



March 14, 2019  
04-18-0508

Mr. Witmar Abele  
Principal  
KMBR Architects Planners Inc.  
300 - 152 West Hastings Street  
Vancouver, BC  
V6B 1G8

VIA E-MAIL: wabele@kmbrr.com

Dear: Mr. Witmar:

**Re: Notre Dame Regional Secondary School - Vancouver, BC  
Addendum - Traffic Management Plan (Draft)**

As requested, Bunt & Associates (Bunt) has prepared this letter report to support the construction of a new playfield, spectator seating and parking lot at Notre Dame Regional Secondary School in the City of Vancouver. It presents the findings and conclusions of a traffic review of the interaction of school traffic with Fire Hall No. 14 located next the school at 2804 Venables Street. In addition, traffic/parking measures are identified that could be implemented by the school during events associated with the new playfield. This letter report is intended to serve as an addendum to the *Notre Dame Regional Secondary School Transportation Management Plan* (Vancouver, BC: ND LEA Inc., July 11, 2007).

## 1. INTRODUCTION

Notre Dame Regional Secondary School is located at 2880 Venables Street in the City of Vancouver (City). KMBR is in the process of submitting a minor amendment to the previously approved (2007) Development Permit (DP) to facilitate the construction of a new playfield, 68-space parking lot and bleacher-style spectator seating with capacity of 738. As part of the DP amendment, the City requested an update to the 2007 study that addresses:

- The traffic impacts, if any, on Fire Hall No. 14 located at the corner of Kaslo and Venables; and
- Traffic/parking measures (e.g. event traffic management) that would be implemented during school events associated with the new playfield.

To that end, the school retained Bunt to prepare this addendum to the 2007 *Transportation Management Plan* which has been completed in accordance with the City-approved Terms of Reference attached in **Appendix A**.

## 2. FINDINGS

### 2.1 Existing Conditions

#### 2.1.1 Land Use

Notre Dame Regional Secondary School, located at 2880 Venables Street (at Renfrew Street) in Vancouver's Hastings-Sunrise neighbourhood, currently has an enrolment of about 740 full time students ranging from Grades 8 through 12, and 54 full-time equivalent staff. These numbers vary slightly from year to year. This regional school offers academic, fine arts, and business programs, as well as athletic, performing arts, and other extra-curricular programs, to students from several municipalities across Greater Vancouver. **Exhibit 1** illustrates the school's location in Vancouver while the proposed site plan is shown in **Exhibit 2**. Key findings and insights include:

- Notre Dame Regional Secondary School occupies most of the block framed by Venables, Renfrew, Parker and Kaslo Streets, except for the northwest corner which is occupied by Fire Hall No. 14;
- Other than the replacement of the entire original school building with a new facility that was completed in 2015, the immediate neighbourhood has not materially changed from what was present in 2007;
- Vancouver Fire & Rescue Service's Fire Hall No. 14 is located next the school at 2804 Venables Street (at Kaslo Street);
- Single-family homes surround the school to the north, south and west while several commercial buildings are located diagonally across the street on the east side of the 800-block of Renfrew Street with the balance of properties to the east also being residential in nature;
- The school's main entrance has moved from Parker Street to Venables Street as reflected by the new address. A night entrance is provided on Parker Street; and
- The school's existing 98-space parking lot, which has a single driveway on Kaslo Street, will be replaced by a new 68-space parking lot with two driveways on Parker Street. The new parking lot also includes two accessible parking spaces, one Class B loading space, parking for a 36-foot school bus, and space for garbage/recycling containers.

### 2.1.2 Existing Transportation Network

**Exhibit 3** illustrates the existing laning and traffic control within the study area road network.

**Table 1** outlines a number of turning movement and lane restrictions that exist within the study area while the characteristics of each street adjacent to the site are presented in **Table 2**.

**Table 1: Study Intersections & Existing Traffic Control**

INTERSECTION	EXISTING TRAFFIC CONTROL	COMMENTS
Venables St & Kaslo St	Unsignalized	-
Venables St & Renfrew St	Signalized	Offset pedestrian signal
Parker St & Kaslo St	Unsignalized	-
Parker St & Renfrew St	Unsignalized	-

**Table 2: Existing Street Characteristics**

STREET	CLASSIFICATION	NO. OF TRAVEL LANES	POSTED SPEED
Renfrew Street	Arterial	4	50 km/h
Venables Street	Local	2	50 km/h; 30 km/h during school times
Parker Street	Local	2	50 km/h; 30 km/h during school times
Kaslo Street	Local	2	50 km/h; 30 km/h during school times

### 2.1.3 Data Collection

Bunt conducted site visits on Thursday, February 7, 2019 (9:30 – 11 a.m.), Friday, February 21, 2019 (9 – 10 a.m.) and Tuesday, February 26, 2019 to observe pick up/drop off (PU/DO) activities at the school as well as to identify existing challenges and any potential transportation-related issues that may arise as part of the new playfield.

Bunt also conducted multimodal turning movement counts at the study intersections on Tuesday, February 26, 2019 during the AM (7-9 a.m.) and PM (2-5 p.m.) peak periods to capture activity at the school's start (8:30 a.m.) and dismissal (2:45 p.m.). **Table 3** provides a summary of the traffic count data of study intersections. Raw traffic data is included in **Appendix B**.

**Table 3: Summary of Available and Counted Traffic Data**

INTERSECTION	SOURCE	DATE OF COUNT	PEAK HOURS	
			AM	PM
Venables St & Kaslo St	Bunt	Tuesday, February 26, 2019	7:45 – 8:45 a.m.	2:45 – 3:45 p.m.
Venables St & Renfrew St	Bunt	Tuesday, February 26, 2019	7:45 – 8:45 a.m.	2:45 – 3:45 p.m.
Parker St & Kaslo St	Bunt	Tuesday, February 26, 2019	7:45 – 8:45 a.m.	2:45 – 3:45 p.m.
<b>OVERALL STUDY PEAK HOUR</b>			<b>7:45 – 8:45 A.M.</b>	<b>2:45 – 3:45 P.M.</b>

To gain an understanding of the existing on-street parking capacity in the immediate area, Bunt conducted an inventory of the on-street parking supply on the four streets that frame the site. The demand was measured during the school’s typical peak periods of activity at 9:30 a.m. on Thursday, February 7, 2019 and at 2:45 p.m. on Tuesday, February 26, 2019; i.e. school dismissal time, as well as on a weekday evening special event (2019 Annual General Meeting: attendance = about 200 people) from 6 – 8 p.m. on Wednesday, February 27, 2019.

**2.1.4 Existing Traffic**

The historic (2007) and existing (2019) traffic volumes at the study intersections are presented in Exhibits 3 and 4, respectively. Table 4 compares the two-way peak-hour vehicle movements measured on the streets that frame the school.

**Table 4: Comparison of 2007 and 2019 Peak Hour Traffic Volumes**

ROAD LINK	YEAR	WEEKDAY AM PEAK HOUR		WEEKDAY PM PEAK HOUR	
		TOTAL (VEH/HR)	% CHANGE	TOTAL (VEH/HR)	% CHANGE
Renfrew St (900 block)	2007	1010	+36%	1350	-14%
	2019	1370		1160	
Venables St (2800 block)	2007	170	+54%	180	+30%
	2019	260		230	
Kaslo St (900 block)	2007	170	+8%	110	+34%
	2019	180		150	
Parker St (2800 block)	2007	180	-6%	120	-10%
	2019	170		110	

Notes: veh/hr – vehicles per hour; Traffic volumes are rounded as appropriate, i.e. nearest 50, 10, or 5 trips.

Key findings and insights include:

- Students continue to be dropped off or picked up on the north (or school) side of Parker Street between Renfrew and Rossland Streets and on the south side of Venables Street between the Fire Hall and Renfrew Street as evidenced by the 75 – 85 veh/hr that appear to travel clockwise around the block. Note that only about 10 veh/hr appear to travel around the block in the opposite (counter-clockwise) direction.
- Traffic on Renfrew Street has increased during the AM peak hour (+35%) but decreased in the PM peak hour (-14%). Nonetheless, the two-way traffic volumes are well within the capacity of a 4-lane arterial using 1,900 veh/hr/lane;
- Traffic on Venables Street has also increased during the AM peak hour (+53%) as well as during the PM peak hour (+28%). These increases were expected given the relocation of the school’s main entrance from Parker Street to Venables Street. Once again, these volumes are well within the capacity of a 2-lane local street; and
- Traffic on Parker and Kaslo Streets are well within the capacity of 2-lane local streets.



### 2.1.5 Existing Parking

#### *Existing Parking Supply*

**Exhibit 5** illustrates the total on-street parking supply within the study area and parking restrictions in effect during the weekday PM and special event periods, respectively. Key findings include:

- There are approximately 195 parking spaces available on the school site (100 spaces) and on the abutting streets (95 spaces); and
- On-street parking restrictions include a combination of unrestricted, restricted during school hours, no parking and no stopping.

#### *Existing Parking Demand*

**Figure 1** shows the observed parking occupancies on the streets surrounding the school when school is in session (9:30 a.m.), during a regular school dismissal at 2:45 p.m. and on an evening with a 200-person special event (School Annual General Meeting) starting at 7 p.m. while **Figure 2** shows the occupancy of the school parking lot at those same times. Key findings and insights include:

#### *Weekday PM (After School Dismissal)*

- At the time of survey, the parking occupancy was found to be within the desired 85% practical capacity of the study area;
- The school parking lot was observed to be occupied by 76 vehicles; and
- At least 33 vehicles were stopped in the No Parking zones along the south side of Venables Street and the north side of Parker Street as students were picked up after school.

#### *Special Event*

- On-street parking demand ranged from 26 spaces (1 hour before start) to 92 spaces (30 minutes after start) of the 96 space supply being occupied during the count period. This translates to occupancies of up to 96%, which is about 20% higher than the occupancy observed during the weekday PM period;
- After the on-street parking begins to fill up, people start to park in the school's parking lot;
- During this period, parking is generally approaching or above 85% occupied throughout the study area. The busiest locations are the north and south sides of Venables and Parker Streets, respectively along with the school parking lot; and
- Given that parking areas begin to feel "full" to drivers searching for an available parking space at about 85% occupancy, the study area would be experiencing this condition during special events.

