



**A Complete Streets Approach To  
Shellard Lane Reconstruction  
City of Brantford**

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## 1.0 The Complete Streets Approach

The Shellard Lane corridor is an important arterial roadway link in the City of Brantford. The road provides an east-west connection from the Brantford West City Limits to Colborne Street West, providing access to the Shellard Lane Neighbourhood (ref. Figure 1).



**Figure 1: Limits of Class Environmental Assessment**

The need and justification for improvements to the Shellard Lane corridor were established in the Brantford Transportation Master Plan (February 2007). The City of Brantford's Master Plan includes a recommendation to incorporate a Complete Streets approach to road reconstruction.<sup>1</sup>

Complete Streets are designed for all road users. Transport corridors have constantly been evolving to network people, places, and products. Urban corridors designed to include active transportation pathways promote healthy lifestyles and offer an alternative for residents to get around their communities. Providing active transportation infrastructure provides both health and social benefits.

Active Transportation refers to all human-powered forms of transportation, in particular walking and cycling. It includes the use of mobility aids such as wheelchairs, and can also encompass other active transport variations such as in-line skating, skateboarding, cross-country skiing, and even kayaking. Active transportation can also be combined with other modes, such as public transit.<sup>2</sup>

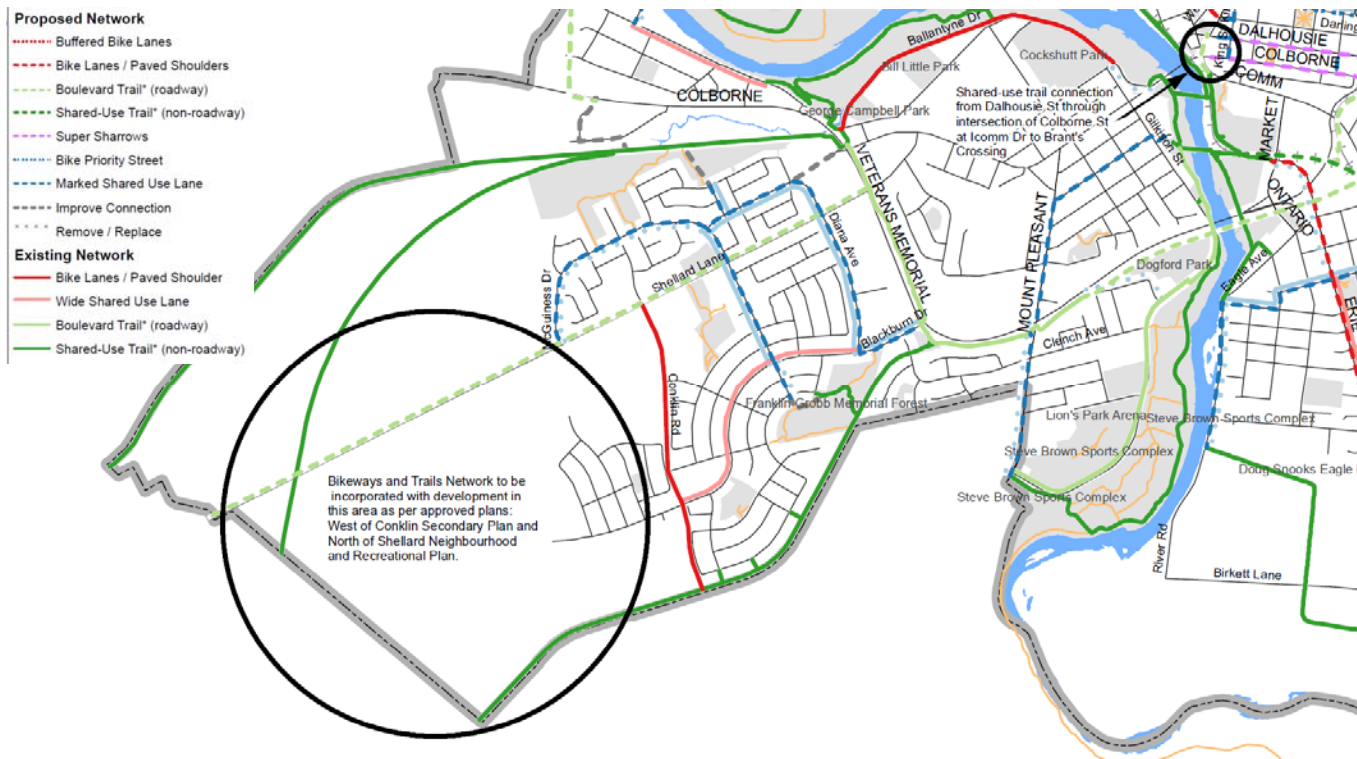
One of the key elements of planning effective active transportation infrastructure is connectivity, the measure of the efficiency of a transportation network. It refers to the directness of transportation links and the number of connections in the path or road network.<sup>3</sup> By designing active transportation infrastructure to be highly connective, people will be drawn to use it. The City of Brantford's Transportation Master Plan, Update 2007, provides a recommended cycling

<sup>1</sup> 2007. "Encouraging Shifts to Walking and Cycling." In *City of Brantford Transportation Master Plan Update*. Brantford, ON: Pp. 4-6.

