TO: Chair and Members  
   Economic Development and Planning Committee  

WARD(S) AFFECTED: CITY WIDE

COMMITTEE DATE: April 20, 2010

SUBJECT/REPORT NO:  
Location and Implementation of Urban Braille (PED10089) (City Wide)

SUBMITTED BY:  
Tim McCabe  
General Manager  
Planning and Economic Development Department

PREPARED BY:  
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SIGNATURE:

RECOMMENDATION:

(a) That Urban Braille be implemented on a priority basis in the Hamilton Downtowns, as shown on the location maps contained in Appendix “A” of Report PED10089, as follows:

   (i) Downtown Dundas;
   (ii) Downtown Stoney Creek;
   (iii) Ancaster Village Core; and,
   (iv) Downtown Waterdown.

(b) That Urban Braille installation projects, proposed as part of any streetscape or road improvements and rehabilitation, or as directed by an applicable Secondary Plan for those downtown areas described in Recommendation (a), be brought forward as part of the Public Works 10-year Capital Improvements Budget.

(c) That Urban Braille be incorporated into municipal parks and public building locations in consultation with Public Works staff and the Advisory Committee for Persons with Disabilities, on a case-by-case basis, and only implemented based on a demonstrated need, transit accessibility, and budget availability.

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(d) That, in accordance with Section 41 of the Planning Act, respecting provisions for persons with disabilities, Urban Braille be implemented on portions of private property with a semi-public character or function, on a case-by-case basis, and where there is no alternative way of finding measures for the visually impaired or blind from a public sidewalk or a readily accessible bus shelter to a main entrance of:

(i) Hospitals;
(ii) Community Centres;
(iii) Educational Facilities;
(iv) Retirement Homes;
(v) Nursing or other care facilities for the elderly;
(vi) Residential Care Facilities; and,
(vii) Shopping Malls.

(e) That the City staff leading the implementation of the Pan-Am Games in 2015 be advised of the Advisory Committee for Persons with Disabilities direction respecting the implementation of Urban Braille, and report back to Council and the Advisory Committee for Persons with Disabilities on the feasibility of Urban Braille installation in the Pan-Am Games facilities and property.

(f) That Planning staff be directed to monitor the Urban Braille Program and report back to the Economic Development and Planning Committee, as appropriate.

(g) That Report PED10089 be forwarded to the Advisory Committee for Persons with Disabilities for information.

(h) That the “Urban Braille for New Site Plans - Advisory Committee for Persons with Disabilities Report” be removed as an Outstanding Business List Item of the Economic Development and Planning Committee.

EXECUTIVE SUMMARY

Urban Braille (UB) is an accessible sidewalk system that was established in 1996, and is based on barrier-free design principles, and is designed to serve the needs of the blind, the visually impaired, the elderly, the infirm, users of mobility devices such as wheelchairs and motorized scooters, the parent with a stroller, in addition to the general public. UB uses 10 standard icons incorporated or imprinted into concrete sidewalks and is best implemented as a planned and coherent network that provides inclusive mobility for entire local populations. UB is generally 2.45 times more expensive to install than standard concrete sidewalk construction.
City staff was directed by Council (Committee of the Whole Report 05-013) to evaluate the financial impacts of recommendations proposed in a June 16, 2005, UB Report by the Advisory Committee for Persons with Disabilities (ACPD). The specific direction was to evaluate the financial impacts of the ACPD recommendations that:

“Urban Braille be incorporated into the standards of all new site plans and all retrofitted streetscapes in the City of Hamilton”; and,

“Urban Braille guidelines be converted into standards which should be mandatory for all new site plans for both the public and private facilities including institutional, industrial, commercial, and multi-unit residential uses”.

Prior to this direction, Planning staff had been reviewing the evolution of UB within the City as part of its annual Work Plan since 2004 (as part of its streetscape master plans) in order to create an Urban Braille Design and Implementation Manual in conjunction with Public Works Department staff (see Appendix “C” for the draft Table of Contents). The manual is intended to:

- Provide Design Standards for UB (the responsibility of Public Works staff); and,
- Identify appropriate areas to expand the UB network (the responsibility of Planning staff).

As Public Works staff prepared an analysis of the financial implications of the ACPD recommendation, in consultation with Planning staff, it was determined that a response to Council’s direction would be addressed with the finalization of the Urban Braille Design and Implementation Manual. However, the introduction of the Accessibility for Ontarians with Disabilities Act in 2005, and the Government of Ontario’s Draft Built Environment Standard in July, 2009, has delayed the finalization of the design standards portion of the Urban Braille Design and Implementation Manual. Accordingly, this staff report is bringing forward matters that deal solely with the locational aspects of UB and associated costs.

The Planning and Economic Development Department, together with Public Works Department, Environment and Sustainable Infrastructure Division, conducted a comprehensive review of the existing UB system, which was first implemented in the City in 1996, and evaluated the financial impacts of incorporating UB into the standards for all new site plans and all retrofitted streetscapes in the City of Hamilton. Based on this review and evaluation, staff has determined the most appropriate geographical locations to install UB are the Hamilton Downtowns, notably: Downtown Dundas; Downtown Stoney Creek; Ancaster Village Core; Downtown Waterdown; and Binbrook Village Core. Staff also considered that on a more general, but functionally specific basis, those portions of private property with a semi-public character or function on a case-by-case basis were also best suited for future installation of UB. Finally, staff has created a draft Urban Braille Design and Implementation Manual (see Appendix “D”),
which has not been finalized due to the release of the Government of Ontario’s Draft Built Environment Standard on July 14, 2009, but will be brought forward at a future date for Council approval.

Staff is of the opinion that installation of UB throughout the entire City is cost prohibitive and presented the general recommendations advised in this report to the ACPD at its meeting of February 9, 2010. The Advisory Committee remained of the opinion that UB should be installed throughout the City, as originally advised. The Advisory Committee also recommended that UB be installed in facilities and associated development as part of the Pan Am Games. This is reflected in Recommendation (e) to Report PED10089.

Staff is of the opinion that the recommendations contained in Report PED10089 are a considered and reasonable response to the expansion of the UB network in an equitable and cost effective manner.

Alternatives for Consideration - See Page 25.

FINANCIAL / STAFFING / LEGAL IMPLICATIONS (for Recommendation(s) only)

Financial:

There are no direct financial implications directly related to the recommendations as specific costs will generally be brought forward as part of Public Works 10-year Capital Projects Budget. UB will be installed by priority on a location-by-location basis based on repair, renovation, or redesign in accordance with the sidewalk programs of the annual Capital and Operating Budgets. More specifically, the Capital Reconstruction Program (Capital Budget), Annual Sidewalk Replacement Program (Capital Budget), and Maintenance Break and Repair Program (Operating Budget). Public Works staff advises that the installation of UB is at least 2.45 times more expensive than the construction of traditional concrete sidewalk. An analysis of the potential financial implications is discussed in the Analysis/Rationale For Consideration section of this report.

Staffing:

There are no staffing implications.

Legal:

There are no legal implications to the recommendations. Legislation applicable to accessibility matters generally is provided in the Policy section of this report and includes:
• *Ontarians with Disabilities Act, 2001;*
• *Accessibility for Ontarians with Disabilities Act, 2005; and,*
• *The Planning Act.*

The recommendations are consistent with the relevant legislation.

**HISTORICAL BACKGROUND (Chronology of events)**

This section contains a brief description of UB, outlines the history of UB in Hamilton, and discusses previous UB Reports.

**Urban Braille Background Information**

**What is it? Who uses it?**

Hamilton’s UB system is founded on the well known Braille system, devised in 1821 by Louis Braille: a tactile alphabet used by blind individuals to read and write. Similarly, Hamilton’s UB System is a tactile series of markings in the pavement that communicate distinct clues such as pavement edge, change in direction, major building entrances, and warning of potential obstructions or danger.

The UB system includes nine (9) standard icons (see Appendix “B”) of information serving the needs of the visually impaired and the physically challenged. By utilizing both colour and texture contrast, UB provides advisory and warning signals and guides related to orientation. It is a system that includes unobstructed, accessible major and minor pathways that guide physically challenged users through urban areas safely and comfortably.

UB serves the needs of the blind, the visually impaired, the elderly, the infirm, users of mobility devices such as wheelchairs and motorized scooters, in addition to the general public.

**Where is it located?**

Currently, the UB system is primarily designed for implementation in urban areas with a concentrated volume of pedestrian traffic. It is predominately located in the Hamilton Downtown Core, sections of Main Street West adjacent to McMaster University, and sections of Parkdale Avenue, the area of first installation in the 1990’s.

**General Design Elements**

The UB system is essentially a system of major and minor “Clearways” defined by textured shorelines of pigmented concrete. The system also includes a series of tactile
information nodes that alert users to such things as bus stops, driveways, building entrances, and street names.

The general design components and function of the existing UB system are outlined in Appendix “B”, while a full description of the design elements, including illustrations, is found in Appendix “D”, which is intended to eventually form Section 1.0 of the Urban Braille Design and Implementation Manual.

The UB system originated in the former City of Hamilton in 1996. It was developed as a collaborative effort between the City of Hamilton Planning and Public Works Departments, the former City’s Pathway Committee, and the Canadian National Institute for the Blind (CNIB). The City’s Planning staff worked with the public, transportation engineers, and social health experts to develop a simple and effective accessible sidewalk system to serve the high pedestrian areas of Hamilton’s Downtown.

The UB system was first implemented in 1996 during the reconstruction of Parkdale Avenue North between Queenston Road and Barton Street East. The technical design of the system was developed informally with the City of Hamilton, and there were no formal manual or design standards. The system evolved with the implementation of each streetscape project. A revised and simplified version was eventually implemented in Gore Park, and is now in widespread use in the Downtown Core.

The success of the UB system resulted in its recognition at the 2003 Sustainable Community Recognition Awards where the then City of Hamilton Planning and Development Department received the Community Accessibility Design Award. The City also received an Award of Merit for Barrier Free Design by the Ontario March of Dimes.

