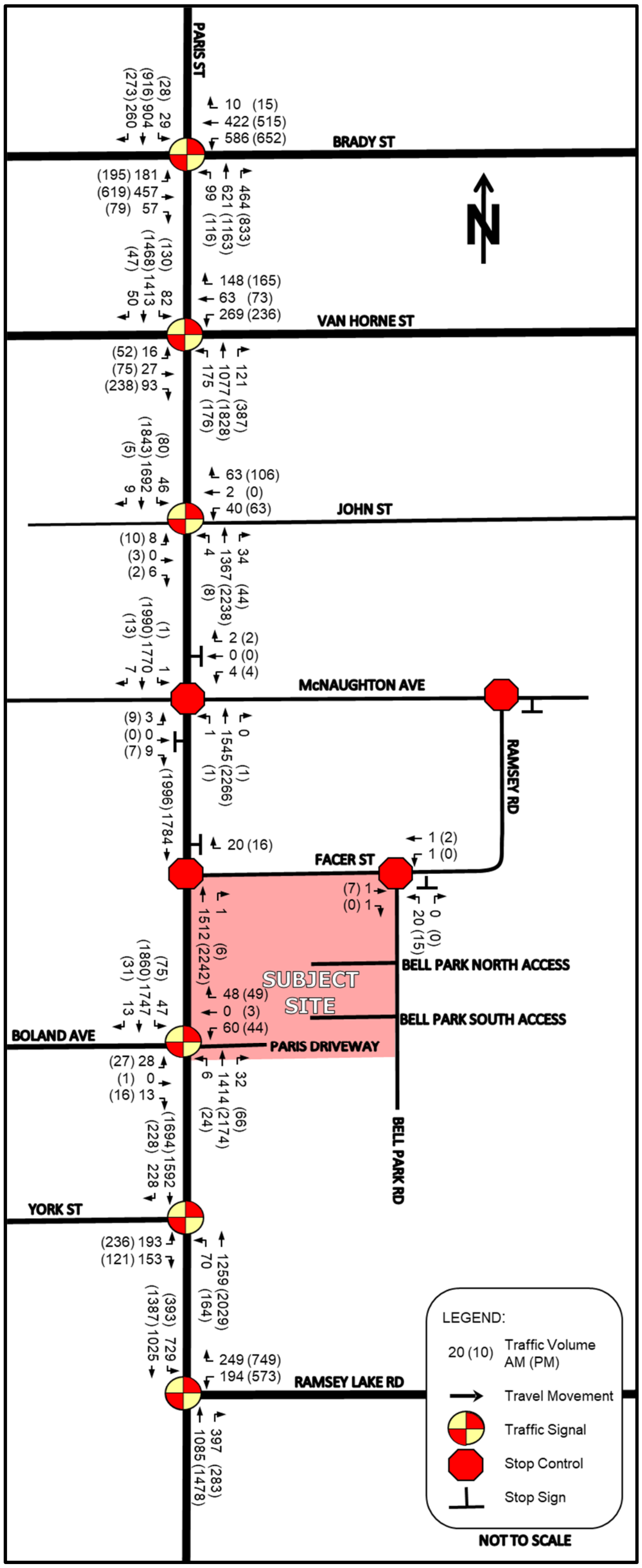


Figure 7 – Total (2032) Traffic Volumes



6.0 INTERSECTION OPERATION WITH PROPOSED DEVELOPMENT

6.1 INTERSECTION CAPACITY ANALYSIS CRITERIA

The same intersection methodology used in Section 3.1 of the TIS (excerpts provided in the **Appendix**), was applied to analyse the traffic at the study area intersections. The scope of intersection included in this TIS Addendum is based on addressing the comments from the City and the changes to the traffic volumes as detailed in Sections 3.0 – 5.0. The traffic volumes and recommendations for all other study area intersections in the TIS have not changed.

6.2 BACKGROUND (2032) INTERSECTION OPERATION

The results of the LOS analysis under background (2032) traffic volumes during the AM and PM peak hours can be found below in **Table 1**. The recommended improvements noted in Section 3.2, 3.3 and 3.4 in the TIS have been utilized for this scenario (excerpts provided in the **Appendix**). The recommendations in the TIS were as follows:

Existing (2022)

- Paris Street / John Street
    - Optimize signal timing plan.

Background (2027)

- Paris Street / McNaughton Street, Paris Street / Boland Avenue & Paris Driveway and Paris Street / York Street
    - Optimize signal timing plan.

Background (2032)

- Paris Street / Brady Street
    - Adjust eastbound pavement markings to accommodate a double left-turn lane.
    - Adjust eastbound signal heads to accommodate a protected eastbound left turn phase.
    - Optimize signal timing plan.

The signal timing optimization at the intersections of Paris Street / Brady Street and Paris Street / John Street were adjusted in this TIS Addendum. Detailed output of the Synchro analysis can be found in the **Appendix**.

Table 1 – Background (2032) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Paris Street / Brady Street (signalized)	0.73	33.1	C	-	-	0.85	34.9	C	-	-
EBL	0.53	46.4	D	38	57	0.57	53.1	D	41	57
EBTR	0.78	46.3	D	93	-	0.81	49.4	D	119	-
WBL	0.79	43.9	D	101	85	0.79	48.7	D	111	85
WBTR	0.41	28.4	C	68	-	0.42	29.7	C	78	-
NBL	0.44	24.2	C	25	70	0.45	27.3	C	33	70
NBT	0.42	28.4	C	61	-	0.58	29.7	C	109	-
NBR	0.41	11.3	B	57	-	0.73	15.5	B	193	-
SBL	0.13	26.0	C	11	24	0.25	36.8	D	17	75
SBT	0.71	36.8	D	99	-	0.68	41.8	D	103	-
SBR	0.31	19.3	B	49	-	0.33	23.8	C	59	-
Paris Street / John Street (signalized)	0.69	8.6	A	-	-	0.89	17.5	B	-	-
EB	0.01	24.5	C	0	-	0.07	42.8	D	9	-
WB	0.30	26.3	C	21	-	0.65	53.5	D	50	-
NBL	0.03	5.6	A	2	33	0.06	5.6	A	3	33
NBTR	0.68	9.9	A	102	-	0.94	22.3	C	361	-
SBL	0.20	5.6	A	5	23	0.65	39.0	D	26	23
SBTR	0.70	6.3	A	93	-	0.68	6.9	A	150	-
Paris Street / McNaughton Street (unsignalized)	-	0.1	A	-	-	-	0.2	A	-	-
EB	0.06	22.2	C	2	-	0.04	13.3	B	1	-
WB	0.03	29.2	D	1	-	0.02	21.0	C	1	-
Paris Street / Facer Street (unsignalized)	-	0.1	A	-	-	-	0.0	A	-	-
WB	0.01	31.0	D	1	-	0.01	17.6	C	1	-
NB	0.64	0.0	A	0	-	0.91	0.0	A	0	-
Bell Park Road / Facer Street (unsignalized)	-	1.8	A	-	-	-	0.0	A	-	-
WB	0.04	0.0	A	0	-	0.00	0.0	A	0	-
Paris Street / Boland Avenue & Paris Driveway (signalized)	0.65	4.9	A	-	-	0.79	7.2	A	-	-
EB	0.07	28.8	C	9	-	0.23	41.4	D	17	-
WBL	0.02	28.4	C	3	-	0.07	40.0	D	7	-
WBTR	0.00	28.3	C	0	-	0.02	39.6	D	7	-
NBL	0.05	2.3	A	2	40	0.25	3.6	A	6	40
NBTR	0.57	3.8	A	58	-	0.84	7.9	A	180	-
SBL	0.00	0.0	A	0	100	0.05	2.1	A	1	100
SBTR	0.70	5.2	A	202	-	0.73	5.4	A	121	-

Similar to the conclusions in the TIS, the LOS analysis indicate that the intersections of Paris Street / Brady Street and Paris Street / John Street operates outside the typical design limits noted in Section 3.1 in the PM peak hour; however, no improvements are recommended as the intersection is still operating within theoretical capacity (V/C < 1.0). The northbound and southbound movements in the PM peak hour exceeds the capacity for a two-lane roadway in each direction (1800 vph); it is recommended the City monitor the traffic volumes and queuing on Paris Street to determine if further improvements are warranted and prioritize TDM strategies and promote active transportation to reduce automobile traffic along Paris Street in the downtown area.

The results of the LOS analysis indicate that the northbound movement at the Paris Street / Facer Street intersection is operating outside the typical design limits as noted in Section 3.1; however, since there are no queuing issues and the V/C ratio only marginally exceeds the typical design limits, no improvements are recommended.

The anticipated queue for northbound and southbound movements at the intersections of Paris Street / John Street, Paris Street / Facer Street and Paris Street / McNaughton Street intersection will marginally extend past intersections along Paris Street. As noted above, northbound traffic volumes are approaching the capacity for a two-lane roadway; it is recommended the City monitor the queuing at the intersections and prioritize TDM strategies and promote active transportation to reduce automobile traffic along Paris Street in the downtown area.

The anticipated queue for all other highlighted auxiliary left turn movements exceed the existing storage, however, the excess queue can be accommodated by the taper length.

An analysis was completed for left turn movements at the unsignalized intersections in the study area, based on the criteria outlined in Appendix 9A of the MTO DS. Based on the above noted criteria a left-turn lane is not warranted at the unsignalized intersections in the study area (results are provided in the **Appendix**).

A review of the need for additional auxiliary right turn lanes was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all right turn movements; consequently, additional right turn lane improvements are not recommended.

Based on the Ontario Traffic Manual Book 12 Signal Justification, traffic signals are not warranted at the unsignalized intersections in the study area (results are provided in the **Appendix**).

No further improvements are recommended for the background (2032) scenario.

6.3 TOTAL (2032) INTERSECTION OPERATION

The results of the LOS analysis under total (2032) traffic volumes during the AM and PM peak hours can be found below in **Table 2**. The recommended improvements noted in Section 3.2, 3.3, 3.4 and 5.1 in the TIS have been utilized for this scenario (excerpts provided in the **Appendix**). The recommendations in the TIS were as follows:

Total (2027)

- Paris Street / Boland Avenue & Paris Driveway
  - Shift the Paris Driveway to align with Boland Avenue.
  - The westbound configuration of Paris Driveway at the intersection shall include a left turn lane and through-right lane.
- Facer Street
  - Construct a sidewalk on the south side of the road between Paris Street and Bell Park Road.
- Bell Park Road
  - Reconstruct Bell Park Road south of Facer Street to a 6.0 metre wide paved condominium road.
  - Bell Park Road shall have a posted speed limit of 20 km/h once Bell Park Road is reconstructed.

In addition to the improvements noted above, the following improvements are recommended prior to build-out of the proposed development:

Opening Day (2027)

- Paris Street / Facer Street
  - Convert the Facer Street approach from full-movement to a right-in / right-out [RIRO].
- Paris Street / Boland Avenue & Paris Driveway
  - Adjust southbound signal heads to accommodate a southbound left turn protected + permissive phase.
  - Optimize signal timing plan.

Detailed output of the Synchro analysis can be found in the **Appendix**.

Table 2 – Total (2032) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Paris Street / Brady Street (signalized)	0.75	35.4	D	-	-	0.86	35.9	D	-	-
EBL	0.56	50.2	D	38	57	0.58	54.3	D	41	57
EBTR	0.83	52.7	D	100	-	0.83	51.1	D	122	-
WBL	0.82	49.0	D	105	85	0.80	53.9	D	115	85
WBTR	0.43	30.8	C	69	-	0.42	29.7	C	78	-
NBL	0.45	23.8	C	29	70	0.50	28.4	C	36	70
NBT	0.40	28.6	C	63	-	0.59	30.4	C	111	-
NBR	0.43	11.2	B	61	-	0.75	16.2	B	201	-
SBL	0.13	27.3	C	11	24	0.26	37.8	D	17	75
SBT	0.72	38.7	D	102	-	0.70	43.2	D	106	-
SBR	0.31	20.9	C	50	-	0.33	24.6	C	60	-
Paris Street / John Street (signalized)	0.71	8.7	A	-	-	0.91	19.1	B	-	-
EB	0.01	25.2	C	0	-	0.07	42.8	D	19	-
WB	0.31	27.2	C	21	-	0.65	53.5	D	50	-
NBL	0.03	5.4	A	2	33	0.07	5.7	A	3	33
NBTR	0.70	10.1	B	111	-	0.96	25.2	C	375	-
SBL	0.22	6.0	A	5	23	0.65	40.9	D	26	23
SBTR	0.71	6.3	A	99	-	0.70	7.4	A	162	-
Paris Street / McNaughton Street (unsignalized)	-	0.4	A	-	-	-	0.2	A	-	-
EB	0.03	13.9	B	1	-	0.04	14.5	B	1	-
WB	0.02	17.6	C	1	-	0.03	22.3	C	1	-
Paris Street / Facer Street (unsignalized)	-	0.1	A	-	-	-	0.1	A	-	-
WBR	0.03	10.1	B	1	-	0.05	17.2	C	2	-
NB	0.66	0.0	A	0	-	0.93	0.0	A	0	-
Bell Park Road / Facer Street (unsignalized)	-	7.6	A	-	-	-	5.4	A	-	-
NB	0.04	8.7	A	1	-	0.02	8.6	A	1	-
Paris Street / Boland Avenue & Paris Driveway (signalized)	0.75	9.3	A	-	-	0.88	13.4	B	-	-
EB	0.03	27.0	C	3	-	0.33	50.7	D	19	-
WBL	0.41	29.8	C	22	-	0.39	50.9	D	23	-
WBTR	0.03	26.9	C	0	-	0.06	47.9	D	13	-
NBL	0.05	5.4	A	3	40	0.23	5.3	A	8	40
NBTR	0.71	10.0	B	114	-	0.92	17.4	B	351	-
SBL	0.25	6.7	A	5	100	0.62	36.3	C	21	100
SBTR	0.74	7.2	A	114	-	0.71	5.1	A	135	-

Similar to the conclusions in the TIS, the results of the LOS analysis indicate that the intersections of Paris Street / Brady Street, Paris Street / John Street and Paris Street / Boland Avenue & Paris Driveway operates outside the typical design limits noted in Section 3.1 in the PM peak hour; however, no improvements are recommended as the intersection is still operating within the theoretical capacity (V/C < 1.0). The northbound and southbound movements in the PM peak hour exceeds the capacity for a two-lane roadway in each direction (1800 vph); it is recommended the City monitor the traffic volumes and queuing on Paris Street to determine if further improvements are warranted and prioritize TDM strategies and promote active transportation to reduce automobile traffic along Paris Street in the downtown area.

The results of the LOS analysis indicate that the northbound movement at the Paris Street / Facer Street intersection is operating outside the typical design limits as noted in Section 3.1; however, since there are no queuing issues and the V/C ratio only marginally exceeds the typical design limits, no improvements are recommended.

The anticipated queue for northbound and southbound movements at the intersections of Paris Street / John Street, Paris Street / Facer Street and Paris Street / McNaughton Street will marginally extend past intersections along Paris Street. As noted above, northbound traffic volumes are approaching the capacity for a two-lane roadway; it is recommended the City monitor the queuing at the intersections and prioritize TDM strategies and promote active transportation to reduce automobile traffic along Paris Street in the downtown area.

The anticipated queue for northbound movements at the Paris Street / Boland Avenue & Paris Driveway intersection will also extend past intersections along Paris Street in the PM peak hour. A SimTraffic queuing analysis was completed to assess the impact of the queuing. Based on our review, the northbound queue along with the queue for all other movements at the intersection, are anticipated to clear after each cycle and will not block any adjacent intersections. Consequently, no additional improvements are required. Signal timing coordination can be reviewed by the City in the future to minimize the impact of queuing on corridor capacity.

An analysis was completed for left turn movements at the unsignalized intersections in the study area, based on the criteria outlined in Appendix 9A of the MTO DS. Based on the above noted criteria a left-turn lane is not warranted at the unsignalized intersections in the study area (results are provided in the **Appendix**).

A review of the need for additional auxiliary right turn lanes was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all right turn movements; consequently, additional right turn lane improvements are not recommended.

Based on the Ontario Traffic Manual Book 12 Signal Justification, traffic signals are not warranted at the unsignalized intersections in the study area (results are provided in the **Appendix**).

No further improvements are recommended for the total (2032) scenario.

6.4 PARIS STREET / BOLAND AVENUE & PARIS DRIVEWAY

The proposed development will shift the location of the Paris Driveway slightly further north at the intersection to align with Boland Avenue. It is recommended the westbound lane configuration at the Paris Street / Boland Avenue & Paris Driveway intersection include a left turn lane and through-right lane, as noted in Section 5.1. A single ingress and egress lane at the Paris Driveway will provide the necessary capacity to service the proposed development. The Paris Driveway will provide ingress and egress access to the underground parking and surface parking.

As illustrated in Sections 6.2 and 6.3, there are no operational or queuing issues at the Paris Street / Boland Avenue & Paris Driveway intersection.

The addition of the proposed development traffic warrants the construction of a southbound left turn protected + permissive phase at the intersection. There are no queuing issues related to the ingress and egress traffic of the proposed development.

6.5 BELL PARK NORTH ACCESS & BELL PARK SOUTH ACCESS

The Bell Park North Access driveway will operate as a full-movement access driveway onto Bell Park Road. A single ingress and egress lane at the Bell Park North Access will provide the necessary capacity to service the proposed development. Bell Park North Access will provide ingress and egress access to the surface parking only.

The Bell Park South Access driveway will operate as a full-movement access driveway onto Bell Park Road. A single ingress and egress lane at the Bell Park South Access will provide the necessary capacity to service the proposed development. Bell Park South Access will have access to the underground parking and will be limited to service vehicles only.

7.0 SUPPLEMENTARY ANALYSIS – FORMER ST. JOSPEPH HEALTH CENTRE TRAFFIC REVIEW

As noted in the TIS, proposed development is located on the site which was formerly occupied by the St. Joseph Health Centre. The St. Joseph Health Centre has been closed since 2012. The following section provides a review of traffic generation for the full operation of the St. Joseph Health Centre building.

Traffic count data is not available from 2012 or earlier, during the full operation of the St. Joseph Health Centre. Consequently, the estimated traffic generation for the St. Joseph Health Centre has been based on the Institute of Transportation Engineers [ITE] Trip Generation Manual (11th Edition) [ITE Trip Generation Manual]. The following ITE land uses have been applied to estimate the traffic from the proposed development:

- ITE land use 610 (Hospital) – General Urban / Suburban Setting

The estimated trip generation of the St. Joseph Health Centre is illustrated below in **Table 3**. The traffic generation for the St. Joseph Health Centre is based on the typical daily traffic on a weekday. For comparative purposes the daily weekday traffic generated by the proposed development was also estimated in Table 3. Building statistics for the St. Joseph Health Centre are based on data provided by the City.

Table 3 – Estimated Traffic Generation of St. Joseph Health Centre

Land Use	Size	Daily Weekday Trips		
		IN	OUT	TOTAL
Hospital Traffic Generation				
Hospital ITE Land Use: 610	218,084 sq.ft.	2312	2312	4624
Proposed Development Traffic Generation				
Multi-Family Housing High-Rise ITE Land Use: 222	448 units	1031	1031	2062
Senior Adult Housing - Single-Family ITE Land Use: 251	100 units	297	297	594
High-Turnover (Sit-Down) Restaurant ITE Land Use: 932	500 sq.m. (5,382 sq.ft).	289	289	578
Proposed Development Traffic Generation*		**1617**	**1617**	**3234**
NET TRAFFIC GENERATION FOR HOSPITAL USE		**-695**	**-695**	**-1390**

* Internal capture and pass-by trip reduction was not applied to be conservative for the trips generated by the proposed development.

Consequently, the proposed development will generate approximately 1,390 fewer trips during a typical weekday compared with the full operation of the St. Joseph Health Centre.

8.0 CONCLUSION

This chapter summarizes the conclusions and recommendations from the study.

1) The following improvements are recommended in addition to the recommendations made in the TIS:

   Existing (2022) Traffic Volumes
   Paris Street / John Street
   - Adjust signal optimization improvement from the TIS.

   Background (2032) Traffic Volumes
   Paris Street / Brady Street
   - Adjust signal optimization improvement from the TIS.

   Opening Day (2027) Traffic Volumes
   Paris Street / Facer Street
   - Convert the Facer Street approach from full-movement to a right-in / right-out.

   Paris Street / Boland Avenue & Paris Driveway
   - Adjust southbound signal heads to accommodate a southbound left turn protected + permissive phase.

2) All other recommendations from the TIS remain applicable.

3) The proposed development will shift the location of the Paris Driveway slightly further north at the intersection to align with Boland Avenue. It is recommended the westbound lane configuration at the Paris Street / Boland Avenue & Paris Driveway intersection include a left turn lane and through-right lane. A single ingress and egress lane at the Paris Driveway will

provide the necessary capacity to service the proposed development. The Paris Driveway will provide ingress and egress access to the underground parking and surface parking.

4) The Bell Park North Access will operate as a full-movement access driveway onto Bell Park Road The Bell Park North Access will provide ingress and egress access to surface parking only.

5) Bell Park South Access will operate as a full-movement access driveway onto Bell Park and will have access to the underground parking and will be limited to service vehicles only.

6) There are no additional revisions to the recommendations and conclusions presented in the TIS, as a result of the City's Comments.

We trust you will find this submission acceptable. Should you have any questions or concerns or require any additional information in this regard, please contact our office.

Yours truly,
JD Northcote Engineering Inc.

John Northcote, P.Eng.
President

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. JD Engineering accept no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this project.

Appendix

City Comments

Appendix 1

Departmental & Agency Comments

File: 701-6/23-04 & 751-6/23-25

RE: Application for Official Plan Amendment & Rezoning – 2226553 Ontario Inc.
PINs 73584-0652 & 73591-0047, Part 2, Plan 53R-3947, Part of Lot 5, Concessions 2 & 3, Township of McKim (700 Paris Street, Sudbury)

Development Engineering

A water and sewer capacity analysis was performed and municipal water and sewer are available within the road right of way and is able to facilitate the requested development.

There is a registered site plan control agreement dated October 7, 2014. This agreement will need to be amended to reflect the newly proposed development.

It is our understanding that there are upgrades to the transportation network as a result of this development. It is our opinion that a holding designation be placed on the zoning such that the required upgrades would need to be made at the time of development of the site plan by way of an offsite servicing agreement.

Based on the requested rezoning and amendment to the Official Plan, Development Engineering has no objection provided that development proceed by way of amendment to the site plan control agreement. This amendment will address, but not limited to, the upgrades required to the transportation network, site servicing, site grading, and stormwater management.

Infrastructure Capital Planning Services (ICPS):

Roads
Bell Park Road is currently a service road and not a publicly maintained roadway. Staff have no concerns with the proposed reconstruction of the road or the use of the road to service the proposed site. Staff however do not support this road becoming a publicly maintained road.

The owner should be aware that as part of the site plan an irregular piece of property will need to be transferred to the City along the frontage of Paris Street and Facer Street. The provided sketch appears to show this new right-of-way limit. As well, Facer Street will be required to be upgraded to an urban standard, on the south side, from Paris Street to Bell Park Road.

Transportation and Innovation Support
Staff has reviewed the provided Traffic Impact Study and has concerns with vehicles trying to access Facer Street or McNaughton Street via Paris Street as no left turn lane is provided on Paris Street. When the Hospital site was in operation both intersections had a high instance of collisions due to left turning vehicles. For this reason, the access to the site from Bell Park Road shall be limited to service vehicles only. All residents, visitors and patrons must access the parking garage from the intersection of Boland Avenue and Paris Street. In addition, Facer Street at Paris Street is required to be modified to permit right-in, right-out turning movements only.

It is noted that in the 2032 total traffic projections (with improvements) the following movements are operating at LOS 'E'. The City requires that any movement with LOS 'E' be addressed further.

- Paris Street @ Brady Street: EBL PM Peak (LOS 'C' in 2032 background)
- Paris Street @ John Street: WBT PM Peak (LOS 'D' in 2032 background)
- Paris Street @ Boland Avenue: SBL PM Peak (LOS 'A' in 2032 background)

In addition to the Paris Street at Boland Avenue intersection operating at LOS 'E' for the SBL movement, it is also noted that the projected 95th percentile queue exceeds the available storage capacity of the left turn lane. Staff are concerned this will result in motorists choosing to use Facer Street as an alternative access to the site, as well, the left turn queue will block through movements at the intersection. For these reasons the south bound left turn lane storage length must be extended to match the anticipated queue lengths.

Active Transportation
In addition to the information provided on the information display board that is recommended as part of the transportation demand management measures, the board shall also include information regarding the City's ride share program "Smart Commute".

This site is within the limits of the City's Paris/Notre Dame Bikeway project. While it appears the bike way has been shown on the provided sketch of the site, the owner should be aware that the bike way design will need to be incorporated as part of the site plan.

Roads Operations
No concerns.

Drainage
No concerns.

Building Services

We have reviewed the application and documents for the requested Zoning By-law Amendment and have the following comment:

- A loading space meeting the dimensional requirements of 5.6.4. has not been provided for Building C.

Applicant to be advised of the following:

- At time of Building Permit review and Site Plan Agreement review, verification will be required for the construction of the Retirement Home in conformance with the Retirement Homes Act and the Zoning By-law.
- Further By-law requirements may need to be addressed upon submission of complete building plans.

Leisure Services

The City will be seeking cash-in-lieu for parkland dedication as permitted under the Planning Act.

Strategic and Environmental Planning

The applications listed in the subject line do not pose an elevated risk to species protected by the Endangered Species Act or to their habitat.

The proposed developments are anticipated to either have only minor negative effects on the overall natural environment or to have potential negative effects that are to be adequately mitigated as indicated on the relevant site plans and sketches. As such, specific environmental studies are not required beyond those that may have been requested previously.

Water/Wastewater - Source Water Protection

No activity or activities engaged in or proposed to be engaged in on the above noted property are considered to be significant drinking water threats at this time. You may undertake the activity or activities described in your application and proceed to apply for a Building Permit or Planning Approval as they are neither prohibited nor restricted for the purpose of Part IV of the Clean Water Act, 2006.

Conservation Sudbury (Nickel District Conservation Sudbury)

The subject property is located outside of any regulated hazards and Conservation Sudbury has no objection to the Official Plan Amendment and Zoning By-law Amendments as described in the circulation.

Greater Sudbury Transit

Transit do not have comments or concerns related to this application.

From: David Knutson <David.Knutson@greatersudbury.ca>
Sent: May 29, 2024 1:26 PM
To: Kevin Jarus
Cc: Wendy Kaufman
Subject: Re: 700 Paris - TIS revisions

Kevin,

As per our conversation this morning, we will be looking to have the main Paris Street southbound access to the surface lot to be via the Bolland Street intersection. Having the main access point to the surface lot for southbound Paris Street be via McNaughton Street will not be acceptable.

The LOS 'E' at both Brady and Bolland are acceptable, provided as you mentioned, the left turn queue at Bolland Street can fit within the provided storage lane for the left turn lane.

Should you require any other clarification or confirmation please let me know.

Best,

David Knutson, C.E.T.
Traffic and Transportation Engineering Analyst
Transportation and Innovation Services

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From: Kevin Jarus <kevin.jarus@tulloch.ca>
Sent: Friday, May 10, 2024 1:31 PM
To: David Knutson <David.Knutson@greatersudbury.ca>
Cc: Wendy Kaufman <Wendy.Kaufman@greatersudbury.ca>
Subject: FW: 700 Paris - TIS revisions

Sorry Dave, got your email wrong below.

Have a great weekend,
Kevin

TULLOCH

Kevin Jarus, M.Pl., RPP
Planning Manager
Sr. Associate

Phone: 705-671-2295 ext 606
Mobile: 416-856-7935
Sudbury Office | www.TULLOCH.ca

CANADA BEST MANAGED COMPANIES

From: Kevin Jarus <kevin.jarus@tulloch.ca>
Sent: Friday, May 10, 2024 1:30 PM
To: Wendy Kaufman <Wendy.Kaufman@greatersudbury.ca>; alex.singbush@greatersudbury.ca; robert.webb@greatersudbury.ca; Ryan Purdy <Ryan.Purdy@greatersudbury.ca>; dave.knutson@greatersudbury.ca
Cc: Vanessa Smith <vanessa.smith@tulloch.ca>; Kevin Jarus <kevin.jarus@tulloch.ca>
Subject: RE: 700 Paris - TIS revisions

Good afternoon all,

Thanks for the discussion this morning. As discussed, we can offer the following preliminary response and information further to the CGS TIS comments received.

1. Regarding the requirement that Facer St be made a right-in right-out, we are amenable to this.

2. Regarding access to the site from Bell Park Road being for service vehicles only, we propose that:
    - Public vehicle traffic utilizing Bell Park Road be limited to accessing the surface-level parking (all types of vehicles)
    - That access to the below-grade parking from Bell Park Road be limited to service vehicles (maintaining prior approval scenario)

    Given Facer St will be limited to right-in right-out, and given anyone egressing the site from the surface parking to go southbound would naturally use the Boland intersection, we feel these cumulative mitigation measures address Facer St access/conflict concerns. If this scenario is generally agreeable, we will provide updated TIS reflecting the right-in right-out reality.

3. Regarding Paris & Boland queue exceeding available storage capacity of SBL lane:
    - we will update the syncro analysis with true storage length and provide revised analysis.

4. With regard to 2032 traffic projects & intersection operational analysis:
    - Regarding Paris @ Brady 2032 EBL:
        - With signal improvements the 2032 controlled delay is 55.2 seconds (only 0.2 seconds beyond range deemed acceptable). However, it was concluded that the intersection would have a delay of 55.5 seconds (LOSS E) in 2034 even without our development, meaning the subject development brings this intersection to LOSS E only 2 years earlier than it would regardless.
    - Regarding Paris @ John 2032 WBT:
        - We note the delay is only 55.9 seconds in 2032 (9 seconds beyond LOSS E).
        - We will have our consultant review LOSS E results and revise/respond as discussed.
    - Regarding Paris @ Boland 2032 SBL:
        - As discussed, the TIS prioritized northbound through movements for the benefit of the 'greater city's transportation network.
        - We agree queue length appropriateness must be satisfied (further to comment #3 above), prior-to determining acceptance of SBL LOSS E for those entering the site southbound from Paris.

5. As discussed we will provide a high-level review of past traffic generation from when the Hospital was operational. This will include (if data is available) EMS trips and public trips (based on projections from bed count) on a ‘total day’ basis.

Prior to our preparing a formal response/TIS addendum, we look forward to your response regarding:

- Surface parking access from Bell Park Rd;
- Paris @ Brady 2032 EBL LOSS ‘E’;
- Paris @ Boland 2032 SBL LOSS ‘E’ (with assumption that appropriate SBL queue will be provided so as to avoid SBT conflicts).

If anyone requires any additional information or clarification before responding do not hesitate to ask. Once we receive your response we will provide a formal response through updated and/or addendum TIS.

Best,
Kevin

Site Plan

TIS Excerpts

700 Paris Street
City of Greater Sudbury

Traffic Impact Study for
2226553 Ontario Inc.

Type of Document:
Final Report

Project Number:
JDE – 21192

Date Submitted:
December 23rd, 2022

John Northcote, P.Eng.
Professional License #: 100124071

LICENSED PROFESSIONAL ENGINEER
J.D. NORTHCOTE
100124071
12/23/22
PROVINCE OF ONTARIO

JD Northcote Engineering Inc.
86 Cumberland Street
Barrie, ON
705.725.4035
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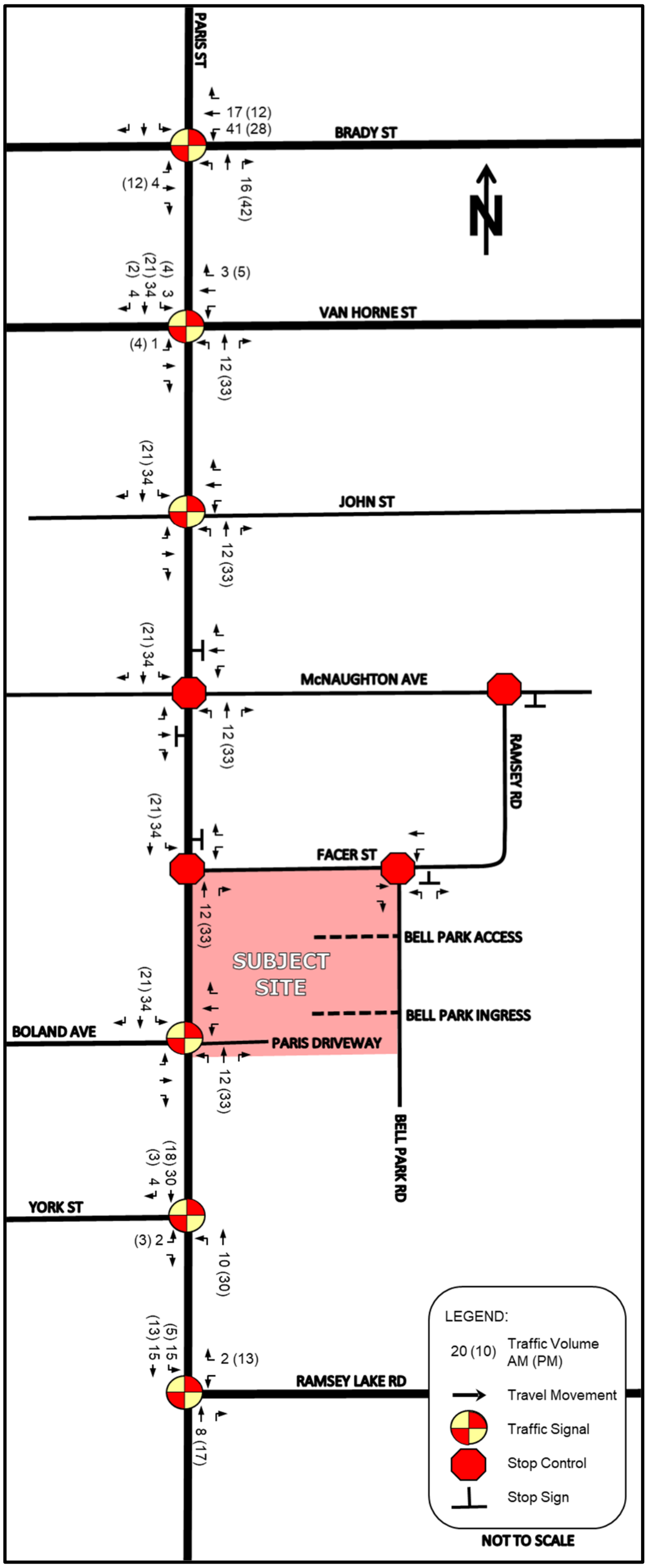
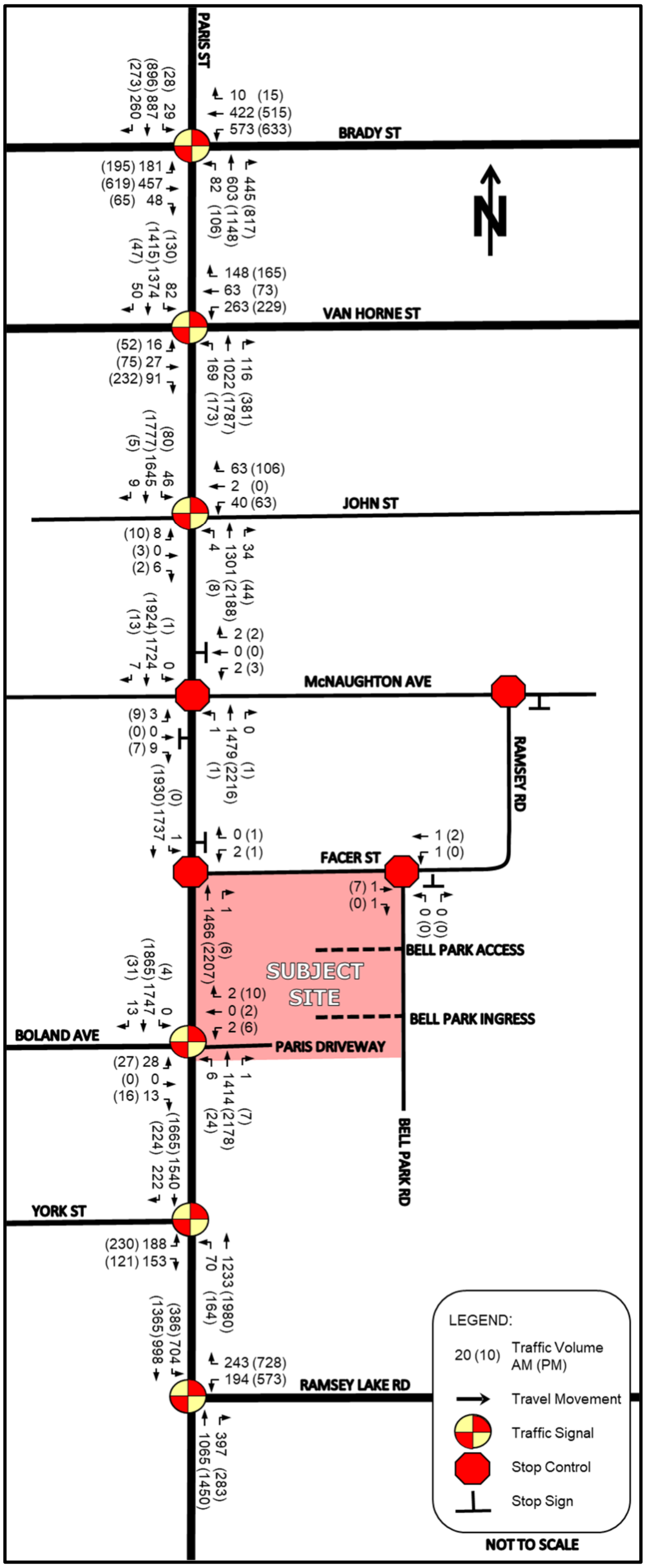
Figure 3 – Manitou Residential Development Traffic Assignment



ENGINEERING

Figure 6 – Background (2032) Traffic Volumes



3 Intersection Operation with Proposed Development

3.1 Intersection Capacity Analysis Criteria

Intersection performance was measured using the traffic analysis software, Synchro 11, a deterministic model that employs Highway Capacity Manual and Intersection Capacity Utilization methodologies for analysing intersection operations. These procedures are accepted by provincial and municipal agencies throughout North America.

Synchro 11 enables the study area to be graphically defined in terms of streets and intersections, along with their geometric and traffic control characteristics. The user is able to evaluate both signalized and unsignalized intersections in relation to each other, thus not only providing level of service for the individual intersections, but also enabling an assessment of the impact the various intersections in a network have on each other in terms of spacing, traffic congestion, delay, and queuing.

Individual turning movements with a volume-to-capacity [V/C] ratio of 0.85 or greater are considered to be critical movements and have been highlighted in the LOS tables.

The intersection operations were also evaluated in terms of the LOS. LOS is a common measure of the quality of performance at an intersection and is defined in terms of vehicular delay. This delay includes deceleration delay, queue move-up time, stopped delay, and acceleration delay. LOS is expressed on a scale of A through F, where LOS A represents very little delay (i.e. less than 10 seconds per vehicle) and LOS F represents very high delay (i.e. greater than 50 seconds per vehicle for a stop sign controlled intersection and greater than 80 seconds per vehicle for a signalized intersection).

The LOS criteria for signalized and stop sign controlled intersections are shown in **Table 2.** A description of traffic performance characteristics is included for each LOS.

Table 2 – Level of Service Criteria for Intersections

LOS	**LOS Description**	**Control Delay (seconds per vehicle)**	
		Signalized Intersections	**Stop Controlled Intersections**
A	Very low delay; most vehicles do not stop (**Excellent**)	less than 10.0	less than 10.0
B	Higher delay; more vehicles stop (**Very Good**)	between 10.0 and 20.0	between 10.0 and 15.0
C	Higher level of congestion; number of vehicles stopping is significant, although many still pass through intersection without stopping **(Good**)	between 20.0 and 35.0	between 15.0 and 25.0
D	Congestion becomes noticeable; vehicles must sometimes wait through more than one red light; many vehicles stop (**Satisfactory**)	between 35.0 and 55.0	between 25.0 and 35.0
E	Vehicles must often wait through more than one red light; considered by many agencies to be the limit of **acceptable** delay	between 55.0 and 80.0	between 35.0 and 50.0
F	This level is considered to be unacceptable to most drivers; occurs when arrival flow rates exceed the capacity of the intersection (**Unacceptable**)	greater than 80.0	greater than 50.0

An analysis was completed for left turn movements at the unsignalized intersections in the study area, based on the criteria outlined in Appendix 9A of the MTO DS. Based on the above noted criteria a left-turn lane is not warranted at the unsignalized intersections in the study area (results are provided in **Appendix G**).

A review of the need for additional auxiliary right turn lanes was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all right turn movements; consequently, additional right turn lane improvements are not recommended.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the unsignalized intersections in the study area (results are provided in **Appendix H**).

No further improvements are recommended for the background (2032) scenario.

4 Proposed Development Traffic Generation and Assignment

4.1 Traffic Generation

The traffic generation for the proposed development has been based on the ITE Trip Generation Manual. The following ITE land uses have been applied to estimate the traffic from the proposed development:

- ITE land use 222 (Multi-Family Housing (High-Rise)) – General Urban / Suburban Setting
- ITE land use 251 (Senior Adult Housing - Single-Family) – General Urban / Suburban Setting
- ITE land use 932 (High-Turnover (Sit-Down) Restaurant) – General Urban / Suburban Setting

The estimated trip generation of the proposed development is illustrated below in **Table 8**. The AM and PM peak hour traffic generation for the proposed development is not expected to exactly align with the AM and PM peak hour in the traffic counts; consequently, we have applied the peak hour of adjacent street traffic values provided in the ITE Trip Generation Manual.

Table 8 – Estimated Traffic Generation of Proposed Development

Land Use	**Size**	**AM Peak Hour**			**PM Peak Hour**		
		IN	**OUT**	**TOTAL**	**IN**	**OUT**	**TOTAL**
Multi-Family Housing High-Rise ITE Land Use: 222	448 units	41	80	121	81	63	144
Senior Adult Housing - Single-Family ITE Land Use: 251	100 rooms	13	26	39	27	18	45
High-Turnover (Sit-Down) Restaurant ITE Land Use: 932	500 sq.m. (5,382 sq.ft).	29	23	52	30	19	49
TOTAL TRIP GENERATION		**83**	**129**	**212**	**138**	**100**	**228**
INTERNAL CAPTURE*		-5	-5	-10	-7	-7	-14
NET GENERATION		**78**	**124**	**202**	**131**	**93**	**224**
PASS-BY TRIPS (ITE Land Use: 932)**		0	0	0	-9	-9	-18
TOTAL TRAFFIC GENERATION		**78**	**124**	**202**	**122**	**84**	**206**

* The internal capture rate has been calculated using the methodology outlined in the National Cooperative Highway Research Program (NCHRP) Report 684. Internal capture reports are provided in **Appendix I**.

** Pass-by trips for the AM and PM peak hour are 0% and 43% respectively, according to the ITE data for ITE land use 932.

In order to be conservative, no transportation modal split reduction has been applied to the above-noted traffic generation calculation.

4.2 Traffic Assignment

For the purposes of this study, it has been assumed that all traffic generated by the proposed development will be new traffic and would not be in the study area if the development was not constructed.

The distribution of traffic for the proposed development is assumed to follow the existing trip distribution of the traffic counts in Section 2.6. The distribution of trips is illustrated in **Table 9** using the methodology outlined above.

Table 9 – Proposed Development Traffic Distribution Summary

Scenario	**Direction**	**Ingress / Egress Traffic Direction**								
		North via Paris Street	**South** via Paris Street	**West** via Brady Street	**East** via Brady Street	**West** via Van Horne Street	**East** via Van Horne Street	**West** via Boland Avenue	**West** via York Street	**East** via Ramsey Lake Road
AM	In	21%	25%	12%	17%	2%	8%	1%	6%	8%
	Out	14%	21%	14%	17%	5%	4%	0%	5%	20%
PM	In	16%	23%	12%	15%	5%	6%	1%	5%	17%
	Out	18%	25%	12%	18%	4%	8%	1%	5%	9%

Figures 7 to **9** illustrates the traffic assignment for the residential and restaurant (primary and pass-by trips) components for the proposed development, during the AM and PM peak hour.