<sup>2</sup> 2011. "Introduction." In *Active Transportation in Canada, a Resource and Planning Guide*. Transport Canada. Ottawa, ON. Pp. 1.

<sup>3</sup> 2011. "Key Terms." In *Active Transportation in Canada, a Resource and Planning Guide*. Transport Canada. Ottawa, ON. Pp. 5.

and trail network plan for the entire city.<sup>4</sup> In the Southwest portion of the City, Shellard Lane is designated to have on-road bike lanes linking the T.H.&B. Rail Trail in the west to existing multi-use trail on Veterans Memorial Parkway in the east.



**Figure 2: Southwest Brantford Active Transportation Network**

The Geometric Design Standing Committee of the Transportation Association of Canada is concerned with the geometric design of facilities for all modes of road transportation, including motor vehicles, bicycles and pedestrians, and its influence on capacity, operation, maintenance, safety, aesthetics and environmental and socio-economic impacts.<sup>5</sup> Key elements of the Shellard Lane geometric design, including horizontal and vertical alignments, taper lengths, sight distance lines, the lane width and horizontal clearance of the multi-use trail were defined using TAC's Geometric Design Manual for Canadian Roads (1999).

Integrating the complete streets approach to the Shellard Lane design is consistent with the City of Brantford's Official Plan. The City forecasts significant population growth in the southwest area of the City. The official plan designates lands north of Shellard Lane for mixed residential, institutional, commercial and recreational purposes. Existing and future active transportation routes in these subdivisions, together with the Shellard Lane Corridor, will create a network for

<sup>4</sup> 2007. "Figure 5.5 - Recommended Cycling and Trail Network Plan." In *City of Brantford Transportation Master Plan Update*. Brantford, ON: Pp. 5-15.

<sup>5</sup> Transportation Association of Canada. *Geometric Design Standing Committee* [online]. [Viewed 16 April 2015.] <http://tac-atc.ca/en/councils-and-committees/chief-engineers-council/geometric-design-standing-committee>

residents that will allow them to move throughout the neighbourhood safely and comfortably. The City of Brantford completed a “Multi-Use Trail/Bikeway Implementation and Design Plan” in March 2000. Since 2000, the City has been successful in implementing many of the proposed off-road cycling / trail facilities. The City has an extensive off-road cycling network that is oriented around the recreational areas on both sides of the Grand River and a multi-use trail has also been incorporated into the existing right-of-way along Wayne Gretzky Parkway, which allows for off-road cycling, walking, and rollerblading within this multi-modal transportation corridor.<sup>6</sup>

City of Brantford Transportation and Parking Services were consulted during the planning process to ensure connectivity of the active transportation pathways with the existing municipal transit route on Shellard Lane. All ages groups, from children to seniors, will reap the benefits of active transportation in their community.

Collision data for Shellard Lane was collected prior to the Class Environmental Assessment and reviewed for recommendations in the Environmental Studies Report. Collision data is continually being monitored and recorded in the City of Brantford’s database. Collision data provides the core information for analyzing safety history, identifying instances where drivers, vehicles, and roadway conditions failed to function properly.

The signalized intersection of Shellard Lane and Colborne Street West was ranked as the twelfth highest collision location in 2011 out of one hundred signalized intersections within the City of Brantford. The signalized intersection of Veterans Memorial Parkway was ranked thirty-eighth within the City of Brantford. The intersections of Shellard Lane with Colborne Street West has higher than typical collision rates. Two pedestrian/vehicle collisions have occurred on Shellard Lane in the past 5 years; one collision at Shellard Lane and Colborne Street West and one collision at Shellard Lane and Killarney Street.

Traffic counts were completed for not only the roadway of Shellard Lane but also the existing sidewalks for the Class EA. This was done in order to justify need for cycling facilities and for pedestrian routes through the corridor. Pedestrian volumes were determined as part of the traffic counts completed for this study. The highest pedestrian volumes during the weekday afternoon peak hours were observed between Flanders Drive and Conklin Road, generated by the three schools present within this stretch of Shellard Lane: Assumption College High School, Ryerson Heights Elementary School and St. Gabriel Catholic Elementary School. In general, lower volumes of pedestrian activity were observed east of Killarney Street and west of Conklin Road.

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<sup>6</sup> 2007. “Walking/Cycling Trail Network.” In *City of Brantford Transportation Master Plan Update*. Brantford, ON: Pp. 2-23.

## 2.0 Problem Statement

Amec Foster Wheeler Environment & Infrastructure was retained by the City of Brantford to complete a Class Environmental Assessment for Shellard Lane from the west city limit to Colborne Street West. The study identified and evaluated a variety of reconstruction and widening alternatives to help meet all forecasted road user transportation needs generated by the build-out of the Southwest Development Area. Based on a review of existing and future conditions, as well as consultation with stakeholders, it was concluded that improvements should be implemented to address the following needs:

- ▶ Accommodate existing and future (projected 2027) traffic demand;
- ▶ Accommodate proposed future adjacent land-use;
- ▶ Incorporate a complete streets approach with active transportation facilities to accommodate pedestrian and cyclist movements throughout the corridor;
- ▶ Address traffic operations and safety related access to residential, commercial and institutional entrances;
- ▶ Incorporate new facilities for an existing bus transit route;
- ▶ Enhanced streetscaping including traffic calming features;
- ▶ Accommodate pedestrian crossing safety issues as Assumption College/Assumption Plaza;
- ▶ Address sight distance issue on Shellard Lane west of Flanders Drive; and
- ▶ Address drainage deficiencies and opportunities for stormwater management.

