



# KINGSCLEAR FIRST NATION PEDESTRIAN-CYCLIST UNDERPASS

*CATEGORY I:  
COMMUNITY OUTREACH AND  
IN-HOUSE INITIATIVES*

CANADIAN CONSULTING  
**engineer**



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## Summary

*NB-Hwy 102 bisects the community of Kingsclear First Nation (KFN) in New Brunswick. KFN has long petitioned the Province to lower the speed limit of the highway through their community unsuccessfully. After a community member was tragically killed crossing the highway in September 2018, KFN retained Dillon Consulting Limited to design and oversee construction of a pedestrian-cyclist underpass, originally funded by the Community, which went from concept to completion in under three months.*





## Nature of the Project

Kingsclear First Nation (KFN) is an Indigenous community near Fredericton, New Brunswick, with a population of approximately 800. The community was bisected by the Trans-Canada Highway (presently NB-Hwy 102) in the 1960s, separating housing and community amenities north of the highway from the traditional Indigenous land to the south. Today KFN has expanded considerably with development on both sides of the highway.

The high-speed (100 km/hr) highway that cuts through the community presents a major safety risk for local pedestrian and vehicle traffic, an issue that KFN has historically requested be lowered with the provincial government unsuccessfully. Many residents rely on walking to the local convenience store for daily amenities as access to Fredericton is often difficult with no access to transit services available. Since the construction of the new convenience store adjacent to NB-Hwy 102 two years ago, two pedestrian collisions have occurred. In September 2018, a community member was fatally struck while crossing the highway; a tragic event covered by national news outlets. As a result, KFN residents demanded that a safer access to community services be available.

Dillon Consulting Limited (Dillon) was retained by KFN in September 2018 to develop the design for an underpass and provide contract administration services during construction. The design consisted of a 3.0m x 3.0m pedestrian-cyclist underpass constructed under a complete closure and detour of NB-Hwy 102. An approach path network, land drainage improvements, lighting, and a security system were also incorporated in the design. The project was delivered as a pseudo design-build wherein Dillon coordinated with KFN's contracting company through all stages of the project to ensure feasibility of the design to meet the aggressive timelines. The project was completed (regulatory approvals, design, procurement

and substantial construction completion) on schedule in three months utilizing significant community labour (over 40%) and was opened to pedestrian-cyclist traffic December 23, 2018. The total project value including engineering and construction costs was approximately \$1.6 Million.

Dillon also supported KFN throughout the project in lobbying various government bodies to expedite the project and to obtain the resources necessary to complete the project prior to the winter months. The dedication of the team to the completion of the project was vital to its success. Without such dedication, construction would have been postponed to the summer of 2019, extending risk of another collision during the higher risk winter months (poor road and visibility conditions).

## Effort and Complexity

The major complexity with this project was the schedule. KFN desired an immediate solution and targeted implementation before year-end (2018). The intended completion strategy was conveyed to the community amplifying pressure on the team to deliver a successful project.

The original underpass concept was developed by Ryan Dunbar (a Partner with Dillon and KFN community member) unsolicited and without associated fees prior to the accident due to his concerns for his community's safety. This concept provided a starting point for detailed design which began in earnest in October 2018.

To meet expectations of the community, it was evident that two items were necessary:

- 1) Use of accelerated construction techniques;
- and 2) Construction of the underpass under complete closure and detour of NB-Hwy 102. While the team had input on construction methodology, it was ultimately up to NBDTI to approve the highway closure and detour. The highway transmits significant daily traffic into







Fredericton; redirecting traffic through secondary roads was considered high-risk given the recent death of a community member. In order to mitigate risk, Dillon completed a detailed traffic detour plan in close consultation with KFN leadership. Realizing the importance of this project to the community, NBDTI approved the complete closure of NB-Hwy 102. Variable message signs were placed at the limits of the proposed detour to advise the public of the planned detour.

While the highway closure approval was secured, the team advanced the design for the underpass with collaboration from the local precaster and contractor. The precaster undertook significant preparatory work and committed to fabrication of the precast segments once final approvals were received. The IFC Drawings were issued to NBDTI for review and approval October 31, 2018.

While the drawings were being reviewed, concern was raised regarding possible settlement of the underpass backfill due to difficulty achieving adequate compaction during winter months. Additionally, and unexpectedly, NBDTI retained an independent reviewer for structural design. These challenges were addressed by designing precast approach slabs integrated into precast box sections and working closely with the independent reviewer to fast-track the structural review. These challenges delayed commencement of precast fabrication until receipt of final approval on November 15, 2018.

In anticipation of resolution of the above issues, the contractor mobilized and began construction outside of the highway right-of-way. NB-Hwy 102 was officially closed and detoured November 15, 2018. Construction was completed with opening to the community on December 23, 2018.





## Social, Economic & Other Benefits

The newly constructed underpass provides a link between two sections of KFN's community previously divided by the high-speed roadway (NB-Hwy 102). The project was identified and initiated by KFN leadership and Dillon's project team in unison, who were committed to preventing another needless tragedy from happening, regardless of the availability of outside funding sources and typical project timelines. Aside from the practical use of the underpass to provide a means of transportation, the quick action and commitment of the parties involved added confidence within the community that the community leadership take the concerns and safety of residents seriously and are willing to act appropriately to support them. The newly constructed tunnel is planned to be dedicated in the memory of Alyssia Paul during a Grand Opening ceremony in the summer of 2019.

The trail network associated with the underpass also allows added possibilities for expansion of an existing plan for a trail network throughout the community. The proposed network will not only provide community members with a means of transportation throughout the community to essential services and between dwellings, but also provide a means to connect with nature through walking and hiking to the nearby Indian and Murray Brooks and the Wolastoq (Saint John) River. The underpass and associated trail links completed during this project are also accessible by wheelchairs and strollers, providing a solution that is inclusive of all community members.

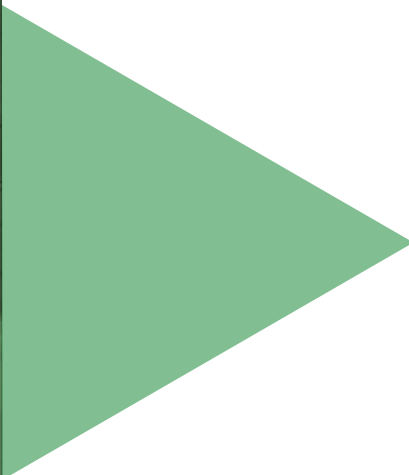
Lastly, the underpass provides the community with a conveniently located central link from the Band Administration Hall, Child and Family Services Office and Wulastukw Elementary School to the Wulastukw Convenience store, as well as the newer southern housing



developments. Community members that do not currently have a means of transportation other than walking or cycling often rely on Wulastukw Convenience for grocery items in times where they cannot travel to Fredericton. The majority of community members also frequent the Band Administration Hall for reasons ranging from community engagement sessions to employment and beyond. The underpass helps to ensure that these community members can safely travel from their homes to these essential services without the danger associated with crossing a high-speed roadway.

The entire project team is extraordinarily proud of what we achieved. This project, which was completed in the face of tragedy, has become a point of pride for the community as it represents what perseverance and teamwork can achieve when presented with the impossible.





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