



 Department Manager	 Director	 CAO
---	---	--

The Corporation of **THE CITY OF NORTH VANCOUVER**
ENGINEERING, PARKS & ENVIRONMENT DEPARTMENT

INFORMATION REPORT

To: Mayor Linda Buchanan and Members of Council

From: Justin Hall, Manager, Public Realm Infrastructure

Subject: ST. ANDREW'S SAFETY IMPROVEMENT PROJECT – POST
IMPLEMENTATION UPDATE

Date: November 23, 2022 File No: 16-8350-20-0038/1

BACKGROUND

In response to community feedback on persistent speed issues and in light of the prioritized missing sidewalk segments in a high pedestrian generator area, staff initiated the St. Andrew's Safety Improvement Project. The project included two components: sidewalk infill (delivered in 2021) and traffic calming (delivered in 2022). The goal of the traffic calming interventions are to slow driver speeds in alignment with the posted speed limit and discourage cut-through traffic.

In 2020, Council approved lowering the speed limit on St. Andrew's Avenue from East Keith Road to East 13th Street, from 50km/h to 30km/h. Data collected for vehicle speed and volumes before and again after the speed limit change showed no change in driver travel speeds likely due to lack of regular enforcement and the overly wide road condition that made it comfortable for drivers to travel quickly. Generally, driver behaviour is a result of adherence to regulation, reaction to enforcement and constrained by design – with design changes creating the most consistent and sustainable behavioural influence.

Design Approach

To accomplish the goal of aligning driver speed with the posted speed limit, design changes to the street were needed to create conditions for more appropriate driver behaviour. A design was developed in-house by the City's engineering staff. Staff drew from design best practices, as published by various government agencies, and established a number of objectives influenced by community feedback to guide design decisions including:

- Prioritize the safety and comfort of vulnerable road users;
- Utilize materials that are cost effective, easy to install and easy to modify;

- Maintain the permeability of the street (avoid physical restrictions preventing drivers from traveling along the corridor);
- Minimize impact on emergency services; and
- Utilize design components that are familiar to City residents and visitors.

Right-sizing

The design outcome to accomplish the project objectives was to put the street on a “road diet” which is a common tactic in urban settings to reallocate road space based on City priorities. Generally, this can mean narrowing lane widths, as was done on Esplanade, or reducing the pavement widths assigned to vehicles. In both instances, the narrowing of the travel way contributes to a well-studied change in driver behaviour that caused improved driver attention and slow speeds. In the case of St. Andrew's, the design narrowed the functional roadway width from 12 metres to 9.2 metres, which accommodates parking on both sides of the street and a narrowed travel way¹. A narrowed street is commonly referred to as a *yield* street by the National Association of City Transportation Officials (NACTO) or a *queueing* street. A narrowed travel space permits bi-directional travel, but does not create separate travel lanes. This forces drivers traveling in opposite directions to slow down, look ahead and navigate around one another using pullout space at lanes and gaps in parking. These actions make drivers more aware of their surroundings including vulnerable road users, making the street safer and more comfortable for everyone. A narrowed street slows drivers, even if there is no opposing traffic, by creating a more visually constrained street that promotes a greater sense of speed awareness. The new functional width is consistent with neighbouring local streets like Ridgeway and Moody Avenues, meets the intent of the Council approved bylaw² with respect to pavement widths for residential streets and aligns with the design and operation of local streets throughout the region³.

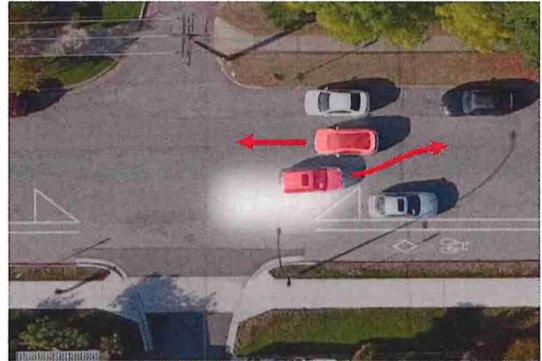


Figure 1: Drivers navigating the narrowed street by utilizing pull out zones and gaps in parking

Safety for Vulnerable Road Users

Narrowing the street creates other benefits for vulnerable road users. As St Andrew's Avenue is part of the City's designated AAA cycling network, the space gained could be reallocated to improve this corridor to AAA standards. Given the consistent grade, limited right of way width, desire to retain street parking and vehicle volumes on the higher end of the range for a local street, the City's Engineers felt the proper local application of the current design standards is to create a parking-protected uphill

¹ A narrowed street is commonly referred to as a *Yield Street* by the National Association of City Transportation (NACTO) or a *queueing street*.