Figure 1: Existing Weekday On-Street Parking Occupancy

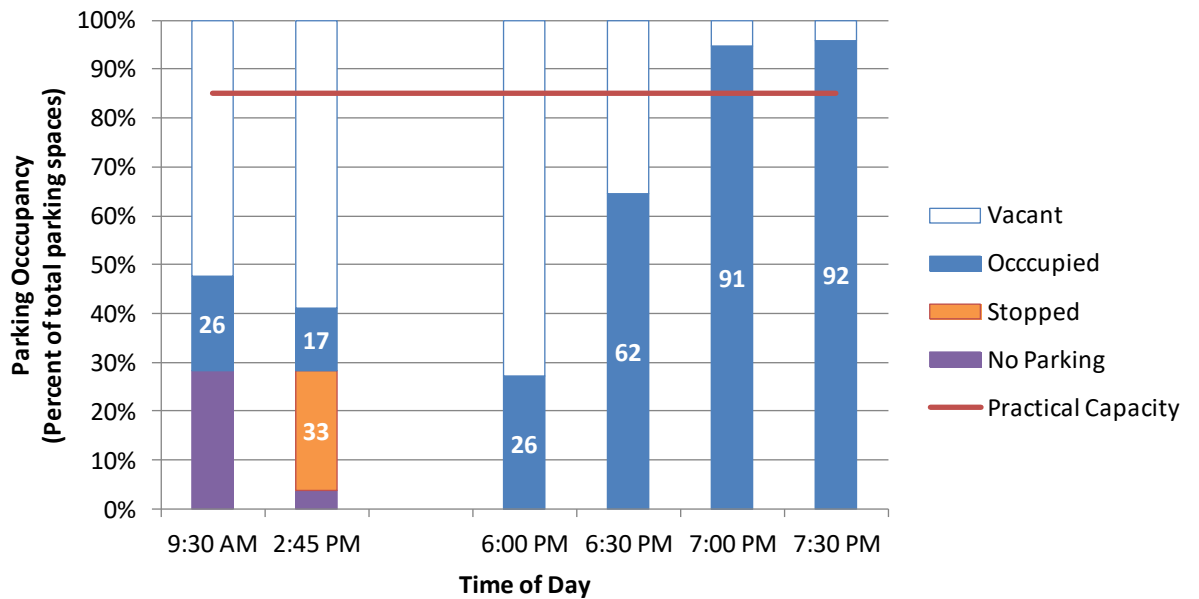
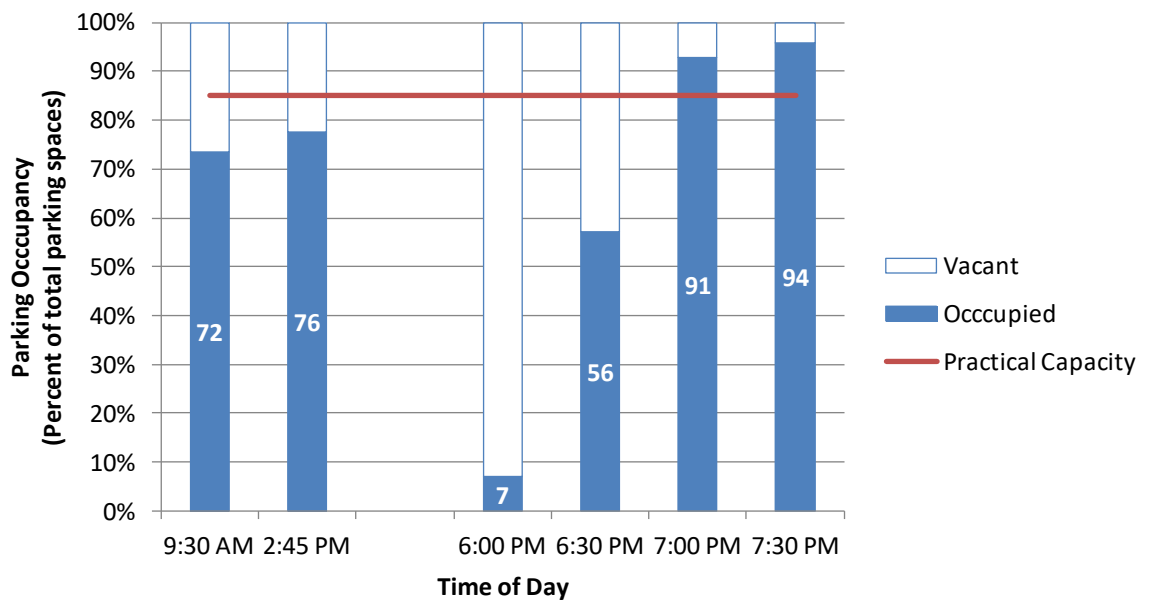


Figure 2: Existing Weekday School Parking Lot Occupancy



## 2.2 Fire Hall No. 14

Vancouver Fire & Rescue Service's Fire Hall No. 14 is located next the school at 2804 Venables Street (at Kaslo Street). Opened in 1979, the fire hall has two apparatus bays and houses Engine 14 and its four firefighters. The fire hall also has outdoor parking for about 10 vehicles with the primary driveway located on Venables Street and a second driveway behind the fire hall on Kaslo Street.

There is a No Stopping zone in front of the fire hall and its driveways. In addition, traffic cones were noted to be deployed along the curb (see **Figure 3**). Nonetheless, motorists were observed to stop (and sometimes wait) in this No Stopping zone in order to drop-off and/or pick-up students. Additional signage (engineering), reminders to parents by the school (education) and the issuing of tickets for parking violations (enforcement) should further discourage people from stopping and/or parking in front of Fire Hall No. 14 and its driveways.

**Figure 3 – Traffic Cones on Venables Street in front of Fire Hall No. 14**



In 2007-2008, Engine 14 responded to an average of 1482 calls per year or four calls per day.<sup>1</sup> Engine 14 would most likely respond to a call by turning right on Venables Street towards Renfrew Street and driving past the school's main entrance and primary pick-up/drop-off area. Should Engine 14 need to respond to a call when students are being dropped off or picked up and

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<sup>1</sup> *Operations Review of Vancouver Fire and Rescue Services* (TriData, December 2009) Table 29, Responses by Station and Unit, 2007-2008 Average

Venables Street was blocked by cars parking, the engine may need to turn left and circle the block counter clockwise to reach Renfrew Street. The peak school drop-off times are from 8-8:30 a.m. while peak pick-up times are from 2:45-3:15 p.m.

### 2.3 School Playfield

The school is now preparing to complete the final phase of construction, moving the parking lot to Parker Street and completing the school's playfield, which will be sunken between the parking lot to the south and the Fr Joe Ponti Academic Wing to the north. This is all part of the school's original development permit. Minor amendments were made limiting the seating to only hold the present school population of 740 students, as well as reconfiguring the parking lot and the school loading zones.

The playfield will not have lighting for after-hours use, so it will only be in use from dawn to dusk. The field surface will be artificial turf so that the field can be used year round without damaging the turf, especially during Vancouver's rainy season.

The main use of the field during the day will be for physical education classes, intramural school sports, school masses, assemblies and as an outdoor classroom. The school is reported to have 21 physical education classes that get transported to fields in the area, sometimes weekly depending on the weather and the time of year. Currently, 160 students are transported 4-5 days a week to fields in Vancouver and Burnaby for practice because they cannot be accommodated at the school. Most of these practices will now be accommodated on the school field.<sup>2</sup>

In the fall, the grade 8 football team would play 3-5 Tuesday afternoon home games per year. The Junior Varsity football games would be played on Wednesday and they would also play 3-5 games at home per year. The senior (Varsity) team would play between 4-5 games at home. Most home games will be played between 3 p.m. and dusk given that the field will not have lighting. Some of these games could be played on a Saturday between 11 a.m. and 4 p.m. These games typically have between 40-80 people in attendance including players, which is notably less than the 200-person attendance observed during the school's 2019 Annual General Meeting. In addition to football, the school's soccer and field hockey teams may host occasional home games on weekdays during the school year.

Consequently, events at the new playfield are not expected to generate any more traffic than is generated by events currently held at the school, which appears to be accommodated by the existing transportation network.

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<sup>2</sup> <https://www.ndrsbuilding.com/project-history>

## 2.4 New Parking Lot

As illustrated in Exhibit 2, a new 68-space parking lot with two driveways would be constructed on the site parallel to Parker Street. The new parking lot includes two accessible parking spaces, one Class B loading space, parking for a 36-foot school bus, and space for garbage/recycling containers.

Section 4.2.3.5 of Vancouver's *Parking By-law* requires that a Secondary School provide a minimum of one and one-quarter spaces for each employee. Therefore, based on 54 employees, a total of 68 parking stalls are required. The proposed parking supply (68 spaces) meets this requirement.

Section 4.1.8 of the *Parking By-law* stipulates that the number of small cars spaces on site may not exceed 25% of the total parking spaces required for the school. Consequently, up to 17 of the required 68 parking spaces can be allocated as small car stalls. The school would meet this requirement as it would provide 17 small car parking spaces.

Swept paths were tested for a 36-foot school bus (S-BUS-11M), a delivery truck (SU-9 medium single unit truck) and a garbage/recycling truck (HSU heavy single unit truck using AutoTURN software with the resulting drawings attached in **Appendix C**. The analysis indicates that these large vehicles should be able to manoeuvre about the parking lot without significant challenges.

### 3. CONCLUSIONS AND RECOMMENDATIONS

#### 3.1 Conclusions

##### *Existing Traffic Conditions*

- Students continue to be dropped off or picked up on the north (or school) side of Parker Street between Renfrew and Rossland Streets and on the south side of Venables Street between the Fire Hall and Renfrew Street. A small number of people appear to travel around the block in the opposite (counter-clockwise) direction.
- Traffic on Renfrew Street has increased during the AM peak hour (+35%) but decreased in the PM peak hour (-14%). Nonetheless, the two-way traffic volumes are well within the capacity of a 4-lane arterial;
- The increase in traffic on Venables Street was expected given the relocation of the school's main entrance from Parker Street to Venables Street. Once again, these volumes are well within the capacity of a 2-lane local street; and
- Traffic on Parker and Kaslo Streets are well within the capacity of 2-lane local streets.

##### *Existing Parking Conditions*

- Within the study area, there are approximately 195 parking spaces available (= 100 off-street + 95 on-street);
- As expected, parking demand is higher during a 200-person special event (School Annual General Meeting) then compared to the weekday afternoon;
- During the weekday PM period, parking demand was found to be 148 spaces being occupied of the 195 space supply. This translates to an occupancy rate of 76%; and
- During the special event period, the busiest locations are the south side of Venables, the north side of Parker Street along with the school parking lot. The overall occupancy was 96%, which is about 20% higher than the occupancy measured during the weekday PM period.

