

Government of Yukon Department of Education

City of Whitehorse Schools Mobility Review Report

Prepared for: The City of Whitehorse Engineering Department
and the Yukon Department of Education

Prepared by: Stantec Architecture Ltd.

Date: August 14, 2018



August 14, 2018

File: 114902667

Attention: Taylor Eshpeter, Assistant City Engineer, City of Whitehorse (and Darrin Fredrickson, Facilities Project Manager, Yukon Department of Education)

City of Whitehorse

2121-2nd Avenue

Whitehorse, Yukon Y1A 1C2

Dear Mr. Eshpeter (and Mr. Fredrickson)

Reference: City of Whitehorse Schools Mobility Review Report

1.0 INTRODUCTION

School sites are microcosms of transportation challenges in a community. For an intense but short period, twice a day for much of the year, users of all ages and modes are concentrated into a small area, interacting near each other. School sites are also the homes of our most vulnerable street users. It is crucial that crossings are visible and well-marked and that students have options to safely walk or bike to school. While ideally as many students as possible would arrive in buses or on foot or bike, parent/guardian drop off is also recognized as important and the design to facilitate that movement safely should be considered in all school sites.

This memo summarizes the recommendations based on Stantec's visit to 12 school sites in the Whitehorse area. These visits allowed us to observe interactions between users, desire lines for movement and identify locations where infrastructure, education, or signage could improve the safety and quality of those interactions.

2.0 METHODOLOGY

Based on information provided by the City of Whitehorse and the School Boards, the school sites were divided into two tiers: High Priority Schools and Lower Priority Schools. High Priority Schools were observed during either the morning and afternoon pick-up/drop-off period. Lower Priority Schools were observed during the day. Detailed recommendations and conceptual cost estimates have been identified for the High Priority Schools. The recommendations for all school sites are summarized in this memo, and Figures illustrating the recommendations have been included in **Appendix A**. Site photos and initial observations are found in **Appendix B**. Some recommendations have been adjusted since the initial assessment.

Stantec completed site visits May 28 – May 31, 2018, while all schools were in session. Seasonal weather was experienced during the visits, which allowed for all modes of transportation to be used by students and staff.

3.0 PRIORITY SCHOOL SITES

Stantec proposed to provide additional feedback on 4 – 6 priority schools. These schools were identified based on feedback from the City of Whitehorse Engineering Department and the Government of Yukon Department of Education. The six priority school sites were identified by the Government of Yukon Department of Education as:

August 14, 2018

Taylor Eshpeter, Assistant City Engineer, City of Whitehorse (and Darrin Fredrickson, Facilities Project Manager, Yukon Department of Education)

Page 2 of 13

Reference: City of Whitehorse Schools Mobility Review Report

- Christ the King Elementary/Junior High School;
- Jack Hulland Elementary School;
- Elijah Smith Elementary School;
- Holy Family Elementary School;
- Whitehorse Elementary School; and
- Selkirk Elementary School.

3.1 CHRIST THE KING

Of the school sites observed, Christ the King appeared to have the largest number of pick-up/drop-offs, and the current drop off loop is insufficient to meet demand. In considering the recommended upgrades to the site to improve safety, the main priority is to limit desire to limit crossings to safe marked locations and formalize pick-up/drop-off to improve driver and pedestrian expectation.

To accommodate existing pick-up/drop-off demand, an additional pick-up/drop-off facility may be installed on the west side of Nisutlin Dr. The wide shoulders of the street should allow a re-configuration of the street to accommodate the pull outs on the street within the existing street right of way, though additional evaluation may be required.

There is also currently pick-up/drop-off occurring in the information lot behind the school. However, this is private land not held by the school and additional pick-up/drop-off capacity may improve the misuse of this land.

The existing traffic circle at Lewes Blvd and Nisutlin Dr has been identified as a potential concern for pedestrian safety. Rectangular Rapid Flashing Beacons (RRFBs) could be installed at the Nisutlin Dr crossing and SE Lewes Blvd crossing locations. RRFBs have been shown to effectively improve yielding especially in locations where the crossing distance is short and are illustrated in **Figure 1**. Additionally, the capacity of the intersection was evaluating to determine if the right-turn bypass lane for westbound to southbound traffic. This analysis indicated that the right-turn bypass lane is not needed for capacity and should be eliminated to improve safety for people crossing at this location. This analysis is summarized in **Appendix C**.

August 14, 2018

Taylor Eshpeter, Assistant City Engineer, City of Whitehorse (and Darrin Fredrickson, Facilities Project Manager, Yukon Department of Education)

Page 3 of 13

Reference: City of Whitehorse Schools Mobility Review Report



Figure 1 Roadside RRFB (FHWA)

The Whitehorse Bike Plan has identified a multi-use trail on Nisutlin Drive in this location. The preferred location for this facility around the school is on the west side of Nisutlin Drive to avoid multiple driveway crossings. A midblock crossing is therefore required at the school entrance to allow students to safely cross from the multi-use trail to school. We have identified RRFBs at this location which also help facilitate the on-street pick-up/drop-off on the west side of the street.

These infrastructure changes should be paired with parent and student education. Because this school services a larger area than other elementary schools, cycling and walking rates to school may be lower here than other sites. Improving city-wide cycling infrastructure and engaging in safe cycling education for students may allow additional students to choose to cycle or walk to school, thus reducing the need for additional pick-up/drop-off infrastructure.

Christ the King Mobility Enhancements

Improvements:

- Pick-up/drop-off on the north side of Nisutlin Dr and curb along the street from rear access to Lewes Boulevard;
- New crossing, curb extension and RRFBs at mid-block access to school
- RRFBs at Nisutlin Drive and Lewes Boulevard;
- Reconfigure roundabout to eliminate right turn bypass lane
- Multi-use trail along the west side of Nisutlin Drive per Bike Plan

Requirements:

- Asphalt Trail;
- Beacons (Flashing);
- Curb & Gutter;
- Patterned Concrete;
- Removals;
- Road Structure; and
- Signage.

August 14, 2018

Taylor Eshpeter, Assistant City Engineer, City of Whitehorse (and Darrin Fredrickson, Facilities Project Manager, Yukon Department of Education)

Page 4 of 13

Reference: City of Whitehorse Schools Mobility Review Report

Opinion of Probable Cost:

- \$210,000

3.2 JACK HULLAND

Jack Hulland is encircled by a large street block and is lacking a formalized pick-up/drop-off area. As such, pick-up/drop-off occurs across informalized locations. The school site would benefit from localized improvements and signage in select pick-up/drop-off locations. We have recommended curb extensions near the church site on Fir St to prohibit stopping in that location and direct crossing traffic to this new, defined crossing location. To improve the pedestrian experience, a sidewalk should be added on Fir Street between 12 Avenue East and 14 Avenue. The addition of this crossing also creates an opportunity for formal on-street pick-up/drop-off that will filter students directly to a safe crossing location.

The sidewalk on the east side of Fir Street is heavily used. Widening it to a minimum 3.0 m multi-use trail will improve accessibility for those walking, cycling, and getting dropped off at school.

Finally, at both T-intersections of Fir Street with 12 Ave E, the width of the crossing and size of turning radius facilitates fast turning vehicles and decreases pedestrian visibility while increasing crossing distances. Curb extensions or a mid-block median in both locations would improve pedestrian safety near the school

Jack Hulland Mobility Enhancements

Improvements:

- Large curb extension with two crosswalks located on Fir St between church parking lot and two access to school;
- Add sidewalk on west side of Fir St; Convert sidewalk to multi-use trail on east side of Fir St; and
- Curb extension or center median at both Fir Street and 12 Ave E intersections. Add crosswalk between curb extensions/median.

Requirements:

- Asphalt Trail;
- Curb & Gutter;
- Crosswalks;
- Patterned Concrete;
- Removals;
- Road Structure; and
- Separate Sidewalk.