² Pavement width of a local street is described as 8.2m in Schedule C of the Subdivision and Development Control bylaw adopted by Council in 2011.

³ Pavement width for a comparable context throughout the region range from 8.5m in the City's of Vancouver, Burnaby and Richmond up to 9m in the City of Victoria.

mobility lane. In the context of a north-south street with a consistent grade, this design protects cyclists and other mobility device users traveling uphill when the speed difference with drivers is greatest. Cyclists traveling southbound share the lane with other vehicles when their travel speeds will be similar and movements easier to predict for other roadway users. Cyclists traveling downhill must follow the same procedure of navigating around others traveling in opposite directions. This approach applies a design best practice that is familiar to City residents and visitors with examples on 1st Street, East 13th Street and Chesterfield Avenue.

Pedestrians crossing St. Andrew's Avenue also benefit from the roadway narrowing. The mobility lane acts as an extension of the curb that provides additional protection for pedestrians before they begin to cross the street where there is the greatest risk of conflict with drivers. This shortens the actual crossing distance and decreases the amount of time that a pedestrian spends in the vehicle travelled portion of the street. Sightlines have been measured from this crossing point to ensure pedestrians and drivers are visible to one another. The actions to slow driver speeds also ensure drivers have more time to react and reduce the distance needed to stop making crossing the street safer.

Parking and Commercial Activity

During project engagement, the project team heard from the community the value of on-street parking space. From the concept design originally presented to the community, staff adjusted the parking zones to retain more on-street parking and ensure adequate parking was available to visitors of the businesses at the corner of East 8th and St. Andrew's Avenue and Sam Walker Park. Street parking space was provided on both sides of St. Andrew's Avenue throughout the corridor with the exception of the 700 block south of the laneway due to a narrower curb-to-curb width. To compensate for this change, a *Resident Only* parking restriction was added to the east side of the street in this portion of the block.

Maintaining Street Permeability and Emergency Response

Access restrictions consistent with best practices for an all ages and abilities neighbourhood mobility route were not considered when developing the design for St. Andrew's Avenue. While this approach could achieve the desired goal of slowing driver speed and discouraging cut-through traffic, these types of changes can have cascading effects when not approached at a neighbourhood level. This can result in a significant change for residents and visitors trying to navigate the neighbourhood or divert traffic onto other streets like Ridgeway Avenue. It may have also created more challenging conditions for the local neighbourhood businesses to succeed.

Speed humps are a common traffic calming tool to help slow drivers. Staff apply speed humps selectively as they slow all vehicles effectively including emergency responders. In the St. Andrew's design, speed humps were strategically placed to create raised crosswalks at the busiest pedestrian crossings where they would create the greatest value. A focused approach to their application minimizes the impact to emergency response times.

