CITY OF NANAIMO
THE HARBOUR CITY

Information Report

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SUBJECT **PEDESTRIAN INFRASTRUCTURE AND EDUCATION, PLANNING AND PRIORITIZATION**

OVERVIEW

Purpose of Report:

To provide Council with information about the planning and prioritization of pedestrian infrastructure.

BACKGROUND

Pedestrian facilities such as sidewalks, crosswalks, or curb extensions typically come from one of three streams: capital projects, small scale projects, and developments. The long term, strategic projects are carried out within the Five Year Capital Plan. These typically include large pedestrian infrastructure investments and are strategically planned with support from corporate documents such as the Transportation Master Plan. Throughout the year, issues may arise that need attention more urgently than the capital planning process can accommodate. These items are typically small and can be addressed through the smaller scale projects process. Development projects provide additional infrastructure within the area of the development's influence. This sometimes leads to gaps in the infrastructure which make no sense to the public.

DISCUSSION

Walking is a critical element in our transportation system. The City provides pedestrian connections through all of the built realm. Examples of this are crosswalks from bus stops to shopping malls, sidewalks alongside roadways, pedestrian pathways within parking lots of City facilities, and multi-use trails for commuting and recreation. Each of these facilities is worthy, and in an ideal world, could be built; however, the demand far outweighs available funding. For Staff, the result is a complex process of short, medium, and long term planning, while balancing competing priorities at each of those planning horizons. This is necessary to provide citizens with thoughtful projects and correctly timed expenditures, which will ultimately create the liveable City we all seek.

The basis for project decisions is fundamentally different between pedestrian facilities and vehicular facilities. Often the reason for vehicular improvements is limited capacity, or congestion. By world standards, Nanaimo is still relatively small and young, and the pedestrian realm is still expanding to support walkability. For this reason, the majority of pedestrian facilities are provided on the basis of connectivity and safety.

PLANNING PEDESTRIAN INFRASTRUCTURE

In terms of infrastructure, pedestrian facilities are either (a) crossings or (b) linear walking features. Crossings are often the most discussed as they represent the greatest conflict, and typically the highest probability for collisions. Collisions on linear walking facilities are rare; however, these facilities tend to make up a more significant portion of a pedestrian's journey, and therefore, could be a more influential factor in whether or not they choose to walk.

(a) Pedestrian Crossing Facilities

Walking, cycling, and driving are complicated tasks that require full attention and awareness of surroundings. Road safety research has shown that consistency is important in conveying the intended messages to the road user. The City's Manual of Engineering Standards and Specifications (MoESS) are based on those used throughout BC and across North America. This provides all road users, drivers and pedestrians with a consistent experience regardless of which road they are on or which jurisdiction they find themselves in. Being consistent in engineering design helps citizens make better, safer decisions on the road.

In general, engineering design standards are well established for crossing facilities. There are North American agencies such as the Federal Highway Administration (US FHWA) and the Transportation Association of Canada (TAC) which research effective planning, design, operation, and safety of every crossing type. The output of the research is applied to design standards so that crossings have become more effective over time.

Crosswalks are defined through the Motor Vehicle Act and whether marked or unmarked, exist at every intersection, excerpt provided below. This provides pedestrians with the right to cross at numerous locations. However, as experienced drivers and pedestrians, we all know this right is often ignored by the motorist which can lead to a dangerous situation for the pedestrians who are either unfamiliar with the crossing location or are not approaching it defensively. When enforcement or education campaigns have been exhausted, the first engineering step to assist pedestrians to exert their right to cross, is a signed and marked crosswalk.

Excerpt from the Motor Vehicle Act, Definitions, Section 119:

"crosswalk" means

(a) a portion of the roadway at an intersection or elsewhere distinctly indicated for pedestrian crossing by signs or by lines or other markings on the surface, or

(b) the portion of a highway at an intersection that is included within the connection of the lateral lines of the sidewalks on the opposite sides of the highway, or within the extension of the lateral lines of the sidewalk on one side of the highway, measured from the curbs, or in the absence of curbs, from the edges of the roadway;

In making the decision to provide a signed and marked crosswalk, Staff examine a variety of factors, including pedestrian volumes, available sight distance, traffic volume and speeds, and the need for a network connection for pedestrians. These factors are contained within a spreadsheet used by Staff, where each factor is evaluated, and then an overall warrant is produced. The technical analysis provides an indication of need and a scoring for priority, then engineering judgement is used to finalize the decision.

