



Staff Report for Council Meeting

Date of Meeting: March 11, 2020

Report Number: SRPRS.20.033

Department: Planning and Regulatory Services
Division: Development Engineering & Transportation

Subject: **SRPRS.20.033 - Pedestrian Crossing
Improvements on Castle Rock Drive at Mayvern
Crescent**

Purpose:

The purpose of the report is to address concerns from the area residents regarding pedestrian safety crossing at Castle Rock Drive and Mayvern Crescent (north intersection) and seek Council approval for recommended remedial measures.

Recommendation(s):

- a) That the installation a Level 2 Type C pedestrian crossover be approved for the north intersection of Castle Rock Drive at Mayvern Crescent;
- b) That a budget in the amount of \$65,000 be approved to implement the crossover identified in a) and any related works identified in staff report SRPRS.20.033; and
- c) That the budget identified in b) be funded from the Federal Gas Tax Reserve Fund.

Contact Person:

Habibur Rahman, Traffic Analyst, Development Engineering, 905-771-5447 and/or
Hubert Ng, Acting Transportation Manager, Development Engineering, 905-771-6501

Report Approval:

Submitted by: Kelvin Kwan, Commissioner of Planning and Regulatory Services

Approved by: Mary-Anne Dempster, Interim City Manager

All reports are electronically reviewed and/or approved by the Division Director, Treasurer (as required), City Solicitor (as required), Commissioner and City Manager. Details of the reports approval are attached.

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Background:

The Local Ward Councilor initiated requests in 2019 to investigate the implementation of traffic safety improvements on behalf of residents in the vicinity of Tannery Park and the intersection of Castle Rock Drive and the northerly end of Mayvern Crescent.

Tannery Park provides recreational amenities including junior/senior play apparatus, tennis courts, a lawn/winter skating rink, passive circuit walkway etc. to service residents in the surrounding area. There is a trail that runs through the park which connects to Castle Rock Drive, opposite Mayvern Crescent. A number of residents have expressed concerns about crossing Castle Rock Drive to access this trail connection to the park and playground.

Castle Rock Drive is a local residential road that extends from Weldrick Road West to Avenue Road. The local road has a two-lane cross section with 20.0 metre right-of-way and 8.5 metre pavement width. Sidewalks are located on both sides of Castle Rock Drive. The posted speed limit for this road is 40 km/h. The average daily traffic volume is approximately 2,500 vehicles.

Mayvern Crescent is also a local residential road and is under stop control at both north and south approaches to Castle Rock Drive. A sidewalk is located on the south side of the road at the subject intersection. The roadway operates at a default speed limit of 50 km/h and experiences an average daily traffic volume of approximately 300 vehicles.

Data Collection and Data Analysis

Staff conducted turning movement counts on Castle Rock Drive at Mayvern Crescent (north leg) to assess warrants for potential all-way stop control (AWSC) condition at the intersection on March 26, 2019. This analysis was based on the AWSC criteria in the Ontario Traffic Manual (OTM) Book 5. The assessment result found that both the minimum vehicle volume on all approaches of the intersection and the minimum volume split for the side road (Mayvern Crescent) did not meet the requirements. Both the requirements must be satisfied in order to justify an AWSC.

Furthermore, there were no collisions at the intersection on file within the past three years that would be susceptible to correction by the installation of all-way stop controls. In order to implement an all-way stop controlled intersection based on collision thresholds, at least four intersection related accidents per year over three consecutive years must occur.

Based on the assessment results, it was concluded that none of the minimum requirements necessary to warrant all-way stop controls at this intersection are satisfied.

However, given the focus of resident concerns, staff also assessed pedestrian and traffic volumes along Castle Rock Drive at Mayvern Crescent to determine if an east-west pedestrian crossover (PXO) this intersection would be warranted.

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As such, further data collection was undertaken on October 11, 2019. Using the data collected, a PXO warrant assessment was performed for this location, in accordance with OTM Book 15.

Motorist and pedestrian sightlines, motorist/pedestrian interactions, pedestrian activities and types of users were also assessed for this location.

A PXO assessment is a tool that takes into account the highest four-hours of pedestrian volumes and vehicle volumes, distance from other traffic control devices, and system connectivity. The technical criteria for the installation of a PXO is shown below, along with the assessment results.

Criteria/Standard	Threshold Value	Observed Value	Criteria Met
Four hour traffic volume	395	750	100% met
Four-hour pedestrian volume *Seasonally adjusted value	65	58/67	100% met
Distance from nearest traffic control device	200 m	180 m	90% met

Based on the warrant assessment, the subject location at the intersection of Castle Rock Drive and Mayvern Crescent exceeds the minimum criteria for vehicular traffic volumes and pedestrian volumes, but is slightly below the minimum distance criterion at 90%. Although the minimum distance criteria is not absolutely 100% met, it is very close at 90%.

It should also be noted that the observed pedestrian volume is based on counts collected in the fall, when pedestrian volumes may be slightly lower. In order to determine peak pedestrian demand, seasonal volume adjustments were applied. Staff identified through the review of other similar data and industry practices that the pedestrian volume is generally 10% to 20% higher during the summer months than it is during the fall and winter. Given the context of this situation and the usage of this park, staff applied a peak factor of 15% to the observed fall pedestrian volumes to estimate the peak summer demand. Based on this adjustment, the pedestrian volume criterion would be fully met.