The existing Shellard Lane Corridor was a 2 lane partially urban, partially rural undivided arterial roadway with a posted speed limit of 50 km/h. The forecasted growth in traffic volume revealed that the existing number of lanes would prove to be insufficient. The existing corridor had sidewalk on both sides and provided no facilities for cyclists.

One of the pedestrian safety challenges identified at the onset of the detailed design phase was the issue of students crossing Shellard Lane from Assumption College High School to Assumption Plaza. Input from school officials and observations during the preliminary design identified that a high number of mid-block pedestrian crossings take place. The observations also noticed that some motorists travelling in the eastbound and westbound directions had to stop abruptly as some pedestrians did not wait for a suitable gap within the traffic stream. These mid-block crossings by students posed a significant pedestrian safety and collision risk. During the detailed design phase the project team consulted with the principal of Assumption College as well as the owner of Assumption Plaza to develop a workable solution.





***Figure 3: Design Challenge; Students crossing Shellard Lane from Assumption College***

## **The Project Team**

The Project team included members of City of Brantford Staff and Amec Foster Wheeler Environment & Infrastructure. Notable contributions to the project were provided by:

- ▶ Vic Bohdanow, P.Eng., Design Engineer, Engineering Services, City of Brantford
- ▶ Russ Loukes, Director, Engineering Services, City of Brantford
- ▶ Wendy Teufel, Manager, Design & Construction, City of Brantford
- ▶ Norma Wood, C.E.T., Supervisor, Transportation & Parking Services, City of Brantford
- ▶ David Sinke, P.Eng., Principal Engineer, Amec Foster Wheeler E&I
- ▶ Wayne Floren, Senior Technologist, Amec Foster Wheeler E&I
- ▶ David Di Pietro, E.I.T., Designer, Amec Foster Wheeler E&I
- ▶ Edd Boyd, Site Inspector, Amec Foster Wheeler E&I

### 3.0 Alternatives

The following planning alternatives have been identified for consideration in addressing the problems and opportunities discussed above:

**Alternative 1: Do Nothing:** Maintain Shellard Lane in its present configuration as a two-lane road. Continue regular maintenance and periodic resurfacing of the roadway.

**Alternative 2: Alternative Routes:** Improve adjacent roadways to accommodate the projected future traffic demand for Shellard Lane.

**Alternative 3: Widen to Three Lanes** with Intersection Improvements.

**Alternative 4: Widen to Four Lanes** from Veterans Memorial Parkway to Conklin Road.

**Alternative 5: Widen to Four Lanes** from Veterans Memorial Parkway to Street C.

**Alternative 6: Transit Service Improvements:** Improve existing public transit service within the City of Brantford to encourage a shift in modal choice from automobile to public transit.

**Alternative 7: Travel Demand Management (TDM):** Shift travel behaviour to reduce peak hour vehicular traffic demand, including facilitating active modes of transportation such as walking and cycling.

**Alternative 8: Combine alternatives 3, 4 or 5, plus 6 and 7** to increase the overall effectiveness of individual alternatives and reduce environmental impacts.

The preliminary recommended Planning Solution was Alternative 8, as it would address the identified needs while minimizing impacts. Alternatives 3, 4 and 5 are carried forward for further evaluation.



## 4.0 Consultation

The project team consulted with various agencies during the project including:

- ▶ City of Brantford Parks and Recreation;
- ▶ City of Brantford Engineering Services;
- ▶ City of Brantford Transportation and Parking Services;
- ▶ Utility companies;
- ▶ Shellard Neighbourhood Association;
- ▶ Brantford Multi-Use Trail and Bikeway Advisory Committee;
- ▶ Grand River Conservation Authority;
- ▶ Ministry of the Environment and Climate Change;
- ▶ County of Brant; and
- ▶ Residents within the area, via multiple Public Information Centres.

Public comment was critical in the evaluation of cross section design alternatives throughout the corridor. Through the public consultation process the project team were lead to balance the interests of active transportation and vehicular transportation. The City's planning documents recommended the provision of two 1.5m wide on-road bicycle lanes west of Conklin Road.

Due to space constraints, implementation of the preferred planning approach for active transportation proved to be difficult. Provision of two 1.5m wide bike lanes with two 2.0m wide sidewalks provides an overall active transportation width of 7m. A 2.0 sidewalk and a 3.0m multi-use trail, with an overall active transportation width of 5.0m could be better accommodated within the constrained sections of the corridor. Public consultation revealed that multi-use trails were more suitable than on-road facilities for the local users (elementary school students and young families with children). Multi-use trails provide recreational opportunities and may also be appropriate in providing a direct cycling commuter route in corridors not served directly by on-road cycling facilities.<sup>7</sup> Users of complete streets should feel safe, comfortable, and infrastructure should be accessible, to all age types and abilities.

However, this meant that decisions would need to be made regarding which side to construct the multi-use trail, or alternatively, if a multi-use trail should be constructed on both sides of the roadway.