After the initial installation of signed and marked crosswalks, there is a hierarchy of pedestrian crossing facilities which is applied at locations where pedestrians require additional support measures to cross or walk along the road. Shown below in Table 1, are the various levels of crossing facilities, and the purpose of each. Crossings tend to be less complex or expensive than linear pedestrian facilities and can often be identified and constructed in a single fiscal year.

Table 1 – Types of Crossing Facilities

Facility	Description	Purpose
Signed and Marked Crosswalk	Signs are mounted on the shoulders and white paint is applied to the road.	To pedestrians, signs and markings indicate the preferred crossing location. Drivers are alerted to the higher likelihood of pedestrian presence. This is a passive treatment and all users must apply judgement and use caution. There is no legal difference between a marked and an unmarked crosswalk.
		
Flashing lights	Also called Rectangular Rapid Flashing Beacons. Pedestrians use a push button to activate the warning device, usually yellow flashing lights which are visible to the driver. Typically, these have simple timing devices to allow time to cross.	This is a dynamic device that gives pedestrians the ability to increase driver awareness of their presence. There is no legal difference between a marked crosswalk and a crosswalk with flashing beacons. All users must still apply judgement and use caution.

Facility	Description	Purpose
		
Signals	These devices show three-colour operation to vehicles (red, yellow, green), with Walk signals provided to pedestrians. Buttons are used to activate the Walk signal. These devices are managed with computers called “controllers”.	The red light requires vehicles to stop and thereby gives pedestrians much greater control over their ability to cross. Less judgement is required for this type of intersection and therefore, less opportunity for human error. Drivers only have to decide to stop and pedestrians can count on a break in traffic. This is the highest level of control for a crossing in an urban environment.
		

(b) Linear Pedestrian Facilities

Sidewalks, multi-use paths, and shoulders are examples of linear walking facilities pedestrians use to get from Point A to Point B. In broad terms, the greater the speed disparity, the greater separation is needed to instil a sense of comfort and safety for all users. Pedestrian safety on linear walking features is inherent in the design standard chosen and is typically not re-examined once constructed. Walking facilities are generally planned and designed based on adjacent land use and the intended comfort and convenience they provide to pedestrians.

Walking facilities are usually examined as part of a network. Staff sometimes call these "desire lines" and this is where medium and long term connections are planned and created. Engineering works closely with Planning and with Parks, Recreation and Culture to identify how the network should evolve over time based on existing and future land use, anticipated developments, and where gaps exist in the system. Walking facilities tend to be constructed and retained for many years, even decades. Crossings, on the other hand, are relocated as necessary to accommodate changes in demand, operation, and land use. Changes to transit or other service amenities may also influence periodic reviews and changes.

There are numerous sources available, which Staff rely on, to design walking facilities. There are the two cited previously, FHWA and TAC, in addition, Staff use:

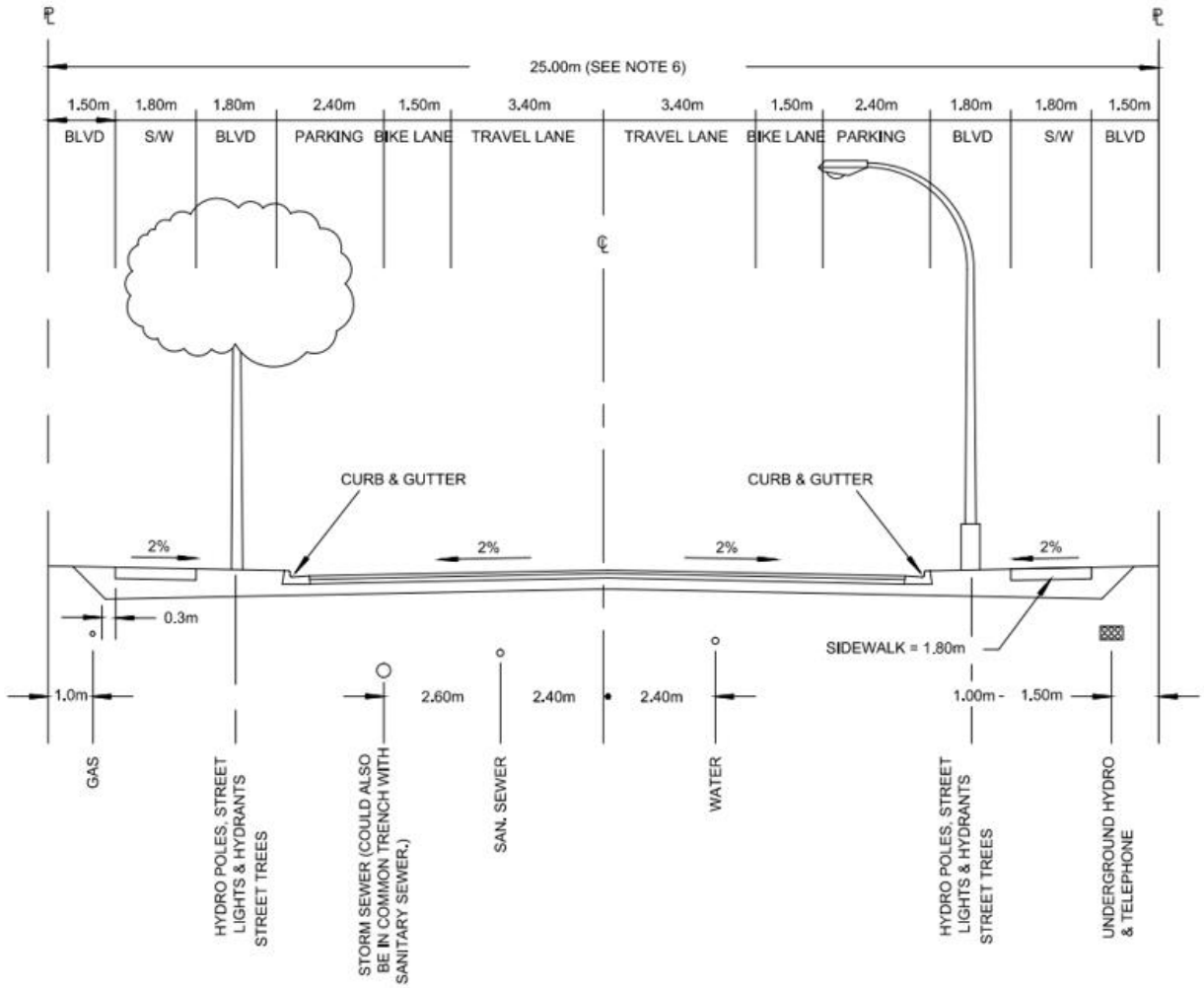
National Association of City Transportation Officials (NACTO)

- Their Mission Statement is "to build cities as places for people, with safe, sustainable, accessible, and equitable transportation choices that support a strong economy and vibrant quality of life".
- BC Active Transportation Design Guideline – published in 2019 by the BC Ministry of Transportation and Infrastructure. This guideline "is a detailed planning and engineering reference that provides practical design guidance and application information for active transportation infrastructure for jurisdictions of all sizes throughout the province."

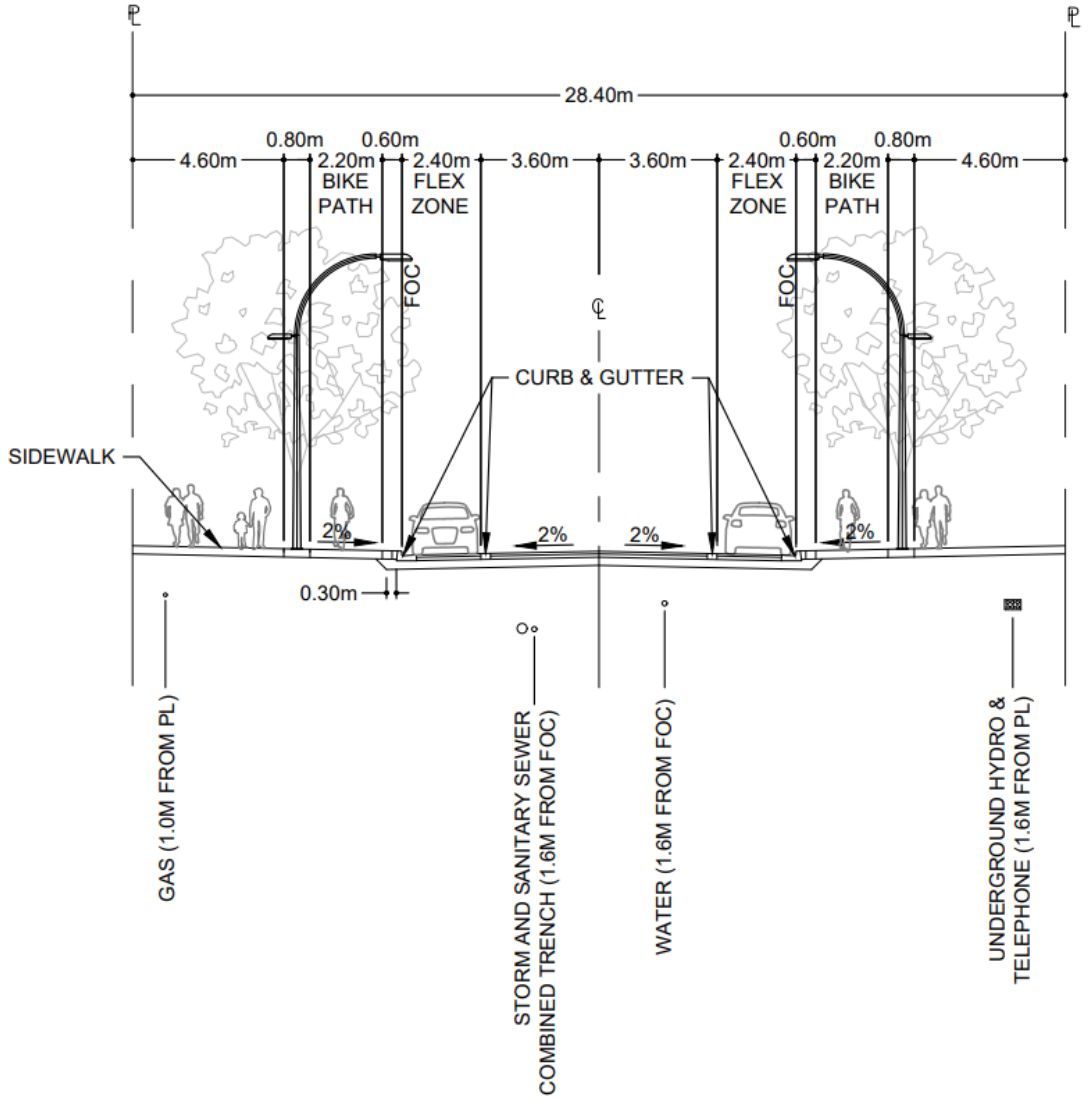
Institute of Transportation Engineers (ITE)

