

Neighbourhood Traffic Management Design Guideline

Written for CITE Undergraduate Scholarship

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Introduction

Edmonton's 375 neighbourhoods take pride in their individual identity. These communities are filled with schools, playgrounds, hospitals, shopping centres, and other amenities which the residents use. With the usage of these amenities comes the deterioration of travel means such as roads and sidewalks. This is where the City of Edmonton, specifically the Building Great Neighbourhoods Program, steps in the form of neighbourhood renewal. During renewal, every residential road and sidewalks are rehabilitated, and new traffic measures are added to make a neighbourhood-specific Traffic Management Plan. This plan addresses traffic concerns in the neighbourhood in hopes of making the neighbourhood safer. The current process to make this is based exclusively on stakeholder input and allocated funds for renewal. Every new traffic plan is started from scratch with very minimal overlap from other neighbourhoods, resulting in high design and consultation costs. Although this proposal will focus on the City of Edmonton, this guideline can be applied in any community in Canada which is experiencing traffic problems.

Objective

The objective of this report is to propose a guideline for the design of a traffic management plan. This guideline provides a baseline for the additional traffic amenities that will be implemented, along with the usual rehabilitation. Adopting this approach will provide design teams with a starting point, saving them redundant design time and cost. This guideline will add multi-modal facilities, consider nearby projects which can affect traffic, and evaluate temporary traffic measures to reduce cost.







Approach

The first step to making a traffic management plan is to add multi-modal facilities in the communities. Focusing on residential neighbourhoods, the two multi-modal facilities which can be added are protected bike lanes and shared-use paths. The protected bike lanes can be added to wide residential-collector roads to increase bike usage and narrow the right of way. Elsewhere in the neighbourhood, shared-use paths can be expanded around schools and playgrounds to connect the neighbourhood. Prior renewal in neighbouring communities should be considered, and the design of these facilities should connect to the already existing multi-modal infrastructure.

The second step is to consider nearby projects that can affect traffic in the future. Neighbourhood renewal should be cautious and address possibilities of shortcutting and speeding before they become an issue. These concerns should be addressed by strategic placement of traffic calming measures such as curb extensions, raised crosswalks, and mini-roundabouts. These measures should be placed on the major residential roads where foreign traffic is likely to travel. The combinations of a narrowed right of way and traffic calming measures can slow the traffic on residential streets. If nearby projects increase traffic volumes in the neighbourhood, these measures will keep the traffic slow for the community's safety.

The final step in making a traffic plan is the consideration of temporary traffic measures to replace permanent measures. Clever use of concrete barriers and bright road paint can be used to calm traffic in place of conventional traffic calming measures. The most significant advantage of these temporary measures is the reduction of cost. Pictures and the breakdown of the costs are given in Table 1. These temporary measures can be added or removed at any point, even when renewal is not happening.

Table 1: Alternative Traffic Calming Measures

Permanent Measures	Temporary Alternatives
 <p data-bbox="342 833 656 865">Cost: \$2,000 to \$20,000</p>	 <p data-bbox="1036 833 1203 865">Cost: \$3,000</p>
 <p data-bbox="342 1165 656 1197">Cost: \$7,000 to \$31,000</p>	 <p data-bbox="1036 1165 1203 1197">Cost: \$1,500</p>
 <p data-bbox="319 1476 680 1507">Cost: \$195,000 to \$500,000</p>	 <p data-bbox="1027 1486 1211 1518">Cost: \$10,000</p>

Constraints

Constraints in neighbourhood renewal can bring up unforeseeable challenges not identified by the project team. Drainage and underground utility are the two factors that can exponentially increase the renewal cost and can not be calculated in the initial design stage. Since renewal is funded using taxpayer money, political and public opinion changes can impact the traffic management plan after the initial design phase. Municipal elections may be won by politicians

who have a different opinion on multi-modal traffic measures. These opinions include, but are not limited to, aversion towards bike lanes, blanket changes to the residential speed limit, and modification to the neighbourhood renewal allocated fund. These changes can vastly impact the already unpredictable budget for the project.

As stated before, the design team has to predict how the nearby projects will impact traffic. Although this is a necessary step, the prediction is an educated guess at best. The traffic impact may be overestimated, resulting in redundant traffic calming measures. Examining all of these constraints together, selecting the correct permutation of traffic measures in a neighbourhood becomes an art of attention to the non-visible. There is no right design that will satisfy everyone, and that is something the design team must live with.

Given all of these constraints, the recommendation is to use the baseline approach only as a guideline. The initial design will need to be modified further based on available funding, unexpected supplementary costs, and expert opinion.

Example

Belmead and La Perle are two neighbourhoods in West Edmonton for which a proposed traffic management plan is given in Figure 1. The traffic management plan adds a protected bike lane on the collector roads and expands the shared-use paths throughout the residential area. Traffic calming measures are added on the high volume roads to account for increased traffic volumes impacted by the Valley Line LRT, which will have a station south of these neighbourhoods on 87 Ave. Any of the proposed traffic calming measures can be converted into temporary measures based on public feedback and expert opinion.

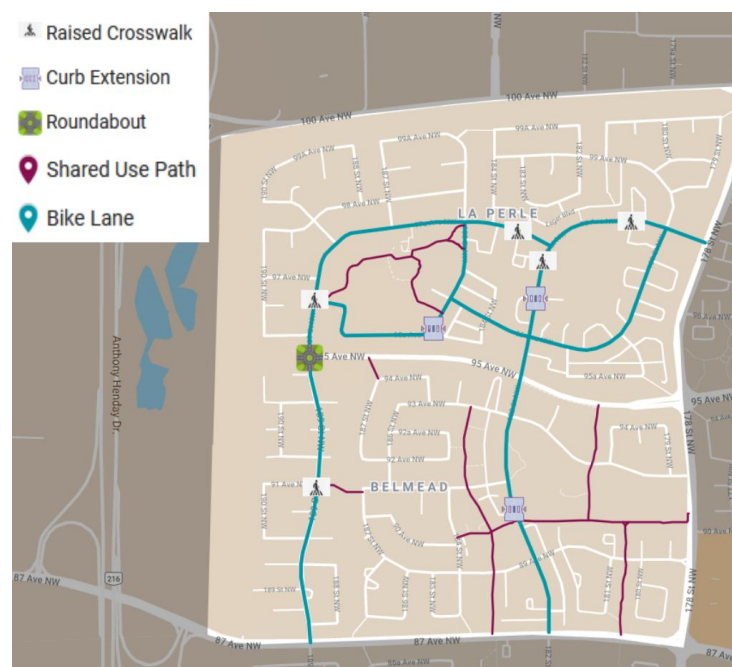


Figure 1: Belmead and La Perle Traffic Management Plan

Summary

In this report, a streamlined approach is proposed to create a traffic management plan during neighbourhood renewal in the City of Edmonton. This approach adds multi-modal facilities to increase alternative travel means, accounts for succeeding projects which may impact traffic patterns, and considers the implementation of temporary traffic calming measures to save cost. The traffic management plan's initial design will need to be modified to account for the allocated budget, political changes, and unforeseeable additional costs. Even though this plan is specific to the city of Edmonton, it can easily be expanded to any neighbourhood in Canada to solve their traffic problems.

Citation

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