The option to have multi-use trails on both the north and south sides of Shellard Lane was proposed by several public stakeholders, in order to better accommodate student cyclists, as there are schools on both sides of the roadway. However, other residents felt that having two multi-use trails would eliminate the potential for seniors to avoid higher speed users and cause safety issues for more vulnerable, less mobile users. Consequently, it was recommended that only one multi-use trail would be constructed and that it would be constructed on the north side, and that a sidewalk would be constructed on the south side. The north side of Shellard Lane

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<sup>7</sup> 2014. "Off-Road Multi-Use Trail." In *Ministry of Transportation Ontario Bikeways Design Manual*. Ontario. Pp. 2-14.

was the logical location to construct the multi-use trail, to provide direct continuity to the major planned community complex on the north side of Shellard Lane, west of Conklin Road.

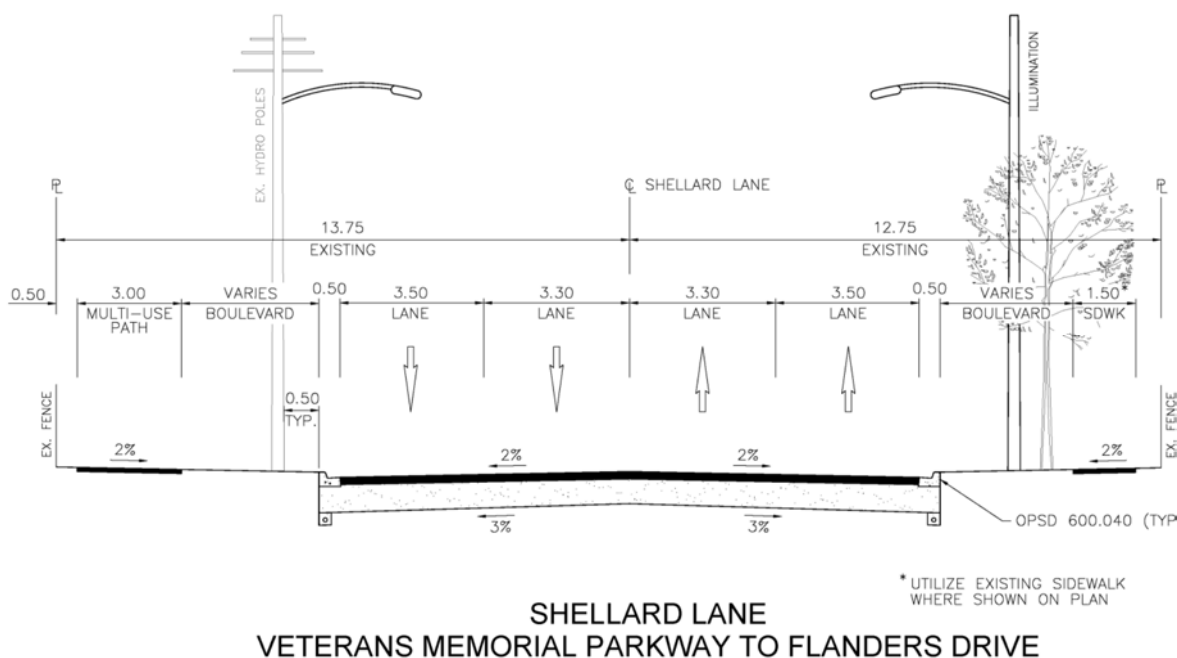
## 5.0 Preferred Preliminary Design

Based on input provided by stakeholders, technical agencies and public participants, as well as project team assessment, the selected planning alternative was Alternative 8: Widen Shellard Lane, including provisions for transit and active transportation. This alternative includes a four lane cross section with a 3 m multi-use path on the north side of Shellard Lane. A concrete sidewalk from Veterans Memorial Parkway to Colborne Street West, and raised planter median gateway feature were also incorporated into the design alternative.

The typical cross sections proposed are illustrated on Figures 4. Key elements of the proposed cross-section of Shellard Lane include the following:

### Veterans Memorial Parkway to Flanders Drive:

- ▶ Two (2) x 3.3 m median lanes, Two (2) x 3.5 m curb lanes;
- ▶ 3.0 m wide asphalt multi-use path – north side of Shellard Lane;
- ▶ 1.5 m concrete sidewalk on the south side, except where existing sidewalk will be maintained.
- ▶ Total proposed Right-of-Way varies in width.