Previous Reports

Advisory Committee for Persons with Disabilities (ACPD) Urban Braille Report to Council - June 2005

On June 16, 2005, the ACPD’s “Urban Braille” Report (05-013) was presented to the Mayor and Members of the Committee of the Whole. The UB report was submitted by the ACPD, and was prepared by the Customer Services Section of the Corporate Services Department on the Committee’s behalf. This report made the following recommendations:

“That Urban Braille be incorporated into the standards for all new site plans and all retrofitted/revised streetscapes in the City of Hamilton”; and,

“That Urban Braille guidelines be converted into standards which should be mandatory for all new site plans for both the public and private facilities including institutional, industrial, commercial, and multi-unit residential uses”.

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Direction from Council to Public Works

The Corporate Administration Committee Report 05-013 was received by Council on September 28, 2005, where Public Works Infrastructure and Environment Committee staff were required to provide a follow-up to the report. The following is an excerpt:

(f)(i) Corporate Administration Outstanding Business List

(gg) Outstanding Business Item Z - Advisory Committee for Persons with Disabilities respecting Urban Braille (Due Date: September 21, 2005).

Staff advised that it is more appropriate that this item be transferred to the Outstanding Business List of the Public Works (Infrastructure and Environment) Committee as the information requested with respect to financial implications relates to the expansion of the current Urban Braille Program.

In response to Council’s direction, the Public Works Department, together with the Planning and Economic Development Department, conducted a comprehensive review of the existing UB system, and evaluated the impacts of expanding the system as well as updating the existing guidelines to standards. During the review, it was determined that the Planning and Economic Development Department should carry the project forward. The outcome of this comprehensive review has produced a draft Urban Braille Design and Implementation Manual (see Appendix “D”). The manual is divided into three parts, being: Section 1.0 Urban Braille Overview; Section 2.0 New Design Standards and Guidelines: Public Realm; and, Section 3 Installation of Urban Braille: New Locations. The draft table of contents of the manual is attached as Appendix “C”.

The draft Urban Braille Design and Implementation Manual has been created, but not finalized due to the release of the Government of Ontario’s Draft Built Environment Standard on July 14, 2009, which creates potential design conflicts to the ultimate UB design standards developed by Public Works. It is anticipated that once these standards are finalized, the Manual will be brought forward to Council for approval. As a result, the purpose of this report is to provide a response to Council’s direction, including recommendations on the future expansion of the City’s UB network.

POLICY IMPLICATIONS

Recently the Province of Ontario introduced a variety of legislation intended to improve accessibility for persons with disabilities. The following is a summary of the applicable Provincial Acts:
Ontarians with Disabilities Act (ODA), 2001

Based on this Act, municipalities have an obligation to develop municipal accessibility plans on an annual basis, developed in consultation with a municipally-established Accessibility Advisory Committee, where the majority of the members are persons with disabilities. These plans must address accessibility and barriers to people with disabilities, as well as strategies to remove barriers to persons with disabilities. Barriers can include By-laws, policies, programs, practices, and services in the municipality. Steps to be taken to remove barriers, and prevent new barriers, must be identified in the annual accessibility plans. Therefore, according to the ODA, the City of Hamilton has the obligation to identify and remove/prevent barriers to accessibility for persons with disabilities. This act does not mandate any specific technique to achieve the removal of such barriers, nor does it advocate or insist upon the installation of UB, a unique “Made in Hamilton” accessibility feature.

Accessibility for Ontarians with Disabilities Act (AODA), 2005

The goal of this Act is to develop provincial standards, for both private and public sectors, in co-ordination with persons with disabilities, industry, and various other sectors of the economy that would apply to goods, services, facilities, accommodations, employment, buildings, structures, and premises (Government of Ontario website, February 2, 2006). This Act mandates the Government of Ontario to develop standards that outline the measures, policies, practices, and other steps needed to remove and prevent barriers to persons with disabilities. These standards must be implemented by the community within a reasonable amount of time, and must be built into annual accessibility plans. Any new standards created by the Province would be incorporated in the City of Hamilton’s annual accessibility plan. The staff recommended expansion of UB maintains the intent of the Act to remove and prevent barriers to persons with disabilities. UB is not a specific requirement of the AODA.

Planning Act

The Planning Act was amended in 2007 enabling municipalities to ensure accessibility for persons with disabilities. Specifically, the Act provides as follows:

Section 2 of the Planning Act deals with matters of Provincial Interest and states:

“2. The Minister, the Council of a municipality, a local board, a planning board and the Municipal Board, in carrying out their responsibilities under this Act, shall have regard to, among other matters, matters of provincial interest such as…

(h) the orderly development of safe and healthy communities;

(h.1) the accessibility for persons with disabilities to all facilities, services, and matters to which this Act applies;…”
the protection of public health and safety;…”

Section 41 of the Planning Act addresses Site Plans and states:

“41.(4) No person shall undertake any development in an area designated under Subsection (2) unless the Council of the municipality or, where a referral has been made under Subsection (12), the Municipal Board has approved one or both, as the Council may determine, of the following:

1. Plans showing the location of all buildings and structures to be erected and showing the location of all facilities and works to be provided in conjunction therewith, and of all facilities and works required under Clause (7) (a), including facilities designed to have regard for accessibility for persons with disabilities.

2. Drawings showing plan, elevation, and cross-section views for each building to be erected, except a building to be used for residential purposes containing less than twenty-five dwelling units, which drawings are sufficient to display, …

(f) facilities designed to have regard for accessibility for persons with disabilities.

41.(7) As a condition to the approval of the plans and drawings referred to in Subsection (4), a municipality may require the owner of the land to,

(a) provide to the satisfaction of, and at no expense to the municipality, any or all of the following:

4.1 Facilities designed to have regard for accessibility for persons with disabilities.”

Section 51 of the Planning Act deals with draft plan of subdivisions and states:

“51.(24) In considering a draft plan of subdivision, regard shall be had, among other matters, to the health, safety, convenience, accessibility for persons with disabilities, and welfare of the present and future inhabitants of the municipality…”

The aforementioned Provincial Acts require municipalities to become more accessible for persons with disabilities through required programming and authority to implement accessibility standards on site plan and draft plan of subdivision applications. However, it should be noted that these Provincial Acts do not specifically require the implementation of UB at this time.

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The following outlines the applicable provincial and local policies and discusses how the recommendations of this report achieve conformity or consistency. As outlined earlier, the Province of Ontario has introduced recent legislation intended to improve accessibility for persons with disabilities. Accordingly, the Provincial Policy Statement, which provides “broad brush” policies on planning matters, has been updated to implement the intent of the recently introduced legislation. Additionally, the Downtown Hamilton Secondary Plan, and recently Council Approved Urban Hamilton Official Plan, contain policies that are consistent with the provincial initiative to improve accessibility for persons with disabilities. However, the former Regional and municipal Official Plans pre-date this recent legislation and policy, and are generally silent on the topic.

**Provincial Policy Statement:**

The following policy of the Provincial Policy statement is applicable to the planning for UB:

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1.1.1 Healthy, liveable, and safe communities are sustained by: …
   f) improving accessibility for persons with disabilities and the elderly by removing and/or preventing land use barriers which restrict their full participation in society;…"
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The proposed recommendations are consistent with the Provincial Policy Statement since it provides an opportunity to improve accessibility for persons with disabilities, and the elderly, by expanding the existing UB network to other areas outside of the downtown core.

**New Urban Hamilton Official Plan (Council Approved)**

The following policies, among others, of the Council Approved Urban Hamilton Official Plan are applicable to the subject report:

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B.3.3.2.5 Places that are safe, accessible, connected and easy to navigate shall be created by using the following design applications, where appropriate: …
   h) including *urban braille* components in streetscape improvements;

B.3.3.2.10 Streets shall be designed not only as a transportation network but also as important public spaces and shall include, where appropriate: …
   d) pedestrian amenities such as lighting, seating, way-finding signage, and *urban braille*;
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B.3.3.11.3 The City shall pursue the implementation of an *urban braille* network throughout the Downtown Urban Growth Centre and other existing and planned Nodes, as appropriate. *Urban braille* installation may be required as part of new development and redevelopment, and shall be implemented through the site plan approval process.

B.4.2.13 Hamilton’s transportation network shall be developed to be inclusive of the needs of persons with disabilities, seniors, children, and those with reduced mobility through the following provisions: …

b) ensuring that sidewalks are accessible and accommodate people with impaired or reduced mobility using techniques including curb cuts, *urban braille*, and appropriately designed crosswalks at intersections and roundabouts;

C.4.2.14 The City shall continue to be a leader in providing accessible sidewalks and other public spaces by maintaining and expanding the *urban braille* network.

C.4.2.14.1 Priority areas for expanding the City’s *urban braille* network shall be within the Downtown Urban Growth Centre and within Sub-Regional Service Nodes, in accordance with Policy B.3.3.11 - Barrier Free Design and Section E.2.0 - Urban Structure, and in areas that will create connections to existing *urban Braille* areas.

B.6.3.2 Large institutions contained in a campus-like setting shall be encouraged to undertake campus plans which address the following matters: …

b) pedestrian linkages between buildings, pedestrian circulation plans, and attention to pedestrian environment, including the installation of *urban braille*;

E.1.9.2 The City may seek to secure any of the following community benefits: …

o) off-site landscaping and streetscaping treatments, including but not limited to *urban braille*, enhanced park facilities, and tree planting;”

The proposed recommendations would conform to the new Urban Hamilton Official Plan since it allows for the inclusion of UB components in streetscape improvements and newly designed streets at appropriate locations, allows for the expansion of UB to all downtowns, allows for the creation of connections from existing UB areas to private properties with a semi-public character or function (including all Sub-Regional Service Nodes), and provides for an inclusive “transportation network”.

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Putting People First: The New Land Use Plan for Downtown Hamilton (2001)

The following policy of the Downtown Hamilton Secondary Plan is applicable to the subject report:

“2.4.7.2.1 d) Walking accounts for more daily trips in Downtown Hamilton than any other mode of transportation. All streets in Downtown Hamilton will provide a safe pedestrian realm through appropriately designed sidewalks, provision of Urban Braille, landscaping, seating areas, transit shelters, and other amenities. The extent to which these amenities can be incorporated may vary from street-to-street.”

The above noted policy requires the installation of UB throughout the Hamilton Downtown Core. The proposed recommendation conforms to the Putting People First: The New Land Use Plan for Downtown Hamilton, since it allows for the expansion of the existing UB system to privately owned properties with a semi-public character or function in the Downtown Hamilton Core.

