

Appendix A-3

Road Classification System – A Consolidated Report

Summary Document

This process began in October 1998, when City Council requested the Commissioner of Works and Emergency Services to give priority to the preparation of a road classification system and associated traffic operations policies. Staff, in a June 29, 1999 report entitled Proposed Road Classification System, reported to the Works Committee at its July 14, 1999 meeting and to the Community Councils at their September 1999 meetings. A number of clarifications of the report and refinements to the road classification system have subsequently been made in response to these and other meetings.

This is a consolidated and revised version of the various staff reports. Once City Council has considered this matter, copies of Appendix 3 (including Tables 1 and 2) and Appendix 4 (including any changes made by City Council) will be made available to interested parties as a free-standing, consolidated report. The report and subsequent Works Committee and Council decisions will also be posted on the City's Internet website.

Introduction

A street network performs most efficiently and safely from both a traffic operations and a road safety perspective if roads are designated and operated to serve their intended purposes. These purposes include the efficiency of travel for all modes and the safety and convenience of all road users. Local roads serve primarily to provide access to properties and serve a relatively minor role in the wider City context for carrying motorized traffic. Consequently, traffic volumes and speeds on these roads should be low. Conversely, expressways carry high volumes of motor vehicle traffic at relatively high speeds. Collector streets serve to collect and distribute traffic between local streets and higher order roads. Arterial roads (with the expressway system) provide the major corridors for traffic (including surface transit) movement.

Arterial roads are also important for pedestrians and cyclists. As motor vehicle speeds and volumes are higher on these roads than on local and collector roads, special facilities such as bicycle lanes will often be necessary to ensure the safety of cyclists. Sidewalks, while important on all streets except expressways, are particularly necessary on collector and arterial roads.

A classification system designates streets into different groups according to the type of service each group is intended to provide and is a fundamental tool for road management. Grouping roads with similar functions can improve transportation planning, road infrastructure design, road maintenance, and traffic and road operations. A road classification system also helps manage urban development.

But while road classification can help meet the needs of communities for transportation service, just as importantly, it can help protect against the adverse impacts of motorized traffic in neighbourhoods. Some roads should carry higher volumes of traffic at higher speeds, while others (the majority) carry lower volumes at lower speeds. This allows neighbourhoods to flourish between main traffic corridors. The absence of a hierarchy of roads would result in less efficient routes for traffic with associated increases in the time and cost of transporting people (whether by foot, bike, bus or car) and goods. The quality of urban life would also decline as motorized traffic would increasingly infiltrate into neighbourhoods to avoid mounting congestion.

Each of Toronto's seven former municipalities had a slightly different approach to, and purpose for, road classification, although the general concept of having a road hierarchy was common. They all had policies related to the development, design, operation and maintenance of roads, and to differing degrees these were referenced to a road classification system. In some cases these policies were consolidated in Official Plans. East York, Etobicoke, Metropolitan Toronto, North York and York had road classifications in their Official Plans while Scarborough and Toronto did not. Metropolitan Toronto and Scarborough had definitions of road rights-of-way in their Official Plans.

Various traffic operations policies had been established by Council decision or departmental practice in each of the municipalities. The main purpose of these policies was to provide a framework for the development and management of the road system, particularly for use by planning and transportation staff. This policy framework also provided a useful context for elected representatives when dealing with issues that required a Council decision.

Some of these policies were not explicitly referenced to a classification system, although there was an implicit connection. By virtue of the existence of national and provincial standards and guidelines as well as historical agreements among the former seven jurisdictions, most individual policies and practices were inherently part of a commonly accepted system of road classification.

Although many of the policies developed by the former seven jurisdictions were similar, there were also differences. With the new City now having responsibility for all roads, there is a need to develop a harmonized classification system, as was recognized by Council in referring this matter to staff for a report. This will provide a consistent policy and planning framework, not only for transportation and planning staff, but also for the various standing committees and Community Councils, the public and other stakeholders. This report summarizes staff efforts to harmonize the road classification system, and reflects widespread consultation through Community Councils and with residents and community groups. The proposed system, and the resulting hierarchical road network, will assist in developing a safe and effective transportation system, to the satisfaction of a broad range of stakeholders.

Purpose of a Road Classification System

According to the Transportation Association of Canada (TAC) *Manual of Geometric Design Standards for Canadian Roads - 1986*, road classification is "the orderly grouping of roads into systems according to the type and degree of service they provide to the public."