##### *Traffic/Parking Impacts on Fire Hall No. 14*

- Engine 14 appears to respond to about four calls per day;
- Should Engine 14 need to respond to a call when students are being dropped off (typically 8-8:30 a.m.) or picked up (typically 2:45-3:15 p.m.), it may need to turn left and circle the block counter clockwise to reach Renfrew Street if Venables Street was blocked by cars parking;
- No Stopping zone in front of the fire hall discourages people from parking in front of the fire hall and its driveways when dropping off or picking up students. In addition, traffic cones are deployed along the curb; and
- Additional signage, parking enforcement and reminders to parents should further discourage people from parking in front of the fire hall and its driveways.

#### *New School Playfield*

- The playfield will not have lighting for after-hours use, so it will only be in use from dawn to dusk. The field surface will be artificial turf so that the field can be used year round without damaging the turf, especially during Vancouver's rainy season. Bleacher-style spectator seating with capacity of 738 will be provided;
- The main use of the field during the day will be for physical education classes, intramural school sports, school masses, assemblies and as an outdoor classroom. The school's three football teams are expected to play a total of 10-15 home games per year between August and November; and
- School football games typically have between 40-80 people in attendance including players, which is notably less than the 200-person attendance observed during the school's 2019 Annual General Meeting; thus, these events are not expected to generate any more traffic than is generated by other events currently held at the school, which appear to be accommodated by the existing transportation network.

#### *New Parking Lot*

- The new 68-space parking lot would meet the supply requirements (= 68 parking spaces including no more than 17 small car spaces) stipulated in Vancouver's *Parking By-law*; and
- School buses, delivery trucks and garbage/recycling trucks should be able to manoeuvre about the parking lot without significant challenges.

### 3.2 Recommendations

1. In order to further discourage people from stopping and/or parking in front of Fire Hall No. 14 and its driveways:
  - Install additional signage on Venables Street in front of the fire hall;
  - Send reminders to parents to not stop and/or park in front of the fire hall; and
  - Enforce No Stopping regulations during school drop-off and pick-up times (typically 8-8:30 a.m. and 2:45-3:15 p.m.).

Please contact me at (604) 685-6427 or [fvanweelderens@bunteng.com](mailto:fvanweelderens@bunteng.com) should you have any questions regarding the findings and conclusions of this letter report.

Yours truly,

**Bunt & Associates**

Floris van Weelderens, P.Eng., PE, PTOE  
Senior Transportation Engineer | Associate

Stuart Thornley, EIT  
Transportation Analyst





PNE/Playland



Scale: NTS

Hastings Community Park

E Hastings St

Renfrew St

E Georgia St

Adanac St

Nanaimo St

Kamloops St

Penticton St

Slocan St

Venables St

Kaslo St

Parker St

SITE

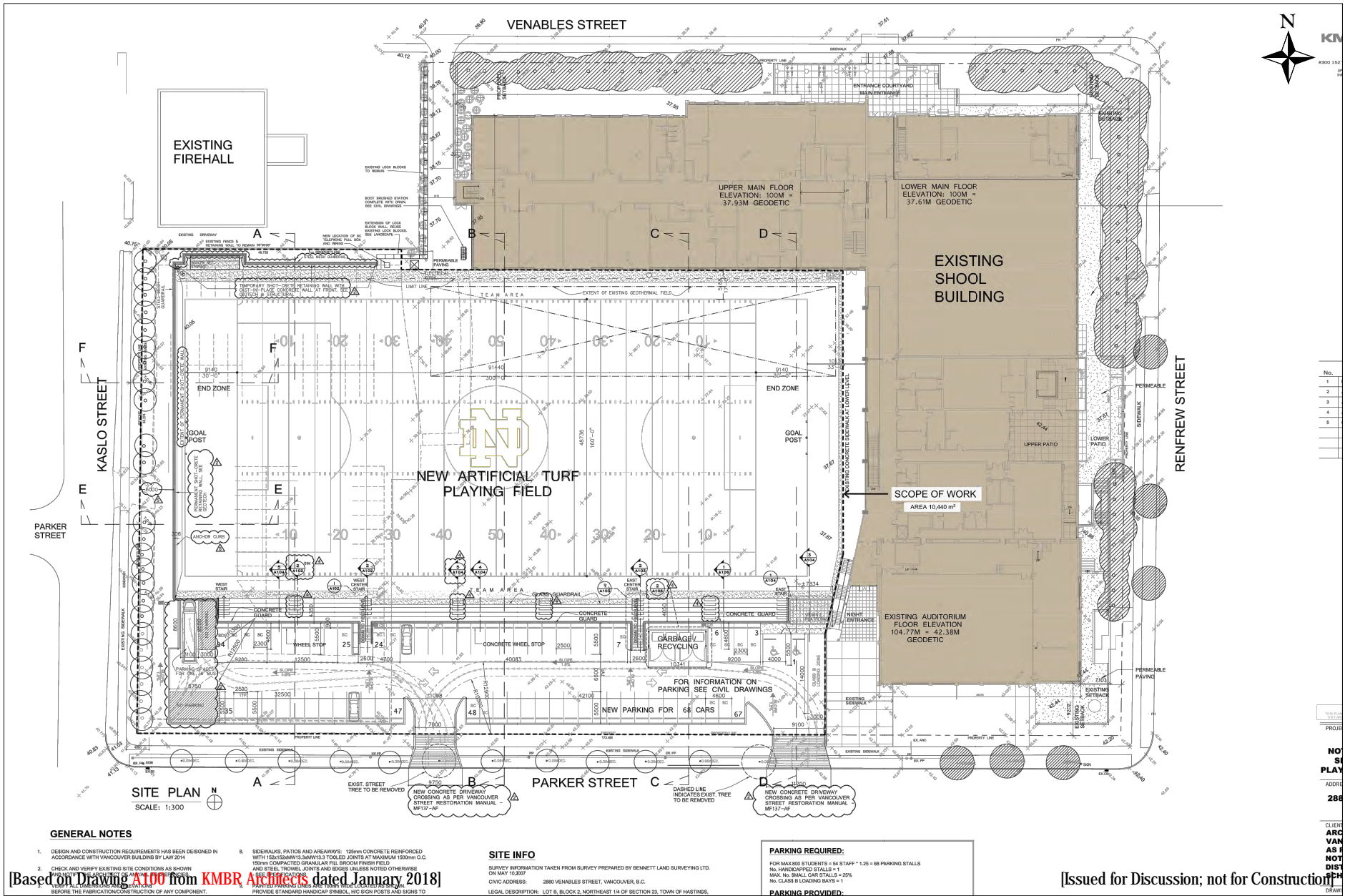
**Exhibit 1**  
Site Location and Study Area

Notre Dame Regional Secondary School  
04-18-0508

March 2019



S:\PROJECTS\FW\04-18-0508 Notre Dame Secondary School\4.0 Analysis & Design\CAD\20190308\_04-18-0508\_Site-Plan.dwg  
 2019/03/12 17:23, Plotted by Stuart Thornley



No.	1
	2
	3
	4
	5
	6

PROJECT NO: 288  
 CLIENT: ARC VAN AS NOT DIST PH  
 ADDRESS: 288  
 DRAWN:

**GENERAL NOTES**

- DESIGN AND CONSTRUCTION REQUIREMENTS HAS BEEN DESIGNED IN ACCORDANCE WITH VANCOUVER BUILDING BY LAW 2014
- CHECK AND VERIFY EXISTING SITE CONDITIONS AS SHOWN
- VERIFY ALL FOUNDATION CONDITIONS BEFORE THE FABRICATION/CONSTRUCTION OF ANY COMPONENT.
- SIDEWALKS, PATIOS AND AREAWAYS: 125mm CONCRETE REINFORCED WITH 150x300MM'S BARS'S 3 TOOKED; JENTS AT MAXIMUM 1500mm O.C. 150mm COMPACTED GRANULAR FILL BROOM FINISH FIELD AND STEEL TRIMMEL, JOINTS AND EDGES UNLESS NOTED OTHERWISE
- PAINTED PARKING LINES ARE TO BE PAINTED TO MATCH THE LOCATION AND PROVIDE STANDARD HANDBOOK SYMBOL, INC SIGN POSTS AND SIGNS TO

**SITE INFO**

SURVEY INFORMATION TAKEN FROM SURVEY PREPARED BY BENNETT LAND SURVEYING LTD. ON MAY 10 2007  
 CIVIC ADDRESS: 288 VENABLES STREET, VANCOUVER, B.C.  
 LEGAL DESCRIPTION: LOT B, BLOCK 2, NORTHEAST 1/4 OF SECTION 23, TOWN OF HASTINGS.

**PARKING REQUIRED:**

FOR MAX 600 STUDENTS = 64 STAFF \* 1.25 = 68 PARKING STALLS  
 NO. HANDICAPPED STALLS = 1  
 MAX. NO. SMALL CAR STALLS = 20%  
 NO. CLASH ELONGATION BAYS = 11

