



City of Hamilton

**DEVELOPMENT OF POLICY PAPERS FOR PHASE TWO OF
THE TRANSPORTATION MASTER PLAN FOR THE CITY OF
HAMILTON
ACCESS MANAGEMENT POLICY PAPER**

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1. INTRODUCTION

1.1 Study Background and Objectives

The City of Hamilton *City-wide Transportation Master Plan* will provide inputs to the *Growth Related Integrated Development Strategy* (GRIDS) and make recommendations to Council on the adoption of a City-wide Transportation Policy that is cognisant of Vision 2020 and other City of Hamilton long-term planning objectives. The project has been divided into three distinct phases. The first phase consisted of the technical calibration of the existing transportation model to reflect current transportation conditions in Hamilton. The second phase, which is the object of this and other policy papers, will focus on the development of 23 policy papers in the following areas: Travel Demand, Urban Development, System Performance, Infrastructure Planning and Infrastructure Financing. Following the completion of the Policy Papers, the City will proceed to develop transportation scenarios (Phase 3 of the project) based upon the results of the policy work performed in Phase 2 and the land use scenarios developed through the broader GRIDS study, and will test the efficiency and viability of these scenarios by integrating them into the calibrated model.

The purpose of this paper is to identify and evaluate policy options related to **Access Management**.

1.2 Access Management

The ability of arterial roads to move traffic safely and efficiently is governed by two basic factors:

- The operations at the signalized intersections of arterials; and
- The friction caused by vehicles entering and exiting the arterial roadways from unsignalized intersecting streets and property driveways.

Therefore, in order to optimize roadway operations, a policy is required that addresses how, where and when these two access management factors are managed in the City of Hamilton.

Access management is a relatively new term, although the basic principles of access management have been around for some time. Access management is defined as the systematic control of the location, spacing, design and operation of driveways, median openings, interchanges and street connections to a roadway.¹ This Policy Paper considers the potential to add access management policies to the Transportation Master Plan. This may involve policies that direct the location, spacing, design and operation of driveways, median openings and street connections to arterial roadways.

In considering access management policies, it is important to recognize that there is always a need to balance competing objectives. In particular, there is a significant relationship between access management and urban design objectives. For example, in some residential areas the desire to allow homes to face the street and be accessed from the street (as opposed to reverse frontage configurations) may take precedence over access management principles. In fact, many of the older arterial streets in Hamilton have adjacent residential dwellings with frequent driveway access. All of the policies discussed and recommended in this paper should be considered in this light.

¹ Access Management Manual; Transportation Research Board, Washington, D.C., 2003

2. REVIEW OF EXISTING CITY OF HAMILTON POLICIES

2.1 Current Practices and Relevant Resources

At the City of Hamilton, interpreting, applying and monitoring traffic control devices and geometry at signalized intersections is the responsibility of the Traffic Engineering and Operations Section of the Roads and Traffic Division in the Public Works Department. Traffic Engineering and Operations is currently responsible for most elements of access management in the City, including:

TRAFFIC ENGINEERING & OPERATIONS	
Traffic Signals & Systems	Traffic Planning
<ul style="list-style-type: none"> • Signal request and warrants • Signal operation revisions (i.e. timing, advance green, walk time) 	<ul style="list-style-type: none"> • Traffic impact studies of proposed developments • Driveway access permits • Permanent road & alley closures

A number of resources provide guidance on access management and are used on a regular basis by the City of Hamilton:

Manual of Uniform Traffic Control Devices produced through the Transportation Association of Canada (TAC). The Manual (MUTCDC) contains in Part B factors to be considered prior to installing a traffic control signal, including a warrant procedure.

Ontario Traffic Manual (OTM) Book 12 published by the Province of Ontario outlined warrants for full traffic signal control at an intersection.