A road classification system groups streets in a hierarchical manner with different groups performing different functions. The hierarchy provides for a gradation in service with high traffic service levels and no access to abutting properties for the highest order roads (expressways) and conversely low traffic service levels but full property access for local roads. Between these two extremes, arterial roads provide relatively high traffic service levels with some property access, while on collector roads, traffic service and property access are equally important. Collectors, as their name implies, serve to collect traffic from local streets and provide access to arterial roads, which then may connect to expressways. Collectors also can be thought of as distributors of traffic from the main roads to the minor roads. As would be expected, traffic volumes are typically higher on higher level roads than on lower level roads.

Other characteristics of streets are dependent on road classification too. Speed limits and traffic operating speeds tend to be higher on higher level streets; higher level roads are generally wider with more traffic lanes; and bus and streetcar service is generally concentrated on arterial and collector roads. Because more pedestrians are likely to use roads of higher classification (except expressways), sidewalks are more important on these streets than on local streets with low volumes of motorized traffic travelling at low speeds. Cyclists will generally not need special facilities on local streets but are more likely to need bicycle lanes on arterial roads, where competition for road space is more intense.

Road classification can assist with the co-ordination and planning of land use and transportation. It can help with the establishment of designated road right-of-way widths and design standards for access control, road cross-sections, pavement structure, drainage systems, sidewalks and boulevards and street lighting. It can assist with the establishment of traffic operations standards and guidelines for traffic control devices, pavement markings, on-street parking and stopping regulations, speed limits and pedestrian and cycling facilities.

Road classification can help with the organization of data and information for road design and traffic operations. It can assist with the establishment of standards and guidelines for snow removal, street cleaning and litter removal, and pavement, sidewalk and boulevard reconstruction and maintenance. It can also be used in the development of guidelines for right-of-way management for the accommodation of utilities, advertising, vendors and banners and pennants.

A road classification system not only provides a fundamental management tool for transportation staff, but road users as well as communities derive benefits from its existence and consistent application. Formalized road classifications help residents, residents' groups, business people, planning professionals and other stakeholders to have a clear understanding of the function and characteristics of particular roads.

Development of a New Road Classification System for the City of Toronto

Most road management authorities establish classification systems for their specific area of responsibility to assist in the development, design, operation and maintenance of the road network. Associations of these authorities typically produce guidelines on the elements of a classification system, and in Canada, the most widely used guideline is published by the Transportation Association of Canada (TAC). "Table U. A. 5 - Characteristics of urban streets" was published in the 1995 *Urban Supplement* to the above-noted TAC manual. The TAC table is not sufficiently explicit to permit easy classification of Toronto's streets. For example, a road carrying between 10,000 and 12,000 vehicles per day could be classified as an "industrial/commercial collector", a "minor arterial", a "major arterial" or even an "expressway".

City staff therefore have adapted this table to reflect Toronto conditions. Table 1: "Road Classification Criteria" revised January 2000 (attached) has been developed to guide road classification and to assist in determining appropriate transportation policies and practices for different road types. Table 1 should not be used in isolation but should be considered in conjunction with this report. A road hierarchy consisting of five road types (expressways, major arterials, minor arterials, collectors, and locals) has been defined. This closely matches the previous classification systems from the amalgamating municipalities.

There are a number of refinements in the new road classification table which reflect Toronto's experience. The most significant characteristics in the new table are the relative importance of traffic movement versus property access, the daily motor vehicle traffic volume, traffic flow characteristics and the inclusion of pedestrian and cycling characteristics. The characteristics identified in Table 1 are intended to be mostly descriptive, but they may also serve a prescriptive role. In other words, they should describe existing characteristics of streets in each class, and assist in the classification of individual streets, but they may also help in determining appropriate changes to land use, property access, traffic operations or road operations on particular streets, so that in future these streets will be able to operate more as intended in the network.

The designation of arterial roads in Toronto (or any existing city) results in different design and operating characteristics applying at different points along the length of many of these roads because of their varied historic land use. The City is comprised of numerous distinct areas, particularly in the former inner three municipalities (East York, Toronto and York) which results in arterial roads having different characteristics from those normally associated with arterial roads. For example, traffic movement tends to be less dominant as access remains an important function in the numerous commercial areas of the City (such as Weston, Downsview, Spadina Village or Bayview Village), many of which were thriving towns independent of the original Toronto. The arterial roads through these former towns not only provided access for customers and suppliers, but also acted as main corridors for local residents and other traffic. As land redevelopment and periodic road reconstruction occur, opportunities will arise to standardize the design standards on streets of each class, but there will always be some differences between roads of the same class, reflecting the different historic backgrounds, community desires and existing urban forms of neighbourhoods.