Opinion of Probable Cost:

- \$385,000

3.3 ELIJAH SMITH

Observations at Elijah Smith indicated fewer challenges than the previous schools, as all observed pick-up/drop-off within the school site. Comments provided by school board indicated that pick-up/drop-off can

August 14, 2018

Taylor Eshpeter, Assistant City Engineer, City of Whitehorse (and Darrin Fredrickson, Facilities Project Manager, Yukon Department of Education)

Page 5 of 13

Reference: City of Whitehorse Schools Mobility Review Report

back up into Hamilton Boulevard roundabout; this was not observed during the two site visits. Crosswalk safety within the roundabout was reinforced through use of a crossing guard. The school has indicated a preference for an additional access to Hamilton Boulevard. The need for this has not been observed and is not recommended.

On site improvements identified are to better clarify pedestrian right of way through improved or raised crossings, curb extensions and improved signage on site.

Elijah Smith Mobility Enhancements

Improvements:

- Redesign bus turnaround to extend curb and add median at entrance to clarify two-way traffic;
- Raise crosswalk at entrance to pick-up/drop-off;
- Add pull forward signage and no parking signage within parent drop off; and
- Add crosswalk at entrance to school at trail crossing across from staff parking; and add crosswalk at entrance to staff parking.

Requirements:

- Crosswalks (level and raised);
- Curb & Gutter;
- Removals; and
- Road Structure.

Opinion of Probable Cost:

- \$60,000

3.4 HOLY FAMILY ELEMENTARY

While Holy Family has several formal pick-up/drop-off locations and well illuminated pedestrian crossing overhead flashers, the main issue with pick-up/drop-off at this site is parents and students not using the designated crossing location. Using curb extensions and sidewalk construction to further formalize pick-up/drop-off locations and educating parents and students on the importance of using the designated crossing is recommended.

The main access to the school site is very wide and creates a long and challenging crossing for people in that location. This crossing should be shortened through curb extensions which extend to the existing pedestrian crossing. Formalized pick-up/drop-off should be limited to the north side of Wann Rd with formalized cut outs for pick-up/drop-off on both the east and west side of the school. A multi-use trail is recommended along this curb.

A sidewalk should extend on the south side of Wann Rd from Holly Street to Basswood Street. An upgrade at the intersection of Wann Rd and Basswood St into a neighborhood traffic circle will allow for safe U-turns, encourage drop off on the north side of the street and act as a traffic calming device through the school site.

August 14, 2018

Taylor Eshpeter, Assistant City Engineer, City of Whitehorse (and Darrin Fredrickson, Facilities Project Manager, Yukon Department of Education)

Page 6 of 13

Reference: City of Whitehorse Schools Mobility Review Report

Holy Family Mobility Enhancements

Improvements:

- Mini roundabout at Wann Rd and Basswood Street; Curb extension and sidewalk at entrance to school;
- Formal pick-up/drop-off on north side of Wann Rd east and west of school site;
- Sidewalk on south side of Wann Rd from Basswood St to Holly St; Prohibit pick-up/drop-off on south side of Wann St through formalized curb and signage; and
- Multi-use trail on north side of Wann St, around new pick up/ drop off pull outs.

Requirements:

- Asphalt Trail;
- Crosswalks;
- Curb & Gutter;
- Patterned Concrete;
- Removals;
- Road Structure;
- Separate Sidewalk; and
- Signage.

Opinion of Probable Cost:

- \$290,000

3.5 WHITEHORSE ELEMENTARY

Whitehorse Elementary is in Downtown Whitehorse and school pick-up/drop-off happened in many directions and using many modes. Issues observed included missing sidewalks, informal pick-up/drop-off resulting in unsafe crossings, lack of cycling infrastructure along key desire lines and shortcutting near school site through alley to the Qwanlin Mall. Speeding was also observed along 4th Avenue.

To curb speeding, we recommend radar speed warning signs installed prior to school zone site to alert drivers of their speed. Black St was identified as an important cycling connection between the school and the riverfront cycling facilities. A formal cycling facility is recommended in the form of a protected on-street bike facility on Black St, as identified in the Bicycle Network Plan. The intersections of Black St with both 3rd Avenue and 2nd Avenue should be improved upon the addition of cycling infrastructure to ensure that use is intuitive to all users. The Whitehorse Bike Plan also recommends cycling facilities on 4th Avenue and 3rd Avenue. An area for additional study is the signal timing at 4 Ave and Black Street, which may not provide sufficient pedestrian phase according to the School Board.

Pick-up/drop-off currently occurs on 3rd Avenue. This location presents additional challenges that may require additional investigation based on adjacent site ownership. Numerous users were observed using the mall alley and the vacant parking lot to cut from 3rd Avenue to either the mall or towards 2nd Avenue. These short cuts should be eliminated if possible. If the access at the north end of 3rd Street can be closed, there is the potential to redesign the end of the street to allow only one-way traffic existing the bus loop and staff parking area. It is further recommended that pick-up/drop-off be restricted to the west side of 3rd Avenue which can

August 14, 2018

Taylor Eshpeter, Assistant City Engineer, City of Whitehorse (and Darrin Fredrickson, Facilities Project Manager, Yukon Department of Education)

Page 7 of 13

Reference: City of Whitehorse School's Mobility Reviews Report

accommodate more vehicles if it is converted to angle parking. A sidewalk is recommended between Black Stand the edge of school property.

Whitehorse Elementary Mobility Enhancements

Improvements:

- Radar speed signs (2) on 4 Avenue;
- Cycling facility and intersection upgrades on Black Street (as identified in the Bicycle Network Plan); Sidewalk on 3rd Avenue between Black Street and edge of school property; and
- Upgrades to 3rd Avenue including additional curbs and painting of new parking stalls.

Requirements:

- Asphalt Path;
- Crosswalks;
- Curb & Gutter;
- Line Painting;
- Patterned Concrete;
- Radar Signs;
- Separate Sidewalk; and
- Signage.

Opinion of Probable Cost:

- \$175,000

3.6 SELKIRK ELEMENTARY

Selkirk Elementary School is located on a busy street which forms the main access and egress from the Riverdale neighborhood. Reconstruction is recommended at the intersection of Alsek Rd and Lewes Blvd to prioritize pedestrian movements in this location. The current pick-up/drop-off location on the west side of the school site has been identified as a future parking lot and pick up/drop off improvements have been identified for the main parking lot. These should be observed to ensure that changes accommodate current demand.

Based on site observations, many students are crossing Lewes Boulevard at both the Alsek Road intersection as well as the mid-block crossing further north. Reducing the speed limit for northbound traffic on Lewes Boulevard through creating a school zone in that direction would further protect students making these crossings.

Pick-up/drop-off currently occurs in the staff parking lot in front of the school. The provided parking lot plans can be found in **Appendix D**.

Selkirk Elementary Mobility Enhancements

Improvements:

- Intersection reconstruction at Lewes and Alsek Road;
- Reconstruct drop off/pick up and provide lighting; School zone signs; and

August 14, 2018

Taylor Eshpeter, Assistant City Engineer, City of Whitehorse (and Darrin Fredrickson, Facilities Project Manager, Yukon Department of Education)

Page 8 of 13

Reference: City of Whitehorse School's Mobility Reviews Report

- Convert Sidewalk to MUT.

Requirements:

- Asphalt Trail;
- Crosswalks;
- Curb & Gutter;
- Patterned Concrete;
- Removals;
- Road Structure; and
- Signage.

Opinion of Probable Cost:

- \$215,000

4.0 REMAINING SCHOOL SITES

The remaining school sites were observed during the day, though not necessarily during a specific pick up and drop off. Recommendations have been identified and are illustrated in **Appendix A** and summarized below.

4.1 WOOD STREET CENTRE

The west side of Downtown Whitehorse is missing sidewalks in locations, and this impacts the Wood Street Centre. The recommendations for this site include:

- Add crosswalk paint for all crossings at Wood Street and 5 Avenue;
- Add sidewalk on west side of 5 Avenue where missing between Main Street and Wood Street;
- Add sidewalk on east side of 5th Avenue north of Wood Street; and
- Add curb stops to parking located on east side of 5 Avenue between Wood Street and Steele Street to prevent parking from blocking walkway.