Highway Capacity Manual – provides procedures to examine the traffic flow units (cars, trucks, transit vehicles, cycles, pedestrians) at signalized intersections, and uses both analytical and evaluation methods to determine an effective allocation of time and space to conflicting traffic streams. A variety of different solutions can be assessed using the performance measures from the Manual. The Institute of Transportation Engineers **Canadian Capacity Guide for Signalized Intersections**, 2nd edition provides similar procedures for signalized intersections.

The **Geometric Design Standards Manual** published by the Ministry of Transportation and the **Geometric Design Guide for Canadian Roads** published by the Transportation Association of Canada provide guidance on the geometric design of intersections, including minimum lane dimensions, storage lengths, corner clearances, medians and intersection angles.

As discussed in the Warrant Paper, the City of Hamilton also has a number of warrant procedures that govern various traffic control devices/techniques:

- Installation Policy for Full Traffic Signals, City of Hamilton, 2001
- Installation Policy for Intersection and Mid-Block Pedestrian Signals, City of Hamilton, 2001
- Installation Policy for All-way Stop Control at Intersections, City of Hamilton, 2001

- Speed Limit Policy, 2001
- Use of Speed Humps on Residential Streets, 2000

2.2 Review of Existing City of Hamilton Policies

Prior to amalgamation, most Region of Hamilton-Wentworth municipalities applied the national signalized intersection, traffic control and road design guidelines noted in the preceding subsection. There were some examples of the more rural municipalities sometimes adjusting these guidelines in response to special access needs such as farm access, but the intent now is for the City of Hamilton to use a standard set of intersection, traffic control and road design guidelines.

The former Region of Hamilton had a policy regarding access for regional roads, which essentially limited all access on regional arterial roads. It is understood that this policy is still in force and applied regularly. It is also noted that the principles contained in the former Region were less explicit than contemporary access management principles and focused mainly on spacing and regulation of driveway access.

For roads that did not fall under the former Region policies, application of access management principles has been mixed, owing to varying needs of different types of land uses. For example, drive-through fast food operations and big box retailers rely on ample access points, compared to multi-unit residential developments that are not as sensitive to the amount or location of site access.

3. SUPPORTING INFORMATION AND ANALYSES

3.1 Arterial Roadway Access Management

The application of specific types of access control measures is dependent on the type of roadway being accessed, and the type of land use generating the access need. Access management is particularly important along arterial roads where through traffic movement takes priority over access to individual properties, although access to property must still be provided either directly by appropriately located, spaced and designed driveways, or indirectly off local or collector streets that intersect with the arterials. Access management is also important on collector and local streets, but more for safety reasons than the optimization of through traffic capacity.

Owing to this transportation/land use relationship that creates the need for access management, trade-offs are often required in applying access management guidelines, often between the need for optimum arterial through capacity and operation, versus the localized access needs of a particular property or development. As a result, the appropriate amount of access control or restriction will differ based on the functional role of the roadway, the character of abutting land use requiring access and the City’s planning objectives along arterial corridors. Less restrictive access management guidelines may be more desirable along some roads such as commercial corridors, and this level of access management can either be based on road classifications, or on designation of specific routes for access management.

In either case, an access management policy would provide an opportunity to delineate between different levels of access control on the City’s arterial network, while at the same time maintaining the predominant role of arterial roads to move through traffic safely and efficiently. The types of specific guidelines that an access management policy could describe include:

Access Management Measure	Application
<ul style="list-style-type: none"> • Treatment of Unsignalized Intersections 	<ul style="list-style-type: none"> • Left Turn Lanes • Right Turn Lanes
<ul style="list-style-type: none"> • Access to Arterial Roads 	<ul style="list-style-type: none"> • Corner Clearance • Number of Driveways • Design of Internal Subdivision Road Network • Use of Centre Medians
<ul style="list-style-type: none"> • Access Locations 	<ul style="list-style-type: none"> • Minimum Driveway Spacing • Centreline Alignments • Angle of Intersection
<ul style="list-style-type: none"> • Access Operations 	<ul style="list-style-type: none"> • Mutual Shared Driveways • Design Treatments

3.2 Intersection Operations

On a fairly regular basis, the City of Hamilton is required to evaluate request from the public or development community for installation of traffic signals, two-way stops and all-way stops. The access management policy should reiterate the predominance of the Manual of Uniform Traffic Control Devices, Ontario Traffic Manual Book 12 and related City of Hamilton traffic operations policies in determining the installation of these traffic control measures. Policies should include

statements on the consequences of inappropriate or unwarranted installations of the devices based on anecdotal information within the City, other municipalities and professional organizations such as TAC and ITE.

