APPENDIX E
Intersection Safety Review Report



#1 MCBRIDE BOULEVARD & EIGHTH AVENUE

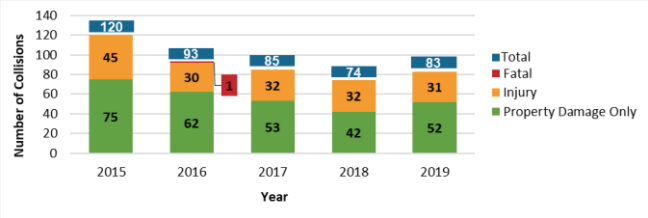
INTERSECTION INFORMATION

Site Number:	1
Approach Leg:	4-Legged
Traffic Control Type:	Signalized – P/P LT for E/W P/P LT for N/S
Road Class (N-S):	Arterial – MRN – Truck Route
Road Class (E-W):	Collector – Truck Route (E leg)
Surrounding Land Use:	Commercial/Park/Institution
Daily Traffic Volume (2017):	46,000 Entering Vehicles
Existing Lane Configurations and Recent Major Change(s):	



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	91 per year	(Total = 455)
Collision Severity Index:	4.58	(Casualty = 38%)
Collision Rate OBS. / CRT.:	4.15 / 2.48	Collisions per MEV
Collision with Pedestrian:	5	(1.1% of total)
Collision with Cyclist:	2	(0.4% of total)



Highest % Month:	November (12%)
Average % Weekday / Weekend:	17% / 8%
Highest % Time Period (3 hours):	1500-1800 (32%)
Top 3 Collision Types:	Rear End (57%) Sideswipe (20%) Driveway Related (7%)
Over-Represented Collision:	
Casualty:	No
Vulnerable Road User Related:	No
Type:	Driveway Related

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- Congestion/long queues during peak periods – *overall*
- High turning volumes during peak periods – *overall*
- Significant lane changing/weaving activities – *overall; especially at the west and north legs to/from the strip mall*
- High vehicle speed – *north and south directions to/from the Pattullo Bridge*
- Significant heavy and long vehicle volumes – *east/north/south legs are truck routes and nearby gas stations*

Geometric:

- Horizontal curve – *north leg*
- Downhill grade – *north and east legs*
- Long right-turn lanes – *southbound approaches and confused with right-turning to gas station*
- Driveways close to intersection – *northeast and northwest quadrants*

Signal:

- Far-side tertiary signal heads – *all approaches*

Vulnerable Road User:

- High pedestrian crossing activities – *overall; especially at the north leg, due to shopping and commercial areas*
- Long pedestrian crossing distances – *north leg and east leg crossing 7 travel lanes and raised median*
- Limited pedestrian waiting area – *northeast corner*
- Lack of cycling facilities – *overall*
- Multi-use pathway – *start at the southwest quadrant (Terry Hughes Park)*

Other:

- Heavy truck drove over the curb corner – *wide westbound right-turn*
- Broken raised median – *all approaches due to heavy and long truck left-turns*
- Fatal collision – *a pedestrian hit by a westbound vehicle when jaywalking on McBride Boulevard, around 2:30PM in November 2016*

#1 MCBRIDE BOULEVARD & EIGHTH AVENUE

SITE OBSERVATION PHOTOS



Northbound Approach – facing south
(high traffic volumes)



Southbound Approach – facing southeast
(high number of heavy vehicles)

POTENTIAL IMPROVEMENTS

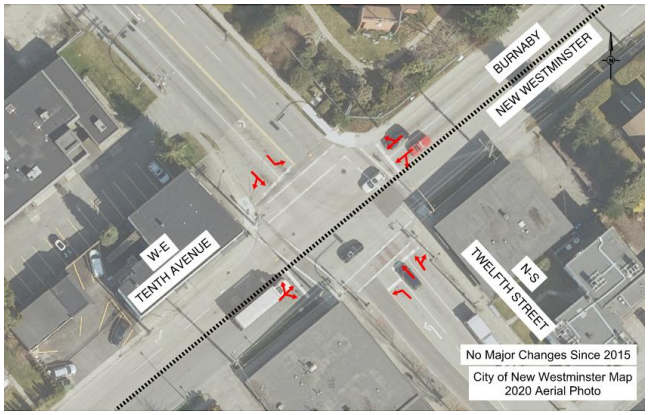
Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Rear-end collisions (overall) *Congestion (peak hours) / speeding (off peak)*	1.1	Short Term	Review signal progression along McBride Boulevard (overall)
		1.2	Short Term	Enhance police speed enforcement (overall)
		1.3	Short Term	Install anti-skid pavement in southbound downhill section
		1.4	Short Term	Install advance flasher if warranted (northbound/southbound)
		1.5	Medium Term	Install red-light cameras (northbound/southbound)
2	Sideswipe collisions (overall) *High lane changing/weaving activities*	2.1	Short Term	Install advance overhead lane designation signs (southbound and westbound)
3	Driveway-related collisions (northeast and northwest quadrants) *Driveways close to intersection*	3.1	Long Term	Consolidate driveways in future redevelopment (northeast and northwest quadrants) – Consult with the commercial
4	Long pedestrian crossing distances (north and east legs)	4.1	Short Term	Provide leading pedestrian interval (overall)
5	Limited pedestrian waiting area (northeast corner)	5.1	Long Term	Expand pedestrian waiting area (northeast corner)

#2 TENTH AVENUE & TWELFTH STREET

INTERSECTION INFORMATION

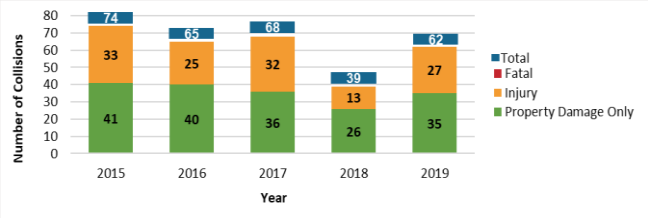
Site Number:	2
Approach Leg:	4-Legged
Traffic Control Type:	Signalized – P/P LT for EB/NB/SB
Road Class (N-S):	Collector – MRN (N leg)
Road Class (E-W):	Arterial – MRN (E leg) Local (W leg)
Surrounding Land Use:	Commercial/Residential/Institution
Daily Traffic Volume (2017):	51,000 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	61.6 per year	(Total = 308)
Collision Severity Index:	4.80	(Casualty = 42%)
Collision Rate OBS. / CRT.:	3.31 / 2.50	Collisions per MEV
Collision with Pedestrian:	2	(0.6% of total)
Collision with Cyclist:	3	(0.9% of total)



Highest % Month:	October (10%)
Average % Weekday / Weekend:	15% / 12%
Highest % Time Period (3 hours):	1500-1800 (31%)
Top 3 Collision Types:	Rear End (55%) Sideswipe (25%) Left-Turn Opposing (4%)
Over-Represented Collision:	
Casualty:	No
Vulnerable Road User Related:	No
Type:	No

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- Red light camera – *westbound approach*
- Congestion and long queues during peak periods – *all approaches*
- Significant left-turn volume/queue during peak periods –*southbound approach*
- Significant right-turn volume/queue during peak periods –*westbound approach*
- Considerable lane changing/weaving– *east and west directions avoiding vehicles waiting to turn left*

Geometric:

- Lack of left-turn bays/lanes – *east and west legs*
- Long left-turn lane – *southbound approach*
- Wide approach lane – *eastbound approach and southbound curb lane (marked as one lane but operates as two lanes)*
- Limited visibility due to protruding building – *southwest corner*
- Downhill grade – *eastbound approach*
- Lane drops after intersection due to merging lane – *westbound far side*

Signal:

- Left-turn phase without left-turn lane – *eastbound approach*
- Missing primary traffic signal head – *north leg (2 through lanes with 1 primary signal head)*

Vulnerable Road User:

- Substantial pedestrian volumes – *school, commercial, and church areas (route-to-school)*
- Limited sight distance to crossing pedestrians – *southwest corner*

Other:

- Damaged wooden streetlight pole due to right-turn trucks – *northwest corner*
- Future redevelopment – *southwest quadrant*
- Missing road signs – *overhead street name sign on the east and south legs*
- Inadequate street lighting – *northeast corner*

#2 TENTH AVENUE & TWELFTH STREET

SITE OBSERVATION PHOTOS



Westbound Approach – facing east
(high left-turn traffic volumes)



Eastbound Approach – facing east
(wide lane)

POTENTIAL IMPROVEMENTS

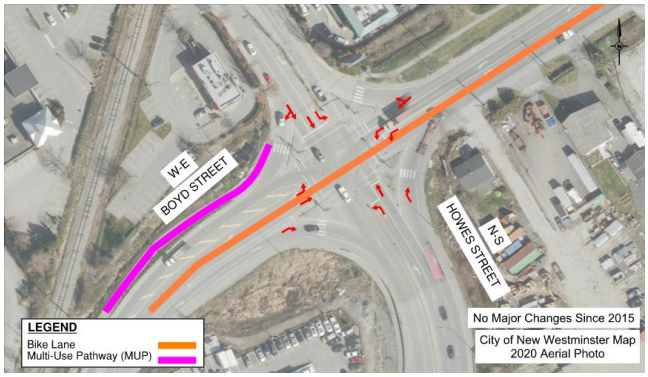
Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Rear-end collisions (overall) *Congestion (peak hours) / speeding (off peak)*	1.1	Short Term	Review signal progression along Tenth Avenue (overall)
		1.2	Short Term	Add one primary traffic signal head (north leg)
2	Sideswipe collisions (overall) *High lane changing/weaving activities*	2.1	Short Term	Provide dedicated left-turn lane (eastbound)
		2.2	Short Term	No right-turn on red for southbound right-turn vehicles
		2.3	Medium Term	Extend left-turn storage lengths if needed (northbound)
		2.4	Medium Term	Review the removal of on-street parking space close to intersection (eastbound)
		2.5	Medium Term	Review the relocation of near-side bus stop that is close to intersection (northbound) - Consult with TransLink
3	Left-turn opposing collisions (north-south directions) *Significant left-turn volume/queue*	3.1	Short Term	Provide yellow backboard to secondary signal heads (overall)
		3.2	Short Term	Provide protected-only left-turn phase for north-south directions
		3.3	Medium Term	Conduct traffic analysis to check if split phase is needed (overall)
4	Wide lane (eastbound)	4.1	Short Term	Provide dedicated left-turn lane (eastbound) **[Similar to item 2.1]**
5	Missing primary traffic signal head (north leg)	5.1	Short Term	Add one primary traffic signal head (north leg) **[Similar to item 1.2]**
6	Missing road signs (east and south legs)	6.1	Short Term	Install overhead street name signs (east and south legs)
7	Inadequate street lighting (northeast corner)	7.1	Short Term	Review and provide adequate streetlight (northeast corner)

#3 BOYD STREET & HOWES STREET

INTERSECTION INFORMATION

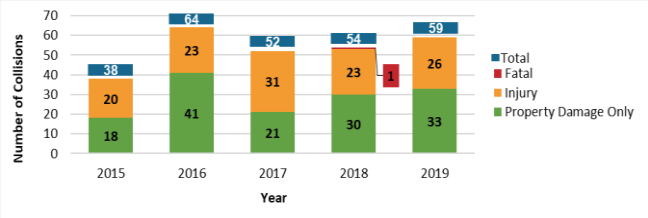
Site Number:	3
Approach Leg:	4-legged
Traffic Control Type:	Signalized – Split phase E/W P/P LT for NB
Road Class (N-S):	Local Road (N leg) Provincial Highway (S leg)
Road Class (E-W):	Arterial – MRN – Truck Route
Surrounding Land Use:	Commercial
Daily Traffic Volume (2017):	23,000 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	53.4 per year	(Total = 267)
Collision Severity Index:	5.52	(Casualty = 46%)
Collision Rate OBS. / CRT.:	6.36 / 2.63	Collisions per MEV
Collision with Pedestrian:	6	(2.2% of total)
Collision with Cyclist:	3	(1.1% of total)



Highest % Month:	August (13%)
Average % Weekday / Weekend:	15% / 12%
Highest % Time Period (3 hours):	1500-1800 (31%)
Top 3 Collision Types:	Rear End (63%) Sideswipe (13%) Backing (6%)
Over-Represented Collision:	
Casualty:	No
Vulnerable Road User Related:	No
Type:	Rear End

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- Significant heavy and long vehicle volumes – *overall*
- High vehicle speed – *east, west and south legs*
- Traffic operation conflict – *weaving movements after/between eastbound right-turn and westbound dual left-turn traffic*
- High left-turn volume and queue – *westbound direction (with dual left-turn lanes)*

Geometric:

- Horizontal curves – *eastbound and northbound approaches*
- Dual left-turn lanes – *westbound approach*
- Exclusive right-turn lane with channelized island – *all approaches*
- Right-turn lane yielding at exit leg – *eastbound and northbound approaches*
- Wide raised/painted medians – *north leg*

Signal:

- Lack of left-turn phase – *southbound approach*
- Inadequate traffic signal head – *southbound approach*
- Bicycle detector – *east and west approaches*