4.2 TAKHINI ELEMENTARY SCHOOL

Range Road is currently part of a pilot with radar speed signs. The street currently has wide shoulders for on-street parking, which may encourage higher driving speeds. The recommendations for this site involve improving crossings:

- Curb extensions on west side of Range Road at Normandy Road;
- Curb extension for crossing at Range Road across from school site; and
- The plan has identified Bike Facilities on both Range Road and Normandy Boulevard.

August 14, 2018

Taylor Eshpeter, Assistant City Engineer, City of Whitehorse (and Darrin Fredrickson, Facilities Project Manager, Yukon Department of Education)

Page 9 of 13

Reference: City of Whitehorse Schools Mobility Review Report



Crossing at Rang Road



Range Road and Normandy Road

4.3 VANIER CATHOLIC SECONDARY SCHOOL

No significant issues were observed at Vanier.

- If pick-up/drop-off is occurring on the southeast side of bus loop, crossings should be added between bus loop and school;
- Driveway to Polarettes Gymnastic Club should be narrowed and does not currently have a stop sign;
- Pickup/drop off turn around on north side of site is lacking sidewalk along west side of loop; and
- School zone should be extended north of Green Crescent.



Driveway to Polarettes Gymnastic Club



Bus Drop Off

August 14, 2018

Taylor Eshpeter, Assistant City Engineer, City of Whitehorse (and Darrin Fredrickson, Facilities Project Manager, Yukon Department of Education)

Page 10 of 13

Reference: City of Whitehorse Schools Mobility Review Report

4.4 GREY MOUNTAIN PRIMARY SCHOOL

Wide streets near the school lengthen crossing distances. Adding curb extensions near the school will improve pedestrian safety and visibility.

- Add curb extensions at all sides of Alsek Road and Lewes Boulevard including along the southeast side of Alsek Road to include crossings and narrow street in front of school access; and
- Add sidewalk on southeast side of Alsek Road south of school.



Alsek Road and Lewes Boulevard

4.5 FH COLLINS SECONDARY SCHOOL

On site pick-up/drop-off appears to be well planned for at this new school site. Minor improvements are recommended for accessibility at intersection locations.

- Add curb ramp for southwest corner of intersection of Lewes Boulevard and Hospital Road;
- Add curb ramp for crossing on Lewes Road located at back of school site (former access to old school) and consider a pedestrian warrant for upgraded facilities at this location; and
- City has identified that overhead flashing pedestrian lights are warranted at the mid-block crossing of Lewes Boulevard.

August 14, 2018

Taylor Eshpeter, Assistant City Engineer, City of Whitehorse (and Darrin Fredrickson, Facilities Project Manager, Yukon Department of Education)

Page 11 of 13

Reference: City of Whitehorse Schools Mobility Review Report



Midblock Crossing on Lewes Boulevard

4.6 GOLDEN HORN ELEMENTARY SCHOOL

No specific concerns were identified during the Golden Horn site visit. Formalizing access points through curb extensions may improve operations and slow traffic near the school.

- School zone can start closer to school (30 – 50 m from school site entrance);
- Add curb extensions to access to bus loop both from street and from school driveway;
- Add sidewalk along east side of school driveway between bus loop and access to school to make that location formalized pick-up/drop-off; and
- Terminate pick-up/drop-off with a turn around that allows access through to staff parking.



August 14, 2018

Taylor Eshpeter, Assistant City Engineer, City of Whitehorse (and Darrin Fredrickson, Facilities Project Manager, Yukon Department of Education)

Page 12 of 13

Reference: City of Whitehorse Schools Mobility Review Report

Access to Golden Horn (view facing away from school)

5.0 SUMMARY AND CONCLUSIONS

All school sites were observed to have students arriving via a mixture of buses, on foot, on bike, and through parent/guardian drop off. Parent/guardian drop off was generally in private vehicles but was also observed on foot and on bike. While improvements to pick-up/drop-off facilities have been identified, ensuring that there are safe and connected cycling and walking facilities throughout Whitehorse and especially in proximity to school sites may help to encourage more families to choose active modes to get to school. Design choices to limit and prohibit unsafe movements by people using all modes is the focus of this study, but education programs to encourage compliance by all users will complement infrastructure upgrades.

An order-of-magnitude opinion of probable cost was developed for the high-level scope of upgrades based on estimated detail design and project management costs; estimated area and quantity measurements using unit rate estimates from recent City of Whitehorse projects, including a 30% contingency.

Any opinion of cost cannot consist of all contractor mobilization and front-end costs, overhead and profit, as well as detailed schedule of values, which would require the review of drawings, specifications, and material schedules. Stantec does not guarantee the accuracy of these costs and shall incur no liability where actual construction costs are exceeded.

In preparation of the costing we have assumed:

- all work is done under a single contract;
- summer construction;
- public competitive tender with minimum of three bidders;
- completed in 2019; and
- no allowance for escalation.

The opinions in the document are based on conditions and information existing at the time the document was published, and do not consider any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party because of decisions made or actions taken based on this document.

Some of the findings herein are based on spot review and others are based on a visual review of the surface conditions. Deficiencies that may exist but were not recorded in this report were not apparent, given the level of study undertaken.

The material in this report reflects the best judgement of Stantec considering the information available at the time of preparation.

August 14, 2018

Taylor Eshpeter, Assistant City Engineer, City of Whitehorse (and Darrin Fredrickson, Facilities Project Manager, Yukon Department of Education)

Page 13 of 13

Reference: City of Whitehorse Schools Mobility Review Report



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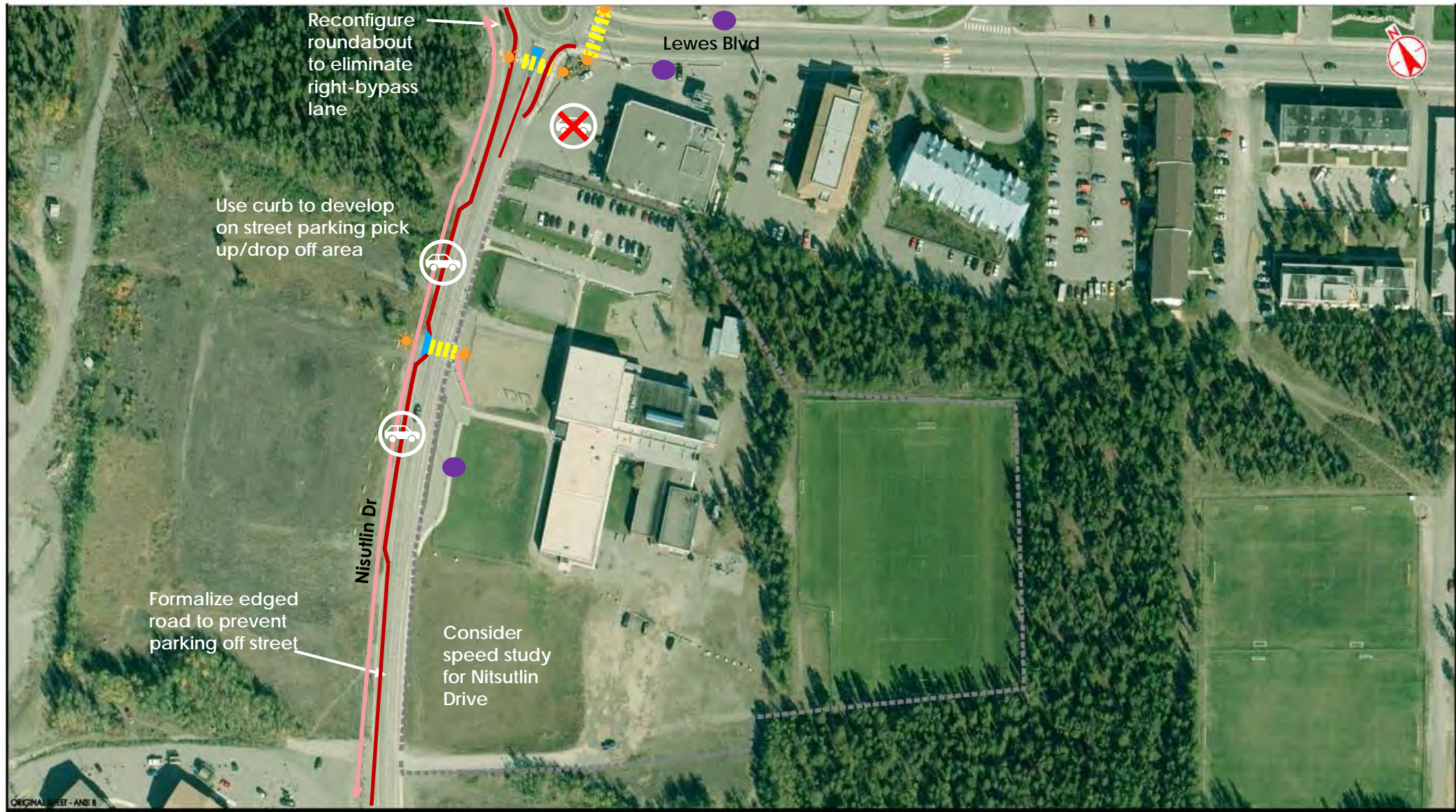
Ryan Martinson M. Eng., P. Eng.
Associate, Sustainable Transportation Specialist