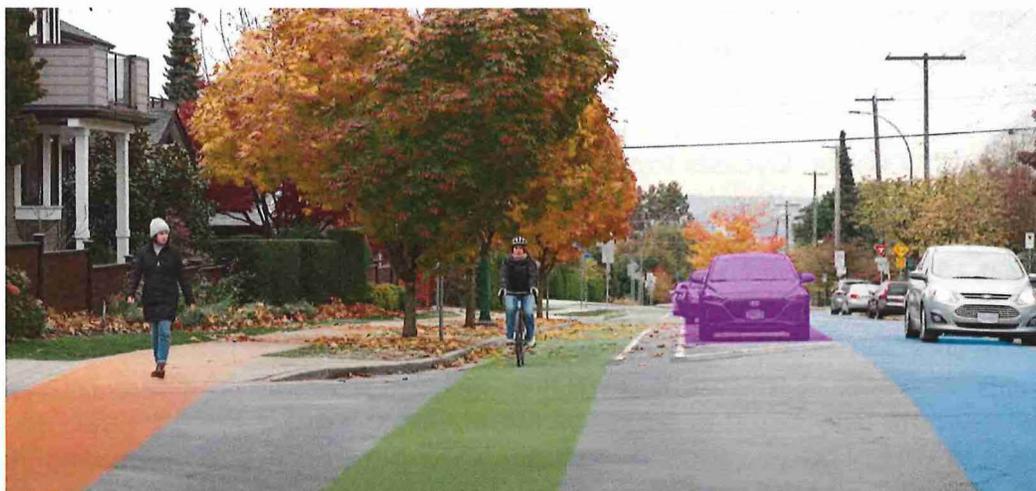


Figure 2: Creating space and balancing the needs of all roadway users

Design Peer Review

Following implementation, a third party engineering firm was retained to review the design and offer recommendations for further improvement. The peer-review process is an important tenet of the engineering profession to ensure design best practices are being applied appropriately. The consulting firm has begun to assemble preliminary feedback after completing a review of the design drawings and site visit. Early feedback has included:

- Advising of minor alterations to pavement marking and signage to continue to improve the legibility of the street;
- Additional investment in a raised crosswalk at 11th Street to slow driver speeds at the northern part of the corridor;
- Further deployment of quick build materials like delineators to further constrict large open areas of asphalt at intersections.

Data Collection and Monitoring

Post implementation, the project team has spent a considerable amount of time on the street verifying that the changes have been implemented correctly and the street is functioning safely. Driver speed and traffic volume has been collected on St. Andrew's Avenue at multiple stages throughout the project: the prior condition with a 50km/h speed limit, after signage was erected to change the speed limit to 30km/h and finally after changes were made to the roadway configuration to encourage compliance with the speed limit. Data was collected at three locations along St. Andrew's Avenue for a minimum of two weeks to gather a representative sample.

Changing the speed limit on St. Andrew's Avenue without changes to the road design had negligible

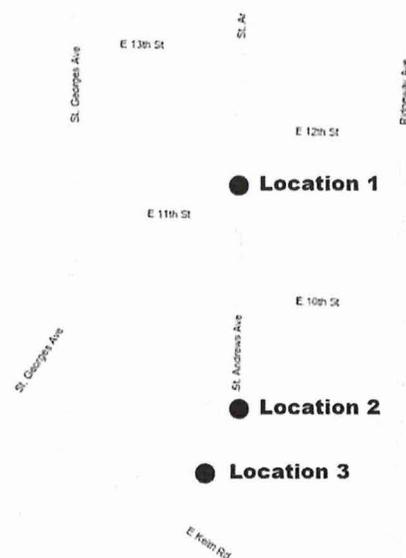


Figure 3 St Andrews Count Locations

impact to 85% driver speed – this is the industry standard methodology for assessing traffic speeds and describes the speed that 85% of drivers traveling at or lower. When changes were made to the street configuration that narrowed the street, it generated a 10% to 16% decrease in driver speed through the corridor.

Location 1 – Between 11th & 12th Streets	Southbound	Change	Northbound	Change
Baseline	43km/h		45km/h	
30km/h Speed Limit	40km/h	-7%	44km/h	-2%
30km/h Speed Limit + Changes	36km/h	-16%	40km/h	-11%

Location 2 – Sam Walker Park	Southbound	Change	Northbound	Change
Baseline	35km/h		38km/h	
30km/h Speed Limit	34km/h	-3%	37km/h	-3%
30km/h Speed Limit + Changes	31km/h	-11%	32km/h	-16%

Location 3 – Between Keith & 8th Street	Southbound	Change	Northbound	Change
Baseline	39km/h		39km/h	
30km/h Speed Limit	36km/h	-8%	38km/h	-3%
30km/h Speed Limit + Changes	34km/h	-10%	35km/h	-13%