Similarly, many early roads have evolved to carry more and more traffic and are often classified as major arterials because that is how they have functioned for many years. Nevertheless, there are many examples of these roads being substantially or completely residential over significant portions of their length, generating concerns from residents about the classification. Changing the classification will not make the traffic go away. Instead, other modifications are needed to control traffic to recognize the residential nature of these streets. These could include the introduction of truck restrictions, school zones, traffic signals or reduced speed limits.

Toronto has numerous rear and side lanes which are not legal streets. They were not included in the road classification systems of the former municipalities and are not included in the system proposed here. There is little ambiguity between local streets and lanes, and there is little likelihood of lanes becoming streets or vice-versa.

Proposed Road Classification System

The former "Metro" roads (including the Don Valley Parkway and the F.G. Gardiner Expressway), with the "400 series" provincial highways formed the backbone of the previous road system. In addition, the six local governments also had various arterial, collector and local roads.

In classifying Toronto's streets, a daily motor vehicle traffic volume of 2,500 (total traffic in both directions) has been used as the dividing line between local streets and collectors, and a daily traffic volume in excess of 8,000 indicates that a road is probably a minor arterial. A traffic volume over 20,000 vehicles per day suggests a major arterial. These numbers are not rigid, however, as all the characteristics are used to a lesser or greater degree to determine a street's classification. For example, Dundas Street through much of its length in the former City of Toronto carries around 17,000 motor vehicles per day (suggesting a minor arterial status on first appearances) and a busy streetcar route with up to 10,000 passengers a day (depending on the location). It should, however, receive the higher level snow clearance accorded to major arterials, and is designated major arterial rather than minor, from Dufferin Street to Parliament Street. In this case, the high transit ridership on the street needs to be reflected in the classification so that traffic and road operations policies, such as parking management and snow removal, are supportive of a road which is important for the movement of many people.

Traffic signal installations are also indicative of collector or arterial roads. Consequently, local streets should not all be connected with arterial roads by traffic signals because this would undermine the capacity of the arterial road system, resulting in neighbourhood traffic infiltration. Instead, a few streets should be designated as collectors and should have signalized intersections at the arterial roads so that residents can access the arterial road system safely at these points from neighbourhoods.

The resulting classification of all streets in the City is attached as Appendix 4: "Classifications of City Streets". This appendix lists all City-owned streets explicitly except local streets. In addition, Appendix 2: "Road Classification Reviews" contains all street sections for which reviews of classifications have been requested by City Councillors, Community Councils or others. Those streets for which staff are recommending changes to classifications (compared with the August 25, 1999 list) are identified by asterisks or number signs (* or #) in the final column.

Generally speaking, the proposed major arterial roads are roughly equivalent to the former "Metro" roads. Minor arterial roads are mostly the former Cities' arterial roads. Most proposed collector and local roads have retained their former classification.

Traffic Operations Policies, Road Classification and Committee Routing

Most traffic operations policies and characteristics are influenced by classification, including speed limits, truck restrictions, road widths, number of lanes, traffic signal location, transit route selection, bicycle facility location and parking and stopping regulations. A number of these are directly identified in Table 1: "Road Classification Criteria".

Numerous land use, traffic and road operations matters are considered by standing committees and Community Councils with recommendations forwarded to City Council for final decisions. It is Council's intention that as many of these transportation matters as practicable should be delegated to Community Councils rather than standing committees. Matters of strategic significance where amalgamated City policies are not in place or where deviations from policies are being proposed will still need to be referred to standing committees. It is recommended that transportation matters relating to land development and transportation planning which are beyond the mandate of Community Councils be directed to the Planning and Transportation Committee. Other strategic transportation issues, including the establishment or amendment of traffic operations policies, should be

considered by the Works Committee. Most matters concerning major arterial roads and all matters concerning expressways which require City Council decisions should be considered by the Works Committee. Table 2: “Road and Traffic Operations Decision Routing” (attached to this report) summarizes the committee routing for these issues and should be used together with this report. More guidance on the interaction between road classification, traffic and road operations and aspects included in Tables 1 and 2 is provided below.