Based on the foregoing, the proposed recommendation is consistent with the applicable provincial policy, and conforms to the applicable local Official Plans.

RELEVANT CONSULTATION

Planning staff commenced work on the UB program in 2004, intending to create a manual to provide technical standards and guidance and recommendations for the expansion of the UB System based on best practice survey and consultation with various user and special interest groups. Staff consulted with the following departments, who provided functional and technical expertise in the review process:

- Corporate Services Department (Access and Equity).
- Public Works Department (Landscape Architectural Services).
- Public Works Department (Design and Construction Section)
- Public Works Department (Operations and Maintenance Division)
- Parking and By-law Services Division.
- Hamilton Street Railway

As part of this program, staff also conducted surveys and held interviews with special interest groups, which included: the Canadian National Institute for the Blind (CNIB) and citizen user groups. These groups provided valuable information regarding the overall effectiveness of the current UB systems.

Additionally, staff made presentations to the Downtown West Harbour Front Co-ordinating Committee in September of 2008, and the Advisory Committee for Persons with Disabilities on:
At this latter meeting of February 9, 2010, staff also presented the general recommendations advised in this report to the Advisory Committee for Persons with Disabilities. The Advisory Committee remained of the opinion that UB should be installed throughout the City, as originally advised. The Advisory Committee also recommended that UB be installed in facilities and associated development as part of the Pan Am Games. This is reflected in Recommendation (e) to Report PED10089.

Specifically, the ACPD confirmed its previous recommendation to staff that UB needs to be installed throughout the City, in all new site plans, as well as existing properties such as the Port Authority lands and privately owned apartment buildings. The ACPD provided the following recommendation, as forwarded to Planning staff by Clerk’s:

“Re: Urban Braille Design and Implementation Manual (Item 6.1)

Staff presented to the Advisory Committee for Person with Disabilities a portion of the Urban Braille Design and Implementation Manual respecting the installation of Urban Braille in new locations.

The Committee confirmed its previous recommendation to staff that Urban Braille needs to be installed throughout the City because people are mobile everywhere in the City, not just in the downtown core areas.

The Committee indicated that Urban Braille should be installed everywhere where there is new construction, even in the side streets. Some private properties should also have Urban Braille, such as the Port Authority on the harbour and privately owned apartment buildings.

After some discussion and debate, the Committee approved the following motions:

(F. Chesney/T. Wallis)

(a) The Advisory Committee for Persons with Disabilities recommends that the installation of Urban Braille be expanded, and that Urban Braille be incorporated in any necessary construction related to the Pan Am Games venues and the connections between those venues.
(b) The Advisory Committee for Persons with Disabilities recommends that in addition to the priorities identified in the *Urban Braille Design and Implementation Manual*, Urban Braille be incorporated in any pedestrian routes adjacent to new developments and site plan developments.  

**CARRIED**

An analysis of the ACPD recommendation is found in the Analysis/Rationale For Recommendation section of this report.

**ANALYSIS / RATIONALE FOR RECOMMENDATION**

(include Performance Measurement/Benchmarking Data, if applicable)

This section analyzes and provides the rationale for staff’s response to the financial and planning implications put forward by the ACPD, evaluates the installation of UB within municipal parks and open space trails, and presents the rationale and financial implications of staff’s recommendation.

**ACPD Recommendation**

The ACPD has advised in their recommendation to Council that UB be implemented City-Wide in order to eliminate barriers for persons with disabilities. The Committee’s mandate is to recommend policies, procedures, and guidelines that address the needs and concerns of people with disabilities. On June 16, 2005, the Customer Service Access and Equity Department presented a report to Council on behalf of the ACPD with the following recommendations:

“*that Urban Braille be incorporated into the standards for all new site plans and all retrofitted/revised streetscapes in the City of Hamilton*”; and,

“*that Urban Braille guidelines be converted into standards which should be mandatory for all new site plans for both public and private facilities including institutional, industrial, commercial and multi-unit residential uses, and all retrofitted or revised streetscapes in the City of Hamilton.*”

**Staff Analysis**

UB is designed as a user-friendly planned and coherent networked system that improves accessibility, is aesthetically pleasing, and when installed in a continuous manner, provides an uninterrupted path of travel that connects districts and contributes to the identity of Hamilton as a leader in its universal design. Planning and Economic Development staff analyzed the recommendations put forth by the ACPD. Several issues were examined as part of this review to determine if the City-Wide application of UB in both public and private developments is both appropriate and feasible.
Staff’s analysis revealed that there are certain circumstances that do not warrant the implementation of UB despite high concentrations of pedestrian traffic. According to the CNIB access and mobility instructors, the visually impaired use textural clues to navigate through their environment. In some suburban streets, the grassed boulevard that buffers the sidewalk from the road provides enough textural clues to the visually impaired to signal to them that they have left the main path of travel. In the UB system, the dark textured “shorelines” define the limits of the main path. The UB textured “shorelines” perform the same function to a visually impaired pedestrian as the grassed boulevard does.

The City standard for primary pedestrian routes in all new site plan applications is 1.5 metres, which meets the needs of the physically challenged. Currently, UB is typically installed in the public realm on downtown streets with high pedestrian concentrations that are mandated for repair or renovation. It is typically installed in a block-by-block configuration to promote connectivity. When staff evaluated the technical and financial implications of the ACPD’s unconditional recommendation to include UB as part of all site plans for private sector facilities, it was concluded that only certain areas satisfying the following criteria should be considered as priorities for UB:

- Demographics (i.e. sites and areas that may have a higher percentage of physically or visually challenged pedestrians, such as a hospital or nursing home).
- High pedestrian populations.
- Serviced by local transit or having a transit node.
- Compact development.

Staff examined various privately owned sites that satisfied the above criteria, paying particular attention to the interface with the public realm. For UB to be effective, it must be a logical, continuous path of travel from A to B as part of a coherent and planned network. For example, if a hospital is undergoing redevelopment plans, it is logical to implement UB from the main entrance of the hospital to the nearest drop off area and/or bus stop. However, if a site plan for a private sector facility is not located near a transit stop or public drop-off area, the UB system will not have a continuous path of travel, and could potentially leave its users disoriented.

Requiring UB on all site plan applications will result in a sporadic, sometimes remote, disjointed, non-coherent system that leaves its users, particularly the visually impaired, disoriented. UB linkages from private property to public property must be established in order for the UB to be effective. As the context of all site plans varies, each application will be reviewed by City staff to ensure appropriate connectivity.
Financial Implications of ACPD Recommendation

Planning and Public Works staff analyzed the financial implications of the ACPD recommendation and conducted a cost comparative analysis, of which the results are outlined below.

Public Works staff advises that the installation of UB is generally 1.9 times more expensive than standard concrete construction, since average cost for the installation of a concrete sidewalk is $80/m² compared to $150/m² for UB. However, a standard City sidewalk is 1.5m wide, whereas the UB system requires a sidewalk width of 1.96m and, as such, the actual cost difference is 2.45 times greater, which is calculated as follows:

<table>
<thead>
<tr>
<th>Type of Sidewalk</th>
<th>Avg. Cost for installation</th>
<th>Amount of Concrete Required (based on width)</th>
<th>Avg. Cost per Linear Metre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>$80m²</td>
<td>1.5m</td>
<td>$120</td>
</tr>
<tr>
<td>Urban Braille</td>
<td>$150m²</td>
<td>1.96m</td>
<td>$294</td>
</tr>
<tr>
<td><strong>Cost Difference (UB/Standard)</strong></td>
<td></td>
<td>2.45</td>
<td></td>
</tr>
</tbody>
</table>

*Costs calculated Based on 2009 $

Given that there are 2,332 kilometres of existing sidewalk in the City (based on 2006 data), the table below compares at a very high level the overall cost of implementing UB in the downtown compared to a city-wide application as recommended by the ACPD.

<table>
<thead>
<tr>
<th>Sidewalk Location</th>
<th>KM of Sidewalk</th>
<th>Cost to install 1.5m wide Stnd. Sidewalk</th>
<th>Cost to Install 1.96m Wide UB Sidewalk</th>
<th>Cost Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sidewalks in Downtown Hamilton</td>
<td>68</td>
<td>$8.16 Million</td>
<td>$20.4 Million</td>
<td>$12.24 Million</td>
</tr>
<tr>
<td>Sidewalks across entire City (2006)</td>
<td>2,330</td>
<td>$229.6 Million</td>
<td>$699.0 Million</td>
<td>$469.4 Million</td>
</tr>
<tr>
<td><strong>Total Increase (Entire City - Downtown Hamilton)</strong></td>
<td></td>
<td><strong>$457.16 Million</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Costs calculated Based on 2009 $

Currently, UB comprises approximately 3% (68km/2,330km) of the total capital sidewalk program. The initial costs of installing UB on the 97% (the increase from 3% to 100%) of sidewalks that are not part of the current UB program would be $457,160,000. This value reflects the costs to install UB on the 2,262 km (2,330 km - 68 km) as part of an increased UB program.

Operating Budget Impacts and Repair of UB

When a single bay of sidewalk needs to be replaced, it is completed through the Maintenance Break and Repair Program through the Operating Budget. Public Works staff estimates that it costs $190/m² to replace a bay of UB sidewalk, compared with
$100/m² for a conventional sidewalk, resulting in a 90% increase in the operating costs for the areas with UB. In larger capital streetscape projects, the costs for UB construction are $150/m², which is reduced from $190/m² due to economies of scale associated with larger areas being constructed.

**Sustainability of Sidewalks and Funding Requirements**

To ensure that sidewalks are replaced every 50-years (based on a 50-year life cycle of sidewalk); the following table shows the financial analysis of the UB installation compared to the current sidewalk construction program. Additionally, the last column shows how long it would take to replace the sidewalks under the different scenarios, if current expenditures on sidewalk programs were maintained.