Phone: 780-716-8138
ryan.martinson@stantec.com

Appendix A - Site Plans












Design with
community in mind



202-107 Main Street
 Whitehorse YT Canada Y1A 2A7
 www.stantec.com

Legend

-  SCHOOL BOUNDARY
-  CURB EXTENSION
-  ROADSIDE CURB
-  CROSSWALK
-  PICK-UP / DROP-OFF
-  DISCOURAGE PU/DO
-  RECTANGULAR RAPID FLASHING BEACONS
-  CITY BUS STOP
-  MULTI-USE TRAIL

SCHOOL: CHRIST THE KING ELEMENTARY
 20 NISUTLIN DR.



202-107 Main Street
Whitehorse YT Canada Y1A 2A7
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Legend





-  SCHOOL BOUNDARY
-  CURB EXTENSION
-  SIDEWALKS
-  CROSSWALK
-  PICK-UP / DROP-OFF
-  CITY BUS STOPS
-  MULTI-USE TRAIL

SCHOOL: JACK HULLAND ELEMENTARY SCHOOL
1304 FIR ST

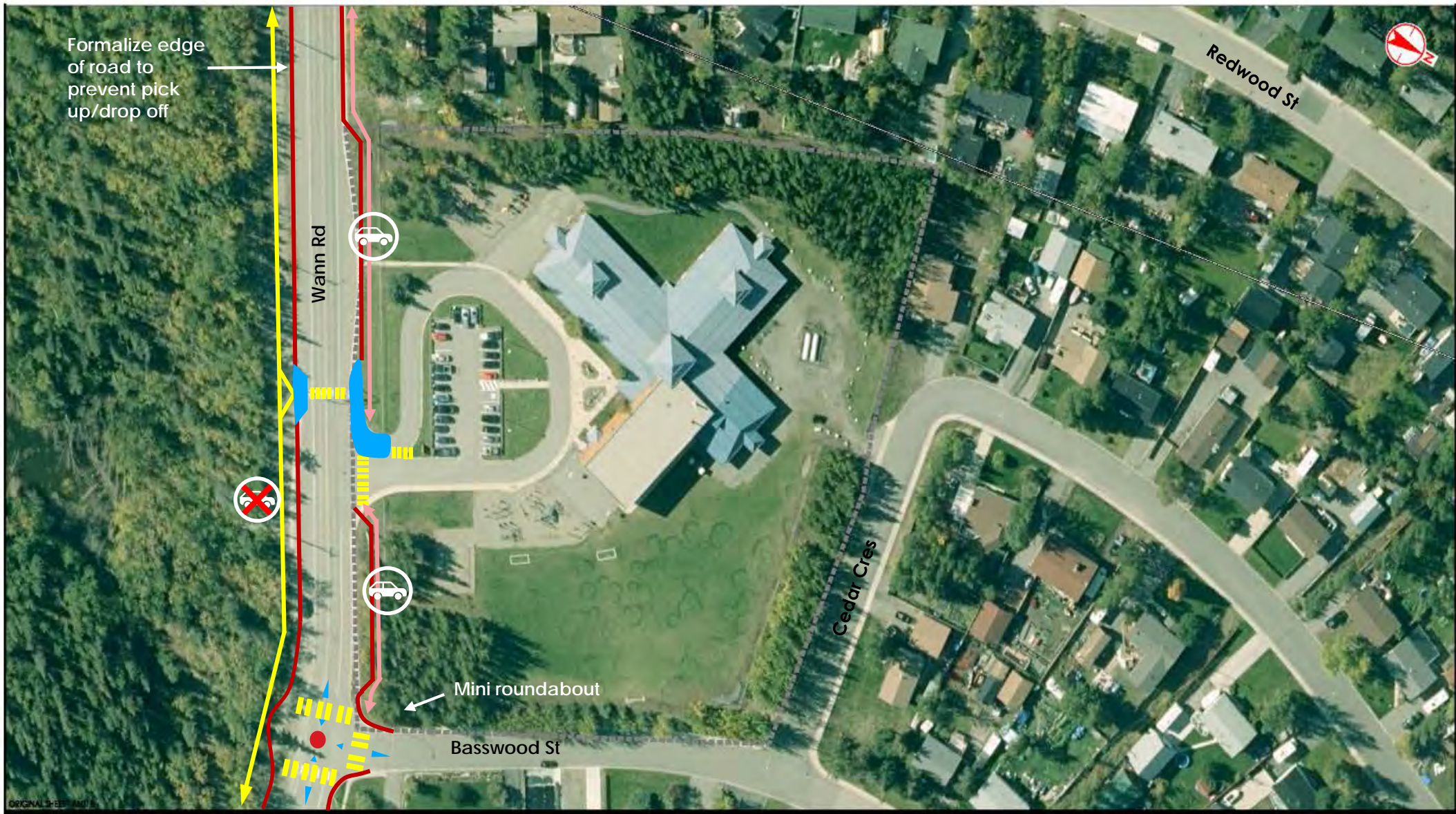


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Legend

-  SCHOOL BOUNDARY
-  CURB EXTENSION
-  CROSSWALK
-  ROADSIDE CURB/MEDIAN
-  CROSSING GUARD
-  CITY BUS STOP

SCHOOL: ELIJAH SMITH ELEMENTARY SCHOOL
 1399 HAMILTON BLVD



Formalize edge of road to prevent pick up/drop off

Wann Rd

Redwood St

Cedar Cres









Basswood St

Mini roundabout



202-107 Main Street
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Legend








-  SCHOOL BOUNDARY
-  CURB EXTENSION
-  ROADSIDE CURB/MEDIAN
-  CROSSWALK
-  PICK-UP / DROP-OFF
-  DISCOURAGE PU/DO
-  MULTI-USE TRAIL
-  SIDEWALKS