1. Traffic Service versus Property Access

Higher classification roads have less of a property access function than lower classification roads. For example, expressways have no direct property access. Conversely, local streets serve primarily to provide access to abutting properties. Local streets serve only a minor function for moving traffic. Collector streets serve both a property access and a traffic carrying function, in their roles as roads to connect between the local streets and the arterial road network. The main difference between minor and major arterials is more of degree than function. They are both intended to serve primarily a traffic movement function, but more restrictions on land use access can be expected on major arterials. Major arterial roads also are more important for longer trips, faster travel and transit service.

Where Council decisions are required on road access for properties, proposals should be considered by Community Councils. For major arterial roads, the “Access Management Guidelines” of the former Metropolitan Toronto should continue to be applied in controlling property access. In cases where disputes between City staff and property owners or their agents over proposed property access to major arterial roads cannot be resolved, the proposal should be referred to the Works Committee, rather than the affected Community Council.

2. Right-of-Way Width

Where road rights-of-way have yet to be secured (typically in newly developing areas), appropriate widths are established in Table 1: “Road Classification Criteria”. The 20 metre minimum widths identified in the table for arterial roads apply to existing arterials in older, typically commercial areas. New arterials should be wider, depending on available widths and requirements for boulevards, bicycle facilities and other features.

It is noted that various road widening and new road right-of-way provisions are contained in the Official Plans of the former municipalities. These are unaffected by this report and the proposed road classification, and will be re-evaluated as part of the Official Plan review process.

3. Speed Limits

Legal speed limits should be set according to Table 1: “Road Classification Criteria”. In general, lower classification streets should have lower speed limits (and operating speeds). Proposals for speed limit changes on roads other than major arterials or expressways, within the ranges established in Table 1, should be considered by Community Councils. Proposals respecting speed limits on arterial roads or expressways should be considered by the Works Committee. Portions of a small number of major arterial roads have speed limits of 70 km/h or 80 km/h, greater than the range shown in Table 1.

On local or collector streets containing (or proposed to contain) substantive traffic calming measures, 30 km/h speed limits may be used, subject to the enactment of the necessary by-laws. These matters should be considered by Community Councils.

4. Road Alterations

Road alterations, such as the narrowing or widening of roads or the introduction of medians, can significantly influence traffic operations, including traffic volumes and speeds. Proposals to alter roads should be considered by Community Councils, except in the case of major arterials and expressways when the Works Committee would be responsible.

5. Surface Transit

Bus and streetcar routes operate primarily on collector and arterial roads which, by their nature, provide for most efficient transit operations. However, there may be times when local roads are used to better serve a neighbourhood. It is also common to use local roads to allow transit vehicles to turn around at the end of a route. The establishment of a local bus route on an expressway would serve no purpose as pedestrians are prohibited from these roads and thus no-one would be able to walk to a bus stop. However, express bus routes may be located on expressways.

6. Sidewalks

As noted in Table 3, sidewalks are normally provided on one or both sides of local streets. While sidewalks are beneficial for pedestrians, people in wheelchairs and people with strollers, on quiet local streets it may often be safe for non-motorized road users to share the road with vehicles. On collectors, minor arterials and major arterials the option of walking in the road is generally not advisable and separate facilities (sidewalks) are recommended on both sides of the street. This becomes even more necessary when a street is a bus or streetcar route, as passengers need to be able to access transit stops from both sides of the road.

Some arterial and collector streets have evolved without sidewalks. When these streets are reconstructed the opportunity should be taken to build sidewalks on both sides of the road as a pedestrian safety measure. In addition, Works and Emergency Services is developing a program to install missing sidewalks where needed. Proposed deviations from this policy should be considered by the Works Committee.

When new streets are built, local streets should have sidewalks on at least one side. On new collector and arterial roads, sidewalks should be built on both sides. Proposed deviations from this policy should be considered by the Works Committee.

7. Bicycle Facilities

Special bicycle facilities are not generally required on local and lower-volume collector roads because traffic volumes and speeds are sufficiently low that sharing of the road by motor vehicles and cyclists is safe. Exceptions to this may be desirable on one-way streets where "contra-flow" bicycle lanes can provide links into and through neighbourhoods and in other special circumstances. On some collector and most arterial roads, cycling is more difficult and bicycle lanes should be considered when roads are being reconstructed or resurfaced,

or as circumstances dictate. If sufficient space on a four (or six) lane road does not exist for bicycle lanes, it may be desirable to widen the curb lanes by narrowing the other travel lanes. This can give cyclists and drivers more space to share the curb lane.