**PARKING PROVIDED:**

Based on Drawing A100 from KMBR Architects dated January 2018

Issued for Discussion; not for Construction



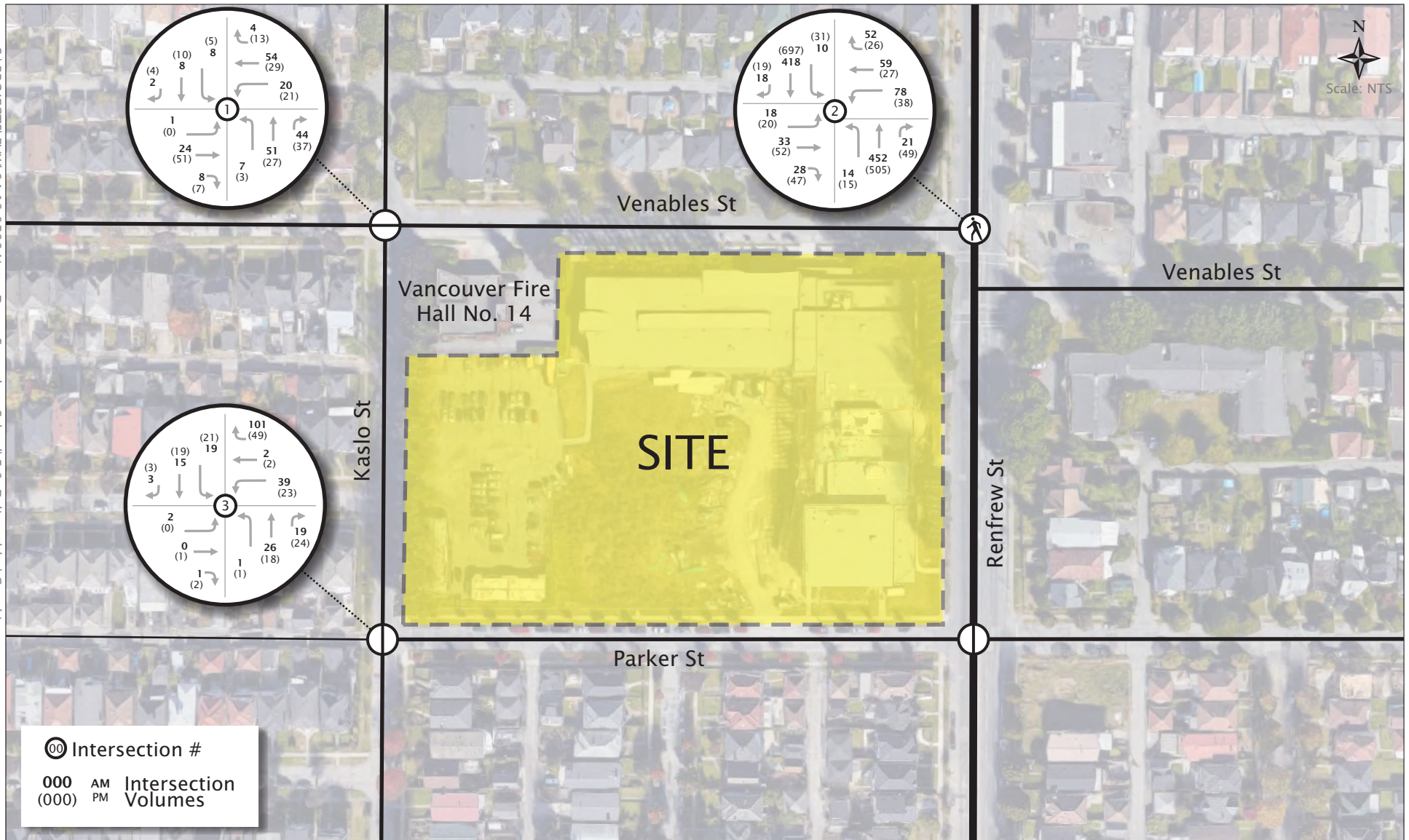


**Exhibit 3**  
Existing Traffic Control and Laning Configuration

Notre Dame Regional Secondary School  
04-18-0508  
March 2019





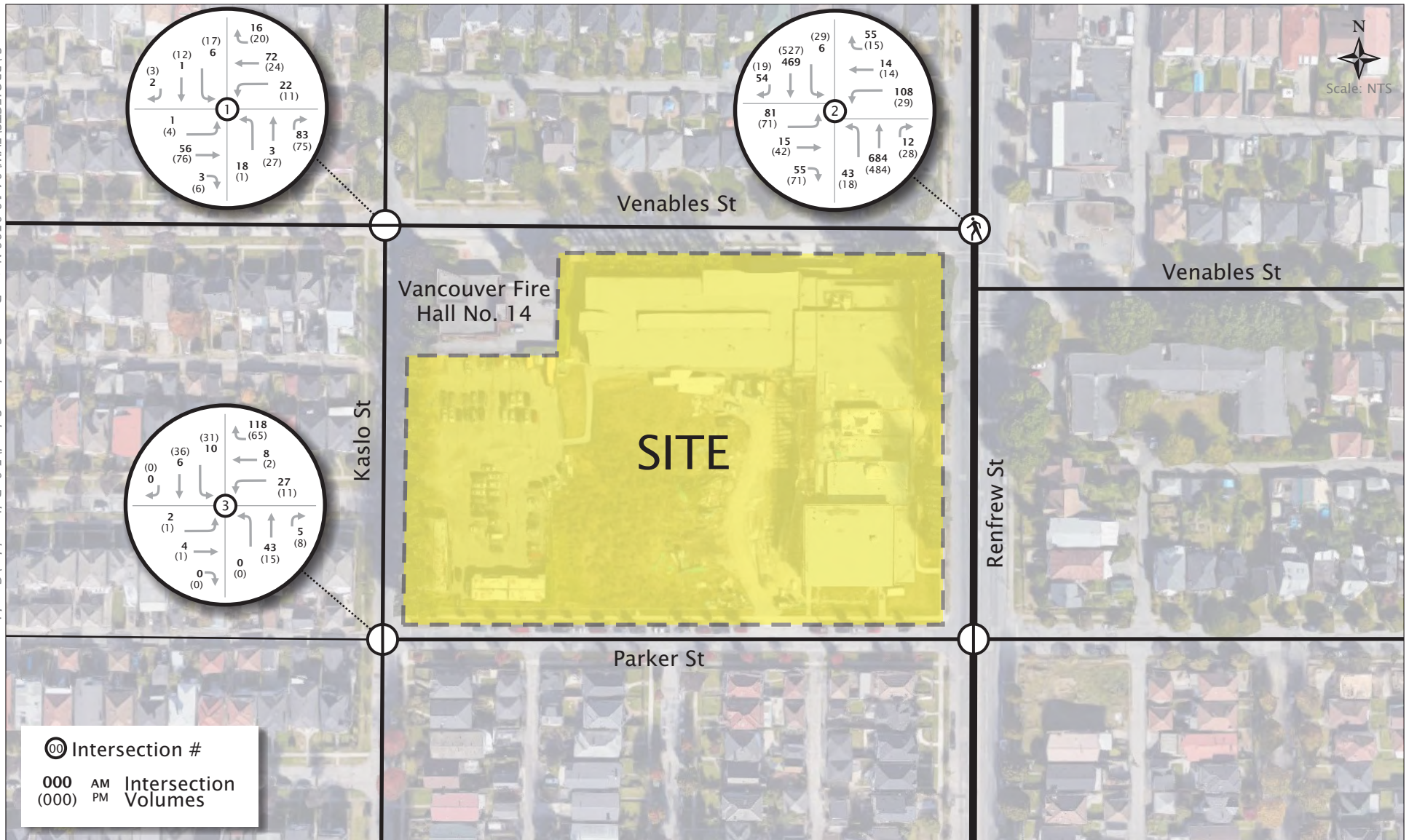


**Exhibit 4**  
Historic (2007) Peak Hour Traffic Volumes

Notre Dame Regional Secondary School  
04-18-0508  
March 2019







**Exhibit 5**  
 Existing (2019) Peak Hour Traffic Volumes

Notre Dame Regional Secondary School  
 04-18-0508  
 March 2019







**Exhibit 6**  
**Parking Supply and Restrictions**

Notre Dame Regional Secondary School  
 04-18-0508  
 March 2019



## APPENDIX A – STUDY TERMS OF REFERENCE



February 14, 2019  
04-18-0508

Mr. John Turecki, P.Eng., Senior Development Review Engineer  
City of Vancouver  
Engineering Services  
453 West 12<sup>th</sup> Avenue  
Vancouver, BC  
V5Y 1V4

VIA E-MAIL: [john.turecki@vancouver.ca](mailto:john.turecki@vancouver.ca)

Dear Mr. Turecki:

**Re: Notre Dame Regional Secondary School – Vancouver, BC  
Terms of Reference – Transportation Management Plan Update (Draft)**

Notre Dame Regional Secondary School retained Bunt & Associates (Bunt) to update the school's 2007 Transportation Management Plan (TMP) in support of the minor amendment to the school's Development Permit which would facilitate construction of a new playfield, parking lot and spectator seating.

As the City will be reviewing our reports, we would like your input on the proposed terms of reference to ensure that City staff has the necessary information to advance this application.

## 1. PROPOSED FORM OF DEVELOPMENT

Notre Dame Regional Secondary School is located at 2855 Parker Street (at Renfrew Street) in the City of Vancouver. KMBR Architects is in the process of submitting a minor amendment to the previously approved (2007) Development Permit (DP) to facilitate the construction of a new playfield, parking lot and bleacher-style spectator seating with capacity of 738 people.

## 2. STUDY DESCRIPTION

Bunt will prepare an update to the *Notre Dame Regional Secondary School Transportation Management Plan* (Vancouver BC: ND LEA Inc. July 11, 2007) in order to address the following issues:

- a. Traffic impacts, if any, on Vancouver Fire Hall No. 14 located at the corner of Kaslo and Venables; and

- b. Traffic/Parking measures (e.g. event traffic management) that would be implemented during school events.

## 2.1 Proposed Work Plan

In order to address the City's requirements, we would:

### Task 1 - Project Start-Up & Data Collection

- Confirm the project scope of work with the City of Vancouver (i.e. Terms of Reference).
- Conduct a site visit to understand fully pick up/drop off (PU/DO) activities at Notre Dame and identify existing challenges and any potential transportation-related issues that may arise as part of the site development.
- Inventory the existing parking regulations and school signage in the study area
- Conduct multimodal turning movement counts during weekday AM (7-9 a.m.) and PM (2-5 p.m.) peak periods at the following intersections:
  - Venables Street & Kaslo Street;
  - Venables Street & Renfrew Street; and,
  - Kaslo Street & Parker Street.
- Conduct a parking demand survey during weekday AM and PM peak periods plus a special event of the existing school parking lot and streets that border the school (Renfrew, Venables, Kaslo; and Parker Streets) which will also form the extents of the study area.

### Task 2 - Operational Analysis

- Analyze traffic and parking data to establish the peak demand periods (AM, PM and special event), PU/DO peak volumes / activity, and parking occupancy patterns;
- Review and articulate the existing travel patterns from the survey data and develop future profiles based on the development plan;
- Estimate future vehicle demands for the school based on data provided by Notre Dame;
- Prepare diagrams showing future vehicle volumes and routing;
- Identify street parking locations that can, or are being, used for the school's activities; and
- Identify traffic impacts, if any, on Vancouver Fire Hall No. 14; and
- Prepare an event traffic management plan that would be implemented during school events.

**Task 3 - Site Design Review**

- Review and articulate the location of vehicle parking and loading accesses for the school;
- Assess vehicle parking for the school;
- Show zones for the PU/DO activity for Notre Dame students;
- Review and present circulation routes for pedestrians, cyclists, and vehicles;
- Present proposed street design changes at the site's frontages along Rupert, Parker, Kaslo and Venables, if any; and
- Identify the number and location of bicycle parking spaces.

**Task 4 - Reporting**

- Summarize the findings, recommendations and conclusions in a Draft report which will be submitted to the City for review/comment;
- After receipt of comments, prepare a Final report and re-submit to City staff; and
- Liaise with the City staff throughout the project approvals process.

\* \* \* \* \*

We trust that the above information meets your needs and look forward to receiving confirmation to that effect. If you have any questions regarding the above, please call me at 604.685.6427 Ex 247 or email me at [fvanweelderens@bunteng.com](mailto:fvanweelderens@bunteng.com).