<table>
<thead>
<tr>
<th>Sidewalk Programs</th>
<th>Yearly Current Capital Expenditures</th>
<th>Yearly Sustainable Capital Expenditures (based on 50 yrs.)</th>
<th>Replacement Time for Sidewalks ($2.780 Million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status Quo (including the current Urban Braille program)</td>
<td>$2.780 Million</td>
<td>$5.678 Million</td>
<td>102 years</td>
</tr>
<tr>
<td>Urban Braille expanded to include <strong>entire City</strong></td>
<td>n/a</td>
<td>$8.395 Million</td>
<td>151 years</td>
</tr>
</tbody>
</table>

*Costs calculated Based on 2006 $*

Based on the foregoing, staff considers that while the all-inclusive recommendation of requiring UB installation on all sidewalks and all new site plan applications may ideally be of community benefit and equitable in its overall objective, staff is of the opinion that this initiative is not sufficiently pragmatic due to the matters of physical connectivity, individual site-specific characteristics and cost-effectiveness. Given the cost constraints, staff is of the opinion that UB should be installed at certain priority locations, which makes best use of limited resources.

**Parks and Open Space Trails**

As noted in the Relevant Consultation section of this report, the ACPD also clarified that the intention of their recommendation was for UB to be included in all public projects, including park projects. As a result, staff evaluated the expansion of UB to parks and open space trails.

Public Works staff has advised that currently parks and open space trails are constructed of asphalt, with an average width of 3m based on technical and user requirements. The table below demonstrates that the cost to replace the traditional asphalt paths at City parks and open space trails with UB would result in an increase of 375%.
**Evaluation of Financial Impacts to Park Development**

<table>
<thead>
<tr>
<th></th>
<th>Asphalt Paths</th>
<th>Urban Braille Paths</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>3m wide park paths</td>
<td>$40/m²</td>
<td>$150/m²</td>
<td>375%</td>
</tr>
<tr>
<td>Average park path cost</td>
<td>$93,000 - $110,000</td>
<td>$348,000 - $412,000</td>
<td>375%</td>
</tr>
</tbody>
</table>

*Costs calculated Based on 2009 $*

A typical 2 hectare neighbourhood park costs approximately $500,000 to construct. It is estimated that an additional $255,000 to $302,000 is required to replace the asphalt with UB, resulting in an average 55% increase. This also impacts the related development charges.

As part of its comprehensive review, staff analyzed the requirements of visually impaired users in a park setting in conjunction with users and the CNIB. Staff was advised that most park paths or trails are flanked by soft landscape (e.g. grass, shrubs). Discussions with stakeholder groups, such as the CNIB, stated that visually impaired pedestrians walking on a park path typically know that they have left the main path of travel due to the textural contrast of the adjacent grass, for example. Technically, the grass functions in a similar manner to the textured “shorelines” of UB in an urban environment. Given that UB is generally 3 times more expensive than an asphalt park path, it is an expensive paving option that was deemed not functionally necessary by visually impaired users. Moreover, the textured components of the UB system on a park trail or path (e.g. obstruction markers, decision nodes, etc.) will create a rough surface that may impede some forms of multi-purpose recreation.

Therefore, due to the fact that the principles of UB are already being met on the majority of park trails and paths, and UB is an expensive paving option if for only aesthetic reasons, this report recommends that UB is not a preferred option for most recreational trails and parks. However, the necessity for UB in all new parks will be assessed and determined on a site-by-site basis by the Landscape Architectural Services staff of the Public Works Department, particularly on paths adjacent to roadways with UB, using the criteria listed below.

The implementation of future parks may warrant a further evaluation for installation of the complete UB system if 2 or more of the following criteria are met:

1. UB is proposed or existing on adjacent streetscapes and along park frontage. Ideally, the installation of the UB sidewalk would be completed in conjunction with any UB walkway improvements in the park to ensure a continuous system.

2. High pedestrian traffic is present, or there is potential for pedestrian traffic through the park from one destination to another.

3. Park is located on a transit route, the park frontage has a transit stop, or if there is a transit hub in direct relation to the park.
4. Key community destination(s) are contained in the park, such as a Community Centre.

5. Contrast between path and adjacent surfaces are not possible/not sufficient.

These criteria would automatically predispose any parks in the Downtown Secondary Plan (2001) area for further evaluation of UB since all the streets in this area are proposed to have UB sidewalks with a high pedestrian volume.

Given the continuing vested interest on the part of the ACPD, staff has recommended that the Advisory Committee be consulted with respect to UB installation in parks where it has been determined that there is a demonstrated need, transit accessibility, and budget availability (see Recommendation (c)).

**Pan American Games**

As noted in the Relevant Consultation section of this report, the ACPD recently suggested that UB be installed at newly constructed Pan American Games facilities, and that the UB network be expanded to connect all Pan American Games facilities. Staff has evaluated this recommendation, and note that Recommendation (c) of this report would automatically require the consideration of installing UB at newly constructed Pan American Games facilities, being a public building location, in consultation with Public Works staff.

In regard to linking all Pan American Games facilities, staff (noting that this was advised as a specific course of action by ACPD) is advising in Recommendation (e) that City staff involved with matters related to the implementation of the Pan-Am Games in 2015 be advised of the ACPD direction on this matter, and report back to Council and the ACPD on the feasibility of UB installation in the Pan-Am Games facilities and properties.

**Staff's Recommendations**

Through staff’s comprehensive review of the City’s current UB network, it was determined that the most appropriate locations to expand UB are to the Hamilton downtowns, and on portions of private property with a semi-public character, as well as parks and public building locations on a case-by-case basis.

**Former Downtowns**

As part of the preparation work for the draft *Urban Braille Design and Implementation Manual* (see Appendix “D”), Planning staff, using broad criteria, considered all the downtowns were potential candidates for the installation of UB. To refine the potential locations, staff conducted field assessments in the Hamilton downtowns to determine the most appropriate locations to install UB based on pedestrian populations, need, transit accessibility, existing street cross section, and budget with the following priority:
1. Downtown Dundas;
2. Downtown Stoney Creek;
3. Ancaster Village Core; and,
4. Downtown Waterdown.

Below are summaries of the results and findings.

**NOTE:** The costs provided are for information purposes only and no approval is being sought for funding commitments at this time.

**Downtown Dundas**

Field assessments of the Dundas town core determined the best application of UB, and examined existing bus routes, pedestrian activity, compact urban development, location of civic and service amenities, and demographics. The Hatt Street Urban Design Study, which outlines the City’s proposal for future growth within the Dundas town core, was also taken into consideration.

Based on these criteria, staff concluded that UB would benefit most pedestrians if it were implemented along King Street West, from York Street to Market Street, with a loop along Hatt Street (see Appendix “A”). UB in these locations connects civic and service amenities, including the Dundas Community Centre, the library, the Dundas School of Art, banks, and a medical clinic, in addition to areas with high density residential communities. This represents a linear distance of approximately 2,010m, or 4,020 linear metres of UB sidewalk for both sides of the street. Staff has identified both primary and secondary locations. The primary locations identified on the map can support UB at this present time. The secondary locations are more appropriate as Hatt Street intensifies and should be evaluated every five years to assess need.

The following chart provides a preliminary cost estimate of the proposed/recommended primary and secondary UB locations. It also provides the relative cost to install standard concrete sidewalk in these locations. Staff has based the cost estimate for UB with curb and gutter, as the existing street cross section in the Dundas town core has sidewalks that meet the curb.

<table>
<thead>
<tr>
<th>Sidewalk Material</th>
<th>Cost per linear metre of 1.96m sidewalk</th>
<th>Proposed cost for 4,020 lin. m. of Primary Sidewalk</th>
<th>Proposed cost for 1,440 lin. m. of Secondary Sidewalk</th>
<th>Total cost for implementation of Primary and Secondary Sidewalks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Braille</td>
<td>$300.00</td>
<td>$1,206,000</td>
<td>$432,000</td>
<td>$1,638,000</td>
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<tr>
<td>Concrete (stnd)</td>
<td>$160.00</td>
<td>$643,200</td>
<td>$230,400</td>
<td>$873,400</td>
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</tbody>
</table>

*Costs calculated Based on 2009 $*
**Stoney Creek**

Based on the evaluation criteria, staff is advising that the primary location for UB in Stoney Creek is along King Street West, from New Mountain Road to the high density residential development at Village Green (see Appendix “A” - Page 2). This represents a distance of approximately 750 linear metres (1,500 linear metres of sidewalk for both sides of the street). UB in this location connects compact commercial development with civic and service amenities, including two churches, and a senior’s Community Centre, in addition to areas with high density residential communities.

A secondary UB location has also been identified for the south side of King Street West, from Walker Avenue past the Stoney Creek Scout Hall and the arena to Battlefield House Museum and Park. The chart below provides a preliminary cost estimate of the recommended primary and secondary UB locations. It also provides the relative cost to install standard concrete sidewalk in these locations for reference purposes. Staff has based the cost estimate for UB with curb and gutter, as the majority of the existing street cross section in Stoney Creek town core has sidewalks that meet the curb. It should be noted that UB has been installed on the south side of King Street, between Centennial and Battlefield Drive, as part of the street improvements associated with Battlefield Park.

<table>
<thead>
<tr>
<th>Sidewalk Material</th>
<th>Cost per linear metre of 1.96m sidewalk</th>
<th>Proposed cost for 1,500 lin. m. of Primary Sidewalk</th>
<th>Proposed cost for 360 lin. m. of Secondary Sidewalk</th>
<th>Total cost for implementation of Primary and Secondary Sidewalks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Braille</td>
<td>$300.00</td>
<td>$450,000</td>
<td>$108,000</td>
<td>$558,000</td>
</tr>
<tr>
<td>Concrete (std)</td>
<td>$160.00</td>
<td>$240,000</td>
<td>$57,600</td>
<td>$297,600</td>
</tr>
</tbody>
</table>

*Costs calculated Based on 2009 $*

**Ancaster Village Core**

Based on the evaluation criteria, Ancaster Village Core has low to moderate pedestrian traffic. Presently, it experiences moderate transit frequency with buses arriving approximately every thirty minutes during peak times to every hour by midday. The main street, Wilson Street, has a comfortable pedestrian scale with street related commercial facilities and public amenities, such as, the Old Town Hall and library. It does, however, have a suburban cross-section (i.e. the sidewalk is adjacent to a grassed boulevard, which provides tactile warning to the visually impaired user). Staff recognizes that the grassed boulevard may not be present in perpetuity, at which time UB may be warranted. The proposed location of UB would be along Wilson Street East, from Halson Street to Academy Street (see Appendix “A” - Page 3). In this location, UB connects two churches, the public library, and Old Town Hall, in addition to street related commercial facilities, all on a bus route.
The results of the site inventory and analysis indicate that the Ancaster Village core is a low priority for the implementation of UB. However, its status should be reviewed every five years to determine if UB is warranted as the village intensifies. The chart below provides a preliminary cost estimate of the identified UB location. It also provides the cost to install standard concrete sidewalk in this location. Additionally, Planning’s work plan identifies the Ancaster Village Core area for secondary planning, where the installation of UB will be re-evaluated.