- Their Mission Statement is "to provide the global community of transportation professionals with the knowledge, practises, skills and connections to serve the needs of their communities and help shape the future of the profession and transportation in the societal context".
- European influence including the Netherlands and Sweden.
- Shared municipal experience from US cities, the province of Ontario, Vancouver, Calgary, Victoria, and more.

The formal research in combination with various guidelines are then incorporated into City standards which lead to revisions in the City's Manual of Engineering Standards and Specifications (MoESS), and the creation of our new Complete Streets Guidelines. These two documents are currently being finalized for presentation to Mayor and Council. A representative of existing and proposed cross section standards is shown below in Figure 1. It can be seen in Figure 1 that the proposed Complete Streets cross section offers greater width for active transportation modes.



Existing Standard for Collector



Proposed Standard for Mobility Collector

Figure 1 – Existing and Proposed Standards for Collectors

PRIORITIZING PEDESTRIAN INFRASTRUCTURE

Engineering Staff look to a variety of sources to identify and prioritize pedestrian infrastructure. These include:

- Guiding documents including the Official Community Plan and the Transportation Master Plan.
- Formal public input from open houses and online surveys.
- Informal public feedback through calls, emails and social media.

- Feedback from other agencies such as School District 68, Regional District of Nanaimo, BC Transit, ICBC, RCMP, Ministry of Transportation and Infrastructure, and Vancouver Island University.
- Neighbourhood residents associations.
- In-house collaboration with other City departments.
- In-house traffic data collection and analysis.

All these sources bring suggested projects to the table. The projects are evaluated and prioritized using a process similar to the one for crossings. Project factors include number of pedestrians, speed of adjacent traffic, gaps in existing walking infrastructure, both existing and future land use, transit connections, and the condition of underground assets. When asset management generates the need for rehabilitation, adding effort for pedestrian facilities is more cost effective than carrying out a single-purpose project. The evaluation process generates an overall warrant for prioritization. Highest priority projects are then input to the Five Year Capital Plan as funding levels allow.

CONCLUSION

Pedestrian infrastructure projects are prioritized annually and delivered through capital and small scale expenditures. Staff make every effort to optimize pedestrian infrastructure investments by coupling strategic priorities with asset renewal projects. The overall goal is a cohesive plan such that short, long term, and development projects create walkable neighbourhoods and a connected community.

SUMMARY POINTS

- Pedestrian infrastructure projects are brought to light through a variety of sources.
- Staff use an engineering evaluation process to prioritize the projects annually.
- Staff use a variety of North American standards and best practices when prioritizing and developing scope of pedestrian infrastructure.
- Small urgent projects are often carried out within single fiscal years.
- Larger strategic projects are included in the Five Year Capital Plan.

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