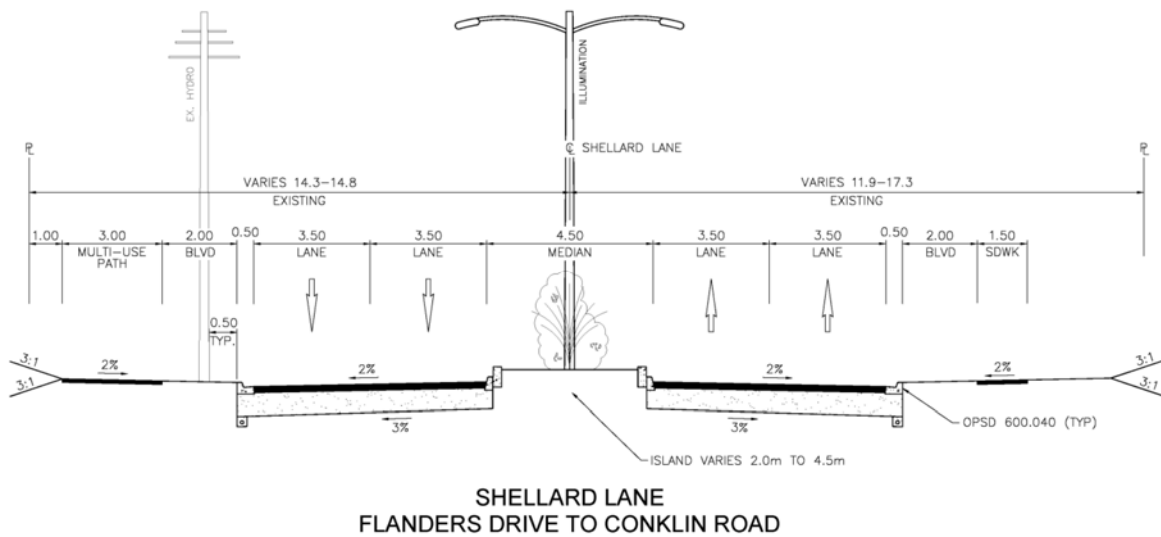


**Figure 4: Veterans Memorial Parkway to Flanders Drive Typical**

Where required due to restricted property (in particular between Diana Avenue/St. Patrick's Drive and Flanders Drive/McGuinness Drive, 3.3 m wide median lanes are proposed.

### Flanders Drive to Conklin Road:

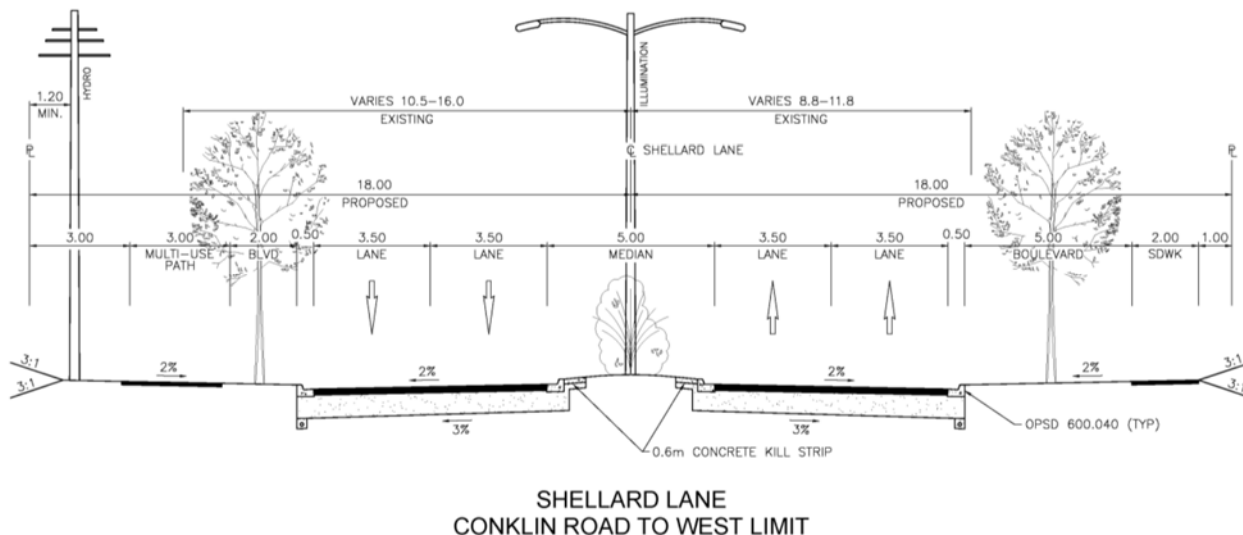
- ▶ Four (4) x 3.5 m through lanes;
- ▶ 4.5 m raised median;
- ▶ 3.0 m asphalt multi-use path on the north side;
- ▶ 1.5 m concrete sidewalk on the south side;
- ▶ Total proposed Right-of-Way varies in width.



**Figure 5: Flanders Drive to Conklin Road Typical**

### Conklin Road to West Limit:

- ▶ Four (4) x 3.5 m through lanes;
- ▶ 5.0 m raised median;
- ▶ 3.0 m asphalt multi-use path on the north side;
- ▶ 2.0 m concrete sidewalk on the south side;
- ▶ Total proposed Right-of-Way will be 36.0 m.



**Figure 6: Conklin Road to West City Limit Typical**

## 6.0 Detailed Design with Active Transportation Facilities

Moving forward with detailed design for active transportation for Shellard Lane involved review of the proposed horizontal and vertical alignments for sidewalk and multi-use trial set in the preliminary design, in the context of available space, utility impacts and grading impacts.

### Property Restrictions

The portion of Shellard Lane from St. Patrick’s Drive to Flanders Drive has reverse-fronting properties which had existing wood fence at the rear lot line along the Shellard Lane right-of-way. Due to the sensitivity in reducing usable backyard space, there was no real opportunity for property purchase. As part of the project, the wood fence running along Shellard Lane within these blocks was upgraded to a wood acoustic fence to mitigate increased noise levels. Due to property restrictions the inner two lanes in this section of Shellard Lane were reduced to 3.3m from the typical 3.5m and no centre median was provided. The absence of a median planter within this section of the project was considered negative for traffic calming, however, this concern was somewhat mitigated by the narrower lane widths and enhanced landscaping, which also tend to reduce traffic speeds.