### Sidewalk Material Costs

<table>
<thead>
<tr>
<th>Sidewalk Material</th>
<th>Cost per linear metre of 1.96m wide sidewalk</th>
<th>Proposed cost for 1000 lin. m. of Identified Sidewalk Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Braille</td>
<td>$300.00</td>
<td>$300,000</td>
</tr>
<tr>
<td>Concrete (stnd)</td>
<td>$160.00</td>
<td>$160,000</td>
</tr>
</tbody>
</table>

*Costs calculated Based on 2009$

**Downtown Waterdown**

Based on the evaluation criteria, staff found that Downtown Waterdown has moderate pedestrian traffic, and is currently serviced by bus transit. The majority of the sidewalks in Downtown Waterdown have grassed boulevards between the sidewalk and the road edge, which on one level, negates the need for UB. Grass provides a textural difference between the main path of travel and the adjacent roadway functioning in the same capacity as UB “shorelines”. The commercial area along Dundas Street East (Highway No.5 East), between Hamilton Street and Mill Street, is a pedestrian oriented pocket with street related facilities and an urban cross-section (i.e. the sidewalk is adjacent to the curb). Given the low to moderate pedestrian traffic, and limited transit service, Downtown Waterdown is low on the priority list for implementation of UB at this present time. However, UB would benefit most users if it were implemented along Dundas Street East, between Hamilton Street and Mill Street, a distance of 500 linear metres (see Appendix “A” - Page 4). Waterdown’s status as an UB candidate should be reviewed regularly every five years to determine if it is warranted as the area intensifies. Additionally, Planning staff’s Work Plan identifies the Downtown Waterdown area (Waterdown Node) for secondary planning, where the installation of UB will be re-evaluated.

The chart below provides a preliminary cost estimate of the identified UB location. It also provides the cost to install standard concrete sidewalk in this location.

### Sidewalk Material Costs

<table>
<thead>
<tr>
<th>Sidewalk Material</th>
<th>Cost per linear metre of 1.96m wide sidewalk</th>
<th>Proposed cost for 1000 lin. m. of Identified Sidewalk Location</th>
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</thead>
<tbody>
<tr>
<td>Urban Braille</td>
<td>$300.00</td>
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</tr>
<tr>
<td>Concrete (stnd)</td>
<td>$160.00</td>
<td>$160,000</td>
</tr>
</tbody>
</table>

*Costs calculated Based on 2009$
Binbrook Village Core

The site inventory and analysis revealed that the main street, Regional Road 56, presently has a dominant suburban cross-section (i.e. the existing concrete sidewalk is adjacent to a grassed boulevard). As noted earlier, grass provides a texture difference between the concrete sidewalk and the roadway, functioning to a large extent in the same way as the pigmented “shorelines” of UB. Furthermore, the speed limit (approximately 60km per hour) along this stretch of road is not conducive to a comfortable pedestrian environment and, as a result, pedestrian traffic here is low. Although Binbrook is currently experiencing great growth with many low and medium density residential developments under construction, it does not meet the design criteria necessary to justify the implementation of UB at this point in time. Low pedestrian traffic, lack of public transit, together with a dominant suburban street cross-section, puts Binbrook Village in the low priority category for the implementation of UB.

It should be noted that the Binbrook Secondary Plan requires that the intersection of Regional Road 56 and Binbrook Road be developed as a prominent focal point to the community. The Council approved Binbrook Village Community Core Urban Design Guidelines (2004) describe, in detail, how this core area might develop over time, including the potential of a village square and the appropriate application of UB.

City Owned Properties

Most improvements to City owned properties other than parks and trails are usually subject to Site Plan Control. At the site plan approval stage, Planning staff, in consultation with Public Works staff and ACPD, will determine if the implementation of UB is appropriate given the type of development and number of pedestrians using the site. They will determine the best possible location for UB, including which components of the system should be included in that environment. UB is best implemented from major entrances of all City-owned buildings to the nearest transportation area be it bus, shuttle, or drop-off area, where appropriate and where possible, such as:

- Administrative buildings (e.g. City Hall, municipal offices).
- Arenas.
- Libraries.
- Museums.
- Recreation and Community Centres.

Implementation of Urban Braille on Property with Semi-Public Use and Access

As outlined in the Policy Implications section of this report, the recent revisions to the Planning Act now enable the City, through site plan applications, to facilitate accessibility for persons with disabilities, and the elderly, including the installation of UB. As such, staff recommends that UB be implemented, through the site plan control process, on portions of private properties with a semi-public character or function, on a
case-by-case basis. For definition purposes, staff has determined that the semi-public uses would be limited to major institutional facilities (e.g. hospitals, universities, colleges, etc.) and private properties with a semi-public use and access (e.g. commercial malls and plazas, etc.). These are examined in further detail below.

**Major Institutional Facilities**

Staff examined the relationship of major institutional facilities across the City to their context within the streetscape. Major institutional facilities, such as hospitals, fall under the semi-public realm, which are all exterior spaces that are available and accessible to the general public that are typically publicly funded. UB can be implemented in the semi-public realm in proximity to major institutional facilities based on demand, type of facility, resident population, and cost. This shall be determined by the appropriate City department, including Planning and Economic Development and Public Works, at the Site Plan Approval or design stage. These facilities shall include, but are not limited to:

- Hospitals.
- Community Centres.
- Educational Facilities (i.e. colleges, universities, schools).

The City will work with development partners, such as, educational organizations and hospitals, to provide appropriate UB linkages from the main building entrances to a public street with UB, transit stop, and/or drop-off area. A modified, scaled down version of the City standard UB system may be implemented through the installation of key components such as “shorelines”, and not the full use of all nine (9) icons. A recent example is the expansion of Mohawk College’s STARTT Institute on Barton Street East, which implemented UB.

**Private Properties with a Semi-Public Use or Access**

It is recognized that certain private properties have high pedestrian traffic and accessibility to public transit, most notably malls (e.g. Limeridge Mall, Eastgate Square, etc.), and these warrant the installation of a scaled down version of the UB system to ensure complete accessibility and safety of all of the site’s users. Within the area that is contained on private property, a continuation of the community fabric with UB is most effective adjacent to roadways, driveways, drop-offs, parking lots, or any area where there may be a pedestrian path adjacent to a vehicular route. UB may be required as part of the site plan approval process on these sites, and will be required as a continuous path from the main entrance of the facility to the closest transit stop. UB requirements are to be reviewed at the Site Plan Approval stage by City staff. Also, at the Site Plan Approval stage, City staff will work with HSR and their development partners to determine the most appropriate and cost-effective solution for the implementation of UB. A recent example is the Heritage Green commercial development.
In considering alternatives to the recommended action, Council could consider the following:

1. **Adopting the ACPD’s recommendations that:**

   “Urban Braille be incorporated into the standards of all new site plans and all retrofitted streetscapes in the City of Hamilton”; and,

   “Urban Braille guidelines be converted into standards which should be mandatory for all new site plans for both the public and private facilities including institutional, industrial, commercial, and multi-unit residential uses”.

   As discussed in this report, the all-inclusive recommendation of requiring UB installation on all sidewalks and all new site plan applications may be unrealistic due to:

   - Readily available and inexpensive environmental and built indicators, such as grassed boulevards and other textural differences in materials that are available for accessibility;

   - Lack of overall connectivity;

   - Site-specific characteristics; and,

   - Prohibitive costs given the competing demands for scarce public funds.

   Accordingly, staff is not recommending this course of action, but is of the opinion that the monitoring of UB installation, either in the public or private realm, is warranted to assess continuing need.

2. **Change the locational priorities for the installation of UB**

   The priorities that staff has recommended have been rationalized on a variety of factors including local demographic/population, need, transit accessibility, and existing street cross sections. Council could establish new priorities, based on other considerations, as deemed appropriate.
3. **Change the functional priorities for the installation of UB**

The priorities that staff has recommended have been rationalized on a number of functional characteristics. Council could establish new priorities or remove the notion of functional priorities and treat all such locations equally, in keeping with ACPD advice.

**CORPORATE STRATEGIC PLAN** (Linkage to Desired End Results)


**Skilled, Innovative & Respectful Organization**

- A culture of excellence.
- A skilled, adaptive, and diverse workforce, i.e. more flexible staff.
- More innovation, greater teamwork, better client focus.
- An enabling work environment - respectful culture, well-being, and safety.

**Social Development**

- Residents in need have access to adequate support services.
- People participate in all aspects of community life without barriers or stigma.

**Healthy Community**

- Plan and manage the built environment.
- An engaged Citizenry.
- Adequate access to food, water, shelter and income, safety, work, recreation, and support for all (Human Services).

**APPENDICES / SCHEDULES**

Appendix “A”: Location Maps of Urban Braille in the Downtowns.
Appendix “B”: Urban Braille: General Design Components.
Appendix “C”: Draft Table of Contents for the *Urban Braille Design and Implementation Manual*.
Appendix “D”: Draft Sections 1.0 and 3.0 of the *Braille Design and Implementation Manual*.

;DF
Attchs. (4)
Urban Braille in Downtown Dundas

Dundas Population: 24,702

Dundas Bus Routes:
#52A Dundas Local
• Weekday AM service every 30 minutes between 6am-9am and PM service every 30 minutes between 3pm-6pm.

#52 Main-West Dundas
• Weekday peak service every 30 minutes
• Off-peak service every 60 minutes.
• Weekend service every 30 minutes.

Downtown Dundas
Urban Braille in Downtown Stoney Creek

Stoney Creek Population - 62,292

Stoney Creek Bus Routes:
#5 Delaware (via King St.)
Weekday and Saturday service every 30 minutes,
Sunday service every 60 minutes.