Notwithstanding the peak demand would likely occur in the summer, the park and playground are well utilized throughout the year and there is a clear pedestrian desire line from Mayvern Crescent to the Tannery Park access on Castle Rock Drive.

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Furthermore, a significant portion of the crossing activity is by children, which are considered vulnerable road users, and are generally more susceptible to pedestrian-vehicle conflicts.

The majority of east-west pedestrian crossings between the residential neighbourhood and Tannery Park occurred along the south leg of the intersection, as there is no sidewalk on the north side of Mayvern Crescent. Hence, the south leg of the Castle Rock Drive and Mayvern Crescent intersection demonstrates a clear desire line for pedestrian crossing activities.

As such, based on the pedestrian and vehicle volumes and the context specific factors noted above, staff recommend that a pedestrian crossover be implemented at the south leg of the Castle Rock Drive and Mayvern Crescent intersection.

Selection of the Type of Pedestrian Crossover

The appropriate type of pedestrian crossover treatment is selected based on four criteria:

1. Four-hour two-way vehicular volumes of the roadway at the location of the crosswalk;
2. Posted speed limit of the roadway;
3. Total number of lanes for the roadway cross section; and
4. Presence of raised pedestrian refuge.

The four-hour vehicular volumes along Castle Rock Drive is approximately 750 vehicles. The posted speed limit is 40 km/h for the two-lane road. There is no raised pedestrian refuge in the area. Based on the matrix of facility types in OTM Book 15, a Level 2 Type D pedestrian crossing is the minimum treatment warranted for this location. This is based on the assumption that the lane widths for the two-lane road only range from 3.0 m to 3.75 m (or a maximum crossing distance of 7.5 m over two vehicular lanes).

However, the pavement width, or pedestrian crossing distance, on Castle Rock Drive is actually greater than 7.5 m (approximately 8.5 metres). As such, there is a need to enhance the level by providing a higher level of pedestrian crossing facility. Therefore, staff recommends a Level 2 Type C pedestrian crossing treatment for the subject location as it reflects the required crossing distance more appropriately.

The Level 2 Type C pedestrian crossover will consist of zebra pedestrian pavement markings, appropriate regulatory signage, and actuated double-sided rectangular rapid flashing beacon with pedestrian pushbutton.

As this pedestrian crossover is situated at the Mayvern Crescent and Castle Rock Drive, the provision of a higher order facility with rapid flashing beacons should also help to provide greater clarity to motorists on the operation of the intersection and when they need to stop.

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Minor sidewalk extensions and driveway curb modification are also required to properly facilitate the Pedestrian Crossover facility.

A clear area of 65 m is required on each approach to the crosswalk in order to improve visibility and safety for the users of the pedestrian crosswalk. Attachment 1 provides an illustration of the recommended crosswalk, its configuration, required signage, and sidewalk extensions.

Financial/Staffing/Other Implications:

The implementation of the Level 2 Type C pedestrian crossover and the sidewalk extensions/curb modifications at the Castle Rock Drive and Mayvern Crescent intersection are estimated to cost approximately \$65,000. It is recommended that the Federal Gas Tax Reserve Fund be the source of funding for this project.

Relationship to the Strategic Plan:

The recommendations of this report are consistent with the City's Strategic Plan to enhance community safety. The recommendations meet Goal One and Goal Two of the City's Strategic Plan of providing "stronger connections" in Richmond Hill by improving the function of buildings, streets, and neighbourhoods and by providing "better choices" of mobility for residents with respect to active transportation.

Conclusion:

Staff recommend the implementation of an east-west pedestrian crossover at the south leg of the northerly intersection of Castle Rock Drive and Mayvern Crescent in order to provide better access between the residential neighbourhood and Tannery Park. Based on the criteria established in the Ontario Traffic Manual Book 15, a Level 2 Type C pedestrian crossover, consisting of zebra crossing pavement markings, appropriate signage and actuated double-sided rectangular rapid flashing beacon with pedestrian pushbutton is recommended as a remedial measure at this location. Minor sidewalk extensions and curb modifications are also recommended to facilitate this crossing improvement.

Attachments:

The following attached documents may include scanned images of appendixes, maps and photographs. If you require an alternative format please call the contact person listed in this document.

- Attachment 1: Pedestrian Crossing Improvements at the Castle Rock Drive and Mayvern Crescent intersection.

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Report Approval Details

Document Title:	SRPRS.20.033 - Pedestrian Crossing Improvements on Castle Rock Drive at Mayvern Crescent.docx
Attachments:	- Attachment 1.pdf
Final Approval Date:	Feb 28, 2020

This report and all of its attachments were approved and signed as outlined below:

Dan Terzievski - Feb 25, 2020 - 1:52 PM

Kelvin Kwan - Feb 25, 2020 - 1:56 PM

David Dexter - Feb 25, 2020 - 3:05 PM

MaryAnne Dempster - Feb 28, 2020 - 2:57 PM