SCHOOL: HOLY FAMILY ELEMENTARY SCHOOL
55 WANN ROAD

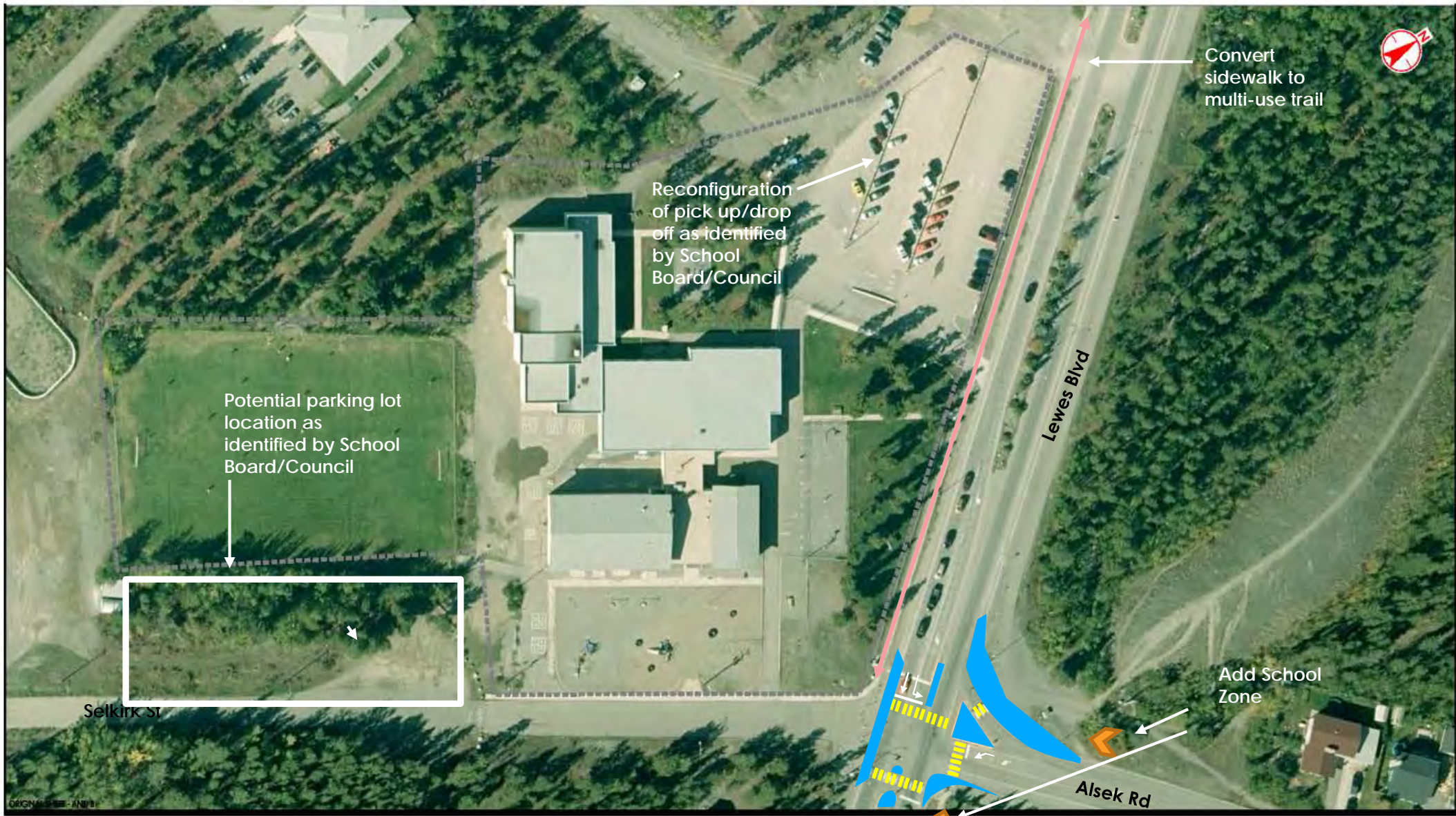


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Legend







-  SCHOOL BOUNDARY
-  CROSSWALK
-  BIKE INFRASTRUCTURE
-  CURB EXTENSION
-  ROADSIDE CURB
-  PICK-UP / DROP-OFF
-  SIDEWALKS

SCHOOL: WHITEHORSE ELEMENTARY SCHOOL
 4181 4TH AVE



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Legend





-  SCHOOL BOUNDARY
-  CURB EXTENSION
-  CROSSWALK
-  MULTI-USE TRAIL
-  PARKING SCHOOL ZONE BOUNDARY
-  DISCOURAGE PU/DO

SCHOOL: SELKIRK ELEMENTARY SCHOOL
 5 SELKIRK ST



202-107 Main Street
 Whitehorse YT Canada Y1A 2A7
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Legend

-  SCHOOL BOUNDARY
-  CURB STOP
-  SIDEWALKS
-  CROSSWALK

SCHOOL: WOOD STREET CENTER
 411 WOOD ST








ORIGINAL SHEET - AND 11

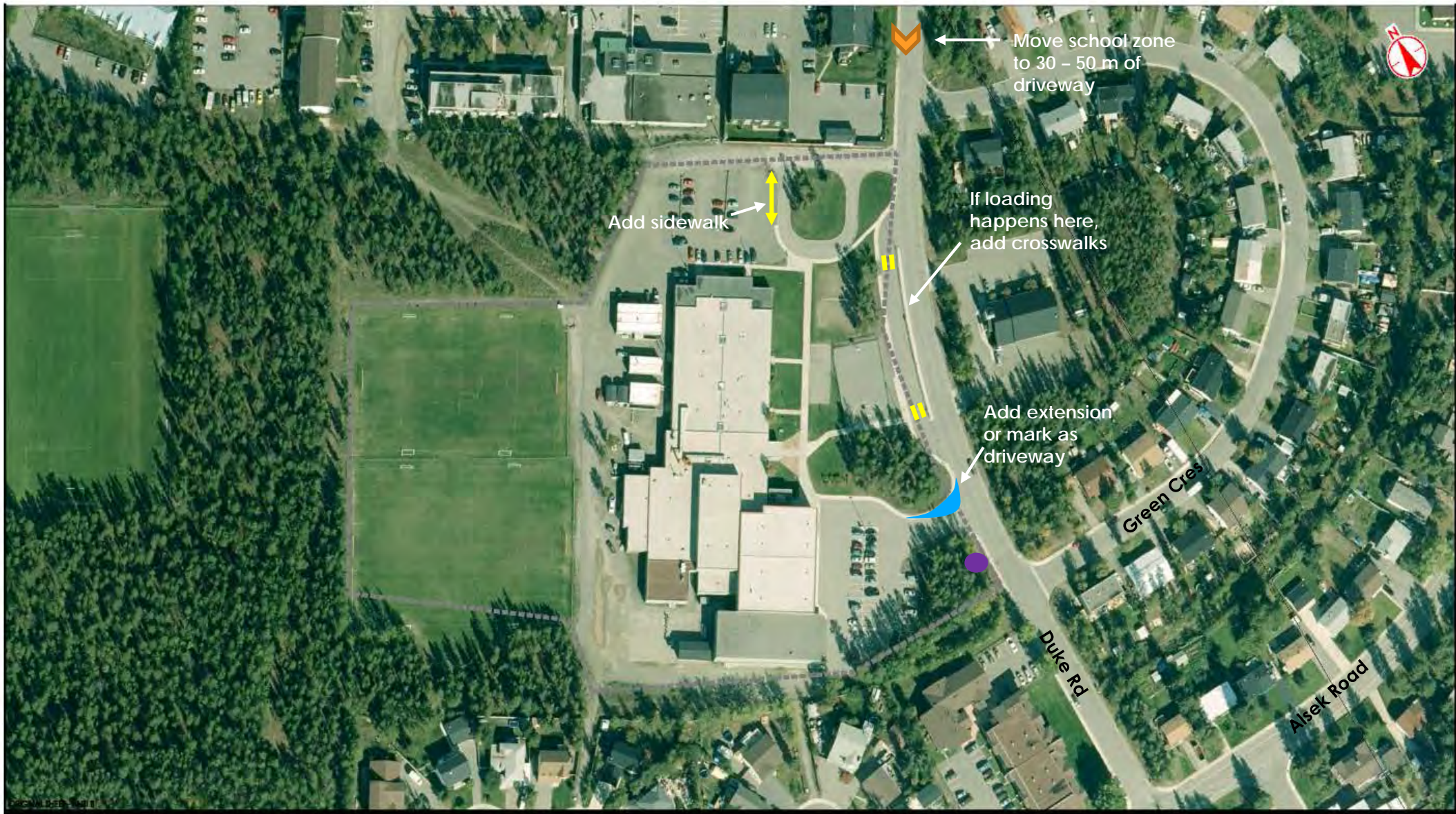


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Legend

-  SCHOOL BOUNDARY
-  CURB EXTENSION
-  CROSSWALK
-  CITY BUS STOP
-  BIKE INFRASTRUCTURE

SCHOOL: TAKHINI ELEMENTARY SCHOOL
 526 RANGE ROAD



202-107 Main Street
 Whitehorse YT Canada Y1A 2A7
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Legend

-  SCHOOL BOUNDARY
-  SCHOOL ZONE BOUNDARY
-  CURB EXTENSION
-  SIDEWALKS
-  CROSSWALK
-  CITY BUS STOP

SCHOOL: VANIER CATHOLIC SECONDARY SCHOOL
 16 DUKE ST.