#58 Stoney Creek Local
• Weekday and Saturday service every 30 minutes,
Sunday service every 60 minutes.
Ancaster Village Core
(along Wilson St. from Halston St. to Rousseaux St.)

Ancaster Population- 33,232

Ancaster Bus Routes:
#5C West Hamilton
• Weekday service every 30 minutes.

#16 Ancaster
• Weekday peak service every 30 minutes, off-peak service every 60 minutes until 7pm (Thursday & Friday 10pm)
• Saturday service every 60 minutes until 9pm.
Urban Braille in Downtown Waterdown

Downtown Waterdown (along Dundas St. E. from Mill St. to Hamilton St.)

Population of Flamborough (includes Waterdown): 39,220

Waterdown Bus Routes:
#18 Waterdown
- Weekday service every 30 minutes.

---

Downtown Waterdown

Legend:
- Urban Braille
- Compact Mixed Use Development

Date: March 2007

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Urban Braille: General Design Components

**Main Clearway**
- This is an unobstructed path of travel for wheelchairs, scooters, and other sidewalk users to bypass each other.

**Minor Clearway**
- The minor pathway acts as an alternate route to the main pathway.

**Shorelines**
- Defines the limits of the main pathway and road edge.

**Street Name Sidewalk Plates**
- Indicates the street name perpendicular to the path of travel.

**Decision Node Symbols**
- Indicates more than one route of travel (i.e. major building entrances, stairways, minor pathways).

**Bus Stop Detection Strip**
- Indicates proximity of bus stops and/or bus shelters.

**Textured Bands/Warning Strips**
- Provides clear “tactile” warning of imminent potential conflict.

**Corner Curbs and Ramps**
- Depressed curbs/ramps at intersections to provide ease of access to the physically impaired, visually impaired, cyclists, pedestrians with strollers, etc.

**Directional Strips**
- Directional strips clearly denote direction of travel at street intersections.
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URBAN BRAILLE
DESIGN AND IMPLEMENTATION MANUAL

CITY OF HAMILTON

Heritage and Urban Design
Community Planning and Design
Planning and Economic Development Department

Capital Planning and Implementation
Open Space Development and Park Planning Section
Public Works
URBAN BRAILLE: DESIGN AND IMPLEMENTATION MANUAL

URBAN BRAILLE

1.0 URBAN BRAILLE OVERVIEW
1.1 History of Urban Braille

The Urban Braille system originated in the former City of Hamilton in 1996. It was developed as a collaborative effort between the City of Hamilton Planning and Public Works Departments, the former City’s Pathway Committee and the Canadian National Institute for the Blind (CNIB). The City’s urban designers worked with the public, transportation engineers, and social health experts to develop a simple and effective accessible sidewalk system to serve the high pedestrian areas of Hamilton’s Downtown.

The Urban Braille system was first implemented in 1996 during the reconstruction of Parkdale Avenue in east Hamilton between Queenston Road and Barton Street East. The technical design of the system developed informally within the City of Hamilton and there was no formal manual or design standards. The system evolved with the implementation of each streetscape project. A refined version was eventually implemented on King Street East and is now in widespread use in the Downtown core.

Hamilton’s Urban Braille system takes its name from the well known Braille system, devised in 1821 by Louis Braille: a tactile alphabet used by blind individuals to read and write. Similarly, Hamilton’s Urban Braille System is a tactile series of markings in the pavement that communicate distinct clues such as pavement edge, change in direction, major building entrances and warning of potential obstructions or danger.

The success of Urban Braille resulted in its recognition at the 2003 Sustainable Community Recognition Awards where the City of Hamilton Planning and Development Department (Heritage and Urban Design Section) received the Community Accessibility Design Award. The City also received an Award of Merit for Barrier Free Design by the Ontario March of Dimes.
1.2 Urban Braille Overview

What is it?

Urban Braille is a system of way-finding and safety. By impressing variations of two textures on the sidewalk surface, light and dark, smooth and grooved, Urban Braille indicates change in direction, sidewalk boundaries, bus stops, ramps and curbs. Other features of the system include markings denoting building entrances, concrete street name plates at intersections, as well as providing minimum width clearance for unobstructed wheelchair access on the street.

Who uses it?

Urban Braille is a system that delivers universal accessibility. Included as features, are ramps at corners, a defined unobstructed clear path of travel with shorelines that define a path of travel for visually impaired persons. Other pedestrians such as the elderly, the infirm, users of mobility devices such as wheelchairs and motorized scooters, parents with strollers, in addition to the general public also benefit from the improved ease and comfort this sidewalk treatment provides.

Where is it?

The Urban Braille system is located in a number of areas in Hamilton. The Downtown Hamilton Secondary Plan (2001) has also identified Urban Braille as a required streetscape component. This system has been incorporated into the following streetscape improvement initiatives (see Downtown Hamilton map on the following page):

Downtown Hamilton
- Bay Street
- King Street West and East
- John Street North
- King William Street
- Hughson Street South
- Ferguson Avenue
- Gore Park area

East Hamilton
- Parkdale Avenue (from Queenston Road to Barton Street East)

West Hamilton
- Main Street West (near McMaster University Medical Centre)

As part of the City’s Capital Projects over the next 3 to 10 years, several streetscape improvement projects are anticipated to be implemented including Catharine Street, York-Wilson Street, and Main Street.
1.3 Urban Braille Design Components

Urban Braille is characterized by nine key design components. These are listed and described in the following illustrations:

1. **Main Clearway**
   The main clearway defines an unobstructed path of travel for wheelchairs, scooters, and other sidewalk users to bypass each other.

2. **Minor Clearway**
   The minor clearway defines an alternate route to the main clearway.

3. **Shorelines**
   Shorelines are dark grey textured bands that define the limits of the main or minor clearway.

4. **Warning Strip**
   A warning strip is a dark grey soldier band of ridged grooves that defines the edge of the curb.

5. **Street Name Sidewalk Plate**
   A street name sidewalk plate indicates the adjacent street name. The plates are oriented perpendicular to the path of travel.
5. Decision Node Symbol
A decision node symbol indicates major building entrances or changes in direction.

6. Bus Stop Detection Strip
A bus stop detection strip is a double dark grey textured band that runs perpendicular to the path of travel and indicates proximity to a bus stop or bus shelter.

7. Directional Lines
Directional strips are grooved lines in the pavement that run parallel to the path of travel and identify direction to the opposite corner at street intersections.

8. Warning Band
A warning band is a textured set of ridged grooves in the pavement that provides a physical "tactile" clue to potential hazards for example at a driveway approach or at a curb ramp.

These nine design elements form the core components of Urban Braille. The Appendix in Part 2 of this manual describes in detail the consultation process and the evaluation of how effective these components were to intended users.

Following this review, a revised set of consistent standards were prepared by City staff and form the key content of Section 2: New Design Standards and Guidelines.
3.0 URBAN BRAILLE: DESIGN AND IMPLEMENTATION MANUAL
INSTALLATION OF URBAN BRAILLE: NEW LOCATIONS

3.1 Introduction
The City of Hamilton Downtown Hamilton Secondary Plan mandates the implementation of Urban Braille on all downtown streets. Urban Braille will be installed on a location by priority basis based on repair, renovation or redesign in accordance with the Planning and Economic Development Strategic Plan. It is the ultimate goal of the City to have a cohesive continuous accessible system in place throughout the downtown.

The Advisory Committee for Persons with Disabilities (ACPD) have advised in their recommendation to Council that Urban Braille be implemented city-wide in order to eliminate barriers for persons with disabilities. The Committee’s mandate is to recommend policies, procedures and guidelines that address the needs and concerns of people with disabilities. On June 16, 2005, the Customer Service Access and Equity Department presented a report to Council on behalf of the ACPD with the recommendation “that Urban Braille be incorporated into the standards for all new site plans and all retrofitted/revised streetscapes in the City of Hamilton”. Their second recommendation was “that Urban Braille guidelines be converted into standards which should be mandatory for all new site plans for both public and private facilities including institutional, industrial, commercial and multi-unit residential uses and all retrofitted or revised streetscapes in the City of Hamilton.”

Urban Design staff commends the ACPD for promoting Urban Braille as a standard pedestrian treatment across the City. It is a user-friendly system that improves accessibility, is aesthetically pleasing, and when installed in a continuous manner, provides an uninterrupted path of travel that connects districts and contributes to the identity of Hamilton as a leader in universal design.

Planning and Economic Development staff analyzed the recommendations put forth by the ACPD. Several issues were examined as part of this review to determine if the city-wide application of Urban Braille in both private and public developments is both appropriate and feasible.

Staff’s analysis revealed that there are certain circumstances that do not warrant the implementation of Urban Braille despite high concentrations of pedestrian traffic. According to the Canadian National Institute of the Blind (CNIB) access and mobility instructors, the visually impaired use textural clues to navigate through their environment. In some suburban streets, the grassed boulevard that buffers the sidewalk from the road provides enough textural clues to the visually impaired to signal to them that they have left the main path of travel. In the Urban Braille system, the dark textured shorelines define the limits of the main path. Urban Braille's textured shorelines perform the same function to a visually impaired pedestrian as the grassed boulevard does.
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It should be noted that the City standard for primary pedestrian routes in all new site plan applications is 1.5m which meets the needs of the physically challenged.

Currently, Urban Braille is typically installed in the public realm on downtown streets with high pedestrian concentrations that are mandated for repair or renovation. It is typically installed in a block by block configuration to promote connectivity. When staff examined the implications of the ACPD’s unconditional recommendation to include Urban Braille as part of all site plans for private sector facilities, it was determined that only sites satisfying the following criteria should be considered:

- High pedestrian populations.
- Serviced by local transit or having a transit node.
- Compact development.
- Demographics (i.e. sites that may have a higher percentage of physically or visually challenged pedestrians such as a hospital or nursing home).