Yours truly,  
**Bunt & Associates**

Floris van Weelderens, P.Eng., PE, PTOE  
Senior Transportation Engineer | Associate

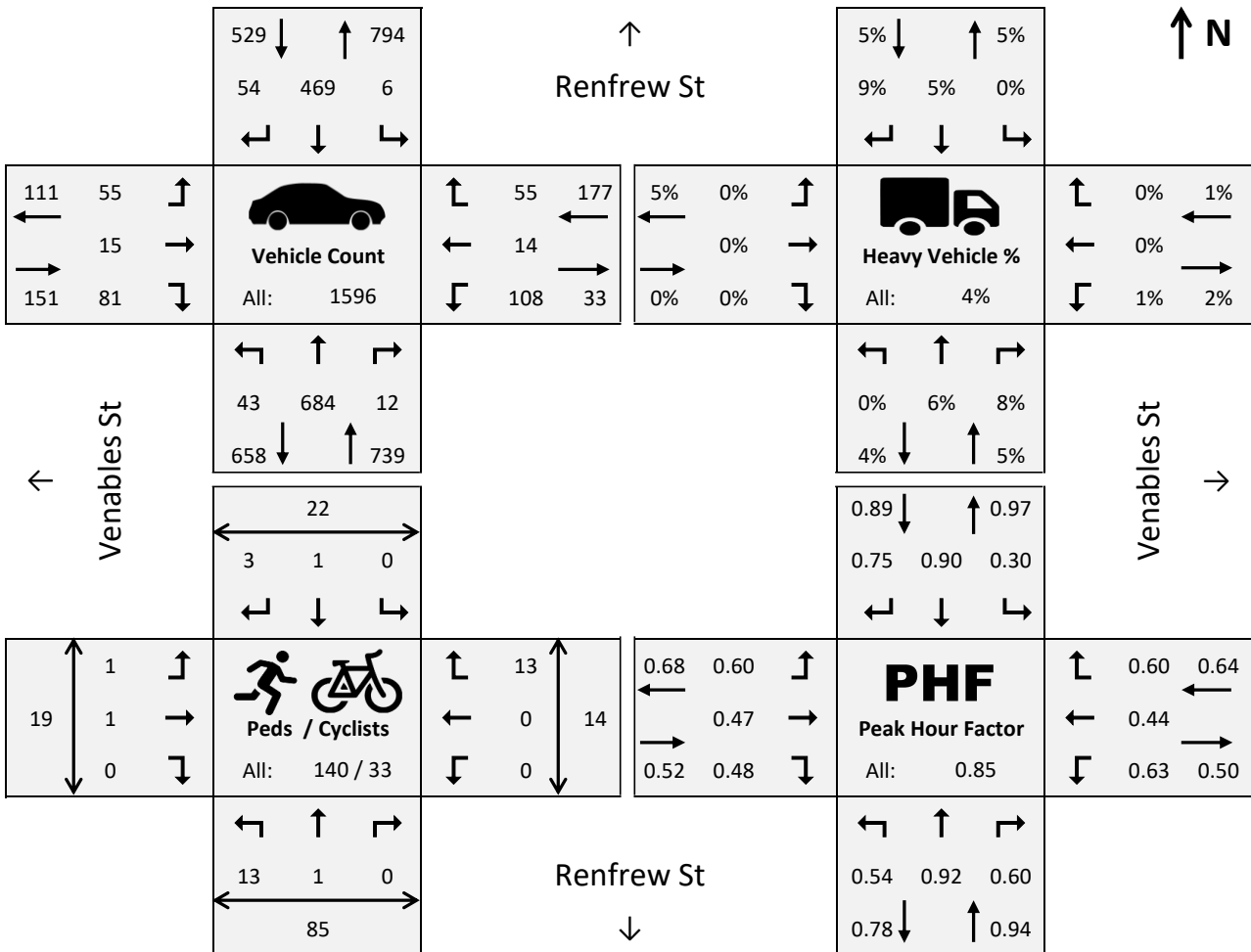
## APPENDIX B – TRAFFIC AND PARKING DATA

# Renfrew St @ Venables St – Vancouver, BC



**Project#:** 04-18-0508      **Weather:** Clear      **Analysis Period:** 7:45 - 8:45  
**Date:** Feb 26, 2019 (Tue)      **Road Cond:** Dry      **Intersection Peak:** 7:45 - 8:45  
**Notes:** Temp -2 AM and +3 PM

TIME INTERVAL	AUTOMOBILE COUNT												PEDESTRIANS			
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	N	S	E	W
7:00 - 7:15	4	103	2	0	78	12	20	1	19	15	2	7	2	5	4	2
7:15 - 7:30	5	128	0	0	76	5	11	2	8	16	1	12	1	2	4	2
7:30 - 7:45	5	161	0	1	72	6	4	1	6	12	1	9	5	15	2	5
7:45 - 8:00	7	178	2	0	130	11	6	1	7	19	3	8	3	14	3	1
8:00 - 8:15	6	166	3	1	91	10	17	3	20	26	8	14	4	33	4	1
8:15 - 8:30	20	155	5	5	126	18	23	8	42	43	3	23	10	31	3	8
8:30 - 8:45	10	185	2	0	122	15	9	3	12	20	0	10	5	7	4	9
8:45 - 9:00	4	187	7	4	129	9	1	0	5	10	0	8	9	11	3	3
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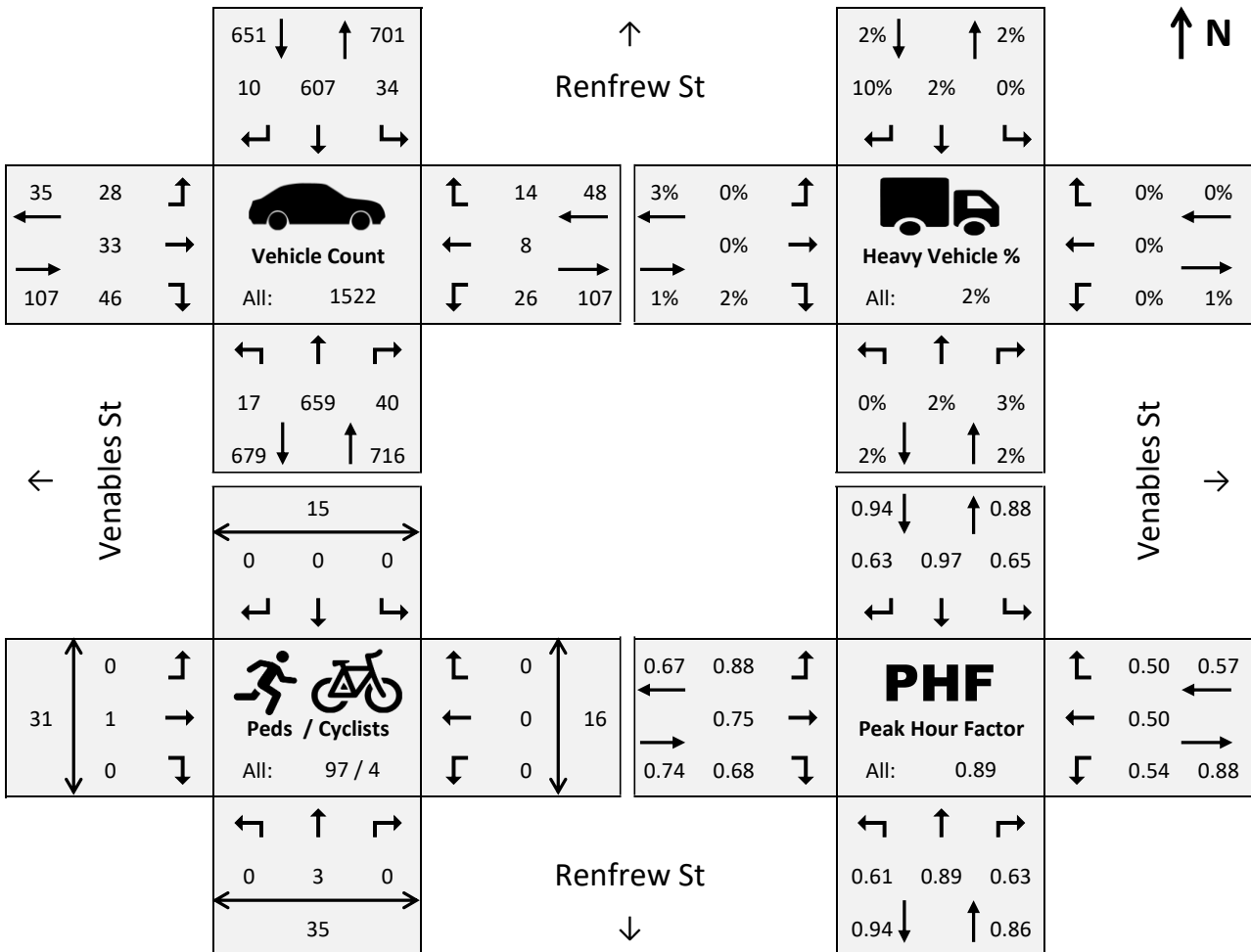


# Renfrew St @ Venables St – Vancouver, BC



**Project#:** 04-18-0508      **Weather:** Clear      **Analysis Period:** 16:00 - 17:00  
**Date:** Feb 26, 2019 (Tue)      **Road Cond:** Dry      **Intersection Peak:** 16:00 - 17:00  
**Notes:** Temp -2 AM and +3 PM