Further information on policies regarding traffic control warrants, are provided in the corresponding **Warrants Paper**.

4. REVIEW OF PRACTICES IN OTHER JURISDICTIONS

According to studies conducted by the Transportation Research Board and other industry sources, access management on major roadways helps to maintain desired speeds and reduce delays, while increasing the number of access points and signals on a roadway results in increased delays. The effects of specific access management techniques on roadway capacity summarized below from the TRB Access Management Manual show improvements in safety and operational conditions based on a synthesis of research (not location-specific applications):²

Access Management Measure	Effects
Add a continuous two-way left turn lane on arterial roadway	30% increase in roadway capacity
Add a nontraversable median on an arterial roadway	30% increase in capacity
Add left-turn bay	25% increase in capacity
Prohibition of on-street parking	30% increase in traffic flow

One example of arterial access management currently practiced in Ontario is the **Region of Waterloo's** delineation of "Controlled Access-Prohibited" and "Controlled Access-Regulated" Regional Roads in their Official Policies Plan. These Regional Roads form the urban and rural arterial roadway network through the Region and its local municipalities. The Region maintains a Regional Road Access Bylaw and associated Regional Implementation Guidelines on access that regulates the location, design and construction of any access to a Regional Road. In general, direct access to Regional Roads is restricted or prohibited to maintain the integrity of the Regional Road system as follows:³

- *New development along a Regional Road will have access provided from area municipal roads wherever practical;*
- *Access locations are discouraged in close proximity to intersections, at-grade railway crossings, road abutments or where minimum sight distances are not met; and*
- *Openings in a centre median for a private access are only permitted where there will be substantial trip generation or transit movement, and appropriate traffic control strategies can be implemented.*

Another example of access management planning is the Arterial Road Capacity Optimization Guidelines recently prepared for the **City of London** in association with the City's new Transportation Master Plan. One transportation planning principle established by London is:⁴

Optimize Arterial Network Capacity – *In previous studies, surveys and public responses regarding transportation, most London residents have traditionally shown a strong desire for a safe, convenient and effective transportation system. At the same time, the City of London has a responsibility to provide a functional transportation system with an appropriate Level-of-Service (LOS) for the movement of people and goods.*

In response, and wherever possible, priority will now be placed on optimizing the vehicle and person-carrying capacity of the existing arterial roadway network before investing in new major

² Access Management Manual; Transportation Research Board, Washington, D.C., 2003

³ Regional Official Policy Plan, December 1998 Consolidation

⁴ Arterial Road Capacity Optimization Guidelines, IBI Group for the City of London, September 2003

capital improvements such as road widenings, extensions and new roads. Optimizing vehicle capacity will involve maximizing the operational capacity of existing signalized intersections through improved phase determination and timing, pre-emption control of traffic signals, dedicated turn lanes and transit priority measures. Vehicle optimization will also involve improved access management along major routes by restricting or limiting on-street parking, and implementing access management techniques such as turn restrictions and minimum driveway guidelines where required within the City.

The London guidelines cover signalized intersection operations (phase determination, timing, detector layout, pre-emption) and access management (turn lanes, centre medians, minimum driveway spacing, access operations). In developing the guidelines, field tests of specific measures were conducted on two arterial roadway sections to evaluate traffic optimization effectiveness. One test section involved a major arterial road traversing a new development area where residential access is limited, but where there is pressure for additional commercial access. The other test section is through an older mixed use area with multiple driveways and intersecting local streets.