Staff examined various privately owned sites that satisfied the above criteria paying particular attention to the interface with the public realm. For Urban Braille to be effective, it must be a logical continuous path of travel from A to B. For example, if a hospital is undergoing redevelopment plans, it is logical to implement Urban Braille from the main entrance of the hospital to the nearest bus stop. If the bus stop is located on public property, a partnership between the hospital and the City may be established at the Site Plan approval stage. The hospital would agree to take the Urban Braille to the property line and the City would commit to continue that path to the nearest bus stop. This may mean that existing sidewalks are potentially removed and replaced with Urban Braille. In order for this to be realistically feasible, sidewalks would have to be mandated for repair or renovation in the City’s capital budget.

Requiring Urban Braille on all site plan applications may potentially result in a sporadic, disjointed system that may leave its users, particularly the visually impaired, disoriented. Urban Braille linkages from private property to public property must be established in order for the Urban Braille to be effective. As the context of all site plans varies, each application will be reviewed by City staff to ensure appropriate connectivity. This section of the manual contains appropriate examples of Urban Braille implementation in the private realm.
3.0  

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Cost
Although it is difficult to provide a direct cost comparison of Urban Braille to a standard sidewalk due to site constraints, varying format between the two, time of year of construction, and quantity of work, Public Works staff advises that Urban Braille is at least 2.5 times more expensive than concrete. The average cost for the installation of a concrete sidewalk is $80 m² compared to $150 m² for Urban Braille. The cost per linear metre of a 1.96 metre wide Urban Braille sidewalk is $300 (without curb and gutter).

Policy
Urban Braille is currently only mandatory for all downtown streets as described in the Downtown Secondary Plan section 2.4.7.2.1 Policies for Streets and Public Spaces.

The outcome of the analysis during the course of this review provides recommendations for implementation of Urban Braille beyond what is described in the Downtown Hamilton Secondary Plan.

<table>
<thead>
<tr>
<th>Sidewalk Location</th>
<th>Km of Sidewalk</th>
<th>Cost to Implement 1.96m wide regular concrete sidewalk at $120,000 per linear kilometre without curb and gutter</th>
<th>Cost to Implement 1.96m wide Urban Braille sidewalk at $300,000 per linear kilometre without curb and gutter</th>
<th>Cost Difference Between Implementation of Concrete compared to Urban Braille</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sidewalks in Downtown Hamilton</td>
<td>68</td>
<td>$8.16 Million</td>
<td>$20.4 Million</td>
<td>$12.24 Million</td>
</tr>
<tr>
<td>Sidewalks across entire City (2006)</td>
<td>2330</td>
<td>$229.6 Million</td>
<td>$699.0 Million</td>
<td>$469.4 Million</td>
</tr>
</tbody>
</table>

Costs may be higher in areas where surface and/or subsurface facilities may need relocation.

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Downtown Hamilton  
Secondary Plan  
Section 2.4.7.2.1  
Enhancing Streets and Public Spaces.

All streets in Downtown Hamilton will provide for a safe pedestrian realm through appropriately designed sidewalks, provision of the Urban Braille System, landscaping, seating areas, transit shelters and other amenities.
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Urban Braille Implementation Summary

Accordingly, the all-inclusive recommendation of requiring Urban Braille installation on all site plan applications is not realistic due to connectivity, site specific characteristics, cost and current policy. As discussed, its unconditional implementation may result in a sporadic, disjointed system that may leave its users, particularly the visually impaired, disoriented.

As part of this review, staff has identified specific locations in the greater Hamilton area including the former downtowns and large institutional uses that are logical candidates for the implementation of Urban Braille. These locations are discussed in sections 3.2, 3.3 and 3.4.

3.2 Urban Braille in the Downtowns

Staff conducted field studies in the Hamilton downtowns to determine the most appropriate locations to install Urban Braille based on pedestrian populations, need, transit accessibility, existing street cross section and budget with the following priority:

3.2.1 Downtown Dundas
3.2.2 Downtown Stoney Creek
3.2.3 Ancaster Village Core
3.2.4 Downtown Waterdown
3.2.5 Binbrook Village Core
3.2.1 Urban Braille in Downtown Dundas

Staff conducted field studies of Dundas town core to determine the best application of Urban Braille. Field studies examined existing bus routes, pedestrian activity, compact urban development, location of civic and service amenities, and demographics. The Hatt Street Urban Design Study which outlines the City's proposal for future growth within the Dundas town core was also taken into consideration.

Based on this criteria, staff recommends that Urban Braille would benefit most pedestrians if it were implemented along King Street West from York Street to Market Street with a loop along Hatt Street (refer to map). Urban Braille in these locations connects civic and service amenities including the Dundas Community centre, the library, the Dundas School of Art, banks, a medical clinic in addition to areas with high density residential communities. This represents a linear distance of approximately 2010m or 4020 linear meters of Urban Braille sidewalk for both sides of the street.

Staff has identified both primary and secondary locations. The primary locations identified on the map can support Urban Braille at this present time. The secondary locations are more appropriate as Hatt Street intensifies and should be evaluated every five years to assess need.

The chart below provides a preliminary cost estimate of the recommended primary and secondary Urban Braille locations. It also provides the relative cost to install standard concrete sidewalk in these locations. Staff has based the cost estimate for Urban Braille with curb and gutter as the existing street cross section in Dundas town core has sidewalks that meet the curb.

<table>
<thead>
<tr>
<th>Sidewalk Paving Material</th>
<th>Cost per linear meter of 1.96m wide sidewalk</th>
<th>Proposed cost for 4020 lin. m. of Primary Sidewalk Location</th>
<th>Proposed cost for 1440 lin. m. of Secondary Sidewalk Location</th>
<th>Total Cost for implementation of Primary and Secondary Sidewalks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Braille sidewalk</td>
<td>$300.00</td>
<td>$1,206,000</td>
<td>$432,000</td>
<td>$1,638,000</td>
</tr>
<tr>
<td>Concrete sidewalk (standard)</td>
<td>$160.00</td>
<td>$643,200</td>
<td>$230,400</td>
<td>$873,400</td>
</tr>
</tbody>
</table>

Costs may be higher in areas where surface and/or subsurface facilities may need relocation.
3.2.2 Urban Braille in Downtown Stoney Creek

Staff conducted field studies of Stoney Creek town core to determine the best application of Urban Braille. Staff examined existing bus routes, pedestrian activity, compact urban development, location of civic and service amenities, location of high density residential, and demographics.

Based on this criteria, staff recommend that the primary location for Urban Braille in Stoney Creek is along King Street West from New Mountain Road to the high density residential development at Village Green. This represents a distance of approximately 750 linear metres (1500 linear metres of sidewalk for both sides of the street). Urban Braille in this location connects compact commercial development with civic and service amenities including two churches, a seniors community centre in addition to areas with high density residential communities.

A secondary Urban Braille location has also been identified for the south side of King Street West from Walker Avenue past Stoney Creek Scout Hall and arena to Battlefield House Museum and Park.

The chart below provides a preliminary cost estimate of the recommended primary and secondary Urban Braille locations. It also provides the relative cost to install standard concrete sidewalk in these locations for reference purposes. Staff has based the cost estimate for Urban Braille with curb and gutter as the majority of the existing street cross section in Stoney Creek town core has sidewalks that meet the curb.

<table>
<thead>
<tr>
<th>Sidewalk Paving Material</th>
<th>Cost per linear meter of 1.98m wide sidewalk</th>
<th>Proposed cost for 1500 lin. m. of Primary Sidewalk Location</th>
<th>Proposed cost for 300 lin. m. of Secondary Sidewalk Location</th>
<th>Total Cost for implementation of Primary and Secondary Sidewalks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Braille sidewalk</td>
<td>$ 300.00</td>
<td>$ 450,000</td>
<td>$ 108,000</td>
<td>$ 558,000</td>
</tr>
<tr>
<td>Concrete sidewalk (standard)</td>
<td>$ 160.00</td>
<td>$ 240,000</td>
<td>$ 57,600</td>
<td>$ 297,600</td>
</tr>
</tbody>
</table>

Costs may be higher in areas where surface and/or subsurface facilities may need relocation.

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3.2.2.1 Urban Braille in Downtown Stoney Creek

Stoney Creek Population: 62,292

Stoney Creek Bus Routes:
- #5 Delaware (via King St.)
  Weekday and Saturday service every 30 minutes, Sunday service every 60 minutes.
- #58 Stoney Creek Local
  - Weekday and Saturday service every 30 minutes, Sunday service every 60 minutes.
3.2.3 Urban Braille in Ancaster Village Core

Staff conducted field studies of Ancaster village core to determine the best application of Urban Braille. Staff examined existing bus routes, pedestrian activity, compact urban development, location of civic and service amenities, and demographics.

Ancaster Village core has low to moderate pedestrian traffic. Presently, it experiences moderate transit frequency with buses arriving approximately every thirty minutes during peak times to every hour by midday. The main street, Wilson Street, has a comfortable pedestrian scale with street related commercial facilities and public amenities, such as, the Old Town Hall and library. It does, however, have a suburban cross-section i.e. the sidewalk is adjacent to a grassed boulevard which provides tactile warning to the visually impaired user. Staff recognizes that the grassed boulevard may not be present in perpetuity at which time Urban Braille may be warranted. The proposed location of Urban Braille would be along Wilson Street East from Halson Street to Academy Street. In this location, Urban Braille connects two churches, the public library, Old Town Hall in addition to street related commercial facilities, all on a bus route.

The results of the site inventory and analysis indicate that Ancaster Village core is a low priority for the implementation of Urban Braille. However, its status should be reviewed every five years to determine if Urban Braille is warranted as the village intensifies.

The chart below provides a preliminary cost estimate of the identified Urban Braille location. It also provides the cost to install standard concrete sidewalk in this location.

<table>
<thead>
<tr>
<th>Sidewalk Paving Material</th>
<th>Cost per linear meter of 1.96m wide sidewalk</th>
<th>Proposed cost for 1000 lin. m. of identified Sidewalk Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Braille sidewalk</td>
<td>$300.00</td>
<td>$300,000</td>
</tr>
<tr>
<td>Concrete sidewalk (standard)</td>
<td>$160.00</td>
<td>$160,000</td>
</tr>
</tbody>
</table>

Costs may be higher in areas where surface and/or subsurface facilities may need relocation.
3.2.4 Urban Braille in Downtown Waterdown

Downtown Waterdown has moderate pedestrian traffic and currently serviced by bus transit. The majority of the sidewalks in Downtown Waterdown have grassed boulevards between the sidewalk and the road edge which on one level, negates the need for Urban Braille. Grass provides a textural difference between the main path of travel and the adjacent roadway functioning in the same capacity as Urban Braille shorelines. The commercial area along Dundas Street East (Highway No.5 East) between Hamilton Street and Mill Street is a pedestrian oriented pocket with street related facilities and an urban cross-section i.e. the sidewalk is adjacent to the curb.