**Figure 7: Shellard Lane pre-construction, St. Patrick's Drive to Flanders Drive**

### Multi-Use Trail Delineation

A 3.0 m wide asphalt multi-use trail was constructed on the north side of Shellard Lane from Veterans Memorial Parkway to 450m west of the west leg of McGuinness Drive (Street 'E'/Phase 1 limit). The objective was to maximize the width of the multi-use trail. Recognizing the desirability of a trail in excess of 3.0 m, a width of 3.0m, however, was identified as the minimum allowable. A width in excess of 3.0 m was not possible through the entire length of the corridor due to property and utility restrictions from the east leg of McGuinness Drive/Flanders Drive to St. Patrick's Drive/Diana Avenue. Consistency was considered to be important, and a 3.0 m width was therefore maintained for the full corridor.

The trail connects with the existing multi-use trail which runs north-south adjacent to Veterans Memorial Parkway on the east side. Proper signage and delineation of the multi-use pathway is a critical component of both way-finding and safety for the active transportation network through the Shellard Neighbourhood. The Phase 2 limit begins at Street 'E' and extends to the west city limit.

TAC guidelines state that bike path lane width that is "two-way, shared with pedestrians" must be 3.0-4.0m. Horizontal clearance of 600mm is to be maintained between a bikeway and lateral obstruction.<sup>8</sup> Where possible, the multi-use trail was constructed to a 3m width. In some areas such as the severely constricted area from St. Patrick's Drive to Flanders Drive, the width had to be reduced marginally to accommodate some hydro utility poles. In these type of situation a WA-24 "path narrows" signs was installed. The signage design for the length of the multi-use trail was completed using TAC's Bikeway Traffic Control Guidelines for Canada, 2012.<sup>9</sup>

<sup>8</sup> 1999. "Table 3.4.6.1 Bike Path Lane Width." *Transportation Association of Canada Geometric Design Guideline for Canadian Roads*. Pp. 3.4.6.1

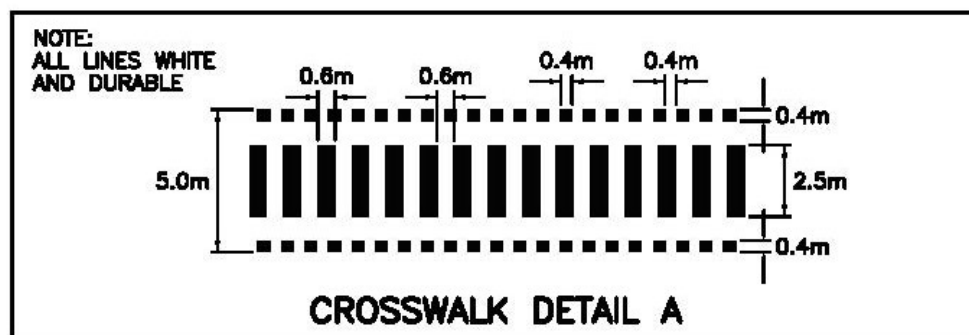
<sup>9</sup> 2012. "Warning Signs." *Transportation Association of Canada Bikeway Traffic Control Guidelines for Canada*. Pp. 33.



**Figure 8: Signage along the Shellard Lane Multi-Use Trail**

Specially delineated crosswalks at side road crossing points were installed on this project to safely accommodate pedestrians and cyclists travelling on the multi-use trail on the north side of Shellard Lane. Upgraded safety features in the corridor include signalization of the intersections of Shellard Lane at St. Patrick's Drive/Diana Avenue, and Conklin Road, respectively. Provisional conduits for signalization were installed at the intersection of Shellard Lane at Street 'E' for future development. Audible signals were installed at the signalized intersections to increase safety measures for the visually impaired.

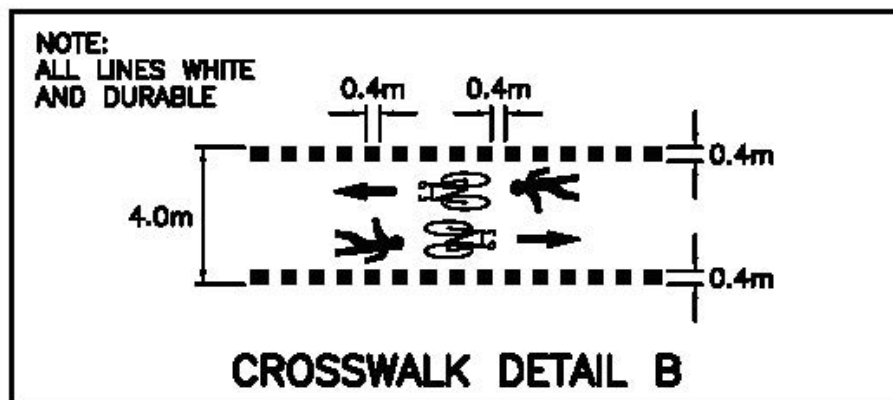
Ladder crosswalk markings are enhanced pavement markings that incorporate longitudinal stripes to enhance the delineation of pedestrian crosswalks. Ladder style crosswalks are a combination of zebra pavement markings aligned perpendicular to the pedestrian direction of travel together with standard parallel crosswalk lines. The contrast of the markings provides enhanced visibility of the crosswalk and thereby increases drivers' awareness of potential conflicts.<sup>10</sup> Ladder style crosswalks were painted at every signalized intersection. To delineate and enforce continuity of the multi-use trail on the north of Shellard Lane a specially configured crosswalk was painted at the non-signalized intersections of Shellard Lane at McGuinness Drive/Powell road and Killarney Street, respectively.