Figure 7 – Traffic Assignment for Proposed Development (Residential Trips)

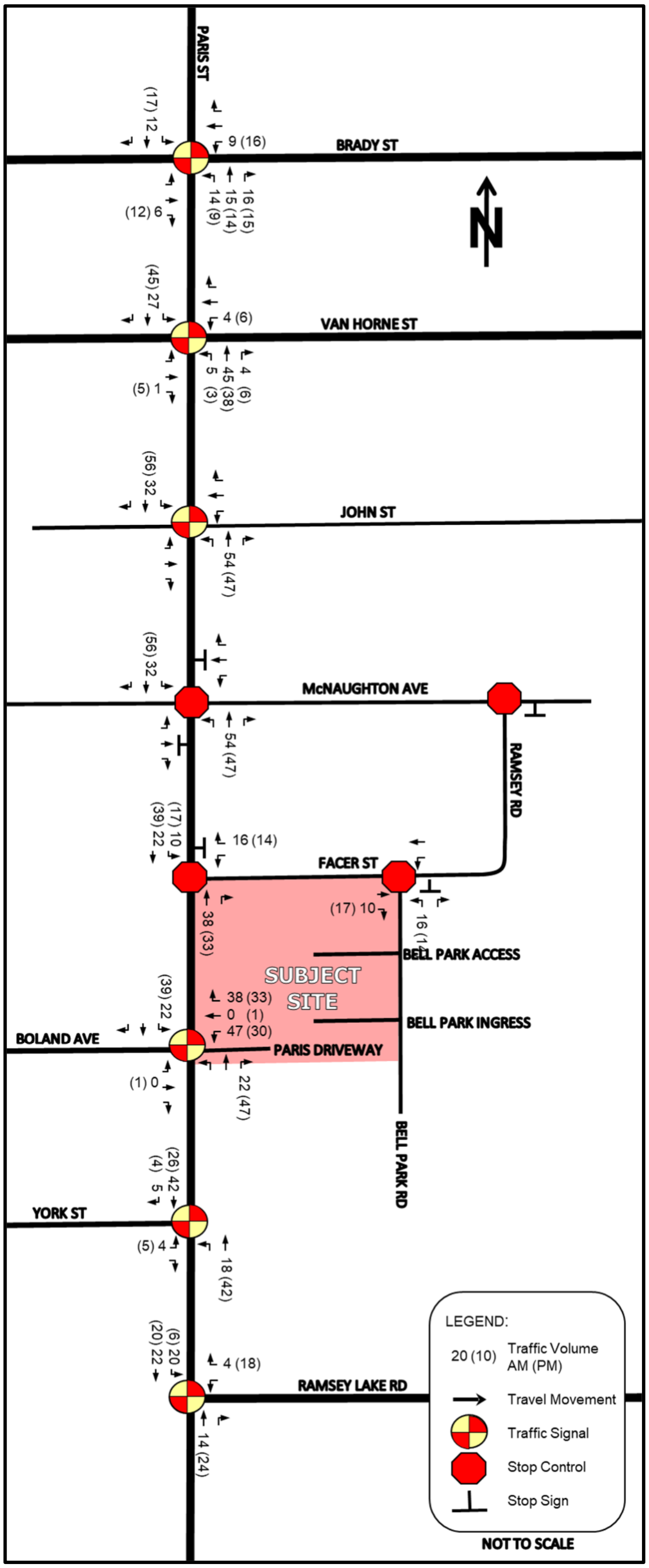


Figure 8 – Traffic Assignment for Proposed Development (Restaurant Primary Trips)

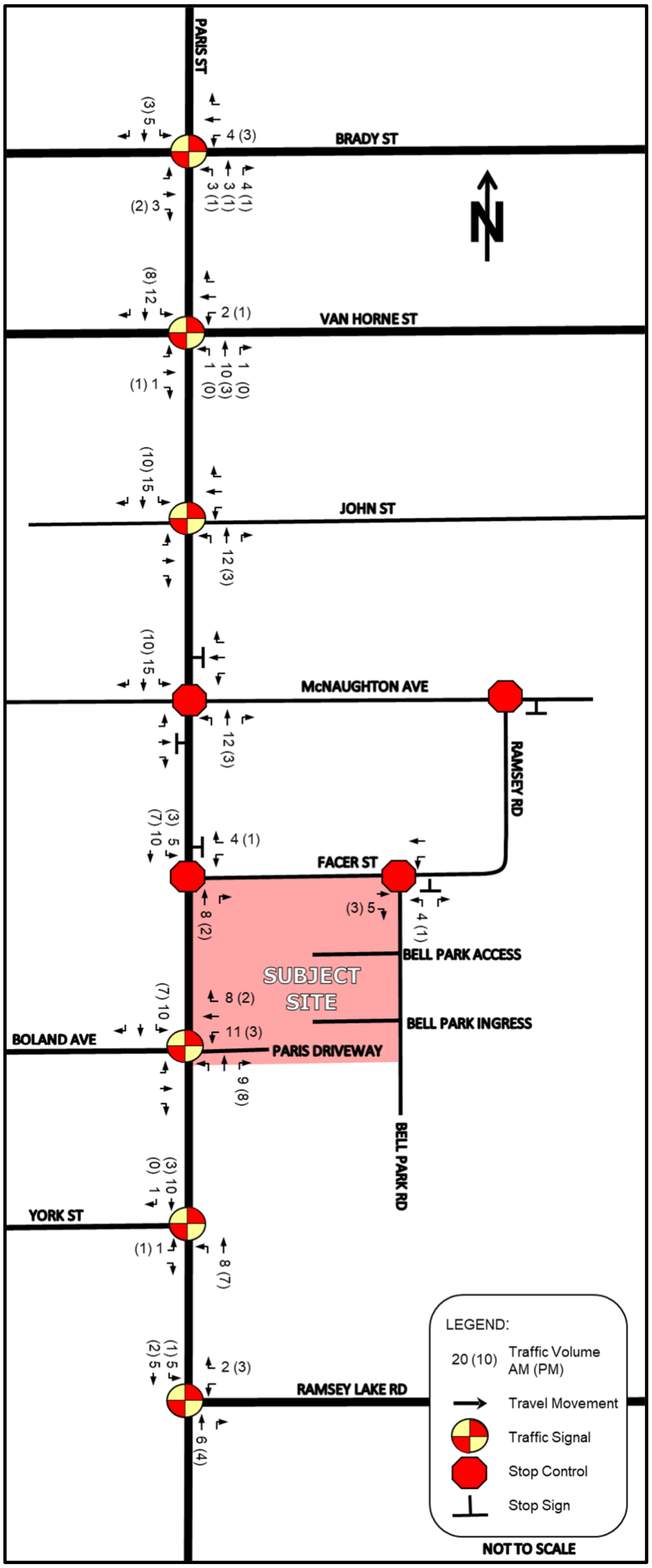
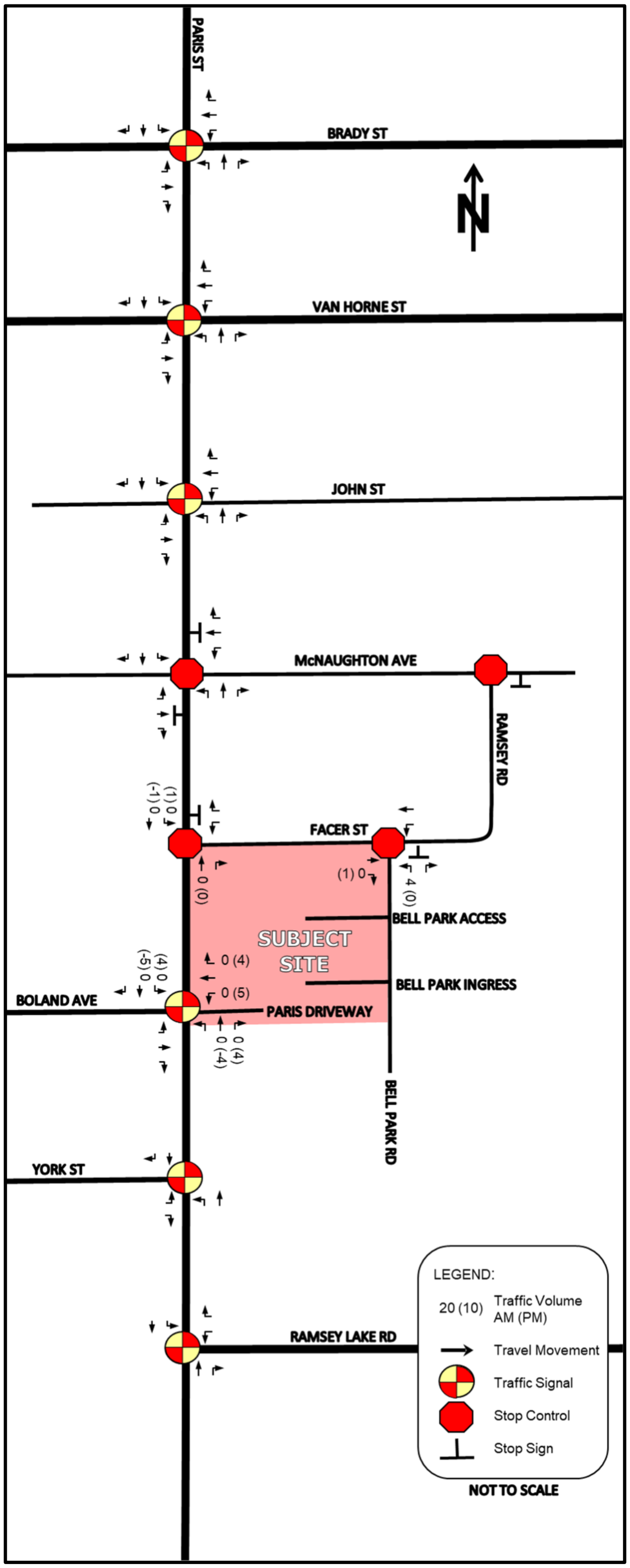


Figure 9 – Traffic Assignment for Proposed Development (Restaurant Pass-by Trips)



7 Summary

2226553 Ontario Inc. retained **JD Engineering** to prepare this traffic impact study in support of the proposed development on a site municipally known as 700 Paris Street, located on the east side of Paris Street between Boland Avenue and Facer Street, in the City of Greater Sudbury. The proposed Draft Plan by ACK Architects is shown in **Appendix A**. This chapter summarizes the conclusions and recommendations from the study.

The proposed development is anticipated to consist of a 16-storey building with 198 units, a 20-storey building with 250 units and a ground-floor restaurant (500 sq.m. of GFA) and a 10-storey retirement home with 100 rooms.

1. The proposed development is expected to generate a total of 202 AM and 206 PM peak hour primary trips and 18 PM peak hour pass-by trips.
2. Background traffic and pedestrian counts were commissioned for the existing intersections of Paris Street / Van Horne Street, Paris Street / McNaughton Street, Paris Street / Facer Street, Facer Street / Bell Park Road and Paris Street / York Street completed on Wednesday, April 20th 2022. Background traffic and pedestrian counts at the study area intersections were also obtained from the City.
3. An intersection operation analysis was completed at the study area intersections, using the existing (2022) and background (2027 & 2032) traffic volumes, with the adjacent development traffic. This enabled a review of existing and future traffic deficiencies that would be present without the influence of the proposed development. These improvements are warranted based on the anticipated growth in the City and traffic generated by future developments in the study area without the proposed development. The following improvements are recommended:

   <u>Existing (2022) Traffic Volumes</u>

   - **Paris Street / John Street and Paris Street / Ramsey Lake Road**
     - Optimize signal timing plan.

   <u>Background (2027) Traffic Volumes</u>

   - **Paris Street / Van Horne Street, Paris Street / McNaughton Street, Paris Street / Boland Avenue & Paris Driveway and Paris Street / York Street**
     - Optimize signal timing plan.

   <u>Background (2032) Traffic Volumes</u>

   - **Paris Street / Brady Street**
     - Adjust eastbound pavement markings to accommodate a double left-turn lane.
     - Adjust eastbound signal heads to accommodate a protected eastbound left turn phase.
     - Optimize signal timing plan.
   - **Paris Street / Ramsey Lake Road**
     - Widen Ramsey Lake Road to accommodate westbound double right turn lane with a 100 metre storage length and 60 metre taper length
     - Optimize signal timing plan.

4. An estimate of the amount of traffic that would be generated by the Subject Site was prepared and assigned to the study area streets and intersections.
5. An intersection operation analysis was completed under total (2027 & 2032) traffic volumes with the proposed development operational at the study area intersections. The following improvements are recommended prior to build-out of the proposed development:

   <u>Opening Day (2027) Traffic Volumes</u>

   Paris Street / Boland Avenue & Paris Driveway

   - Shift the Paris Driveway to align with Boland Avenue.
   - The westbound configuration of Paris Driveway at the intersection shall include a left turn lane and through-right lane.

   Facer Street

   - Construct a sidewalk on the south side of the road between Paris Street and Bell Park Road.

   Bell Park Road

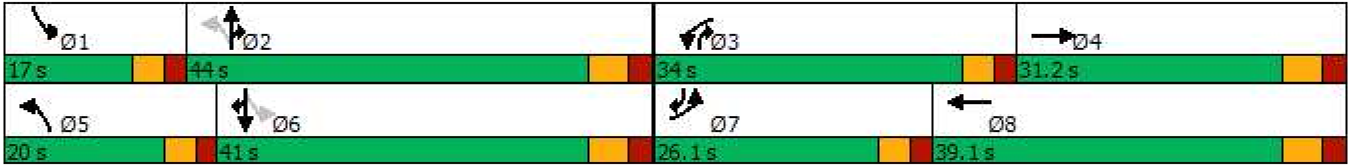
   - Reconstruct Bell Park Road south of Facer Street to a 6.0 metre wide paved condominium road.
   - Bell Park Road shall have a posted speed limit of 20 km/h once Bell Park Road is reconstructed.
6. The proposed development will shift the location of the Paris Driveway slightly further north at the intersection to align with Boland Avenue. It is recommended the westbound lane configuration at the Paris Street / Boland Avenue & Paris Driveway intersection include a left turn lane and through-right lane. A single ingress and egress lane at the Paris Driveway will provide the necessary capacity to service the proposed development. The Paris Driveway will provide ingress and egress access to the underground parking and surface parking.
7. The Bell Park Access will operate as full-movement access driveway. A single ingress and egress lane at the Bell Park Access will provide the necessary capacity to service the proposed development. The Bell Park Ingress will operate efficiently with a single ingress only driveway. A single ingress lane at the Bell Park Ingress will provide the necessary capacity to service the proposed development. Bell Park Access will provide ingress and egress access to the surface parking and the Bell Park Ingress will provide ingress only access to the underground parking.
8. There are no issues regarding the sight distance available for the proposed Paris Driveway and Bell Park Access.
9. The proposed parking supply for the proposed development meets the minimum parking requirement specified in the City's Zoning By-law 2010–100Z.
10. In summary the proposed development will not cause any operational issues and will not add significant delay or congestion to the local roadway network.

Synchro Analysis Output – Background Traffic Volumes

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱	↰↰	↑↱	↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	181	457	573	422	82	603	445	29	887	260
Future Volume (vph)	181	457	573	422	82	603	445	29	887	260
Lane Group Flow (vph)	197	549	623	470	89	655	484	32	964	283
Turn Type	Prot	NA	Prot	NA	pm+pt	NA	pt+ov	pm+pt	NA	pt+ov
Protected Phases	7	4	3	8	5	2	2 3	1	6	6 7
Permitted Phases					2			6		
Detector Phase	7	4	3	8	5	2	2 3	1	6	6 7
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	15.0		5.0	15.0	
Minimum Split (s)	10.0	31.2	10.0	31.2	10.0	40.1		10.0	40.1	
Total Split (s)	26.1	31.2	34.0	39.1	20.0	44.0		17.0	41.0	
Total Split (%)	20.7%	24.7%	26.9%	31.0%	15.8%	34.9%		13.5%	32.5%	
Yellow Time (s)	3.0	3.7	3.0	3.7	3.0	3.7		3.0	3.7	
All-Red Time (s)	2.0	2.5	2.0	2.5	2.0	2.4		2.0	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.2	5.0	6.2	5.0	6.1		5.0	6.1	
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	Min		None	Min	
v/c Ratio	0.52	0.78	0.78	0.41	0.38	0.41	0.46	0.11	0.73	0.38
Control Delay	52.7	49.7	47.4	30.6	25.8	30.3	7.7	21.5	40.0	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Total Delay	52.7	49.7	47.4	30.6	25.8	30.3	8.0	21.5	40.0	14.3
Queue Length 50th (m)	22.9	63.3	70.6	43.6	12.9	45.6	29.4	4.5	76.0	25.8
Queue Length 95th (m)	37.1	92.1	100.7	67.9	24.4	60.5	56.5	11.0	98.3	48.6
Internal Link Dist (m)		364.5		324.4		160.9			177.4	
Turn Bay Length (m)	57.0		85.0		70.0		6.0	24.0		6.0
Base Capacity (vph)	682	838	965	1230	308	1900	1105	371	1688	875
Starvation Cap Reductn	0	0	0	0	0	0	195	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	0.66	0.65	0.38	0.29	0.34	0.53	0.09	0.57	0.32

Intersection Summary
Cycle Length: 126.2
Actuated Cycle Length: 106
Natural Cycle: 105
Control Type: Semi Act-Uncoord

Splits and Phases: 1: Paris St & Brady St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱		↰↰	↑↱		↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	181	457	48	573	422	10	82	603	445	29	887	260
Future Volume (vph)	181	457	48	573	422	10	82	603	445	29	887	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.2		5.0	6.2		5.0	6.1	6.1	5.0	6.1	6.1
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3273	3369		3367	3461		1671	4988	1568	1717	4893	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.14	1.00	1.00	0.38	1.00	1.00
Satd. Flow (perm)	3273	3369		3367	3461		250	4988	1568	681	4893	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	497	52	623	459	11	89	655	484	32	964	283
RTOR Reduction (vph)	0	6	0	0	1	0	0	0	92	0	0	63
Lane Group Flow (vph)	197	543	0	623	469	0	89	655	392	32	964	220
Confl. Peds. (#/hr)	7		4	4		7	19		10	10		19
Heavy Vehicles (%)	7%	5%	10%	4%	4%	0%	8%	4%	3%	5%	6%	2%
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	pt+ov	pm+pt	NA	pt+ov
Protected Phases	7	4		3	8		5	2	2 3	1	6	6 7
Permitted Phases							2			6		
Actuated Green, G (s)	12.2	22.1		25.2	35.1		42.0	33.9	65.2	33.8	29.8	48.1
Effective Green, g (s)	12.2	22.1		25.2	35.1		42.0	33.9	65.2	33.8	29.8	48.1
Actuated g/C Ratio	0.11	0.21		0.23	0.33		0.39	0.32	0.61	0.31	0.28	0.45
Clearance Time (s)	5.0	6.2		5.0	6.2		5.0	6.1		5.0	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	371	692		789	1130		204	1572	951	252	1356	708
v/s Ratio Prot	0.06	c0.16		c0.19	0.14		c0.03	0.13	0.25	0.00	c0.20	0.14
v/s Ratio Perm							0.14			0.04		
v/c Ratio	0.53	0.78		0.79	0.41		0.44	0.42	0.41	0.13	0.71	0.31
Uniform Delay, d1	45.0	40.4		38.7	28.2		22.7	29.0	11.1	25.7	35.0	19.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.5	5.8		5.3	0.2		1.5	0.2	0.3	0.2	1.8	0.3
Delay (s)	46.4	46.3		43.9	28.4		24.2	29.2	11.4	26.0	36.8	19.3
Level of Service	D	D		D	C		C	C	B	C	D	B
Approach Delay (s)		46.3			37.3			21.8			32.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	107.5	Sum of lost time (s)	22.3
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✣		✣	↰	↑↱	↰	↑↱
Traffic Volume (vph)	8	0	40	2	4	1301	46	1645
Future Volume (vph)	8	0	40	2	4	1301	46	1645
Lane Group Flow (vph)	0	14	0	110	4	1390	48	1723
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	20.0	20.0	5.0	20.0
Minimum Split (s)	25.7	25.7	25.7	25.7	34.8	34.8	9.0	34.8
Total Split (s)	25.7	25.7	25.7	25.7	50.8	50.8	14.0	64.8
Total Split (%)	28.4%	28.4%	28.4%	28.4%	56.1%	56.1%	15.5%	71.6%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.7
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	1.0	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.7		5.7	5.8	5.8	4.0	5.8
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	None	Min
v/c Ratio		0.05		0.38	0.03	0.62	0.15	0.67
Control Delay		0.3		18.0	8.2	11.4	4.0	7.6
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		0.3		18.0	8.2	11.4	4.0	7.6
Queue Length 50th (m)		0.0		4.7	0.2	63.0	1.3	53.1
Queue Length 95th (m)		0.0		20.6	1.6	101.7	4.4	92.8
Internal Link Dist (m)		561.8		431.0		175.2		478.0
Turn Bay Length (m)					33.0		23.0	
Base Capacity (vph)		586		578	172	2735	437	3245
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		0.02		0.19	0.02	0.51	0.11	0.53

Intersection Summary

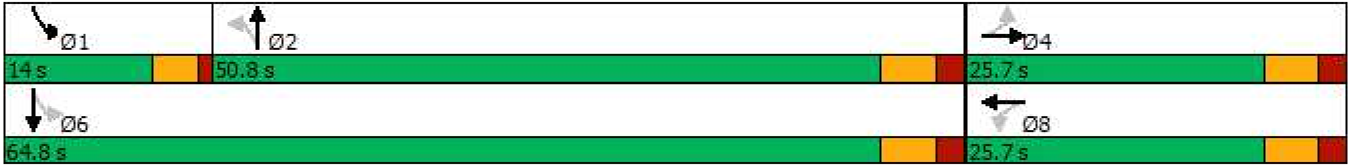
Cycle Length: 90.5

Actuated Cycle Length: 59.3

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Splits and Phases: 3: Paris St & John St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	8	0	6	40	2	63	4	1301	34	46	1645	9
Future Volume (vph)	8	0	6	40	2	63	4	1301	34	46	1645	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.92		1.00	1.00		1.00	1.00	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1726			1696		1803	3492		1770	3536	
Flt Permitted		0.84			0.87		0.12	1.00		0.12	1.00	
Satd. Flow (perm)		1496			1501		220	3492		218	3536	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	8	0	6	42	2	66	4	1355	35	48	1714	9
RTOR Reduction (vph)	0	12	0	0	58	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	2	0	0	52	0	4	1388	0	48	1723	0
Confl. Peds. (#/hr)	5		5	5		5	8		4	4		8
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	2%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.1			7.1		36.3	36.3		43.6	43.6	
Effective Green, g (s)		7.1			7.1		36.3	36.3		43.6	43.6	
Actuated g/C Ratio		0.11			0.11		0.58	0.58		0.70	0.70	
Clearance Time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		170			171		128	2037		235	2478	
v/s Ratio Prot								0.40		0.01	c0.49	
v/s Ratio Perm		0.00			c0.03		0.02			0.13		
v/c Ratio		0.01			0.30		0.03	0.68		0.20	0.70	
Uniform Delay, d1		24.4			25.3		5.5	9.0		5.2	5.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0			1.0		0.1	1.0		0.4	0.9	
Delay (s)		24.5			26.3		5.6	9.9		5.6	6.3	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		24.5			26.3			9.9			6.3	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	62.2	Sum of lost time (s)	15.5
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			↰↑↑↱			↰↑↑↱	
Traffic Volume (veh/h)	3	0	9	2	0	2	1	1479	0	0	1724	7
Future Volume (Veh/h)	3	0	9	2	0	2	1	1479	0	0	1724	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	0	10	2	0	2	1	1643	0	0	1916	8
Pedestrians		2			1							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								347			199	
pX, platoon unblocked	0.75	0.75	0.65	0.75	0.75	0.80	0.65			0.80		
vC, conflicting volume	2748	3568	964	2614	3572	822	1926			1644		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1465	2559	0	1287	2564	279	1348			1306		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	7.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.8	2.2			2.2		
p0 queue free %	96	100	99	98	100	100	100			100		
cM capacity (veh/h)	68	20	708	91	20	474	336			429		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	13	4	822	822	958	966
Volume Left	3	2	1	0	0	0
Volume Right	10	2	0	0	0	8
cSH	222	152	336	1700	429	1700
Volume to Capacity	0.06	0.03	0.00	0.48	0.00	0.57
Queue Length 95th (m)	1.5	0.6	0.1	0.0	0.0	0.0
Control Delay (s)	22.2	29.2	0.1	0.0	0.0	0.0
Lane LOS	C	D	A			
Approach Delay (s)	22.2	29.2	0.1		0.0	
Approach LOS	C	D				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↱		↑↱			↰↑
Traffic Volume (veh/h)	2	0	1466	1	1	1737
Future Volume (Veh/h)	2	0	1466	1	1	1737
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	2	0	1629	1	1	1930
Pedestrians						1
Lane Width (m)						3.6
Walking Speed (m/s)						1.2
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			226			321
pX, platoon unblocked	0.74	0.79			0.79	
vC, conflicting volume	2596	816			1630	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1157	231			1263	
tC, single (s)	6.8	6.9			6.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			3.2	
p0 queue free %	99	100			99	
cM capacity (veh/h)	141	613			174	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	2	1086	544	644	1287
Volume Left	2	0	0	1	0
Volume Right	0	0	1	0	0
cSH	141	1700	1700	174	1700
Volume to Capacity	0.01	0.64	0.32	0.01	0.76
Queue Length 95th (m)	0.3	0.0	0.0	0.1	0.0
Control Delay (s)	31.0	0.0	0.0	0.3	0.0
Lane LOS	D			A	
Approach Delay (s)	31.0	0.0		0.1	
Approach LOS	D				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

6: Bell Park Rd & Facer St

Background (2032) AM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↰	Y	
Traffic Volume (veh/h)	1	1	1	1	0	0
Future Volume (Veh/h)	1	1	1	1	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Hourly flow rate (vph)	2	2	2	2	0	0
Pedestrians	1			2	2	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			6		12	7
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			6		12	7
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1625		1009	1078

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	4	4	0
Volume Left	0	2	0
Volume Right	2	0	0
cSH	1700	1625	1700
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	3.6	0.0
Lane LOS		A	A
Approach Delay (s)	0.0	3.6	0.0
Approach LOS			A

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	14.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Configurations		✥	↰	↱	↰	↑↱	↑↱
Traffic Volume (vph)	28	0	2	0	6	1414	1747
Future Volume (vph)	28	0	2	0	6	1414	1747
Lane Group Flow (vph)	0	43	2	2	6	1489	1853
Turn Type	Perm	NA	Perm	NA	Perm	NA	NA
Protected Phases		4		8		2	6
Permitted Phases	4		8		2		
Detector Phase	4	4	8	8	2	2	6
Switch Phase							
Minimum Initial (s)	8.0	8.0	8.0	8.0	30.0	30.0	30.0
Minimum Split (s)	26.0	26.0	26.0	26.0	35.9	35.9	35.9
Total Split (s)	26.0	26.0	26.0	26.0	55.9	55.9	55.9
Total Split (%)	31.7%	31.7%	31.7%	31.7%	68.3%	68.3%	68.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.7	3.7	3.7
All-Red Time (s)	2.5	2.5	2.5	2.5	2.2	2.2	2.2
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0	6.0	5.9	5.9	5.9
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	Min	Min	Min
v/c Ratio		0.19	0.01	0.01	0.04	0.51	0.64
Control Delay		13.8	27.0	0.0	4.0	4.4	5.8
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		13.8	27.0	0.0	4.0	4.4	5.8
Queue Length 50th (m)		0.6	0.3	0.0	0.2	42.0	64.0
Queue Length 95th (m)		9.0	2.1	0.0	1.3	57.8	89.2
Internal Link Dist (m)		198.2		192.5		314.0	201.8
Turn Bay Length (m)					40.0		
Base Capacity (vph)		502	581	559	139	2927	2924
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		0.09	0.00	0.00	0.04	0.51	0.63

Intersection Summary

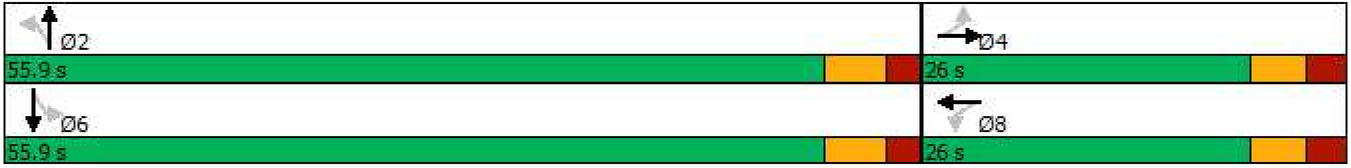
Cycle Length: 81.9

Actuated Cycle Length: 62.4

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Splits and Phases: 7: Paris St & Boland Ave/Paris Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	28	0	13	2	0	2	6	1414	1	0	1747	13
Future Volume (vph)	28	0	13	2	0	2	6	1414	1	0	1747	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		5.9	5.9			5.9	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95			0.95	
Frt		0.96		1.00	0.85		1.00	1.00			1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1757		1805	1615		1805	3505			3502	
Flt Permitted		0.80		0.93	1.00		0.09	1.00			1.00	
Satd. Flow (perm)		1448		1767	1615		167	3505			3502	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	29	0	14	2	0	2	6	1488	1	0	1839	14
RTOR Reduction (vph)	0	36	0	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	7	0	2	0	0	6	1489	0	0	1853	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		4.3		4.3	4.3		48.8	48.8			48.8	
Effective Green, g (s)		4.3		4.3	4.3		48.8	48.8			48.8	
Actuated g/C Ratio		0.07		0.07	0.07		0.75	0.75			0.75	
Clearance Time (s)		6.0		6.0	6.0		5.9	5.9			5.9	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		95		116	106		125	2631			2629	
v/s Ratio Prot					0.00			0.42			c0.53	
v/s Ratio Perm		c0.00		0.00			0.04					
v/c Ratio		0.07		0.02	0.00		0.05	0.57			0.70	
Uniform Delay, d1		28.5		28.4	28.3		2.1	3.5			4.3	
Progression Factor		1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		0.3		0.1	0.0		0.2	0.3			0.9	
Delay (s)		28.8		28.4	28.3		2.3	3.8			5.2	
Level of Service		C		C	C		A	A			A	
Approach Delay (s)		28.8			28.4			3.8			5.2	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	11.9
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱	↰↰	↑↱	↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	195	619	633	515	106	1148	817	28	896	273
Future Volume (vph)	195	619	633	515	106	1148	817	28	896	273
Lane Group Flow (vph)	195	684	633	530	106	1148	817	28	896	273
Turn Type	Prot	NA	Prot	NA	pm+pt	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	7	4	3	8	5	2	2 3		6	6 7
Permitted Phases					2			6		
Detector Phase	7	4	3	8	5	2	2 3	6	6	6 7
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	15.0		15.0	15.0	
Minimum Split (s)	10.0	31.2	10.0	31.2	10.0	40.1		40.1	40.1	
Total Split (s)	45.0	40.3	37.0	32.3	20.0	60.0		40.0	40.0	
Total Split (%)	32.8%	29.4%	26.9%	23.5%	14.6%	43.7%		29.1%	29.1%	
Yellow Time (s)	3.0	3.7	3.0	3.7	3.0	3.7		3.7	3.7	
All-Red Time (s)	2.0	2.5	2.0	2.5	2.0	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	
Total Lost Time (s)	5.0	6.2	5.0	6.2	5.0	6.1		6.1	6.1	
Lead/Lag	Lead	Lag	Lead	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	None	None	None	None	None	Min		Min	Min	
v/c Ratio	0.57	0.82	0.79	0.43	0.45	0.58	0.75	0.26	0.69	0.38
Control Delay	60.9	53.4	53.5	31.8	31.5	31.4	18.4	46.9	44.7	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0
Total Delay	60.9	53.4	53.5	31.8	31.5	31.4	22.5	46.9	44.7	18.7
Queue Length 50th (m)	27.3	95.1	85.8	57.5	18.5	90.2	126.1	6.0	79.8	33.5
Queue Length 95th (m)	40.2	118.9	110.9	77.8	32.7	108.9	192.1	16.8	102.3	58.2
Internal Link Dist (m)		364.5		324.4		160.9			177.4	
Turn Bay Length (m)	57.0		85.0		70.0		6.0	24.0		6.0
Base Capacity (vph)	1046	1033	945	1242	296	2333	1152	127	1524	1061
Starvation Cap Reductn	0	0	0	0	0	0	251	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	0.19	0.66	0.67	0.43	0.36	0.49	0.91	0.22	0.59	0.26

Intersection Summary

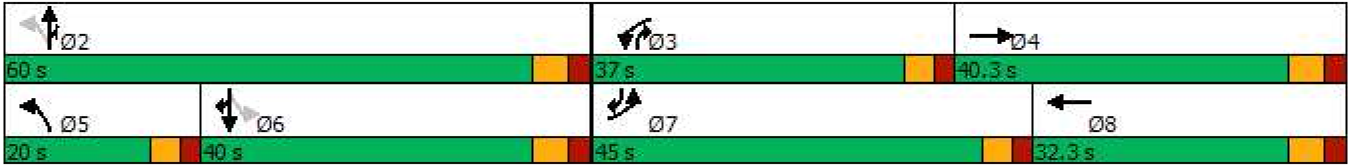
Cycle Length: 137.3

Actuated Cycle Length: 121.4

Natural Cycle: 105

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Paris St & Brady St



700 Paris St
1: Paris St & Brady St

HCM Signalized Intersection Capacity Analysis
Background (2032) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱		↰↰	↑↱		↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	195	619	65	633	515	15	106	1148	817	28	896	273
Future Volume (vph)	195	619	65	633	515	15	106	1148	817	28	896	273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.2		5.0	6.2		5.0	6.1	6.1	6.1	6.1	6.1
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3072	3539		3467	3491		1751	5085	1615	1775	5085	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.15	1.00	1.00	0.23	1.00	1.00
Satd. Flow (perm)	3072	3539		3467	3491		270	5085	1615	427	5085	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	195	619	65	633	515	15	106	1148	817	28	896	273
RTOR Reduction (vph)	0	6	0	0	1	0	0	0	21	0	0	52
Lane Group Flow (vph)	195	678	0	633	529	0	106	1148	796	28	896	221
Confl. Peds. (#/hr)	9		6	6		9	25		33	33		25
Heavy Vehicles (%)	14%	0%	4%	1%	3%	0%	3%	2%	0%	1%	2%	0%
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	7	4		3	8		5	2	2 3		6	6 7
Permitted Phases							2			6		
Actuated Green, G (s)	13.5	28.6		28.1	43.2		46.9	46.9	81.1	31.3	31.3	50.9
Effective Green, g (s)	13.5	28.6		28.1	43.2		46.9	46.9	81.1	31.3	31.3	50.9
Actuated g/C Ratio	0.11	0.24		0.23	0.36		0.39	0.39	0.67	0.26	0.26	0.42
Clearance Time (s)	5.0	6.2		5.0	6.2		5.0	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	343	837		805	1247		234	1972	1083	110	1316	679
v/s Ratio Prot	0.06	c0.19		c0.18	0.15		0.04	0.23	c0.49		0.18	0.14
v/s Ratio Perm							0.14			0.07		
v/c Ratio	0.57	0.81		0.79	0.42		0.45	0.58	0.73	0.25	0.68	0.33
Uniform Delay, d1	50.9	43.6		43.6	29.4		25.9	29.3	12.9	35.5	40.3	23.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	5.8		5.1	0.2		1.4	0.4	2.6	1.2	1.5	0.3
Delay (s)	53.1	49.4		48.7	29.7		27.3	29.7	15.5	36.8	41.8	23.8
Level of Service	D	D		D	C		C	C	B	D	D	C
Approach Delay (s)		50.2			40.0			24.0			37.5	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	34.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.9	Sum of lost time (s)	22.3
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		

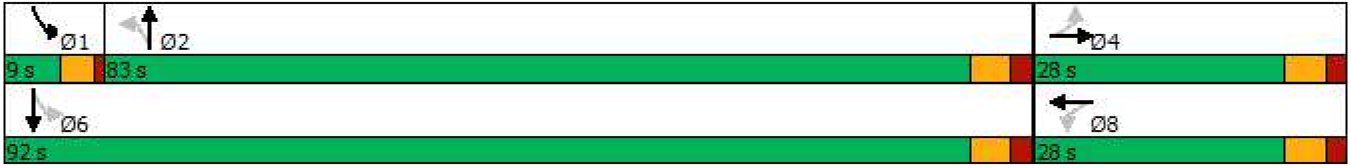
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✥		✥	↰	↑↱	↰	↑↱
Traffic Volume (vph)	10	3	63	0	8	2188	80	1777
Future Volume (vph)	10	3	63	0	8	2188	80	1777
Lane Group Flow (vph)	0	15	0	174	8	2301	82	1837
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	20.0	20.0	5.0	20.0
Minimum Split (s)	25.7	25.7	25.7	25.7	34.8	34.8	9.0	34.8
Total Split (s)	28.0	28.0	28.0	28.0	83.0	83.0	9.0	92.0
Total Split (%)	23.3%	23.3%	23.3%	23.3%	69.2%	69.2%	7.5%	76.7%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.7
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	1.0	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.7		5.7	5.8	5.8	4.0	5.8
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	None	Min
v/c Ratio		0.08		0.72	0.06	0.93	0.57	0.68
Control Delay		38.7		46.6	8.8	24.2	28.5	8.6
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		38.7		46.6	8.8	24.2	28.5	8.6
Queue Length 50th (m)		2.7		25.0	0.6	222.5	3.4	88.5
Queue Length 95th (m)		9.0		49.4	2.9	#360.3	#25.2	149.8
Internal Link Dist (m)		561.8		431.0		175.2		478.0
Turn Bay Length (m)					33.0		23.0	
Base Capacity (vph)		279		341	129	2477	145	2773
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		0.05		0.51	0.06	0.93	0.57	0.66

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 110.6
Natural Cycle: 110
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Paris St & John St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	10	3	2	63	0	106	8	2188	44	80	1777	5
Future Volume (vph)	10	3	2	63	0	106	8	2188	44	80	1777	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.92		1.00	1.00		1.00	1.00	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1799			1627		1802	3528		1736	3537	
Flt Permitted		0.74			0.87		0.10	1.00		0.05	1.00	
Satd. Flow (perm)		1373			1443		184	3528		90	3537	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	10	3	2	65	0	109	8	2256	45	82	1832	5
RTOR Reduction (vph)	0	2	0	0	54	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	13	0	0	120	0	8	2300	0	82	1837	0
Confl. Peds. (#/hr)	3		4	4		3	14		2	2		14
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%	0%	2%	0%	4%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		14.4			14.4		77.6	77.6		85.5	85.5	
Effective Green, g (s)		14.4			14.4		77.6	77.6		85.5	85.5	
Actuated g/C Ratio		0.13			0.13		0.70	0.70		0.77	0.77	
Clearance Time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		177			186		128	2457		126	2714	
v/s Ratio Prot								c0.65		0.02	c0.52	
v/s Ratio Perm		0.01			c0.08		0.04			0.48		
v/c Ratio		0.07			0.65		0.06	0.94		0.65	0.68	
Uniform Delay, d1		42.6			46.1		5.4	14.7		27.5	6.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			7.5		0.2	7.6		11.4	0.7	
Delay (s)		42.8			53.5		5.6	22.3		39.0	6.9	
Level of Service		D			D		A	C		D	A	
Approach Delay (s)		42.8			53.5			22.2			8.3	
Approach LOS		D			D			C			A	

Intersection Summary			
HCM 2000 Control Delay	17.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	111.4	Sum of lost time (s)	15.5
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			↰↑↱			↰↑↱	
Traffic Volume (veh/h)	9	0	7	3	0	2	1	2216	1	1	1924	13
Future Volume (Veh/h)	9	0	7	3	0	2	1	2216	1	1	1924	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	9	0	7	3	0	2	1	2308	1	1	2004	14
Pedestrians		3			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								347			199	
pX, platoon unblocked	0.41	0.41	0.69	0.41	0.41	0.26	0.69			0.26		
vC, conflicting volume	3174	4329	1012	3324	4336	1156	2021			2311		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	75	2880	134	438	2895	0	1589			336		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	99	99	100	99	100			100		
cM capacity (veh/h)	369	7	620	204	7	282	290			319		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	16	5	1155	1155	1003	1016
Volume Left	9	3	1	0	1	0
Volume Right	7	2	0	1	0	14
cSH	449	230	290	1700	319	1700
Volume to Capacity	0.04	0.02	0.00	0.68	0.00	0.60
Queue Length 95th (m)	0.9	0.5	0.1	0.0	0.1	0.0
Control Delay (s)	13.3	21.0	0.2	0.0	0.1	0.0
Lane LOS	B	C	A		A	
Approach Delay (s)	13.3	21.0	0.1		0.1	
Approach LOS	B	C				

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑↱			↰↑
Traffic Volume (veh/h)	1	1	2207	6	0	1930
Future Volume (Veh/h)	1	1	2207	6	0	1930
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	1	2323	6	0	2032
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			225			321
pX, platoon unblocked	0.40	0.24			0.24	
vC, conflicting volume	3343	1166			2330	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	177	0			194	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	323	260			332	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	2	1549	780	677	1355
Volume Left	1	0	0	0	0
Volume Right	1	0	6	0	0
cSH	288	1700	1700	332	1700
Volume to Capacity	0.01	0.91	0.46	0.00	0.80
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0
Control Delay (s)	17.6	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	17.6	0.0		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

6: Bell Park Rd & Facer St

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↰	Y	
Traffic Volume (veh/h)	7	0	0	2	0	0
Future Volume (Veh/h)	7	0	0	2	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67
Hourly flow rate (vph)	10	0	0	3	0	0
Pedestrians	1			2		
Lane Width (m)	3.6			3.6		
Walking Speed (m/s)	1.2			1.2		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			10		14	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			10		14	12
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1009	1073

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	10	3	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1623	1700
Volume to Capacity	0.01	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

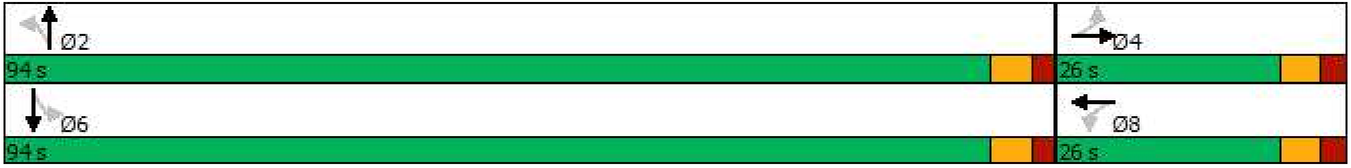
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	14.0%	ICU Level of Service	A
Analysis Period (min)	15		

7: Paris St & Boland Ave/Paris Driveway

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✥	↰	↱	↰	↑↱	↰	↑↱
Traffic Volume (vph)	27	0	6	2	24	2178	4	1865
Future Volume (vph)	27	0	6	2	24	2178	4	1865
Lane Group Flow (vph)	0	46	7	13	26	2375	4	2061
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	30.0	30.0	30.0	30.0
Minimum Split (s)	26.0	26.0	26.0	26.0	35.9	35.9	35.9	35.9
Total Split (s)	26.0	26.0	26.0	26.0	94.0	94.0	94.0	94.0
Total Split (%)	21.7%	21.7%	21.7%	21.7%	78.3%	78.3%	78.3%	78.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.7	3.7	3.7	3.7
All-Red Time (s)	2.5	2.5	2.5	2.5	2.2	2.2	2.2	2.2
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0	6.0	5.9	5.9	5.9	5.9
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Min	Min	Min	Min
v/c Ratio		0.29	0.05	0.07	0.24	0.81	0.05	0.70
Control Delay		30.0	44.8	25.9	8.9	8.8	3.5	6.2
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		30.0	44.8	25.9	8.9	8.8	3.5	6.2
Queue Length 50th (m)		3.4	1.2	0.3	1.0	117.6	0.1	80.5
Queue Length 95th (m)		16.1	6.2	6.6	5.2	179.8	1.0	120.1
Internal Link Dist (m)		192.5		282.1		313.9		201.2
Turn Bay Length (m)					40.0		100.0	
Base Capacity (vph)		340	330	400	117	3223	94	3219
Starvation Cap Reductn		0	0	0	0	21	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0
Reduced v/c Ratio		0.14	0.02	0.03	0.22	0.74	0.04	0.64

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 90.1
Natural Cycle: 90
Control Type: Semi Act-Uncoord

Splits and Phases: 7: Paris St & Boland Ave/Paris Driveway



700 Paris St
7: Paris St & Boland Ave/Paris Driveway

HCM Signalized Intersection Capacity Analysis
Background (2032) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑↱		↰	↑↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (vph)	27	0	16	6	2	10	24	2178	7	4	1865	31
Future Volume (vph)	27	0	16	6	2	10	24	2178	7	4	1865	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		5.9	5.9		5.9	5.9	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.95		1.00	0.87		1.00	1.00		1.00	1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1623		1805	1639		1805	3537		1805	3530	
Flt Permitted		0.80		0.73	1.00		0.07	1.00		0.05	1.00	
Satd. Flow (perm)		1341		1381	1639		130	3537		104	3530	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	0	17	7	2	11	26	2367	8	4	2027	34
RTOR Reduction (vph)	0	24	0	0	10	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	22	0	7	3	0	26	2375	0	4	2060	0
Confl. Peds. (#/hr)	2					2	4		2	2		4
Heavy Vehicles (%)	4%	0%	14%	0%	0%	0%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		6.4		6.4	6.4		73.0	73.0		73.0	73.0	
Effective Green, g (s)		6.4		6.4	6.4		73.0	73.0		73.0	73.0	
Actuated g/C Ratio		0.07		0.07	0.07		0.80	0.80		0.80	0.80	
Clearance Time (s)		6.0		6.0	6.0		5.9	5.9		5.9	5.9	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		94		96	114		103	2828		83	2822	
v/s Ratio Prot					0.00			c0.67			0.58	
v/s Ratio Perm		c0.02		0.01			0.20			0.04		
v/c Ratio		0.23		0.07	0.02		0.25	0.84		0.05	0.73	
Uniform Delay, d1		40.1		39.7	39.5		2.3	5.6		1.9	4.4	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.3		0.3	0.1		1.3	2.4		0.2	1.0	
Delay (s)		41.4		40.0	39.6		3.6	7.9		2.1	5.4	
Level of Service		D		D	D		A	A		A	A	
Approach Delay (s)		41.4			39.8			7.9			5.4	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	91.3	Sum of lost time (s)	11.9
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

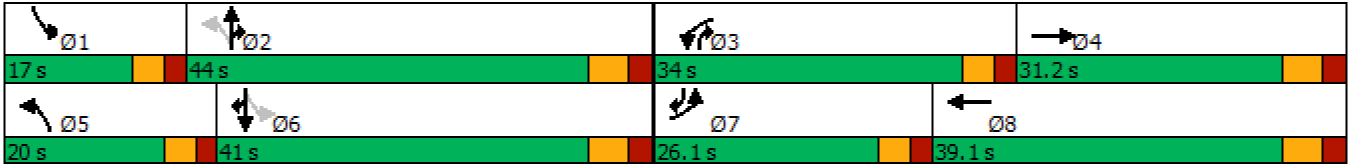
Synchro Analysis Output – Total Traffic Volumes

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱	↰↰	↑↱	↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	181	457	586	422	99	621	465	29	904	260
Future Volume (vph)	181	457	586	422	99	621	465	29	904	260
Lane Group Flow (vph)	197	559	637	470	108	675	505	32	983	283
Turn Type	Prot	NA	Prot	NA	pm+pt	NA	pt+ov	pm+pt	NA	pt+ov
Protected Phases	7	4	3	8	5	2	2 3	1	6	6 7
Permitted Phases					2			6		
Detector Phase	7	4	3	8	5	2	2 3	1	6	6 7
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	15.0		5.0	15.0	
Minimum Split (s)	10.0	31.2	10.0	31.2	10.0	40.1		10.0	40.1	
Total Split (s)	26.1	31.2	34.0	39.1	20.0	44.0		17.0	41.0	
Total Split (%)	20.7%	24.7%	26.9%	31.0%	15.8%	34.9%		13.5%	32.5%	
Yellow Time (s)	3.0	3.7	3.0	3.7	3.0	3.7		3.0	3.7	
All-Red Time (s)	2.0	2.5	2.0	2.5	2.0	2.4		2.0	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.2	5.0	6.2	5.0	6.1		5.0	6.1	
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	Min		None	Min	
v/c Ratio	0.55	0.82	0.81	0.42	0.45	0.39	0.47	0.11	0.76	0.39
Control Delay	55.2	54.2	51.1	32.0	27.3	30.0	7.9	21.6	42.9	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0
Total Delay	55.2	54.2	51.1	32.0	27.3	30.0	8.2	21.6	42.9	15.0
Queue Length 50th (m)	23.9	67.2	75.0	44.8	16.5	48.9	33.2	4.7	81.5	27.5
Queue Length 95th (m)	37.5	#99.3	104.3	68.8	28.6	62.3	61.0	11.0	101.8	49.3
Internal Link Dist (m)		364.5		324.4		160.9			177.4	
Turn Bay Length (m)	57.0		85.0		70.0		6.0	24.0		6.0
Base Capacity (vph)	631	774	892	1167	294	1804	1099	378	1560	832
Starvation Cap Reductn	0	0	0	0	0	0	210	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	0.72	0.71	0.40	0.37	0.37	0.57	0.08	0.63	0.34

Intersection Summary

Cycle Length: 126.2
Actuated Cycle Length: 111.6
Natural Cycle: 105
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Paris St & Brady St



HCM Signalized Intersection Capacity Analysis

Total (2032) AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱		↰↰	↑↱		↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	181	457	57	586	422	10	99	621	465	29	904	260
Future Volume (vph)	181	457	57	586	422	10	99	621	465	29	904	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.2		5.0	6.2		5.0	6.1	6.1	5.0	6.1	6.1
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3273	3357		3367	3461		1671	4988	1568	1717	4893	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.13	1.00	1.00	0.38	1.00	1.00
Satd. Flow (perm)	3273	3357		3367	3461		233	4988	1568	693	4893	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	497	62	637	459	11	108	675	505	32	983	283
RTOR Reduction (vph)	0	8	0	0	1	0	0	0	89	0	0	64
Lane Group Flow (vph)	197	551	0	637	469	0	108	675	416	32	983	219
Confl. Peds. (#/hr)	7		4	4		7	19		10	10		19
Heavy Vehicles (%)	7%	5%	10%	4%	4%	0%	8%	4%	3%	5%	6%	2%
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	pt+ov	pm+pt	NA	pt+ov
Protected Phases	7	4		3	8		5	2	2 3	1	6	6 7
Permitted Phases							2			6		
Actuated Green, G (s)	12.2	22.4		26.0	36.2		47.9	38.8	70.9	35.9	31.8	50.1
Effective Green, g (s)	12.2	22.4		26.0	36.2		47.9	38.8	70.9	35.9	31.8	50.1
Actuated g/C Ratio	0.11	0.20		0.23	0.32		0.42	0.34	0.62	0.32	0.28	0.44
Clearance Time (s)	5.0	6.2		5.0	6.2		5.0	6.1		5.0	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	351	661		770	1102		238	1703	978	255	1369	698
v/s Ratio Prot	0.06	c0.16		c0.19	0.14		c0.04	0.14	0.27	0.00	c0.20	0.14
v/s Ratio Perm							0.15			0.03		
v/c Ratio	0.56	0.83		0.83	0.43		0.45	0.40	0.43	0.13	0.72	0.31
Uniform Delay, d1	48.2	43.8		41.7	30.5		22.4	28.5	10.9	27.1	36.9	20.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	8.9		7.3	0.3		1.4	0.2	0.3	0.2	1.8	0.3
Delay (s)	50.2	52.7		49.0	30.8		23.8	28.6	11.2	27.3	38.7	20.9
Level of Service	D	D		D	C		C	C	B	C	D	C
Approach Delay (s)		52.0			41.2			21.4			34.5	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	35.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	113.6	Sum of lost time (s)	22.3
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✥		✥	↰	↑↱	↰	↑↱
Traffic Volume (vph)	8	0	40	2	4	1367	46	1692
Future Volume (vph)	8	0	40	2	4	1367	46	1692
Lane Group Flow (vph)	0	14	0	110	4	1459	48	1772
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	20.0	20.0	5.0	20.0
Minimum Split (s)	25.7	25.7	25.7	25.7	34.8	34.8	9.0	34.8
Total Split (s)	25.7	25.7	25.7	25.7	50.8	50.8	14.0	64.8
Total Split (%)	28.4%	28.4%	28.4%	28.4%	56.1%	56.1%	15.5%	71.6%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.7
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	1.0	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.7		5.7	5.8	5.8	4.0	5.8
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	None	Min
v/c Ratio		0.05		0.38	0.03	0.64	0.16	0.68
Control Delay		0.3		18.4	8.2	11.6	4.0	7.7
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		0.3		18.4	8.2	11.6	4.0	7.7
Queue Length 50th (m)		0.0		4.9	0.2	68.5	1.3	56.2
Queue Length 95th (m)		0.0		20.6	1.7	110.6	4.4	98.5
Internal Link Dist (m)		561.8		431.0		175.2		478.0
Turn Bay Length (m)					33.0		23.0	
Base Capacity (vph)		574		566	157	2673	421	3198
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		0.02		0.19	0.03	0.55	0.11	0.55