ORIGINAL SHEET - AN31 B



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 Whitehorse YT Canada Y1A 2A7
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Legend




-  SCHOOL BOUNDARY
-  CURB EXTENSION
-  SIDEWALKS
-  CROSSWALK

SCHOOL: GREY MOUNTAIN PRIMARY SCHOOL
 186 ALSEK RD



202-107 Main Street
 Whitehorse YT Canada Y1A 2A7
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Legend

-  SCHOOL BOUNDARY
-  SIDEWALKS
-  CITY BUS STOP

SCHOOL: FH COLLINS SECONDARY SCHOOL
 1001 LEWES BLVD



202-107 Main Street
 Whitehorse YT Canada Y1A 2A7
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Legend




-  SCHOOL BOUNDARY
-  CURB EXTENSION
-  SIDEWALKS
-  SCHOOL ZONE BOUNDARY
-  ROADSIDE CURB/MEDIAN


SCHOOL: GOLDEN HORN ELEMENTARY SCHOOL
 DUNCAN DRIVE, LOT 209

Appendix B - Site Observations







3.1 CHRIST THE KING




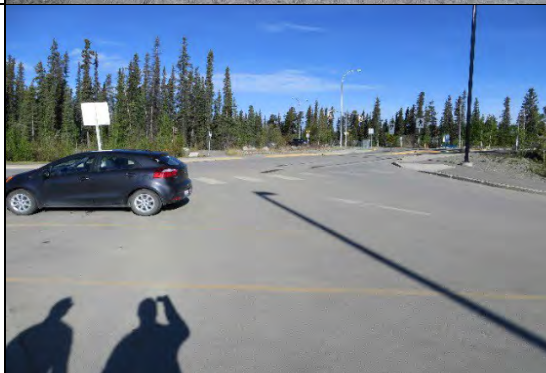
Safety Issue		Observation	Possible Enhancement		
#	Description		Description	Type	Required effort
1	Insufficient formalized parent pickup/drop off space	Most of the issues outlined in this summary are related to informal pickup/drop off locations which can translate into unsafe street crossings.	Develop new formalized drop off locations and restrict pickup/drop off to those locations	Varied	
2	Unsafe crossings on Nitsutlin Dr		Formalize curb on NW side of Nisutlin Dr to prohibit parking on side of street	Curbs	High
3	Insufficient formalized parent pickup/drop off space		Develop additional formalized pickup/drop off on the south side of Nisutlin Drive to the west and east of bus loop. Develop neighborhood roundabout at back access to school to allow for traffic calming and safe U-turns to encourage parents to use formal drop off locations	Curbs, intersection upgrades	High
4	Parents backed up into staff parking area		Prohibit parent pick up in staff parking	Education	Low
5	Potential speeding along Nitsutlin Dr	Recommend speed study along this street	If speed study finds concern, consider additional traffic calming along street	Additional study	Low

6	Busy and speeding at Roundabout	Concerns at Nisutlin Dr and Lewes Boulevard crossing of Roundabout	Add Rectangular Rapid Flashing Beacons at these locations	Lights	Medium
7	Important crossing location through drop off/pick up loop		Raise and mark crosswalk	Raised Crosswalk	Medium

3.2 JACK HULLAND




Safety Issue		Observation	Possible Enhancement		
#	Description		Description	Type	Required effort
1	Crossing of Fir Street at informal locations causing uncertainty with drivers in area		Create curb extensions in the area to highlight where pick-up/drop-off should occur and formalize crossing locations	Curb extensions	Moderate
2	Missing sidewalk connections on west side of Fir Street		Install sidewalk	New sidewalk	Moderate
3	Pick-up/drop-off occurring in the parking lot across from school		Restrict access and create curb extensions in the area to highlight where pick-up/drop-off should occur and formalize crossing locations	Curb extensions	Moderate
4	Unclear curbside management signage in area		Create curb extensions in the area to highlight where pick-up/drop-off should occur and formalize crossing locations	Curb extensions	Moderate

3.3 ELIJAH SMITH





Safety Issue		Observation	Possible Enhancement		
#	Description		Description	Type	Required effort
1	Confusing intersection at start of bus loop and entrance to staff parking		Clarify two-way traffic direction through use of curb extension and median	Curbs	High
2	Lack of crossing infrastructure at trail crossing entrance to staff parking		Curb extension	Curbs	High
3	Accessible Ramp to school lacking		Fix lip	Paving	Low
4	Improve crossing		Curb extensions, sign and paint crosswalk	Curb extensions	Medium

5	Raise crosswalk at entrance to parent pickup loop		Raised Crosswalk	Paint	Low
6	Parking on both sides of drop off, insufficient space		Prohibit parking on north side of loop, sign "Pull to front" on south side to make most use of the existing space	Paint and Signs	Low

3.4 HOLY FAMILY ELEMENTARY




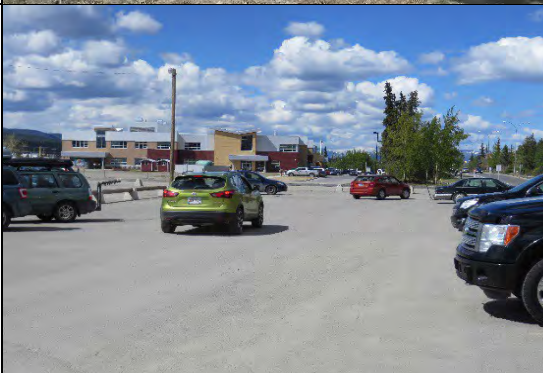
Safety Issue		Observation	Possible Enhancement		
#	Description		Description	Type	Required effort
1	People crossing at other locations other than crosswalk		Formalize drop off locations on both sides of street, improve sidewalk connections to the crossing. Educated students and parents to only cross at marked crossing	Education Sidewalk Curbs	High
2	Wide access at school entrance with no formalized crosswalk		Narrow access through curb extensions and add marked crosswalk	Curbs Crosswalk	High
3	Drops off located all along street in informal locations		Formalize drop off locations through developing curbs and sidewalks to direct users to marked crosswalk. Develop mini-roundabout at Basswood Street to allow for safe u- turns to facilitate drop off at designated drop off locations and slow traffic	Curbs Crosswalks	High
4	Lack of formal sidewalk on far side of Wann Rd		Add sidewalk on south side of Wann Road between Holly Street and school crossing	Sidewalk	Medium

3.5 WHITEHORSE ELEMENTARY

Safety Issue		Observation			Possible Enhancement		
#	Description				Description	Type	Required effort
1	Speed on 4 Avenue, despite being a school zone				Install speed warning signs	Signage	Low
2	Pedestrian and Bicycle conflict on Black Street because of desire lines to pathway network				Create bicycle facility on Black Street to separate all movements	New construction	High
3	Bicycle and motor vehicle conflicts at Black St/3 Avenue and Black St/2 Avenue				Create bicycle facility on Black Street to separate all movements; ensure intersection treatments are intuitive to all users	New construction	High
4	Ad-hoc pick-up/drop-off across the street and through alley creates uncertainty in drivers and students walking				Closures of alley; formalize pick-up/drop-off in empty lot; create one-way street configuration;	Further investigation required	Further investigation required

5	Missing sidewalk					
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3.6 SELKIRK ELEMENTARY

Safety Issue		Observation	Possible Enhancement		
#	Description		Description	Type	Required effort
1	Speed on Lewes Boulevard (northbound)		Install speed zone for northbound travel	Signage	Low
2	Turning movements conflicting with people walking at intersection of Alsek Road and Lewes Boulevard		Change intersection geometry to reduce possibility of collisions	New construction	High
3	Geometry and unclear design causes congestion, confusion, and uncertainty in area		More formalized Pick-up / Drop-off area (upgrade to permanent design with modifications)	New construction	High
4	Parent pick-up/drop-off occurring in parking lot in informal locations causing uncertainty in travel		Discourage parent pick-up and drop-off in parking lot, or formalize pick-up/drop-off location in this area	Curbs	Moderate