Vulnerable Road User:

- On-street bike lanes on both side – *east-west directions*
- MUP on north side – *west leg*
- No bicycle crossing markings – *east-west directions*
- Bicycle detector – *eastbound-westbound*
- Substantial pedestrian volumes – *north leg (shopping and commercial areas)*
- Wide intersection – *with right-turn channelized islands on all legs*

Other:

- Fatal collision – *a skateboarding pedestrian fell onto roadway and hit by an eastbound truck around 1:00PM in April 2018*

#3 BOYD STREET & HOWES STREET

SITE OBSERVATION PHOTOS



Westbound Approach – facing west
(high left-turn traffic volumes)



Southbound Approach – facing south
(only one signal head for two through lanes)

POTENTIAL IMPROVEMENTS

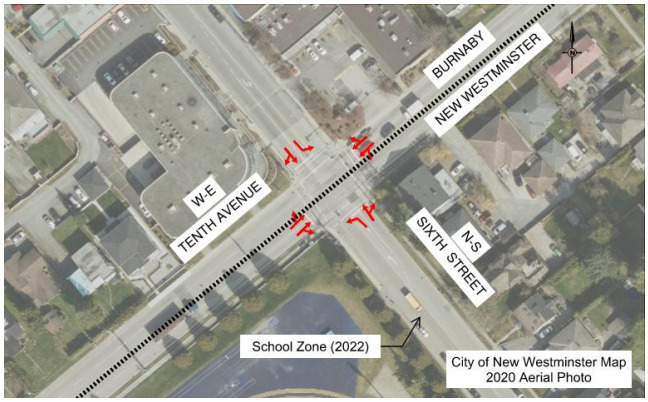
Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Rear-end collisions (overall) *Congestion (peak hours) / speeding (off peak) / right-turn lane yielding at exit legs*	1.1	Short Term	Provide additional primary traffic signal head (south leg)
		1.2	Short Term	Enhance police speed enforcement (overall)
		1.3	Medium Term	Convert right-turn lane to smart channel (eastbound and northbound)
2	Sideswipe collisions (overall) *High lane changing/weaving activities*	2.1	Medium Term	Install advance overhead guide signs for left-turn lanes (westbound)
3	High left-turn volume and queue (westbound with dual left-turn lanes)	3.1	Short Term	Provide left-turn guiding line for westbound left
		3.2	Medium Term	Install advance overhead guide signs for left-turn lanes (westbound) **[Similar to item 2.1]**
4	Inadequate traffic signal heads (southbound)	4.1	Short Term	Provide additional primary traffic signal head (south leg) **[Similar to item 1.1]**
5	Lack of pedestrian/cycling facilities (overall)	5.1	Short Term	Install pedestrian/cyclist crosswalk signs at right-turn lanes (overall)
		5.2	Short Term	Paint coloured pavement on the marked bike lanes at the conflict points (east-west directions)
		5.3	Medium Term	Review the feasibility to widen the sidewalk (northwest corner)
6	Wide intersection (overall)	6.1	Short Term	Review walk time interval (overall)
		6.2	Medium Term	Extend the pedestrian refuge island to NE (southwest corner)

#4 TENTH AVENUE & SIXTH STREET

INTERSECTION INFORMATION

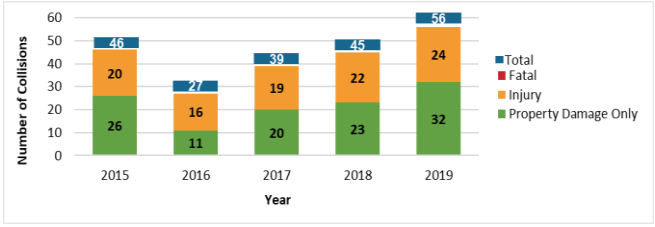
Site Number:	4
Approach Leg:	4-legged
Traffic Control Type:	Signalized – P/P LT for N/S No LT Except Bus E/W
Road Class (N-S):	Collector
Road Class (E-W):	Arterial – MRN – Truck Route
Surrounding Land Use:	Commercial/Residential/Institution
Daily Traffic Volume (2017):	42,000 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	42.6 per year	(Total = 213)
Collision Severity Index:	5.27	(Casualty = 47%)
Collision Rate OBS. / CRT.:	2.78 / 2.53	Collisions per MEV
Collision with Pedestrian:	3	(1.4% of total)
Collision with Cyclist:	1	(0.5% of total)



Highest % Month:	December (14%)
Average % Weekday / Weekend:	17% / 7%
Highest % Time Period (3 hours):	1500-1800 (31%)
Top 3 Collision Types:	Rear End (56%) Sideswipe (25%) Driveway Related (6%)

Over-Represented Collision:

Casualty:	No
Vulnerable Road User Related:	No
Type:	No

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- Congestion/long queues during peak periods – *overall*
- School zone posted speed limit – *southbound far side entering New Westminster*
- Considerable lane changing/weaving – *eastbound direction due to lane drop further down stream*
- Significant left-turn volume/queue during peak periods – *southbound approach*
- Significant right-turn volume/queue during peak periods – *westbound approach*

Geometric:

- Accesses close to intersection – *northeast quadrant*
- Lane drops after intersection – *east leg (further downstream)*

Signal:

- Prohibited left turn – *westbound and eastbound approach (except buses)*

Vulnerable Road User:

- Substantial pedestrian volumes – *school, park, commercial, and residential areas (route-to-school)*
- Limited pedestrian waiting area – *northeast corner*
- Old style pedestrian button – *all approaches.*
- Limited sight distance to crossing pedestrians – northeast and *southeast corners*

Other:

- Missing road signs – *overhead street name sign on the east and south legs*
- Inadequate street lighting – *northeast corner*

#4 TENTH AVENUE & SIXTH STREET

SITE OBSERVATION PHOTOS



Westbound Approach – facing southwest
(a driveway close to intersection)



Eastbound Approach – facing northeast
(missing road sign)

POTENTIAL IMPROVEMENTS

Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Rear-end collisions (overall) *Congestion (peak hours) / speeding (off peak)*	1.1	Short Term	Optimize signal coordination on Tenth Street (overall)
		1.2	Short Term	Install speed reader board in (eastbound/westbound)
2	Sideswipe collisions (overall) *High lane changing/weaving activities*	2.1	Medium Term	Review the need of extending the length of left-turn bay (northbound)
		2.2	Long Term	Construct left-turn bays (eastbound and westbound)
3	Driveway-related collisions (northeast quadrants) *Driveways close to intersection*	3.1	Long Term	Close the northeast commercial driveway on Tenth Avenue - Consult with commercial property owner
4	Limited pedestrian waiting area (northeast corner)	4.1	Short Term	Provide leading pedestrian interval (east and north legs)
		4.1	Medium Term	Expand pedestrian waiting area (northeast corner)
5	Limited sight distance to crossing pedestrian (northeast and southeast corners)	5.1	Short Term	Trim vegetation regularly (northeast and southeast corners)
6	Missing road signs (east and south legs)	6.1	Short Term	Install overhead street name signs (east and south legs)
7	Inadequate street lighting (northeast corner)	7.1	Short Term	Review and provide adequate streetlight (northeast corner)

#5 ROYAL AVENUE & SIXTH STREET

INTERSECTION INFORMATION

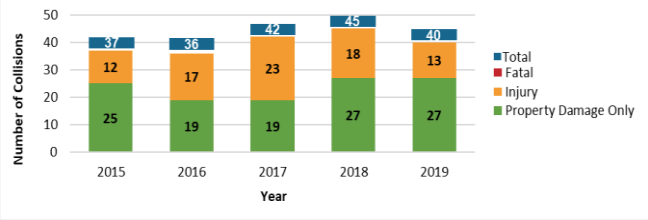
Site Number:	5
Approach Leg:	4-legged
Traffic Control Type:	Signalized – P/P LT for E/W P/P LT for N/S
Road Class (N-S):	Collector
Road Class (E-W):	Arterial – MRN – Truck Route
Surrounding Land Use:	Commercial/Residential/Institution
Daily Traffic Volume (2017):	42,000 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	40.0 per year	(Total = 200)
Collision Severity Index:	4.74	(Casualty = 42%)
Collision Rate OBS. / CRT.:	2.61 / 2.53	Collisions per MEV
Collision with Pedestrian:	2	(1.0% of total)
Collision with Cyclist:	0	(0.0% of total)



Highest % Month:	Octorber (12%)
Average % Weekday / Weekend:	17% / 7%
Highest % Time Period (3 hours):	1500-1800 (40%)
Top 3 Collision Types:	Rear End (66%) Sideswipe (20%) Backing (16%)

Over-Represented Collision:

Casualty:	No
Vulnerable Road User Related:	No
Type:	Rear End

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- Significant heavy and long vehicle volumes – *east and west directions*
- High through volumes and queues – *east and west directions*
- Considerable lane changing/weaving – *eastbound and westbound approaches*

Geometric:

- Steep gradient on approaches – *northbound and southbound*
- Exclusive right-turn lane – *northbound approach*
- Lane drops after intersection – *northbound far side*
- Wide raised/painted medians – *eastbound approach*

Signal:

- Far-side tertiary signal heads – *all approaches*

Vulnerable Road User:

- Long pedestrian crossing distance – *east and west legs*
- Substantial pedestrian volumes – *school, commercial and City Hall area*
- Old style pedestrian button – *all approaches*

Other:

- On-street parking close to intersection – *east leg and west leg*

#5 ROYAL AVENUE & SIXTH STREET

SITE OBSERVATION PHOTOS



Southbound Approach – facing northwest
(steep gradient on southbound approach)



westbound Approach – facing southwest
(on-street parking close to intersection)

POTENTIAL IMPROVEMENTS

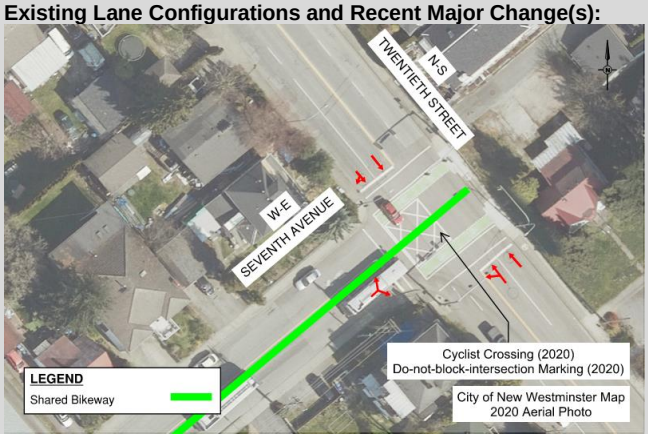
Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Rear-end collisions (overall) *Congestion (peak hours) / Steep gradient*	1.1	Short Term	Review signal progression along Royal Avenue (overall)
		1.2	Short Term	Install anti-skid pavement on steep approaches (southbound)
2	Sideswipe collisions (overall) *High lane changing/weaving activities*	2.1	Short Term	Install merging sign before the lane drop (northbound far side)
		2.2	Medium Term	Install advance overhead lane designation sign (eastbound/westbound)
		2.3	Medium Term	Review the prohibition of on-street parking during peak hours (east and west legs)
		2.4	Medium Term	Review the removal of on-street parking close to intersection (east and west legs) **[Alternative to item 2.3]**
3	Limited sight distance to eastbound traffic (northbound right-turn)	3.1	Short Term	Prohibit right-turn at red (northbound)
4	Left-turn opposing collisions (north-south directions)	4.1	Short Term	Provide left-turn guiding lines (north-south directions)
		4.2	Short Term	Provide protected-only left-turn phase for all directions
5	Long pedestrian crossing distance (east and west legs)	5.1	Short Term	Provide leading pedestrian interval (east and west legs)
		5.2	Short Term	Provide coloured crosswalk markings (east and west legs)
		5.3	Short Term	Install curb extension (eastbound far side)
		5.4	Medium Term	Provide pedestrian refuge islands (east and west legs)

#6 SEVENTH AVENUE & TWENTIETH STREET

INTERSECTION INFORMATION

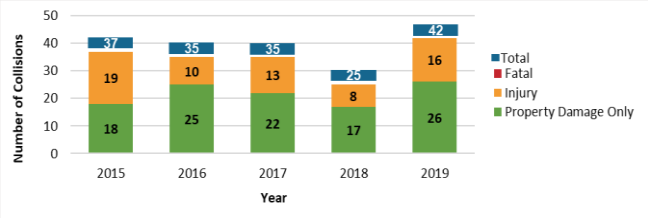
Site Number:	6
Approach Leg:	3-legged
Traffic Control Type:	Signalized – P/P LT for N
Road Class (N-S):	Collector
Road Class (E-W):	Local
Surrounding Land Use:	Residential
Daily Traffic Volume (2017):	21,000 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	34.8 per year	(Total = 174)
Collision Severity Index:	4.41	(Casualty = 38%)
Collision Rate OBS. / CRT.:	4.54 / 2.65	Collisions per MEV
Collision with Pedestrian:	4	(2.3% of total)
Collision with Cyclist:	2	(1.1% of total)