Intersection Summary

Cycle Length: 90.5
Actuated Cycle Length: 60.6
Natural Cycle: 75
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Paris St & John St

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	8	0	6	40	2	63	4	1367	34	46	1692	9
Future Volume (vph)	8	0	6	40	2	63	4	1367	34	46	1692	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.92		1.00	1.00		1.00	1.00	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1726			1696		1803	3492		1770	3536	
Flt Permitted		0.84			0.87		0.11	1.00		0.11	1.00	
Satd. Flow (perm)		1493			1501		204	3492		197	3536	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	8	0	6	42	2	66	4	1424	35	48	1762	9
RTOR Reduction (vph)	0	12	0	0	59	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	2	0	0	51	0	4	1457	0	48	1772	0
Confl. Peds. (#/hr)	5		5	5		5	8		4	4		8
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	2%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.0			7.0		37.8	37.8		45.1	45.1	
Effective Green, g (s)		7.0			7.0		37.8	37.8		45.1	45.1	
Actuated g/C Ratio		0.11			0.11		0.59	0.59		0.71	0.71	
Clearance Time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		164			165		121	2075		221	2507	
v/s Ratio Prot								0.42		0.01	c0.50	
v/s Ratio Perm		0.00			c0.03		0.02			0.14		
v/c Ratio		0.01			0.31		0.03	0.70		0.22	0.71	
Uniform Delay, d1		25.2			26.1		5.3	9.0		5.5	5.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0			1.1		0.1	1.1		0.5	0.9	
Delay (s)		25.2			27.2		5.4	10.1		6.0	6.3	
Level of Service		C			C		A	B		A	A	
Approach Delay (s)		25.2			27.2			10.1			6.3	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	63.6	Sum of lost time (s)	15.5
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

700 Paris St
HCM Unsignalized Intersection Capacity Analysis
4: Paris St & McNaughton St
Total (2032) AM Peak Hour

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			↰↑↱			↰↑↱	
Traffic Volume (veh/h)	3	0	9	4	0	2	1	1545	0	1	1770	7
Future Volume (Veh/h)	3	0	9	4	0	2	1	1545	0	1	1770	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	0	10	4	0	2	1	1717	0	1	1967	8
Pedestrians		2			1							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								347			199	
pX, platoon unblocked	0.80	0.80	0.63	0.80	0.80	0.67	0.63			0.67		
vC, conflicting volume	2838	3695	990	2716	3699	860	1977			1718		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	924	1997	0	771	2002	0	1383			1079		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	7.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.8	2.2			2.2		
p0 queue free %	98	100	99	98	100	100	100			100		
cM capacity (veh/h)	180	48	689	229	48	632	317			436		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	13	6	860	858	984	992
Volume Left	3	4	1	0	1	0
Volume Right	10	2	0	0	0	8
cSH	417	291	317	1700	436	1700
Volume to Capacity	0.03	0.02	0.00	0.51	0.00	0.58
Queue Length 95th (m)	0.8	0.5	0.1	0.0	0.1	0.0
Control Delay (s)	13.9	17.6	0.1	0.0	0.1	0.0
Lane LOS	B	C	A		A	
Approach Delay (s)	13.9	17.6	0.1		0.0	
Approach LOS	B	C				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↱			↑↑
Traffic Volume (veh/h)	0	20	1512	1	0	1784
Future Volume (Veh/h)	0	20	1512	1	0	1784
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	22	1680	1	0	1982
Pedestrians						1
Lane Width (m)						3.6
Walking Speed (m/s)						1.2
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			226			321
pX, platoon unblocked	0.77	0.67			0.67	
vC, conflicting volume	2672	842			1681	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	664	0			1041	
tC, single (s)	6.8	6.9			6.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			3.2	
p0 queue free %	100	97			100	
cM capacity (veh/h)	307	734			199	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	22	1120	561	991	991
Volume Left	0	0	0	0	0
Volume Right	22	0	1	0	0
cSH	734	1700	1700	1700	1700
Volume to Capacity	0.03	0.66	0.33	0.58	0.58
Queue Length 95th (m)	0.7	0.0	0.0	0.0	0.0
Control Delay (s)	10.1	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	10.1	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	59.6%	ICU Level of Service	B
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↳			↰	⋎	
Traffic Volume (veh/h)	1	1	1	1	20	0
Future Volume (Veh/h)	1	1	1	1	20	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Hourly flow rate (vph)	2	2	2	2	40	0
Pedestrians	1			2	2	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			6		12	7
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			6		12	7
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		96	100
cM capacity (veh/h)			1625		1009	1078

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	4	4	40
Volume Left	0	2	40
Volume Right	2	0	0
cSH	1700	1625	1009
Volume to Capacity	0.00	0.00	0.04
Queue Length 95th (m)	0.0	0.0	1.0
Control Delay (s)	0.0	3.6	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	3.6	8.7
Approach LOS			A

Intersection Summary			
Average Delay	7.6		
Intersection Capacity Utilization	14.6%	ICU Level of Service	A
Analysis Period (min)	15		

7: Paris St & Boland Ave/Paris Driveway

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✥	↰	↱	↰	↑↱	↰	↑↱
Traffic Volume (vph)	28	0	60	0	6	1414	47	1747
Future Volume (vph)	28	0	60	0	6	1414	47	1747
Lane Group Flow (vph)	0	43	63	51	6	1522	49	1853
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	30.0	30.0	5.0	30.0
Minimum Split (s)	26.0	26.0	26.0	26.0	35.9	35.9	9.0	35.9
Total Split (s)	26.0	26.0	26.0	26.0	55.0	55.0	9.0	64.0
Total Split (%)	28.9%	28.9%	28.9%	28.9%	61.1%	61.1%	10.0%	71.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.7	3.7	3.0	3.7
All-Red Time (s)	2.5	2.5	2.5	2.5	2.2	2.2	1.0	2.2
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0	6.0	5.9	5.9	4.0	5.9
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	None	Min
v/c Ratio		0.16	0.31	0.15	0.05	0.65	0.18	0.71
Control Delay		3.1	32.7	0.9	8.5	11.4	4.6	8.6
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		3.1	32.7	0.9	8.5	11.4	4.6	8.6
Queue Length 50th (m)		0.0	7.4	0.0	0.3	74.2	1.4	67.2
Queue Length 95th (m)		2.8	21.1	0.0	2.2	113.6	4.5	113.3
Internal Link Dist (m)		198.2		192.5		314.0		201.8
Turn Bay Length (m)					40.0		100.0	
Base Capacity (vph)		501	442	600	142	2742	269	3077
Starvation Cap Reductn		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0
Reduced v/c Ratio		0.09	0.14	0.09	0.04	0.56	0.18	0.60

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 64.8

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Splits and Phases: 7: Paris St & Boland Ave/Paris Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	28	0	13	60	0	48	6	1414	32	47	1747	13
Future Volume (vph)	28	0	13	60	0	48	6	1414	32	47	1747	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		5.9	5.9		4.0	5.9	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt		0.96		1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1757		1805	1615		1805	3495		1805	3502	
Flt Permitted		0.77		0.73	1.00		0.10	1.00		0.10	1.00	
Satd. Flow (perm)		1392		1385	1615		182	3495		187	3502	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	29	0	14	63	0	51	6	1488	34	49	1839	14
RTOR Reduction (vph)	0	38	0	0	45	0	0	2	0	0	1	0
Lane Group Flow (vph)	0	5	0	63	6	0	6	1520	0	49	1852	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.6		7.6	7.6		41.7	41.7		48.4	48.4	
Effective Green, g (s)		7.6		7.6	7.6		41.7	41.7		48.4	48.4	
Actuated g/C Ratio		0.11		0.11	0.11		0.61	0.61		0.71	0.71	
Clearance Time (s)		6.0		6.0	6.0		5.9	5.9		4.0	5.9	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		155		155	180		111	2146		197	2496	
v/s Ratio Prot					0.00			0.43		0.01	c0.53	
v/s Ratio Perm		0.00		c0.05			0.03			0.17		
v/c Ratio		0.03		0.41	0.03		0.05	0.71		0.25	0.74	
Uniform Delay, d1		26.9		28.1	26.9		5.2	8.9		6.0	5.9	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1		1.7	0.1		0.2	1.1		0.7	1.2	
Delay (s)		27.0		29.8	26.9		5.4	10.0		6.7	7.2	
Level of Service		C		C	C		A	B		A	A	
Approach Delay (s)		27.0			28.5			10.0			7.2	
Approach LOS		C			C			B			A	

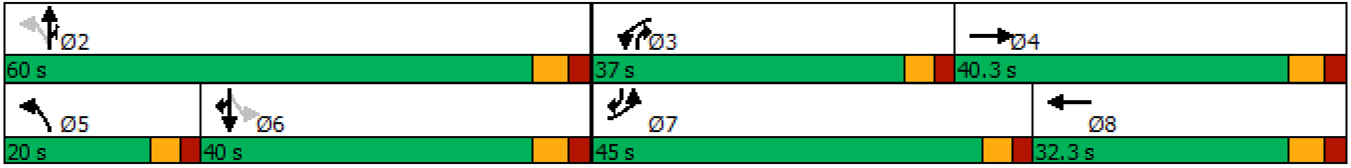
Intersection Summary			
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	67.9	Sum of lost time (s)	15.9
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱	↰↰	↑↱	↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	195	619	652	515	116	1163	833	28	916	273
Future Volume (vph)	195	619	652	515	116	1163	833	28	916	273
Lane Group Flow (vph)	195	698	652	530	116	1163	833	28	916	273
Turn Type	Prot	NA	Prot	NA	pm+pt	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	7	4	3	8	5	2	2 3		6	6 7
Permitted Phases					2			6		
Detector Phase	7	4	3	8	5	2	2 3	6	6	6 7
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	15.0		15.0	15.0	
Minimum Split (s)	10.0	31.2	10.0	31.2	10.0	40.1		40.1	40.1	
Total Split (s)	45.0	40.3	37.0	32.3	20.0	60.0		40.0	40.0	
Total Split (%)	32.8%	29.4%	26.9%	23.5%	14.6%	43.7%		29.1%	29.1%	
Yellow Time (s)	3.0	3.7	3.0	3.7	3.0	3.7		3.7	3.7	
All-Red Time (s)	2.0	2.5	2.0	2.5	2.0	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	
Total Lost Time (s)	5.0	6.2	5.0	6.2	5.0	6.1		6.1	6.1	
Lead/Lag	Lead	Lag	Lead	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	None	None	None	None	None	Min		Min	Min	
v/c Ratio	0.58	0.83	0.80	0.42	0.50	0.59	0.76	0.27	0.71	0.39
Control Delay	61.6	54.6	54.6	31.8	33.1	32.0	19.2	48.0	46.1	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0	0.0	0.0
Total Delay	61.6	54.6	54.6	31.8	33.1	32.0	24.5	48.0	46.1	19.3
Queue Length 50th (m)	27.5	97.4	89.5	57.6	20.6	92.6	134.2	6.1	83.4	34.6
Queue Length 95th (m)	40.2	121.6	114.4	77.8	35.3	110.6	200.4	17.0	105.4	59.1
Internal Link Dist (m)		364.5		324.4		160.9			177.4	
Turn Bay Length (m)	57.0		85.0		70.0		6.0	24.0		6.0
Base Capacity (vph)	1024	1009	925	1259	286	2286	1140	121	1481	1042
Starvation Cap Reductn	0	0	0	0	0	0	244	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	0.19	0.69	0.70	0.42	0.41	0.51	0.93	0.23	0.62	0.26

Intersection Summary

Cycle Length: 137.3
Actuated Cycle Length: 123.2
Natural Cycle: 105
Control Type: Semi Act-Uncoord

Splits and Phases: 1: Paris St & Brady St



	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱		↰↰	↑↱		↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (vph)	195	619	79	652	515	15	116	1163	833	28	916	273
Future Volume (vph)	195	619	79	652	515	15	116	1163	833	28	916	273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.2		5.0	6.2		5.0	6.1	6.1	6.1	6.1	6.1
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3072	3526		3467	3491		1752	5085	1615	1775	5085	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.14	1.00	1.00	0.22	1.00	1.00
Satd. Flow (perm)	3072	3526		3467	3491		251	5085	1615	417	5085	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	195	619	79	652	515	15	116	1163	833	28	916	273
RTOR Reduction (vph)	0	8	0	0	1	0	0	0	21	0	0	51
Lane Group Flow (vph)	195	690	0	652	529	0	116	1163	812	28	916	222
Confl. Peds. (#/hr)	9		6	6		9	25		33	33		25
Heavy Vehicles (%)	14%	0%	4%	1%	3%	0%	3%	2%	0%	1%	2%	0%
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	pt+ov	Perm	NA	pt+ov
Protected Phases	7	4		3	8		5	2	2 3		6	6 7
Permitted Phases							2			6		
Actuated Green, G (s)	13.5	29.1		28.8	44.4		47.5	47.5	82.4	31.4	31.4	51.0
Effective Green, g (s)	13.5	29.1		28.8	44.4		47.5	47.5	82.4	31.4	31.4	51.0
Actuated g/C Ratio	0.11	0.24		0.23	0.36		0.39	0.39	0.67	0.26	0.26	0.42
Clearance Time (s)	5.0	6.2		5.0	6.2		5.0	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	337	836		813	1263		232	1968	1084	106	1301	671
v/s Ratio Prot	0.06	c0.20		c0.19	0.15		0.05	0.23	c0.50		0.18	0.14
v/s Ratio Perm							0.15			0.07		
v/c Ratio	0.58	0.83		0.80	0.42		0.50	0.59	0.75	0.26	0.70	0.33
Uniform Delay, d1	51.9	44.4		44.3	29.4		26.7	29.9	13.3	36.4	41.4	24.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	6.7		5.7	0.2		1.7	0.5	2.9	1.3	1.8	0.3
Delay (s)	54.3	51.1		50.0	29.7		28.4	30.4	16.2	37.8	43.2	24.6
Level of Service	D	D		D	C		C	C	B	D	D	C
Approach Delay (s)		51.8			40.9			24.7			38.9	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	35.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	122.7	Sum of lost time (s)	22.3
Intersection Capacity Utilization	104.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

3: Paris St & John St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✥		✥	↰	↑↱	↰	↑↱
Traffic Volume (vph)	10	3	63	0	8	2238	80	1843
Future Volume (vph)	10	3	63	0	8	2238	80	1843
Lane Group Flow (vph)	0	15	0	174	8	2352	82	1905
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	20.0	20.0	5.0	20.0
Minimum Split (s)	25.7	25.7	25.7	25.7	34.8	34.8	9.0	34.8
Total Split (s)	28.0	28.0	28.0	28.0	83.0	83.0	9.0	92.0
Total Split (%)	23.3%	23.3%	23.3%	23.3%	69.2%	69.2%	7.5%	76.7%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.7
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	1.0	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.7		5.7	5.8	5.8	4.0	5.8
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	None	Min
v/c Ratio		0.08		0.72	0.07	0.95	0.57	0.70
Control Delay		38.7		46.6	9.1	26.7	28.5	9.1
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		38.7		46.6	9.1	26.7	28.5	9.1
Queue Length 50th (m)		2.7		25.0	0.6	238.0	3.4	95.6
Queue Length 95th (m)		9.0		49.4	3.0	#374.1	#25.2	161.6
Internal Link Dist (m)		561.8		431.0		175.2		478.0
Turn Bay Length (m)					33.0		23.0	
Base Capacity (vph)		279		341	115	2477	145	2773
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		0.05		0.51	0.07	0.95	0.57	0.69

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 110.6

Natural Cycle: 120

Control Type: Semi Act-Uncoord

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

Splits and Phases: 3: Paris St & John St

HCM Signalized Intersection Capacity Analysis
Total (2032) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	10	3	2	63	0	106	8	2238	44	80	1843	5
Future Volume (vph)	10	3	2	63	0	106	8	2238	44	80	1843	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.92		1.00	1.00		1.00	1.00	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1799			1627		1802	3529		1736	3537	
Flt Permitted		0.74			0.87		0.09	1.00		0.05	1.00	
Satd. Flow (perm)		1373			1443		164	3529		90	3537	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	10	3	2	65	0	109	8	2307	45	82	1900	5
RTOR Reduction (vph)	0	2	0	0	54	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	13	0	0	120	0	8	2351	0	82	1905	0
Confl. Peds. (#/hr)	3		4	4		3	14		2	2		14
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%	0%	2%	0%	4%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		14.4			14.4		77.6	77.6		85.5	85.5	
Effective Green, g (s)		14.4			14.4		77.6	77.6		85.5	85.5	
Actuated g/C Ratio		0.13			0.13		0.70	0.70		0.77	0.77	
Clearance Time (s)		5.7			5.7		5.8	5.8		4.0	5.8	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		177			186		114	2458		126	2714	
v/s Ratio Prot								c0.67		0.02	c0.54	
v/s Ratio Perm		0.01			c0.08		0.05			0.48		
v/c Ratio		0.07			0.65		0.07	0.96		0.65	0.70	
Uniform Delay, d1		42.6			46.1		5.4	15.4		29.5	6.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			7.5		0.3	9.9		11.4	0.8	
Delay (s)		42.8			53.5		5.7	25.2		40.9	7.4	
Level of Service		D			D		A	C		D	A	
Approach Delay (s)		42.8			53.5			25.2			8.7	
Approach LOS		D			D			C			A	

Intersection Summary			
HCM 2000 Control Delay	19.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	111.4	Sum of lost time (s)	15.5
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			↰↑↱			↰↑↱	
Traffic Volume (veh/h)	9	0	7	4	0	2	1	2266	1	1	1990	13
Future Volume (Veh/h)	9	0	7	4	0	2	1	2266	1	1	1990	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	9	0	7	4	0	2	1	2360	1	1	2073	14
Pedestrians		3			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								347			199	
pX, platoon unblocked	0.47	0.47	0.66	0.47	0.47	0.30	0.66			0.30		
vC, conflicting volume	3269	4450	1046	3410	4456	1182	2090			2363		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	298	2789	20	596	2803	0	1612			890		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	99	98	100	99	100			100		
cM capacity (veh/h)	296	9	693	182	9	329	268			232		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	16	6	1181	1181	1038	1050
Volume Left	9	4	1	0	1	0
Volume Right	7	2	0	1	0	14
cSH	395	214	268	1700	232	1700
Volume to Capacity	0.04	0.03	0.00	0.69	0.00	0.62
Queue Length 95th (m)	1.0	0.7	0.1	0.0	0.1	0.0
Control Delay (s)	14.5	22.3	0.2	0.0	0.2	0.0
Lane LOS	B	C	A		A	
Approach Delay (s)	14.5	22.3	0.1		0.1	
Approach LOS	B	C				

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↱			↑↑
Traffic Volume (veh/h)	0	16	2242	6	0	1996
Future Volume (Veh/h)	0	16	2242	6	0	1996
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	17	2360	6	0	2101
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			225			321
pX, platoon unblocked	0.47	0.29			0.29	
vC, conflicting volume	3414	1184			2367	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	311	0			782	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	95			100	
cM capacity (veh/h)	313	311			241	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	17	1573	793	1050	1050
Volume Left	0	0	0	0	0
Volume Right	17	0	6	0	0
cSH	311	1700	1700	1700	1700
Volume to Capacity	0.05	0.93	0.47	0.62	0.62
Queue Length 95th (m)	1.4	0.0	0.0	0.0	0.0
Control Delay (s)	17.2	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	17.2	0.0		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↰	Y	
Traffic Volume (veh/h)	7	0	0	2	15	0
Future Volume (Veh/h)	7	0	0	2	15	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67
Hourly flow rate (vph)	10	0	0	3	22	0
Pedestrians	1			2		
Lane Width (m)	3.6			3.6		
Walking Speed (m/s)	1.2			1.2		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			10		14	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			10		14	12
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	100
cM capacity (veh/h)			1623		1009	1073

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	10	3	22
Volume Left	0	0	22
Volume Right	0	0	0
cSH	1700	1623	1009
Volume to Capacity	0.01	0.00	0.02
Queue Length 95th (m)	0.0	0.0	0.5
Control Delay (s)	0.0	0.0	8.6
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.6
Approach LOS			A

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	14.0%	ICU Level of Service	A
Analysis Period (min)	15		

7: Paris St & Boland Ave/Paris Driveway

Total (2032) PM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		✥	↰	↱	↰	↑↱	↰	↑↱
Traffic Volume (vph)	27	1	44	3	24	2174	75	1860
Future Volume (vph)	27	1	44	3	24	2174	75	1860
Lane Group Flow (vph)	0	47	48	56	26	2435	82	2056
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	30.0	30.0	5.0	30.0
Minimum Split (s)	26.0	26.0	26.0	26.0	35.9	35.9	9.0	35.9
Total Split (s)	26.0	26.0	26.0	26.0	85.0	85.0	9.0	94.0
Total Split (%)	21.7%	21.7%	21.7%	21.7%	70.8%	70.8%	7.5%	78.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.7	3.7	3.0	3.7
All-Red Time (s)	2.5	2.5	2.5	2.5	2.2	2.2	1.0	2.2
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0	6.0	5.9	5.9	4.0	5.9
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	None	Min
v/c Ratio		0.35	0.32	0.29	0.22	0.89	0.54	0.69
Control Delay		40.8	52.4	17.8	11.5	18.3	25.3	6.4
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		40.8	52.4	17.8	11.5	18.3	25.3	6.4
Queue Length 50th (m)		6.4	10.3	0.6	1.7	220.6	2.5	86.1
Queue Length 95th (m)		18.5	22.4	13.0	7.4	#351.0	#20.7	135.0
Internal Link Dist (m)		192.5		282.1		313.9		201.2
Turn Bay Length (m)					40.0		100.0	
Base Capacity (vph)		255	311	340	116	2729	153	2965
Starvation Cap Reductn		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0
Reduced v/c Ratio		0.18	0.15	0.16	0.22	0.89	0.54	0.69

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 108.2

Natural Cycle: 130

Control Type: Semi Act-Uncoord

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

Splits and Phases: 7: Paris St & Boland Ave/Paris Driveway

HCM Signalized Intersection Capacity Analysis

Total (2032) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣		↰	↱		↰	↑↱		↰	↑↱	
Traffic Volume (vph)	27	1	16	44	3	49	24	2174	66	75	1860	31
Future Volume (vph)	27	1	16	44	3	49	24	2174	66	75	1860	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		5.9	5.9		4.0	5.9	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.95		1.00	0.86		1.00	1.00		1.00	1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1628		1805	1608		1804	3523		1805	3530	
Flt Permitted		0.78		0.89	1.00		0.08	1.00		0.05	1.00	
Satd. Flow (perm)		1307		1683	1608		150	3523		88	3530	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	1	17	48	3	53	26	2363	72	82	2022	34
RTOR Reduction (vph)	0	16	0	0	49	0	0	1	0	0	1	0
Lane Group Flow (vph)	0	31	0	48	7	0	26	2434	0	82	2055	0
Confl. Peds. (#/hr)	2					2	4		2	2		4
Heavy Vehicles (%)	4%	0%	14%	0%	0%	0%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.0		8.0	8.0		82.5	82.5		90.4	90.4	
Effective Green, g (s)		8.0		8.0	8.0		82.5	82.5		90.4	90.4	
Actuated g/C Ratio		0.07		0.07	0.07		0.75	0.75		0.82	0.82	
Clearance Time (s)		6.0		6.0	6.0		5.9	5.9		4.0	5.9	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		94		122	116		112	2635		132	2893	
v/s Ratio Prot					0.00			c0.69		0.02	c0.58	
v/s Ratio Perm		0.02		c0.03			0.17			0.48		
v/c Ratio		0.33		0.39	0.06		0.23	0.92		0.62	0.71	
Uniform Delay, d1		48.6		48.8	47.6		4.2	11.3		27.6	4.3	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.1		2.1	0.2		1.1	6.1		8.8	0.8	
Delay (s)		50.7		50.9	47.9		5.3	17.4		36.3	5.1	
Level of Service		D		D	D		A	B		D	A	
Approach Delay (s)		50.7			49.3			17.3			6.3	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	110.3	Sum of lost time (s)	15.9
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

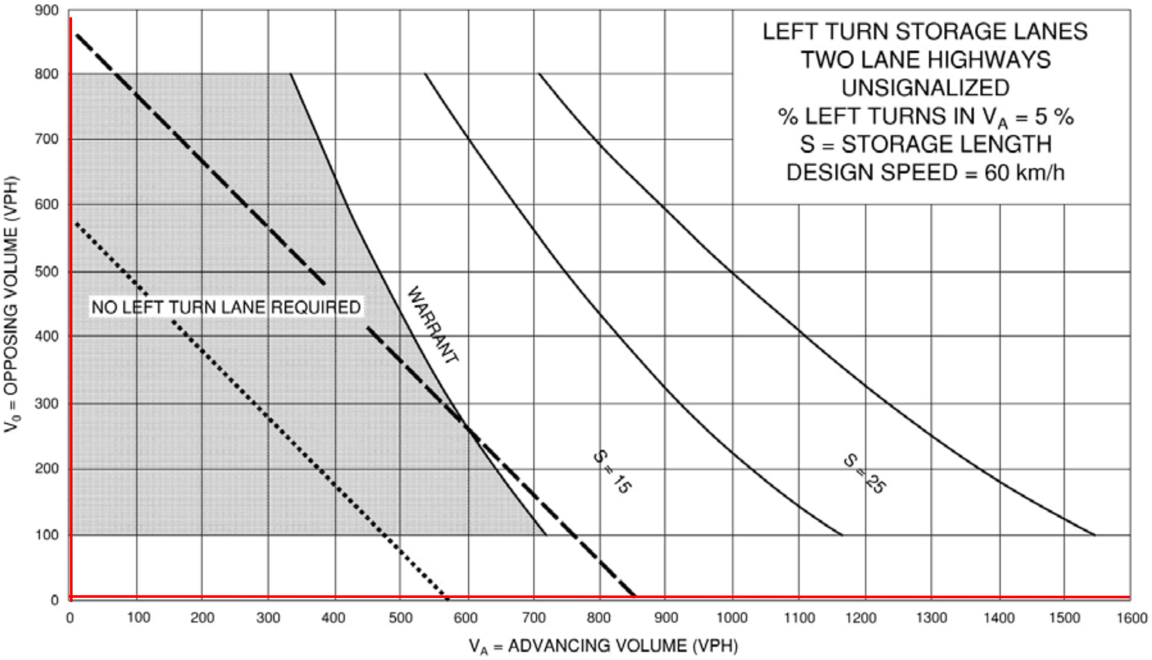
MTO Left-Turn Analysis

Bell Park Road / Facer Street

2032 Total - Westbound

Critical Case - AM Peak Hour

Exhibit 9A-6



— — — — TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

·············· TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

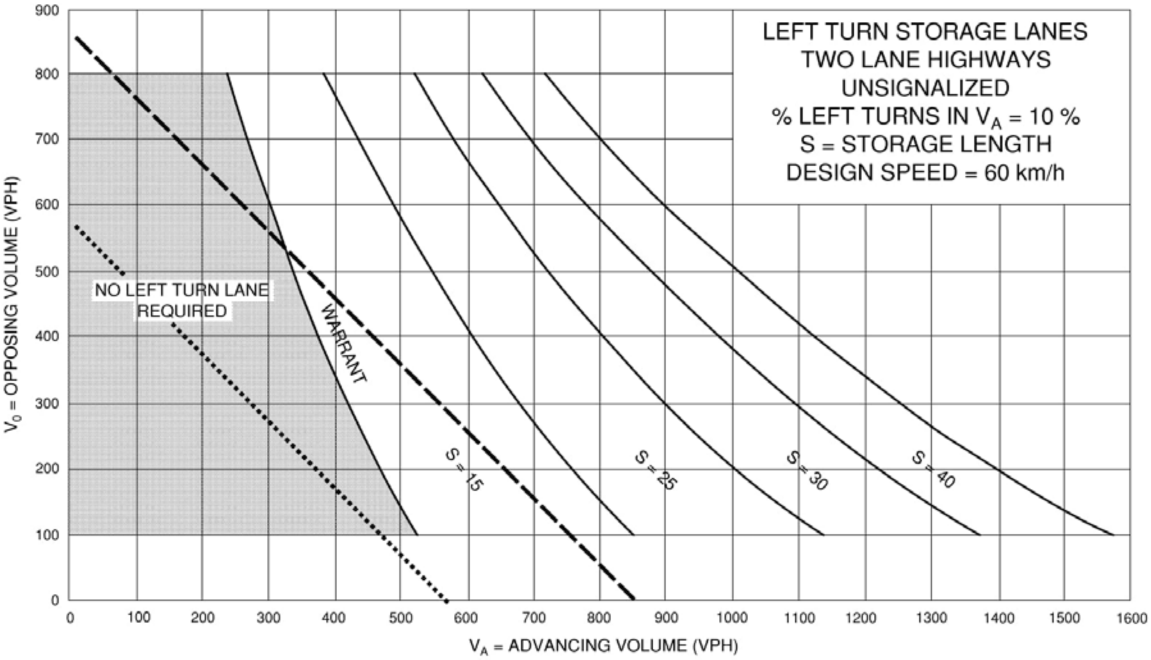


Exhibit 9A-30

Paris Street / McNaughton Street

2032 Total - Southbound

Critical Case - PM Peak Hour

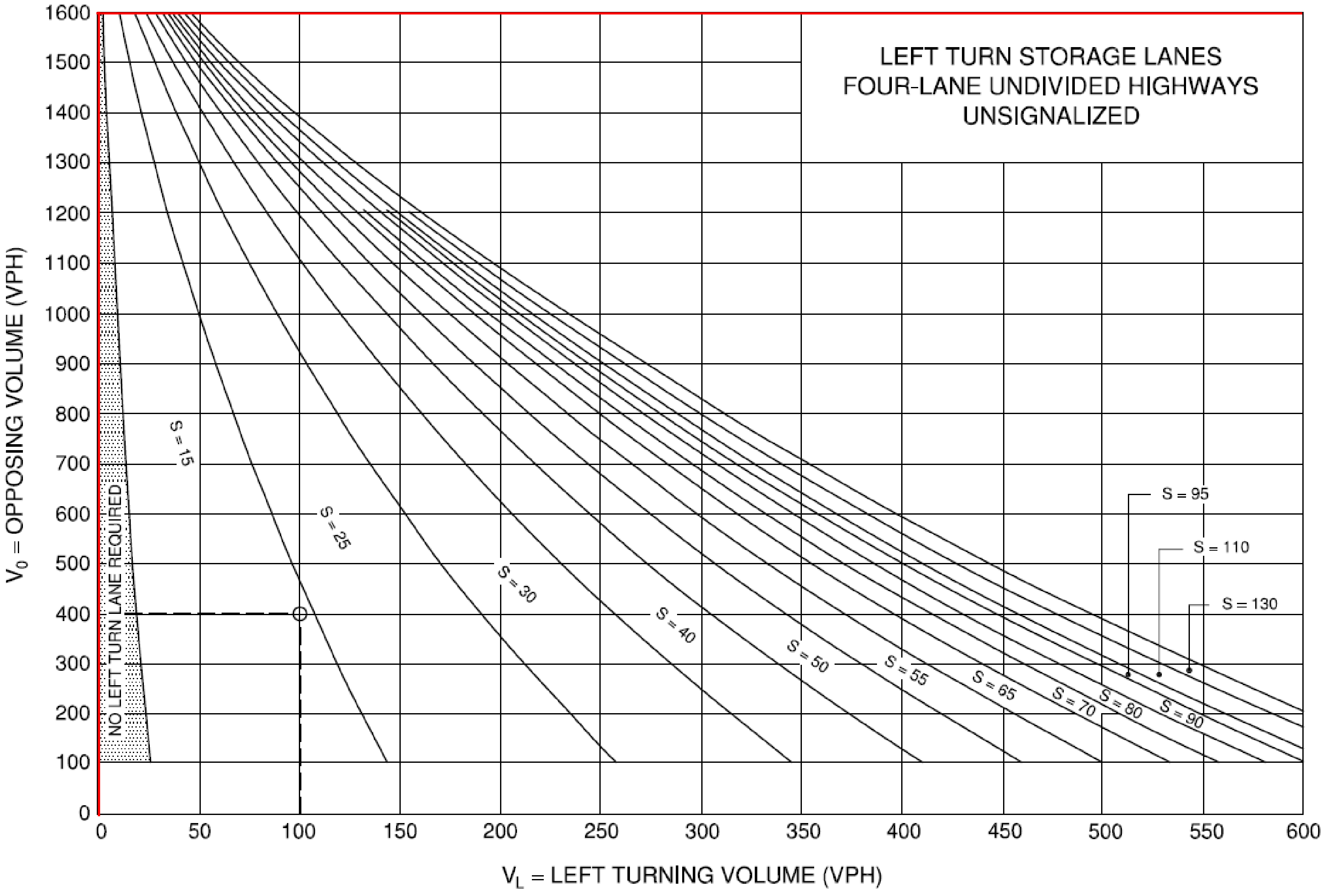


Exhibit 9A-30

Paris Street / McNaughton Street

2032 Total - Northbound
Critical Case - PM Peak Hour

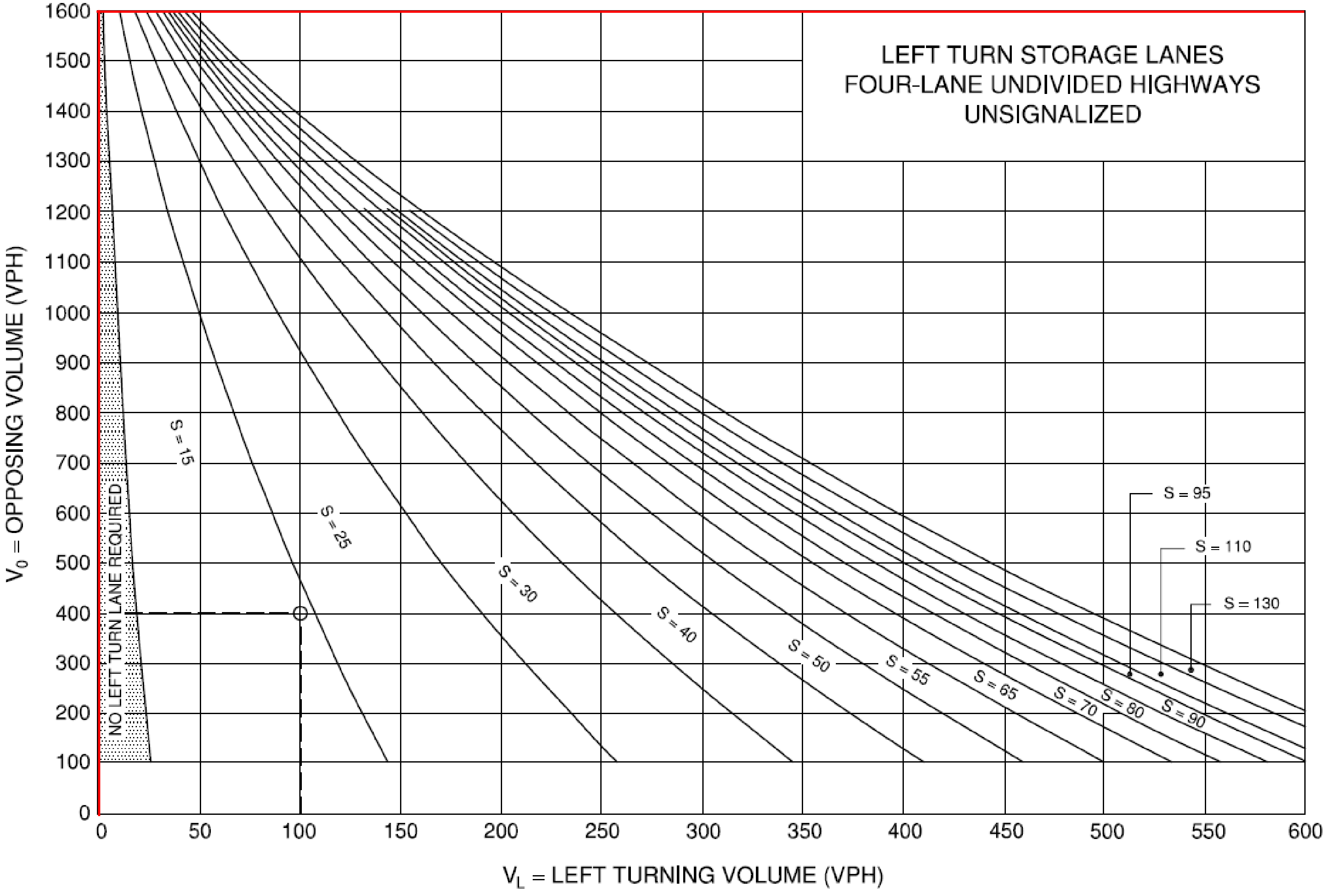
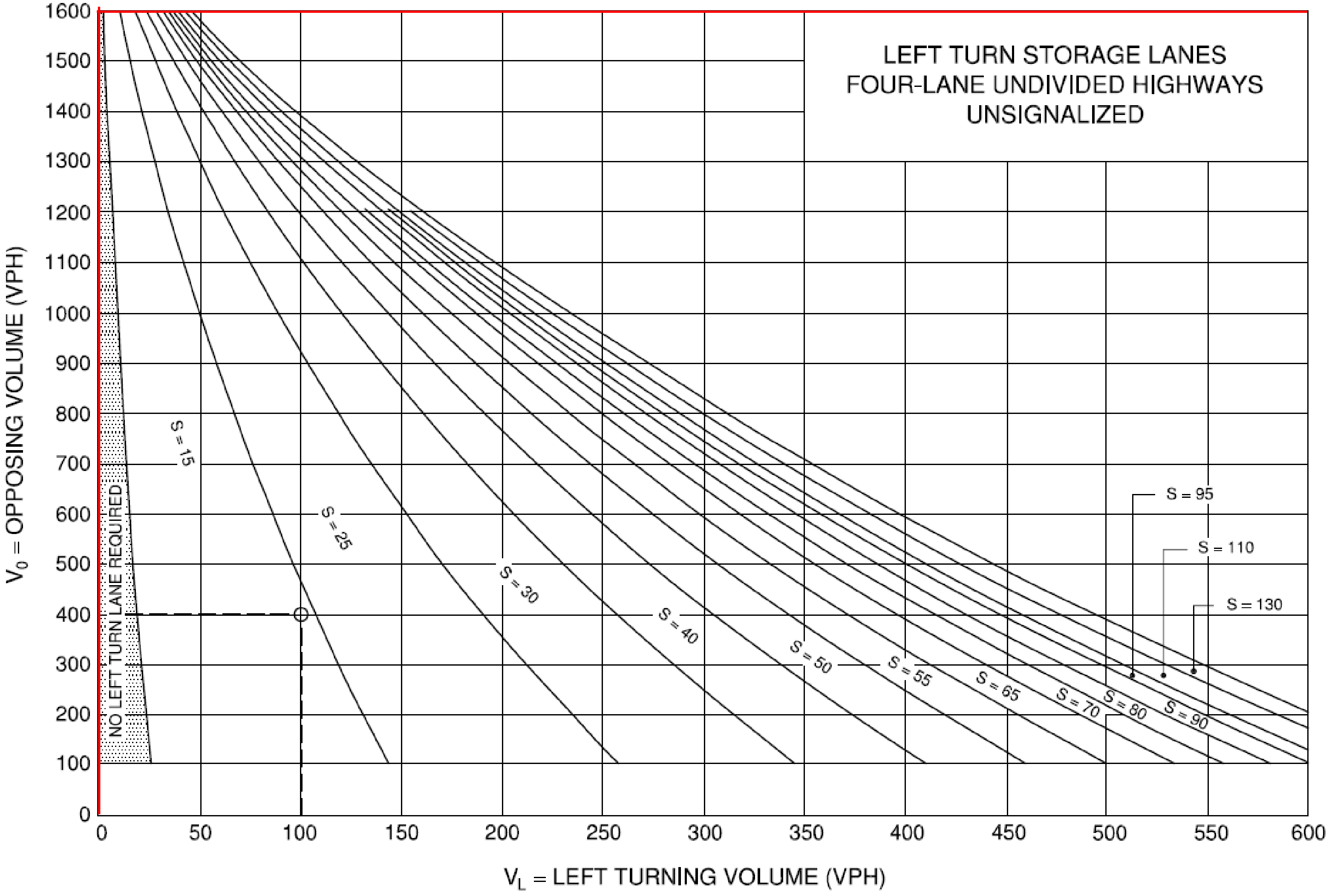


Exhibit 9A-30

Paris Street / Facer Street

2032 Background - Southbound

Critical Case - PM Peak Hour



OTM Signal Justification Sheets

Justification No. 7 - 2032 Total Traffic (Critical Case)

Paris Street / McNaughton Street

Justification	Description		Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
		Rest. Flow	Numerical	%			
1. Minimum Vehicluar Volume	A. Vehicle volume, all aproaches (average hour)	900	1909	212%	5%	YES	YES
	B. Vehicle volume, along minor streets (average hour)	170	10	6%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	900	1894	210%	2%	YES	YES
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	170	5	3%		NO	NO

Justification No. 7 - 2032 Total Traffic (Critical Case)

Paris Street / Facer Street

Justification	Description		Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
		Rest. Flow	Numerical	%			
1. Minimum Vehicluar Volume	A. Vehicle volume, all aproaches (average hour)	900	1894	210%	3%	YES	YES
	B. Vehicle volume, along minor streets (average hour)	255	9	4%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	900	1883	209%	0%	YES	YES
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	170	0	0%		NO	NO

Justification No. 7 - 2032 Total Traffic (Critical Case)

Bell Park Road / Facer Street

Justification	Description		Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
		Rest. Flow	Numerical	%			
1. Minimum Vehicluar Volume	A. Vehicle volume, all aproaches (average hour)	720	12	2%	1%	NO	NO
	B. Vehicle volume, along minor streets (average hour)	255	9	3%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	720	3	0%	0%	NO	NO
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	75	10	14%		NO	NO

SLR Consulting (Canada) Ltd.
100 Stone Road West, Suite 201, Guelph, ON N1G 5L3

April 9, 2024

Attention: Vanessa Smith
Tulloch Engineering Inc.
1942 Regent Street, Unit L
Sudbury, ON   P3E 5V5

SLR Project No.: 241.031508.00001

Revision: 0

RE: Peer Review of Preliminary Pedestrian Level Wind Assessment 700 Paris Street – Sudbury, ON

SLR Consulting (Canada) Ltd. (SLR) was retained by Tulloch Engineering Inc. to conduct a peer review of the Preliminary Pedestrian Level Wind Assessment for the proposed residential development at 700 Paris Street in Sudbury prepared by Theakston Environmental Consulting Engineers (Theakston), dated September 19, 2023 (herein referred to as “Wind Report”). This letter summarizes SLR’s peer review comments.

Background

Based on the review of the Wind Report, the proposed development is located at 700 Paris Street in Sudbury, and is encompassed by Facer Street to the north, Paris Street to the west and Bell Park Road to the east. The proposed development will be located on the site of the old St. Joseph’s Health Care Centre.

The proposed development includes three residential buildings. Building A is 16-storeys tall; Building B is 20-storeys tall, and Building C is 12-storeys in height. Building C is located on the north third of the site, Building B is in the middle of the site, and Building A is located on the south third of the site. All three buildings are closer to Bell Park Road than Paris Street and/or Facer Street. The long axis of each building is approximately parallel with Paris Street and hence aligned approximately with southwest / northeast.

The Wind Report assessed the pedestrian wind comfort and safety of the proposed development. SLR understands the Wind Report was prepared in support of joint Official Plan Amendment (OPA) and Zoning Bylaw Amendment (ZBA) planning application, although this is not stated within the report.

Note, if no comments are provided, SLR agrees with the findings of the report section.

Peer Review Comments

SLR’s overall comments on the Wind Report:

1) In general, the report is well organized and easy to follow.
2) SLR assumes that when comfort categories are discussed with regards to an area, it implies on an annual basis unless otherwise stated.

Site Information & Proposed Development

3) SLR suggests the figures be numbered in the order they are discussed.

4) SLR suggests Figure 2 include a north arrow and credit.

Meteorological Data

5) What period did the meteorological data encompass? Theakston to clarify in report.

6) SLR is unclear as to why 31.7 km/h was selected to distinguish strong winds. Theakston to clarify in report.

7) SLR suggests the wind roses in Figure 3 would be more valuable to the reader if the wind categories were simplified between strong winds and the rest of the winds, per comment #6 above.

Comfort Criteria

8) SLR agrees comfort is based on mean wind speed and safety is based on gust speed.

9) SLR agrees with the use of 80% of the time for categorization of wind comfort.

10) SLR agrees with the expectations of wind comfort for pedestrian areas around a building.

11) In the first paragraph, the inclusion of uncomfortable within the suitability of 80% (last line) is confusing for the reader. Theakston to clarify in report.

12) In the fifth paragraph, the discussion of safety implies it has to do with mean wind speed. SLR recommends the inclusion of a separate paragraph to discuss the implications of safety and what wind speed and type (i.e., mean or gust) is used for the categorization of unsafe wind conditions. Theakston to clarify in report.

Pedestrian Level Wind Assessment

13) SLR suggests additional clarification is required as to the approach undertaken to conduct the Wind Report. The first paragraph implies the Wind Report is based on quantitative analysis, which SLR believes was not the case. We suggest Theakston include a more robust methodology section in the report to clarify what type of analysis was conducted.

Discussion of Easterly Winds

14) In the fifth paragraph of the section, SLR suggests correcting from “southwest facades” to “northwest facades” with regards to the main entrances.

Discussion of Outdoor Amenity Space

15) SLR assumes that unless otherwise stated, wind screens are 100% solid (third paragraph). Theakston to confirm and describe in report.

16) In the discussion of the amenity space on the 13th floor of Building A, SLR is confused by the summary of the wind conditions on the terrace will be suitable for sitting (second paragraph), which is then contradicted in the following paragraph and recommendations

are made. Can Theakston please clarify if mitigation (i.e., 2 m tall perimeter wind screen) is suggested or recommended for this amenity space?

17) With regards to mitigation for the 20th floor covered terrace, is Theakston recommending landscaping (in planters) and trellises in addition to the design roof and recommended wind screen? In SLR's opinion, these additional features are no necessary for this space with the roof and tall screens in place. Theakston to confirm and update report if necessary.

18) SLR is unclear if the mitigation measures described for the grade level patio of Building C are to be applied to the 3rd floor (sixth paragraph). Or does the sixth paragraph of this section discuss the 3rd floor outdoor amenity of Building C? Theakston to clarify in report.

19) In the seventh paragraph, does "incorporating a porous wind screen…" imply a recommendation or suggestion? Theakston to clarify in report.

Mitigation Strategies

20) SLR finds the last two paragraphs contradictory. Will wind conditions be suitable once the recommendations are implemented or are the wind conditions expected to be suitable without mitigation? Theakston to clarify in report.

Conclusions and Recommendations

Based on our review of the Wind Report, SLR recommends the following:

1) Some sections of the Wind Report need to be updated to account for clarification requests.

2) The findings of the assessment are acceptable once clarifications are provided.

SLR requests Theakston provide an updated report, to address SLR's clarifications, suggestions, and recommendations, to complete the peer review process of the Wind Report.

Statement of Limitations

This report has been prepared by SLR Consulting (Canada) Ltd. (SLR) for Tulloch Engineering Inc. (Client) in accordance with the scope of work and all other terms and conditions of the agreement between such parties. SLR acknowledges and agrees that the Client may provide this report to government agencies, interest holders, and/or Indigenous communities as part of project planning or regulatory approval processes. Copying or distribution of this report, in whole or in part, for any other purpose other than as aforementioned is not permitted without the prior written consent of SLR.

Any findings, conclusions, recommendations, or designs provided in this report are based on conditions and criteria that existed at the time work was completed and the assumptions and qualifications set forth herein.

This report may contain data or information provided by third party sources on which SLR is entitled to rely without verification and SLR does not warrant the accuracy of any such data or information.

Nothing in this report constitutes a legal opinion nor does SLR make any representation as to compliance with any laws, rules, regulations, or policies established by federal, provincial territorial, or local government bodies, other than as specifically set forth in this report. Revisions to legislative or regulatory standards referred to in this report may be expected over time and, as a result, modifications to the findings, conclusions, or recommendations may be necessary.

Regards,

SLR Consulting (Canada) Ltd.

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100056279
2024-04-09
PROVINCE OF ONTARIO

SLR Consulting (Canada) Ltd.
100 Stone Road West, Suite 201, Guelph, ON N1G 5L3

April 23, 2024

Attention: Vanessa Smith
Tulloch Engineering Inc.
1942 Regent Street, Unit L
Sudbury, ON   P3E 5V5

SLR Project No.: 241.031508.00001

RE: Addendum Letter for Pedestrian Wind Peer Review
700 Paris Street – Sudbury, ON

SLR Consulting (Canada) Ltd. (SLR) was retained by Tulloch Engineering Inc. (Tulloch) to conduct a peer review of the Preliminary Pedestrian Level Wind Assessment for the proposed residential development at 700 Paris Street in Sudbury prepared by Theakston Environmental Consulting Engineers (Theakston), dated September 19, 2023 (herein referred to as "Wind Report"). SLR provided peer review comments to Tulloch on April 9, 2024.