TIME INTERVAL	AUTOMOBILE COUNT												PEDESTRIANS			
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	N	S	E	W
14:00 - 14:15	1	106	4	3	108	0	3	3	4	8	2	2	3	4	0	4
14:15 - 14:30	3	95	3	3	100	5	3	3	2	8	3	6	3	3	1	4
14:30 - 14:45	6	137	7	1	116	4	8	2	6	7	2	1	2	0	1	4
14:45 - 15:00	5	122	6	3	116	8	28	9	30	9	0	3	10	5	1	48
15:00 - 15:15	4	74	4	11	141	4	21	8	15	10	7	7	10	8	3	9
15:15 - 15:30	5	151	8	9	119	4	15	13	15	5	2	2	6	11	8	14
15:30 - 15:45	4	137	10	6	151	2	7	12	11	5	5	3	5	9	5	4
15:45 - 16:00	6	140	9	8	164	1	7	4	8	6	2	3	6	6	5	4
16:00 - 16:15	2	141	7	8	146	2	8	11	8	4	1	4	2	10	5	11
16:15 - 16:30	3	162	9	8	152	3	4	6	9	4	4	3	3	5	4	9
16:30 - 16:45	5	171	8	5	153	1	8	11	17	6	1	0	5	6	2	5
16:45 - 17:00	7	185	16	13	156	4	8	5	12	12	2	7	5	14	5	6
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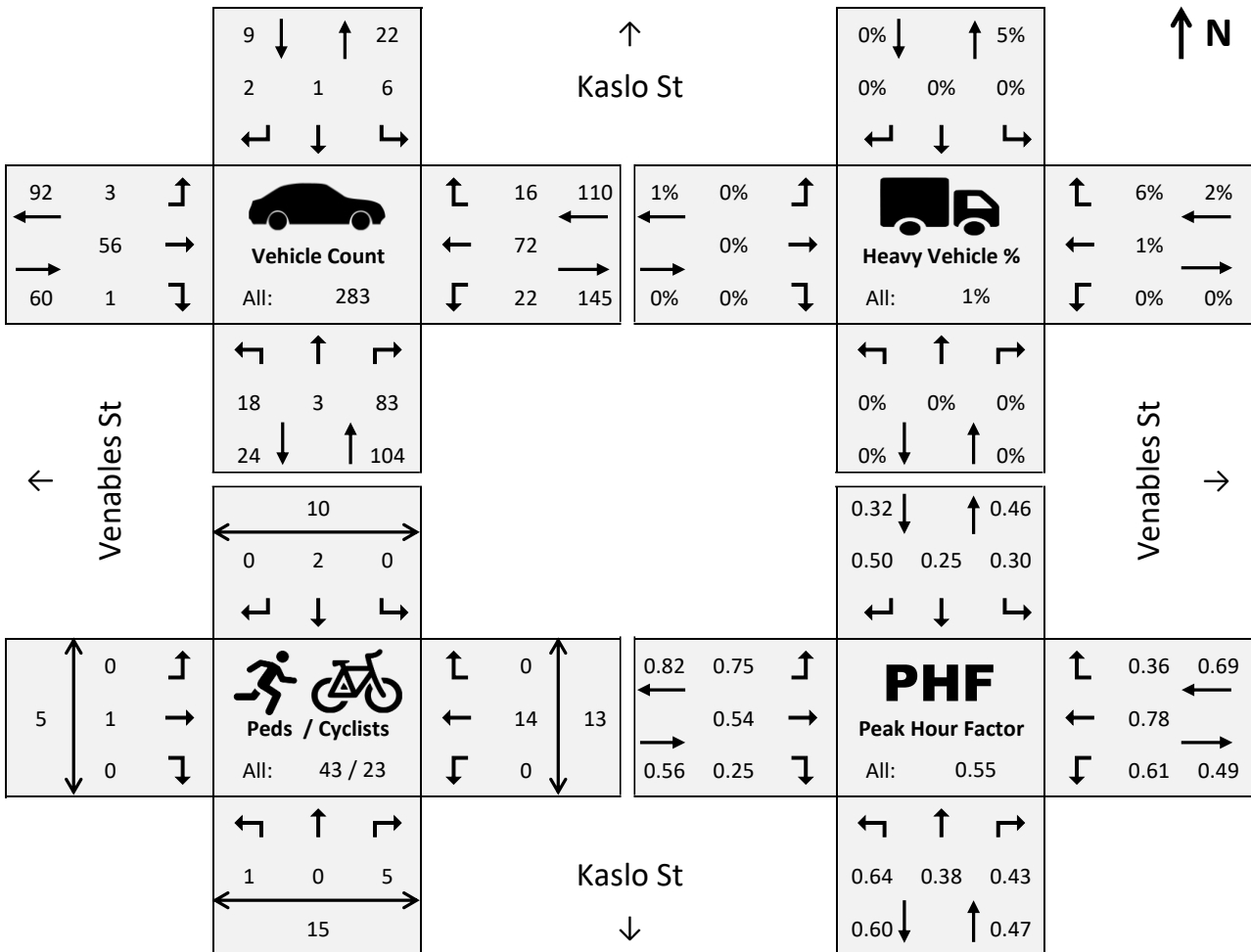


# Kaslo St @ Venables St – Vancouver, BC



**Project#:** 04-18-0508      **Weather:** Clear      **Analysis Period:** 7:45 - 8:45  
**Date:** Feb 26, 2019 (Tue)      **Road Cond:** Dry      **Intersection Peak:** 7:45 - 8:45  
**Notes:** Temp -2 AM and +3 PM; Road Closure North Leg due to construction at 7 AM, Move further up to the alley at 8AM and opened at 2PM.

TIME INTERVAL	AUTOMOBILE COUNT												PEDESTRIANS			
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	N	S	E	W
7:00 - 7:15	7	0	18	4	1	1	0	10	0	7	10	3	0	1	2	1
7:15 - 7:30	6	0	13	0	0	1	1	7	1	6	3	0	0	0	0	1
7:30 - 7:45	2	0	5	0	0	2	1	3	1	2	9	1	0	2	1	0
7:45 - 8:00	3	1	9	0	0	0	1	6	0	4	18	0	0	2	1	2
8:00 - 8:15	7	2	19	0	0	1	0	13	1	6	11	2	1	1	4	0
8:15 - 8:30	7	0	48	5	1	1	1	26	0	9	20	11	7	10	5	0
8:30 - 8:45	1	0	7	1	0	0	1	11	0	3	23	3	2	2	3	3
8:45 - 9:00	2	1	3	1	0	0	1	2	0	4	8	1	6	7	3	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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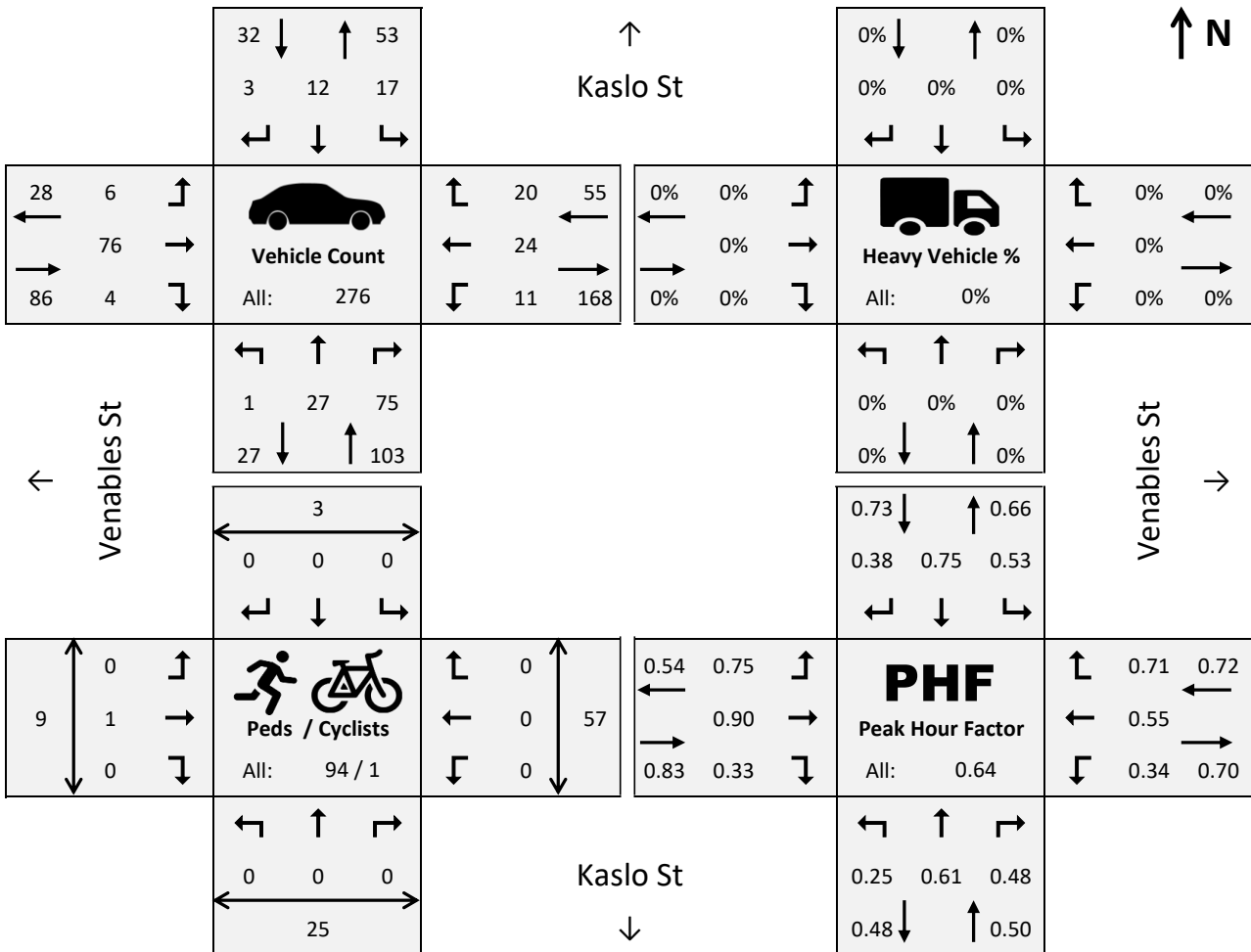


# Kaslo St @ Venables St – Vancouver, BC



**Project#:** 04-18-0508      **Weather:** Clear      **Analysis Period:** 14:45 - 15:45  
**Date:** Feb 26, 2019 (Tue)      **Road Cond:** Dry      **Intersection Peak:** 14:45 - 15:45  
**Notes:** Temp -2 AM and +3 PM; Road Closure North Leg due to construction at 7 AM, Move further up to the alley at 8AM and opened at 2PM.