Highest % Month:	September (11%)
Average % Weekday / Weekend:	16% / 10%
Highest % Time Period (3 hours):	0600-0900 (26%)
Top 3 Collision Types:	Rear End (50%) Sideswipe (20%) Right-turn Crossing (16%)

Over-Represented Collision:

Casualty:	No
Vulnerable Road User Related:	No
Type:	Right-turn Crossing

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- High through volumes – *north and south legs*
- Congestion/long queues – *southbound traffic queue backup from upstream signal*
- Considerable lane changing/weaving – *northbound drivers overtake vehicles waiting to turn left*
- Traffic operation conflicts – bus turning – *eastbound right-turn*

Geometric:

- Steep gradient on approaches – *northbound and southbound*
- Wide lane – *west leg*

Signal:

- Left-turn phase without left-turn lane – *northbound approach*
- Cyclist push button – *eastbound approach*
- Far-side tertiary signal heads – *all approaches*

Vulnerable Road User:

- Limited sight distance to crossing pedestrians – *northwest and southwest corners*
- Shared bikeway – *west leg*
- Painted cyclist crossing – *north and south legs*

Other:

- Inadequate street lighting – *northeast corner*

#6 SEVENTH AVENUE & TWENTIETH STREET

SITE OBSERVATION PHOTOS



Eastbound Approach – facing southeast
(eastbound right-turn bus)



Southbound Approach – facing southeast
(limited sight distance to crossing pedestrians)

POTENTIAL IMPROVEMENTS

Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Rear-end collisions (overall) *Congestion (peak hours) / Steep gradient*	1.1	Short Term	Review signal coordination Along Twentieth Street
		1.2	Short Term	Install anti-skid pavement on steep approach (southbound)
2	Sideswipe collisions (overall) *High lane changing/weaving activities*	2.1	Medium Term	Install overhead land designation sign (northbound far-side)
		2.2	Medium Term	Conduct traffic analysis to check if feasible to provide dedicated left-turn lane (northbound)
		2.3	Medium Term	Restrict left-turn movement except buses (northbound)
3	Right-turn Crossing collisions (eastbound) *High through volumes / Traffic operation conflicts*	3.1	Short Term	Prohibit right-turn at red (eastbound)
4	Limited sight distance to crossing pedestrians (northwest and southwest corners)	4.1	Short Term	Trim vegetation regularly (northwest and southwest corners)
5	Inadequate street lighting (northeast corner)	5.1	Short Term	Review and provide adequate streetlight (northeast corner)
6	Wide lane (eastbound)	6.1	Short Term	Convert to left-turn lane and right-turn only lane (eastbound approach)

#7 EIGHTH AVENUE & SIXTH STREET

INTERSECTION INFORMATION

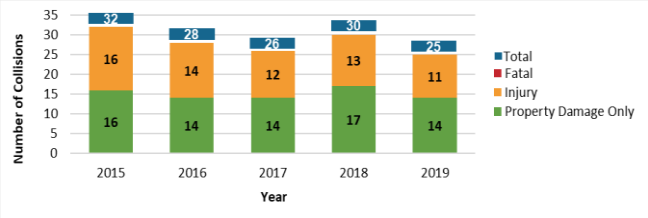
Site Number:	7
Approach Leg:	4-legged
Traffic Control Type:	Signalized – P/P LT for E/W P LT for N/S
Road Class (N-S):	Collector
Road Class (E-W):	Collector
Surrounding Land Use:	Commercial/Residential
Daily Traffic Volume (2017):	31,000 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	28.2 per year	(Total = 141)
Collision Severity Index:	5.21	(Casualty = 47%)
Collision Rate OBS. / CRT.:	2.49 / 2.58	Collisions per MEV
Collision with Pedestrian:	3	(2.1% of total)
Collision with Cyclist:	0	(0.0% of total)



Highest % Month:	October (13%)
Average % Weekday / Weekend:	15% / 11%
Highest % Time Period (3 hours):	1500-1800 (34%)
Top 3 Collision Types:	Rear End (58%) Sideswipe (25%) Driveway Related (4%)

Over-Represented Collision:

Casualty:	No
Vulnerable Road User Related:	No
Type:	No

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- School zone posted speed limit (speed differential) – *north leg with 30 kilometres per hour posted speed limit*
- High through volumes – *all approaches*
- Significant left-turn volume/queue during peak periods – *westbound approach*
- Considerable lane changing/weaving – all directions – *overtakes stopped bus (north-south on-street)*

Geometric:

- Left-turn lanes – *all approaches*
- Accesses close to intersection – *southeast and southwest quadrants*
- Wide lane – *northbound through and right-turn shared lane*

Signal:

- Limited traffic signal heads visibility – *due to smaller signal lenses for secondary traffic signal heads (200 mm)– all north and south approaches*

Vulnerable Road User:

- None

Other:

- None

#7 EIGHTH AVENUE & SIXTH STREET

SITE OBSERVATION PHOTOS



Eastbound Approach – facing northeast
(wide driveway close to intersection)



Northbound Approach – facing northwest
(wide shared through and right-turn lane)

POTENTIAL IMPROVEMENTS

Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Rear-end collisions (overall) *Congestion (peak hours) / Speed differential*	1.1	Short Term	Enlarge signal lenses for traffic signal heads (northbound/southbound)
2	Sideswipe collisions (overall) *High lane changing/weaving activities*	2.1	Medium Term	Extend the length of left-turn bay if needed (overall)
		2.2	Medium Term	Review the relocation of far side bus stop that is close to intersection (westbound far side) – Consult with TransLink
3	Driveway-related collisions (southeast and southwest quadrants) *Driveways close to intersection*	3.1	Long Term	Shift the southeast commercial driveway on Sixth Street as far away from intersection - Consult with commercial
4	Wide lane (northbound)	4.1	Short Term	Convert shared lane to dedicated through and right-turn lanes (northbound)
		4.2	Short Term	Install curb extension subject to turning path (northbound) **[Alternative to item 4.1]**
		4.3	Medium Term	Install raised median (south leg) **[Alternative to item 4.1]**
5	Limited traffic signal heads visibility (northbound/southbound)	5.1	Short Term	Enlarge signal lenses for traffic signal heads (northbound/southbound) **[Similar to item 1.1]**
		5.2	Short Term	Provide yellow backboard to secondary signal heads (overall)

#8 EIGHTH AVENUE & TWENTIETH STREET

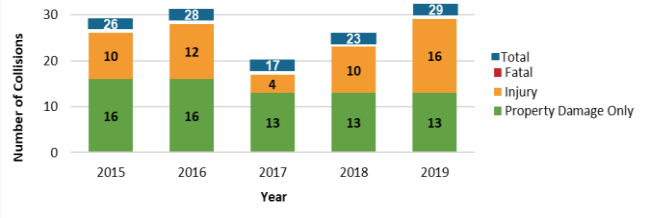
INTERSECTION INFORMATION

Site Number:	8
Approach Leg:	4-legged
Traffic Control Type:	Signalized
Road Class (N-S):	Collector
Road Class (E-W):	Collector (E leg) / Local (W leg)
Surrounding Land Use:	Commercial/Residential
Daily Traffic Volume (2017):	23,000 Entering Vehicles
Existing Lane Configurations and Recent Major Change(s):	



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	24.6 per year	(Total = 123)
Collision Severity Index:	4.80	(Casualty = 42%)
Collision Rate OBS. / CRT.:	2.93 / 2.63	Collisions per MEV
Collision with Pedestrian:	3	(2.4% of total)
Collision with Cyclist:	1	(0.8% of total)



Highest % Month:	May (12%)
Average % Weekday / Weekend:	15% / 12%
Highest % Time Period (3 hours):	1500-1800 (24%)
Top 3 Collision Types:	Rear End (33%) Side Swipe (25%) Left-turn Opposing (12%)
Over-Represented Collision:	
Casualty:	No
Vulnerable Road User Related:	No
Type:	LT Opposing, LT Crossing

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- Congestion/long queues during peak periods – *southbound approach (the traffic queue backup from Queensborough Bridge)*
- Significant lane changing/weaving activities – *northbound and southbound approaches*
- High left-turn volume and queue – *westbound*

Geometric:

- Downhill grade – *southbound approach*
- Do not block intersection marking – *overall*
- Lack of left-turn bays/lanes – *westbound (with high left-turn volume)*
- Wide lanes – south, *east and west approaches (marked as one lane, but operates as two lanes)*

Signal:

- Limited traffic signal heads visibility – *due to smaller signal lenses for secondary traffic signal heads (200 mm) – all approach*

Vulnerable Road User:

- Narrow sidewalk – *east leg*
- Lack of cycling facility – *all legs*
- Old style pedestrian button – *all approaches*

Other:

- Inadequate street lighting – *northwest and southeast corners*
- On-street parking close to intersection – *north and west legs*

#8 EIGHTH AVENUE & TWENTIETH STREET

SITE OBSERVATION PHOTOS



Eastbound Approach – facing northeast
(wide travel lane)



Southbound Approach – facing southeast
(observed long queue)

POTENTIAL IMPROVEMENTS

Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Rear-end collisions (overall) *Congestion (peak hours)*	1.1	Short Term	Optimize signal coordination on Twentieth Street
		1.2	Short Term	Install anti-skid pavement on steep approach (southbound)
2	Sideswipe collisions (overall) *High lane changing/weaving activities*	2.1	Medium Term	Provide overhead lane designation sign (northbound)
		2.2	Medium Term	Provide dual through lanes (southbound)
		2.3	Medium Term	Review the prohibition of on-street close to intersection parking during peak hours (southbound)
3	Left-turn opposing collisions (overall) *High left-turn volume and queue (westbound)*	3.1	Short Term	Provide protected-permissive left-turn phase (north-south directions)
		3.2	Short Term	Enlarge signal lenses for secondary traffic signal heads (overall)
		3.3	Short Term	Provide yellow backboard to secondary signal heads (overall)
4	Wide lane (eastbound/westbound)	4.1	Short Term	Convert shared lane to dedicated left-turn and through/right-turn lanes (eastbound/westbound)
		4.2	Short Term	Install curb extension subject to turning path (eastbound/westbound) **[Alternative to item 4.1]**
5	Limited traffic signal heads visibility (overall)	5.1	Short Term	Enlarge signal lenses for traffic signal heads (overall) **[Similar to item 1.1]**
		5.2	Short Term	Provide yellow backboard to secondary signal heads (overall) **[Similar to item 1.2]**
6	Lack of cycling facilities (overall)	6.1	Medium Term	Review the amenities and accessibility of cycling network
7	Inadequate street lighting (northwest and southeast corners)	7.1	Short Term	Review and provide adequate streetlight (northwest and southeast corners)

#9 TENTH AVENUE & SECOND STREET

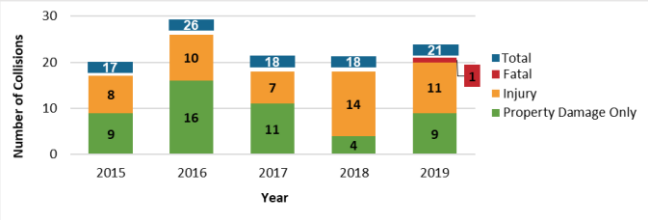
INTERSECTION INFORMATION

Site Number:	9
Approach Leg:	4-Legged
Traffic Control Type:	Pedestrian Signal – E-W Stop Control for N-S
Road Class (N-S):	Local
Road Class (E-W):	Arterial – MRN – Truck Route
Surrounding Land Use:	Residential
Daily Traffic Volume (2017):	44,700 Entering Vehicles
Existing Lane Configurations and Recent Major Change(s):	



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	20.0 per year	(Total = 100)
Collision Severity Index:	6.49	(Casualty = 51%)
Collision Rate OBS. / CRT.:	1.23 / 0.93	Collisions per MEV
Collision with Pedestrian:	0	(0.0% of total)
Collision with Cyclist:	0	(0.0% of total)



Highest % Month:	August (13%)
Average % Weekday / Weekend:	16% / 11%
Highest % Time Period (3 hours):	1500-1800 (33%)
Top 3 Collision Types:	Rear End (41%) Right Angle (18%) Left-turn Opposing (16%)
Over-Represented Collision:	
Casualty:	No
Vulnerable Road User Related:	No
Type:	LT Opposing & Right Angle

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- High through volumes and queues – *east and west legs*
- Considerable lane changing/weaving – *eastbound and westbound drivers overtake vehicles waiting to turn left*
- High vehicle speed – *westbound approach*
- Prohibited right turn – *westbound approach from 6 AM to 9 AM every day*

Geometric:

- Lack of left-turn bays/lanes – *east and west legs*
- Steep gradients on approaches – *north and south legs*
- Misaligned approaches – *north-south direction*

Signal:

- Pedestrian signal – *eastbound and westbound approaches*
- Cyclist push button – *northbound and southbound approaches*

Vulnerable Road User:

- Missing crosswalk pavement markings – *north and south legs*
- No pedestrian waiting area – *northeast and northwest corners*
- Lack of cycling facilities – *east-west legs*
- No bicycle signs and markings – *northbound and southbound approaches*

Other:

- Missing pavement marking – *no centreline on north leg*
- Missing road signs – *overhead street name sign on the east leg*
- Inadequate street lighting – *northwest and southeast corners*
- Fatal collision – a right angle collision between eastbound and southbound vehicles around 4:00AM in December 2019

#9 TENTH AVENUE & SECOND STREET

SITE OBSERVATION PHOTOS



Eastbound Approach – facing southwest
(high through volumes and long queues)



Southbound Approach – facing southeast
(no centre line on north leg)

POTENTIAL IMPROVEMENTS

Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Rear-end collisions (overall) *Congestion (peak hours) / speeding (off peak)*	1.1	Short Term	Review the need to install anti-skid pavement on steep minor road approach (southbound)
		1.2	Short Term	Enhance police speed and illegal movement enforcement (overall)
2	Fatal right-angle collision (eastbound and southbound) *High vehicle speed*	2.1	Medium Term	Convert to full signal if warranted (overall)
3	Left-turn opposing collisions (overall)	3.1	Short Term	Convert to full signal if warranted (overall) **[Similar to item 2.1]**
4	Lack of left-turn bays (eastbound/westbound)	4.1	Long Term	Provide dedicated left-turn bays (eastbound/westbound)
5	Lack of cycling facilities (north and south legs)	5.1	Short Term	Provide shared bikeway markings (north and south legs)
6	Missing pavement marking (north leg)	6.1	Short Term	Paint centre line (north leg)
7	Missing road sing (east leg)	7.1	Short Term	Install overhead street name signs (east leg)
8	Inadequate street lighting (northwest and southeast corners)	8.1	Short Term	Review and provide adequate streetlight (northwest and southeast corners)

#10 BRAID STREET & ROUSSEAU STREET

INTERSECTION INFORMATION

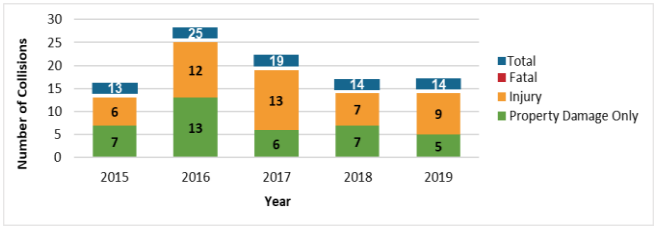
Site Number:	10
Approach Leg:	4-legged
Traffic Control Type:	Signalized – P/P LT for E/W
Road Class (N-S):	Local
Road Class (E-W):	Collector – MRN – Truck Route
Surrounding Land Use:	Residential/Commercial/Institution
Daily Traffic Volume (2017):	54,000 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	17.0 per year	(Total = 85)
Collision Severity Index:	5.98	(Casualty = 55%)
Collision Rate OBS. / CRT.:	0.86 / 2.49	Collisions per MEV
Collision with Pedestrian:	2	(2.4% of total)
Collision with Cyclist:	0	(0.0% of total)



Highest % Month:	Feastboundurary (14%)
Average % Weekday / Weekend:	17% / 8%
Highest % Time Period (3 hours):	1500-1800 (41%)
Top 3 Collision Types:	RearEnd (38%) Side Swipe (36%) Left-turn Opposing (13%)

Over-Represented Collision:

Casualty:	No
Vulnerable Road User Related:	No
Type:	Left-Turn Opposing

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- Significant heavy and long vehicle volumes – *eastbound traffic queue backup from Brunette Avenue*
- High through volumes – *east and west legs*
- School zone posted speed limit – *south leg*

Geometric:

- Downhill grade – *eastbound approach*
- Exclusive wide right-turn lane with channelized island – *westbound approach (wide radius)*

Signal:

- Cyclist push button – *northbound and southbound approaches*
- Absent of signage on signal head – *southbound left-turn*

Vulnerable Road User:

- Lack of cycling facilities – *north-south directions*
- Long pedestrian crossing distance – *east and west legs*
- High pedestrian volume – *north legs*

Other:

- Future development will generate more traffic in the future – *southeast quadrant*
- Missing street name signs on the signal heads – *all directions*
- Inadequate left-turn pavement markings on the road – *southbound left-turn lane*

#10 BRAID STREET & ROUSSEAU STREET

SITE OBSERVATION PHOTOS



Westbound Approach – facing west
(missing road sign)



Southbound Far-side – facing south
(school zone ahead)

POTENTIAL IMPROVEMENTS

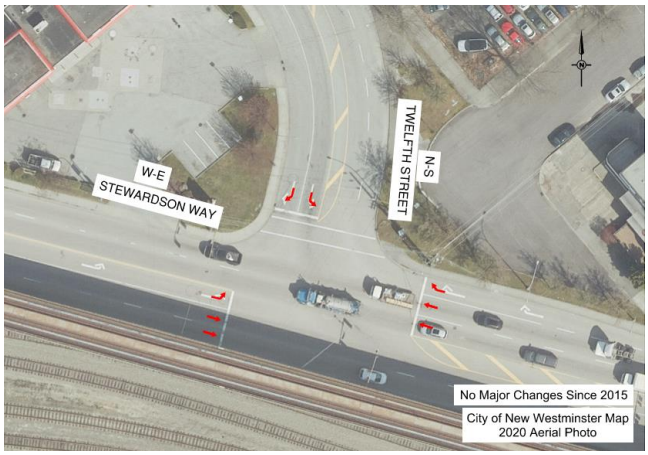
Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Rear-end collisions (overall) *Congestion (peak hours) / downhill grade*	1.1	Short Term	Review and optimize signal timings with Brunette Avenue signal (overall)
		1.2	Short Term	Install anti-skid pavement on steep approach (eastbound)
2	Sideswipe collisions (overall) *High lane changing/weaving activities*	2.1	Short Term	Provide left-turn pavement marking before stop line (southbound)
3	Left-turn opposing collisions (overall) *High left-turn volume and queue*	3.1	Short Term	Provide protected-only left-turn phase (southbound)
4	Lack of pedestrian/cycling facilities (overall)	4.1	Short Term	Provide shared bikeway markings (north-south directions)
		4.2	Short Term	Install pedestrians/cyclists crossing signs (westbound right-turn)
5	Long pedestrian crossing distance (east and west legs)	5.1	Short Term	Provide coloured crosswalk markings (eastbound/westbound)
6	Missing road signs on signal heads (overall)	6.3	Short Term	Install overhead street name signs (overall)

#11 STEWARDSON WAY & TWELFTH STREET

INTERSECTION INFORMATION

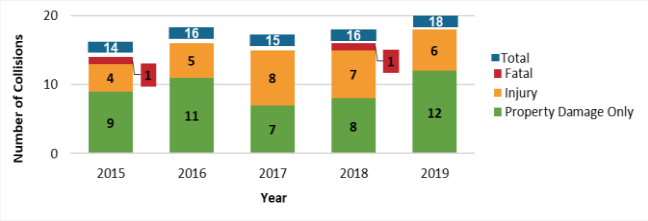
Site Number:	11
Approach Leg:	3-legged
Traffic Control Type:	Signalized – P/P LT for EB
Road Class (N-S):	Collector
Road Class (E-W):	Arterial – MRN – Truck Route
Surrounding Land Use:	Commercial
Daily Traffic Volume (2017):	49,900 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	15.8 per year	(Total = 79)
Collision Severity Index:	6.92	(Casualty = 41%)
Collision Rate OBS. / CRT.:	0.87 / 2.50	Collisions per MEV
Collision with Pedestrian:	2	(2.5% of total)
Collision with Cyclist:	0	(0.0% of total)



Highest % Month:	March (15%)
Average % Weekday / Weekend:	16% / 11%
Highest % Time Period (3 hours):	1500-1800 (25%)
Top 3 Collision Types:	Rear End (51%) Sideswipe (17%) Driveway Related (11%)
Over-Represented Collision:	
Casualty:	No
Vulnerable Road User Related:	No
Type:	Driveway Related

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- High through volumes and queues – *eastbound and westbound*
- Significant heavy and long vehicle volumes – *east-west legs are truck routes*
- Vehicle speeding during off-peak – *westbound-eastbound approach (Stewardson Way)*

Geometric:

- Horizontal curve – *southbound approach*
- Long left-turn lanes – *eastbound and southbound approaches*
- Right-turn lanes – *westbound and southbound approaches*
- Driveways close to intersection – *northwest quadrant*

Signal:

- None

Vulnerable Road User:

- Long pedestrian crossing distance – *north leg*
- Inadequate pedestrian/cyclist connections – *lack of sidewalk – south side*

Other:

- Observed violating trucks turning into Twelfth Street (non-truck route) – *westbound*
- Fatal collisions – *a left-turn opposing collision between eastbound left-turn motorcyclist and westbound vehicle around 8:45AM in May 2015; a rear-end collision with 3 eastbound vehicles involved around 15:30PM in June 2018*

#11 STEWARDSON WAY & TWELFTH STREET

SITE OBSERVATION PHOTOS



Westbound Approach – facing northwest
(significant heavy and long vehicle volumes)



Southbound Approach – facing south
(overhead signs on Twelfth Street)

POTENTIAL IMPROVEMENTS

Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Rear-end collisions (overall) *Congestion (peak hours) / speeding (off peak)*	1.1	Short Term	Review the signal progression along Stewardson Way (overall)
		1.2	Short Term	Install speed reader boards (east-west directions)
		1.3	Short Term	Enhance police speed enforcement (east-west directions)
2	Sideswipe collisions (overall) *Heavy and long vehicle volumes*	2.1	Medium Term	Add right-turn lane designation overhead signs (southbound)
		2.2	Medium Term	Install advance lane designation signs to warn lane drop (eastbound far side)
3	Driveway-related collisions (northwest quadrant) *Driveways close to intersection*	3.1	Long Term	Redesign the northwest commercial driveway on Stewardson Way to right-in/right-out arrangement – Consult with commercial
4	Long pedestrian crossing distance (north leg)	4.1	Medium Term	Install curb extension and convert to one receiving lane only (north leg)

#12 EIGHTH AVENUE & TWELFTH STREET

INTERSECTION INFORMATION

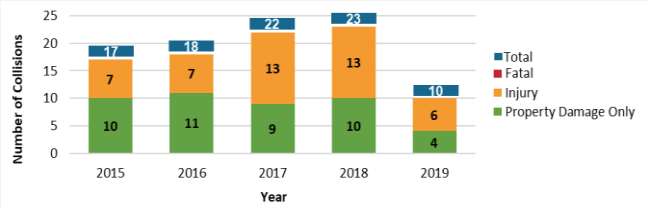
Site Number:	12
Approach Leg:	4-legged
Traffic Control Type:	Signalized – P/P LT for E/W
Road Class (N-S):	Collector
Road Class (E-W):	Collector
Surrounding Land Use:	Commercial
Daily Traffic Volume (2017):	28,000 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	18.0 per year	(Total = 90)
Collision Severity Index:	5.60	(Casualty = 51%)
Collision Rate OBS. / CRT.:	1.76 / 2.59	Collisions per MEV
Collision with Pedestrian:	2	(2.2% of total)
Collision with Cyclist:	0	(0.0% of total)



Highest % Month:	November (12%)
Average % Weekday / Weekend:	17% / 8%
Highest % Time Period (3 hours):	1500-1800 (32%)
Top 3 Collision Types:	Rear End (49%) Sideswipe (27%) Left-Turn Opposing (5%)
Over-Represented Collision:	
Casualty:	No
Vulnerable Road User Related:	No
Type:	No

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- Vehicular violations – *northbound and southbound drivers cross centreline to overtake stopped buses*
- High through volumes and queues – *all legs*
- Considerable lane changing/weaving – *all directions – overtakes stopped bus (north-south) and vehicles waiting left-turn (east-west)*

Geometric:

- Near-side bus stop next to intersection – *westbound approach*
- Short left-turn bay – *northbound and southbound approaches*
- Downhill grade – *southbound approach*
- Wide lanes – *east and west approaches (marked as one lane, but operates as two lanes)*

Signal:

- Far-side signal heads – *all approaches*

Vulnerable Road User:

- Limited sight distance to crossing pedestrians – *southwest corner*
- Old style pedestrian button – *all approaches*

Other:

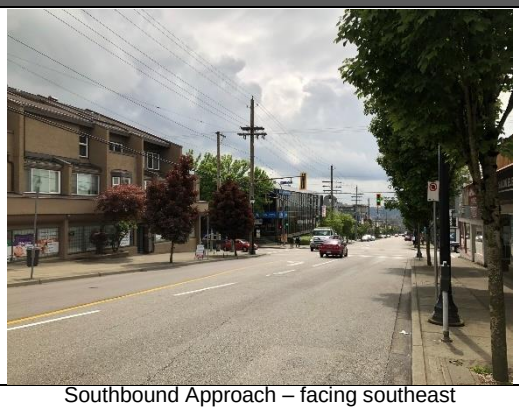
- Inadequate street lighting – *northeast corner*
- On-street parking close to intersection – *east, north, and south legs*
- Bus stops close to intersection – *east, north, and south legs*

#12 EIGHTH AVENUE & TWELFTH STREET

SITE OBSERVATION PHOTOS



Westbound Approach – facing north
(near-side bus stop close to intersection)