Subsequently, per SLR's comments, Theakston updated their Wind Report. An updated report was completed on April 16, 2024 (herein referred to as "Updated Wind Report").

SLR has reviewed the Updated Wind Report and considered the comments discussed in our April 9, 2024, peer review document. In summary, SLR's comments have been addressed sufficiently. SLR agrees with the conclusions presented in the Updated Wind Report.

Regards,

SLR Consulting (Canada) Ltd.

LICENSED PROFESSIONAL ENGINEER
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2024-04-23
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April 16, 2024

Preliminary Pedestrian Level Wind Assessment

700 Paris Street
Sudbury, Ontario

Theakston Project No. 23037 (22898)

Submitted To:

Panoramic Properties
Angelo Butera, President
9582 Beaverdam Road
Niagara Falls, ON
L2E 6S4

Submitted By:

Theakston Environmental
Consulting Engineers
596 Glengarry Crescent
Fergus, Ontario
N1M 3E2

Stephen Pollock, P.Eng.

An International Reputation for Excellence

1. EXECUTIVE SUMMARY

Based upon our analysis, wind conditions on and around the proposed 700 Paris Street Development site are considered mainly suitable for standing, or better, throughout the year in the existing setting.

The proposed 700 Paris Street Development occupies a portion of a block of land bound by Facer Street to the north, Bell Park Road to the east, and Paris Street to the west, within the City of Sudbury, Ontario. The former St. Joseph's Health Centre currently occupies the site and will be removed.

The 700 Paris Street Development involves a proposal to construct 3 residential buildings, 20, 16 and 12 storeys in height. Outdoor Amenity Space is proposed on the 13th floor of Building A, the 13th, 14th, and 20th floors of Building B, and at-grade and at the 3rd floor of Building C.

With inclusion of the proposed Development, prevailing pedestrian comfort conditions are predicted to remain comfortable and suitable for mainly standing, or better, under normal to high ambient wind conditions. Localised areas proximate to the north and southmost corners of the Development and in the gaps between the buildings will realise windier conditions on occasion. Additional mitigation is recommended for the Main Entrances and Outdoor Amenity Spaces to improve pedestrian comfort conditions and extend the useability of the areas into the shoulder seasons. To the extent mitigation may be warranted is best assessed through quantitative analysis.

The overall upset to pedestrian comfort conditions with inclusion of the proposed Development is well managed by the proposed Development's wind mitigative design features, resulting in conditions that are, in many cases, similar to the existing setting.

Should you have questions or comments, please do not hesitate to call.

Kindest regards,

C. Prevost

Emily Prevost, EIT

Stephen Pollock, P.Eng

2. INTRODUCTION

Panoramic Properties has retained Theakston Environmental Consulting Engineers to conduct a preliminary pedestrian level wind assessment for the proposed residential development at 700 Paris Street, Sudbury, Ontario, herein referred to as the proposed Development. The assessment is based upon project plans prepared by ACK Architects Studio Inc. The objective of this preliminary analysis is to estimate pedestrian level wind conditions resulting from inclusion of the proposed Development, relative to comfort and safety. The analysis is based upon the historical wind conditions and our experience with similar microclimatic analyses that were conducted on other properties in the area and/or on similar projects. The qualitative assessment utilises numerical analysis of local wind data predicted at the site and provides a synopsis of pedestrian comfort conditions anticipated on, and adjacent to, the property.

3. SITE INFORMATION & PROPOSED DEVELOPMENT

The proposed Development occupies a block of land south of Facer Street, bounded by Paris Street to the west and Bell Park Road to the east, within the City of Sudbury, Ontario, as shown in Figure 1. The site is currently occupied by the former St. Joseph's Health Care, pictured below, which will be removed.

700 Paris Street existing site, looking north from adjacent parking lot (Google)

The Development involves a proposal to construct 3 residential buildings, denoted Building A, Building B, and Building C. The buildings are 16, 20, and 12 storeys in height, respectively. Outdoor Amenity Spaces are proposed at the 13th floor of Building A, 13th, 14th, and 20th floors of Building B, and at-grade and at the 3rd floor of building C. The Main Residential Entrances to the buildings are proposed along the northwest façades, accessed via a private driveway parallel to Paris and Facer Streets. The site plan is shown in Figure 2.

4. SURROUNDING AREA

Low-rise residential buildings, open spaces, and mature vegetation, for all intents and purposes, surround the site.

Lands to the immediate north of the proposed Development are occupied by low-rise, single detached houses and mature vegetation. Mature vegetation, low rise concession buildings and open spaces associated with Bell Park occupy the land to the immediate east through south of the proposed Development which slopes down towards Ramsey Lake. A municipal parking lot occupies the land southwest of the proposed Development, accessed via Paris Street. Lands to the immediate west of Paris Street are comprised of rocky hillside and vegetation, with low-rise, single detached houses beyond.

The suburban landscape has mitigative effects upon the wind climate to varying degrees, providing surface roughness that reduces the wind's energy at the pedestrian level. Conversely, the more open areas of Ramsey Lake present a relatively smooth surface to approaching winds, affording wind the opportunity to accelerate.

5. METEOROLOGICAL DATA

Historical weather data recorded at the Greater Sudbury Airport for the period between 2012 and 2021 were analysed for the seasons, and the resulting wind roses presented as velocity and percent frequency in Figure 3. The airport is approximately 21km to the northeast of the site, which, considered in concert with the site's distance from Ramsey Lake, indicate the wind climate at the proposed Development is well represented by said airport. From the historical wind data, it is apparent that winds can occur from any direction, however, the data indicates the directional characteristics of strong winds at Greater Sudbury Airport are most likely to occur from the southwest and the northwest through northeast quadrant, with a far less significant northeast through southeast component.

The historical meteorological data presented in the wind roses is measured at an elevation of 10m. This data is numerically processed with AERMET, a meteorological processor that considers wind speed and direction. Thus, representative ground level velocities at a height of 2m, for a suburban macroclimate, are 63% of the mean values indicated on the wind rose. For urban and rural macroclimates, the values are 52% and 78%, respectively.

The macroclimate for the subject site is considered suburban. Figure 3 depicts wind velocity categories relative to directionality at the airport with winds greater than 30km/h occurring approximately 3% of the time during the summer and 8% during the winter, and emanating from the aforementioned quadrants during both the winter and summer seasons, with calm conditions occurring approximately 1% of the time during the summer and winter.

6. COMFORT CRITERIA

The assignment of pedestrian comfort takes into consideration pedestrian safety and comfort attributable to mean and gust wind speeds. Gusts have a significant bearing on safety, while winds flowing at or near mean velocities have a greater influence upon comfort. The effects of mean and gust wind conditions are described as suitable for Sitting, Standing, or Walking when said categories are realised 80% of the time, or greater, and Uncomfortable over 20% of the time.

For a point to be rated as suitable for <u>Sitting</u>, for example, the wind conditions must be less than 10 km/h 80% of the time, or greater. The rating would include conditions ranging from calm up to wind speeds that would rustle tree leaves or wave flags slightly. As the name infers, the category is recommended for outdoor space such as terraces and patios where people might sit for extended periods and generally applied to the summer months.

The <u>Standing</u> category is slightly more tolerant of wind, including wind speeds from calm up to 15km/h, also occurring 80% of the time of greater. In this situation, the wind would rustle tree leaves and, on occasion, move smaller branches while flags would be partially extended. This category would be suitable for locations where people might sit for short periods or stand in relative comfort, such as building entrances and drop-off areas.

The <u>Walking</u> category includes wind speeds from calm up to 20km/h, again occurring over 80% of the time. These winds would set tree limbs in motion, lift leaves, litter and dust, and the locations are suitable for sidewalks and parking.

The <u>Uncomfortable</u> category covers a broad range of wind conditions, including wind speeds above 20km/h, occurring 20% of the time or greater. These winds would set trees in motion, cause inconvenience when walking, and are not generally suitable to activities.

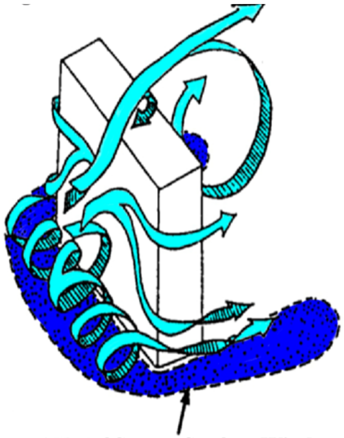
Safety concerns are generally associated with gust wind speeds at or beyond 90km/h and occurring more than 9 times a year. Such conditions are sufficient to affect a person's balance, however, they are difficult to predict with confidence in a qualitative wind assessment.

Many variables contribute to a person's perception of the wind environment beyond the seasonal variations presented. While people are generally more tolerant of wind during the summer months, than during the winter, due to the wind cooling effect, people become acclimatized to a particular wind environment. Persons dwelling near the shore of an ocean, large lake or open field are more tolerant of wind than someone residing in a sheltered wind environment.

7. PEDESTRIAN LEVEL WIND ASSESSMENT

Variables beyond the orientation and conformation of a proposed development must be considered in predicting wind speed and occurrence at a given location. These include the previously discussed historical wind climate, surrounding terrain, and neighbouring buildings, each of which is considered in this qualitative microclimatic assessment of pedestrian level winds. The results of such analyses have afforded a knowledge base that allows an estimation of pedestrian level wind conditions.

The site and surrounds, in the present circumstances as a mix of suburban residential neighbourhoods, mature vegetation, and open spaces, have a sympathetic relationship with the existing wind climate. Suburban development provides turbulence inducing surface roughness that can be wind friendly, while open settings afford wind the opportunity to accelerate as the wind's boundary layer profile thickens at the pedestrian level, owing to lack of surface roughness. Transition zones from open to suburban settings can prove problematic, as winds exacerbated by the open setting are redirected to flow over, down, around and between buildings.



High-rise buildings may exacerbate wind conditions within their immediate vicinity, to varying degrees, by redirecting wind currents to the ground level and along streets and open areas. Wind tends to split upon impact with a high-rise building, as pictured, with portions flowing up and over the building without consequence to the pedestrian level, along the facades of the building, around the corners and beyond, or down the face of the building to the pedestrian level as downwash, where it is deflected, or otherwise redirected to flow along the building and around its corners, creating localized zones of increased pedestrian level wind. Conversely, points situated to the leeside, or in the wake of buildings will often enjoy an improvement in pedestrian comfort. It is reasonable to expect the inclusion of the proposed development will alter wind conditions under specific wind directions and velocities from those of the existing site condition, resulting in an improvement over the existing conditions at some points, with more windy conditions at others.

Wind approaching façades at skewed angles will, for the most part, split upon contact with the building and flow along the façades. Wind approaching at near right angles to the building generally result in the propensity for a downwash of wind to the pedestrian level, the magnitude of which is dependent upon several variables. Those variables commanding primary consideration are the building height, and the effective width of the presented façade.

Discussion of Northerly Winds

Northerly winds make up a moderate percentage of the prevailing wind climate, tend to be of mid- to high velocity, with a higher percentage of stronger winds expected in the winter and spring seasons. Northerly winds are preconditioned upon approach by low-rise residential houses, associated open spaces, mature vegetation, and a rock cut, that will induce some turbulence into the wind's approach flow, reducing the wind's energy realized at the pedestrian level.

Proposed Setting

Northerly winds approaching the site at higher streamlines will come into contact with the upper levels of the north and northwest façades of the proposed Development. The winds will display a propensity to split upon contact with the building's northmost corners to flow up and over the rooftops, along the façades of the buildings, around the corners and beyond, with portions, depending upon the angle of incidence, downwashing towards the pedestrian level. The winds that deflect to flow up and around the proposed Development at elevations above the pedestrian level will have little consequence on the pedestrian level wind climate. Downwash to the pedestrian level is well mitigated by the skewed angle of northerly winds impact, balconies, podiums, stepped façades and canopies, however, downwash that finds its' way to the pedestrian level will be redirected along the façades of the buildings, around the corners, and through the gaps between, before dissipating over the coarser terrain of Bell Park.

Northerly winds approaching the site in lower streamlines will similarly contact the north façade of Building C and, the northmost corners and adjacent façades of Buildings

A and B, where the wind streamlines will split and flow along the northwest façades of the buildings, around corners, in gaps, and beyond.

As a result, conditions along the northwest façades of the buildings are mainly predicted suitable for standing on the occasion of northerly winds, with localised conditions suitable for walking near the northeast corner of Building C, the southwest corners of Building B and Building A, and in the gaps between the buildings. Areas along the southeast façades of the proposed Development, as well as south of Building A, are within the aerodynamic shade region of the Development for northerly winds and as a result will realise conditions suitable for sitting throughout much of the year.

The Main Entrances to the proposed Development are located centrally along the northwest façades of the buildings and are subjected to northerly winds that are redirected to flow along the buildings' façades. The Entrances are well removed from the corners and are protected from downwash by canopies, balconies, and/or podiums, and will be suitable for standing most of the time, walking on the occasion of high ambient northerly winds, and are considered appropriate for their intended use most of the time. Mitigation is recommended in order to achieve more comfortable conditions throughout the year and can include recessing the Entrances into their façades such that wind cannot act upon the door leaves, utilizing revolving or sliding doors, incorporating wind screens perpendicular to the façades, including coniferous and/or marcescent vegetation, raised planter beds populated with dense vegetation, trellises, and others.

The proposed Development is well removed from Paris Street and Facer Street and, as such, sidewalk conditions are predicted to remain similar to those of the existing setting, suitable for standing or walking, appropriate to their intended use with the inclusion of the proposed Development. Bell Park Road will realise protection from northerly winds with the inclusion of the proposed Development. Localized areas near the northeast corner of Building C, and near the gaps between the buildings, will experience windier conditions, suitable for standing or walking, however they remain appropriate for their intended use.

Discussion of Westerly Winds

Westerly winds make up a smaller percentage of the prevailing wind climate, occurring slightly more frequently during the summer and fall months. They tend to be of lower velocity and are preconditioned upon approach by rocky terrain with mature vegetation and low-rise residential houses with mature vegetation beyond, providing some surface roughness to winds, decreasing the wind's energy realised at the pedestrian level upon approach.

Proposed Setting

Westerly winds approaching in higher streamlines will similarly contact the westmost corners of the buildings, and/or the northwest façades of the buildings at a skewed angle. These winds will split to flow along the adjacent façades, around the corners and beyond, and to a lesser extent up and over the buildings. Portions of the westerly wind climate will also downwash towards the pedestrian level, however this is well mitigated by the skewed angle of approach, stepped façades, podiums, balconies and canopies that will interrupt winds before reaching the pedestrian level. Downwash that does reach the pedestrian level will be limited, but that which does occur will be redirected to flow along the façades of the buildings, around the corners, between the gaps, and beyond over Bell Park.

Winds approaching the site in lower streamlines similarly contact the westmost corners and façades of the buildings and will split to flow along the respective façades, around the corners and through the gaps between, resulting in localised windy conditions.

As a result, conditions along the Paris Street façades of the buildings are mainly predicted suitable for standing on the occasion of westerly winds, with localised conditions suitable for walking at the northwest corners of Buildings A, B, and C, the southmost corners of Building A, and in the gaps between the buildings. Areas along the eastern Bell Park façades of the proposed Development are within the aerodynamic shade region of the Development and will realise conditions suitable for sitting throughout much of the year. Areas leeward to the gaps or near Building A's southmost corners will be windy, but are expected to remain suitable to the intended purpose.

The Main Entrances located along the northwest façades of the buildings will be subjected to winds redirected to flow along the façades and, as a result, will be windy at times, however, they are predicted suitable for standing most of the time, and appropriate for their intended use. This rating is partially attributed to the Entrances being well removed from the corners and protected from downwash by the balconies, canopies, and/or stepped condition at the podium. Mitigation, as described above, is recommended at the Main Entrances.

Similar to northerly winds, the proposed Development is well removed from Paris Street and Facer Street and, as such, sidewalk conditions are expected to remain similar to the existing setting, suitable for their intended use, with inclusion of the proposed Development on the occasion of westerly winds. Bell Park Road will be in the aerodynamic shade region of the proposed Development for westerly winds, resulting in sitting conditions in these areas, with localized sections near the gaps in buildings experiencing higher wind speeds due to the funneling of winds between the buildings, resulting in conditions predicted suitable for walking.

Discussion of Southerly Winds

Southerly winds make up a moderate percentage of the prevailing wind climate, tend to be of lower velocity, and are preconditioned on approach by an open parking lot to the southwest, affording wind the opportunity to accelerate, and mature vegetation and low-rise building to the southeast, introducing some turbulence to the approaching wind and reducing the wind’s energy at the pedestrian level.

Proposed Setting

Southerly winds approaching the site in higher streamlines will contact the southmost corners of the buildings and southeast façades at a skewed angle where they will split to varying degrees to flow along the adjacent façades. Downwash acting upon Buildings A and C will be limited due to the angle of incidence. Building B presents a broader façade to southerly winds, making it slightly more susceptible, however it features stepped conditions to the southwest, resulting in a modest contribution to winds realised at the pedestrian level.

Southerly winds, approaching at or near the pedestrian level will be significantly moderated upon approach by the landscape of Bell Park, comprised of a mature mix of deciduous and coniferous trees. Southerly winds, once upon Building A, will be redirected along the southeast and southwest façades of Building A, through the gap between Buildings A and B, and beyond. This will result in windy conditions in the gap between Buildings A and B and at the westmost corner of Building A. The gap between Buildings B and C is for the most part within the aerodynamic shade region of Building B and as such will be more comfortable, suitable for the intended purpose most of the time, on the occasion of southerly winds.

As such, conditions along the Bell Park Road façades of the buildings are mainly predicted suitable for standing on the occasion of southerly winds, with localised conditions suitable for walking near the southeast corner of Building A, the northeast corner of Building C, and the gaps between the buildings. Areas along the Paris Street façades of the proposed Development are within the aerodynamic shade region of the Development for southerly winds and as such will realise conditions suitable for sitting throughout much of the year, with localized areas near the west corner of Building A and between the buildings experiencing windier conditions, expected to be suitable for walking.

The Main Entrances located along the Paris Street façades of the buildings are in the aerodynamic shade region of the proposed Development, for southerly winds, and as such, are expected to be comfortable, suitable for sitting, and appropriate for their intended use.

Conditions along Bell Park Road will be exposed to larger portions of the southerly wind climate that are directed to flow around the proposed Development, resulting in conditions that are windy from time to time, but are expected to remain suitable for standing through most of the year. Paris Street and Facer Street are predominantly in the aerodynamic shade region of the proposed development for southerly winds, and as such, will realize conditions suitable for their intended purpose.

Discussion of Easterly Winds

Easterly winds are infrequent and, as indicated by the historical weather data, are of moderate velocity, however they are often associated with storms. The approach terrain over Bell Park consists of mainly mature vegetation, a few low-rise buildings, open spaces, and Ramsey Lake beyond. Although easterly winds are afforded the opportunity to accelerate over Ramsey Lake, the mature vegetation induces turbulence, reducing the wind's energy at the pedestrian level.

Proposed Setting

Easterly winds approaching the proposed Development in upper streamlines will contact the eastmost corners and southeast façades of the proposed Development where they will split to flow around the façades or downwash towards the pedestrian level below. Downwash will similarly be well mitigated by the wind's skewed angle of incidence, and the buildings' stepped façades, podiums and balconies.

Easterly winds approaching near the pedestrian level will similarly split upon contact with the proposed Development, flowing along the southeast façades, around the corners, between the buildings, and beyond towards Paris Street.

As a result, conditions along the southeast façades of the buildings are mainly predicted suitable for standing on the occasion of easterly winds, with localised conditions suitable for walking between the buildings, around the northeast corner of Building C and the southmost corner of Building A. Areas along the Paris Street façades of the proposed Development are within the aerodynamic shade region of the Development for easterly winds and as such will realise conditions suitable for sitting.

The Main Entrances along the northwest façades of the buildings are located within the aerodynamic shade region of the Development for easterly winds, and as such will be suitable for sitting and appropriate for their intended use.

Bell Park Road will be exposed to easterly winds that are directed to flow along the proposed Development, resulting in windier conditions than the existing site, but are considered suitable for standing most of the time, and appropriate for the intended use.

Paris Street is in the aerodynamic shade region of the proposed Development for easterly winds and will realize comfortable conditions also suitable for its' intended purpose.

Discussion of Ordinal Winds

Ordinal Winds approaching from the northwest, northeast, southeast, and southwest also make up an appreciable percentage of the prevailing wind climate, particularly from the southwest and to a lesser degree, northeast, and can be of higher velocity, as depicted in Figure 3.

The proposed Development considered as a whole, is orientated with the long axis nearly parallel with the southwest and northeast wind directions, resulting in said winds coming into contact with relatively narrow façades, with the balance of the site being in the aerodynamic shade region of the windward building. Windy conditions would be expected along the southwest façade of Building A, in the event of high ambient southwesterly winds, as winds split upon impact and flow along the façade, around the corners and beyond. Similarly, the windward façade of Building C will experience windy conditions in the event of high ambient northeasterly winds, as wind splits upon contact to flow along the façade and around the corners, with the remainder of the site being situated in the aerodynamic shade region, experiencing much calmer conditions, once beyond the respective corners. As such, wind conditions resulting from said ordinal winds are expected to pose a less significant influence upon pedestrian comfort than the cardinal winds discussed above.

Winds approaching from the northwest and southeast make up a considerably smaller percentage of the wind climate, and are of mid - to higher velocity, particularly from the northwest. Northwesterly and southeasterly winds will contact the proposed Development at nearly right angles, to a lesser extent for Buildings B and C, increasing the propensity of downwash to the pedestrian level. However, downwash was effectively mitigated by the buildings being punctuated with balconies, stepped podiums and canopies above the entrances. Downwash that reaches the pedestrian level will be redirected along the respective façades, around the corners, between the buildings, and beyond, resulting in pedestrian comfort conditions that are very similar to those discussed for the cardinal directions.

Discussion of Outdoor Amenity Space

Outdoor Amenity Space is proposed on the 13th floor of Building A, the 13th, 14th, and 20th floors on Building B, and at-grade and at the 3rd floor of Building C. The amenity spaces are, for the most part, higher than the neighbouring surroundings and, as a result, are exposed to large portions of the wind climate that are not as effectively moderated upon approach compared to the windward ground level.

The proposed rooftop amenity space on the 13th floor of Building A is located along the northeast façade within the eastmost corner. The Amenity Space is located within the aerodynamic shade region of the 14th through 16th floors of Building A on the occasion of winds emanating from the near northwest through southwest, which make up a significant portion of the wind climate. The Amenity Space is similarly within the aerodynamic shade region of Building B for winds emanating from the near northeast, which make up a considerable portion of the wind climate, particularly in the spring and summer. As a result, the Amenity Space is predicted to experience comfortable conditions, suitable for sitting, under the above described wind conditions.

Conversely, the Amenity Space will be exposed to winds from the near north as well as southeast quadrant being redirected by the windward façades of Building A and Building B to flow along the façades and through the gap, resulting in windy conditions at times. Winds from the southeast quadrant occur less frequently, tend to be of lower velocity, and are not predicted to have a significant influence on the Amenity Space overall. However, northerly winds will result in windy conditions from time to time and, as a result, 2.0m high glass wind screens are recommended around the perimeter of the space. Porous wind screens with a porosity in the order of 30% would be considered a viable alternative to solid screens. The need for and extent of mitigation necessary is best determined through quantitative analysis.

Outdoor Amenity Spaces are proposed for Building B at the 13th and 14th floors along the southwest façade and a covered Roof Top Terrace at the 20th floor along the southeast façade, at the southmost corner of the building. Similar to above, the Amenity Spaces are located within the aerodynamic shade region of Building B for winds emanating from the northeast, which makes up a considerable portion of the wind climate, particularly in the spring and summer. They will also realise protection from Building A on the occasion of winds from the southwest, which make up a significant portion of the wind climate. The Amenity Space is predicted to experience comfortable conditions, suitable for sitting, under these wind conditions. Conversely, they will be exposed to winds from the remaining directions flowing along the northwest and southeast façades of Buildings A and B and through the gap between and, as a result, 2.0m high wind screens situated around the perimeter of the Amenity Spaces is recommended.

The 20th floor Covered Roof Top Terrace of Building B is located within the aerodynamic shade region of Building B for winds emanating from the west through north to northeast. The Rooftop Terrace will be exposed to winds emanating from the remaining compass points, unmitigated as it approaches over the lower surrounds. The Roof Top Terrace is covered, reducing exposure, however, 2.0m high wind screens are recommended to achieve conditions seasonally appropriate for the area's intended use. If more comfortable conditions are desired, coniferous vegetation, raised planter beds populated with coarse plantings, trellises, and/or others can be included in the mitigation plan.

Outdoor Amenity Spaces are proposed for Building C at-grade along the northwest façade, proximate to the northmost corner, and at the 3rd floor, along the southeast façade. The at-grade Patio Area will be protected by the Development for winds emanating from the east through south to southwest, however it is exposed to the remaining directions, which makes up much of the prevailing wind climate. Locating Amenity Spaces away from corners is preferrable when practical. Consideration of existing and proposed landscape features will result in more comfortable conditions, however, the area is expected to be windy, and mitigation including wind screens, coniferous plantings, raised planter beds populated with coarse plantings, trellises, and others is recommended to achieve seasonally appropriate conditions for the area's intended use.

The Outdoor Amenity Space proposed along the 3rd level southeast façade of Building C is located within the aerodynamic shade region of Building C for winds emanating from the north through west to southwest, making up a significant portion of the prevailing wind climate, resulting in comfortable conditions suitable for sitting, much of the time. The Amenity Space will be exposed to northeasterly winds flowing along the façade, which are common in the spring and summer. Incorporating a porous screen wall (30% porosity) along the northeast façade of the building across the width of the Amenity Space would redirect northeasterly winds to flow around the Amenity Space, resulting in more comfortable conditions throughout the year, if desired. Winds emanating from the remaining compass points occur less frequently and are not likely to significantly influence comfort conditions.

Discussion of Residential Entrances

The Main Residential Entrances to the proposed Development are located centrally along the northwest, Paris Street, façades of the buildings. Downwash is moderated by balconies, overhangs, stepped façades, and canopies. The Entrances will be exposed to winds from the northwest quadrant, while they are sheltered by the proposed Development for winds emanating from the southeast quadrant. They are well removed from the buildings' corners, reducing the impact of winds from the remaining directions flowing along the façades, and around the corners. As a result, pedestrian comfort conditions at the Entrances are generally predicted to be suitable for standing most of the time, walking on the occasion of high ambient winds, and are considered appropriate for their intended use most of the time.

Comfort conditions appropriate for standing or better are preferable at building Entrances, and conditions suitable for walking are appropriate for the related sidewalks. A mitigation plan is recommended for the Entrances in order to achieve conditions more appropriate for their intended use throughout the year and can include recessing the entrances into the façades, utilizing revolving or sliding doors, incorporating wind screens perpendicular to the facades, including coniferous/marcescent vegetation, raised planter beds populated with dense plantings, trellises, and/or others.

With consideration of the aforementioned mitigative features, the Main Residential Entrances to the proposed Development are predicted to be comfortable and suitable for their intended use throughout the year.

8. MITIGATION STRATEGIES

The proposed 700 Paris Street Development plans establish a context for development in terms of height, massing, and location that allow the prediction of wind issues/problems that may persist once built.

The proposed Development employs an overall wind mitigative design that assists in moderating the upset in winds with inclusion of the building, causing limited influence upon pedestrian comfort conditions realised along the flanking streets and at neighbouring properties. The proposed Development's wind mitigative design features include:

- podiums,
- stepped massing,
- textured façades,
- balconies,

- overhangs,
- canopies,
- landscaping,

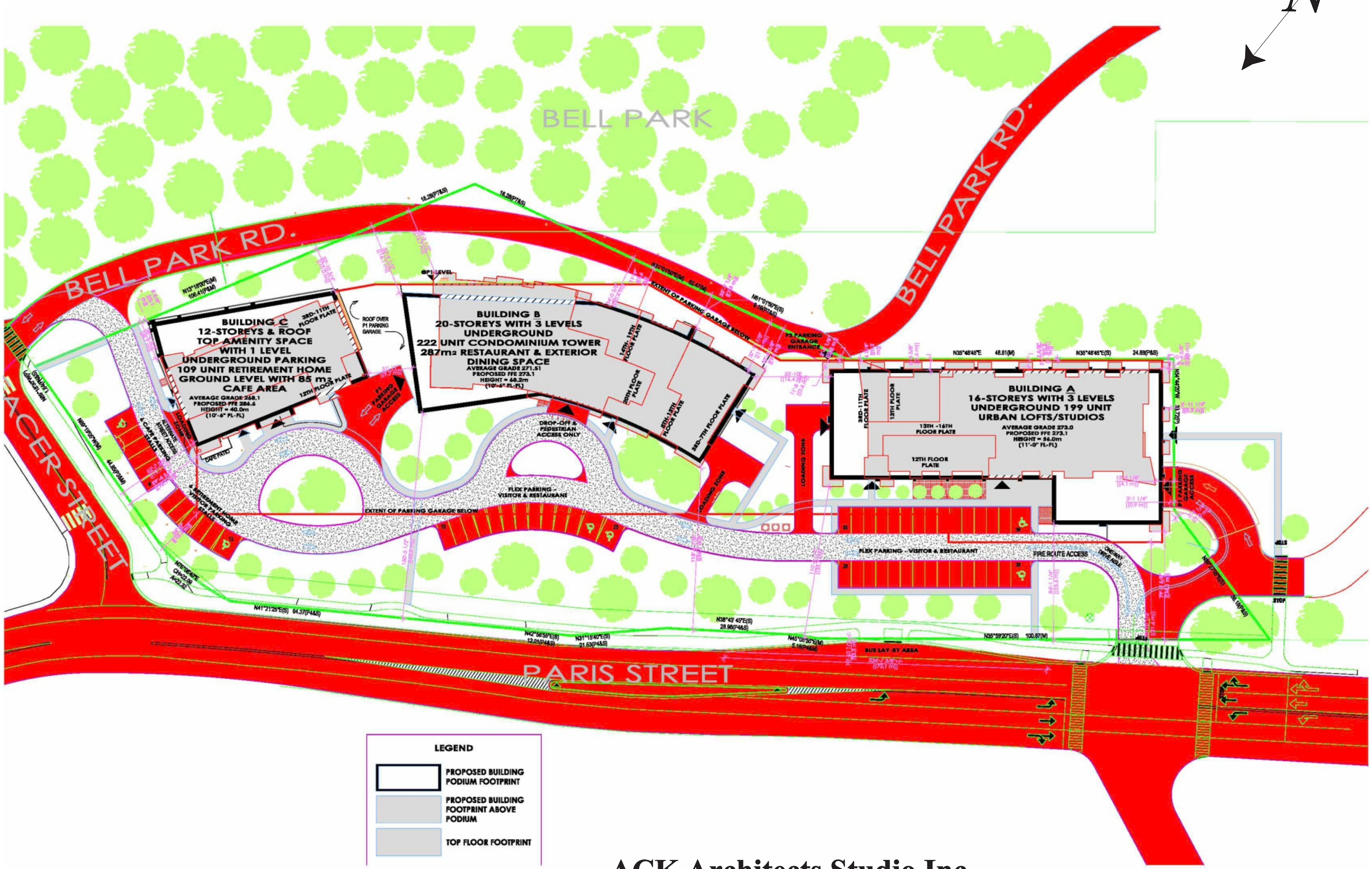
and others, that will increase surface roughness apparent to the wind.

Additional mitigation is recommended for the Main Entrances and Outdoor Amenity Spaces to achieve conditions that are suitable for the intended uses, as described within.

Comfort conditions expected at, and around, the proposed Development site, with the above-described mitigation in place, are considered suitable to the context, based upon qualitative analysis. Quantitative wind tunnel analysis is best suited to the determination of pedestrian comfort conditions and wind mitigation requirements.

Figure 1: Site Aerial Photo

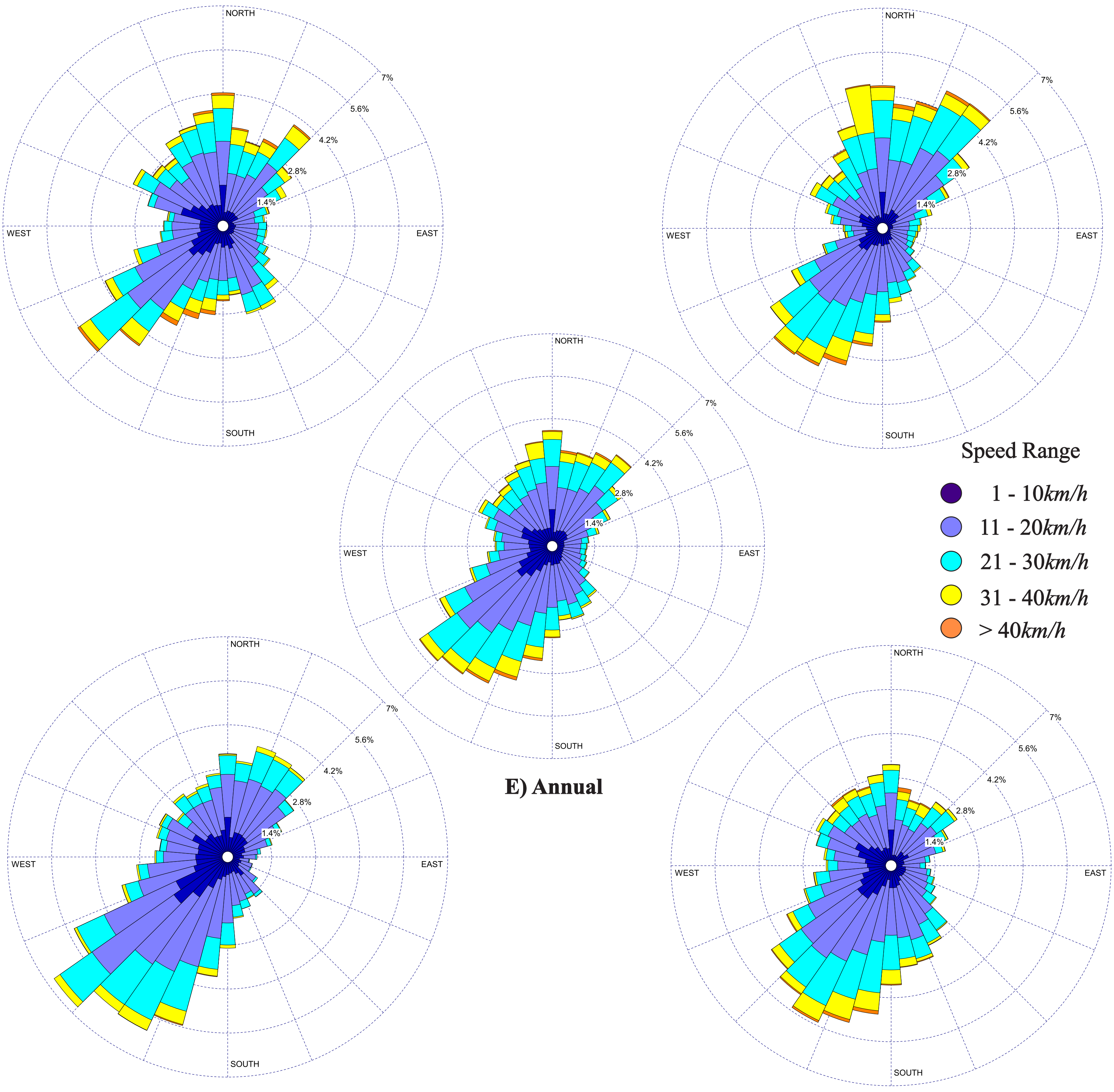
Figure 2: Site Plan



ACK Architects Studio Inc.

Figure 3: Wind Roses - Greater Sudbury Airport (2012 - 2021)

Historical Directional Distribution of Winds @ 10*m* height
Between the Hours of 6:00 - 23:00



A) Winter (December - February)

B) Spring (March - May)

E) Annual

D) Summer (June - August)

D) Fall (September - November)


Photo 1. Subject lands at 700 Paris Street showing the west side of the existing building, with Paris Street on the left, facing northeast. Photo taken October 17, 2024. CGS Files 701-6/23-04 & 751-6/23-25.


Photo 2. West and north side of the existing building at 700 Paris Street on the right, with Paris in the centre of the photo, and vacant lands zoned for low density residential development on the left. Photo taken October 17, 2024. CGS Files 701-6/23-04 & 751-6/23-25.

Photo 3. Intersection of Paris Street and Boland Avenue showing the current driveway into the site and City-owned parking lot in the foreground and low density residential use in the background, looking north. Photo taken October 17, 2024. CGS Files 701-6/23-04 & 751-6/23-25.

Photo 4. Intersection of Paris Street and current driveway into the site and City-owned parking lot, with City-owned parking lot shown in the background, looking south. Photo taken October 17, 2024. CGS Files 701-6/23-04 & 751-6/23-25.

Photo 5. South of subject lands showing Bell Park Road on the left and City park maintenance building in the foreground, with the south side of the existing building on the subject lands in the background, facing north. Photo taken October 17, 2024. CGS Files 701-6/23-04 & 751-6/23-25.

Photo 6. South side of subject lands showing the south side of the existing building, taken from Bell Park Road facing north. Photo taken October 17, 2024. CGS Files 701-6/23-04 & 751-6/23-25.

Photo 7. East side of subject lands showing the east side of the existing building, with Bell Park Road on the left, taken from Facer Street facing southwest. Photo taken October 17, 2024. CGS Files 701-6/23-04 & 751-6/23-25.

Photo 8. Facer Street showing the subject lands on the right and low density residential use on the left, taken from Paris Street facing east. Photo taken October 17, 2024. CGS Files 701-6/23-04 & 751-6/23-25.

Photo 9. Intersection of Paris Street and Facer Street, showing Facer Street in the foreground and low density residential use in the background, facing north. Photo taken October 17, 2024. CGS Files 701-6/23-04 & 751-6/23-25.

Appendix 1

Departmental & Agency Comments

File: 701-6/23-04 & 751-6/23-25

RE: Application for Official Plan Amendment & Rezoning – 2226553 Ontario Inc.
PINs 73584-0652 & 73591-0047, Part 2, Plan 53R-3947, Part of Lot 5, Concessions 2 & 3, Township of McKim (700 Paris Street, Sudbury)

Stage 2 Comments

Infrastructure Capital Planning Services (ICPS):

Roads
The owner should be aware that as part of the site plan an irregular piece of property will need to be transferred to the City along the frontage of Paris Street and Facer Street. The provided sketch appears to show this new right-of-way limit. As well, Facer Street will be required to be upgraded to an urban standard, on the south side, from Paris Street to Bell Park Road.

Transportation and Innovation Support
We have reviewed the Traffic Impact Study Addendum and have no further concerns.

Active Transportation
- In addition to the information provided on the information display board that is recommended as part of the transportation demand management measures, the board shall also include information regarding the City’s ride share program “Smart Commute”.
- This site is within the limits of the City’s Paris/Notre Dame Bikeway project. While it appears the bike way has been shown on the provided sketch of the site, the owner should be aware that the bike way design will need to be incorporated as part of the site plan.

Stage 1 Comments

Development Engineering

A water and sewer capacity analysis were performed and municipal water and sewer are available within the road right of way and is able to facilitate the requested development.

There is a registered site plan control agreement dated October 7, 2014. This agreement will need to be amended to reflect the newly proposed development.

It is our understanding that there are upgrades to the transportation network as a result of this development. It is our opinion that a holding designation be placed on the zoning such that the required upgrades would need to be made at the time of development of the site plan by way of an offsite servicing agreement.

Based on the requested rezoning and amendment to the Official Plan, Development Engineering has no objection provided that development proceed by way of amendment to the site plan control agreement. This amendment will address, but not limited to, the upgrades required to the transportation network, site servicing, site grading, and stormwater management.

Infrastructure Capital Planning Services (ICPS):

Roads

Bell Park Road is currently a service road and not a publicly maintained roadway. Staff have no concerns with the proposed reconstruction of the road or the use of the road to service the proposed site. Staff however do not support this road becoming a publicly maintained road.

The owner should be aware that as part of the site plan an irregular piece of property will need to be transferred to the City along the frontage of Paris Street and Facer Street. The provided sketch appears to show this new right-of-way limit. As well, Facer Street will be required to be upgraded to an urban standard, on the south side, from Paris Street to Bell Park Road.

Transportation and Innovation Support

Staff has reviewed the provided Traffic Impact Study and has concerns with vehicles trying to access Facer Street or McNaughton Street via Paris Street as no left turn lane is provided on Paris Street. When the Hospital site was in operation both intersections had a high instance of collisions due to left turning vehicles. For this reason, the access to the site from Bell Park Road shall be limited to service vehicles only. All residents, visitors and patrons must access the parking garage from the intersection of Boland Avenue and Paris Street. In addition, Facer Street at Paris Street is required to be modified to permit right-in, right-out turning movements only.

It is noted that in the 2032 total traffic projections (with improvements) the following movements are operating at LOS ‘E’. The City requires that any movement with LOS ‘E’ be addressed further.

- Paris Street @ Brady Street: EBL PM Peak (LOS ‘C’ in 2032 background)
- Paris Street @ John Street: WBT PM Peak (LOS ‘D’ in 2032 background)
- Paris Street @ Boland Avenue: SBL PM Peak (LOS ‘A’ in 2032 background)

In addition to the Paris Street at Boland Avenue intersection operating at LOS ‘E’ for the SBL movement, it is also noted that the projected 95th percentile queue exceeds the available storage capacity of the left turn lane. Staff are concerned this will result in motorists choosing to use Facer Street as an alternative access to the site, as well, the left turn queue will block through movements at the intersection. For these reasons the south bound left turn lane storage length must be extended to match the anticipated queue lengths.

Active Transportation

In addition to the information provided on the information display board that is recommended as part of the transportation demand management measures, the board shall also include information regarding the City’s ride share program “Smart Commute”.

This site is within the limits of the City’s Paris/Notre Dame Bikeway project. While it appears the bike way has been shown on the provided sketch of the site, the owner should be aware that the bike way design will need to be incorporated as part of the site plan.

Roads Operations

No concerns.

Drainage

No concerns.

Building Services

We have reviewed the application and documents for the requested Zoning By-law Amendment and have the following comment:

- A loading space meeting the dimensional requirements of 5.6.4. has not been provided for Building C.

Applicant to be advised of the following:

- At time of Building Permit review and Site Plan Agreement review, verification will be required for the construction of the Retirement Home in conformance with the Retirement Homes Act and the Zoning By-law.
- Further By-law requirements may need to be addressed upon submission of complete building plans.

Leisure Services

The City will be seeking cash-in-lieu for parkland dedication as permitted under the Planning Act.

Strategic and Environmental Planning

The applications listed in the subject line do not pose an elevated risk to species protected by the Endangered Species Act or to their habitat.

The proposed developments are anticipated to either have only minor negative effects on the overall natural environment or to have potential negative effects that are to be adequately mitigated as indicated on the relevant site plans and sketches. As such, specific environmental studies are not required beyond those that may have been requested previously.

Water/Wastewater - Source Water Protection

No activity or activities engaged in or proposed to be engaged in on the above noted property are considered to be significant drinking water threats at this time. You may undertake the activity or activities described in your application and proceed to apply for a Building Permit or Planning Approval as they are neither prohibited nor restricted for the purpose of Part IV of the Clean Water Act, 2006.

Conservation Sudbury (Nickel District Conservation Sudbury)

The subject property is located outside of any regulated hazards and Conservation Sudbury has no objection to the Official Plan Amendment and Zoning By-law Amendments as described in the circulation.

Greater Sudbury Transit

Transit do not have comments or concerns related to this application.

Maria Gonzalez Santos

From: Laura Tagliafierro <[redacted]>
Sent: Friday, February 9, 2024 12:19 PM
To: Alex Singbush
Subject: Notice of application for old St Jo's site

You don't often get email from [redacted]. Learn why this is important

Hello,
I would like to express some issue with the proposed development at Paris Street and Boland intersection at the former site of Saint Joseph's Hospital.

Being directly adjacent to the development means:

Decrease scope of view to the lake
Increase in light pollution and ambient light in the night sky (an issue we already deal with due to the new led lighting in the adjacent parking lot which is turned off in winter months.)

increased traffic

Increased cars parked along adjacent streets

increased noise
increased garbage
Increased foot track traffic to an already extremely busy area especially in the summer.

Since the installation of parking at the site for the public and post Covid, we have seen an increase in people camping overnight in the parking lot, significant garbage throughout the summer at the site, as well as an increase in noise, crime and such behaviour in the late night hours 12am to 5am.

We frequently have foot traffic people entering our properties in yards as well as significant noise from Paris Street.
At the intersection, there is significant running of the red light in the north and south bound directions.

Despite recent traffic calming measures with posted signage of 40 km/h on Boland Street we continue to see extremely high speeds of driving in a residential area where children play.

Though I would like to see the development of this site, I believe the significant number of units is far too many for this neighbourhood to maintain the nature of the community. In addition, there is concern that the development will block the view and access of neighbours and community members to the lake and the park, something which we have been paying a premium to have the opportunity to live near.

I would like to see some measures of what will occur in terms of the following:

-pedestrian management for walkways adjacent to the park to limit wind factors which are already significant.
-the pedestrian environment around the development.
- proposed continued access for the park and lake front
- study on shading and how the development will affect light to surrounding street- for example we will no longer have the morning sun.

-light management in terms of ambient light and light pollution in the night sky.

-garbage management around the park parking lot area and side streets other areas in the community due to traffic.
-Proposed significant traffic calming measures by the city as well as by the developers and how traffic will flow in and out of the development.
-sound barriers were possible.
- most importantly a reduction in the number of units.

-will there be access to grocery, cafe and restaurants in the facility will these be accessible to the surrounding community.

We would like to see a reduction in the
Number of units, and or maintain the current height of the building that exists on the site. Otherwise we feel a study to examine how it will affect neighboring properties and community is necessary before such a large development is built.

Sincerely,
Laura and Anthony Tagliafierro
11 Boland Ave.

Maria Gonzalez Santos

From: Alex Singbush
Sent: Thursday, February 15, 2024 3:32 PM
To: Wendy Kaufman; Maria Gonzalez Santos
Subject: FW: NOTICE OF APPLICATION - file# 701-6/23-04 & 751-6/23-25
Attachments: TO CITY OF SUDBURY.docx

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: COMMENTS

From: Mike Parsons <[redacted]>
Sent: Thursday, February 15, 2024 10:13 AM
To: Alex Singbush <Alex.Singbush@greatersudbury.ca>
Subject: NOTICE OF APPLICATION - file# 701-6/23-04 & 751-6/23-25

Hello Alex.
Please see attached comments regarding “NOTICE OF APPLICATIONS “ in connection with old St Joseph’s Health Centre, file# 701-6/23-04 & 751-6/23-25.

Thank you.
Michael Parsons
578 Paris Street
Sudbury Ontario. P3B-3B4
[redacted]

To: February 14/2024

City of Greater Sudbury.

Alex Singbush.

Manager of Development Approvals, Planning Services Division.

PO Box 5000, Station A, 200 Brady Street, Sudbury, ON P3A-5P3.

(alex.singbush@greatersudbury.ca)

Hello Alex.

In response to “NOTICE OF APPLICATIONS” regarding the old St Joseph’s Health Centre, Sudbury.

The current application for the abandoned St Joseph’s Health Centre property presents at least three problems for the citizens of Sudbury who enjoy the benefits of Bell Park.

First, the request for zero set back on the Bell Park side of the proposed construction. This would place an exclusion zone for construction on the Bell Park property, removing that land from the use and enjoyment of people of Sudbury for the duration of construction.

Second, the proposal shows the annex of a public access road that presently runs underneath the old helicopter pad. Rerouting this road would destroy a stand of pine trees and walking path in the park.

Third, the proposal contains no time line for completion of the development. Based on the progress over the last ten or more years, that means Bell Park will be dominated by perpetual construction for decades.

Thank you.

Michael Parsons

578 Paris Street

Sudbury Ontario. P3B-3B4

[redacted]

[redacted]

Maria Gonzalez Santos

From: Ray Spangler <[redacted]>
Sent: Friday, March 8, 2024 2:14 PM
To: Alex Singbush
Subject: Notice of Applications File 701-6/23-04 & 751-6/23-25

To: Mr. Alex Singbush, Manager of Development Approvals.

Re: Notice of Applications

File 701-6/23-04 & 751-6/23-25

Applicant: 2226553 Ontario Inc.

We object to this application.

My reasons are as follows:

- There is no timeline. The applicant has had possession of this property for more than 10 years and it could be vacant for another 10 years. He has left the site in a derelict state without consideration to adjacent property owners or passing traffic. The applicant provides no guaranty that they will continue to develop the property. If development does progress, the site could be under construction for many years causing traffic issues and unsightly conditions.