**Figure 9: Crosswalk Detail A, Multi-Use Trail at signalized intersections**

<sup>10</sup> 2010. "Pedestrian Crossing Facilities-Crosswalks." In *Ministry of Transportation Ontario Traffic Manual Book 15*. Pp. 37-38





*Figure 10: Crosswalk Detail B, Multi-Use Trail at non-signalized intersections*

Crosswalks with ramps were constructed on all legs at the signalized intersections of Veterans Memorial Parkway, St. Patrick's Drive/Diana Avenue, McGuinness Drive/Flanders Drive, Conklin Road, and Street 'E'. A pedestrian linkage across Shellard Lane for the T.H.&B. Rail Trail has been proposed for Phase 2 construction.

### **Sidewalk & Multi-Use Trail Connectivity**

The sidewalk constructed as part of the first phase of construction (Colborne Street West to west of Conklin Road) on the south side of Shellard Lane serves pedestrians and the multi-use trail on the north side of Shellard Lane connects to the existing active transportation infrastructure on Veterans Memorial Parkway. A second phase of construction (from west of Conklin Road to the Brantford West Limit) is planned to allow for increased connectivity by extending the multi-use trail to the T.H.&B. Rail Trail, and community facilities including playing fields, a community centre/arena and place of worship. The multi-use trail is paved asphalt and allows a smooth travelling surface for bicycles, roller blades, skateboards, and motorized mobility aids.

### **School Block, Flanders Drive to Conklin Road**

The section of Shellard Lane from McGuinness Drive/Flanders Drive to Conklin Road contains three schools, St. Gabriel Catholic Elementary School, Assumption College High School and Ryerson Heights Elementary School.

A dedicated signalized pedestrian crosswalk was proposed and constructed at the Assumption College High School east entrance. The intersection of Shellard Lane and Conklin Road was also signalized. A raised planter median with a decorative fencing was constructed to obstruct student movements across to Assumption Plaza, encouraging students to cross at the dedicated pedestrian crosswalk or at the crosswalk at Conklin Road. These design features aid to mitigate potential vehicle/vehicle or vehicle/pedestrian collisions.



Photo Not Available



(To be provided shortly)

***Figure 11: Dedicated pedestrian crosswalk at Assumption College High School***

With the installation of the pedestrian signal there have been significantly more students crossing at this location during school start and finish times.

### **Streetscaping**

Efforts were made to fashion the Shellard Lane corridor as a gateway to the Shellard Neighbourhood. In addition, several median planters were designed and constructed to enhance the corridor aesthetics and serve as traffic calming. Amec Foster Wheeler retained James McWilliam Landscape Architects to help create a unique gateway streetscape. The result was an aesthetically appealing corridor was created with extensive landscape boulevard planting, raised planter medians, coloured concrete at intersections, and decorative fencing.

### **Accessibility for Ontarians with Disabilities Act (AODA)**

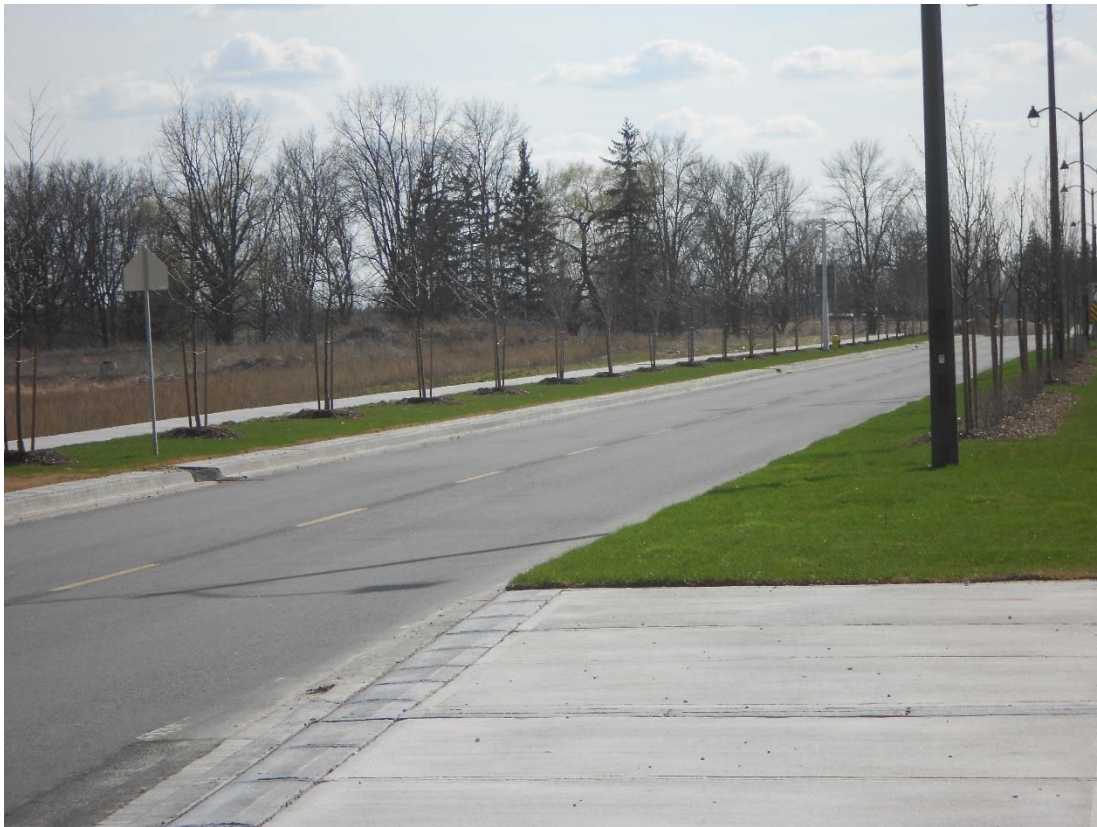
The reconstructed Shellard Lane corridor is equipped with flush ramps at sidewalk and multi-use trail crossings, providing barrier-free mobility for all persons regardless of their age or level of ability.<sup>11</sup> Coloured concrete at the crosswalk locations not only add to aesthetics of the Shellard Lane corridor but also delineate the intersection locations. All intersections have audible signals to accommodate the visually impaired. Pedestrian pushbuttons were installed at a maximum height of 1.2m to allow accessibility for wheelchair and scooter occupants.