Southbound Approach – facing southeast
(downhill grade on southbound approach)

POTENTIAL IMPROVEMENTS

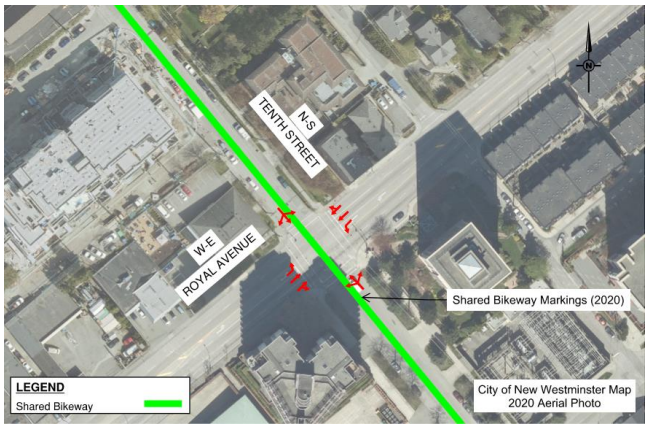
Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Rear-end collisions (overall) *Congestion (peak hours) / Downhill grade*	1.1	Short Term	Paint aligned left-turn bays (eastbound/westbound)
		1.2	Short Term	Install anti-skid pavement on steep approach (southbound)
2	Sideswipe collisions (overall) *On-street parking/bust stop close to intersection*	2.1	Short Term	Paint aligned left-turn bays (eastbound/westbound) **[Similar to item 1.1]**
		2.2	Medium Term	Review the removal of on-street parking near the intersection (north and south legs)
		2.3	Medium Term	Review the relocation of bus stops (east leg and northbound far side) – Consult with TransLink
3	Left-turn opposing collisions (overall) *High left-turn volume and queue (westbound)*	3.1	Short Term	Provide left-turn lanes and protected-permissive left-turn phase (eastbound/westbound)
		3.2	Short Term	Install yellow backboards for secondary signal heads (overall)
4	Wide Lane (eastbound/westbound)	4.1	Short Term	Install curb extension subject to turning path (eastbound/westbound)
		4.2	Short Term	Paint aligned left-turn lanes (eastbound/westbound) **[Similar to item 1.1 and alternative to item 4.1]**
5	Limited sight distance to crossing pedestrians (southwest corner)	5.1	Short Term	Install curb extension (eastbound) **[Similar to item 4.1]**
6	Inadequate street lighting (northeast corner)	6.1	Short Term	Review and provide adequate streetlight (northeast corners)

#13 ROYAL AVENUE & TENTH STREET

INTERSECTION INFORMATION

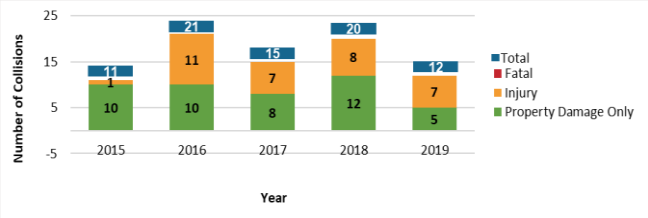
Site Number:	13
Approach Leg:	4-legged
Traffic Control Type:	Signalized
Road Class (N-S):	Collector (S leg) / Local (N leg)
Road Class (E-W):	Arterial – MRN – Truck Route
Surrounding Land Use:	Commercial/Residential/Institution
Daily Traffic Volume (2017):	24,000 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	15.8 per year	(Total = 79)
Collision Severity Index:	4.87	(Casualty = 43%)
Collision Rate OBS. / CRT.:	1.80 / 2.62	Collisions per MEV
Collision with Pedestrian:	4	(5.1% of total)
Collision with Cyclist:	0	(0.0% of total)



Highest % Month:	December (15%)
Average % Weekday / Weekend:	18% / 6%
Highest % Time Period (3 hours):	1500-1800 (29%)
Top 3 Collision Types:	Rear End (33%) Sideswipe (27%) Backing (17%)
Over-Represented Collision:	
Casualty:	No
Vulnerable Road User Related:	No
Type:	Backing

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- Speed differential – *north-south leg with 30 kilometres per hour posted speed limit*
- Congestion/long queues during peak periods – *north-south and eastbound approaches*
- Significant lane changing activities, due to on-street parking right after the intersection – *westbound approach*
- Prohibited left-turn during 3 to 6 PM weekdays – *southbound approach*

Geometric:

- Steep gradient on approaches – *all legs*
- Left-turn bays – *eastbound and westbound approaches*

Signal:

- Limited traffic signal heads visibility – *due to smaller signal lenses for secondary and tertiary as traffic signal heads (200 mm) – all approach*
- Old style pedestrian push button – *all approaches*
- Cyclist push button – *northbound and southbound approaches*

Vulnerable Road User:

- Shared bikeway – *north and south legs*
- No bicycle signs – *north-south direction*
- Long pedestrian crossing distance – *east and west legs*

Other:

- Inadequate street lighting – *northeast corner*

#13 ROYAL AVENUE & TENTH STREET

SITE OBSERVATION PHOTOS



Westbound far side – facing northeast
(steep gradient on approaches)



Westbound Approach – facing southwest
(wide intersection to cross)

POTENTIAL IMPROVEMENTS

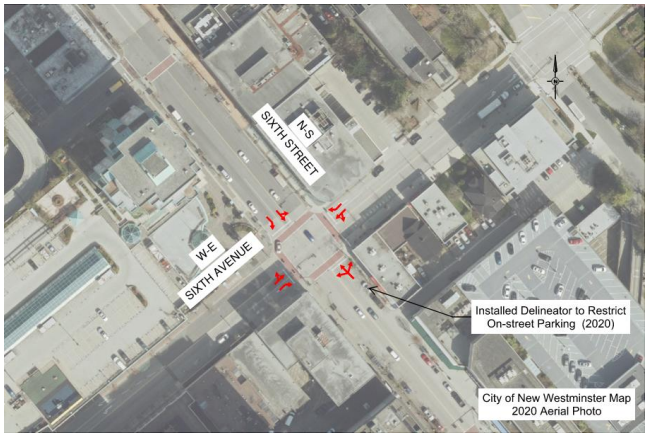
Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Rear-end collisions (overall) *Congestion (peak hours) / Steep gradient*	1.1	Short Term	Review the signal progression along Royal Avenue (overall)
		1.2	Short Term	Install anti-skid pavement on steep approaches (southbound/westbound)
		1.3	Short Term	Enhance police speed enforcement (overall)
		1.4	Short Term	Enlarge signal lenses for traffic signal heads (overall)
2	Sideswipe collisions (overall) *High lane changing/weaving activities / On-street parking*	2.1	Medium Term	Review the removal of on-street parking close to intersection (west leg)
3	Backing collisions (eastbound) *Steep gradient*	3.1	Short Term	Install steep grade warning sign (eastbound)
4	Limited traffic signal heads visibility	4.1	Short Term	Enlarge signal lenses for traffic signal heads (overall) **[Similar to item 1.4]**
		4.2	Short Term	Provide yellow backboard to secondary signal heads (overall)
5	No bicycle crossing signs (north-south directions)	5.1	Short Term	Install bicycle crossing signs (north-south directions)
6	Long pedestrian crossing distance (east and west legs)	6.1	Short Term	Review walk time interval (east and west legs)
		6.2	Short Term	Provide coloured crosswalk markings (east and west legs)
7	Inadequate street lighting (northeast corner)	7.1	Short Term	Review and provide adequate streetlight (northeast corners)

#14 SIXTH AVENUE & SIXTH STREET

INTERSECTION INFORMATION

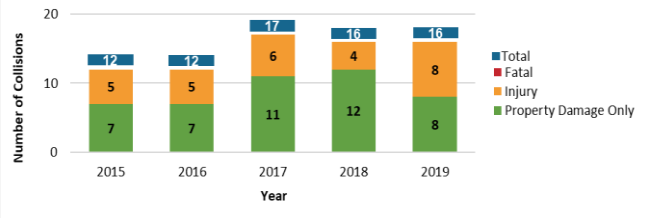
Site Number:	14
Approach Leg:	4-legged
Traffic Control Type:	Signalized – No LT except buses for all approaches
Road Class (N-S):	Collector
Road Class (E-W):	Collector
Surrounding Land Use:	Residential/Commercial
Daily Traffic Volume (2017):	20,000 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	14.6 per year	(Total = 73)
Collision Severity Index:	4.45	(Casualty = 38%)
Collision Rate OBS. / CRT.:	2.00 / 2.66	Collisions per MEV
Collision with Pedestrian:	5	(6.8% of total)
Collision with Cyclist:	1	(1.4% of total)



Highest % Month:	September (15%)
Average % Weekday / Weekend:	16% / 11%
Highest % Time Period (3 hours):	1200-1500 (32%)
Top 3 Collision Types:	Rear End (48%) Sideswipe (15%) Driveway Related (8%)

Over-Represented Collision:

Casualty:	No
Vulnerable Road User Related:	No
Type:	Right-turn Crossing

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- High through volumes and queues – *all leg*
- Vehicles turning prohibitions – *all left-turn movements*

Geometric:

- Delineators installed to restrict on-street parking – *northbound approach*
- Right-turn lanes – *eastbound, westbound, and southbound approaches*
- Wide lanes – *all exit legs*

Signal:

- None

Vulnerable Road User:

- High pedestrian crossing activities – *overall*
- Short pedestrian clearance interval – *overall*
- Traffic-pedestrians operation conflict – *all movements between right-turn traffic and crossing pedestrians*

Other:

- On-street parking close to intersection – *east and south legs*

#14 SIXTH AVENUE & SIXTH STREET

SITE OBSERVATION PHOTOS



Eastbound Approach – facing east
(high pedestrian crossing activities)



Northbound Approach – facing northwest
(delineators installed to narrow travel lane)

POTENTIAL IMPROVEMENTS

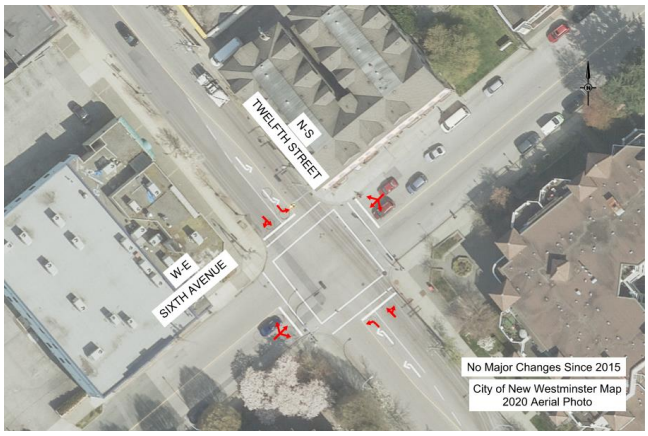
Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Rear-end collisions (overall) *Congestion (peak hours)*	1.1	Short Term	Review and optimize signal timings (overall)
2	Short pedestrian clearance interval (overall)	2.1	Short Term	Increase pedestrian clearance interval (overall)
		2.2	Short Term	Provide leading pedestrian interval (overall)
		2.3	Medium Term	Convert to pedestrian scramble intersection (overall)
3	High pedestrian crossing activities (overall)	3.1	Short Term	Provide leading pedestrian interval (overall) **[Similar to item 2.2]**
		3.2	Medium Term	Convert to pedestrian scramble intersection (overall) **[Similar to item 2.3]**

#15 SIXTH AVENUE & TWELFTH STREET

INTERSECTION INFORMATION

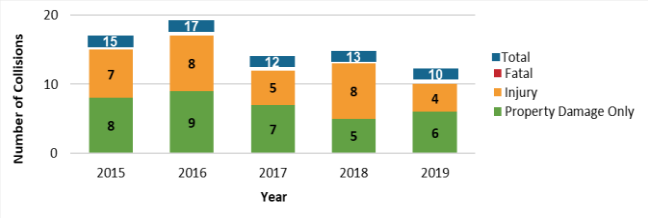
Site Number:	15
Approach Leg:	4-legged
Traffic Control Type:	Signalized – P/P LT for N/S
Road Class (N-S):	Collector
Road Class (E-W):	Collector
Surrounding Land Use:	Commercial/Residential
Daily Traffic Volume (2017):	34,300 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	13.4 per year	(Total = 67)
Collision Severity Index:	5.30	(Casualty = 48%)
Collision Rate OBS. / CRT.:	1.07 / 2.56	Collisions per MEV
Collision with Pedestrian:	2	(3.0% of total)
Collision with Cyclist:	2	(3.0% of total)



Highest % Month:	July (13%)
Average % Weekday / Weekend:	15% / 13%
Highest % Time Period (3 hours):	1500-1800 (24%)
Top 3 Collision Types:	Rear End (57%) Sideswipe (20%) Right Angle (6%)

Over-Represented Collision:

Casualty:	No
Vulnerable Road User Related:	No
Type:	No

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- High through volumes and queues – *north and south legs*
- Considerable lane changing/weaving – *all legs – drivers overtake stopped bus and vehicles waiting to turn left*