- The increase of traffic and turning movements on Paris Street will be significant.

- The City will have little control of the building aesthetics or the site landscaping. These structures will be adjacent to Bell Park and will no doubt be unattractive and ordinary apartment buildings.

- A 12, 16 and 20 story building will have an obvious and negative impact on Bell Park. This fact alone should be sufficient reason for Planning Services to reject the application.

We also forward further comments which we feel are applicable to this application. I have expressed my concern with this development via several emails to my Councillor over the past years.

The Master Plan for Bell Park calls for the City to purchase any adjacent property that becomes available over time. The City has already ignored this policy as they have permitted residential development adjacent to the park on Facer Street

The previous council should have taken the opportunity to purchase the old hospital site and letting the most valuable piece of property within the City go to a developer was a major mistake. This can now be rectified by the current administration and council by the expropriation of the property. Costs are irrelevant - considering the property would forever belong to the people of the City of Sudbury.

We question the integrity of the applicant. At the first public meeting, they presented architectural renderings for high end condominiums. We later found that they did not build and sell but only built to rent. The condominium plan was a ploy to get the City and neighboring property owners to approve the development and donate a small piece of land to permit additional parking.

We question the integrity of the City. The building is an eyesore. Why the City has not forced demolition and restoration remains a question and we wonder if the City will continue to allow this applicant to be unrestricted.

There is activity inside the existing building which is a major Health and Safety concern – putting the developer and the City at risk.

We would appreciate notification of the decision on the proposed zoning amendment.

I have also forwarded this email to Councillor Cormier. Please feel free to contact us if you have any questions of comments.

Ray and Connie Spangler

530 Ramsey Road, Sudbury

[redacted]

From: Philip Hopkins <[redacted]>
Sent: Friday, February 2, 2024 10:12 AM
To: Alex Singbush
Subject: FW: Notice of Applications 701-6/23-04 & 751-6/23-25 - 2226553 Ontario Inc

Attention: Mr Alex Singbush
Manager of Development Approvals
City of Greater Sudbury

Re: Notice of Applications
File: 701-6/23-04 & 751-6/23-25

Dear Mr Singbush,

In reference to the letter I received from yourself (29 January 2024) regarding the Notice of Applications (File: 701-6/23-04 & 751-6/23-25) I would like to make comment on the proposed applicatyions (1 & 2) outlined in your letter.

As noted below (see address), my wife (Mary) and I reside in a single home dwelling directly on Paris Street some three homes to the north of the proposed rezoning and ultimate construction site. We would like to note for the record that we are wholly in support of both the rezoning and ultimate construction of the joined and multiple use building outlined in your letter of 29 January 2024. Furthermore, we would be supportive of seeing this development move forward as smoothly and unhindered as possible.

In sending this letter of support we fully understand and expect: traffic restrictions and interruptions, some noise matters, some dust and general area "housekeeping" matters and local movement disruptions throughout the development process and that this overall period may last a number of years. We respect this may/will result in some challenges from time to time with us as local residents but fully respect the work and approach here and will support this development in any feasible way we can.

We wish you the greatest success here and know the final outcomes will greatly improve the city and area overall.

Sincerely
Philip Hopkins (& Mary)

Personal details are as follows:

Mary & Philip Hopkins
584 Paris Street
Sudbury, Ontario
P3E 3B4

Phone: [redacted] (Philip)

Maria Gonzalez Santos

From:	Arthur Peach <[redacted]>
Sent:	Sunday, April 28, 2024 11:09 AM
To:	Fern Cormier; clerks; 311
Cc:	Arthur F Peach
Subject:	Referencing Panoramic's proposal for the old hospital property: 700 Paris Street – Item 4.1 on the Agenda Monday, April 219, 2024

COUNCILLOR CORMIER AND CGS CLERK,

I would like this presentation to be received and put on the Agenda for Monday's Planning Committee Meeting.

I will be at the meeting and If possible I would appreciate being able to present orally, personally to the Committee; I trust that you can enable that. I would be happy to take questions.

Thank you, very much

Art Peach, B. Arch. Consultant
For a Better Designed Sudbury
7 Pebblehill Place, Sudbury ON
P3E 5Y9, Tel. [redacted]
[redacted]

ARTHUR F. PEACH, B. ARCH., RET. OAA – BUILDING AND URBAN DESIGN CONSULTANT

7 PEBBLEHILL PLACE, SUDBURY, ON P3E 5Y9

T. [redacted] E. [redacted]

Referencing Panoramic's proposal for the old hospital property: 700 Paris Street –

Item 4.1 on the Agenda

1. When first acquired about 10 years ago Panoramic presented a fairly reasonable plan which I tentatively supported. It provided for a living project with ONE building, in good scale with the neighbourhood, and with PUBLIC amenities, transparent 'through-the-project' access to Bell Park and Lake Ramsey. It was itself presented as an integral part of the Boland Neighbourhood, with public street and sidewalks, paid for by the developer.

2. The current proposal is presented as a Barrier Wall, cutting off public sight lines, excluding public access to the Public Park and Lake Ramsey; a virtual Gated Community with very limited "neighbourliness", "VIBE"; could it be comparable to the WALL on the US southern border, only much worse at 12 to 20 stories high, BOTH meant to EXclude.??

3. In the proposal by Panoramic there is no mention of a market study if indeed one was done. Is this company, our community, aware of the number of possible tenants and owners who would participate in this monster?

What will the range of rents be?

What will be the price range of the condo suites?

Does the proposed development do anything to help solve the affordable housing crisis we are experiencing in Sudbury?

4. What is going to be the cost to the Taxpayers of the city? Will the developer pay for all the additional service infrastructure needed for the development, the public road improvements, the new, traffic controlled intersection that is suggested in the proposal? Remember well...how the city got stuck with nearly a million dollars in unauthorized infrastructure costs that eventually favoured the developer of the KED...even though that proposal was thankfully stopped by the previous Council.

5. What will be the effect to traffic on adjacent Paris Street during construction, and after the finish of the construction? Currently citizens have been subjected to a long period of reconstruction on the nearby Bridge of nations, the entry to our downtown; it's not pretty. Has there been any sort of Traffic Study?

6. As a retired architect and partner in an urban planning practice for over 65 years I think I have some credibility to offer the developer and our planning department. My advice? Back to the drawing board, fellow colleagues. Our friends at Panoramic know, or should know better than to expect approval for this monster development…which will consume us.

7. <u>RE-THINK...RE-PLAN...RE-IDEA THE WHOLE THING...!</u>

If Panoramic really wishes to stay in the good graces of the Residents of Sudbury, they will seriously consider and accept to enter nehotiations fo a 'Land Swap'.

The land, our land, always has been Public Land, before being acquired by a Private Citizen, and eventually willed to us by that same Private Citizen, who had a lot of Integrity.

I trust the Council and Planners of our great city will recognize and maintain that integrity.

Sincerely,

Arthur Peach

From:	George Kaminski <[redacted]>
Sent:	Monday, April 29, 2024 12:55 PM
To:	Alex Singbush
Subject:	700 Paris Street

My name is Edward George Kaminski.
I reside at 598 Paris St.

I would like to express my concerns regarding amendments to the Official Plan and Zoning By-laws with regard to 700 Paris St.

1- I believe the number of proposed units is extremely excessive for a relatively small plot of land. The Applicant is well aware that because of the park/lake location, they can command a premium prices for the condo, retirement and rental units and trying to take advantage of this by requesting a very high density. This is very beneficial for the Developer but would be detrimental to the enjoyment of citizens of this low density residential area.

2- Why is a restaurant necessary for this development? It will only increase traffic and parking issues. Where will the restaurant employees park? Traffic is often backed up from York or Boland St to the Bridge of Nations making it difficult to enter or exit my driveway. Adding a restaurant will only add to the traffic jams, especially during lunch, dinner and rush hours. A commercial use for this property was rejected 10 years ago for the condo development so here they are again hoping to get approval on this round. When the last development was approved in 2012 for 210 units without restaurants, a study projected an increase of over 1,200 vehicle trips on an average week day. This proposal projects less than 450 vehicle trip for 530 units plus restaurants. Interesting how projections can be manipulated to suite an outcome.
I have to admit that if I were to purchase a condo in this development, would I really want to have a restaurant open to the public in the same building. Would the condo owners elevators be shared with the restaurant? Will the condo owners be responsible to maintain the elevators? What is the benefit to the condo owner? The proposal also states that the restaurant will also be used for special private events. How would the 21 parking spots allocated for the restaurant be sufficient for the guests, cooks, servers, etc. Will they be relying on the city owned parking lot on the south side of the property? What about the noise from this commercial endeavour?

3- I believe the Developer is requesting access to parking from Bell Park Road via Facer and McNaughton Streets. This was rejected 10 years ago for the previous condo proposed development. All traffic was to be accessed from the Boland/Paris intersection. In Living Area 1, there should be minimal impact on local streets. Accessing parking from Bell Park Road will not accomplish this.
Bell Park Road is not a public road. It is a fire route and access route for city vehicles and other limited access for events at the Amphitheatre.
If this development is given access to service vehicles, what prevents vehicles from accessing the parking using the same route? There is a proposal to widen and pave Bell Park Road, Does this mean that parkland that is part of the Bell covenant of 1927 will be infringed upon? Would this be legal?

4- The Developer is requesting no setback on the park side of the property. This helps facilitate the proposed high density and also sets a precedent that other developers will request. They are also asking for less distance between buildings so they can increase density. This should be rejected as it sets a negative precedent for other developments. The city should not accept money in lieu of this requirement. Setbacks are legislated for a purpose and exceptions should be limited whenever possible.

5- The Development proposes plenty of landscaping. I trust that the trees planted will be more mature than a few years old so we do not have to wait 20 years before they are mature enough to make a difference.

6- No time frame is mentioned in the proposal. In 2012, the city made many accommodations and changes to the Zoning By-laws to facilitate development, yet the property sat idle until now. The Developer is now requesting approximately a 150% increase in the proposed units without a timeline. What prevents them from leaving this eyesore for another 10 years?

I believe that this property will be developed so let's do this right. The proposal seems to portray that the Developer is doing Sudbury a big favour by developing this property. I hope the City Councillors' will not be blinded by the Developers spin on this project and approve this without seriously considering the negatives. The City has developed an Official Plan and Zoning By-laws. Looking at this proposal, it appears that the Developer ignored this Plan and proposed something that hardly resembles the Plan.. Tell them to re-imagine their proposal to better align with the Official Plan and Zoning By-laws.

George Kaminski

Arthur F. Peach, B. Arch., Ret. OAA – Building and Urban Design Consultant
7 Pebblehill Place, Sudbury, ON P3E 5Y9
T. [redacted] E. [redacted]

Referencing Panoramic's proposal for the old hospital property: 700 Paris Street – Item 4.1 on the Agenda

1. When first acquired about 10 years ago Panoramic presented a fairly reasonable plan which I tentatively supported. It provided for a living project with ONE building, using the existing shell and profile of the old hospital, in good scale with the neighbourhood, and with PUBLIC amenities, transparent 'through-the-project' access to Bell Park and Lake Ramsey. It was itself presented as an integral part of the Boland Neighbourhood, with public street and sidewalks, paid for by the developer.

2. The current proposal strikingly different is presented as a Barrier Wall, cutting off public sight lines, excluding public access to the Public Park and Lake Ramsey; a virtual Gated Community with very limited "neighbourliness", "VIBE"; could it be comparable to the WALL on the US southern border, only much worse at 12 to 20 stories high, BOTH meant to EXclude.??

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I trust the Council and Planners of our great city will recognize and maintain that integrity.

Sincerely,

Arthur Peach

RECEIVED
APR 29 2024
PLANNING SERVICES

Maria Gonzalez Santos

From: David King <[redacted]>
Sent: Wednesday, May 29, 2024 1:55 PM
To: Wendy Kaufman
Subject: 700 Paris Street - Proposed O.P and ZBL Amendments

You don't often get email from [redacted] Learn why this is important

Dear Ms. Kaufman:

I am a property owner (0 Facer Street McKim CON3, Lot5, Plan 50S -Pt. Lot 12, 13, & 14 Inst 2554) adjacent to the subject property.
I viewed online the public meeting held on April 29th, 2024, regarding the proposal. I have some questions and concerns that I would like addressed in the next version of the planning report.

Like most Sudbury residents, I would like to see the former hospital demolished and replaced with public space, or a development that is aesthetically pleasing, blends in with the natural environment and is forward thinking in terms of architecture, storm water management and active transportation. This property is one of the premier development sites in the City and needs to be developed with thought and care as it will impact the Lake Ramsey land scape for future generations.

In my view, the subject proposal has a number of issues that need to be addressed. In particular, the **number of dwelling units** being proposed, the **height of the buildings** and the associated issues of **parking, traffic flow, stormwater management and active transportation.**

Given the length of time that it has taken to develop this property, I am skeptical of the developers' intentions and fear that they are simply trying to "up zone" the property to try and maximize its value only to turn around and flip the property to another developer which will further delay the redevelopment of this property.

Number of dwelling units being proposed:
First, I would like the background section of the planning report provide an outline of the planning/development history for this site. I recall that after the property was purchased from the Sisters of St. Joseph, the developer was proposing to utilize the existing structure of the hospital to redevelop the site for condominium units.

Was an Official Plan (O.P) and Zoning By-law Amendment (ZBL) required at that time?
If so, what was proposed and approved in terms of the number of dwelling units, parking, and access to the property?
What does the current O. P. designation and ZBL provide for in terms of the number of dwelling units and parking?
What does the proposed O.P. and ZBL amendment provide for in terms of the number of dwelling units and parking?

Has there been any issues identified by City departments in the past associated with the subject property that need to be addressed/rectified with the proposed development? I would like the planning report to identify these to ensure that they are addressed when the site is redeveloped.

Heights of the proposed buildings:
I understand from the public hearing that the developer has submitted a sun and shadow report. However, I was unable to locate this report online.

My concerns relate to the proposed heights of the buildings and the transition in building heights from the McNaughton and Boland Street neighborhoods; the shadow effect on both Paris Street and Bell Park during different parts of the day, and the Lake Ramsy viewscape.

In short, I would like to see I would like to see the height restrictions of any of the buildings limited to 8 Stories or 32 meters, which I understand to be the current height restrictions for the property.

Parking:
Despite the developer's proposal to provide 592 parking spaces for the Condo/Apartment/Senior units under the proposed buildings, I am concerned that there is still insufficient parking for the size of the development proposal and a limited amount of above ground parking to accommodate visitors and staff to the units and the proposed restaurant. I foresee issues with overflow parking impacting the Facer Street entrance to Bell Park as well as the City owned parking area for Bell Park to the south of the proposed development.
As a user of the General Hospital in the past, I recall there was insufficient parking at that time and visitors and staff had to park in the area south of the Hospital.

Traffic Flow:
Parris Street is one of the busiest thorough fares/ access points to the south end of Sudbury. I would like the traffic study to address how this development proposal would impact traffic flow and in particular how to address traffic calming along Paris Street.

Consideration to having traffic lights at the intersection of Facer Street and Paris Street would slow traffic, reduce the number of vehicle accidents turning east onto Facer Street and allow for safer pedestrian access to Bell Park from the west side of Paris Street to Facer Street.
I would also recommend that bus pull off areas be provided on Paris Street (north and south bound) near the Boland Street entrance to the development in order to reduce traffic build ups.

Stormwater Management:
It is well known that the water quality in Ramsey Lake continues to be impacted by stormwater runoff from the roadways and developments in the Ramsey Lake watershed. When questioned by Councillor Leduc about how stormwater runoff from the proposed development and snow storage would be managed, the consultant for the developer indicated the "City's stormwater protection group is satisfied with what is being proposed as the site less than one hectare in size".
I find this response to irresponsible as uncontrolled runoff from this dense development will surely impact water quality in Ramsey Lake.

There needs to be a separate and thorough study on how stormwater runoff will be managed (in terms of quantity and quality) from the 592 underground parking spaces, roof tops, surface parking and snow storage before an increase in building density is considered.

Active Transportation:
Given that the proposed development is adjacent to Bell park with access points to both the north and south portions of the development, it is important that active transportation be considered and linked to those access points.

If you have any questions or require clarification of my comments, my contact information is below.

Sincerely,

David King
Phone: [redacted]
Email: [redacted]

MacMillan Drive, Val Therese Plan of Subdivision

Presented To:	Planning Committee
Meeting Date:	November 25, 2024
Type:	Routine Management Reports
Prepared by:	Stephanie Poirier Planning Services
Recommended by:	General Manager of Growth and Infrastructure
File Number:	780-7/09002

Report Summary

This report provides a recommendation regarding a request to extend draft plan approval for a proposed subdivision in Val Therese.

Resolution

THAT the City of Greater Sudbury's delegated official be directed to amend the conditions of draft approval for the draft plan of subdivision on lands described as PIN 73504-0952, Reference Plan 53R18901 Parts 1 & 2, Rem. of Parcel 764 S.E.S., in Lot 6, Concession 1, Township of Hanmer, City of Greater Sudbury, File 780-7/09002, in the report entitled "MacMillan Drive, Val Therese Plan of Subdivision", from the General Manager of Growth and Infrastructure, presented at the meeting of November 25, 2024 as follows:

a) By amending the draft approval lapsing date in Condition #10 to "November 28, 2027."

b) By deleting condition #12

c) By amending condition #16 to add the words "including examining the soil conditions above the abandoned tributary of the Whitson River" after the words "Said report shall, as a minimum, provide factual information on the soils and groundwater conditions within the proposed development"

d) By deleting condition #26 and replacing with the following:

#26 That the following conditions related to the implementation of the Paquette-Whitson Municipal Drain be addressed to the satisfaction of the General Manager of Growth and Infrastructure:

a) Deleted.
b) The owner acknowledges that the current Tributary 8A watercourse that crosses the subject subdivision was rerouted southerly to the Whitson River on lands east of the subject subdivision lands. Existing road and storm sewer drainage from MacMillan Drive and Josephine Street shall be directed westerly, as part of the subdivision design, towards the existing Municipal Road 80 and Tributary 8A cross culvert.
c) Deleted.
d) Deleted.

    e) The owner agrees to pay Paquette-Whitson Municipal Drain assessments applied to the subject subdivision lands as set out in the Engineer's Report for benefit, outlet, and stormwater management and in conformance with Finance Committee Resolution FA2012-12 (Paquette Whitson Financing Report) ratified by City Council on July 10, 2012.
    f) Deleted.
    g) New drainage swales are required on the owner's lots to accept drainage from the backyards of the existing lots on MacMillan Drive.
    h) The overland flow system within the plan of subdivision must be designed to accommodate and/or convey the major storm flow, that is, the rainfall runoff resulting from the subject site and any external tributary areas using the City's 100 year design storm or Regional storm event, whichever is greater, without causing damage to proposed and adjacent public and private properties. The underground storm sewer system within the plan of subdivision must be designed to accommodate and/or convey the minor storm flow, that is, the rainfall runoff resulting from the subject site and any external tributary areas using the City's 5 year design storm. The owner is required to design the site storm sewer to meet a storm sewer elevation of 284.60 meters at the east subdivision property line on John Street. The owner shall confirm the storm sewer elevation prior to the subdivision engineering submission to the City.
    i) Deleted.
    j) The owner acknowledges the final built of the City pond lands area complete, and the design of the subdivision rear yard drainage swales and catch basins must be integrated with the grading of the pond and the City's lands to the satisfaction of General Manager of Growth and Infrastructure. The owner will be responsible for install any outlet storm sewers from the subdivision to connect to the constructed City stormwater infrastructure. The owner shall limit the number of storm sewers outlet to City pond to the satisfaction of the City's Drainage Engineer.
    k) The owner agrees to transfer a 6.17 hectare tract of land on the south portion of the subdivision in consideration of the subdivision stormwater land requirement and the requirements of the Engineer's Report for the Paquette-Whitson Municipal Drain and the owner agrees to accept the land allowance payment contained in the report of $41,000 as the financial consideration for the transfer of the 6.17 h land to the City.
    l) Deleted.
    m) Deleted.
    n) The owner shall provide a 1.8 m high galvanized chain link fence, 0.05 metres inside the subdivision lot line and along the subdivision boundary with the stormwater management block from Lot 37 to Lot 21.
e) By deleting condition #32
f) By adding the following condition:
   #33. A detailed lot grading plan, prepared, signed, sealed, and dated by a professional civil engineer with a valid certificate of authorization shall be submitted to the satisfaction of Conservation Sudbury. The plan shall show that all portions of the subdivision are located at or above the flood elevation of the Paquette Whitson municipal drain, and that the lowest opening into any dwelling is located 30 cm above the flood elevation.

Relationship to the Strategic Plan, Health Impact Assessment and Climate Action Plans

The request to extend the approval for a draft plan of subdivision is an operational matter under the Planning Act to which the City is responding. The proposal is consistent with the goals and objectives of the Strategic Plan by diversifying the supply of new housing and providing a range of housing options to accommodate future demand.

The proposed development is located within a designated growth area, has access to public transit on Municipal Road 80, and represents the rounding out of existing development including the local road network. Active transportation components will be integrated into the subdivision design. The application is therefore deemed to be consistent with the goal to create compact, complete communities under the

Community Energy & Emissions Plan.

Financial Implications

If approved, staff estimates approximately $927,000 in taxation revenue, based on the assumption of 163 single detached dwelling units based on an estimated assessed value of $375,000 at the 2024 property tax rates.

If there is additional taxation revenue, it will only occur in the supplemental tax year. Any taxation revenue generated from new development is part of the supplemental taxation in its first year. Therefore, the City does not receive additional taxation revenue in future years from new development, as the tax levy amount to be collected as determined from the budget process, is spread out over all properties within the City.

The amount of development charges will be based on final review of the property by the Building Services department at the time of permit issuance.

Report Overview:

The owner of the subject land has requested a three-year draft approval extension for a proposed subdivision in the community of Val Therese (File 780-7/09002). The current draft plan comprises a total of 163 lots for low density residential use, including singles, semis and duplexes. If approved, the new lapsing date will be November 28, 2027.

Planning Services recommends that the request to extend draft plan approval for a period of three (3) years be approved.

STAFF REPORT

Applicant:

Campeau St. Development Inc.

Location:

PIN 73504-0952, Reference Plan 53R18901 Parts 1 & 2, Rem. of Parcel 764 S.E.S., in Lot 6, Concession 1, Township of Hanmer, City of Greater Sudbury

Application:

To extend the draft approval which was extended most recently in 2022 and is set to expire November 28 2024, for a draft plan of subdivision on those lands known as PIN 73504-0952, Reference Plan 53R18901 Parts 1 & 2, Rem. of Parcel 764 S.E.S., in Lot 6, Concession 1, Township of Hanmer, City of Greater Sudbury.

Proposal:

The owner is requesting that the draft approval conditions for the above noted lands be extended for a period of three years until November 28, 2027.

Background:

The owner of the subject land has requested a three-year draft approval extension for a proposed plan of subdivision (File 780-7/09002). If approved, the new lapsing date will be November 28, 2027. The original draft approval date is November 28, 2012. The current draft plan approval comprises a total of 163 lots for low density residential uses, including singles, semis, duplexes and secondary dwelling units.

The current draft plan approval is described as follows:

- 25 lots zoned "H39R1-5", Holding Low Density Residential One (single detached dwellings);
- 90 lots zoned "H39R2-1", Holding Low Density Residential Two (singles & duplexes); and,
- 48 lots zoned "H39R2-2", Holding Low Density Residential Two (singles, duplexes & semis), for a total of 163 lots.

The holding provision restricts development until such time that the lands are removed from the flood plain. A six-hectare block zoned "OSC", Open Space Conservation on the southerly portion of the property will accommodate a stormwater management pond as part of the Paquette-Whitson Municipal Drain project.

The draft plan was most recently extended in 2022. No phases have been registered since the original application. The last set of construction drawings were reviewed and commented on in 2014 and would need to be resubmitted. Staff have not received any further submissions since that date. The most recent conditions of draft approval dated March 2022 are attached for review.

Policy & Regulatory Framework:

The extension request is subject to the following applicable policy and regulatory framework:

- Planning Act;
- 2024 Provincial Planning Statement; and,
- Official Plan for the City of Greater Sudbury, 2006.

The Planning Act, Provincial Planning Statements, and municipal Official Plans, provide a policy framework for planning and development in the Province. This framework is implemented through a range of land use controls such as zoning by-laws, plans of subdivision and site plans.

Planning Act:

Section 51 of the Planning Act has established two land use planning principles with respect to the initial approval of a draft plan of subdivision and how extensions to an existing draft approved plan of subdivision are to be addressed.

First, Section 51(32) allows for a municipality to provide a lapsing date on a draft approved plan of subdivision of not less than three years and the draft approval is considered to have lapsed at the end of the specified time period. Section 51(33) allows for a municipality to extend draft approval beyond the initial period for a time specified by the municipality.

In practice, where a draft plan of subdivision has lapsed, a landowner may request the subdivision be deemed not to have lapsed if the criteria listed in Section 51(33.1) can be met. Additionally, there is nothing preventing a landowner from filing another draft plan of subdivision application for consideration. The re-application is treated as a new application and all requirements under Section 51 are applicable (e.g., a public hearing would be required).

Lapsing conditions are imposed by a municipality to ensure that development once approved will proceed in an expeditious manner. The municipality is most typically concerned that development takes place within the current policy and regulatory framework and especially where scarce services or capacity to service development have been committed to the draft approved plan of subdivision. Three years is generally considered to be sufficient time to clear conditions of draft approval and proceed to registering a plan of subdivision. Section 51(33) allows for some flexibility whereby some additional time can be afforded to a landowner where they are actively pursuing the clearing of draft approval conditions.

Second, Section 51(44) on the other hand allows for a municipality to withdraw draft approval of a plan of subdivision at its discretion or to change the conditions of a draft approval at any time before the registration of a plan of subdivision.

Appeal rights in both cases noted above are found under Section 51 of the Planning Act should a landowner wish to appeal a refusal to extend a lapsing date, a change of conditions or the complete withdrawal entirely of a draft approval by a municipality.

2024 Provincial Planning Statement:

Municipalities in the Province of Ontario are required under Section 3 of the Planning Act to ensure that decisions affecting planning matters are consistent with the PPS. Settlement areas, employment areas, housing and housing supply, provision of public spaces, sewage and water capacities, transportation, natural hazards and human-made hazards are some examples of areas of provincial interest that a draft approved plan of subdivision may impact and should be considered when an initial approval is granted as well as when an extension to an existing draft approval is granted. The PPS is updated from time-to-time by the Province, and any draft approval extension should be considered within the context of the in-force PPS at the time an extension request is made.

Official Plan:

Section 19.4.2 of the Official Plan for the City of Greater Sudbury addressing draft plan of subdivision approvals outlines that Council will not extend or recommend the extension of a draft plan approval, beyond the statutory limitation of three years, unless the owner has demonstrated to the satisfaction of Council that they are making a reasonable effort to proceed in meeting the conditions of draft approval. At the time of an extension request, Council is to review the draft plan conditions and may make appropriate modifications.

With respect to the City’s Official Plan, staff advises that Phase 2 of the City’s Official Plan Review is in part examining issues related to water and waste-water capacities and demands. Section 19.4.2 of the City’s Official Plan in particular has been identified as being a policy requiring an update to address municipal infrastructure capacities and demand issues. Staff through this process will consider the embedding of criteria into this section to strengthen the policy position and to better clarify what constitutes reasonable effort on behalf of a landowner when they seek to extend a draft approved plan of subdivision. Internal procedures and application requirements for extension requests are also under review and a stronger “landowner onus” approach will be applied to extension requests in the future once said procedures are established. The owner is cautioned however that future draft approval extensions may be subject to review under strengthened criteria embedded in the Official Plan through the City’s Phase 2 Official Plan Review.

Departmental & Agency Circulation:

The extension request including relevant accompanying materials has been circulated to all appropriate agencies and departments. Responses received from agencies and departments have been used to assist in evaluating the extension request and to inform and identify appropriate revisions to the draft plan conditions should the extension request be approved. Comments received from departments generally had no concerns with the extension request, however, a few modifications to the draft plan conditions were requested.

Detailed comments can be found in Appendix 1 to this report.

Planning Analysis:

Staff are of the opinion that the draft plan approval remains consistent with the Provincial Planning Statement, conforms to the Growth Plan for Northern Ontario, the Official Plan for the City of Greater Sudbury, has regard for matters of provincial interest and represents good planning. The following modifications are proposed to the draft plan conditions based on department and agency comments and are largely intended to reflect current standards as a result of policy changes.

Draft Approval Conditions

It is recommended that condition #10 be amended to reflect the new lapsing date of November 28 2027.

Conservation Sudbury recommended that conditions #12, #26 l), and #32 be deleted as the works for the Paquette-Whitson municipal drain have been completed. Additionally, Conservation Sudbury recommended that condition #16 be amended to specifically require soil examination above the abandoned tributary of the Whitson River. Lastly, it was recommended that the following new condition be added:

#33 A detailed lot grading plan, prepared, signed, sealed, and dated by a professional civil engineer with a valid certificate of authorization shall be submitted to the satisfaction of Conservation Sudbury. The plan shall show that all portions of the subdivision are located at or above the flood elevation of the Paquette Whitson municipal drain, and that the lowest opening into any dwelling is located 30 cm above the flood elevation.

The City’s Drainage Engineer recommended revisions to condition #26 as a result of the completion of the Paquette-Whitson municipal drain and to reflect current standards. Detailed changes are outlined in Appendix 1 and the resolution.

CONCLUSION:

The Planning Services Division has reviewed the request to extend the subject draft approved plan of subdivision and has no objections to the requested extension for a period of three years. The request was also circulated to relevant agencies and departments for comment and no concerns were identified with respect to extending the draft approved plan of subdivision. Appropriate changes, where identified and explained within this report, have been included in the Resolution section of this report and would now form part of the draft plan approval if approved by Council. The Planning Services Division therefore recommends that the application to extend the draft approval for the MacMillan Drive Plan of Subdivision for a period of three years until November 28, 2027, be approved as outlined in the Resolution section of this report.

Appendix 1:
Departmental & Agency Comments

a) Building Services
No objections to the extension.

b) Conservation Sudbury
Since the last draft plan approval circulation, the works of the Paquette Whitson municipal drain have been completed. Conservation Sudbury has approved the report and as-built drawings (K. Smart Associates Limited, April 5, 2023). The report shows that the floodplain is contained within the banks of the drain. As a result the upland areas, adjacent to the drain, have been effectively removed from the floodway. However, in order to fully remove the development from the flood hazard, the grades within the subdivision must be raised to match or exceed the flood elevation of the adjacent drain. This will be verified as part of the lot grading plan in the draft plan of subdivision process.

Considering that the works of the Paquette Whitson municipal drain are completed, conditions #12, #26(I) and #32 can be deleted. Condition #20 should remain as written. The following new conditions are being suggested:

1. A detailed lot grading plan, prepared, signed, sealed, and dated by a professional civil engineer with a valid certificate of authorization shall be submitted to the satisfaction of Conservation Sudbury. The plan shall show that all portions of the subdivision are located at or above the flood elevation of the Paquette Whitson municipal drain, and that the lowest opening into any dwelling is located 30 cm above the flood elevation.

We recommend that the municipality expand the existing condition #16 to include language explicitly related to examining the soil conditions above the abandoned tributary of the Whitson River.

c) Development Engineering
No development of this subdivision has occurred since the original application. The last set of construction drawings were reviewed and commented on in 2014 and would need to be resubmitted. We have not received any further submission since that date. All of our conditions are included in the current Council Conditions of Draft Approval and as such, we have no objection to the draft plan extension.

d) Fire
No comments on this extension request.

e) Infrastructure Capital Planning

Roads/Traffic/Active Transportation
No concerns.

Drainage
Condition #26 be deleted and replaced with the following:

#26 That the following conditions related to the implementation of the Paquette-Whitson Municipal Drain be addressed to the satisfaction of the General Manager of Growth and Infrastructure:

a) Deleted.
b) The owner acknowledges that the current Tributary 8A watercourse that crosses the subject subdivision was rerouted southerly to the Whitson River on lands east of the subject subdivision lands. Existing road and storm sewer drainage from MacMillan Drive and Josephine Street shall be directed westerly, as part of the subdivision design, towards the existing Municipal Road 80 and Tributary 8A cross culvert.
c) Deleted.
d) Deleted.
e) The owner agrees to pay Paquette-Whitson Municipal Drain assessments applied to the

subject subdivision lands as set out in the Engineer's Report for benefit, outlet, and stormwater management and in conformance with Finance Committee Resolution FA2012-12 (Paquette Whitson Financing Report) ratified by City Council on July 10, 2012.

f) Deleted.

g) New drainage swales are required on the owner's lots to accept drainage from the backyards of the existing lots on MacMillan Drive.

h) The overland flow system within the plan of subdivision must be designed to accommodate and/or convey the major storm flow, that is, the rainfall runoff resulting from the subject site and any external tributary areas using the City's 100 year design storm or Regional storm event, whichever is greater, without causing damage to proposed and adjacent public and private properties. The underground storm sewer system within the plan of subdivision must be designed to accommodate and/or convey the minor storm flow, that is, the rainfall runoff resulting from the subject site and any external tributary areas using the City's 5 year design storm. The owner is required to design the site storm sewer to meet a storm sewer elevation of 284.60 meters at the east subdivision property line on John Street. The owner shall confirm the storm sewer elevation prior to the subdivision engineering submission to the City.

i) Deleted.

j) The owner acknowledges the final built of the City pond lands area complete, and the design of the subdivision rear yard drainage swales and catch basins must be integrated with the grading of the pond and the City's lands to the satisfaction of General Manager of Growth and Infrastructure. The owner will be responsible for install any outlet storm sewers from the subdivision to connect to the constructed City stormwater infrastructure. The owner shall limit the number of storm sewers outlet to City pond to the satisfaction of the City's Drainage Engineer.

k) The owner agrees to transfer a 6.17 hectare tract of land on the south portion of the subdivision in consideration of the subdivision stormwater land requirement and the requirements of the Engineer's Report for the Paquette-Whitson Municipal Drain and the owner agrees to accept the land allowance payment contained in the report of $41,000 as the financial consideration for the transfer of the 6.17 h land to the City.

l) That any required approvals or permits from the Conservation Sudbury, the Ministry of Natural Resources and Department of Fisheries and Oceans, be obtained.

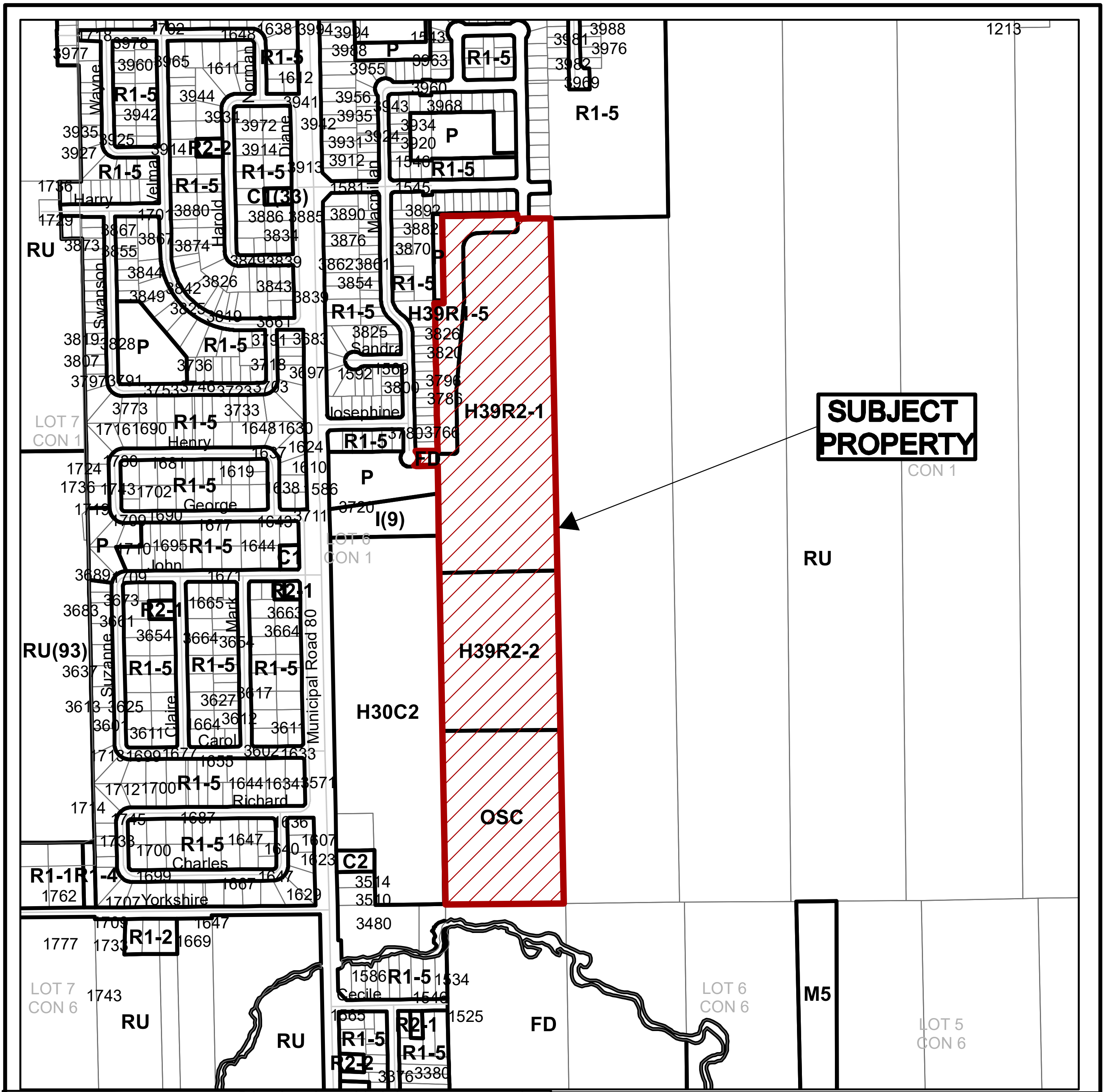
m) Deleted.

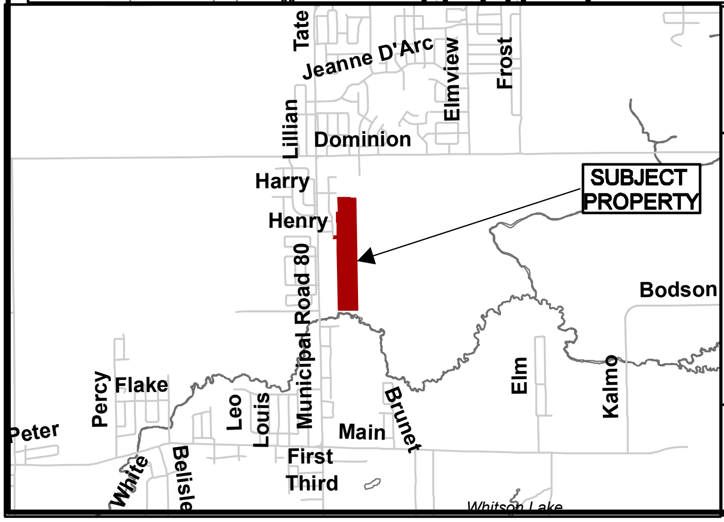
n) The owner shall provide a 1.8 m high galvanized chain link fence, 0.05 metres inside the subdivision lot line and along the subdivision boundary with the stormwater management block from Lot 37 to Lot 21.

f) Strategic and Environmental Planning
No concerns with the application. The owner is solely responsible for ensuring that vegetation removal, site alteration, and development undertaken on the subject lands do not contravene the provincial Endangered Species Act, the provincial Fish and Wildlife Conservation Act, the federal Fisheries Act or the federal Migratory Birds Convention Act.

g) Source Water Protection
This property is within the Vermillion IPZ "3". This Vulnerable area is considered to be "non-critical" and does not impose any restrictions or prohibitions from the Source Protection Plan policies. There are no significant drinking water threats identified at this time.

h) Transit
No comments or concerns at this time.





Growth and Infrastructure Department

Subject Property being PIN 73504 0952,
Reference Plan 53R18901 Parts 1 & 2,
Rem. of Parcel 764 S.E.S., in Lot 6, Concession 1,
Township of Hanmer,
City of Greater Sudbury

NTS
Sketch 1

780-7/09-002
Date: 2024 10 24

PREPARED BY
DENNIS CONSULTANTS
a Division of R.V. Anderson Associates Limited
436 WESTMOUNT AVENUE
SUDBURY, ONTARIO
P3A 5Z8

IN CO-OPERATION WITH
ADRIAN BORTOLUSSI, O.L.S.
144 ELM STREET
SUDBURY, ONTARIO
P3C 1T7

OWNER
630411 ONTARIO INC.
LIFESTYLE HOMES, INC.
281 RAY STREET
WAHNAPITEI, ONTARIO
P0M 3C0

OWNER'S CERTIFICATE

I HEREBY APPROVE OF THE MANNER IN WHICH THE LAND SHOWN ON THIS PLAN IS PROPOSED TO BE SUBDIVIDED AND REQUEST THE APPROVAL OF THE CITY OF GREATER SUDBURY.

Nov. 24/2011
DATE

JOANNE CAOUETTE

ONTARIO LAND SURVEYOR
ADRIAN BORTOLUSSI, O.L.S.
144 ELM STREET
SUDBURY, ONTARIO
P3C 1T7

SURVEYOR'S CERTIFICATE

I CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN ON THIS PLAN.

Nov 24/2011
DATE

A Bortolussi
ADRIAN BORTOLUSSI, O.L.S.

ADDITIONAL INFORMATION

AS REQUIRED BY SECTION 51(17) OF THE PLANNING ACT

A) BOUNDARIES AS SHOWN
B) AS SHOWN
C) KEY PLAN AS SHOWN
D) LOTS 1 TO 138 – R2: DOUBLE RESIDENTIAL
LOTS 139 TO 163 – R1: SINGLE RESIDENTIAL
BLOCK 164 – DRAINAGE AND PARKLAND

E) NORTH – R1: SINGLE RESIDENTIAL, P: PARK LAND
SOUTH – P: PARK LAND, 1: INSTITUTIONAL, R1: SINGLE RESIDENTIAL
EAST – P: PARK LAND
WEST – R1: SINGLE RESIDENTIAL, P: PARK LAND

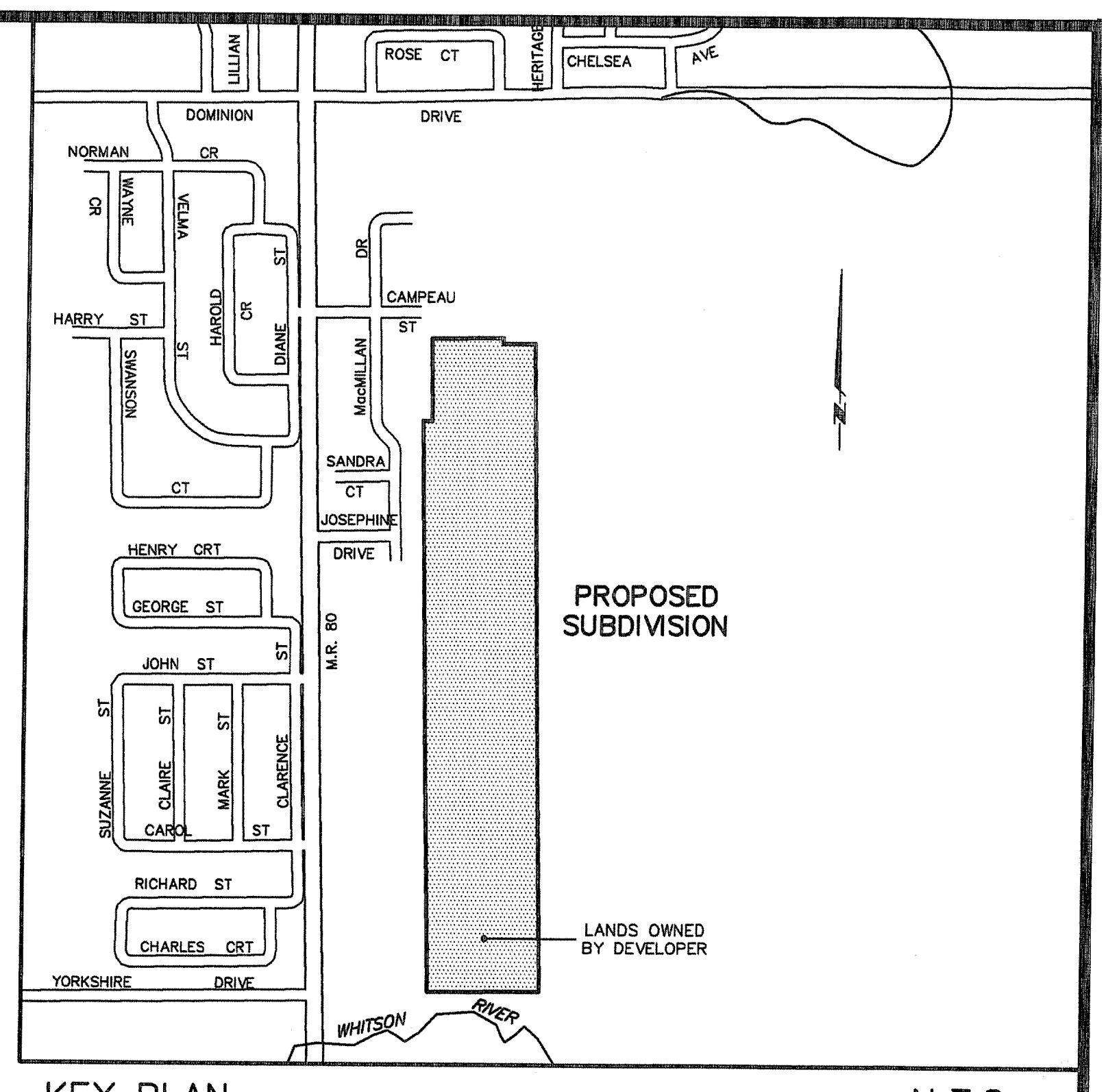
F) DIMENSIONS OF PROPOSED PROPERTIES AS SHOWN
G) ARTIFICIAL FEATURES AS SHOWN
H) WATER FROM EXISTING MUNICIPAL SUPPLY
I) GENERALLY SANDY SOIL
J) CONTOURS AS SHOWN
K) MUNICIPAL SERVICES TO BE AVAILABLE INCLUDES WATER, SEWER, HYDRO, BELL, GAS, GARBAGE COLLECTION, POLICE, FIRE, AMBULANCE
L) AS SHOWN

AREA OF APPLICATION = 23.90 ha.

DRAFT PLAN
OF PROPOSED SUBDIVISION OF PART OF PIN 73504–0952

BEING PART OF LOT 6 CONCESSION 1
GEOGRAPHIC TOWNSHIP OF HANMER
CITY OF GREATER SUDBURY

SCALE 1 : 1000



KEY PLAN

N.T.S.

METRIC

DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

BORTOLUSSI SURVEYING

FILE 1629

PREPARED BY TR

R.V. Anderson Associates Limited
engineering · environment · infrastructure

PROJECT # 081556

CITY COUNCIL'S CONDITIONS APPLYING TO THE APPROVAL OF THE FINAL PLAN FOR REGISTRATION OF THE SUBJECT SUBDIVISION ARE AS FOLLOWS:

1. That this draft approval applies to the draft plan of subdivision of PIN 73504-0952, Rem. of Parcel 764 S.E.S., in Lot 6, Concession 1, Township of Hanmer as shown on a plan of subdivision prepared by Adrian Bortolussi, O.L.S., and dated November 24, 2011.

2. That the streets shall be named to the satisfaction of the Municipality.

3. That any dead-ends or open sides of road allowances created by this plan of subdivision shall be terminated in 0.3 metre reserves, to be conveyed to the Municipality and held in trust by the Municipality until required for future road allowances or the development of adjacent land.

4. That prior to the signing of the final plan, the Planning Services Division shall be advised by the Ontario Land Surveyor responsible for preparation of the final plan, that the lot areas, frontages and depths appearing on the final plan do not violate the requirements of the Restricted Area By-laws of the Municipality in effect at the time such plan is presented for approval.

5. That the subdivision agreement be registered by the Municipality against the land to which it applies, prior to any encumbrances.

6. That such easements as may be required for utility or drainage purposes shall be granted to the appropriate authority.

7. That the owner agrees in writing to satisfy all the requirements, financial and otherwise, of the City of Greater Sudbury, concerning the provision of roads, walkways, street lighting, sanitary sewers, watermains, storm sewers and surface drainage facilities.

8. That the subdivision agreement contain provisions whereby the owner agrees that all the requirements of the subdivision agreement including installation of required services be completed within 3 years after registration.