5. IDENTIFICATION OF POLICY OPTIONS

5.1 Key Policy Issues

The City of Hamilton Transportation Master Plan will include a comprehensive functional hierarchy of roadways across the City (see Policy Paper on Roadway Classification). This classification system provides the framework on which a number of optional policies can be developed for access management, roadway planning, design and operations. These optional policy subjects are:

1. The **priority** given in Hamilton to arterial roadway mobility compared to property access;
2. **Design standards** applied to access management techniques and signalized intersection operations along arterial roads;
3. The degree to which arterial roads and associated access management techniques will apply to various **modes of transportation** and users;
4. The **degree of traffic and access management** ranging from restrictive to permissive; and
5. The **relative importance** of Hamilton's arterial roadway operations in relation to traffic signals and other traffic control devices.
6. The interaction with **land use and urban design** objectives, which at times may compete with access management principles

5.2 Policy Options

The preceding optional policy subjects for access management in Hamilton are all considered to be part of the final access management policy. Each subject has been examined in terms of what it adds to the policy as summarized below.

5.2.1 PRIORITY

Access management is often a process involving trade-offs and balancing competing objectives between mobility and accessibility. While property access is obviously an important prerequisite to successful property development, it can be negated by congested arterial conditions that limit access and create a negative image of adjacent property development (i.e. commercial uses). Therefore, it is recommended that in the City of Hamilton's access management policy, arterial roadway mobility and Level of Service should take first priority in the planning of access and intersection operations. This should be interpreted and applied as meaning that any proposed access or intersection treatment that is determined to be potentially detrimental to the operation of an arterial road can be denied.

5.2.2 DESIGN STANDARDS

Design standards used for access management measures such as driveways and driveway spacing should conform to the Ministry of Transportation's **Geometric Design Standards Manual** and/or the **Geometric Design Guide for Canadian Roads** by TAC. These standards must also be applied consistently across the City, with the rationale clearly described to the public and equitably administered. This approach is recommended to ensure ease of use and user understanding of all access management and intersection operation measures in the City, and to avoid liability claims against the City arising from substandard access control and intersection operations.

5.2.3 MULTI-MODAL APPLICATION

Access management and intersection operations should be applied and designed not only for auto traffic, but also for commercial vehicles, transit vehicles, cyclists, pedestrian and persons with special mobility needs. This multi-modal approach to access management ensures that the person-carrying capacity of arterial roads is optimized, as well as the vehicle capacity.

5.2.4 DEGREE OF MANAGEMENT

Traffic control warrants and access design standards often involve a range of values such as lane widths between x and y metres, or intersection volumes between x and y vph. In these cases, although maximum values may be desirable when making access management or traffic control decisions, the minimum values often become the norm. This situation can be avoided by setting the minimum standards that represent the desired values, with a supporting deviation process that allows consideration of lesser standards where unique or special conditions make the use of the minimum standards unrealistic. This approach to minimum design and warrant standards provides a degree of access control management that is restrictive, but with special allowances and consideration of alternative solutions. For example, some municipal traffic agencies include a formal appeal procedure in cases where access permits are denied, with some using a designated access management committees to hear such appeals and make final decisions. A more common approach is for the municipal decision-makers to consider alternative access provisions to offer an applicant, should the preferred access request off an arterial road be denied.

5.2.5 RELATIVE IMPORTANCE

The need for safe and convenient traffic operations at an acceptable Level of Service should be the paramount priority for access management and traffic control planning in Hamilton. This priority begins with the functional classification system established for the roadway network as the guiding system for access management and traffic control. The importance of the classification system allows the same level of access and control to be provided to all City roads in the same functional class.

5.2.6 LAND USE AND URBAN DESIGN

As noted previously, there may be times when land use and urban design policies may compete with access management policies. For example, in order to provide a more pedestrian oriented street frontage, it may be desirable in some areas, such as key transit corridors, to face homes and businesses towards the street and allow access directly off an arterial road, similar to what occurs on some of the older streets in Hamilton today. However, there are ways to achieve the desired urban design objectives as well as access management. For example, homes and businesses along an arterial could face the street, with all pedestrian access occurring at the front, while vehicular access could be provided by a local street or laneway. Many communities in the GTA are experimenting with this type of development on selected arterial roads.