5	Pedestrian and Bicycle Conflicts on west side of Lewes Boulevard		Convert sidewalk to wide multi-use path	New multi- use path	Moderate
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Appendix C - Lewes Boulevard Roundabout

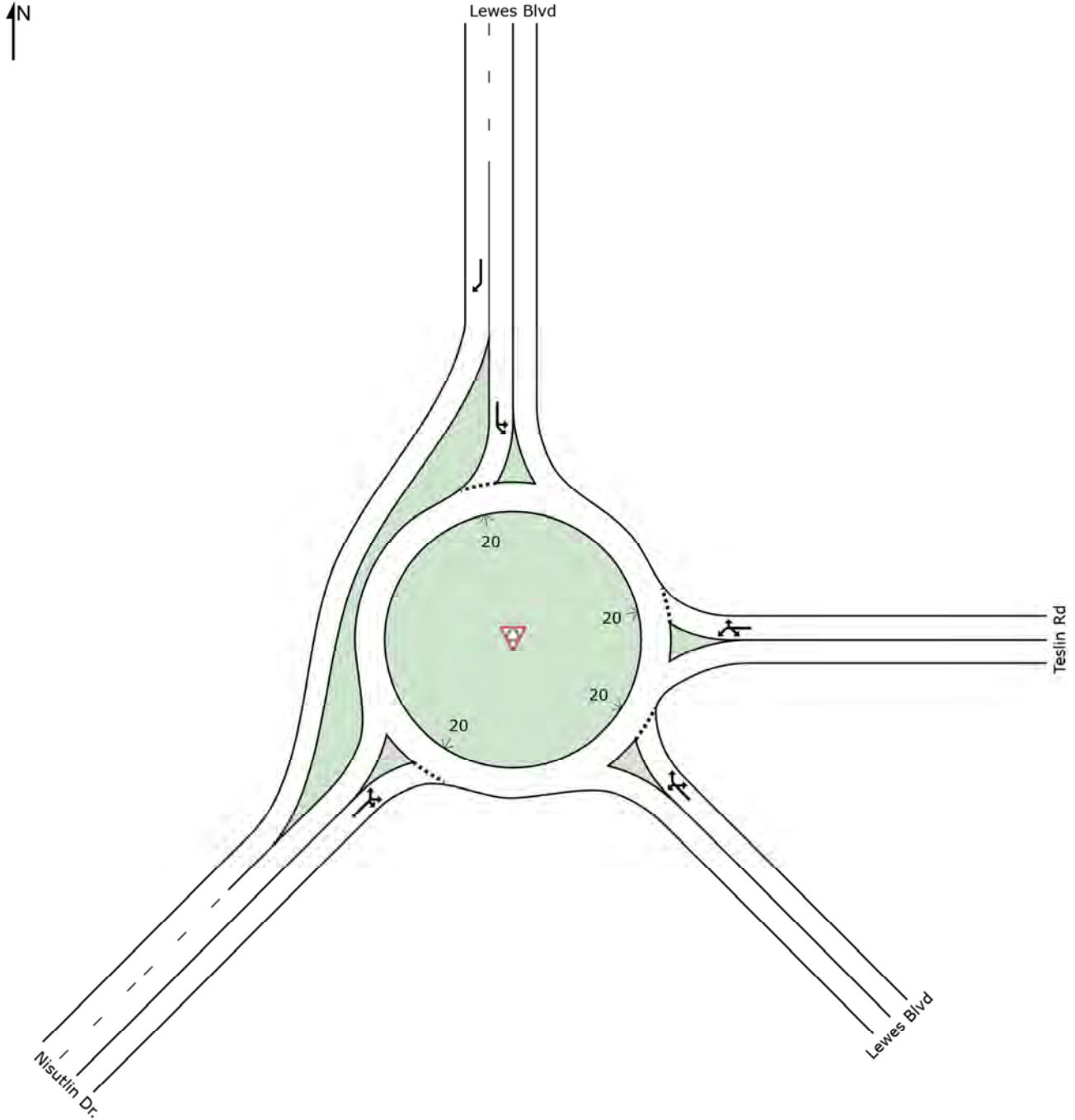


Design with
community in mind

SITE LAYOUT

Site: 101 [Lewes Roundabout AM]

Existing Geometry - AM Peak Hour
Roundabout



MOVEMENT SUMMARY

 Site: 101 [Lewes Roundabout AM]

Existing Geometry - AM Peak Hour
Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	
SouthEast: Lewes Blvd												
21	L2	15	2.0	0.372	9.8	LOS A	2.5	18.1	0.44	0.51	55.1	
23a	R1	429	2.0	0.372	4.8	LOS A	2.5	18.1	0.44	0.51	54.7	
23b	R3	1	2.0	0.372	5.2	LOS A	2.5	18.1	0.44	0.51	53.3	
Approach		445	2.0	0.372	5.0	LOS A	2.5	18.1	0.44	0.51	54.7	
East: Teslin Rd												
4b	L3	5	2.0	0.081	12.9	LOS B	0.5	3.3	0.64	0.68	53.9	
4a	L1	16	2.0	0.081	10.8	LOS B	0.5	3.3	0.64	0.68	52.9	
6	R2	49	2.0	0.081	7.0	LOS A	0.5	3.3	0.64	0.68	52.2	
Approach		71	2.0	0.081	8.3	LOS A	0.5	3.3	0.64	0.68	52.5	
North: Lewes Blvd												
7	L2	5	2.0	0.131	8.9	LOS A	0.7	5.3	0.14	0.59	53.4	
7a	L1	217	2.0	0.131	7.8	LOS A	0.7	5.3	0.14	0.59	52.9	
9a	R1	141	2.0	0.072	3.7	LOS A	0.0	0.0	0.00	0.41	56.8	
Approach		363	2.0	0.131	6.2	LOS A	0.7	5.3	0.09	0.52	54.4	
SouthWest: Nisutlin Dr.												
30a	L1	155	2.0	0.158	8.9	LOS A	0.8	5.9	0.40	0.62	52.5	
32a	R1	6	2.0	0.158	4.9	LOS A	0.8	5.9	0.40	0.62	52.7	
32	R2	20	2.0	0.158	5.1	LOS A	0.8	5.9	0.40	0.62	51.9	
Approach		181	2.0	0.158	8.3	LOS A	0.8	5.9	0.40	0.62	52.5	
All Vehicles		1060	2.0	0.372	6.2	LOS A	2.5	18.1	0.33	0.55	54.0	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

 Site: 101 [Lewes Roundabout PM]

Existing Geometry - PM Peak Hour
Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	
SouthEast: Lewes Blvd												
21	L2	6	2.0	0.222	9.6	LOS A	1.3	9.4	0.37	0.48	55.4	
23a	R1	253	2.0	0.222	4.5	LOS A	1.3	9.4	0.37	0.48	55.1	
23b	R3	5	2.0	0.222	4.9	LOS A	1.3	9.4	0.37	0.48	53.7	
Approach		264	2.0	0.222	4.7	LOS A	1.3	9.4	0.37	0.48	55.0	
East: Teslin Rd												
4b	L3	4	2.0	0.051	11.4	LOS B	0.3	1.9	0.48	0.59	55.0	
4a	L1	8	2.0	0.051	9.3	LOS A	0.3	1.9	0.48	0.59	54.0	
6	R2	41	2.0	0.051	5.5	LOS A	0.3	1.9	0.48	0.59	53.2	
Approach		54	2.0	0.051	6.6	LOS A	0.3	1.9	0.48	0.59	53.5	
North: Lewes Blvd												
7	L2	29	2.0	0.243	8.8	LOS A	1.5	10.9	0.11	0.59	53.5	
7a	L1	401	2.0	0.243	7.8	LOS A	1.5	10.9	0.11	0.59	53.0	
9a	R1	160	2.0	0.082	3.7	LOS A	0.0	0.0	0.00	0.41	56.8	
Approach		591	2.0	0.243	6.7	LOS A	1.5	10.9	0.08	0.54	54.0	
SouthWest: Nisutlin Dr.												
30a	L1	112	2.0	0.122	10.0	LOS A	0.6	4.6	0.53	0.69	51.9	
32a	R1	5	2.0	0.122	6.0	LOS A	0.6	4.6	0.53	0.69	52.1	
32	R2	3	2.0	0.122	6.1	LOS A	0.6	4.6	0.53	0.69	51.3	
Approach		120	2.0	0.122	9.7	LOS A	0.6	4.6	0.53	0.69	51.9	
All Vehicles		1028	2.0	0.243	6.5	LOS A	1.5	10.9	0.23	0.55	54.0	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