9. Draft approval does not guarantee an allocation of sewer or water capacity. Prior to the signing of the final plan, the Director of Planning Services is to be advised by the General Manager of Growth and Infrastructure that sufficient sewage treatment capacity and water capacity exist to service the development.

10. That this draft approval shall lapse on November 28, 2024.

11. The final plan shall be integrated with the City of Greater Sudbury Control Network to the satisfaction of the Coordinator of the Surveying and Mapping Services. The survey shall be referenced to NAD83(CSRS) with grid coordinates expressed in UTM Zone 17 projection and connected to two (2) nearby City of Greater Sudbury Control Network monuments. The survey plan must be submitted in an AutoCAD compatible digital format. The submission shall be the final plan in content, form and format and properly geo-referenced.

12. That a direct application to the Conservation Sudbury shall be required prior to any development. The applicant or City of Greater Sudbury as part of the Paquette Whitson drain project must prepare a flood plain drainage study on the effects of rerouting Tributary 8A of the Whitson River. The study must demonstrate that downstream areas will not suffer any negative effects including increased flood flows. The proposal must also be reviewed by Department of Fisheries & Oceans and Ministry of Natural Resources.

13. That the owner undertake a Traffic Impact Study. The owner will be responsible to contribute to the cost of any upgrades or improvements identified in the study, all to the satisfaction of the General Manager of Growth and Infrastructure. Some of the issues to be reviewed as part of the study include the following:

    a) It is intended that John Street will provide the main access to the subdivision. The study is to review and recommend a plan for phasing development of the subdivision to minimize the impact to existing residential streets.

    b) Undertake a capacity study and traffic signal warrant analysis at the intersection of Highway 69 North and John Street, and Highway 69 North and Campeau Street.

    c) Review the feasibility and need to extend the easterly north/south road to the south in the future.

    d) Review the number and location of future road connections to the undeveloped land to the east.

14. That John Street and the easterly north/south roadway be constructed to an urban collector standard. John Street shall be constructed with on-road bicycle lanes on both sides. On-street parking shall be restricted on both sides of John Street.

15. That 5% of the land included in the plan of subdivision be dedicated to the City for parks purposes to the satisfaction of the City Solicitor in accordance with Section 51.1 (1) of the Planning Act.

16. Prior to the submission of servicing plans, the owner shall, to the satisfaction of the Director of Planning Services, provide an updated geotechnical report prepared, signed, sealed, and dated by a geotechnical engineer licensed in the Province of Ontario. Said report shall, as a minimum, provide factual information on the soils and groundwater conditions within the proposed development. Also, the report should include design information and recommend construction procedures for any proposed storm and sanitary sewers, watermains, roads to a 20-year design life, the mass filling of land, surface drainage works, erosion control, slope stability, slope treatment and building foundations. Included in this report must be details regarding the removal of substandard soils (if any) and placement of engineered fill (if required) for the construction of homes. Also, the report must include an analysis illustrating how the groundwater table will be lowered to a level that will not cause problems to adjacent boundary housing and will, in conjunction with the subdivision grading plan, show that basements of new homes will not require extensive foundation drainage pumping. The geotechnical information on building foundations shall be to the satisfaction of the Chief Building Official and Director of Planning Services. The geotechnical engineer will be required to address On-site and Excess Soil Management in accordance with O. Reg. 406/19. A soils caution agreement shall be registered on title, if required, to the satisfaction of the Chief Building Official and the City Solicitor. The owner shall be responsible for the legal costs of preparing and registering the agreement.

17. All streets will be constructed to an urban standard, including the required curbs, gutters and sidewalks.

18. The owner shall provide a detailed lot grading plan for the proposed lots, prepared, signed, sealed, and dated by a professional civil engineer with a valid certificate of authorization, as part of the submission of servicing plans. This plan must show finished grades around new houses, retaining walls, side yards, swales, slopes and lot corners. The plan must show sufficient grades on boundary properties to mesh the lot grading of the new site to existing properties and show the stormwater overland flow path. A lot grading agreement shall be registered on title, if required, to the satisfaction of the Director of Planning Services and the City Solicitor. The owner shall be responsible for the legal costs of preparing and registering the agreement.

19. The owner agrees to provide the required soils report, water, sanitary sewer and lot grading master planning reports and plans to the Director of Planning Services prior to the submission of servicing plans for any phase of the subdivision. A soils caution agreement shall be registered on title, if required, to the satisfaction of the Chief Building Official and City Solicitor. The owner shall be responsible for the legal costs of preparing and registering the agreement.

20. The owner shall develop a siltation control plan for the subdivision construction period to the satisfaction of the Director of Planning Services, Conservation Sudbury and the Department of Fisheries and Oceans.

21. Any streetlights required for this subdivision will be designed and constructed by Greater Sudbury Hydro Plus Inc. at the cost of the owner.

22. As part of the submission of servicing plans, the owner shall have rear yard slope treatments designed by a geotechnical engineer licensed in the Province of Ontario incorporated into the lot grading plans if noted as required at locations required by the Director of Planning Services. Suitable provisions shall be incorporated into the Subdivision Agreement to ensure that the treatment is undertaken to the satisfaction of the Director of Planning Services.

23. The owner shall provide a utilities servicing plan showing the location of all utilities including City services, Greater Sudbury Hydro Plus or Hydro One, Bell, Union Gas, Canada Post , EastLink and Vianet (where applicable). This plan must be to the satisfaction of the Director of Planning Services and must be provided prior to construction for any individual phase.

24. The owner shall provide proof of sufficient fire flow in conjunction with the submission of construction drawings for each phase of construction. All costs associated with upgrading the existing distribution system to service this subdivision will be borne totally by the owner.

25. The owner shall provide proof of sufficient sanitary sewer capacity in conjunction with the submission of construction drawings for each phase of construction. All costs associated with upgrading the existing collection system and/or sewage lift stations to service this subdivision will be borne totally by the owner.

26. That the following conditions related to the implementation of the Paquette-Whitson Municipal Drain be addressed to the satisfaction of the General Manager of Growth and Infrastructure:

    a) The owner acknowledges that the creation of the Paquette-Whitson Municipal Drain is essential to the development of the subject subdivision and agrees to sign the petition for the Paquette-Whitson Municipal Drain project and support said project.

    b) The owner acknowledges that the current Tributary 8A watercourse that crosses the subject subdivision will be rerouted southerly to the Whitson River on lands east of the subject subdivision lands. Existing road and storm sewer drainage from MacMillan Drive and Josephine Street shall be directed westerly, as part of the subdivision design, towards the existing Municipal Road 80 and Tributary 8A cross culvert.

    c) Deleted.

    d) The owner agrees to enter into a fill supply agreement with the City.

e) The owner agrees to pay Paquette-Whitson Municipal Drain assessments applied to the subject subdivision lands as set out in the Engineer's Report for benefit, outlet and stormwater management and in conformance with Finance Committee Resolution FA2012-12 (Paquette Whitson Financing Report) ratified by City Council on July 10, 2012.

f) Deleted.

g) New drainage swales are required on the owner's lots to accept drainage from the backyards of the existing lots on MacMillan Drive.

h) The owner shall provide stormwater drainage works for the internal subdivision storm sewer system including the Regional Storm overland flow path and the external subdivision stormwater works on the Paquette-Whitson Drain lands. The owner is responsible for the cost of the outlet storm sewer to the northwest pond forebay including the provision of engineering plans as outlined in the Paquette-Whitson Municipal Drain Engineer's Report dated February 8, 2012. The owner is required to design the site storm sewer to meet a storm sewer elevation of 284.69 metres at the east subdivision property line on John Street.

i) Major storm overland flow for the subdivision is to remain within the road allowance, and follow the road pattern for the subject subdivision to the northwesterly pond forebay via the future John Street to meet the City designed overland flow path at surface elevation 287.94 metres at the east subdivision property line on John Street.

j) The owner acknowledges the final built of the City pond lands are complete, and the design of the subdivision rear yard drainage swales and catch basins must be integrated with the grading of the pond to the satisfaction of General Manager of Growth and Infrastructure. The owner will be responsible to install any outlet storm sewers from the subdivision to connect to the constructed City facility.

k) The owner agrees to transfer a 6.17 hectare tract of land on the south portion of the subdivision in consideration of the subdivision stormwater land requirement and the requirements of the Engineer's Report for the Paquette-Whitson Municipal Drain and the owner agrees to accept the land allowance payment contained in the report of $41,000 as the financial consideration for the transfer of the 6.17 ha of land to the City.

l) That any required approvals or permits from the Conservation Sudbury, the Ministry of Natural Resources and Department of Fisheries and Oceans, be obtained.

m) Deleted.

n) The owner shall provide a 1.8 metre high galvanized chain link fence, 0.05 metres inside the subdivision lot line and along the subdivision boundary with the stormwater management block from Lot 37 to Lot 21.

27. That prior to the signing of the final plan the owner shall satisfy Canada Post with respect to mail delivery facilities for the site.

28. That prior to the signing of the final plan the Planning Services Division is to be advised by the City Solicitor that conditions 2, 3, 5, 6, 7, 8 and 15 have been complied with to his satisfaction.

29. Final approval for registration may be issued in phases to the satisfaction of the Director of Planning Services, provided that:

    i) phasing is proposed in an orderly progression, in consideration of such matters as the timing of road improvements, infrastructure and other essential services; and

    ii) all agencies agree to registration by phases and provide clearances, as required, for each phase proposed for registration; furthermore, the required clearances may relate to lands not located within the phase sought to be registered.

30. That the owner shall have completed all major outstanding infrastructure deficiencies that are critical to the overall function of the subdivision in previous phases of the plan that have been registered, or have made arrangements for their completion, prior to registering a new phase of the plan, to the satisfaction of the General Manager of Growth and Infrastructure.

31. That in accordance with Section 59(4) of the *Development Charges Act*, a notice of agreement shall be registered on title to ensure that persons who first purchase the subdivided land after registration of the plan of subdivision are informed, at the time the land is transferred, of all development charges related to development.

32. The proponent acknowledges that the current extent of the flood plain (as of September 2021) will not be eliminated from the subject parcel until the works associated with the Paquette-Whitson Municipal Drain have been completed, are fully operational, and the reduced flood plain has been accepted by Conservation Sudbury. The proponent must acknowledge that development within the flood plain is prohibited.

Information note:

Please be advised that the Nickel District Conservation Authority regulates the hazards associated with natural features and uses mapping as a tool to identify those hazards for the public. Although the Nickel District Conservation Authority makes every effort to ensure accurate mapping, regulated natural hazards may exist on-site that have not yet been identified. Should a regulated natural hazard be discovered as the site is developed, the applicant must halt works immediately and contact Conservation Sudbury directly at 705.674.5249. Regulated natural hazards include flood plains, watercourses, shorelines, wetlands, and valley slopes."

Institutional As-of-Right Zoning By-law Amendment

Presented To:	Planning Committee
Meeting Date:	November 25, 2024
Type:	Managers' Reports
Prepared by:	Bailey Chabot Planning Services
Recommended by:	General Manager of Growth and Infrastructure
File Number:	751-6/24-021

Report Summary

This report provides a recommendation directing staff to undertake the process to amend Zoning By-law 2010-100Z to permit ‘R3’, Medium Density Residential zone uses and standards as-of-right within the ‘I’, Institutional zone.

Resolution

THAT the City of Greater Sudbury directs staff to undertake the process to amend Zoning By-law 2010-100Z to permit ‘R3’, Medium Density Residential zone built forms and standards as-of-right within the ‘I’, Institutional zone consistent with Option 1 as outlined in the report entitled “Institutional As-of-Right Zoning By-law Amendment”, from the General Manager of Growth and Infrastructure, presented at the Planning Committee meeting on November 25, 2024.

Relationship to the Strategic Plan, Health Impact Assessment and Climate Action Plans

Permitting residential uses as-of-right in the ‘I’, Institutional zone aligns with Council’s Strategic Priorities including “Expand Affordable and Attainable Housing Options” and “Develop and Promote Solutions to Support Existing Housing Choices”.

The Housing As-of-Right Zoning Review provides recommendations that support the creation of compact, complete communities, Goal 1 of the CEEP.

Financial Implications

There are no financial implications associated with this report at this time.

Staff Report

BACKGROUND:

The Housing As-of-Right Zoning Review was commenced in 2022. J.L. Richards and Associates Ltd. was retained to conduct research and provide recommendations to assist with an as-of-right residential land use planning review. The report provided a summary of potential policy amendments to facilitate housing creation and increase the City's housing supply under five (5) themes:

1. Mixed Use Development;
2. Residential Uses on Institutional Lands;
3. Secondary Dwelling Units;
4. Minimum Density Requirements; and,
5. Affordable Housing.

The findings and recommendations of the consultant's report are informed by comparable municipal precedents, internal stakeholder consultation and external stakeholder consultation. As-of-right zoning serves to bring housing supply to market by eliminating the need for a rezoning or minor variance process in certain situations. The focus of this report is on zoning by-law amendments to address the second theme of 'Residential Uses on Institutional Lands' as directed by Council through resolution CC2023-252.

Housing-As-Of-Right Zoning Review Findings and Recommendations

To address residential uses in Institutional zones, the question was posed: "What parameters can be set out as to residential uses on institutional lands?". The report found that the City has various institutional uses of all sizes, from educational facilities and places of worship to medical and research institutions. When these lands are declared surplus and sold to private interests with the intent developing the land for residential purposes, a rezoning is required, introducing additional risk, time, and cost to the developer. An analysis of examples within the City and of comparable municipalities was conducted as well as internal and external stakeholder interviews. The Housing As-of-Right Zoning Review recommended that the City amend the 'I', Institutional zone so that institutional sites can develop residential uses as-of-right while being respectful of established neighbourhood uses.

Options to Incorporate Residential Uses within the 'I', Institutional Zone

Permitting residential uses within the 'I', Institutional zone can be accomplished by permitting the built forms and standards associated with one of the existing residential zones. The residential built forms permitted in the 'R3' and 'R3-1', Medium Density Residential zones include:

- Single Detached Dwelling;
- Semi-Detached Dwelling;
- Duplex Dwelling;
- Street Townhouse Dwelling;
- Row Dwelling; and
- Multiple Dwelling.

The residential built forms permitted in the 'R4', High Density Residential zone include:

- Duplex Dwelling;
- Street Townhouse Dwelling;
- Row Dwelling; and
- Multiple Dwelling.

Alternatively, residential uses could be added to the 'I', Institutional zone and rely on the existing standards of the 'I', Institutional zone.

The predominate difference between these options relate to the standards applied to the different built forms, particular as it relates to height, side yard setback, and density. The table below compares the standards applied to multiple dwelling unit development for the different zone. As the surrounding neighbourhoods around 'I', Institutional zoned properties are typically zoned 'R1-5', Low Density Residential, staff have included that zone for comparison.

Standard	**R1-5**	**R3**	**R3-1**	**R4**	**I**
Min. Front Yard	6.0 m	6.0 m	6.0 m	10.0 m	10.0 m
Min. Rear Yard	7.5 m	7.5 m	7.5 m	10.0 m (plus 1.0 m for every storey above five)	10.0 m
Min. Interior Side Yard	1.2 m	1.2 m (5 m when 3 storeys)	1.2 m (5 m when 3 or more storeys)	10.0 m (plus 1.0 m for every storey above five)	10.0 m
Min. Corner Side Yard	4.5 m	4.5 m	4.5 m	10.0 m	10.0 m
Max. Lot Coverage	40%	40%	50%	50%	50%
Min. Landscaped Open Space	40%	30%	30%	30%	15%
Max. Height	11.0 m	11.0 m	19.0 m and five storeys	63.0 m	50.0 m
Max. Density	One single detached dwelling plus two secondary dwelling units	30 units per building	No max. number of units per building	No max. number of units per building	No max. density

For a more visual representation, staff have prepared schematic drawings in Figures 1 and 2 below showing the multiple dwelling developments at maximum density, with the minimum required setbacks. The 'R1-5' zone was again included.

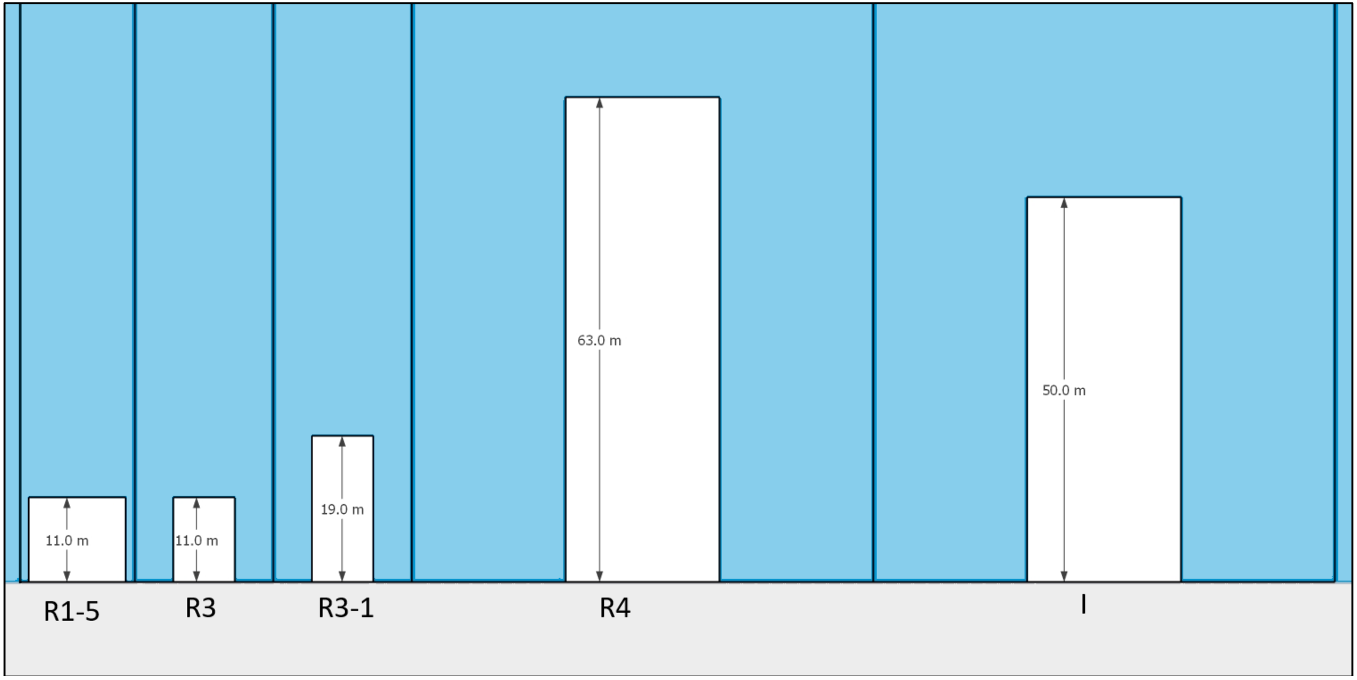


Figure 1 - This figure shows a view from the street of the greatest height permitted in each of the noted zones at the minimum permitted side yard setbacks. The figure is drawn to scale.

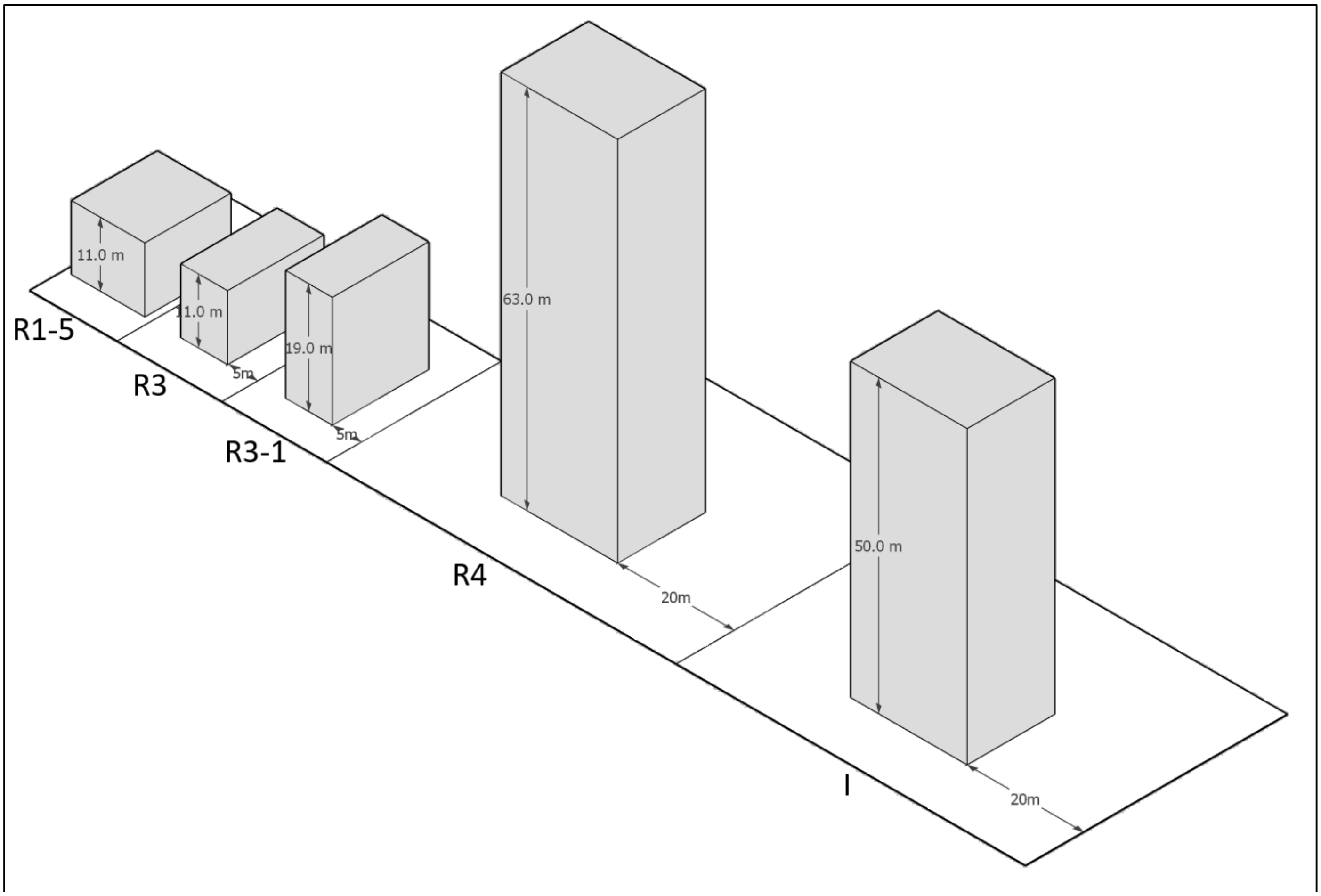


Figure 2 - This figure shows an aerial view of the greatest height permitted in each of the noted zones at the minimum permitted side yard setbacks. The figure is drawn to scale.

Staff have identified five options for incorporating residential uses in the ‘I’, Institutional zone:

Option 1: Amend the ‘I’, Institutional Zone to Permit ‘R3’ Residential Built Forms and Standards

The ‘R3’ zone permits a number of residential built forms, however, the maximum height permitted is 11.0 metres and a maximum of 30 multiple dwelling units are permitted per building.

Option 2: Amend the ‘I’, Institutional Zone to Permit ‘R3-1’ Residential Built Forms and Standards

This option would permit development at greater heights and density than the ‘R3’, Medium Density zone as proposed in Option 1. The ‘R3-1’ zone permits development of multiple dwelling units in buildings up to five storeys or 19 metres, without limiting the number of multiple dwellings within each individual building but has similar setback standards to the ‘R3’ zone.

Option 3: Amend the ‘I’, Institutional Zone to Permit ‘R4’ Residential Built Forms and Standards

Permitting ‘R4’ residential built forms and standards would allow for the greatest intensification of underutilized institutional parcels. This zone permits a maximum height of 63 metres, which is approximately 15 to 19 storeys, and does not limit the number of multiple dwelling units per building. These standards of the ‘R4’, High Density zone would require the greatest setbacks, greater even than the I, Institutional zone.

Option 4: Amend the ‘I’, Institutional Zone to Permit ‘R3’ Residential Built Forms

This option would rely on the development standards associated with the ‘I’, Institutional zone. There would be no maximum number of multiple dwelling units per building, and any residential built form would have a maximum permitted height of 50.0 metres. The ‘I’, Institutional zone standards has the lowest minimum required landscaped open space requirement at 15%, while the ‘R3’, ‘R3-1’, and ‘R4’ zones all require a minimum landscaped open space of 30%.

Option 5: Make No Amendments

This option would require developers to make an application for rezoning when they acquire surplus institutional parcels with the intent to redevelop as, or to include, residential uses.

Analysis

Option 1: This is the recommended approach. It permits the intensification of underutilized institutional parcels while the standards associated with the ‘R3’, Medium Density zone are consistent with those found in the ‘R1-5’, Low Density Residential One zone. Both zones allow development only to 11 metres in height, while the R3, Medium Density zone has greater side yard setbacks than the 1.2 metres requires by the ‘R1-5’, Low Density Residential One zone for multiple dwelling units. This would allow for flexibility for the developer, at standards that are compatible with adjacent low density residential neighbourhoods. Finally, this approach is consistent with the recommendations of the Housing As-of-Right Zoning Review completed by J.L. Richards and Associates Ltd.

Option 2: This option would allow for the intensification of underutilized institutional parcels at a greater intensity than would be allowed through Option 1, but with the same residential built forms and setbacks as Option 1. However, development would be permitted at greater heights (19 metres vs 11 metres). This option is viable, as the difference in height is not substantial and represents a difference of approximately 2 storeys.

Option 3: Permitting the residential built forms and standards of the ‘R4’, High Density zone would permit development that may not be compatible with the adjacent established neighbourhood. Staff are also concerned that permitting high density residential development would be contrary to recent amendments to the City’s Official Plan, particularly OPA 119, which focuses high density development (91 units per hectare or greater) to strategic nodes and corridors. Staff do not recommend Option 3.

Option 4: As with Option 3, Option 4 would permit high density development that may not be compatible with the adjacent established neighbourhood despite the greater minimum setbacks required by the ‘I’, Institutional zone. Again, staff are concerned that permitting high density residential development would be contrary to recent amendments to the City’s Official Plan, particularly OPA 119, which focuses high density development (91 units per hectare or greater) to strategic nodes and corridors. Staff do not recommend Option 4.

Option 5: Requiring developers to apply for zoning by-law amendments when surplus institutional lands are acquired adds uncertainty to the development process. Allowing the residential built forms and standards of the ‘R3’, Medium Density zone would allow for compatible residential development, offering greater flexibility and stability for the developer. Should a developer be interested in greater heights or densities than permitted, a minor variance application or rezoning application can be submitted for consideration. Historically staff have been supportive of rezoning applications to allow surplus institutional lands to permit residential uses. Option 5 is the least supportive of housing and is not recommended by staff.

Other Considerations

Servicing Capacity

The addition of tens or hundreds of residential units within an existing municipal service area will require servicing capacity from the municipal water and wastewater systems. Some areas of the City are nearing or at service capacity for water, wastewater, or both. It is recommended that a holding provision to ensure connection to and capacity within the municipal water and wastewater systems be employed to address this issue.

Unserviced Institutional Uses

The ‘I’, Institutional zone permits a number of uses that would not require water nor wastewater, such as cemeteries or parks, and therefore a number of parcels zoned ‘I’, Institutional are located in areas outside of the settlement area where municipal water nor wastewater exist. The same holding provision noted for servicing capacity would prohibit inappropriate development in areas not serviced by municipal water or wastewater.

RECOMMENDATION

Staff are of the opinion that the built forms and standards for residential uses of the ‘R3’, Medium Density zone, as outlined in Option 1, are the most appropriate to permit as-of-right in the ‘I’, Institutional zone and that staff should be directed to amend Zoning By-law 2010-100Z as such.

RESOURCES CITED

1. City of Greater Sudbury Zoning By-law 2010-100Z
   https://www.greatersudbury.ca/do-business/zoning/zoning-by-law-2010-100z/

2. Official Plan Amendment 119 – Nodes and Corridors, presented at the June 24, 2024 Planning Committee meeting
   https://pub-greatersudbury.escribemeetings.com/filestream.ashx?DocumentId=54519

JLR No.: 32064
Revision: 1

February 8, 2023

Housing As-of-Right Zoning Review

Prepared for:

City of Greater Sudbury
Planning Services Division

Value through service and commitment

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1.0 Introduction

1.1 Background

The City of Greater Sudbury has committed to providing an appropriate range of housing types and densities, including housing that is safe, affordable, attainable and suitable, to maintain and enhance and healthy community. This goal has been a cornerstone of the City's policy framework for many years. The importance of this goal is highlighted in City Council's Strategic Plan and Official Plan.

- City Council's Strategic Plan for 2019-2027 includes the provision of housing that is safe, suitable, affordable and attainable as an ongoing strategic goal for the community. The Strategic Plan indicates that this goal will be achieved by expanding affordable and attainable housing options in the community.

- City Council's Official Plan recognizes that adequate and affordable housing for all residents is a fundamental component of Greater Sudbury's Healthy Community approach to growth and development given the fundamental role that it plays in achieving other socio-economic outcomes such as success at school. The Official Plan set out a number of housing objectives which generally align with the outcomes envisaged in the Strategic Plan.

In the last decade, Greater Sudbury has pursued a number of policies and programs designed to facilitate the creation of new housing units at various points along the housing spectrum.

In 2017, City Council passed Resolution CS2017-17 directing staff to consider and make recommendations on a five point Affordable Housing Strategy, including:

(1) the development of an Affordable Housing Community Improvement Plan;
(2) investigating options for parkland disposal and the use of surplus municipal land;
(3) investigating amendments to Zoning By-law 2010-100Z to encourage affordable housing development across the housing continuum;
(4) designating a single point of contact for affordable housing and developing an affordable housing webpage, and,
(5) investigating changes to the Development Charges By-law 2014-151 to ensure that affordable housing criteria align with Federal and Provincial funding programs.

Since this time, the City has defined and implemented this five point strategy. For example, in 2018, Council approved the Affordable Housing Community Improvement Plan (CIP) and changes to the Zoning By-law to reduce parking for projects subject to an affordable housing agreement by 25%, introduce shared housing along certain corridors and create a new R1-7 zone standard to permit the creation of lots with reduced minimum lot frontages and areas. In 2019, Council approved changes to the Development Charges By-law to encourage affordable housing. Development charge exemptions are available within defined areas of the City and for projects subject to an affordable housing agreement. Development charge reductions are available for residential projects with defined nodes and corridors and dwellings less than 1,000 square feet in area.

Building on this momentum, in 2022 Council passed Resolutions PL2022-11 and PL2022-11-A1 to direct staff to investigate amendments to the Official Plan and Zoning By-law to permit residential uses in institutional zones, and Community Housing portfolio developments on all municipally owned properties. This work was to be undertaken as part of Phase 2 of the Official Plan Review.

Around the same time, the Federal and Provincial Government's have undertaken a variety of initiatives to increase the supply of safe, suitable, attainable and affordable housing.

- At the Federal level, this includes the creation of a National Housing Strategy focused on six priority areas and more recent budget measures such as the Tax Free First Homes Savings Account, the new Housing Accelerator Fund, extension of the Rapid Housing Initiative, and extension of the First Time Home Buyer Incentive, amongst others.

- At the Provincial level, this includes the Housing Affordability Task Force Report, the passage of Bill 109 the *More Homes for Everyone Act,* the Development Streamlining Fund and the passage of Bill 23 the *More Homes Built Faster Act*. Taken together, these changes are intended to streamline the land use planning approval process and reduce obstacles to the creation of new housing units

As part of the Development Streamlining Fund, the City of Greater Sudbury up to $1.75 million towards improving municipal development approval processes. In March 2022, Council directed that some of this funding be directed towards a study that would identify additional opportunities for 'as of right' residential land use permissions across the city.

1.2 Retainer

In 2022, the City of Greater Sudbury retained J.L. Richards and Associates Ltd. to assist with an 'as of right' residential land use planning permission review. The review is intended to address the following questions:

(1) What parameters can be set out as to the consistent inclusion of commercial components within mixed-use development in the C2-C6 zones?
(2) What parameters can be set out as to residential uses on institutional lands?
(3) What development standards are appropriate for accessory structures with second units?
(4) Is the use of mobile homes as secondary units or garden suites appropriate within urban areas as well as rural areas?
(5) Is the inclusion of accessory guest room accommodation appropriate in accessory structures?
(6) How can the introduction of appropriate minimum densities be accomplished in the Official Plan and Zoning By-law?
(7) How can policy measures in the Official Plan and Zoning By-law require applicants to describe how large-scale development supports affordable housing (i.e., development over 50 units)?

1.3 Purpose

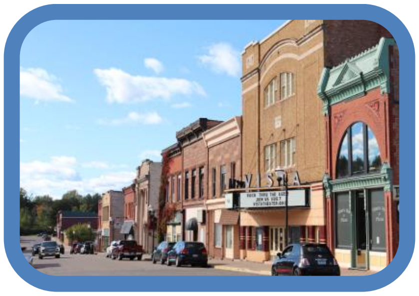
This report responds to the above questions and in doing so provides information in response to Council Resolution PL2022-11 and PL2022-11-A1 and direction to identify additional as of right residential land use permissions, as part of the provincial Development Streamlining Fund.

1.4 Outline

The remainder of this report is structured as follows:

Section 2.0

- methodology and assumptions uased for this project;



Section 3.0

- relevant policy, best practices, and recommendations for mixed-use development;

Section 4.0

- relevant policy, best practices, and recommendations for residential uses permitted as of right on institutional lands;

Section 5.0

- relevant policy, best practices, and recommendations for secondary dwelling units;

Section 6.0

- relevant policy, best practices, and recommendations for establishing a minimum density target

Section 7.0

- relevant policy, best practices, and recommendations for requiring applicants to describe how large-scale development supports the provision of affordable housing;

2.0 Methodology

Background Research

Undertake preliminary review of relevant background information, including policy, reports, and precedents from other jurisdictions.

Stakeholder Interviews

Conduct one-on-one interviews with City of Greater Sudbury staff and representatives of the development community, including Panoramic Properties, Community Builders North, Dalron Homes, Ontario Aboriginal Housing Services.

Discuss Project Alignment

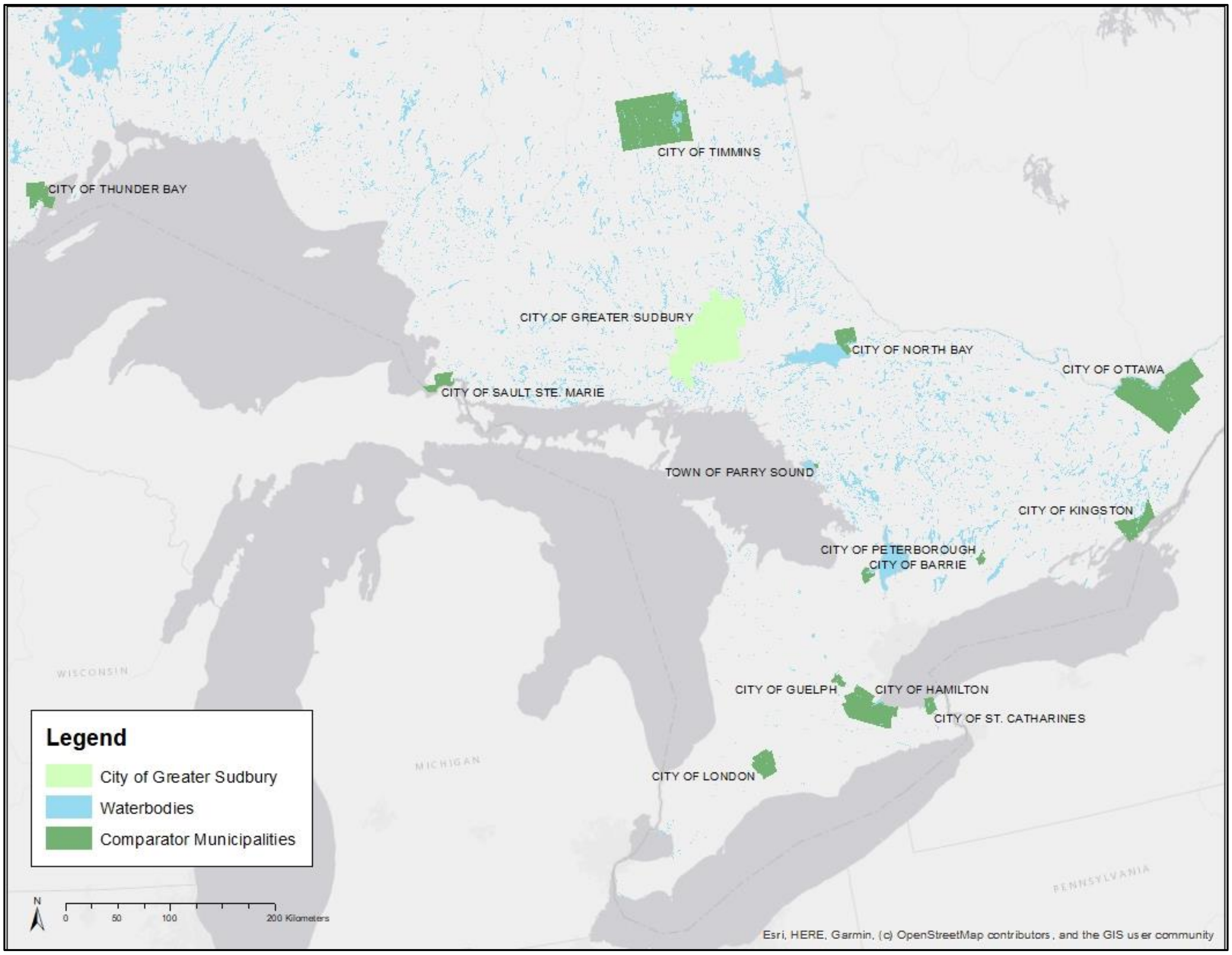
Discuss the project's alignment with work undertaken by N. Barry Lyon regarding the development of a best practice review and strategy for the adaptive re-use of institutional lands.

This review draws from a preliminary review of relevant background information, including available research, policy, and reports, as well as precedents from other jurisdictions similar in size and context to the City of Greater Sudbury.

Benchmark municipalities in northern Ontario include North Bay, Sault Ste Marie, Timmins, Parry Sound, and Thunder Bay, and in southern Ontario include Guelph, Barrie, Peterborough, London, Hamilton, Kingston, St. Catharines, and Ottawa.

Many of these municipalities form a part of the Municipal Benchmark Network of Canada in Ontario, including the City of Hamilton, the City of London, and St. Catharines (as a part of Niagara Region). Other municipalities were selected on the basis of similarities in geography, as is the case for the comparator municipalities in northern Ontario, or due to their similar size as mid-size communities, such as Guelph, Barrie, Peterborough, and Kingston.

This review is complemented by key informant interviews with City of Greater Sudbury staff and external stakeholders in the housing and development industry. Where themes emerged from these interviews on each of the topics outlined in this report, a summary of the discussions is included. See Figure 1 for a visual representation of the location of the comparator municipalities.



Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

Figure 1 Map of comparator municipalities selected for best practice review

3.0 Mixed Use Development

How can the CGS Official Plan and Zoning By-law facilitate the increased supply of housing through mixed use development with residential components in commercial zones?

Mixed-use commercial buildings in downtown Sudbury (Source: Briana Fram)

3.1 Provincial Policy Statement (PPS, 2020)

Section 1.1 of the PPS states that healthy, liveable, and safe communities are sustained by accommodating an appropriate affordable and market-based range and mix of residential types, employment, institutional, recreation, park and open space, and other uses to meet long-term needs.

Within settlement areas, the PPS emphasizes land use patterns that are based on densities and a mix of land uses which efficiently use land and resources, minimize negative impacts to air quality and climate change, support active transportation, and are transit-supportive, where transit is planned, exists, or may be developed (Section 1.1.3.2).

Further, Section 1.1.3.6 of the PPS states that new development taking place in designated growth areas should occur adjacent to the existing built-up area and should have a compact form, mix of uses and densities that allow for the efficient use of land, infrastructure, and public service facilities.

Within Employment Areas, planning authorities are directed by the PPS to promote economic development and competitiveness by providing for an appropriate mix and range of employment, institutional, and broader mixed uses to meet long-term needs, and encouraging compact, mixed-use development that incorporates compatible employment uses to support liveable and resilient communities, with consideration of housing policy (Section (1.3.1).

3.2 Official Plan for the City of Greater Sudbury

The City of Greater Sudbury's Official Plan and Zoning By-law establishes the policy and regulatory framework to guide the development of mixed-use development in various areas of the City and its communities.

The Employment Area policies of the City's Official Plan establish a policies for "centres" and "mixed use commercial areas". Centres include the Downtown, Regional Centres, Secondary Community Nodes, Regional Corridors and Town Centres. The Secondary Community Node and Regional Corridor designations were created as part of the implementation of the LaSalle Boulevard Corridor Plan. While these designations are currently limited to the LaSalle Corridor, the City's intent is to expand these designations to other nodes and corridors in conjunction with the completion of the City-wide "Nodes and Corridors Strategy".

These designations establish the following policy direction for mixed use development in these various areas of the city:

- The Downtown designation permits residential and commercial uses (Section 4.2.1, Policy 1). The Official Plan does not speak directly to the relationship between residential and commercial land uses in a mixed use building format. The Plan does state that all forms of residential development and residential intensification will be encouraged in the Downtown and that such development will respect the existing and planned context. (Section 4.2.1.2, Policy 3). The Plan also encourages the conversion of vacant above-grade floor space to residential where the building being converted was constructed prior to 2000.

- The Regional Centre designation also permits residential and commercial land uses (Section 4.2.2, Policy 1). Similar to the Downtown, the Regional Centre policies do not speak directly to the relationship between residential and commercial land uses in a mixed use building format.

- The Secondary Community Node designation permits residential and commercial lands uses (Section 4.2.3, Policy 2). The Secondary Community Node policies speak to the relationship between residential and commercial land uses and recognizing that this mixing can occur in different formats. These policies state that the mixing of uses should be in the form of either mixed use buildings with ground oriented commercial and institutional land uses and residential uses above the second storey, or a mix of uses and buildings on the same development site (Section 4.2.3, Policy 3).

- The Regional Corridor designation permits residential and commercial land uses (Section 4.2.4, Policy 2). The Regional Corridor policies do not speak directly to the relationship between residential and commercial land uses in a mixed use building format.

- The Town Centre designation permits commercial and residential land uses (subject to density restrictions). The Town Centre policies do not speak directly to the relationship between residential and commercial land uses in a mixed use building format.

- The Mixed Use Commercial designation permits residential and commercial uses (Section 4.3, Policy 1). The policies encourage the mixing of residential and non-residential uses on a single site, where appropriate, and state that mixed use buildings should be in a form of mixed use buildings with ground oriented commercial and institutional uses and residential uses above the second storey.

- The Official Plan's urban design policies do not speak to the relationship between residential and commercial and uses on a site or in a mixed use building format.

Based on the above, the City's Official Plan allows residential and commercial uses in centres and corridors (including mixed use commercial areas) as of right and in a variety of formats. The Plan does not require that commercial or institutional uses be located at grade, with residential uses on upper storeys. This approach is consistent with the underlying principle of the Official Plan, which is to encourage investment and growth in the community by providing flexibility.

3.3 Zoning By-law for the City of Greater Sudbury

The Official Plan policies for centres and corridors (including mixed use commercial areas) is implemented through five of the seven commercial zone standards in the Zoning By-law, as follows:

- General Commercial (C2) which generally align with the Corridor and Mixed Use Commercial land use designations and can be found in the Town Centre designations.
- Limited General Commercial (C3), which can be found along Mixed Use Commercial designated corridors.
- Office Commercial (C4), which generally applies in the "shoulder" areas of Downtown Sudbury (e.g., the lands south of Elm Street between Paris and Brady Streets and lands north and south of Elm Street between Regent and Lorne Streets);
- Shopping Centre Commercial (C5) which applies to the New Sudbury Shopping Centre, RioCan and Silver Hills Power Centre and Southridge Mall; and,
- Downtown Commercial (C6), which applies to Downtown Sudbury.

Given the purpose of this report, Table 1 shows the permitted residential uses in the C2 to C6 zones, per Section 7.2 of the Zoning By-law. These zones further permit a number of non-residential uses.

Table 1 Permitted residential uses by commercial zone in the Zoning By-law

Use	C2	C3	C4	C5	C6
Any dwelling containing not more than 2 dwelling units	🟦	🟦	🟦		🟦
Boarding House Dwelling or Shared Housing					🟦
Group Home Type 1		🟦			
Long Term Care Facility	🟦	🟦	🟦	🟦	🟦
Multiple Dwelling	🟦	🟦	🟦	🟦	🟦
Private Home Daycare	🟦	🟦	🟦		🟦
Retirement Home	🟦	🟦	🟦	🟦	🟦
Row Dwelling			🟦		
Shared Housing	🟦	🟦	🟦		
Street Townhouse Dwelling			🟦		

These residential land use permissions are subject to special provisions outlined in the Zoning By-law as footnotes to Table 7.1. Based on our review, three special provisions should be highlighted.

- Special Provision 10 limits the density of multiple dwellings in the C2 and C3 Zones to 30 dwelling units per building and a maximum net residential density of 60 units per hectare with or without permitted non-residential uses provided that the lot is a fully serviced lot. This is consistent with the Official Plan policies for the Town Centres and also applies to the corridors (including mixed use commercial corridors). The Official Plan policies for the Mixed Use Commercial designation does not limit maximum residential densities on Mixed Use Commercial designated lands.

- Special Provision 13 permits any dwelling containing not more than two dwelling units on a lot in the C3 and C4 Zones with or without non residential uses [emphasis added] provided the lot is a fully serviced lot. Where the lot is not a fully serviced lot a maximum of one dwelling unit shall be permitted on a lot with or without non-residential uses [emphasis added].

- Special Provision 16 permits any dwelling containing not more than two dwelling units on a lot in the C2 and C6 Zones, together with permitted non-residential uses as a main use on the ground floor [emphasis added] provided that the lot is a fully serviced lot. Where the lot is not a fully serviced lot, a maximum of 1 dwelling unit shall be permitted together with permitted non-residential uses as the main use on the ground floor [emphasis added].

3.4 Comparable Municipal Precedents

Most municipalities permit residential uses in select commercial zones, provided that they are connected to and forming an integral part of a commercial building. In most municipalities where this is the case, the residential uses are not permitted on the ground floor, or if they are, the residential use is to be located to the rear of the commercial use. Many other municipalities permit residential uses as main uses within select commercial zones, without requiring an accompanying commercial use. Only a few municipalities allow residential uses in standalone buildings accessory to the main commercial use in select commercial zones. Other less popular approaches include setting a maximum percentage of the floor space index or lot coverage for residential uses in commercial zones, requiring that the floor space index of the residential use not exceed that of the commercial use, or setting a minimum percentage of the floor space index or ground floor area to be maintained in a commercial use.

How each municipality employs these options to consistently include commercial components in mixed-use residential development in commercial zones is presented in Table 2 below. A more detailed overview of how residential uses are treated in the various Commercial Zones is presented within Appendix A, based on the review of comparator municipalities' Zoning By-laws.

Table 2 Summary of provisions for residential uses in commercial zones

	North Bay	Sault Ste. Marie	Thunder Bay	Timmins	Parry Sound	Ottawa	Guelph	Barrie	Peterborough	London	Hamilton	Kingston	St. Catharines
Residential uses are connected to and forming an integral part of a commercial building	🟦		🟦		🟦	🟦	🟦	🟦	🟦	🟦	🟦	🟦	🟦
Residential use is permitted in a standalone building accessory to commercial use	🟦			🟦								🟦	🟦
Maximum percentage of floor space index or lot coverage for residential use					🟦	🟦					🟦		🟦
Floor space index of residential use cannot exceed that of commercial use	🟦								🟦				
Minimum ground floor area maintained in a commercial use					🟦			🟦					
Dwelling units are not to be located on the ground floor, or if on the ground floor, to the rear of the commercial use	🟦	🟦			🟦	🟦			🟦	🟦	🟦		🟦
No restrictions for residential uses in specified commercial zones		🟦	🟦			🟦	🟦	🟦			🟦		🟦
No residential uses are permitted in any commercial zones										🟦			

3.5 Recommendations

Given that the C2 and C3 Zone categories apply in the same areas of the City such as corridors and Town Centres and that C2 and C4 Zones can be found adjacent to each-other in the shoulder areas of the Downtown, the City should consider harmonizing its approach to permitted non-residential uses with dwelling units containing not more than two dwelling units.

Given the City's desire to permit additional residential development opportunities as of right within the community, we recommend that the City eliminate Special Provision 16 in the C2 Zone and apply Special Provision 13 to the C2 Zone. This approach is consistent with the City's Official Plan, which provides flexibility in how mixed-use developments are achieved in centres and corridors (including mixed use commercial areas).