6. RECOMMENDED POLICIES

Access management policies overlap with a wide range of policy areas addressed in other policy papers including:

- Road Classification;
- Level of Service Standards;
- Warrants;
- Urban Design.

As noted throughout this paper, the primary challenge with access management is to ensure that access management principles are applied, without having undue impacts on other transportation or urban design policy objectives. Reflecting this challenges, the following policy recommendations are proposed.

Recommended Policy
When evaluating access and intersection operation proposals, the first priority in the City of Hamilton's decision-making process will be to maintain and optimize mobility, safety and Level of Service on the arterial road network.
Implementation
<ul style="list-style-type: none"> • Use the City's roadway classification system to define the degree of access control applied to the arterial roadway network, including prohibited access and regulated access arterials. • Where safe access or intersection operations cannot be provided, or where a proposal either alone or in combination with existing conditions is determined by the City to be detrimental to arterial roadway operations, such access or intersection operation proposals may be denied. In these cases, the City will endeavour to identify alternative solutions for consideration by the applicant. • Ensure that access management policies and associated warrants and design standards are readily made available to the development industry; • Attempt to identify access management concerns early in the site plan approval process and (if possible) during the site design process.

Recommended Policy
The City of Hamilton will have regard to land use and urban design objectives when applying access management principles.
Implementation
<ul style="list-style-type: none"> • In preparing local urban design guidelines for new development, consideration will be given to options that enhance street front and pedestrian activities without impacting traffic flow.

7. IMPACTS OF POLICY OPTIONS

7.1 Assessment Factors

Assessment of policy options is based on factors for achieving sustainable growth and development across all of the policy papers developed in this project. They fall under the three major categories of **social, economic and environmental** impacts, and they are described briefly below.

Exhibit 7.1: Assessment Factors

Impact	Acts on	Description (or examples)
Social	Residential communities	Improves quality of life in neighbourhoods
	Safety and security	Reduces collisions; improves personal safety and security
	Ease of implementation & governance	Provides clarity, measurability, accountability
Economic	Development	Attracts employment, capital, optimal use of transportation infrastructure capacity, and future land use
	Land value	Increases land value, or does not decrease land values
	Operating and capital costs	Reduces or defers public and private costs of transportation capital (construction or acquisition of fixed infrastructure and rolling stock) and operations (maintenance, enforcement, delay, fuel, etc.)
	Congestion	Maintains traffic flow at acceptable level
Environmental	Air quality	Reduction of Criteria Air Contaminants
	Noise and vibration	Minimizes noise impacts
	Natural environment	Improves water quality, green spaces, flora and fauna etc.

The rating system that will be used to apply these criteria is a visual five-point scale, to reflect a range from strong positive impact to strong negative impact. **(+, +, o, --, --)**

+ Represents the strong positive impact, **o** represents absence of significant impact either way, and **--** represents strong negative impact.

7.2 Summary of Evaluation

The factors described in Section 7.1 are applied to the policy options described in Section 6. The results of a preliminary qualitative assessment using the rating scheme described previously are provided in Exhibit 7.2.

Exhibit 7.2: Impacts of Policy Options

Policy Option	Social			Economic				Environmental		
	Residential Communities	Safety and Security	Ease of Implementation and Governance	Development	Land Value	Operating and Capital Costs	Congestion	Air Quality	Noise and Vibration	Natural Environment
When evaluating access and intersection operation proposals, the first priority in the City of Hamilton's decision-making process will be to maintain and optimize mobility, safety and Level of Service on the arterial road network.	+	+	-	-	-	+	+	+	+	+
The City of Hamilton will have regard to land use and urban design objectives when applying access management principles.	+	0	+	+	+	0	0	0	0	0