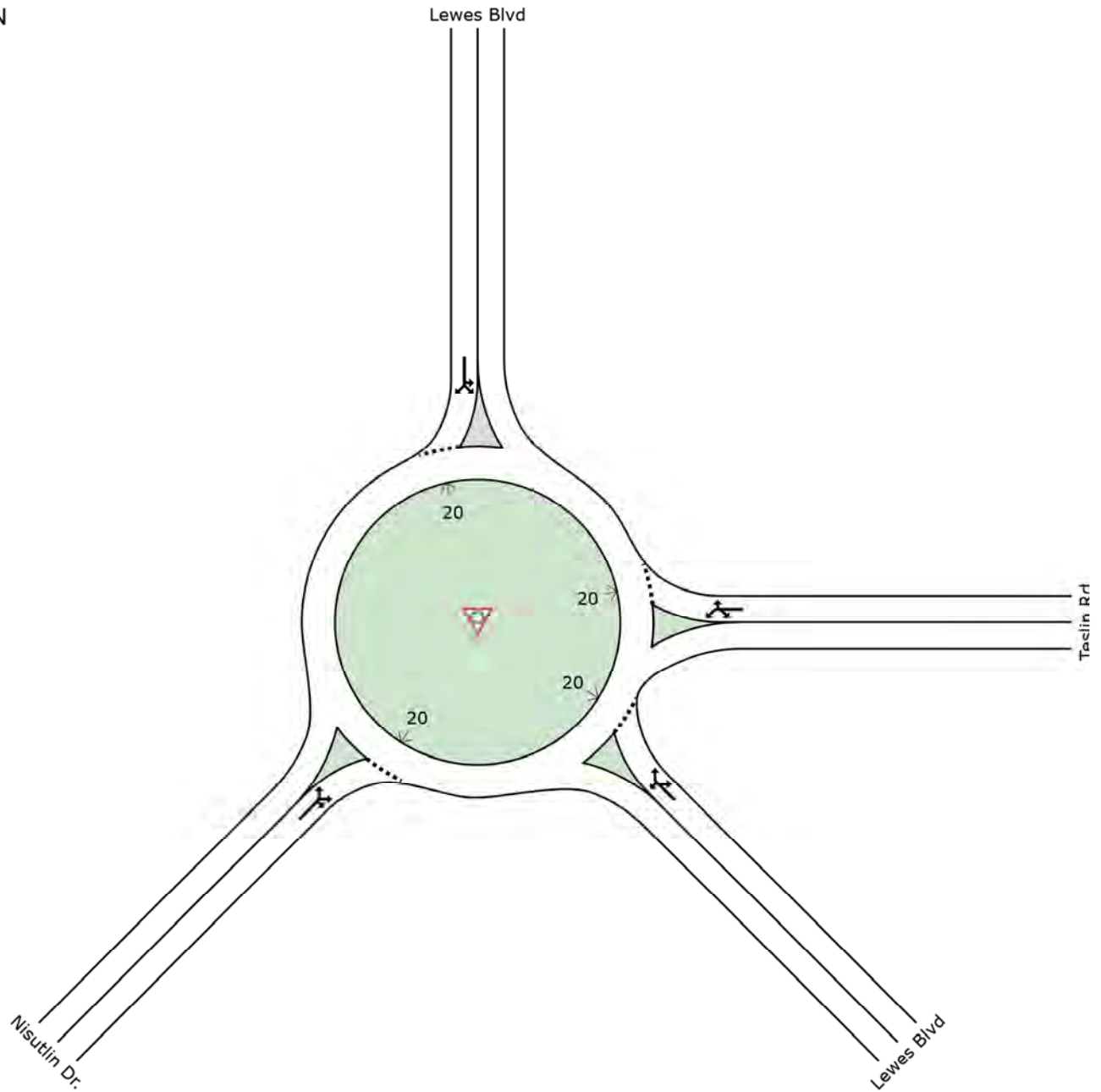
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101 [Lewes Roundabout AM - Revised]

Revised Geometry - AM Peak Hour
Roundabout



MOVEMENT SUMMARY

 Site: 101 [Lewes Roundabout AM - Revised]

Revised Geometry - AM Peak Hour
Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	
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21	L2	15	2.0	0.372	9.8	LOS A	2.5	18.1	0.44	0.51	55.1	
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23b	R3	1	2.0	0.372	5.2	LOS A	2.5	18.1	0.44	0.51	53.3	
Approach		445	2.0	0.372	5.0	LOS A	2.5	18.1	0.44	0.51	54.7	
East: Teslin Rd												
4b	L3	5	2.0	0.081	12.9	LOS B	0.5	3.3	0.64	0.68	53.9	
4a	L1	16	2.0	0.081	10.8	LOS B	0.5	3.3	0.64	0.68	52.9	
6	R2	49	2.0	0.081	7.0	LOS A	0.5	3.3	0.64	0.68	52.2	
Approach		71	2.0	0.081	8.3	LOS A	0.5	3.3	0.64	0.68	52.5	
North: Lewes Blvd												
7	L2	5	2.0	0.237	8.9	LOS A	1.5	10.6	0.16	0.53	54.5	
7a	L1	217	2.0	0.237	7.9	LOS A	1.5	10.6	0.16	0.53	54.0	
9a	R1	141	2.0	0.237	3.9	LOS A	1.5	10.6	0.16	0.53	54.2	
Approach		363	2.0	0.237	6.3	LOS A	1.5	10.6	0.16	0.53	54.1	
SouthWest: Nisutlin Dr.												
30a	L1	155	2.0	0.159	8.9	LOS A	0.8	6.0	0.41	0.62	52.5	
32a	R1	6	2.0	0.159	4.9	LOS A	0.8	6.0	0.41	0.62	52.7	
32	R2	20	2.0	0.159	5.1	LOS A	0.8	6.0	0.41	0.62	51.9	
Approach		181	2.0	0.159	8.3	LOS A	0.8	6.0	0.41	0.62	52.5	
All Vehicles		1060	2.0	0.372	6.2	LOS A	2.5	18.1	0.35	0.55	54.0	

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SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

 Site: 101 [Lewes Roundabout PM - Revised]

Revised Geometry - PM Peak Hour
Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	
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4a	L1	8	2.0	0.051	9.3	LOS A	0.3	1.9	0.48	0.59	54.0	
6	R2	41	2.0	0.051	5.5	LOS A	0.3	1.9	0.48	0.59	53.2	
Approach		54	2.0	0.051	6.6	LOS A	0.3	1.9	0.48	0.59	53.5	
North: Lewes Blvd												
7	L2	29	2.0	0.361	8.8	LOS A	2.6	18.5	0.13	0.55	54.3	
7a	L1	401	2.0	0.361	7.8	LOS A	2.6	18.5	0.13	0.55	53.8	
9a	R1	160	2.0	0.361	3.8	LOS A	2.6	18.5	0.13	0.55	54.0	
Approach		591	2.0	0.361	6.8	LOS A	2.6	18.5	0.13	0.55	53.9	
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Approach		120	2.0	0.122	9.7	LOS A	0.6	4.6	0.53	0.69	51.9	
All Vehicles		1028	2.0	0.361	6.6	LOS A	2.6	18.5	0.25	0.55	53.9	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

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Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix D - Parking Plans



Design with
community in mind