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<sup>11</sup> 2010. "4.1.10 Curb Cuts and Sidewalks." In *City of Brantford Facility Accessibility Design Standards*. Pp. 23.



**Figure 12: Shellard Lane post construction, concrete sidewalk with boulevard, wood acoustic fence and new trees**



**Figure 13: Shellard Lane post-construction, streetscaping west of Conklin Road**

## 7.0 Construction

The reconstruction of the first phase of Shellard Lane took place over an 8 month period. Phased detailed design and construction allowed for the portion between the proposed Street 'E' and Colborne Street West to be completed and tendered for construction in March 2014. Construction of phase 1 began in May 2014 and was completed by December 2014.

Design and Construction Services included:

- ▶ Installation of retaining wall at Shellard Lane Forest;
- ▶ Installation of watermain extension from Conklin Road to Street 'E';
- ▶ Installation of sanitary sewer extension from Conklin Road to Street 'E';
- ▶ Relocation of utilities;
- ▶ Reconstruction and widening of roadway;
- ▶ Replacement of sidewalks and construction of multi-use trail;
- ▶ Replacement of storm sewers and stormwater management features;
- ▶ Replacement of two culverts and an extension of twin culvert;
- ▶ Full illumination design;
- ▶ Landscaping;
- ▶ Signage design;
- ▶ Preparation of contract package and assistance during tendering;
- ▶ Construction Inspection; and
- ▶ Construction Administration.



**Figure 14: South headwall at Culvert 2**

Special consideration was kept in mind for staging and maintenance of traffic for the Shellard Lane reconstruction. The area known as the School Block between Flanders Drive and Conklin Road was scheduled for construction during the summer months of July and August 2014. This



was to minimize impacts and inconvenience to the student population of the three schools, and to keep construction hazards at a minimum while school was in session.



***Figure 15: Paving the multi-use trail at Assumption Plaza (School Block)***

In addition to a Pre-Construction Public Information Centre, the project team published a construction bulletin every month for the Shellard Neighbourhood Association website. The bulletin provided informative status updates to members of the association. The project team received accolades from the Shellard Neighbourhood Association for successful completion of the road reconstruction project.

## **8.0 Monitoring**

The active transportation facilities implemented as part of this project provide a route for both pedestrians and cyclists achieving objectives set out in the Transportation Master Plan. The multi-use trail is a much welcomed addition to the Shellard Lane Neighbourhood. The City of Brantford is monitoring both pedestrian volumes and collision statistics to determine the effectiveness of the active transportation plan in promoting active transportation, as well as the safety of the new facility. More information on pedestrian volumes to be made available at the presentation.

## **9.0 Lessons Learned**

This project provide several valuable lessons learned related to active transportation and safety. This project included several raised median planters, installed to enhance aesthetics and to provide traffic calming. In designing raised planters careful attention must be paid to potential obstruction of sight distance for turning vehicles. On this project a late change was required to one planter design to provide adequate decision sight distance for the design speed.

A further lesson learned related to the median fencing provided to prevent student pedestrian crossings. Some nimble students took the fencing to be a personal challenge – scaling the fencing in spite of the obstacle imposed.

## **10.0 Conclusion**

The Shellard Lane corridor has been rejuvenated and refreshed for longtime residents and for future additions to the neighbourhood. The reconstruction proved to be a success. The project team received positive feedback from residents and council. The project team is looking ahead to Phase 2, from Street 'E' (450m west of the west leg of McGuinness Drive) to the west city limit.

A special thank you to Vic Bohdanow, P.Eng., Design Engineer for the City of Brantford, for driving the project design forward and for liaising with residents, staff, utility companies, agencies and contractors.