Geometric:

- Downhill grade – *southbound and westbound approaches*
- Short left-turn bays – *northbound and southbound approaches*
- Wide lanes – *eastbound and westbound approaches*

Signal:

- Limited traffic signal heads visibility – *due to smaller signal lenses (200mm) for secondary traffic signal heads – eastbound and westbound approaches*

Vulnerable Road User:

- Limited pedestrian waiting area – *northeast corner*

Other:

- Inadequate street lighting – *northeast corner*
- On-street parking close to intersection – *all legs*
- Bus stops close to intersection – *east, and west leg*

#15 SIXTH AVENUE & TWELFTH STREET

SITE OBSERVATION PHOTOS



Westbound Approach – facing southwest
(on-street parking close to intersection)



Eastbound Approach – facing northeast
(wide travel lane)

POTENTIAL IMPROVEMENTS

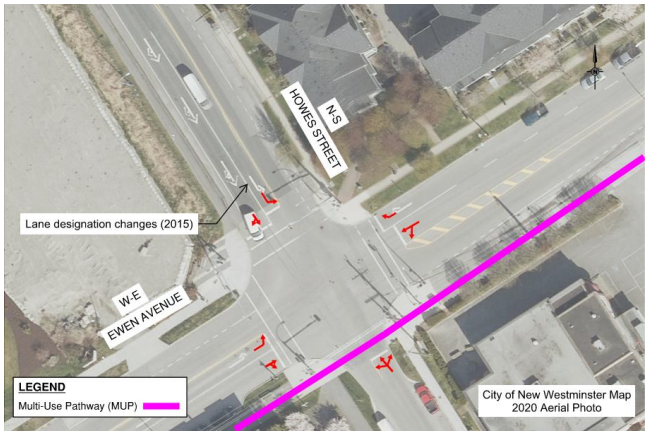
Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Rear-end collisions (overall) *Congestion (peak hours) / Downhill grade*	1.1	Short Term	Enlarge signal lenses for traffic signal heads (eastbound and westbound)
		1.2	Short Term	Install anti-skid pavement on steep approaches (southbound/westbound)
2	Sideswipe collisions (overall) *Wide lanes / On-street parking close to intersection*	2.1	Short Term	Paint centre line (east leg)
		2.2	Short Term	Install curb extension subject to turning path (eastbound/westbound)
		2.3	Short Term	Add a left-turn lane (eastbound/westbound) **[Alternative to item 2.1]**
		2.4	Medium Term	Review the removal of on-street parking close to intersection (all legs) **[Alternative to item 2.2]**
3	Limited traffic signal heads visibility (overall)	3.1	Short Term	Enlarge signal lenses for traffic signal heads (eastbound and westbound) **[Similar to item 1.1]**
		3.2	Short Term	Provide yellow backboard to secondary signal heads (overall)
4	Inadequate street lighting (northeast corner)	4.1	Short Term	Review and provide adequate streetlight (northeast corners)

#16 EWEN AVENUE & HOWES STREET

INTERSECTION INFORMATION

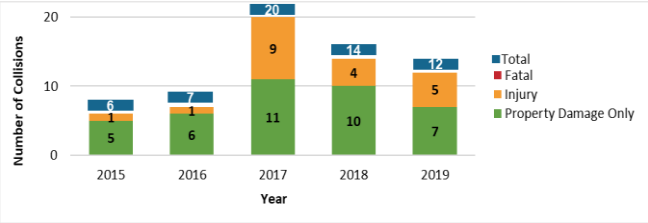
Site Number:	16
Approach Leg:	4-legged
Traffic Control Type:	Signalized – P/P LT for EB No RTOR for WB
Road Class (N-S):	Provincial Highway (N leg) Local (S leg)
Road Class (E-W):	Collector
Surrounding Land Use:	Commercial/Residential
Daily Traffic Volume (2017):	12,000 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	11.8 per year	(Total = 59)
Collision Severity Index:	4.05	(Casualty = 34%)
Collision Rate OBS. / CRT.:	2.69 / 2.79	Collisions per MEV
Collision with Pedestrian:	7	(11.8% of total)
Collision with Cyclist:	1	(1.7% of total)



Highest % Month:	January (14%)
Average % Weekday / Weekend:	15% / 12%
Highest % Time Period (3 hours):	1200-1500 (27%)
Top 3 Collision Types:	Rear End (30%) Sideswipe (27%) Pedestrian Related (16%)

Over-Represented Collision:

Casualty:	No
Vulnerable Road User Related:	Yes
Type:	No

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- High turning volumes – *eastbound and westbound approaches*

Geometric:

- Left-turn lanes – *eastbound and southbound approaches*
- Right-turn lane – *westbound approach*

Signal:

- No right-turn on red – *westbound approach*

Vulnerable Road User:

- MUP – *east west direction on south side of Even Avenue*
- High pedestrian crossing activities – *overall*
- Traffic-pedestrians operation conflict – *all movements between right-turn traffic and crossing pedestrians*

Other:

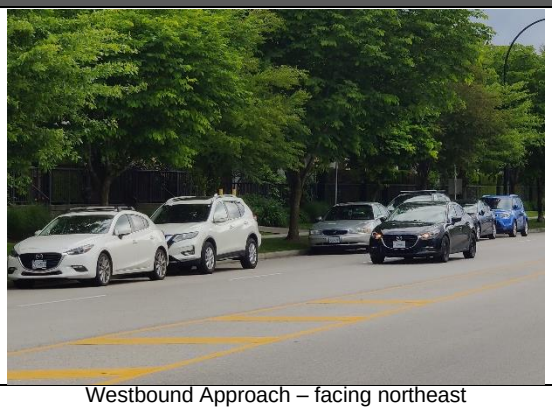
- On-street parking on the right-turn lame with high turning volume – *westbound approach*
- Observed vehicles violating no right-turn at red – *westbound approach*

#16 EWEN AVENUE & HOWES STREET

SITE OBSERVATION PHOTOS



Westbound Approach – facing east
(high right-turn traffic volumes)



Westbound Approach – facing northeast
(on-street parking close to right-turn lane)

POTENTIAL IMPROVEMENTS

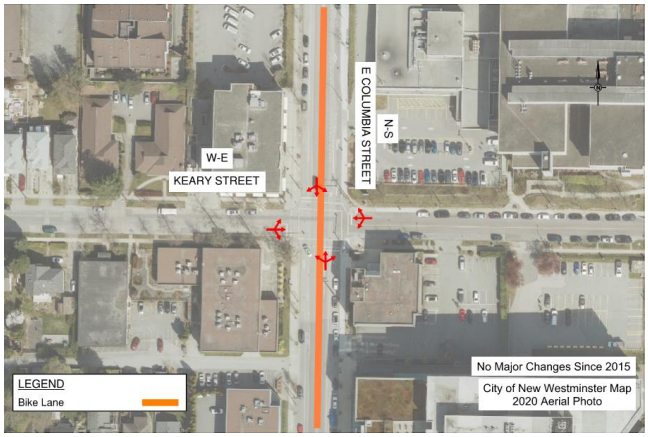
Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Rear-end collisions (overall) *High turning volumes*	1.1	Short Term	Enhance police illegal turning movement enforcement (overall)
2	Sideswipe collisions (overall) *High turning volumes / On-street parking on right-turn lane*	2.1	Medium Term	Extend the length of right-turn lane (westbound)
		2.2	Medium Term	Review the removal of on-street parking close to intersection (all legs)
3	Pedestrian related collisions (overall) *High pedestrian crossing activities / No right-turn at red*	3.1	Short Term	Provide coloured crosswalk (all legs)
4	Traffic-pedestrians operation conflict (all right-turn)	4.1	Short Term	Provide leading pedestrian interval (overall)
		4.2	Short Term	Enlarge no right-turn on read signs (westbound)

#17 COLUMBIA STREET & KEARY STREET

INTERSECTION INFORMATION

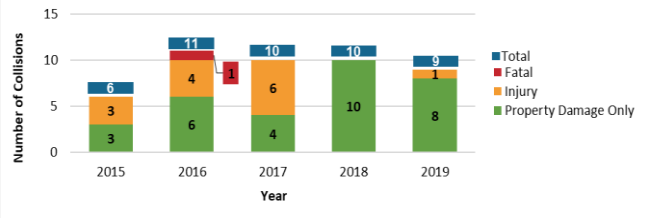
Site Number:	17
Approach Leg:	4-legged
Traffic Control Type:	Signalized
Road Class (N-S):	Collector – Limited Hours Truck Route
Road Class (E-W):	Local
Surrounding Land Use:	Commercial/Institution
Daily Traffic Volume (2017):	16,000 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	9.2 per year	(Total = 46)
Collision Severity Index:	5.89	(Casualty = 33%)
Collision Rate OBS. / CRT.:	1.57 / 2.71	Collisions per MEV
Collision with Pedestrian:	4	(8.7% of total)
Collision with Cyclist:	0	(0.0% of total)



Highest % Month:	March (17%)
Average % Weekday / Weekend:	17% / 7%
Highest % Time Period (3 hours):	1500-1800 (26%)
Top 3 Collision Types:	Sideswipe (36%) Rear End (21%) Off Road (11%)

Over-Represented Collision:

Casualty:	No
Vulnerable Road User Related:	No
Type:	Off Road

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- Posted speed limit of 30 kilometres per hour – north-south directions

Geometric:

- Downhill grade on approaches – *southbound*
- Wide lanes – *overall*
- Far-side right-turn access into hospital – *northbound far-side*

Signal:

- Cyclist push buttons – *eastbound and westbound approaches*
- Limited traffic signal heads visibility – *due to smaller signal lenses for secondary traffic signal heads – overall*

Vulnerable Road User:

- Bike lanes on both sides – *north and south legs*
- Lack of cycling markings – *east west direction*
- High pedestrian crossing activities – *overall*
- Old crosswalk button – *overall*

Other:

- On-street parking close to intersection – *overall*
- Bus stop close to intersection – *southbound far side*
- Small road signs – *overall*
- Fatal collision – *a crossing pedestrian hit by a southbound semi truck around 6:15AM in January 2016*

#17 COLUMBIA STREET & KEARY STREET

SITE OBSERVATION PHOTOS



Northbound far side – facing north
(hospital access close to intersection)



Northbound Approach – facing south
(on-street parking close to intersection)

POTENTIAL IMPROVEMENTS

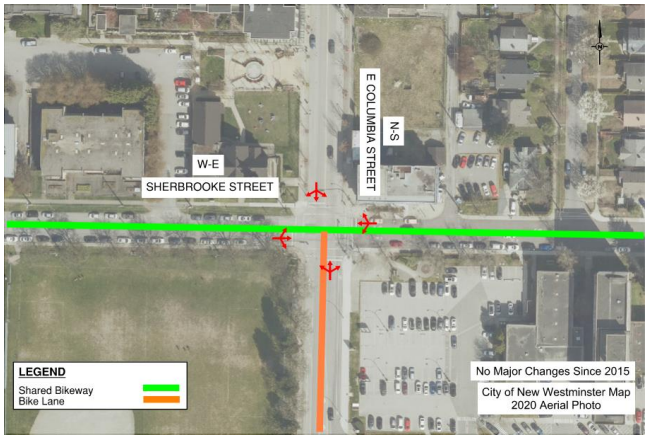
Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Rear-end collisions (overall) *Downhill grade on approaches*	1.1	Short Term	Install anti-skid pavement on steep approaches (southbound)
		1.2	Short Term	Install speed reader board (southbound)
		1.3	Short Term	Enhance police speed enforcement (overall)
		1.4	Short Term	Enlarge signal lenses for traffic signal heads (overall)
2	Sideswipe collisions (overall) *Wide lanes / Access close to intersection*	2.1	Short Term	Install curb extension subject to turning path (eastbound)
		2.2	Short Term	Install overhead sign for right-turn only lane to hospital access (northbound far side)
		2.3	Medium Term	Review the removal of on-street parking close to intersection (northbound/southbound)
3	Pedestrian-involved collisions (overall)	3.1	Short Term	Provide leading pedestrian interval (overall)
		3.2	Short Term	Provide coloured crosswalk markings (overall)
4	Limited traffic signal heads visibility (overall)	4.1	Short Term	Enlarge signal lenses for traffic signal heads (overall) **[Similar to item 1.4]**
		4.2	Short Term	Provide yellow backboard to secondary signal heads (overall)
5	Lack of cycling facilities (northbound/southbound)	5.1	Short Term	Coloured cyclist crossing markings within intersection (north - south directions)