TIME INTERVAL	AUTOMOBILE COUNT												PEDESTRIANS			
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	N	S	E	W
14:00 - 14:15	0	5	4	1	0	3	0	6	0	0	2	1	0	1	0	0
14:15 - 14:30	0	2	4	4	1	1	0	8	0	4	5	1	1	3	5	1
14:30 - 14:45	0	4	8	5	1	2	2	9	0	2	1	3	0	3	4	1
14:45 - 15:00	1	11	39	8	3	0	2	21	3	8	4	7	0	6	13	2
15:00 - 15:15	0	7	9	6	3	2	1	19	1	2	11	3	1	9	30	1
15:15 - 15:30	0	7	18	1	4	0	1	17	0	0	4	4	1	4	10	1
15:30 - 15:45	0	2	9	2	2	1	2	19	0	1	5	6	1	6	4	5
15:45 - 16:00	0	2	5	1	3	0	5	13	1	1	3	4	1	3	4	0
16:00 - 16:15	3	6	2	0	3	1	2	21	1	0	2	1	0	0	2	0
16:15 - 16:30	3	4	8	3	2	3	2	18	0	2	7	4	0	0	0	0
16:30 - 16:45	0	3	16	1	1	0	2	21	0	1	3	3	1	1	1	4
16:45 - 17:00	0	3	10	3	3	0	2	9	0	1	5	4	2	3	3	2
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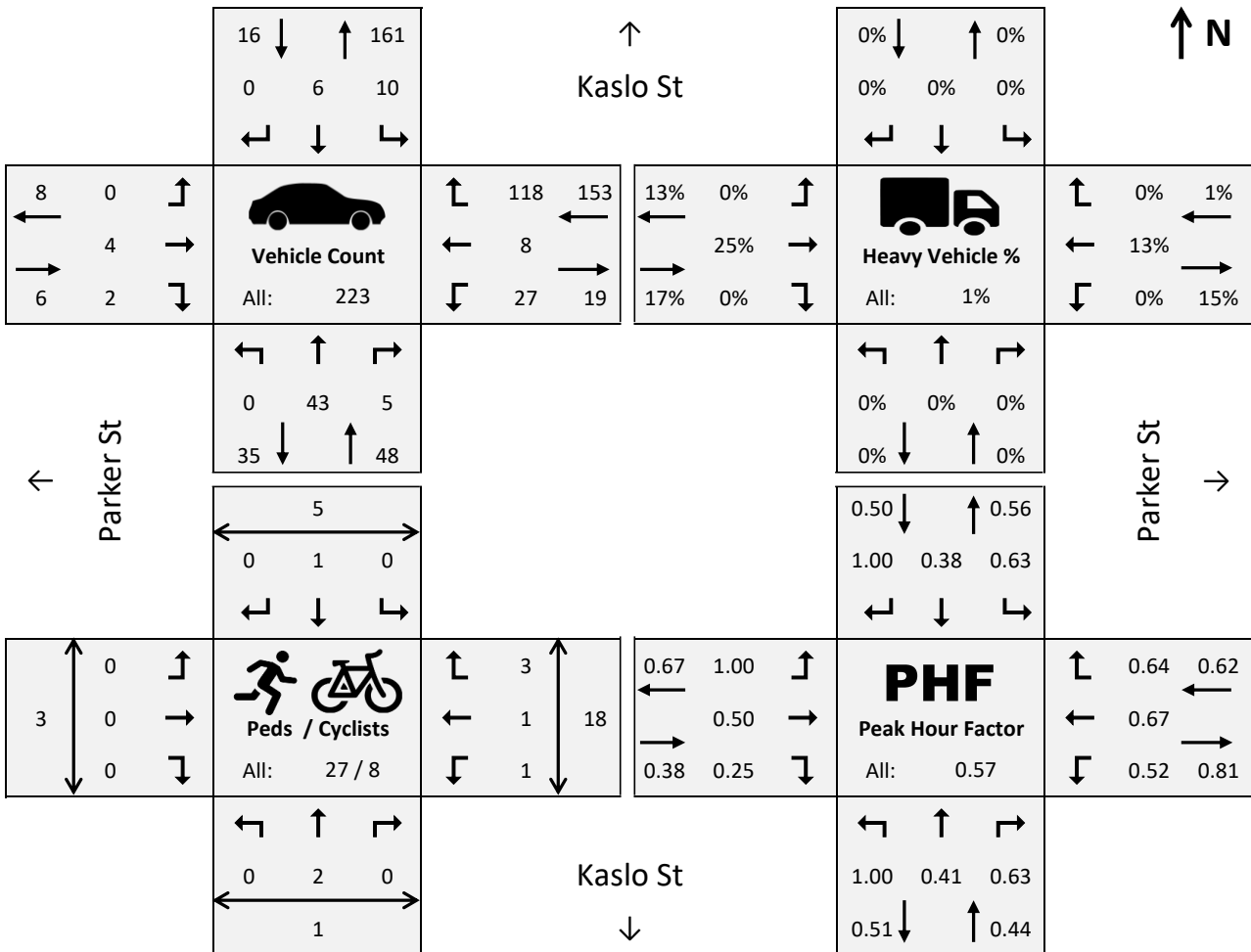


# Kaslo St @ Parker St – Vancouver, BC



**Project#:** 04-18-0508      **Weather:** Clear      **Analysis Period:** 7:45 - 8:45  
**Date:** Feb 26, 2019 (Tue)      **Road Cond:** Dry      **Intersection Peak:** 7:45 - 8:45  
**Notes:** Temp -2 AM and +3 PM

TIME INTERVAL	AUTOMOBILE COUNT												PEDESTRIANS			
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	N	S	E	W
7:00 - 7:15	0	5	4	5	2	0	0	1	0	2	0	27	0	0	0	0
7:15 - 7:30	0	4	1	3	1	0	0	1	0	2	0	22	0	0	0	0
7:30 - 7:45	0	1	0	3	2	0	0	1	0	1	1	11	0	0	1	0
7:45 - 8:00	0	2	2	3	0	0	0	1	0	2	2	22	1	0	2	0
8:00 - 8:15	0	11	0	0	0	0	0	2	2	7	1	37	1	1	2	2
8:15 - 8:30	0	26	1	4	4	0	0	0	0	13	3	46	1	0	8	1
8:30 - 8:45	0	4	2	3	2	0	0	1	0	5	2	13	2	0	6	0
8:45 - 9:00	0	2	0	1	3	0	0	0	0	1	0	6	0	0	3	0
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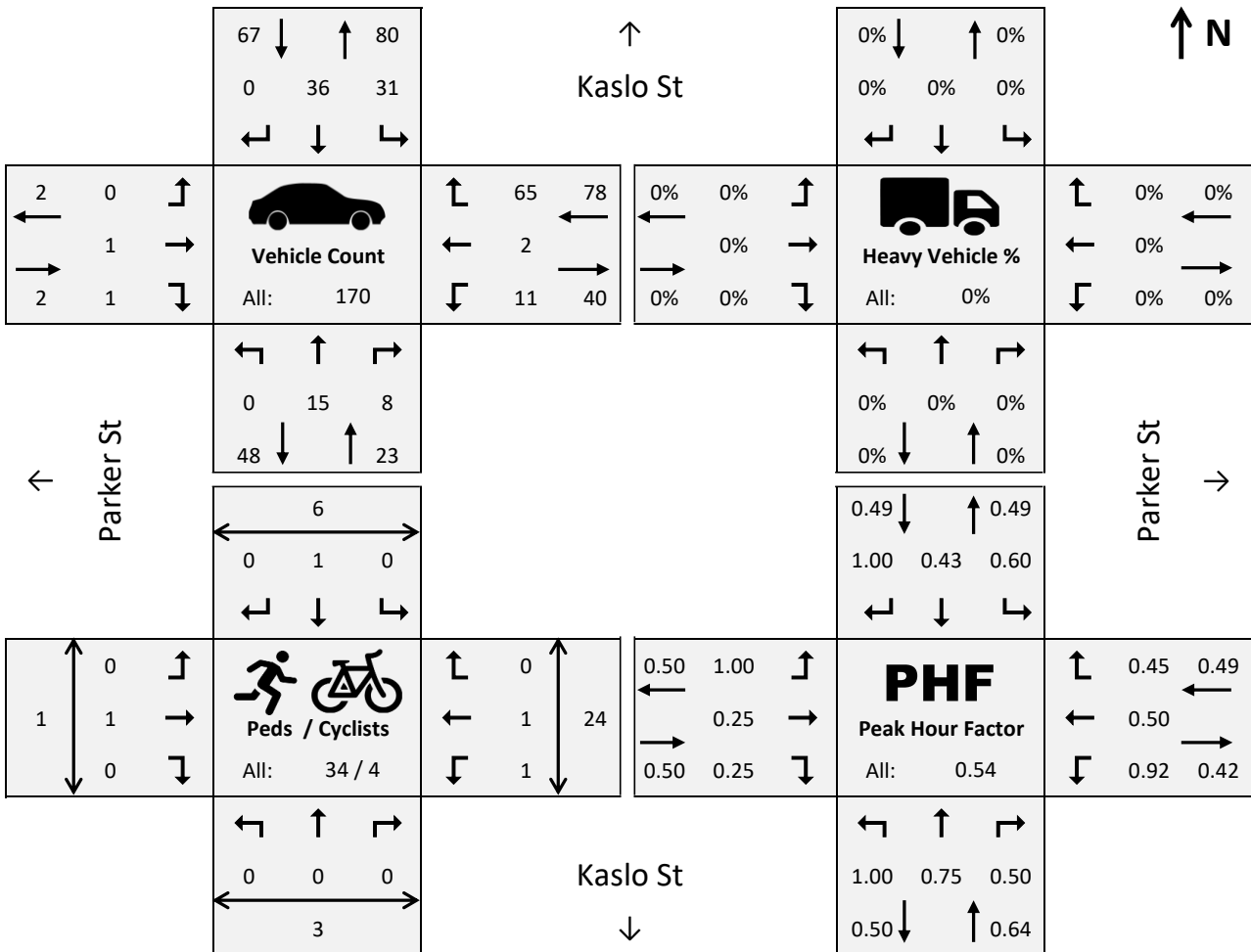


# Kaslo St @ Parker St – Vancouver, BC



**Project#:** 04-18-0508      **Weather:** Clear      **Analysis Period:** 14:45 - 15:45  
**Date:** Feb 26, 2019 (Tue)      **Road Cond:** Dry      **Intersection Peak:** 14:45 - 15:45  
**Notes:** Temp -2 AM and +3 PM

TIME INTERVAL	AUTOMOBILE COUNT												PEDESTRIANS			
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	N	S	E	W
14:00 - 14:15	0	3	1	3	0	0	0	0	0	1	7	0	0	0	0	
14:15 - 14:30	0	4	0	4	3	0	0	1	0	0	6	0	0	8	0	
14:30 - 14:45	0	5	1	2	0	0	1	0	0	1	12	1	0	7	0	
14:45 - 15:00	0	5	0	13	21	0	0	0	0	3	36	1	1	5	0	
15:00 - 15:15	0	3	4	8	8	0	0	1	0	3	12	4	1	12	0	
15:15 - 15:30	0	2	0	3	3	0	0	0	1	3	13	1	1	3	1	
15:30 - 15:45	0	5	4	7	4	0	0	0	0	2	4	0	0	4	0	
15:45 - 16:00	0	2	2	3	4	0	0	0	0	0	8	0	0	0	0	
16:00 - 16:15	0	4	2	5	3	0	0	1	0	0	5	1	0	2	0	
16:15 - 16:30	0	5	0	3	2	0	0	0	0	2	11	0	0	1	0	
16:30 - 16:45	0	3	3	1	4	0	0	0	0	4	16	0	0	3	0	
16:45 - 17:00	0	3	1	8	3	0	0	0	0	1	6	0	0	4	1	
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04-18-0508 Notre Dame Secondary School  
 Street & Site Parking Supply & Demand Survey