Given the importance of at grade uses in a Downtown urban setting, we recommend that Special Provision 16 continue to apply to the C6 Zone. We further recommend that the City amend the Downtown Official Plan policies to provide the policy basis for Special Provision 16.

4.0 Residential Uses on Institutional Lands

What parameters can be set out as to residential uses on institutional lands as-of-right?

Former Ecole St. Denis School on Regent Street, redeveloped for housing (Source: Google Maps)

The City of Greater Sudbury has various institutional uses, such as elementary and secondary schools, libraries, recreation centres, colleges, a university, and other community facilities that are intended for public use. In recent years, surplus institutional lands, for example surplus elementary school sites as a result of amalgamation of neighbourhood schools, have been acquired by the development community for conversion to residential uses. In the current policy framework, this type of conversion requires rezoning of the surplus institutional lands, which introduces additional risk, time and cost. Leveraging these and other surplus institutional lands as sites ideal for residential development meets a number of Council's strategic outcomes. The following section provides an overview of how the current policy framework works with respect to residential uses as of right on institutional lands, presents a review of how other municipalities have addressed this in their Official Plan and Zoning By-law, and provides recommendations for the City to consider.

4.1 Provincial Policy Statement (PPS, 2020)

The Provincial Policy Statement (PPS) outlines the following policies relevant to the provision of residential development by way of redevelopment and/or intensification.

1.1.1 Healthy, liveable, and safe communities are sustained by:

b) accommodating an appropriate affordable and market-based range and mix of residential types (including single-detached, additional residential units, multi-unit housing, affordable housing and housing for older persons), employment (including industrial and commercial), institutional (including places of worship, cemeteries and long-term care homes), recreation, park and open space, and other uses to meet long-term needs;

1.4.1 To provide for an appropriate range and mix of housing options and densities required to meet projected requirements of current and future residents of the regional market area, planning authorities shall:

a) maintain at all times the ability to accommodate residential growth for a minimum of 15 years through residential intensification and redevelopment and, if necessary, lands which are designated and available for residential development; and
b) maintain at all times where new development is to occur, land with servicing capacity sufficient to provide at least a three-year supply of residential units available through lands suitably zoned to facilitate residential intensification and redevelopment, and land in draft approved and registered plans.

Allowing residential development as of right on institutional lands would allow the City to count these lands towards their supply of lands for residential growth, using already developed lands more efficiently to accommodate residential growth, rather than contributing to greater sprawl.

4.2 Official Plan for the City of Greater Sudbury

The Official Plan for the City of Greater Sudbury contains several policies of relevance to the as of right permission of housing on institutional lands.

Section 2.3.3 of the OP speaks to intensification and states that intensification will be encouraged on sites that are no longer viable for the purpose for which they were intended, such as former commercial, industrial, and institutional sites. This policy supports the conversion of surplus institutional lands for residential use.

Section 4.4.3 of the OP specifically speaks to the conversion of surplus institutional buildings, with the following criteria for rezoning of vacant lands held by institutions:

- The need for such lands or buildings for other public uses, and their long-term value to the community;
- The compatibility of the proposed uses with surrounding land uses and the intent of the polices in the Official Plan with respect to the proposed use;
- For conversion to residential uses, the appropriateness of the proposed density; and
- The policies of Section 2.3.2 (the Settlement Area), 11.3.2 (Land use policies to support transit needs), and 11.8 (Accessibility), and Chapters 13.0 Heritage Resources and 14.0 Urban Design.

The City also uses Section 2.3.3., Policy 9 to evaluate these types of applications, which states that the following criteria, amongst other matters, may be used to evaluate applications for intensification:

a. The suitability of the site in terms of size and shape of the lot, soil conditions, topography, and drainage;
b. The compatibility of the proposed development with the existing and planned character of the area;
c. The provision of on-site landscaping, fencing, planting, and other measures to lessen any impact the proposed development may have on the character of the area;
d. The availability of existing and planned infrastructure and public service facilities;
e. The provision of adequate ingress/egress, off street parking and loading facilities, and safe and convenient vehicular circulation;
f. The impact of traffic generated by the proposed development on the road network and surrounding land uses;
g. The availability of existing or planned, or potential to enhance, public transit and active transportation infrastructure;
h. The level of sun-shadowing and wind impact on the surrounding public realm;
i. Impacts of the proposed development on surrounding natural features and areas and cultural heritage resources;
j. The relationship between the proposed development and any natural or man-made hazards;
k. The provision of any facilities, services, and matters if the application is made pursuant to Section 37 of the *Planning Act*.

Policy 9 of Section 2.3.3 of the OP further states that applications for intensification of difficult sites may be subject to Section 19.7 (*Comprehensive Planned Unit Developments*), where applicable.

The OP recognizes that small-scale institutional uses are compatible with a residential setting, such as elementary schools, libraries, day nurseries, retirement homes, places of worship, and recreation centres. In doing so, the OP permits small scale institutional uses in residential areas and does not remove the underlying residential land use permission. Thus, where these small-scale institutional uses are permitted, residential uses should be permitted, since they are compatible.

Allowing residential uses as of right on small-scale institutional lands in the Zoning By-law would be consistent with this interpretation.

4.3 Zoning By-law for the City of Greater Sudbury

The City of Greater Sudbury's Zoning By-law establishes the Institutional (I) Zone, which includes group homes and special needs facilities as permitted residential uses. No other residential uses are permitted as of right in the Institutional Zone. As such, those wishing to establish a residential use on institutional lands would need to do so through a Zoning By-law Amendment.

In permitting residential uses as-of-right on lands zoned Institutional, the City has a number of options:

1. Establish the appropriate residential uses as permitted uses in the Institutional zones and apply the development standards for the respective Institutional zone to the residential use.
    - **PRO**: This approach allows for consistency of development standards set for institutional lands, regardless of the use.
    - **CON**: If institutional development standards are to be applied when the site is developed with a residential use, the transition to adjacent residential uses in residential zones will not be seamless. There are no precedents in other municipalities to apply the development standards of the institutional zone to the permitted residential use.

2. Establish the appropriate residential uses as permitted uses in the Institutional zones and apply the development standards from the respective Residential zone to the residential use. For example, if single-detached dwellings are to be permitted in an Institutional zone, then the development standards of the Low-Density Residential Zone would apply.
    - **PRO**: This approach allows for the most seamless transition between the residential use established on institutional lands and neighbouring residential uses in residential zones.
    - **CON**: There are no apparent drawbacks to adopting this approach.

3. Establish the appropriate residential uses as permitted uses in the Institutional zones, and develop a modified set of development standards, stricter than those of the Institutional zones and the respective Residential zone to the residential use.
    - **PRO**: This approach gives the City more control over setting standards that are appropriate specifically to residential uses on institutional lands that may not be appropriate for residential uses elsewhere in residential zones.
    - **CON**: There are no precedents in other municipalities to establish stricter development standards for residential uses on institutional lands.

4.4 Case Examples in the City of Greater Sudbury

The City of Greater Sudbury has seen recent applications for rezoning of institutional lands to permit conversion to a residential use, including the lands located at 95 Estelle Street and the abutting former St. Remi School site, as well as the lands located at 1305 Holland Street, which contain a vacant former elementary school. In both cases, the lands were rezoned to an appropriate residential zone category, with proposals complying with most, if not all, requirements of the respective zone. In the case of the lands located at 95 Estelle Street, the applicants requested site-specific zoning to provide relief for the on-site parking requirements but were able to meet all other requirements of the residential zone.

4.4.1 95 Estelle Street

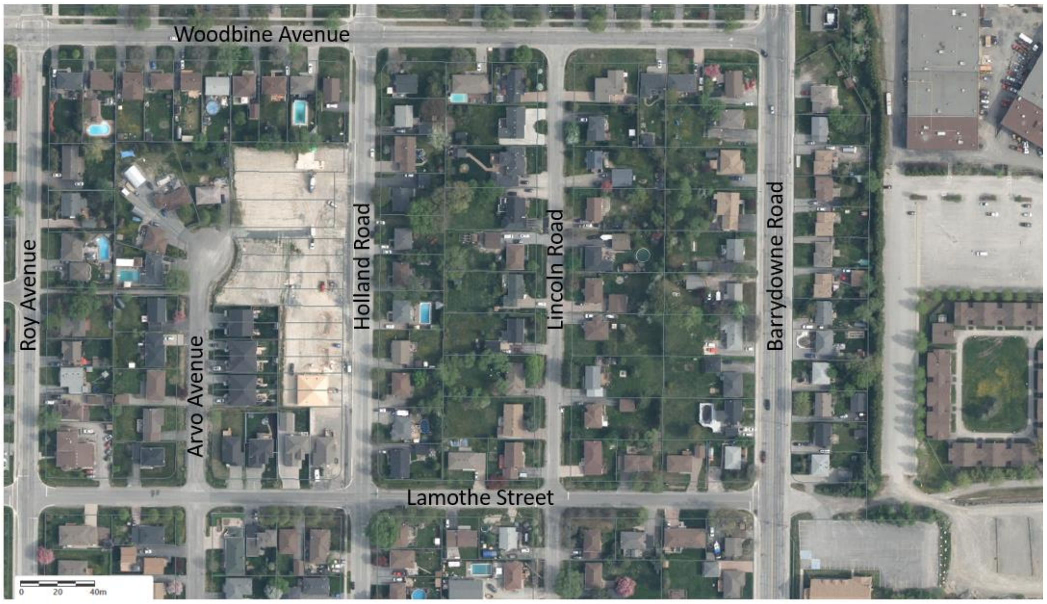
An application for rezoning was submitted to the City of Greater Sudbury for the former St. Remi School site and abutting undeveloped lands located at 95 Estelle Street. The site is located on the west side of Estelle Street in the east end of Sudbury, with a total lot area of 6.16 ha and 180 metres of frontage on Estelle Street. Surrounding uses include low-density residential development. The applicants proposed a total of 179 dwelling units in a mix of housing types, with a total density of 30 dwelling units per hectare. The proposal included the following breakdown of uses:

- Three five-storey multiple dwellings with a total of 120 units;
- Four two-storey ground-oriented multiple dwellings containing 26 units;
- Eight two-storey row dwellings containing a total of 31 units; and,
- One two-storey semi-detached dwelling containing 2 units.

The applicants requested rezoning to a Medium Density Special (R3-1) Zone. Although the application complied with most requirements of the R3 Zone, the special zoning was required to provide site-specific relief for parking.

The appropriateness of the built form and the impact on abutting single-detached dwellings was a key consideration for this proposal. Council decided that the density of 30 dwelling units per hectare was appropriate to allow the introduction of alternative housing types while appropriately limiting the intensity of use in a low-density residential area. To address concerns related to the interface with existing residential uses, the applicants provided for enhanced setbacks, far more than what is required by the R3 Zone. As a further measure, Council decided that any building within 50 metres of the property boundaries should be limited to a building height of 11 metres as a means of mitigating the impact of mid-rise buildings on existing abutting residential uses.

4.4.2 1305 Holland Road



An application for rezoning was submitted to the City of Greater Sudbury for the lands at 1305 Holland Road. The site is located on the west side of Holland Road to the north of Lamothe Street and to the east of Arvo Avenue in New Sudbury, with a lot area of 1.23 hectares and frontage of approximately 70.7 metres on Lamothe Street and 283.2 metres on Holland Road. The lands contain a vacant institutional building that was formerly used as an elementary school. Surrounding uses include low-density residential development, with commercial uses and higher density residential development to the south of the site along the Lasalle Boulevard corridor.

The applicants proposed the creation of seventeen urban residential lots allowing for a mix of single-detached, semi-detached, and duplex dwellings, with a residential density of 14-28 dwelling units per hectare. As such, the applicants proposed rezoning to the Low Density Residential Two (R2-2) Zone. The proposed uses comply with all requirements of the R2-2 Zone.

Council ultimately approved the creation of fifteen urban residential lots on the site, with a reduction of two lots to allow for the introduction of a connection between Arvo Avenue and Holland Road in order to provide greater connectivity to the existing road network.

4.5 Comparable Municipal Precedents

Most comparable municipalities restrict residential uses in institutional lands to uses such as residential care facilities, long-term care facilities, nursing homes, group homes, retirement homes, boarding, lodging and rooming homes, residential uses associated with post-secondary institutions, or as accessory uses together with permitted institutional zones. The City of Hamilton and the City of St. Catharines are unique in that they permit a variety of low and medium density residential uses as primary uses without any institutional component in several of their institutional zones.

The City of Hamilton's Zoning By-law establishes several institutional zones, including the Neighbourhood Institutional (I1) Zone, Community Institutional (I2) Zone, and Major Institutional (I3) Zone. Within the Neighbourhood Institutional Zone (I1) and the Community Institutional Zone (I2), duplex dwellings, semi-detached dwellings, and single detached dwellings are permitted residential uses, in addition to emergency shelter, residential care facility, and retirement home uses. Residential uses are limited to emergency shelter, lodging house, multiple dwelling, residential facility, and retirement home uses in the Major Institutional Zone (I3). Each institutional zone uses the development standards for the respective use in the Low Density Residential (R1) Zone.

The City of Hamilton's Official Plan limits permitted uses in the Institutional designation to educational facilities, religious facilities, cultural facilities, health care facilities, long-term care facilities, day care facilities, accessory uses and ancillary uses. Residential uses ancillary to an institutional use may be permitted provided that conditions related to the impact on institutional uses, development standards, and on-site parking are met.

The City of St. Catharines' Zoning By-law establishes three institutional zones, including the Local Neighbourhood Institutional (I1) Zone, the Community Institutional (I2) Zone, and the Major Institutional (I3) Zone. Uses permitted in the Low Density Suburban Residential (R1) Zone are also permitted in the I1 Zone. These uses include detached dwellings, semi-detached dwellings, quadruplex dwellings, townhouses, and private road development. These uses must comply with the zone provisions of the Low Density Suburban Residential (R1) zone. Uses permitted in the Medium Density Residential (R3) Zone are also permitted in the I2 Zone. These uses include detached dwellings, semi-detached dwellings, duplexes, triplex, fourplexes, quadruplexes, townhouses, private road developments, apartment buildings, and long-term care facilities. These uses must comply with the zone provisions of the Medium Density Residential (R3) zone. No residential uses are permitted as of right in the I3 Zone.

The latter option (i.e., that of St. Catharines) is most in line with how the City of Greater Sudbury has processed previous applications for rezoning of institutional lands to permit their conversion to residential uses.

4.6 Internal Stakeholder Consultation

Staff expressed support for the establishment of residential uses as of right on institutional lands. Some discussion centered around whether the same set of standards would apply to instances of adaptive reuse of existing structures on the sites as compared to redevelopment of the whole site, with additions or new structures erected on the lands as well. They noted that the majority of applications for re-zoning for this purpose were for adaptive reuse, with some applicants also considering additions to the existing structure.

Staff echoed the importance of considering the maximum height allowance and the minimum setbacks required when deciding on the appropriate development standards to apply to residential uses on institutional lands. Staff considered that the standards for the Medium Density Residential (R3) Zone would be the most appropriate given their alignment to the Low Density Residential One (R1) and Low Density Residential Two (R2) Zones in the maximum height allowance, providing for a seamless transition to the adjacent residential neighbourhood. The R3 standards were also deemed to be most appropriate given their maximum allowance of 30 dwelling units and their requirement for the provision of a 3 metre wide planting strip adjacent to the full length of the lot line between a lot zoned R3 and a lot zoned R1 or R2.

4.7 External Stakeholder Consultation

Stakeholders expressed support for the establishment of residential uses as of right on institutional lands, with support of balanced development standards that facilitate affordability and also would appease neighbours within the vicinity of such redevelopment. Most stakeholders agreed that the applying the development standards of the respective residential zone would be appropriate to ensure a seamless transition to adjacent residential areas. One stakeholder suggested maintaining buffers around the institutional lands, for example, in the form of an enhanced setback from side lot lines, as neighbours directly abutting the institutional lands will be accustomed to having much more open space beside their property than the setbacks required in the residential zones.

Some stakeholders suggested that the City prioritize or incentivize affordable housing projects on surplus institutional lands. This stakeholder pointed out that the adaptive reuse of former school sites would be ideal sites for co-housing or shared accommodation with embedded social supports and programming, for seniors' accommodation or as a way to support people in their transitions out of homelessness, for example.

Some stakeholder pointed out the potential to limit the as-of-right permissions for residential uses only to institutional lands that are deemed surplus, out of a concern that an applicant may apply to re-zone lands to the Institutional Zone under the guise of offering a public or community use, where the true intent would be in leveraging the permissions for residential uses as of right that are established with the Institutional Zone. They proposed that the permissions for as of right residential use be limited to adaptive reuse of the existing structure, so as to maintain the built form that the community is accustomed to, as well as the existing open space that the community uses for recreation. With this approach, any applicants that wish to replace the existing structure with a more intensive use would still need to go through the process of a re-zoning or minor variance application, with the opportunity for the public to provide their input, but applicants that are simply re-using the existing structure are able to do so without concern that their proposal will be defeated by public opposition. Similarly, this stakeholder alternatively proposed a maximum density allowance that could be used as a threshold for permitting residential uses as of right, whereby more intensive uses would need to still go through the process of a re-zoning or minor variance application, but applicants that met the density threshold could redevelop the site for residential uses as of right.

As for the types of residential uses that would be permitted, stakeholders agreed that these sites would be better used for higher density residential uses than single-detached dwellings, especially on major institutional sites.

4.8 Recommendations

Based on the review of these precedents, it is recommended that the City of Greater Sudbury establish a second zone category for institutional uses, such that minor and major institutional sites can be delineated within the Zoning By-law, as is the case in both the City of Hamilton and the City of St. Catharines. Table 3 to follow shows how the permitted uses currently established in the Institutional (I) Zone and proposed residential uses could be allocated to either the Minor Institutional (I1) or Major Institutional (I2) Zones, or both.

Within the Minor Institutional (I1) Zone, we recommend that low and medium density residential uses are permitted as-of-right, subject to their respective development standards as established by the Low Density Residential One (R1-1 to R1-7), Low Density Residential Two (R2-1 to R2-3), and Medium Density Residential (R3 and R3-1) Zones.

Within the Major Institutional (I2) Zone, we recommend that low, medium, and high-density residential uses are not permitted as-of-right. Rather, the policies within the Official Plan that speak to the conversion of surplus institutional lands can establish criteria to permit these residential uses on institutional lands and then require re-zoning on a site-specific basis.

An Official Plan Amendment will be required to amend Section 4.4.3 to read as follows:

> Rezoning applications related to the conversion of surplus large-scale institutional buildings and the rezoning of vacant lands held by large-scale institutions will be considered based on the following criteria:
>
> a. the need for such lands or buildings for other public uses, and their long-term value to the community;
> b. the compatibility of the proposed uses with surrounding land uses and the intent of the policies in this Official Plan with respect to the proposed use;
> c. for conversion to residential uses, the appropriateness of the proposed density; and,
> d. the policies of Sections 2.3.2, 11.3.2 and 11.8, and Chapters 13.0 Heritage Resources and 14.0 Urban Design.

A Zoning By-law Amendment will be required to remove the Institutional (I) Zone and all references to it within the Zoning By-law and replace it with the Minor Institutional (I1) Zone and the Major Institutional (I2) Zone. Table 10.1 of the Zoning By-law will require revision to align with the permitted uses in each of these zones as outlined in Table 3 below.

Table 3 Proposed permitted uses within the Minor Institutional (I1) & Major Institutional (I2) Zones

Use	Minor Institutional (I1)	Major Institutional (I2)
Arena	■	■
Special Needs Facility	■	■
Carnivals		■ (1)
Cemetery		■
Children's Home	■	■
College or University		■
Day Care Centre	■	■
Fire Hall	■	■
Group Home Type 1	■	■
Group Home Type 2	■	■
Hospital		■
Library	■	■
Museum	■	■
Non-Profit or Charitable Institution	■	■
Park	■	■
Place of Worship	■	■
Private Club	■	■
Public Business	■	■
Recreation and Community Centre	■	■
Public Use other than Utility	■	■
Refreshment Pavilion	■ (2)	■ (2)
Restaurant	■ (2)	■ (2)
School, Elementary	■	
School, Secondary	■	
Uses Permitted in the Low Density Residential One (R1-1 to R1-7) Zones	■	
Uses Permitted in the Low Density Residential Two (R2-1 to R2-3) Zones	■	
Uses Permitted in the Medium Density Residential (R3 and R3-1) Zones	■	

(1) Only on lands owned or operated by the municipality
(2) Only if accessory to a park use

The Zone standards for the I Zone, per Section 10.3 of the Zoning By-law, will apply to the I1 and I2 Zone. Table 10.3 of the Zoning By-law will require revision to include I1 and I2 in place of I in the first row and include the requirement for residential uses permitted in the I1 Zone to comply with the zone standards of the Medium Density Residential (R3) Zone, as shown below.

Zone	Min Lot Area	Min Lot Frontage	Min Front Yard	Min Rear Yard	Min Interior Side Yard	Min Corner Side Yard	Max Lot Coverage	Min Landscaped Open Space	Max Height	Other
I1	900.0m² (1)	30.0m	10.0m (2)	10.0m (3)	10.0m (3)	10.0m (2)	50% (4)	15%	50.0m	(5) (9)
I2	900.0m² (1)	30.0m	10.0m (2)	10.0m (3)	10.0m (3)	10.0m (2)	50% (4)	15%	50.0m	(5)

(1) For partially unserviced lots – 1,350.0m²
(2) Abutting a primary arterial road – 15.0m
(3) For a building greater than 20.0m in height – 20.0m
(4) For partially unserviced lots – 30%
(5) Building separation – 3.0m
…
(9) For residential uses permitted in the Minor Institutional (I1) Zone, the zone standards of the Medium Density Residential (R3) Zone shall apply.

A Zoning By-law Amendment would also be required to Section 4.15.4, which concerns the location of planting strips, which would read as follows:

4.15.4 Planting Strip – Location

a) A 3.0-metre-wide planting strip adjacent to the full length of the lot line shall be required:

  i) Where the lot line of a non-residential lot, other than a lot containing an open space use or a lot in an Industrial Zone, abuts a residential lot or Residential Zone;

  ii) Where a lot zoned Medium Density Residential (R3) (R3-1) or High Density Residential (R4) abuts a lot zoned Low Density Residential One (R1) or Low Density Residential Two (R2);

  iii) Where a lot zoned Minor Institutional (I1) containing a residential use abuts a lot zoned Low Density Residential One (R1) or Low Density Residential Two (R2);

…

4.9 Greater Sudbury Housing Corporation Use on City-Owned Land

Section 4.40 of the Zoning By-law contains policies related to uses permitted in all zones. It states that the continued use of any lot in any zone for a specific institutional use legally existing thereon, in accordance with all applicable provisions and requirements hereof, except that in a zone where such use is not specifically listed as a permitted use, the zone requirements pertaining to Institutional Zones shall apply.

The Zoning By-law defines ‘institutional use’ as a children’s home, a day care centre, a place of worship, a hospital, a private club, a non-profit or charitable institution, a group home type 1, a group home type 2, a special needs facility, a recreation and community centre, an area, a public museum, a public library, a public business, a public fire hall, a public or private school other than a trade school, or any public use other than a public utility. The Zoning By-law further defines ‘public’ when used in reference to a building, structure, use or lot as one that is owned, occupied, used or administered by a public agency, such as the Greater Sudbury Housing Corporation (GSHC).

As currently written, GSHC uses are permitted in all zones, provided that they are already established. Currently, the lands occupied by GSHC are zoned in a residential zone appropriate for their use. To allow GSHC uses on all City-owned lands, the Zoning By-law could be amended to permit public uses in all zones in Section 4.40.1 of the Zoning By-law.

5.0 Secondary Dwelling Units

A secondary dwelling unit is an additional dwelling unit that is ancillary and subordinate to the primary dwelling unit that may be contained within the main building on a lot and/or in an accessory building (see Figure 2 below for a visual representation).

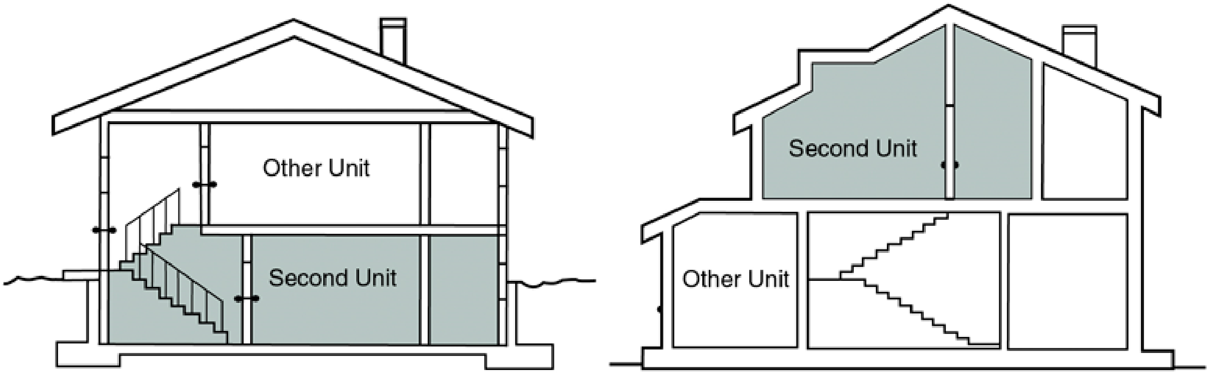


Figure 2 Schematic of secondary dwelling unit (Source: Province of Ontario)

5.1 Bill 23: More Homes Built Faster Act

Bill 23, the *More Homes Built Faster Act*, was introduced to address the housing shortage being faced across the Province. It includes amendments to the *Planning Act*, which affect how municipalities can regulate secondary dwelling units.

Section 4(1) subsection 16(3) of the *Planning Act* is repealed and replaced with the following sections:

(3) No official plan may contain any policy that has the effect of prohibiting the use of,

- (a) Two residential units in a detached house, semi-detached house or rowhouse on a parcel of urban residential land, if all buildings and structures ancillary to the detached house, semi-detached house or rowhouse cumulatively contain no more than one residential unit;
- (b) Three residential units in a detached house, semi-detached house or rowhouse on a parcel of urban residential land, if no building or structure ancillary to the detached house, semi-detached house or rowhouse contains any residential units; or
- (c) One residential unit in a building or structure ancillary to a detached house, semi-detached house or rowhouse on a parcel of urban residential land, if the detached house, semi-detached house or rowhouse contains no more than two residential units and no other building or structure ancillary to the detached house, semi-detached house or rowhouse contains any residential units.

5.2 Provincial Policy Statement (PPS, 2020)

The Provincial Policy Statement (PPS) outlines the following policies relevant to the provision of residential development by way of secondary dwelling units.

1.1.1 Healthy, liveable, and safe communities are sustained by:

…

b) accommodating an appropriate affordable and market-based range and mix of residential types (including single-detached, additional residential units, multi-unit housing, affordable housing and housing for older persons), employment (including industrial and commercial), institutional (including places of worship, cemeteries and long-term care homes), recreation, park and open space, and other uses to meet long-term needs;

1.1.3.4 Appropriate development standards should be promoted which facilitate intensification, redevelopment, and compact form, while avoiding or mitigating risks to public health and safety.

1.4.3 Planning authorities shall provide for an appropriate range and mix of housing options and densities to meet projected market-based and affordable housing needs of current and future residents of the regional market area by:

b) permitting and facilitating:

…

2. all types of residential intensification, including additional residential units, and redevelopment in accordance with policy 1.1.3.3;

…

f) establishing development standards for residential intensification, redevelopment and new residential development which minimize the cost of housing and facilitate compact form, while maintaining appropriate levels of public health and safety.

5.3 Official Plan for the City of Greater Sudbury

Per Section 2.3.6 of the CGS OP, secondary dwelling units are permitted in single detached, semi-detached, street townhouse, and row dwellings and in an accessory structure, to a maximum of two secondary dwelling units per lot in association with each primary dwelling on the same lot. A maximum of one secondary dwelling unit is permitted in the primary structure and one secondary dwelling unit in the accessory structure. This section further states that adequate servicing must be available to service the secondary dwelling unit through either the municipal system or through individual, privately owned systems, and that secondary dwelling units are connected to the service lines of the principal dwelling to City specifications. Secondary dwelling units are not permitted on or adjacent to any hazards identified in Chapter 10.0 Protecting Public Health and Safety.

The OP further speaks to the design of the secondary dwelling unit, stating that secondary dwelling units shall not cause alterations to the main building exterior that would change the character of an existing neighbourhood or streetscape, and shall satisfy all applicable requirements of the *Ontario Building Code*, *Ontario Fire Code*, the Zoning By-law, and the Property Standards By-law.

5.4 Zoning By-law for the City of Greater Sudbury

The City’s Zoning By-law establishes the development standards for secondary dwelling units. Where a secondary dwelling unit is located in a building accessory to a primary dwelling, the secondary dwelling unit shall not be permitted to be in the form of a mobile home dwelling in all Residential, Commercial, and Future Development zones, but may be in the form of a mobile home dwelling in a Rural, Agricultural or Rural Shoreline zone. In these latter zones, the secondary dwelling unit shall have a maximum net floor area of 45 percent of the gross floor area of the primary dwelling on the lot and be located no more than 30 metres from the primary dwelling at their closest.

Secondary dwelling units are not permitted within a dwelling located within an Environmental Protection zone, within a dwelling that is permitted accessory to a permitted non-residential use, on a lot containing a garden suite, within a seasonal dwelling, or within a building or structure accessory to any of these uses.

5.5 Development Standards for Accessory Structures with Secondary Dwelling Units

Of all municipalities reviewed, all permit secondary dwelling units within accessory structures, with varying development standards, with the exception of the City of Ottawa, who permits secondary dwelling units only within the same building as the principal dwelling. These municipalities have established development standards for secondary dwelling units within accessory structures, which regulate such aspects as the location on the lot, the building setbacks, the maximum lot coverage, the height, the separation distance between the principal dwelling and the secondary dwelling unit, the maximum gross floor area, required parking, the maximum number of bedrooms, and the provision of a pedestrian access. The City of Kingston's development standards for secondary dwelling units within accessory structures are the most extensive of those reviewed and include additional requirements for the completion of a hydrogeological study and the provision of privacy fencing along the side and/or rear lot lines adjacent to the secondary dwelling unit.

Below is a brief summary of the development standards that apply to secondary dwelling units in accessory structures based on the review of municipal precedents:

- **Location**: Most of the municipalities reviewed establish that secondary dwelling units located in accessory structures are only permitted to be sited within the rear and/or interior side yards.
- **Setback**: While some municipalities provide specific setback distances from the rear and/or interior side lot lines, most specify that the secondary dwelling units meet the setback requirements of either the main building on the lot or the standards that apply to accessory structures generally within the applicable zone. Where setback distances are provided, they range from the lowest minimum setback of 1.2 m from the interior side and rear lot lines to the greatest minimum setback of 7 m from the rear lot line.
- **Maximum Lot Coverage**: Most of the municipalities reviewed established a maximum lot coverage of 10 percent of the total lot area. Some municipalities further require that this maximum of 10 percent lot coverage also include all other accessory buildings or structures on the lot. Other municipalities allow greater lot coverage, including the City of Hamilton, which permits the secondary dwelling unit and all other accessory structures to occupy up to 25 percent of the lot, and the City of Guelph, which permits the secondary dwelling unit to occupy up to 30 percent of the yard.
- **Maximum Height**: The maximum height of secondary dwelling units in accessory structures were consistently between 4 and 6 m among the municipalities reviewed. Exceptions to this include the City of Sault Ste. Marie and the Town of Parry Sound, which both permit a maximum building height of 8 m (only in the Rural Area in the case of the City of Sault Ste. Marie).
- **Separation Distance**: Some municipalities establish either minimum or maximum separation distances between the principal dwelling unit and the secondary dwelling unit in an accessory structure. Where this separation distance is defined, it is typical that the secondary dwelling unit is to be located no more than 30 m from the primary dwelling and not less than 1.2 m from the primary dwelling.
- **Maximum Gross Floor Area**: Given that the secondary dwelling units are not the primary use of the land, it stands to reason that their gross floor area does not exceed that of the primary dwelling on the lot. Many municipalities express the relationship between the gross floor area of the secondary dwelling unit and that of the primary dwelling as a percentage, ranging from a maximum of 45 percent of the gross floor area of the primary dwelling to up to 75 percent of the gross floor area of the primary dwelling. Where these percentages are established, they are often accompanied by absolute maximum gross floor areas as well, whereby the secondary dwelling unit must comply with the lesser of the two. These absolute maximum gross floor areas range from 75 to 90 square metres.
- **Required Parking**: Most municipalities require that secondary dwelling units are to have one additional parking space than what would have been required on the property.

Exceptions include the City of Sault Ste. Marie and the City of Peterborough, which requires no additional parking for secondary dwelling units where they are located in the downtown and the City of London, which requires no additional parking for any secondary dwelling unit.

- **Maximum Number of Bedrooms**: Only a few municipalities regulate the maximum number of bedrooms permitted in secondary dwelling units. These municipalities include the City of Guelph, which caps the number of bedrooms in a secondary dwelling unit to two, the City of Kingston, which allows up to 8 bedrooms per lot, including the combined number of bedrooms in the primary dwelling and all secondary dwelling units, and the City of London, which requires that the additional residential units and primary dwelling unit together not exceed the total number of bedrooms permitted for the primary dwelling when combined.
- **Pedestrian Access**: Some municipalities also require that a secondary dwelling unit must be accessed by a walkway that is at minimum 1.2 m in width and is unobstructed up to a minimum height of 2.1 m, unless the secondary dwelling unit can be accessed by a street or lane directly. This is the case in the City of Guelph and the City of Kingston.

A more detailed overview of the development standards set by each municipality that pertain to secondary dwelling units in accessory buildings is contained within Appendix A.

5.6 Mobile Homes as Secondary Dwelling Units

Is the use of mobile homes as secondary units or garden suites appropriate within urban areas as well as rural areas?

A mobile home dwelling is defined as a single dwelling that is designed to be mobile and constructed or manufactured to provide a permanent residence for one or more persons in accordance with Canadian Standards Association Standard Z240, but does not include a park model home dwelling, a travel trailer, or tent trailer or trailer otherwise designed.

The City of Greater Sudbury's Official Plan states that an individual mobile home unit is allowed in the Rural Residential designation where a single detached dwelling would be permitted, provided that it is built in accordance with the *Ontario Building Code*.

Where a secondary dwelling unit is located in a building accessory to a primary dwelling, the secondary dwelling unit shall not be permitted to be in the form of a mobile home dwelling in all Residential, Commercial, and Future Development zones, but may be in the form of a mobile home dwelling in a Rural, Agricultural or Rural Shoreline zone.

Within Ontario, there are no available precedents that permit secondary dwelling units to take the form of mobile homes within an urban area. Many municipalities' policies on secondary dwelling units make no mention of mobile homes to include them as permitted uses. Where they are mentioned in policies on secondary dwelling units, such as in the case of the City of North Bay, they are explicitly prohibited. Although the Town of Parry Sound's Official Plan does not explicitly permit a secondary dwelling unit to take the form of a mobile home, in its policies governing mobile homes more generally, they are only permitted on the fringe of the urban area in the Rural Residential designation.

5.7 Accessory Guest Room Accommodation

Is the inclusion of accessory guest room accommodation appropriate in accessory structures?

Guest rooms that provide temporary accommodation can support small scale intensification and affordability. The City of Greater Sudbury's Zoning By-law defines guest rooms as "*a habitable room or suite of habitable rooms wherein accommodation, with or without meals, is provided for gain or profit to one or more persons, but which contains no facilities for cooking except where specifically permitted hereby."* The Zoning By-law further defines accessory guest rooms as "*a guest room accessory to, and located within, a dwelling*."

The City's Official Plan permits accessory guest room accommodation for up to two persons in any dwelling unit.

Currently, the City's Zoning By-law states that where the By-law provides that a lot may be used or a building or structure may be erected or used for a purpose, that purpose shall include any accessory building or structure or use, provided that the principal building, structure, or use is already in existence on the lot, but shall not include a guest room.

The municipalities reviewed do not define guest room accommodation in the same way as the City of Greater Sudbury, but use boarding, lodging, or rooming houses, shared housing, or bed and breakfast establishments fairly consistently to describe a similar concept. Most municipalities reviewed did not permit boarding, lodging, or rooming houses in accessory buildings/structures, with a few exceptions. The Town of Parry Sound permits a guest cabin as an accessory building/structure maintained for sleeping accommodation in which sanitary facilities are provided but not cooking facilities. The City of Kingston similarly permits a bunkhouse in the rural area, as a detached accessory building designed to provide seasonal sleeping accommodations, which may contain a washroom but does not contain a kitchen.

Based on the review of comparable municipalities, accessory guest room accommodation is not appropriate in accessory structures.

5.8 Internal Stakeholder Consultation

City staff identified that they receive a number of minor variance applications to seek relief from various provisions of the Zoning By-law regarding the development of secondary dwelling units. Of the variances requested, City staff see a trend of applications to seek relief from the maximum height requirements for accessory structures. The Zoning By-law currently allows for accessory structures to be built to a maximum height of 5 m, or in the Agricultural (A) or Rural (RU) Zones, up to a maximum of 6.5 m. Staff consider this maximum height requirement to be appropriate for most accessory structures but proposed allowing for additional height beyond these requirements for accessory structures that contain a secondary dwelling unit.

Another key theme that emerged in discussions with City staff around secondary dwelling units generally was the way that developers have interpreted the definition of a secondary dwelling unit. The Zoning By-law has defined a secondary dwelling unit as a dwelling unit that is ancillary and subordinate to the primary dwelling unit that may be contained within the main building on a lot and/or in an accessory building. The lack of clarity as to how 'ancillary' and 'subordinate' apply to the secondary dwelling unit in relation to the primary dwelling has given many developers the impression that a secondary dwelling unit need only be modestly smaller than the primary dwelling, in some cases minutely so, in order to be considered ancillary and subordinate. All staff echoed that a more precise definition that gives greater clarity as to the relationship between the primary and secondary dwelling units would help to ensure that future secondary dwelling units conform to the general intent and purpose of the policies in place governing secondary dwelling units. An option that some staff supported to overcome this issue is the establishment of a maximum percentage of the ground floor area of the primary dwelling unit that the secondary dwelling unit cannot exceed. Some staff raised concern that such a maximum cap may overly restrict the development of secondary dwelling units where the primary dwelling unit is quite small. As such, they recommended a threshold where primary dwelling units above a set size, the maximum cap would apply to the secondary dwelling unit, but below this size, the secondary dwelling unit need only be less than that of the primary dwelling unit.

Staff also commented on a number of applications for a minor variance to permit the construction of a detached secondary dwelling unit in the front yard and to permit the size of the secondary dwelling unit to be greater than that of the primary dwelling unit. Essentially, the applicant wishes to build an additional dwelling on a lot that already contains a dwelling, but to use the existing dwelling on the lot as the detached secondary unit and to erect a new, larger dwelling that would serve as the primary dwelling.

Some staff also commented on whether it is appropriate to apply the development standards that apply to all accessory buildings/structures to those that contain a secondary dwelling unit, especially considering the requirements pertaining to setbacks from property lines. These staff found it to be more appropriate to apply the setback requirements of the primary dwelling to that of the detached secondary dwelling unit.

Staff echoed that the policies governing additions or alterations to primary dwellings to accommodate a secondary dwelling unit may be overly restrictive, especially as they do not apply to secondary dwelling units where they are being constructed alongside newly built primary dwellings. They felt that as long as any additions or alterations to the primary dwelling keep with the character of the existing neighbourhood, that it may be appropriate to allow for additional entrances to the main building façade that faces a public road or additional exterior stairs or stairwells for entrances below finished grade to be along a wall facing a public road.

Nearly all staff were in agreement that the use of a mobile home as a detached secondary dwelling would not be consistent with the character of urban residential neighbourhood and felt it was appropriate to continue to restrict this use to only the rural areas of the City.

Some staff voiced support for the provision of accessory guest room accommodation within accessory structures. Staff recommended that the City could explore a registration system similar to that of secondary dwelling units for accessory guest rooms in accessory structures and stressed the importance of ensuring that such accommodation meet the requirements of the Ontario Building Code and Fire Code.

5.9 External Stakeholder Consultation

The main concerns shared by members of the development community related to secondary dwelling units pertained to the maximum lot coverage and maximum height restrictions imposed by the Zoning By-law. These two standards were viewed as barriers to achieving secondary dwelling units within existing development.

In the case of height restrictions, the maximum imposed on detached accessory structures prevents the addition of a secondary dwelling unit above a detached garage. The Zoning By-law currently allows for an accessory structure to be built up to a maximum height of 5 m, or in the Agricultural (A) or Rural (RU) Zones, up to a maximum of 6.5 m. Including a separate provision that allows an increased maximum height of accessory structures that contain secondary dwelling units could help to address this concern.

The concern shared by members of the development community pertaining to lot coverage spoke to the restrictive nature of the maximum lot coverage requirement as a limiting factor in the construction of a secondary dwelling unit of adequate size. The Zoning By-law currently allows for a maximum lot coverage for accessory structures of 10%, which includes all accessory buildings and structures on a residential lot, not only the accessory structure containing the secondary dwelling unit. Including a separate provision that allows for an increased maximum lot coverage for accessory structures where an accessory structure contains a secondary dwelling unit could help to address this concern.

One stakeholder also expressed interest in reducing the parking requirements for secondary dwelling units in areas that are well served with active transportation facilities as a means to increase their uptake. Currently, the Zoning By-law requires one parking space per dwelling unit for mobile homes, seasonal dwelling, secondary dwelling units, semi-detached dwellings, single-detached dwellings, street townhouse dwellings, and duplex dwellings. Section 5.5.1.1 states that where a multiple dwelling, long-term care facility or retirement home is permitted and the lot is directly abutting a GOVA route, the number of required parking spaces may be reduced by 10% of the minimum required parking spaces. A similar provision could be established for secondary dwelling units.

As for the use of mobile homes as secondary dwelling units in the urban area, most stakeholders agreed that this use would not fit with the built form of the urban environment. Some stakeholders expressed support for a secondary dwelling unit to take the form of a prefabricated or modular home in the urban area, while some felt that providing affordable housing opportunities is more important that the aesthetic character.

Another key theme that emerged relative to secondary dwelling units was the potential for the City to establish ongoing funding opportunities to assist homeowners in establishing secondary dwelling units. One stakeholder pointed to the County of Simcoe as an example where this is working well. The County of Simcoe features a Secondary Suites Program, which provides funding of up to $30,000 per unit in the form of a 15-year forgivable loan for the creation of a secondary or garden suite as a means to increase the supply of affordable housing.

Some stakeholders also recommended the City engage in education and awareness campaigns around secondary dwelling units to combat NIMBYism and inform homeowners of the ways they can include secondary dwelling units in compliance with the current policy framework.

5.10 Recommendations

Based on the above, we recommend that the City update its existing secondary dwelling unit policies and regulations to align them with the new additional dwelling unit provisions in Bill 23, incorporating feedback from stakeholders. An amendment to the Official Plan would be required. Section 2.3.6 of the OP could be amended to read as follows:

1. ~~Secondary dwelling units are permitted in single detached, semi-detached; street townhouse and row dwellings and a secondary dwelling unit is permitted in an accessory structure.~~
2. ~~No more than two Secondary dwelling units will be permitted in association with each primary dwelling on the same lot. One within the primary structure and one within an accessory structure.~~
3. No more than two residential units are permitted in a detached house, semi-detached house, or rowhouse on a parcel of urban residential land if all buildings and structures ancillary to the primary dwelling contain no more than one residential unit.
4. No more than three residential units are permitted in a detached house, semi-detached house or rowhouse on a parcel of urban residential land, if no building or structure ancillary to the detached house, semi-detached house or rowhouse contains any residential units.
5. No more than one residential unit is permitted in a building or structure ancillary to a detached house, semi-detached house or rowhouse on a parcel of urban residential land, if the detached house, semi-detached house or rowhouse contains no more than two residential units and no other building or structure ancillary to the detached house, semi-detached house or rowhouse contains any residential units.
6. Mobile homes are not permitted as Secondary dwelling units in the Living Area designations.
7. Adequate servicing must be available to service the ~~secondary dwelling unit~~ additional residential unit through either the municipal system or through individual, privately owned systems. Secondary dwelling units will be connected to the service lines of the principal dwelling to City specifications.
8. ~~Secondary dwelling units~~ Additional residential units are not permitted on or adjacent to any hazards identified in Chapter 10.0, Protecting Public Health and Safety.
9. ~~Secondary dwelling units~~ Additional residential units will not cause alterations to the main building exterior that would change the character of an existing neighbourhood or streetscape.
10. ~~Secondary dwelling units~~ Additional residential units must satisfy all applicable requirements of the *Ontario Building Code*, *Ontario Fire Code* as well as the Zoning By-law and Property Standards By-law.
11. ~~Secondary dwelling units~~ Additional residential units are not to be considered in the calculation of density requirements outlined in Section 3.2.1.
12. Additional regulations for ~~Secondary dwelling units~~ additional residential units will be established in the Zoning By-law.
13. Existing Garden Suites may be considered as accessory dwellings, provided they conform with these policies and the Zoning By-law.

An Amendment to the Zoning By-law will be required to align with the changes to the *Planning Act* enacted by Bill 23. Section 4.2.10.1 of the Zoning By-law could be amended to read as follows:

4.2.10.1 Permission for Secondary Dwelling Units

A secondary dwelling unit may be permitted within:

a) A single-detached dwelling or a building accessory thereto;
b) A semi-detached dwelling or a building accessory thereto;
c) A row dwelling or a building accessory thereto;
d) A street townhouse or a building accessory thereto;

~~provided that a maximum of one secondary dwelling unit is permitted within the primary dwelling and one secondary dwelling unit is permitted within an accessory building on a lot.~~

provided that the following maximum number of residential units are not exceeded:

i) No more than two residential units are permitted in a detached house, semi-detached house, or rowhouse on a parcel of urban residential land if all buildings and structures ancillary to the primary dwelling contain no more than one residential unit.
ii) No more than three residential units are permitted in a detached house, semi-detached house or rowhouse on a parcel of urban residential land, if no building or structure ancillary to the detached house, semi-detached house or rowhouse contains any residential units.
iii) No more than one residential unit is permitted in a building or structure ancillary to a detached house, semi-detached house or rowhouse on a parcel of urban residential land, if the detached house, semi-detached house or rowhouse contains no more than two residential units and no other building or structure ancillary to the detached house, semi-detached house or rowhouse contains any residential units.

Notwithstanding the above, ~~a *secondary dwelling unit*~~ an additional residential unit is not permitted:

a) Within dwelling that is deemed to be a permitted use in Section 4.16 of this By-law;
b) Within a dwelling located within an "EP", Environmental Protection Zone;
c) Within a dwelling that is permitted *accessory* to a permitted *non-residential use* in Section 4.40.2 of this By-law;
d) On a *lot* containing a garden suite;
e) Within a seasonal dwelling;
f) Within a building or *structure accessory* to a), b), c) or e) above.

An Amendment to the Zoning By-law will be required to better align the development standards for accessory structures containing additional residential units with the best practices of precedent municipalities. To better align with the language contained within Bill 23, references to secondary dwelling units should be replaced with additional residential units. Section 4.2.10.3 could be amended to read as follows:

4.2.10.3 ~~Secondary Dwelling Units~~ Additional Residential Units in ~~Accessory~~ Ancillary Buildings

Where ~~a secondary dwelling unit~~ an additional residential unit is located in all or part of a building accessory to a primary dwelling the ~~secondary dwelling unit~~ additional residential unit:

a) Shall not be permitted to be in the form of a mobile home dwelling in all Residential (R), Commercial (C), and "FD", Future Development Zones;

b) May be in the form of a mobile home dwelling in a Rural (RU), Agricultural (A) or Rural Shoreline (RS) Zones;

~~c) In Rural (RU), Agricultural (A) or Rural Shoreline (RS) Zones shall:~~

  ~~i. have a maximum net floor area of 45 percent of the gross floor area of the primary dwelling on the lot. For the purposes of this Section of the By-law, net floor area shall be the gross floor area of the accessory building excluding any parking areas within the accessory building; and,~~

  ~~ii. be located no more than 30 metres from the primary dwelling at their closest.~~

c) Shall be sited not less than 1.2 m from the primary dwelling;

d) Shall not have a gross floor area that exceeds 45 percent of the gross floor area of primary dwelling or 90 square metres, whichever is lesser;

e) Shall only be permitted within the rear and/or interior side yards;

f) Shall comply with the setback requirements for accessory buildings, per Section 4.2 of this By-law;

g) Shall not exceed a maximum lot coverage of 25 percent, inclusive of the lot coverage of all accessory buildings/structures on the lot;

h) Shall not exceed a maximum height of 8.0 m;

i) Shall require one additional parking space than what would have been required on the property; and,

j) Shall be accessed by a pedestrian walkway that at minimum 1.2 m in width and is unobstructed up to a minimum height of 2.1m, unless the secondary dwelling unit can be accessed by a street or lane directly.