#18 COLUMBIA STREET & SHERBROOKE STREET

INTERSECTION INFORMATION

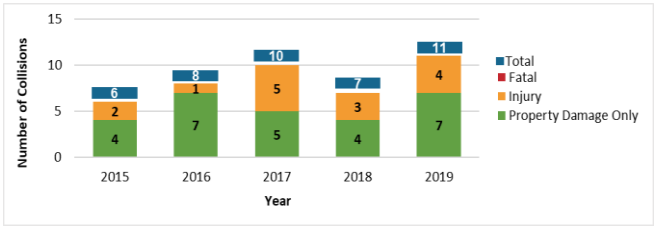
Site Number:	18
Approach Leg:	4-legged
Traffic Control Type:	Signalized
Road Class (N-S):	Collector – Limited Hour Truck Route
Road Class (E-W):	Local
Surrounding Land Use:	Institution/Residential
Daily Traffic Volume (2017):	22,900 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	8.4 per year	(Total = 42)
Collision Severity Index:	4.21	(Casualty = 36%)
Collision Rate OBS. / CRT.:	1.00 / 2.63	Collisions per MEV
Collision with Pedestrian:	4	(9.5% of total)
Collision with Cyclist:	1	(2.4% of total)



Highest % Month:	January (17%)
Average % Weekday / Weekend:	18% / 6%
Highest % Time Period (3 hours):	1200-1500 (33%)
Top 3 Collision Types:	Rear End (39%) Sideswipe (18%) Driveway Related (14%)

Over-Represented Collision:

Casualty:	No
Vulnerable Road User Related:	Yes
Type:	Driveway Related

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- Posted speed limit – *all legs with 30 kilometres per hour*

Geometric:

- Wide lanes – *overall*

Signal:

- Cyclist push button – *westbound and eastbound approaches*
- Limited traffic signal heads visibility – *due to smaller signal lenses for secondary traffic signal heads – overall*

Vulnerable Road User:

- Bike lanes on both sides – *south leg*
- Share bikeway – *east and west legs*
- Lack of cycling facilities – *overall*

Other:

- On-street parking – *west leg*
- Bus stop close to intersection – *southbound far side*

#18 COLUMBIA STREET & SHERBROOKE STREET

SITE OBSERVATION PHOTOS



Eastbound Approach – facing east
(cyclists waiting to cross)



Southbound far side – facing south
(bus stop close to intersection)

POTENTIAL IMPROVEMENTS

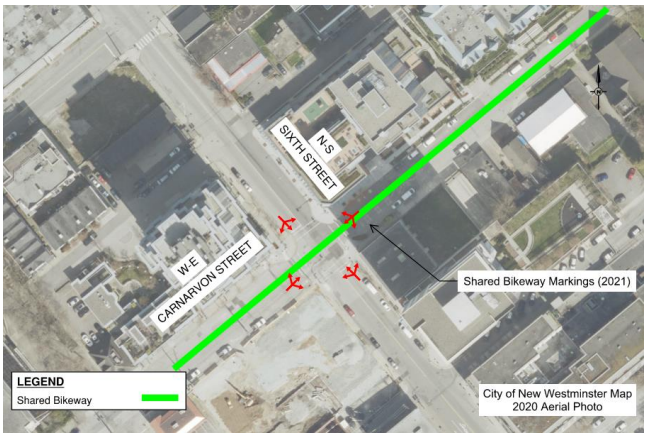
Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Rear-end collisions (northbound/southbound) *Speed limit*	1.1	Short Term	Enlarge signal lenses for traffic signal heads (overall)
		1.2	Short Term	Install speed reader board (northbound/southbound)
		1.3	Short Term	Enhance police speed enforcement (northbound/southbound)
2	Sideswipe collisions (overall) *Wide lane / On-street parking/bus stop close to intersection*	2.1	Short Term	Install curb extension subject to turning path (eastbound/westbound)
		2.2	Medium Term	Review the removal of on-street parking close to intersection (west leg)
3	Limited traffic signal heads visibility (overall)	3.1	Short Term	Enlarge signal lenses for traffic signal heads (overall)
		3.2	Short Term	Provide yellow backboard to secondary signal heads (overall)
4	Lack of cycling facilities (overall)	4.1	Short Term	Coloured cyclist crossing markings at conflict points (overall)

#19 CARNARVON STREET & SIXTH STREET

INTERSECTION INFORMATION

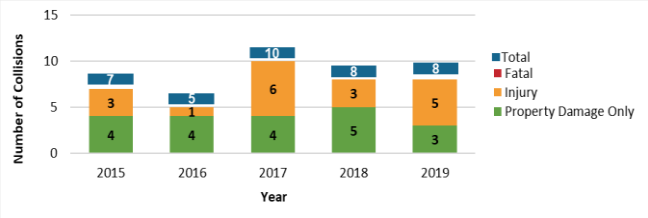
Site Number:	19
Approach Leg:	4-legged
Traffic Control Type:	Signalized
Road Class (N-S):	Collector
Road Class (E-W):	Collector
Surrounding Land Use:	Commercial/Residential
Daily Traffic Volume (2017):	13,000 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	7.6 per year	(Total = 38)
Collision Severity Index:	5.26	(Casualty = 47%)
Collision Rate OBS. / CRT.:	1.60 / 2.77	Collisions per MEV
Collision with Pedestrian:	4	(10.5% of total)
Collision with Cyclist:	1	(2.6% of total)



Highest % Month:	Feastbounduray (18%)
Average % Weekday / Weekend:	18% / 4%
Highest % Time Period (3 hours):	1500-1800 (39%)
Top 3 Collision Types:	Rear End (48%) Sideswipe (24%) Right Angle (12%)
Over-Represented Collision:	
Casualty:	No
Vulnerable Road User Related:	Yes
Type:	Pedestrain Related

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- None

Geometric:

- Steep gradient on approaches – *north and south legs*
- Wide lanes – *eastbound and westbound approaches*
- EV charging station next to intersection – *westbound approach*

Signal:

- Cyclist push button – *westbound and eastbound approaches*
- Limited traffic signal heads visibility – *due to smaller signal lenses (200mm) for secondary traffic signal heads – overall*

Vulnerable Road User:

- Share bikeway – *east and west legs*
- Lack of cycling facilities – *overall*
- High pedestrian crossing activities – *north and east legs*

Other:

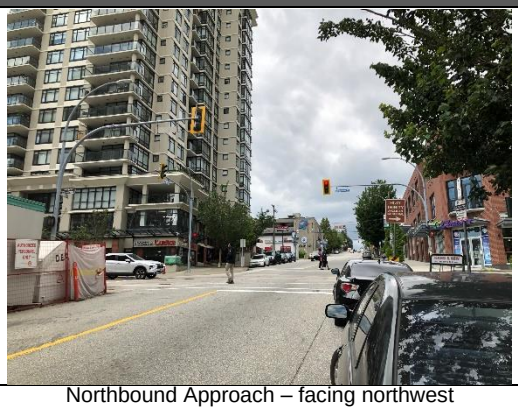
- Future redevelopment – *southwest quadrant*
- On-street parking – *east and west legs*

#19 CARNARVON STREET & SIXTH STREET

SITE OBSERVATION PHOTOS



Westbound Approach – facing southwest
(EV charging station close to intersection)



Northbound Approach – facing northwest
(steep gradient on approaches)

POTENTIAL IMPROVEMENTS

Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Rear-end collisions (overall) *Steep gradient on approaches*	1.1	Short Term	Enlarge signal lenses for traffic signal heads (overall)
		1.2	Short Term	Install anti-skid pavement on steep approaches (southbound)
2	Sideswipe collisions (overall) *Wide lanes / Bus stop close to intersection*	2.1	Short Term	Install curb extension subject to turning path (eastbound)
		2.3	Medium Term	Review the relocation of bus stop that is close to intersection (northbound far side) – Consult with TransLink
3	Right angle collisions (overall)	3.1	Short Term	Enhance police illegal turning movement enforcement (overall)
4	Limited traffic signal heads visibility (overall)	4.1	Short Term	Enlarge signal lenses for traffic signal heads (overall) **[Similar to item 1.1]**
		4.2	Short Term	Provide yellow backboard to secondary signal heads (overall)
5	Lack of cycling facilities (overall)	5.1	Short Term	Install shared bikeway signs (eastbound/westbound)

#20 QUEENS AVENUE & SIXTH STREET

INTERSECTION INFORMATION

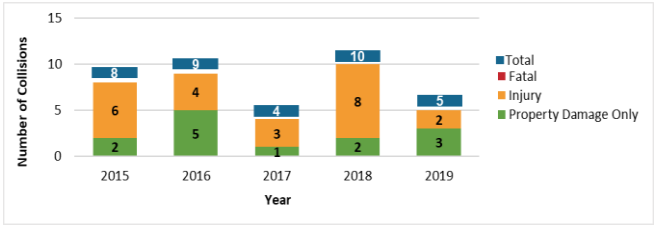
Site Number:	20
Approach Leg:	4-legged
Traffic Control Type:	Stop-controlled – E/W RRFB – N/S
Road Class (N-S):	Collector
Road Class (E-W):	Local
Surrounding Land Use:	Residential/Institution
Daily Traffic Volume (2017):	15,000 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	7.2 per year	(Total = 36)
Collision Severity Index:	6.75	(Casualty = 64%)
Collision Rate OBS. / CRT.:	1.31 / 1.06	Collisions per MEV
Collision with Pedestrian:	2	(5.5% of total)
Collision with Cyclist:	0	(0.0% of total)



Highest % Month:	January (17%)
Average % Weekday / Weekend:	18% / 6%
Highest % Time Period (3 hours):	1500-1800 (56%)
Top 3 Collision Types:	Right Angle (63%) Rear End (16%) Left-turn Crossing (11%)

Over-Represented Collision:

Casualty:	No
Vulnerable Road User Related:	No
Type:	Right Angle, LT Crossing

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- None

Geometric:

- Steep gradient on approaches – *north and south legs*
- Limited sight distance due to on-street parking – *eastbound approach*
- Wide Lanes – *eastbound and southbound approaches*

Signal:

- RRFB – north-south directions

Vulnerable Road User:

- High pedestrian crossing activities – *overall*

Other:

- On-street parking close to intersection – *east leg and west leg*

#20 QUEENS AVENUE & SIXTH STREET

SITE OBSERVATION PHOTOS



Southbound Approach – facing southeast
(crossing pedestrians)



Northbound Approach – facing northwest
(steep gradient on approaches)

POTENTIAL IMPROVEMENTS

Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Rear-end collisions (overall) *Steep gradient on approaches*	1.1	Short Term	Install anti-skid pavement on steep approaches (southbound)
		1.2	Short Term	Install speed reader board in southbound approach
2	Right angle collisions (overall)	2.1	Short Term	Install intersection ahead sign (southbound)
		2.2	Medium Term	Convert to full traffic signal control if warranted (overall)
		2.3	Medium Term	Convert to a roundabout (overall) **[Alternative to item 2.2]**
		2.4	Medium Term	Review the removal of on-street parking close to intersection (eastbound)
3	Left-turn crossing collisions (overall)	3.1	Medium Term	Convert to full traffic signal control if warranted (overall) **[Similar to item 2.2]**
		2.3	Medium Term	Convert to a roundabout (overall) **[Similar to item 2.3]**

#21 TENTH AVENUE & FOURTH STREET

INTERSECTION INFORMATION

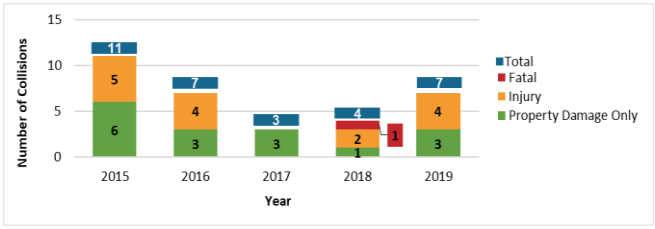
Site Number:	21
Approach Leg:	4-legged
Traffic Control Type:	Stop-controlled for N/S
Road Class (N-S):	Local
Road Class (E-W):	Arterial – MRN – Truck Route
Surrounding Land Use:	Residential
Daily Traffic Volume (2017):	39,500 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	6.4 per year	(Total = 32)
Collision Severity Index:	8.31	(Casualty = 50%)
Collision Rate OBS. / CRT.:	0.44 / 0.94	Collisions per MEV
Collision with Pedestrian:	0	(0.0% of total)
Collision with Cyclist:	0	(0.0% of total)



Highest % Month:	March (22%)
Average % Weekday / Weekend:	18% / 5%
Highest % Time Period (3 hours):	1500-1800 (41%)
Top 3 Collision Types:	Sideswipe (46%) Rear End (31%) Left-turn Opposing (8%)

Over-Represented Collision:

Casualty:	No
Vulnerable Road User Related:	No
Type:	No

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- High through volumes and queues – *east-west directions*
- Congestion/long queues during peak periods – *east-west directions*

Geometric:

- Staggered approaches – *north and south legs*
- Downhill grade on approach – *south leg*

Signal:

- None

Vulnerable Road User:

- Narrow sidewalk – *both sides on 10th Avenue*
- Lack of crosswalk – *north and south legs*

Other:

- Inadequate streetlight – north and south legs
- Fatal collision – *a left-turn opposing collision between eastbound and westbound left-turn vehicles around 8:15AM in June 2018*

#21 TENTH AVENUE & FOURTH STREET

SITE OBSERVATION PHOTOS



Eastbound Approach – facing northeast
(a left-turn vehicle in traffic queue)



Westbound Approach – facing southwest
(a heave vehicle in traffic queue)