NR = No Restriction  
 NP = No Parking  
 NPS= No Parking School days

Demand Profile

Segment			C	D	F	H	I	J	J1	L	M	N	O	P	Q
Time	Date	Day of Week	Venables St N	Venables St S	Renfrew St W	Renfrew St E	Parker St N	Parker St N	Parker St N	Kaslo St W	Kaslo St E	Kaslo St W	Kaslo St W	Kaslo St E	Parking Lot
Restriction			No restrictions	No Parking during School Hours	No Parking during School Hours	No restrictions	No Parking during School Hours	No Parking during School Hours	No restrictions	No restrictions	No restrictions	No restrictions	No restrictions	No restrictions	No restrictions
Supply			19	17	8	6	5	8	7	4	5	4	3	10	98
9:30 AM	07-Feb-19	Thursday	5	0	0	3	0	0	5	2	0	3	3	5	72
2:45 PM	26-Feb-19	Tuesday	17	18	2	0	5	8	5	1	2	3	3	8	76
6:00 PM	27-Feb-19	Wednesday	9	2	0	0	1	3	3	1	0	2	0	5	7
6:30 PM	27-Feb-19	Wednesday	17	15	0	3	5	7	5	1	0	2	2	5	56
7:00 PM	27-Feb-19	Wednesday	18	16	8	6	5	7	7	3	5	4	3	9	91
7:30 PM	27-Feb-19	Wednesday	18	16	8	6	5	7	7	4	5	4	3	9	94
Peak Demand			18	16	8	6	5	7	7	4	5	4	3	9	94

## APPENDIX C – PARKING LOT CIRCULATION SWEPT PATHS

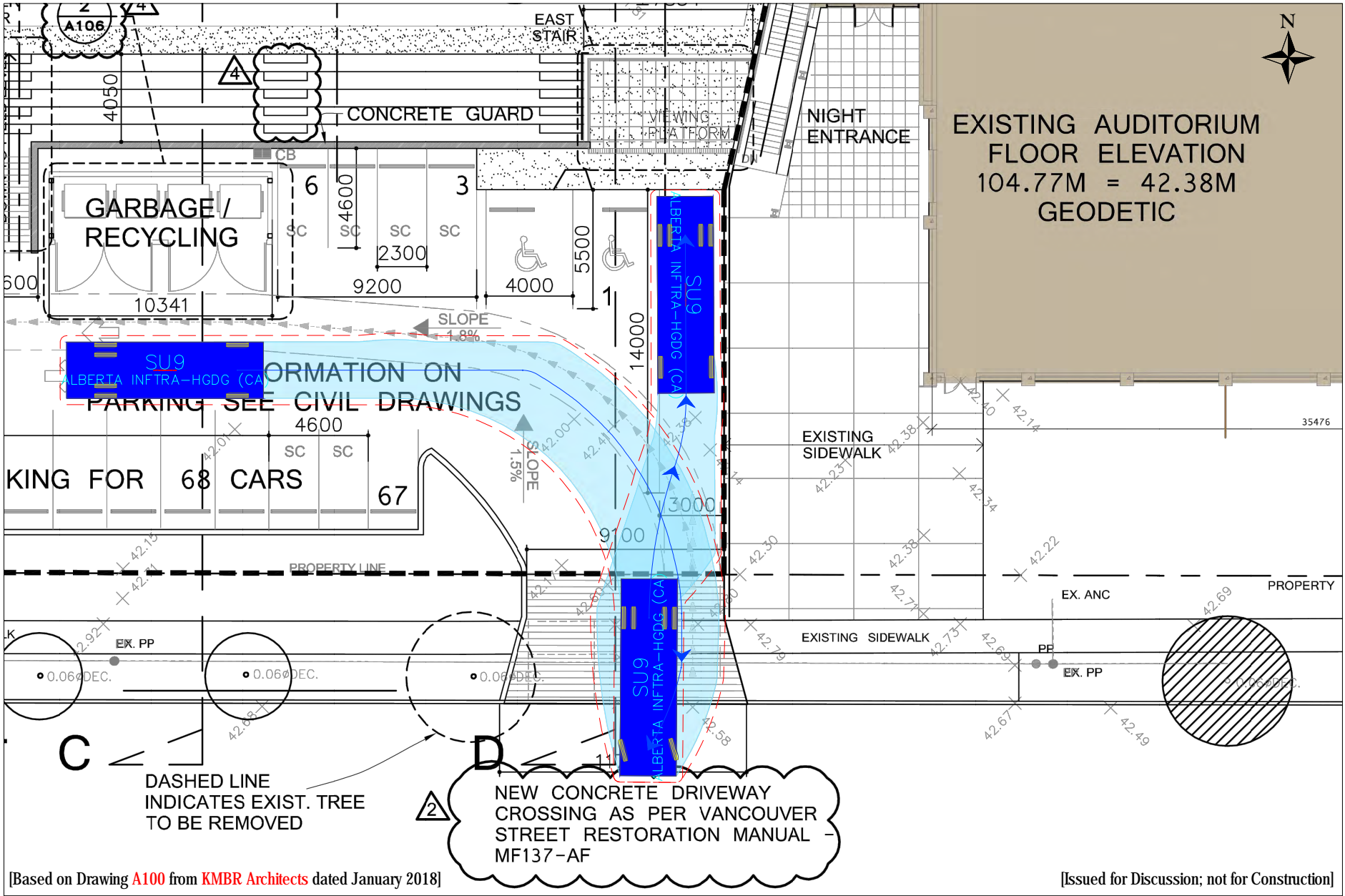









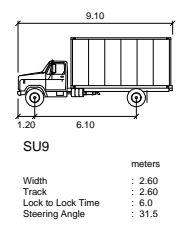
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 2019/03/14 14:43, Plotted by Stuart Thornley



  
**EXISTING AUDITORIUM  
 FLOOR ELEVATION  
 104.77M = 42.38M  
 GEODETIC**

[Based on Drawing A100 from KMBR Architects dated January 2018]

[Issued for Discussion; not for Construction]

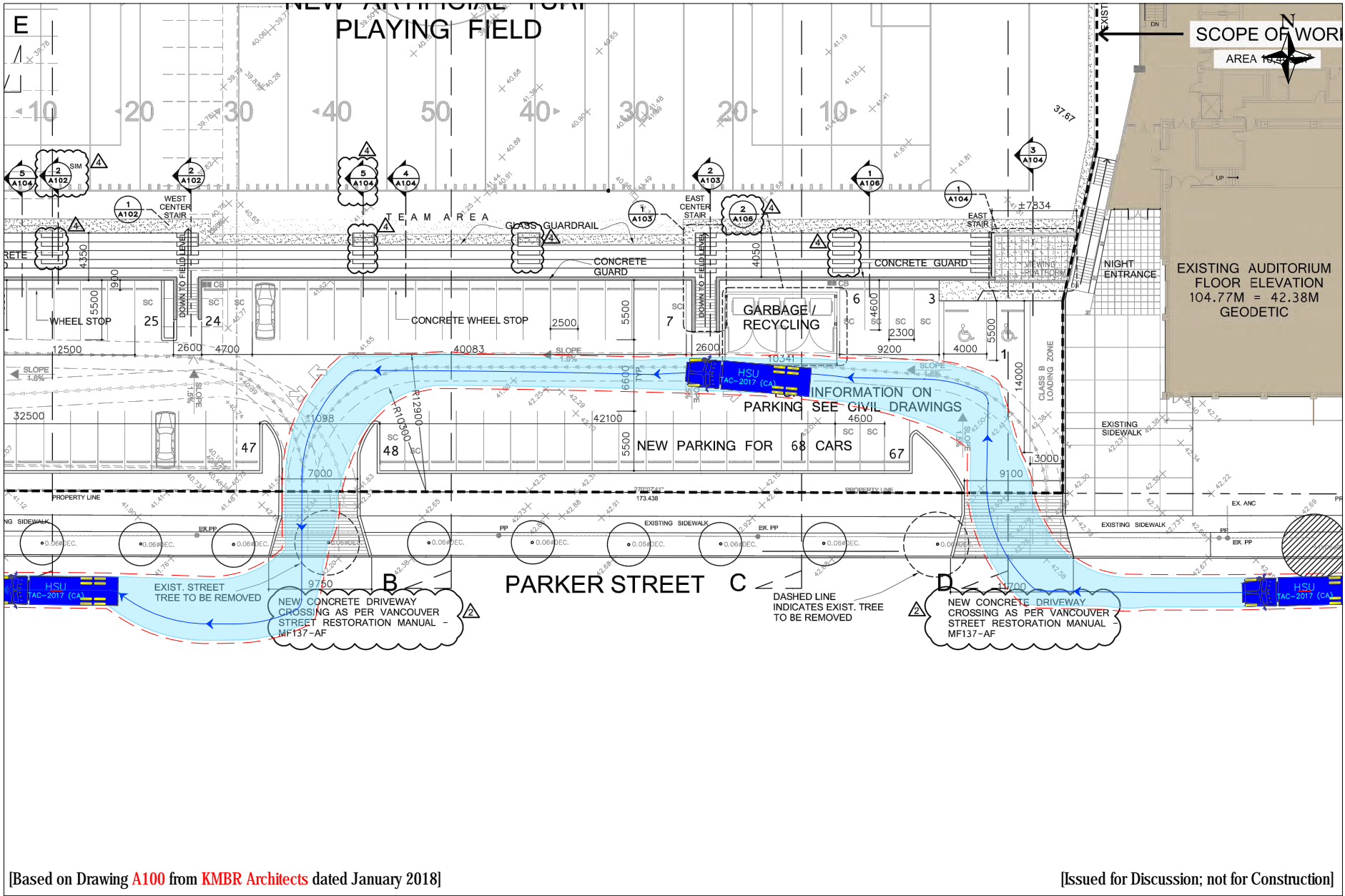


## Exhibit C.4 SU-9 Circulation Swept Path (Reverse In from Parking Lot)

Notre Dame Regional Secondary School  
 Scale 1:250 on Letter Prepared by ST

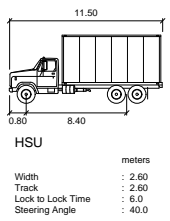


S:\PROJECTS\FW\04-18-0508 Notre Dame Secondary School\4.0 Analysis & Design\CAD\20190312\_04-18-0508-Swpt-Pth-V01.dwg  
 2019/03/14 14:43, Plotted by Stuart Thornley



[Based on Drawing A100 from KMBR Architects dated January 2018]

[Issued for Discussion; not for Construction]



## Exhibit C.5 HSU Circulation Swept Path

Notre Dame Regional Secondary School  
 Scale 1:500 on Letter Prepared by ST