Given the change in language from secondary dwelling unit to additional dwelling unit to align with Bill 23, an amendment would also be required to Part 3: Definitions of the Zoning By-law, to read as follows:

102.	~~Dwelling unit, Secondary~~ Additional Residential Unit	An additional dwelling unit that is ancillary and subordinate to the primary dwelling unit that may be contained within the main building on a lot and/or in an accessory building.

6.0 Minimum Density Requirements

How can the introduction of appropriate minimum densities be accomplished in the OP and ZBL?

6.1 Provincial Policy Statement (PPS, 2020)

The Provincial Policy Statement includes the following relevant provisions to the establishment of appropriate minimum densities.

1.1.3.2 Land use patterns within settlement areas shall be based on densities and a mix of land uses which:

- a) efficiently use land and resources;
- b) are appropriate for, and efficiently use, the infrastructure and public service facilities which are planned or available, and avoid the need for their unjustified and/or uneconomical expansion;
- c) minimize negative impacts to air quality and climate change, and promote energy efficiency;
- d) prepare for the impacts of a changing climate;
- e) support active transportation;
- f) are transit-supportive, where transit is planned, exists, or may be developed; and,
- g) are freight-supportive.

1.4.3 Planning authorities shall provide for an appropriate range and mix of housing options and densities to meet projected market-based and affordable housing needs of current and future residents of the regional market area by:

…

- d) promoting densities for new housing which efficiently use land, resources, infrastructure and public service facilities, and support the use of active transportation and transit in areas where it exists or is to be developed;

6.2 Official Plan for the City of Greater Sudbury

The OP establishes maximum density targets which vary by designation, as shown below.

Living Area I – Communities

- Low density development with a maximum net density of 36 units/hectare
- Medium density development with a maximum net density of 90 units/hectare
- High density development with a maximum net density of 150 units/hectare
- High density housing permitted only in the community of Sudbury.

Living Area II – Non-Urban Settlements

- A single detached dwelling is the only housing type permitted in Living Area II

- Densities for Living Area II are set out in the Zoning By-law based on the service levels currently available in non-urban settlements

Downtown

- All forms of residential development and residential intensification will be encouraged, provided adequate infrastructure and services are available, with new development respecting the existing and planned context

Town Centres

- Medium density development with a maximum net residential density of 60 units/hectare

Regional Centre

- Medium and high density residential development utilizing existing infrastructure and achieving increased urban intensification
- Designed to implement appropriate transitions of density and uses to facilitate compatibility with surrounding existing lower density neighbourhoods

Regional Corridor

- Residential development primarily in the form of medium density buildings at transit-supportive densities
- Designed to implement appropriate transitions of density and uses to facilitate compatibility with surrounding existing lower density neighbourhoods

Mixed Use Commercial

- Lesser density and concentration than Regional Corridors

Secondary Community Node

- Residential development primarily in the form of medium and high density buildings, discouraging single-detached dwellings
- Designed to implement appropriate transitions of density and uses to facilitate compatibility with surrounding existing lower density neighbourhoods

The OP contains no policies to establish a minimum residential density in any designation. Policy 2.3.2 of the OP, however, does state that the City may establish minimum density standards for new residential development in Living Area I lands.

6.3 Zoning By-law for the City of Greater Sudbury

The City of Greater Sudbury’s Zoning By-law establishes several residential zones, as follows:

- Low Density Residential One: R1-1, R1-2, R1-3
- Low Density Residential Two: R1-4, R1-5, R1-6, R1-7
- Medium Density Residential R3, R3-1
- High Density Residential: R4

Further, wherever a zone symbol on the Schedules to the By-law is followed by a period, a letter ‘D’, and a number, the maximum number of dwelling units permitted on a lot with such a symbol shall be the residential density represented by such number in dwelling units per hectare.

6.4 Comparable Municipal Precedents

Among the comparable municipalities reviewed, most had targets for minimum and maximum density in their policies governing residential development, with the exception of a few municipalities that did not regulate density, but rather regulate the built form (e.g., restricting density by permitting only single-detached dwellings in a residential zone). Of the municipalities that established a minimum density, this was generally in the order of 15-25 units/hectare for low-density residential development, 25-50 units/hectare for medium density residential development, and 75-100 units/hectare for high-density residential development. Outliers to this general trend include the City of Barrie, whose minimum density targets are much higher than the other municipalities reviewed, establishing minimum density targets for medium- and high-density residential development at 125 units/hectare and 225 units/hectare, respectively. On the other end of the spectrum, the City of Timmins’ established minimum density targets are much lower than their counterparts, with minimum densities set for medium- and high-density residential development set at 15 units/hectare and 30 units/hectare, respectively.

6.5 External Stakeholder Consultation

Some members of the development community felt it to be unnecessary for the City to establish a minimum density target, as they felt market forces would drive development towards the minimum densities that the City may institute. Given the increasing costs of development, they felt that a developer will likely try to maximize their investment through higher, rather than lower densities.

Others voiced concern over the establishment of rigid targets for density, and whether proponents of development that did not meet the minimum density targets would be required to apply for an amendment or a minor variance in order to develop at a lesser density than what is established as the minimum. They preferred the approach of giving staff greater discretion in their review of development applications by using softer language if policy were enacted to establish a minimum density. For example, language like “medium density residential development is generally in the order of x units per hectares to y units per hectare”, which would allow staff to consider the appropriateness of lessen or increased density beyond those parameters given existing context.

Table 4 Summary of minimum and maximum densities by comparator municipality

	Timmins	Parry Sound	Guelph	Peterborough	Hamilton	Kingston	St. Catharines		
0-15	Low	Low		Low	Low	Low			
15-20	Medium		Low						
20-25							Low		
25-30		Medium		Medium				Medium	
30-32	High								
32-35									
35-37.5			Medium						
37.5-50						Medium			
50-60		High							
60-75					Medium		Medium High		
75-85						High			
85-100									High
100-125			High	High	High				
125-150									
150-200									
200-225									
225-250									
250-300									
300-500									
500+									

6.6 Recommendations

Based on the review of municipal precedents, the following minimum and maximum densities are appropriate for the City of Greater Sudbury to adopt into their OP and Zoning By-law:

- Low density residential development, generally in the order of 15 to 36 units/hectare
- Medium density residential development, generally in the order of 37 to 90 units/hectare
- High density residential development, generally in the order of 91 to 150 units/hectare

7.0 Affordable Housing

How can policy measures in the OP and ZBL require applicants to describe how large-scale development supports affordable housing?

Visual representation of the housing continuum (Source: Canada Mortgage & Housing Corp)

The Canada Mortgage and Housing Corporation (CMHC) considers housing to be affordable if it costs less than 30% of a household's before-tax income.

7.1 Provincial Policy Statement (PPS, 2020)

The Provincial Policy Statement contains several provisions relevant to affordable housing.

1.1.1 Healthy, liveable, and safe communities are sustained by:

b) accommodating an appropriate affordable and market-based range and mix of residential types (including single-detached, additional residential units, multi-unit housing, affordable housing, and housing for older persons)

1.4.3 Planning authorities shall provide for an appropriate range and mix of housing options and densities to meet projected market-based and affordable housing needs of current and future residents of the regional market area by:

a) establishing and implementing minimum targets for the provision of housing which is affordable to low- and moderate-income households and which aligns with applicable housing and homelessness plans

7.2 Official Plan for the City of Greater Sudbury

The City of Greater Sudbury's Official Plan encourages the diversity in the supply of housing by promoting a full range of housing types, including housing that is affordable and appropriate to low-income groups and people with special needs. The City's Official Plan sets a target of 25% of new dwellings to meet the definition of affordable housing.

The City's Official Plan also contains policies on height and density bonusing, as permitted under Section 37 of the *Planning Act*. These policies allow the City to authorize, by by-law, increases in the height and density of development otherwise permitted by the Zoning By-law that will be permitted in return for the provision of such facilities as housing that is affordable to low- and moderate-income households, or other facilities, services and matters outlined.

Beyond these policies, the City's Official Plan contains no policies that would require applicants to describe how large-scale development supports affordable housing. This policy position is one shared by many comparable municipalities reviewed. Other municipalities have set thresholds for large-scale development which trigger requirements for the applicants to describe how their proposal will address housing affordability. Many other municipalities establish targets for the provision of affordable housing in new housing each year, but do not establish policies that would require proponents of large-scale development to describe how they will address affordable housing.

7.3 Comparable Municipal Precedents

In the City of Sault Ste. Marie's Official Plan, all urban residential development proposals greater than 50 units must provide a statement of affordability ensuring that opportunities for creating a range of housing types are provided so that no less than 30% of the new dwellings are affordable, 50% of which would be affordable to low-income households where feasible.

The City of Guelph establishes a policy in their Official Plan that allows the City to require a submission of an Affordable Housing Report as a part of a development application, demonstrating to the satisfaction of the City how the application addresses affordable housing needs and the affordable housing target.

The City of Barrie's Official Plan establishes that the Urban Growth Centre and Major Transit Station Areas will be planned to require that at least 20% of housing units developed satisfy the criteria for affordable housing and in all other areas, a minimum of 15% of all new housing units each year are to be provided for affordable housing, in line with the City's policies on affordable housing. These policies include the requirement that all development proposals with more than 40 residential dwelling units proposed will be required to demonstrate the provision of affordable housing units.

The City of Peterborough's Official Plan states that the affordable housing component will be thoroughly reviewed in any new development where 25 or more single and/or semi-detached dwelling units or 50 or more multi-family dwellings are proposed. The City will strive to ensure that at least 10% of new residential units resulting from new residential development and residential intensification through conversion of non-residential structures, infill and redevelopment, to be affordable housing.

7.4 Internal Stakeholder Consultation

Staff noted that the lack of legislation to allow the City to require developers proposing large-scale projects to provide affordable housing as a barrier to implementing such a policy and anticipated pushback from the development community if such a policy were to be implemented. Instead of requiring developers to provide a set percentage of affordable housing units in their large-scale development proposals, Staff could highlight the incentives for providing affordable housing within the pre-consultation process and ask proponents of large-scale development projects to consider how their proposal could provide affordable housing.

7.5 Recommendations

In line with municipal best practices, the City can choose to adopt a new policy in their OP to require applicants to describe how large-scale development addresses the City's targets for the provision of affordable housing. This policy could read as follows:

> Development proposals that include 25 or more single or semi-detached dwelling units or 50 or more multi-family dwelling units will be supported by a report describing how the units will be affordable and/or attainable, in line with the Canada Mortgage and Housing Corporation definitions of affordable and attainable.

Implementing such a policy would align with the 2019-2027 City of Greater Sudbury Strategic Plan, which includes the Council's desire for all citizens, especially vulnerable populations, to have access to safe, affordable, attainable, and suitable housing options in the City of Greater Sudbury. Strategic initiatives to achieve this goal include expanding affordable and attainable housing options and revitalizing and improving the existing housing stock.

8.0 Conclusion and Next Steps

This report has presented precedents for a range of topics related to residential development from comparable municipalities across Ontario, including North Bay, Sault Ste. Marie, Timmins, Parry Sound, and Thunder Bay in northern Ontario, Kingston, Peterborough, and Ottawa in southeastern Ontario, and Guelph, Barrie, London, Hamilton, and St. Catharines in southwestern Ontario. These topics include the consistent inclusion of commercial components in mixed use development, the as-of-right permission of residential uses on institutional lands, development standards for additional residential units, the use of mobile homes as additional residential units, the use of accessory structures for guest room accommodation, the establishment of minimum density requirements, and how large-scale development supports affordable housing. The following presents a high-level summary of these topics, based on the discussion throughout the body of this report.

Inclusion of commercial components in mixed-use development:	The City of Greater Sudbury has a variety of options to include provisions in the Zoning By-law that would have the effect of consistently including commercial components in mixed-use residential development in commercial zones, drawn from precedents in other municipalities. These options include the following: • Permitting dwelling units or residential uses, provided that they are connected to and forming an integral part of a commercial building, • Permitting a residential building, provided that it is accessory to a permitted main commercial use, • Setting a maximum percentage of the floor space index or cumulative floor area that can be occupied by a residential use or requiring that the floor space index or

cumulative floor area of the residential use does not exceed that of the commercial use, and

- Setting a minimum ground floor area that must be maintained in a commercial use where a residential use is permitted.

As-of-right permissions for residential uses on institutional lands:

Most comparable municipalities restrict residential uses in institutional lands to uses such as residential care facilities, long-term care facilities, nursing homes, group homes, retirement homes, boarding, lodging and rooming homes, residential uses associated with post-secondary institutions, or as accessory uses together with permitted institutional zones. The City of Hamilton and the City of St. Catharines are unique in that they permit a variety of low and medium density residential uses as primary uses without any institutional component in several of their institutional zones.

In permitting residential uses as-of-right on lands zoned Institutional, the City has a number of options:

1. Establish the appropriate residential uses as permitted uses in the Institutional zones, and apply the development standards for the respective Institutional zone to the residential use.
2. Establish the appropriate residential uses as permitted uses in the Institutional zones, and apply the development standards from the respective Residential zone to the residential use. For example, if single-detached dwellings are to be permitted in an Institutional zone, then the development standards of the Low-Density Residential Zone would apply. With this option, the transition to the adjacent development would be relatively seamless, given that the development standards that exist for residential development in proximity to the Institutional site would be identical to those imposed on the residential uses on the Institutional site.
3. Establish the appropriate residential uses as permitted uses in the Institutional zones, and develop a modified set of development standards, stricter than those of the Institutional zones and the respective Residential zone to the residential use.

Development standards for additional residential units in accessory structures:

Of all municipalities reviewed, all permit secondary dwelling units within accessory structures, with varying development standards, with the exception of the City of Ottawa, who permits secondary dwelling units only within the same building as the principal dwelling. The development standards for additional residential units in accessory structures cover location, setbacks, lot coverage, height, separation distance,

	gross floor area, required parking, number of bedrooms, and pedestrian access for additional residential units.
Mobile homes as additional residential units:	Within the municipalities reviewed, there are no available precedents that permit secondary dwelling units to take the form of mobile homes within an urban area. Many municipalities' policies on secondary dwelling units make no mention of mobile homes to include them as permitted uses. Where they are mentioned in policies on secondary dwelling units, such as in the case of the City of North Bay, they are explicitly prohibited.
Guest room accommodation in accessory structures:	The municipalities reviewed do not define guest room accommodation in the same way as the City of Greater Sudbury, but use boarding, lodging, or rooming houses or bed and breakfast establishment fairly consistently to describe a similar concept. Most municipalities reviewed did not permit boarding, lodging, or rooming houses in accessory buildings/structures, with a few exceptions. The Town of Parry Sound permits a guest cabin as an accessory building/structure maintained for sleeping accommodation in which sanitary facilities are provided but not cooking facilities. The City of Kingston similarly permits a bunkhouse in the rural area, as a detached accessory building designed to provide seasonal sleeping accommodations, which may contain a washroom but does not contain a kitchen.
Minimum density requirements:	Among the comparable municipalities reviewed, most had targets for minimum and maximum density in their policies governing residential development, with the exception of a few municipalities that did not regulate density, but rather regulate the built form (e.g., restricting density by permitting only single-detached dwellings in a residential zone). Of the municipalities that established a minimum density, this was generally in the order of 15-25 units/hectare for low-density residential development, 25-50 units/hectare for medium density residential development, and 75-100 units/hectare for high-density residential development. Outliers to this general trend include the City of Barrie, whose minimum density targets are much higher than the other municipalities reviewed, establishing minimum density targets for medium- and high-density residential development at 125 units/hectare and 225 units/hectare, respectively. On the other end of the spectrum, the City of Timmins' established minimum density targets are much lower than their counterparts, with minimum densities set for medium- and high-density residential development set at 15 units/hectare and 30 units/hectare, respectively.
Large-scale developments' support for affordable housing:	Some of the comparator municipalities reviewed have set thresholds for large-scale development which trigger requirements for the applicants to describe how their proposal

will address housing affordability. For example, in the City of Sault Ste. Marie’s Official Plan, all urban residential development proposals greater than 50 units must provide a statement of affordability ensuring that opportunities for creating a range of housing types are provided so that no less than 30% of the new dwellings are affordable, 50% of which would be affordable to low-income households where feasible. The City of Guelph, for example, establishes a policy in their Official Plan that allows the City to require a submission of an Affordable Housing Report as a part of a development application, demonstrating to the satisfaction of the City how the application addresses affordable housing needs and the affordable housing target. Many other municipalities establish targets for the provision of affordable housing in new housing each year, but do not establish policies that would require proponents of large-scale development to describe how they will address affordable housing.

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Appendix A

Provisions for Residential Uses in Commercial Zones

North Bay	The City of North Bay’s Zoning By-law establishes a number of commercial zones. Several provisions for the various permitted residential uses in the commercial zones could be useful to ensuring the consistent inclusion of commercial components within mixed use residential development in commercial zones. These provisions include: • Dwelling units, or any residential use, connected to and forming an integral part of the commercial building shall be permitted, provided that access to the dwelling units or residential use is separate from the access to the commercial portion of the building, and no dwelling units or residential use shall be permitted on the ground floor • Dwelling units, or any residential use, connected to and forming an integral part of the commercial building shall be permitted, provided that the floor area does not exceed that of the commercial portion of the building, and that the dwelling units are located above or at the rear of the building • A residential building may be established and occupied provided it is accessory to a main use.
Sault Ste. Marie	The Zoning By-law establishes a number of commercial zones. These various commercial zones permit residential dwellings, with varying provisions. The strictest provisions only permit residential dwellings in existing buildings, such as in the C1 zone. Others permit residential dwellings, provided that no dwelling units are located on the ground floor, and even others still permit residential dwellings with no additional restrictions, including duplex dwellings.
Thunder Bay	The City of Thunder Bay’s Zoning By-law establishes a number of commercial zones. Residential uses are permitted in some of the commercial zones, subject to additional restrictions. For example, in the RC and RS2 zones, permitted residential uses are limited to a detached house as a main use or a home within a building containing a permitted non-residential main use as a secondary use. Limiting a residential use to a home within a building containing a permitted non-residential main use as a secondary use gives the City the ability to ensure that commercial components are consistently included in mixed use development in commercial zones.
Timmins	The City of Timmins’ Zoning By-law establishes a number of commercial zones. Residential uses are limited to accessory dwellings and accessory dwelling units in these commercial zones. Permitting residential uses as only an accessory use would ensure that an established main use, such as a commercial use, would be required. Structuring the Zoning By-law

	policies around permitted residential in this way would help the City to ensure the consistent inclusion of commercial uses where mixed use residential development is proposed in commercial zones.
Parry Sound	The Town of Parry Sound's Zoning By-law includes a set of policies related to dwelling units in a non-residential building or on a non-residential lot. This section includes policies that could be useful to ensure the consistent inclusion of commercial components in mixed use residential development in commercial zones. Among the requirements, this section requires that in a commercial zone, the cumulative floor area of the dwelling unit(s) shall not exceed 50% of the lot area and at least 50% of the ground floor area shall be maintained in a commercial use. This section also specifies the location of dwelling units in commercial zones, stating that in a commercial zone, no dwelling unit shall be permitted as a free-standing building and no dwelling unit shall be located in a non-residential building, except on a second or higher storey or to the rear of the commercial use, if on the ground or main floor level.
Ottawa	The City of Ottawa's Zoning By-law establishes a number of commercial zones and sub-zones, many of which permit residential development without any additional restrictions. Other zone provisions require that the residential use not exceed a set percentage, such as 50% or 75%, of the permitted floor space index, and that the residential use be located in a mixed use building above the ground floor. Setting a maximum threshold for the floor space index that can be occupied by a residential use and requiring residential uses to be located in a mixed use building can give the City the authority to ensure that commercial components are included in mixed use residential development in commercial zones.
Guelph	The City of Guelph's Zoning By-law establishes a number of commercial zones. Within these commercial zones, dwelling units are permitted in some, provided that permitted commercial uses are located in the same building. This is the case in the Commercial-Residential (CR) Zone, Convenience Commercial (C.1) Zone, Neighbourhood Shopping Centre (NC) Zone, Community Shopping Centre (CC) Zone, Regional Shopping Centre (RC) Zone. In other commercial zones, such as the Downtown (D) Zones, several residential uses are permitted without accompanying permitted commercial uses. This flexibility allows the City to ensure that commercial components are consistently included in mixed use residential development in areas of the City where this is beneficial and allows residential development without additional restrictions in areas of the City where it is appropriate.
Barrie	The City of Barrie's Zoning By-law establishes a Mixed Use Zone, whereby dwelling unit(s) are permitted in conjunction with permitted commercial uses. The City's Zoning By-law also establishes a number of commercial zones, which also permit dwelling unit(s) in conjunction with permitted commercial uses in every commercial zone. The zone standards for these commercial zones require a minimum coverage for commercial uses, set at 50% of the lot area. Selected residential uses, such as group homes and residential uses permitted in the Second

	Density (RA2) Zone are also permitted in some, but not all, commercial zones, without accompanying commercial uses. These residential uses include apartment dwellings, boarding, lodging, and rooming houses, converted dwellings, existing semi-detached duplex dwellings, existing single detached dwellings, three or more unit dwellings, and walk-up apartments. The requirement for dwelling unit(s) to be accompanied by a permitted commercial use and requiring a minimum lot coverage for commercial uses in commercial zones would give the City leverage to consistently include commercial uses in mixed use residential development in commercial zones.
Peterborough	The City of Peterborough’s Zoning By-law establishes a number of commercial zones, some of which permit a dwelling unit. For example, the Commercial District 1 Zone permits a dwelling unit, but states that the maximum residential floor area in a building shall not exceed the commercial floor area therein. Other commercial zones, such as the Commercial District 5 and Commercial District 50 Zones permits a dwelling unit, so long as it be located in a second or higher storey. Although the zone requirements do not explicitly state that the residential use must be accompanied by a permitted commercial use, it stands to reason it must be accompanied by another use if it is to be located on a second or higher storey.
London	The City of London’s Zoning By-law establishes a number of commercial zones. In most of the commercial zones, no residential uses are established as permitted uses. In other commercial zones, residential uses are permitted with any or all of the other permitted commercial uses on the first and/or second floor or where the dwelling unit is located at the rear of the ground floor or on the second floor or above with any or all of the other permitted commercial uses in the front portion of the ground floor. There are no established commercial zones where a residential use is permitted as a main use without any accompanying commercial use. This wording of the Zoning By-law would ensure that commercial components are consistently included in mixed use residential developments in select commercial zones.
Hamilton	The City of Hamilton’s Zoning By-law establishes a number of commercial zones, some of which permit residential uses. While some commercial zones permit select residential uses, such as duplex dwellings and single detached dwellings, without any accompanying commercial uses, other zones permit dwelling units only as a mixed use where the residential use is located above the ground floor and where the residential use does not occupy more than 50% of the total gross floor area of the building(s) within the lot. The provisions for the maximum gross floor area that can be occupied by a residential use allows the City to ensure that commercial components are consistently included in mixed use residential development in select zones.
Kingston	The City of Kingston’s Zoning By-law establishes a number of commercial zones, some of which permit residential uses. These residential uses are limited to a dwelling unit in a mixed use building, as

	is the case in the Neighbourhood Commercial (CN), General Commercial (CG), and Marine Commercial (CW) zones, and a single detached house where it is an accessory use to a principal use on the lot, as is the case in the Marine Commercial (CW) zone. There are no commercial zones where residential uses are permitted without an accompanying permitted commercial use. Structuring the Zoning By-law in this way ensures that commercial components are consistently included in mixed use residential developments in commercial zones.
St. Catharines	The City of St. Catharine’s Zoning By-law establishes a number of commercial zones, some of which permit residential uses. In select commercial zones, apartment buildings are a permitted use, provided that they are located on the same lot as a commercial use, and to a maximum lot coverage of 15%. Apartment dwelling uses are also a permitted use in select commercial zones, provided that dwelling units are located above and to the rear and/or below non-residential uses. There are other commercial zones where apartment buildings and apartment dwelling units are permitted without any other restrictions requiring that they are accompanied by permitted commercial uses. Requiring that residential uses are located on the same lot or within the same building as permitted commercial uses allows the City leverage to consistently include commercial components within mixed use residential development in commercial zones.

Appendix B:

Development Standards for Secondary Dwelling Units in Accessory Buildings

North Bay

The City of North Bay's Official Plan (OP) define a secondary dwelling unit as a dwelling unit that is ancillary and subordinate to the main dwelling unit that may be contained within the main building on a lot or within an accessory building on the same lot, but not both. The OP policies state that secondary dwelling units are permitted in detached, semi-detached, and townhouses or in accessory structures related to these uses, but not in both. Adequate servicing must be available to service the secondary dwelling unit through either the municipal system within the urban area or through privately owned systems within the rural area where municipal services are not available.

Per the City's Zoning By-law, secondary dwelling units in accessory structures must meet the development standards for accessory buildings or structures generally:

- must be located in the rear or interior side yard,
- must comply with the building setback requirements of the main building on the lot,
- shall not exceed 10 percent coverage of the total lot area,
- shall not exceed 4.1 m or one storey in height,
- shall not be attached to the main building or built within 1.2 m of the main building, and
- shall not be located completely underground.

A secondary dwelling unit is only permitted within a dwelling unit or an accessory building within specific zones in the City, including Residential First Density (R1), Residential Second Density (R2), Residential Third Density (R3), Residential Fifth Density (R5), Residential Sixth Density (R6), Rural (A), and Rural Residential Estate (RRE) zones.

Further, where the secondary dwelling unit is located in an accessory building to the primary dwelling, it shall meet the following requirements:

- shall not be permitted to be a mobile home, recreational vehicle, or boat home,
- shall have a maximum gross floor area of 45 percent of the gross floor area of the primary dwelling on the lot,
- shall be located no more than 30 m from the primary dwelling, and

- in the A or RRE zones, shall only have one driveway from the publicly maintained road.

Secondary dwelling units are required to have one additional parking space than what would have been required on the property.

Sault Ste Marie

The City of Sault Ste. Marie's Zoning By-law defines a second unit as a dwelling unit built within a single detached dwelling, semi-detached dwelling or multiple attached dwelling, as part of an accessory building such as a garage, or as a standalone accessory building. An accessory use second unit is subordinate to and intended only as an accessory use to the primary dwelling unit located on the same lot. A maximum of one accessory use second unit shall be permitted per lot. One parking space shall be required for each accessory use second unit, with the exception of an accessory use second unit on a lot located in the downtown.

The building regulations for accessory second units as part of an accessory building are as follows:

- Maximum building height of 8.0 m in Rural Area (RA) zone and 6.0 m in all other zones,
- Not larger in gross floor area than the dwelling unit that is the lot's primary use, to a maximum of 90 sq m in the Estate Residential (R1) and Rural Area (RA) zones, and 75 sq m in all other zones,
- Required lot frontage and area and maximum lot coverage same as for the main building, with specific requirements dependent on zoning, and,
- Required minimum setback distances same as for accessory buildings, with specific distances dependent on zoning, to a minimum of 1.2 m for a 1-storey building and 1.8 m for 2-storey building.

The building regulations for accessory second units as a standalone accessory building are as follows:

- Maximum building height of 1 storey,
- Required minimum setback distances same as for accessory buildings, with specific distances dependent on zoning, to a minimum of 1.2 m,
- Not larger in gross floor area than the dwelling unit that is the lot's primary use, to a maximum of 90 sq m in the Estate Residential (R1) and Rural Area (RA) zones, and 75 sq m in all other zones, and,
- Required lot frontage and area and maximum lot coverage same as for the main building, with specific requirements dependent on zoning.

Thunder Bay

The City of Thunder Bay's Zoning By-law defines a garden suite as a free-standing residential building that is designed to be temporary and portable and contains a maximum of one home. A garden suite is a secondary use to a detached house located on the same lot. Garden suites are not considered accessory uses by the City's By-law and are only permitted in zones where they are expressly permitted. Garden suites are not listed as permitted main uses in any of the City's established zones.

Timmins

The City of Timmins' Official Plan states that garden suites may be permitted as a one-unit detached portable self-contained residential structure that is accessory to and separated from an existing permitted residential dwelling on the same lot. Garden suites may be established in any land use designation which permits a residential use for the period of time by a Temporary use By-law under the *Planning Act* for a period of up to ten years.

The City's Zoning By-law defines a garden suite as a one-unit residential structure containing a bathroom and kitchen facilities that is ancillary/accessory to an existing residential structure and that is designed to be portable.

One garden suite only shall be permitted as a separate dwelling unit to a permitted main residential use on the same lot, subject the following requirements:

- Minimum lot area is 460 sq m,
- Maximum floor area of the garden suite does not exceed 60 sq m,
- Maximum height of the garden suite is one storey,
- Garden suite is located in the rear or interior side yard,
- Meets the minimum yard and lot coverage requirements set out in the corresponding zone, and
- Setback a minimum of 3 m from any rear or side lot line.

One parking space per garden suite is required in addition to the parking requirements of the main residential use.

Parry Sound

The Town of Parry Sound's Official Plan permits that a second residential unit may be located in a detached house, semi-detached house rowhouse or accessory building in all areas where these uses are permitted, subject to the following additional requirements:

- There are sufficient on-site parking facilities to accommodate the primary and second units,
- The property has sufficient servicing capacity (sewer and water) to accommodate the second unit,
- The unit is clearly secondary to the main unit, having an area that in general does not exceed 75 percent of the area of the primary dwelling unit, and

- The unit is not located in an area that is susceptible to flooding, except were the units are suitably flood-proofed.

The Town's Zoning By-law permits that an ancillary dwelling unit is permitted accessory to any single detached dwelling, semi-detached dwelling, or townhouse in a R1, R2 or R3 zone, and RR and RU zones not abutting Georgian Bay, Mill Lake, or Darlington Lake, subject to the following requirements:

- The ancillary dwelling unit is located in the second storey of a detached garage,
- Any new structure which contains the ancillary dwelling unit shall meet the same interior side yard and exterior side yard setback requirements of the principal residential use in the zone and shall meet a rear yard requirement of 3 m,
- An ancillary dwelling unit is not permitted if the lot also contains two or more detached legal non-conforming residential structures,
- A minimum of one parking space is provided for the ancillary dwelling unit, which can take the form of a tandem parking space, and does not result in a separate driveway being required,
- Accessory structures with an ancillary dwelling shall not exceed a maximum height of 8 m,
- Accessory structures with an ancillary dwelling shall conform to the requirements for accessory buildings and structures generally, including:
    - The accessory building or structure is located on the same lot and in the same zone as the principal use,
    - The accessory building shall be erected to the rear of the main wall of the main building for the front or exterior yard, or the extension of the building line of the main wall to the side lot line and shall comply with minimum yard requirements of the zone in which the building is erected,
    - The total lot coverage of all accessory buildings and structures shall not exceed 10 percent,
    - No accessory building shall be erected prior to the erection of the main building on the same lot.

Ottawa

The City of Ottawa's Zoning By-law permits a secondary dwelling unit in any detached dwelling, linked-detached or semi-detached or townhouse dwelling in any zone where that dwelling type is a listed permitted use. Among other requirements, the Zoning By-law requires that the secondary dwelling unit be contained within the same building as its principal dwelling unit. As such, secondary dwelling units are not permitted in accessory structures or as accessory uses.

Guelph

The City of Guelph's Official Plan provides for the creation of additional residential units. The City's Zoning By-law contains specific regulations for additional residential dwelling units, as follows:

- A maximum of two additional residential dwelling units shall be permitted on a lot, one within the same building as the primary dwelling unit and one located in a separate building on the same lot,
- The additional residential dwelling unit shall not exceed 45 percent of the total net floor area of the primary building, or a maximum of 80 sq m in floor area, whichever is less,
- The additional residential dwelling unit within a separate building on the same lot shall not contain more than two bedrooms,
- The additional residential dwelling unit shall not occupy more than 30 percent of the yard, including all accessory buildings and structures,
- The maximum building height shall be 5 m and shall not exceed an overall building height of the primary dwelling,
- Where an additional residential dwelling unit is located above a garage, the maximum total building height shall be 6.1 m and shall not exceed the overall building height of the primary dwelling,
- A 1.2 m wide unobstructed pedestrian access shall be provided to the entrance of the unit, unless access to the additional residential dwelling unit is provided directly from a street or lane,
- A minimum 1.2 m side yard setback is required for the primary dwelling in the yard closest to the unobstructed pedestrian access, unless access to the additional residential unit is provided directly from a street or lane,
- An additional residential dwelling unit in a separate building on a lot may occupy a yard other than a front yard or required exterior side yard,
- An additional residential dwelling unit in a separate building on a lot shall have a minimum side and rear yard setback consistent with the side yard setback for the primary dwelling in the applicable zone,
- A two-storey additional residential dwelling unit shall have a minimum 3 m side yard and rear yard setback where a window is adjacent to the property line,
- A minimum distance of 3 m shall be provided between the primary dwelling unit and an additional residential dwelling unit in a building on the same lot, and,

- One additional off-street parking space must be provided for the additional residential dwelling unit, above the parking requirements for the primary dwelling unit
    - If no legal off-street parking can be provided for the primary dwelling, no parking spaces are required for the additional residential dwelling units.

Barrie

The City of Barrie’s Official Plan permits additional residential units, including detached ancillary dwelling units, which are defined as an accessory dwelling unit that is located within a detached accessory building on the same lot as a single detached dwelling, semi-detached dwelling unit, duplex dwelling, or street townhouse dwelling unit, and is subordinate to the principal unit.

The City’s Zoning By-law permits a detached accessory dwelling unit as a permitted accessory use to a single detached dwelling, duplex dwelling, semi-detached dwelling, or street townhouse dwelling unit, subject to the following development standards:

- Maximum height of 4.5 m or the height of the principal building, whichever is lesser,
- Minimum front yard and rear yard setbacks of 7 m,
- Minimum interior side yard and exterior side yard setbacks of 3 m,
- The detached accessory dwelling unit is located on the same lot of a principal building that has frontage on a municipal street,
- A detached accessory dwelling unit may be a stand-alone detached accessory building or structure or located within or attached to a detached accessory building or structure,
- A maximum of one detached accessory dwelling unit is permitted per lot and a detached accessory dwelling unit shall only contain one dwelling unit,
- A detached accessory dwelling unit is not permitted to have a basement,
- A detached accessory dwelling unit is not permitted in a front yard,
- The maximum distance between the front lot line and the primary entrance to a detached accessory dwelling unit shall be 40 m,
- A 1.2 m wide unobstructed path of travel shall be provided to the primary entrance of the detached accessory dwelling unit from the street, driveway, or parking area,
- A detached accessory dwelling unit shall be smaller than the principal dwelling unit and have a maximum gross floor area equal to 45 percent of the gross floor area of the principal building, up to a maximum of 75 sq m, and

- A detached accessory dwelling unit shall not exceed 10 percent lot coverage, including the lot coverage for all other accessory buildings and structures.

Peterborough

The City of Peterborough’s Official Plan states that secondary suites are permitted, subject to the following criteria:

- Only one secondary suite for each single detached, semi-detached, or row/townhouse dwelling unit will be permitted,
- A secondary suite may be contained within a primary residential dwelling or in a building accessory thereto, but not in both,
- Secondary suites shall be developed with municipal water and wastewater services unless permission is granted otherwise in the Zoning By-law.

The City’s Zoning By-law contains additional development standards pertaining to secondary suites, as follows:

- Minimum floor area of 28 sq m and maximum floor area less than the floor area of the principal dwelling unit,
- Maximum of two bedrooms in a secondary suite,
- No additional off-street parking shall be required for a secondary suite located in Area 1, and one off-street parking space shall be required for a secondary suite located in Areas 2 and 3, which can be tandem parking spaces,
- Secondary suites shall comply with the development standards for residential accessory buildings, as follows:
  - Minimum distance of 1.2 m to rear of dwelling,
  - Minimum distance of 0.6 m from side or rear lot line,
  - Maximum height of 4.3 m, and
  - Maximum lot coverage of 10 percent.

London

The City of London’s Zoning By-law permits additional residential units in any zone in association with a single detached dwelling, semi-detached dwelling or street townhouse. A maximum of two additional residential units are permitted per lot, including a maximum of one additional residential unit in the main dwelling and one additional residential unit in an accessory or ancillary structure. Additional residential units within accessory structures are subject to the regulations of the zone which apply to accessory structures and are only permitted in the rear or interior side yards. The following development standards also apply to additional residential units in accessory structures:

- The gross floor area of additional residential units shall not be greater than 40 percent of the combined total gross floor area of the primary dwelling unit and the additional residential units,

- The additional residential units and primary dwelling unit together shall not exceed the total number of bedrooms permitted for the primary dwelling unit when the total number of bedrooms in the primary and additional residential units are combined,
- No additional parking is required for additional residential units, and
- A new driveway in association with an additional residential unit is not permitted.

Hamilton

The City of Hamilton's Zoning By-law permits a maximum of one detached additional dwelling unit on a lot containing a single detached dwelling, a semi-detached dwelling or a street townhouse dwelling in select zones. A legally established accessory building may be converted to the additional dwelling unit, subject to the following development standards:

- All the regulations of the By-law applicable to the existing dwelling shall continue to apply,
- An additional dwelling unit is only permitted in a rear or interior side yard,
- A minimum 1.2 m setback shall be provided from the interior side lot line and rear lot line,
- A landscape strip is required to be provided with the required side yard adjacent to an additional dwelling unit,
- An additional dwelling unit shall not be located closer to the flankage street than the principal dwelling,
- An unobstructed path with a minimum 1.0 m width and minimum 2.1 m clearance in height from a street line to the entrance of the additional dwelling unit shall be provided and maintained,
- Where an additional dwelling unit is located in the rear yard, a minimum of 7.5 m shall be required between the rear wall of the principal dwelling and the additional dwelling unit,
- Where an additional dwelling unit is located in an interior side yard, a minimum of 4.0 m shall be provided between the side wall of the principal dwelling and the additional dwelling unit and the additional dwelling unit shall be set back a minimum of 5.0 m from the front façade of the principal dwelling,
- A maximum height of 6.0 m shall be permitted,
- A maximum gross floor area shall not exceed 75 square metres or the gross floor area of the principal dwelling, whichever is lesser,
    - The ground floor area of an additional dwelling unit shall not exceed 70 percent of the ground floor area of the principal dwelling when the ground floor area of the

    principal dwelling is less than or equal to 105 square metres, and

- The maximum combined lot coverage of all accessory buildings and the additional dwelling unit shall be 25 percent.

Kingston

The City of Kingston’s Official Plan defines second residential units as dwelling units which are ancillary to a principal residential unit and are located on the same lot. Second residential units are permitted in single detached dwellings, semi-detached dwellings, linked and row houses, as well as accessory buildings where a second residential unit does not already exist in the primary dwelling subject to the following criteria:

- In areas shown as known or potential servicing constraints, a second residential unit may only be permitted where it has been demonstrated that there is adequate water and wastewater to support the second residential unit,
- If the second residential unit is detached, a hydrogeological study is required, confirming that the groundwater quality and quantity are sufficient for the second residential unit and will not adversely impact the water supply of adjacent lots and the principal residential unit. The hydrogeological study must also assess the potential for sewage system impact and demonstrate that the area of development is not hydrogeologically sensitive and the sewage system is isolated from the receiving aquifer or the impact of the principal residential unit plus the second residential unit is less than 10 mg/L nitrate-nitrogen at the property boundary,
- Second residential units may be a prohibited use on a residential dwelling lot containing a garden suite, boarding house, or lodging house,
- Second residential units shall not be permitted in a residential dwelling unit situated within a floodplain,
- Additional parking for the second residential unit is required above the requirement for parking for the principal residential dwelling.

Additional development standards for second residential units are detailed in the City’s Zoning By-law, as follows:

- Additional residential units must be connected to municipal services or private services,
- A maximum of two additional units are permitted per lot,
- A maximum of one detached additional residential unit is permitted,
- The gross floor area of the additional residential unit must be less than or equal to the gross floor area of the principal dwelling unit,
- An additional residential unit in a detached accessory building must be located within a rear yard or interior yard,

- Minimum rear yard and interior side yard setbacks of 1.2 m,
- Minimum front yard setback and exterior side yard setbacks of the applicable zone,
- Maximum lot coverage of all accessory buildings of 10 percent,
- Maximum height of 4.6 m and/or 1 storey,
- A maximum of 8 bedrooms are permitted per lot, in the aggregate,
- An additional residential unit must be accessed by a walkway that complies with the following provisions:
    - Minimum width of the walkway is 1.2 m,
    - In the urban area, the walkway must be provided from a street line to the main exterior entrance of every dwelling unit on a lot,
    - In the rural area, the walkway must be provided from the driveway containing the parking space for the dwelling unit to the exterior entrance of every dwelling unit on a lot, and
    - The walkway must be unobstructed up to a minimum height of 2.1 m above grade.
- In the urban area, where an additional residential unit is located in a detached accessory building, the rear yard or interior yard must be screened with a privacy fence with a minimum height of 1.8 m
    - Where the additional residential unit is located in a rear yard, the privacy fence must be established along all interior and rear lot lines adjacent to the rear yard
    - Where the additional residential unit is located in an interior yard, the privacy fence must be established along the interior lot line closest to the detached additional residential unit extending from the intersection of the interior lot line with the rear lot line to the intersection of the interior lot line with the required front setback
- Additional residential units in a detached building that are accessed by a private street or public laneway adjacent to the rear lot line must also comply with the following provisions:
    - The minimum interior side yard setback is 0 m,
    - The maximum height is the lesser of 7.5 m or 2 storeys,
    - A privacy fence with a minimum height of 1.8 m must be established along all interior lot lines adjacent to the rear yard and interior yard,
    - The walkway requirements may be satisfied through the provision of an unobstructed 6 m wide private street or public laneway connected to a walkway on the lot.

St. Catharines

The City of St. Catharines’ Official Plan permits an accessory apartment in single detached, semi-detached, and townhouse dwelling units, or in a detached structure accessory to these uses. One accessory dwelling unit, either interior or detached, is permitted per principal dwelling unit.

Per the City’s Zoning By-law, where a detached accessory dwelling is permitted by Section 13 (Special Provision), it is subject to the following development standards:

- The floor area shall not exceed 105 sq m or 40 percent of the floor area of the principal dwelling unit, whichever is less,
- Shall not be located in a required front yard or exterior side yard,
- Shall not be located within any sight triangle,
- Shall not exceed a building height of 4.5 m,
- Shall not exceed 10 percent of the total lot area, and
- Shall not be located less than 0.6 m from an interior side or rear lot line.

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Downtown Sudbury Master Plan Review – Q4 2024 Update

Presented To:	Planning Committee
Meeting Date:	November 25, 2024
Type:	Correspondence for Information Only
Prepared by:	Ed Landry Planning Services
Recommended by:	General Manager of Growth and Infrastructure
File Number:	N/A

Report Summary

This quarterly report provides information regarding the status of the Downtown Sudbury Master Plan Review.

Relationship to the Strategic Plan, Health Impact Assessment and Climate Action Plans

Strategic Objective 2.4 of Council's 2019-2027 Strategic Plan seeks to revitalize Greater Sudbury's Downtown and Town Centres with public investment that supports private investment. The objective specifically includes updating and implementing the Downtown Sudbury Master Plan.

The proposed review of the Downtown Sudbury Master Plan would help achieve Goal 1 of the CEEP regarding compact, complete communities.

Financial Implications

There are no financial implications associated with this report.

Background

The Downtown Sudbury Master Plan (Master Plan) provides guidance for the revitalization of Downtown Sudbury over the 2012-2022 period and beyond (See Reference 1). The Master Plan was developed over a 20-month period that featured a comprehensive examination of existing opportunities and constraints, a visioning exercise, detailed planning and design work, and the active participation of a Community Liaison Group. The Master Plan was received and endorsed by Council in April of 2012.

In September 2022, staff reported that most of the "25 Year-1 Action Items" and many of the "10-Year Action Strategy Projects" have been completed (See Reference 2). As part of the 2023 Budget Process, Council approved funding of $250,000 for the update of the Master Plan. Staff finalized the procurement process for the Master Plan Update in late 2023. The update is to be undertaken in 4 phases:

1. Initiation and Reconnaissance
2. Visioning and Strategies
3. Draft Master Plan Concept; and,
4. Master Plan Update, culminating in late 2025.

Status

The update is currently moving into Phase 2. The City's Over-to-You website is now active. It is the hub of information for the project and includes information regarding status of the project, resources, next steps, and surveys (See Reference 3).

Community Liaison Group

The City has now established a Community Liaison Group (CLG). The role of the CLG and its members is to provide insight using their lived experiences and subject matter expertise on topics brought forward through the Downtown Master Plan Update process, including by participating in public consultations and community workshops. The group held its first meeting on October 8, 2024, to discuss key issues and opportunities and to explore the themes of the Master Plan Update.

Next Steps

Community Visioning Workshop

As of this writing, the City is planning a Community Visioning Workshop for November 18, 2024, at Place des arts. The goal of the workshop is to seek community input on the issues and opportunities and develop the vision by asking questions such as:

- What do you love about your community?
- What would you like to change?

Out of this interactive workshop, the team will draft a Vision Statement, Principles, and Strategies. These will then be brought back to the City Staff Working Group, Steering Committee and CLG for feedback, and will later be confirmed via a Second Community Workshop anticipated to be held in Q1, 2025.

Resources Cited

1. Downtown Sudbury Master Plan
   https://www.greatersudbury.ca/play/downtown-sudbury/plans/

2. "Downtown Master Plan Update", Manager's Report presented at the September 26, 2022, Planning Committee Meeting
   https://pub-greatersudbury.escribemeetings.com/filestream.ashx?DocumentId=47509

3. "Downtown Master Plan Review", Over-To-You Website
   https://overtoyou.greatersudbury.ca/downtown-master-plan-review

4. "Update on the Downtown Master Plan Review", Correspondence for Information Only, presented at the June 24, 2024, Planning Committee Meeting
   https://pub-greatersudbury.escribemeetings.com/filestream.ashx?DocumentId=53823

Provincial Policy Statement, 2024

Presented To:	Planning Committee
Meeting Date:	November 25, 2024
Type:	Correspondence for Information Only
Prepared by:	Ed Landry Planning Services
Recommended by:	General Manager of Growth and Infrastructure
File Number:	N/A

Report Summary

This report provides information regarding the new Provincial Policy Statement, 2024, as well as an update on Phase 2 of the Official Plan Review schedule.

Relationship to the Strategic Plan, Health Impact Assessment and Climate Action Plans

This report relates to operational matters.

Financial Implications

There are no financial implications related with this report.

Background

Provincial Planning Statement, 2024

The Province released the final version of the Provincial Planning Statement (PPS) on August 20, 2024 (See Reference 1). The new 2024 PPS has an effective date of October 20, 2024, meaning that all municipal decisions, as well as comments, submissions or advice affecting a planning matter, will be required to be consistent with the 2024 PPS from that date on.

The Province had released a first draft Provincial Planning Statement (PPS) in April of 2023. Planning Staff presented a review of proposed changes to the PPS to Planning Committee on May 29, 2023 (See Reference 2). The Province released a new draft PPS in April 2024, and staff again provided comment on that draft.

The new PPS is similar to the version released in April 2024 (See Reference 3).

Next Steps – Phase 2 Review of the Official Plan

The City began its Phase 2 Review of the Official Plan (OP Update) in 2019 and a draft was submitted to the Ministry of Municipal Affairs and Housing (MMAH) in February 2022. The City received a response from the Province in July, 2023 (i.e., subsequent to the release of the 2023 draft Provincial Planning Statement) indicating no concern, and encouraging the City of Greater Sudbury to adopt its OP Update.

Staff is preparing a new draft OP Update that considers and incorporates the 2024 PPS where appropriate. This draft will be presented to Planning Committee in Q1, 2025, where staff will be seeking direction to proceed with open houses and a public hearing prior to the anticipated adoption of the OP update in the Fall. As required by the Planning Act, the OP update will then be sent to the Province for its review and approval.

A likely timeline for the remaining milestones of the OP Update is as follows:

Milestone	**Timeline**
Incorporate 2024 PPS into OP Update	Q4, 2024
Present new draft OP Update to Planning Committee	Q1, 2025
Statutory Open Houses and Public Hearing	End of Q2, 2025
Council adoption of OP Update and forwarding of record to Province for approval	Q3, 2025
Provincial Decision on OP Update	Potentially within 6 months from the adoption of the OP Update
In-effect date	The day after the last date of appeal – potentially within the first half of 2026

Resources Cited

1. "Provincial Planning Statement, 2024"
   https://www.ontario.ca/files/2024-08/mmah-provincial-planning-statement-en-2024-08-19.pdf

2. "Draft Provincial Planning Statement 2023", report presented at the Planning Committee Meeting of May 29, 2023
   https://pub-greatersudbury.escribemeetings.com/filestream.ashx?DocumentId=49734

3. "Bill 185 – Cutting Red Tape to Building More Homes Act, and New Proposed Provincial Policy Statement, 2024", report presented at the Planning Committee Meeting of May 27, 2024
   https://pub-greatersudbury.escribemeetings.com/filestream.ashx?DocumentId=53500