Given the low to moderate pedestrian traffic and limited transit service, Downtown Waterdown is low on the priority list for implementation of Urban Braille at this present time. However, Urban Braille would benefit most users if it were implemented along Dundas Street East between Hamilton Street and Mill Street, a distance of 500 linear metres. Waterdown's status as an Urban Braille candidate should be reviewed regularly every five years to determine if it is warranted as the area intensifies.

<table>
<thead>
<tr>
<th>Sidewalk Paving Material</th>
<th>Cost per linear meter of 1.36m wide sidewalk</th>
<th>Proposed cost for 1000 lin. m. of Identified Sidewalk Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Braille sidewalk</td>
<td>$300.00</td>
<td>$300,000</td>
</tr>
<tr>
<td>Concrete sidewalk (standard)</td>
<td>$180.00</td>
<td>$160,000</td>
</tr>
</tbody>
</table>

Costs may be higher in areas where surface and/or subsurface facilities may need relocation.
3.2.4.1 Urban Braille in Downtown Waterdown

Downtown Waterdown (along Dundas St. E. from Mill St. to Hamilton St.)
Population of Flamborough (Includes Waterdown) - 39,220
Waterdown Bus Routes:
#16 Waterdown
Weekday service every 30 minutes.
3.2.5 Urban Braille in Binbrook Village Core

Staff conducted field studies of Binbrook Village core to determine if Urban Braille is warranted. Staff examined existing bus routes, pedestrian activity, compact urban development, location of civic and service amenities, and demographics.

The site inventory and analysis revealed that the main street, Regional Road 56 presently has a dominant suburban cross-section, i.e. the existing concrete sidewalk is adjacent to a grassed boulevard. As described in the introduction of this section, grass provides a texture difference between the concrete sidewalk and the roadway, functioning to a large extent in the same way as the pigmented shorelines of Urban Braille. Furthermore, the speed limit (approximately 60km per hour) along this stretch of road is not conducive to a comfortable pedestrian environment and as a result pedestrian traffic here is low.

Although Binbrook is currently experiencing great growth with many low and medium density residential developments under construction, it does not meet the design criteria necessary to justify the implementation of Urban Braille at this point in time. Low pedestrian traffic, lack of public transit together with a dominant suburban street cross-section puts Binbrook Village in the low priority category for the implementation of Urban Braille.

It should be noted that the Binbrook Secondary Plan requires that the intersection of Regional Road 56 and Binbrook Road be developed as a prominent focal point to the community. The Binbrook Village Community Core Urban Design Guidelines describe in detail how this core area might develop over time including the potential of a village square and the appropriate application of Urban Braille.
3.2.5.1 Urban Braille in Binbrook Village Core

Binbrook Village Core
(Intersection of Highway 56 and Binbrook Road East and West)
Population of Glenbrook (including Binbrook): 15,263
3.3 City Owned Facilities:

3.3.1 Urban Braille in Public and Semi-Public Location

At the site plan approval stage, the Planning and Design staff will determine the potential for Urban Braille at the site. They will then determine the best possible location for Urban Braille based on the type of development and number of buildings. The decision will be made to accommodate the needs of all pedestrian users.

Urban Braille should be implemented from major entrances of all City-owned buildings to the drop-off area where appropriate (if possible). The use of Braille will change direction towards the building entrance.

- Public buildings, i.e., City Hall, municipal
- Libraries
- Arenas
- Recreation and Community Centres

In the example shown, Urban Braille connects the main entrance of the public building to the public sidewalk. A decision was made to locate in the public sidewalk on the main building façade to align with the change direction towards the building entrance.
3.3.2 Public Parks

Urban Braille should be implemented in all public parks including urban parks as determined appropriate and necessary by City staff.

It will be implemented at facilities based on need, transit accessibility and budget as they are reconstructed, redesigned, repaired, or renovated. Facilities may or may not include parks and open space (to be reviewed by appropriate City staff to determine necessity).

The sketch to the right demonstrates the potential implementation of Urban Braille in a park environment. If at all possible, the Urban Braille should:

- Connect with existing Urban Braille on the public road allowance and continue along any pedestrian walkways that are adjacent to vehicular driveways.
- Connect with park amenity buildings as necessary.

A scaled down modified version of the Urban Braille City standard may be implemented in parks at the discretion of City staff.

For an in depth analysis of Urban Braille implementation in public parks including field studies, refer to the appendix of this manual.
3.3.3 Major Institutional Facilities

Staff examined the relationship of major institutional facilities across the city to their context within the streetscape. Major institutional facilities such as hospitals, fall under the semi-public realm which are all exterior spaces that are available and accessible to the general public that are typically publicly funded.

Urban Braille can be implemented in the semi-public realm in proximity to major institutional facilities based on demand, type of facility, resident population, and cost. This shall be determined by the appropriate City department including Planning and Economic Development, Public Works, Parks Planning etc. at the Site Plan Approval or design stage.

These facilities shall include but are not limited to:
- Hospitals
- Community centres
- Educational facilities, i.e. colleges, universities, schools.

The City will work with development partners, such as, educational organizations and hospitals, to provide appropriate Urban Braille linkages from the main building entrances to the property line to the public street, transit stop, and/or drop off area. A modified scaled down version of the City standard Urban Braille system may be implemented.

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3.3.4 Outdoor Boulevard Café Patios

Location and Size

The following are excerpts from the City of Hamilton Outdoor Boulevard Café Patios - Urban Design Guidelines that are specific and relevant to Urban Braille. The document was prepared by the Planning & Economic Development Department, Downtown Renewal Division and Long-Range Planning and Design Division, Heritage and Urban Design Section and was approved by Council in 2003. For a complete copy of the Outdoor Boulevard Café Patios Urban Design Guidelines, refer to section A.8.9 in the appendix of this document.

Outdoor boulevard cafes in the public realm may have the following standard locations:
• At a building face at grade level.
• On a boulevard between the sidewalk and the curb.
• On a pedestrian mall.

• Boulevard patio cafes cannot interfere with the accessibility by the public of the public realm.
• Space limitations on some sidewalks will prohibit the implementation of a boulevard patio café. For example:

a) If the public realm clearway width is less than 2500mm measured from building face to curb edge.

b) If the public realm clearway width is less than 1650mm measured from building face to outer shoreline plus a boulevard of less than 1500mm measured from outer shoreline to curb edge.

• Lands intended for boulevard cafes must conform to the Zoning Bylaws of the abutting lands.

• In most cases, the outer edge of a boulevard café must have a setback 0.45m from the inside edge of a public sidewalk or shoreline.

There are some instances where a boulevard patio café occurs in a major clearway particularly along King Street East in downtown Hamilton. In these situations, a minor clearway must be implemented as an alternative route to the major clearway.

In these instances, all obstructions (light poles, hydrants, tree grates, flower beds, benches, etc.) are to be located outside the limits of the minor clearway.

The clearway must have a minimum dimension of 1500mm measured inside the shorelines.

A warning strip with a minimum 230mm (9") width located a minimum of 5000mm (5 metres, 16’ 3") from the patio fence or boundary must be is implemented. The enhanced warning strip must be located on either side of all patios occurring in the major clearway.
3.4 Urban Braille on Private Property

Urban Braille is currently only located within the public realm. Revisions to the Planning Act in 2007 now enable the City to facilitate the installation of Urban Braille as part of the overall amenity of a site and to accommodate accessibility for people with disabilities.

The Urban Braille Design and Implementation Manual shall be the basis for providing guidance and recommendations for the City of Hamilton’s Urban Braille system for public and private projects under site plan control and for the purpose of site plan approval.

It is recognized that certain private development sites (semi-private realm) have high pedestrian traffic and accessibility to public transit should warrant a scaled down version of the Urban Braille system to ensure complete accessibility and safety of all of the site’s users.

Within the area that is contained on private property, a continuation of the community fabric with Urban Braille is most effective adjacent to roadways, driveways, drop-offs, parking lots or any area where there may be a pedestrian path adjacent to a vehicular route.

Urban Braille may be required as part of the site plan approval process on sites that have high pedestrian populations and/or accessibility to public transit for example a shopping mall.

It is required as a continuous path from the main entrance of the facility to the closest transit stop. If the transit stop is located on public property, the City will continue the Urban Braille from the property line to the transit stop. Urban Braille requirements to be reviewed at the Site Plan Approval stage by City staff.

Minimum Urban Braille components might include:

- a) Main Clearway
- b) Shorelines
- c) Directional Strips
- d) Corner Curbs and Ramps
- e) Warning Strips

See figure 3.4.1 and 3.4.2 on the following pages for scaled down versions of the Urban Braille system on private property.

Figure a
Figure b
Figure c
Figure d

The lack of pedestrian crosswalks at Limeridge Mall bus terminal results in a less than ideal pedestrian environment with pedestrian/vehicular conflict. (Figure a,b,c,d)
3.4.1 Semi-Private Property: Shopping Malls

Urban Braille is beneficial in a semi-private application where there is a high concentration of pedestrian traffic and access to public transit. In this example, Urban Braille connects the main transportation node (located on private property) with the main entrance of the shopping mall.

Generally, the main walkways should be paved in a light colour to provide contrast to the dark gray shorelines. Shorelines should be located along the curb edge of any vehicular routes in the vicinity of the transportation node.

At the Site Plan Approval stage, City staff will work with HSR and their development partners to determine the most appropriate and cost effective solution for the implementation of Urban Braille.
3.4.2 Semi-Private Property: Singular Building

Urban Braille is beneficial in a semi-private application where there is a high concentration of pedestrian traffic and access to public transit. In this example, the Urban Braille connects the private realm with the public realm by extending from the main building access/egress points and connecting to the public sidewalk and transit stop.

Shorelines are located along the curb edge of all walkways adjacent to vehicular routes or driveways.