POTENTIAL IMPROVEMENTS

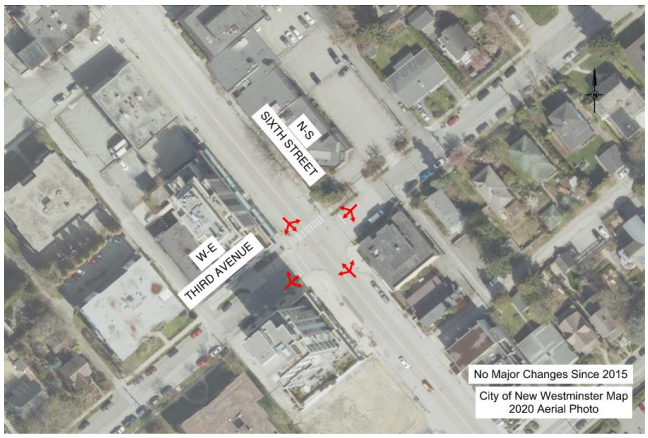
Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Fatal left-turn opposing collision (east-west directions) *High through volumes (east-west directions)*	1.1	Medium Term	Convert Fourth Street to right-in and right-out arrangement (north and south legs)
		1.3	Medium Term	Review the feasibility of left-turn prohibition during peak hours (westbound) **[Alternative to item 2.1]**
		1.4	Long Term	Realign the north-south legs with redevelopment (north and south legs)
2	Inadequate street lighting (north and south legs)	2.1	Short Term	Review and provide adequate streetlight (north and south legs)

#22 THIRD AVENUE & SIXTH STREET

INTERSECTION INFORMATION

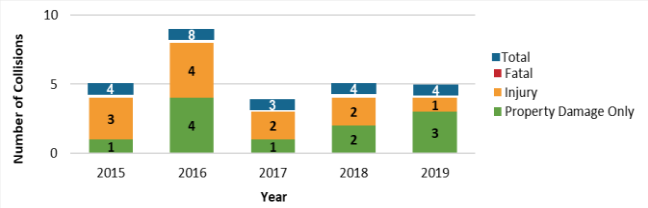
Site Number:	22
Approach Leg:	4-legged
Traffic Control Type:	Stop-controlled – EB/WB
Road Class (N-S):	Collector
Road Class (E-W):	Local
Surrounding Land Use:	Commercial/Residential
Daily Traffic Volume (2017):	12,000 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	4.6 per year	(Total = 23)
Collision Severity Index:	5.70	(Casualty = 52%)
Collision Rate OBS. / CRT.:	1.05 / 1.09	Collisions per MEV
Collision with Pedestrian:	4	(17.4% of total)
Collision with Cyclist:	0	(0.0% of total)



Highest % Month:	December (22%)
Average % Weekday / Weekend:	15% / 13%
Highest % Time Period (3 hours):	1500-1800 (35%)
Top 3 Collision Types:	Sideswipe (40%) Rear End (20%) Pedestrian Related (10%)

Over-Represented Collision:

Casualty:	No
Vulnerable Road User Related:	Yes
Type:	No

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- None

Geometric:

- Steep gradient on approaches – *north and south legs*

Signal:

- None

Vulnerable Road User:

- Lack of crosswalk – *south leg*
- High pedestrian crossing activities – *north, east, and west legs*
- Bus stops close to intersection and affect the visibly of the pedestrians crossing – *southbound and northbound far side*

Other:

- On-street parking – *west and east legs*

#22 THIRD AVENUE & SIXTH STREET

SITE OBSERVATION PHOTOS



Northbound Approach – facing northwest
(steep gradient on approaches)



South Leg Letdown – facing southwest
(Lack of crosswalk marking)

POTENTIAL IMPROVEMENTS

Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Pedestrian related collisions (overall) *High pedestrian crossing activities*	3.1	Short Term	Install curb extension subject to turning path (northeast corner)
		3.2	Short Term	Provide coloured crosswalk markings (overall)
		3.3	Short Term	Convert to special crosswalk, pedestrian signal or RRFB if warranted (overall)

#23 BRUNETTE AVENUE & SHERBROOKE STREET

INTERSECTION INFORMATION

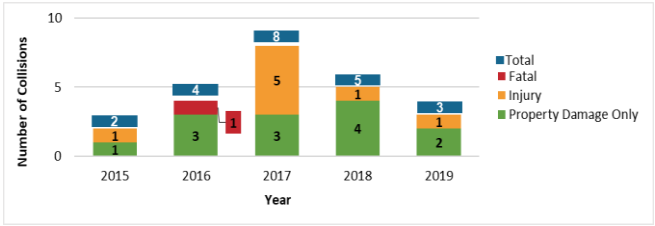
Site Number:	23
Approach Leg:	3-legged
Traffic Control Type:	Stop-controlled – EB Right-in / Right-out
Road Class (N-S):	Arterial – MRN – Truck Route
Road Class (E-W):	Local
Surrounding Land Use:	Commercial/Residential
Daily Traffic Volume (2017):	29,000 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	4.4 per year	(Total = 22)
Collision Severity Index:	8.77	(Casualty = 41%)
Collision Rate OBS. / CRT.:	0.42 / 0.97	Collisions per MEV
Collision with Pedestrian:	0	(0.0% of total)
Collision with Cyclist:	2	(9.1% of total)



Highest % Month:	March (23%)
Average % Weekday / Weekend:	16% / 9%
Highest % Time Period (3 hours):	1200-1500 (41%)
Top 3 Collision Types:	Rear End (47%) Sideswipe (33%) Cyclist Related (7%)

Over-Represented Collision:

Casualty:	No
Vulnerable Road User Related:	No
Type:	No

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- Vehicle speeding during off-peak – *north-south directions*
- Significant heavy and long vehicle volumes – north-south directions along truck route
- High through volumes and queues – *north and south legs*

Geometric:

- Downhill grade – *eastbound approach*
- Skewed approach – *north – south directions*

Signal:

- None

Vulnerable Road User:

- None

Other:

- Observed truck tire marks on sidewalk – *southwest corner*
- Damaged barriers – *eastbound approach*
- Inadequate street lighting – northwest and southwest corners
- Fatal collision – *a cyclist fell from the bike and hit by a northbound truck around 3:25PM in February 2016*

#23 BRUNETTE AVENUE & SHERBROOKE STREET

SITE OBSERVATION PHOTOS



Eastbound Approach – facing northeast
(damaged road barrier)



Southbound Approach – facing north
(high number of heavy vehicles)

POTENTIAL IMPROVEMENTS

Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Rear-end collisions (overall) *Congestion (peak hours) / speeding (off peak)*	1.1	Short Term	Enhance police speed enforcement (overall)
2	Sideswipe collisions (overall)	2.1	Medium Term	Consider closing off Sherbrooke Street (west leg)
3	Damage road barriers (west leg)	3.1	Short Term	Paint road barriers in yellow (west leg)
		3.2	Short Term	Remove road barriers and provide delineators (west leg) **[Alternative to item 4.1]**
4	Inadequate street lighting (northwest and southwest corners)	4.1	Short Term	Review and provide streetlight (northwest and southwest corners)

#24 SIXTH AVENUE & CUMBERLAND STREET

INTERSECTION INFORMATION

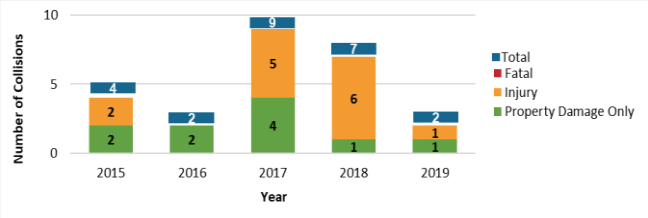
Site Number:	24
Approach Leg:	4-legged
Traffic Control Type:	4 Way Stop-controlled
Road Class (N-S):	Collector (S leg) / Local (N leg)
Road Class (E-W):	Local (E leg) / Collector (W leg)
Surrounding Land Use:	Residential/Institution
Daily Traffic Volume (2017):	18,000 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	4.8 per year	(Total = 24)
Collision Severity Index:	6.25	(Casualty = 58%)
Collision Rate OBS. / CRT.:	0.73 / 1.03	Collisions per MEV
Collision with Pedestrian:	2	(8.3% of total)
Collision with Cyclist:	1	(4.2% of total)



Highest % Month:	May (21%)
Average % Weekday / Weekend:	17% / 8%
Highest % Time Period (3 hours):	1500-1800 (54%)
Top 3 Collision Types:	Rear End (47%) Right Angle (18%) Pedestrian Related (12%)

Over-Represented Collision:

Casualty:	No
Vulnerable Road User Related:	No
Type:	Right Angle

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- High left-turning volumes – *eastbound and northbound approaches*
- High right-turning volumes – *eastbound and southbound approaches*

Geometric:

- Skewed approaches – *overall*
- Wide lanes – all approaches
- Wide curb radius – all approaches

Signal:

- None

Vulnerable Road User:

- Lack of cycling facilities – *north south direction*

Other:

- Inadequate street lighting – *southwest, northwest, and northeast corners*

#24 SIXTH AVENUE & CUMBERLAND STREET

SITE OBSERVATION PHOTOS



Intersection – facing southwest
(a bus making left turn)



Westbound Approach – facing southwest
(existing curb extension)

POTENTIAL IMPROVEMENTS

Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Right angle collisions (overall)	1.1	Medium Term	Convert to full traffic signal control if warranted (overall)
		1.2	Medium Term	Convert to a roundabout (overall) **[Alternative to item 1.1]**
2	Pedestrian related collisions (overall) *Wide lanes*	2.1	Short Term	Install curb extension subject to turning path (overall)
		2.2	Median Term	Install median refuge (overall) **[Alternative to item 2.1]**
3	Lack of cycling facilities (north-south directions)	3.1	Short Term	Paint shared bikeway markings (north and south legs)
4	Inadequate street lighting (southwest, northwest, and northeast corners)	4.1	Short Term	Review and provide adequate streetlight (southwest, northwest, and northeast corners)

#25 LONDON STREET & TWELFTH STREET

INTERSECTION INFORMATION

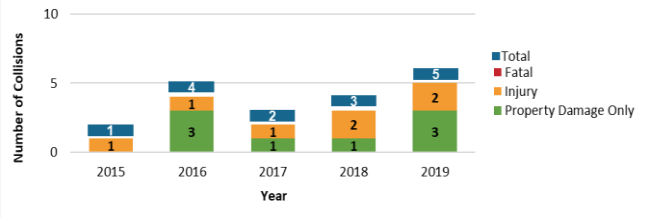
Site Number:	25
Approach Leg:	4-legged
Traffic Control Type:	Stop-controlled – E/W RRFB – N/S
Road Class (N-S):	Collector
Road Class (E-W):	Local
Surrounding Land Use:	Commercial/Residential
Daily Traffic Volume (2017):	15,000 Entering Vehicles

Existing Lane Configurations and Recent Major Change(s):



COLLISION STATISTICS (ICBC 2015-2019)

Collision Frequency:	3.0 per year	(Total = 15)
Collision Severity Index:	5.20	(Casualty = 47%)
Collision Rate OBS. / CRT.:	0.55 / 1.06	Collisions per MEV
Collision with Pedestrian:	2	(13.3% of total)
Collision with Cyclist:	0	(0.0% of total)



Highest % Month:	November (20%)
Average % Weekday / Weekend:	16% / 10%
Highest % Time Period (3 hours):	0600-0900 (27%)
Top 3 Collision Types:	Rear End (33%) Right Angle (22%) Left-turn Crossing (22%)
Over-Represented Collision:	
Casualty:	No
Vulnerable Road User Related:	No
Type:	Right Angle,LT Crossing

FIELD REVIEW OBSERVATIONS (JUNE 2022):

Operational:

- Posted speed limit – *east and west legs with 30 kilometres per hour*

Geometric:

- None

Signal:

- Cyclist push button – *eastbound and westbound approaches*

Vulnerable Road User:

- Substantial pedestrian crossing volumes – east-west directions
- Shared bikeway – *east and west legs*
- Lack of crosswalk markings – *east and west legs*

Other:

- Pedestrian icon on cyclist push button – *eastbound and westbound approaches*
- Observed tire marks on curb extension – *northwest corner*
- On-street parking close to intersection – *north leg*
- Bus stops close to intersection – *southbound far side*

#25 LONDON STREET & TWELFTH STREET

SITE OBSERVATION PHOTOS



Eastbound Far Side – facing east
(on-street parking on both sides)



Northbound Approach – facing northwest
(crossing pedestrians)

POTENTIAL IMPROVEMENTS

Collision Trend / Identified Issue		Potential Countermeasure		
#	Description	#	Timeline	Description
1	Pedestrian-involved collisions (overall)	1.1	Short Term	Install curb extension (east and west legs)
		1.2	Medium Term	Convert to special crosswalk or pedestrian signal if warranted (overall)
2	Right angle collisions (overall)	2.1	Medium Term	Convert to full traffic signal control if warranted (overall)
3	Left-turn opposing collisions (overall)	3.1	Medium Term	Convert to full traffic signal control if warranted (overall) **[Similar to item 2.1]**