Location 1 at the north end of the corridor continues to have higher speeds in part due to lower parking occupancy to create the intended effect of constricting the street and lower volumes generating fewer driver interactions. Speeds at Locations 2 & 3 are aligned with driver speeds observed on Ridgeway and Moody Avenues. When looking at average driver speed for Locations 1, 2 & 3, speeds fall to 33km/h, 25km/h and 29km/h respectively. Reducing driver speed in the southern portion of the corridor is particularly important as the park and café function as a focal point for the community generating higher pedestrian activity. It also falls along popular walking routes to Ridgeway Elementary School with children regularly traveling along and crossing St. Andrew's Avenue in this area. Studies have shown pedestrians struck by a motor vehicle traveling 30km/h are eight times more likely to survive compared to when struck by a vehicle traveling 50km/h. Drivers traveling slower can stop more quickly and have more time to react which reduces the probability of collisions with other road users.

Traffic Volume (vehicles per day)	Baseline*	30km/h Speed Limit**	30km/h Speed Limit + Changes
Location1	1582	840	832
Location2	1756	1155	1119
Location3	2180	1393	1378

* Between the baseline and 30km/hr signage data collection periods access restrictions were added to 13th at St. Andrew's Avenue that prevented north-south movements and left turns onto the street.

** Collected during summer 2020 when traffic volumes were generally low throughout the region

Staff tested a hypotheses that cut-through traffic attempting to bypass the St. George's Avenue and Keith Road intersection was using East 6th Street and St. Andrew's Avenue. This might have explained higher traffic volumes in the southern area. This hypotheses was not supported by data and the higher traffic volume appears to be generated by the commercial establishments at 8th Street and St. Andrew's Avenue with drivers entering and exiting the area from Keith Road.

Traffic volumes on St. Andrew's Avenue have fallen within the typical volume for a local street (less than 1,500 vehicles per day). Local streets that are also identified as a neighbourhood or AAA bike route are held to a higher standard of having less than 1,000 vehicles per day to be comfortable for cyclists and other mobility device users. Noting that many local streets, like the Adanac bike route in Vancouver, are not able to consistently achieve low enough volumes to qualify as AAA. Traffic volumes in the southern portion of the St. Andrew's corridor remain higher than desirable; however, the current street design helps to address user comfort. Providing an uphill mobility lane protects users when the speed difference with drivers is greatest. Cyclist traveling southbound share the travel lane with other vehicles when their speeds are more closely aligned making them more visible and predictable for others using the road. Alternative traffic volume reduction arrangements would require significant changes to traffic patterns and access to the area. This could have significant impact on the local neighbourhood businesses.

Community Feedback

After installation began in late July, staff have feedback from residents in the neighbourhood about the new design for the street. The most common themes have been:

- Drivers having issues navigating the street with some confusion with cars parked further into the road protecting the mobility lane;
- Sightlines for pedestrian at intersections;
- Parking changes reducing short term opportunities for commercial customers;
- Specific parking loss in the southern half of the 700 Block;
- Vulnerable road users have felt more comfortable walking and rolling on the street; and
- Users reporting that the new street design creates a better balance of space between users.

Staff have worked to educate those reaching out on the design approach, have spent significant time onsite with those wishing to discuss the project and are working to ensure accurate information is available on the City's webpage. It is common to have a period of adaptation as the community adjusts to a new condition.

Re-engaging the Community

The project team has developed an engagement strategy to re-connect with the community in the new year. Engagement will focus on understanding the experience of people using St. Andrew's Avenue to establish if refinements are needed based on the feedback from lived experience gained from using the street. Key communication tools will use Let's talk to ensure residents can participate in providing feedback on a schedule that works for them and small in-person meetings should that feel necessary to facilitate two-way information sharing. Staff will also continue engaging the business owners to ensure deliveries can be received safely and efficiently. This may include establishing a special delivery zone.

In the interim, staff will publish an educational video highlighting the features of the new roadway configuration and instructions for drivers on how to navigate it safely.

A report back to Council following community engagement will follow with staff's recommendations for the street.

RESPECTFULLY SUBMITTED:



Justin Hall
Manager, Public Realm Infrastructure