Work is currently underway to develop a Cycling Master Plan, which will identify a network of desirable corridors for bicycle lanes, wide curb lanes, bicycle routes and other facilities. Any roads identified for bicycle facilities through this process (and subsequently endorsed by City Council) may be modified independently of the road reconstruction or resurfacing timetable, depending on cycling network and safety priorities and the availability of funds.

Where bicycle facilities are proposed on local, collector or minor arterial roads, these proposals should be considered by Community Councils. Bicycle facility proposals on major arterial roads should be considered by the Works Committee.

8. High Occupancy Vehicle (HOV) Lanes

High occupancy vehicle (HOV) lanes exist on a number of the City's arterial streets. Typically, during peak periods, the curb lane may only be used by transit vehicles, cars with three or more occupants, and cyclists. HOV lanes are particularly beneficial to buses, reducing delays and helping to encourage transit use. Proposals to introduce, remove or modify HOV lanes should be considered by the Works Committee.

9. 'Stop' Signs

'Stop' signs are a valuable technique for allocating right-of-way at intersections. They should not, however, be used on major arterial roads or expressways, and should be used only rarely on minor arterial roads. At a typical intersection controlled by 'Stop' signs, traffic on the less heavily-travelled approaches is controlled. For example, at a four-legged intersection, traffic on the lower-volume road would be controlled to allow the major traffic stream to proceed unimpeded through the intersection, minimising delay and congestion while improving safety.

There are, however, some situations which justify the installation of 'Stop' signs on all approaches. All-way 'Stop' signs are usually installed at an intersection when a technical warrant is satisfied. Such a warrant takes into consideration motor vehicle and pedestrian traffic volumes as well as collision statistics, among other things. Current Transportation Services Division practice is to follow the all-way 'Stop' sign control warrants or guidelines of the predecessor municipalities. To help standardize the application of all-way 'Stop' sign control across the City, Transportation Services staff are developing a new warrant.

Generally speaking, proposals to install 'Stop' signs should be considered by the appropriate Community Council. Proposals for the installation of 'Stop' signs on minor arterial roads which deviate from City policy should be considered by the Works Committee, given the broader traffic and safety implications of installing 'Stop' signs on these roads.

10. Turn and Entry Prohibitions at Intersections

Community Councils should usually consider proposals to introduce, rescind or modify turn and entry prohibitions. However, the Works Committee process should be used when these measures are proposed at intersections on major arterial roads or expressways. For

example, a proposal to introduce a turn restriction on a major arterial road at its intersection with a local road, or on a local road at its intersection with a major arterial road, should be considered by the Works Committee. Where an intersection does not include major arterial roads, the appropriate Community Council should consider the proposal.

11. Traffic Control Signals and Pedestrian Crossovers

Traffic signals are very effective at alternating traffic right-of-way at the main intersections of arterial roads (such as with other arterial or collector streets) where certain technical warrants are satisfied. They should not be installed at intersections of local streets with local or collector streets. The technical warrants are unlikely to be met at the intersection of two collector streets (and this is even less likely for two local streets), and therefore signals should not generally be used in these circumstances. Usually, at signalized intersections of streets of different classification, a higher level of traffic service should be maintained on the street (or streets) with the higher classification.

Pedestrian crossovers can also be very beneficial in improving pedestrian safety in the right circumstances, as determined by technical warrants. They are most commonly found on minor arterial roads.

Proposals for the installation of “warranted” traffic signals, where the minimum spacings (to adjacent signals, pedestrian crossovers or ‘Stop’ signs) outlined in Table 1: “Road Classification Criteria” are satisfied, should be considered by Community Councils. Traffic signal installation proposals which are either unwarranted or violate the spacing requirements in Table 1 should be considered by the Works Committee.

Proposals for the installation of “warranted” pedestrian crossovers on minor arterial roads (or streets of lower classification), where the minimum spacings are satisfied, should be considered by Community Councils. Other installation proposals should be considered by the Works Committee.

Because of the significant capital and on-going annual maintenance costs associated with these facilities, it will be necessary for the Works Committee to consider the priority and timing of installation of traffic signals and pedestrian crossovers to ensure that all requests for these facilities are prioritized across the City and can be accommodated within existing budget envelopes.

12. On-street Parking

Generally, peak period parking or stopping prohibitions apply on most arterial roads. Until more explicit policies are developed, any reduction of existing parking or stopping prohibitions on major arterial roads should be referred to the Works Committee. Other parking issues (except issues which have policy or strategic implications) should be considered by Community Councils.

13. Permit Parking

In those Community Council areas where the residential permit parking system operates, permit parking is not authorized on major arterial roads. A review of permit parking is currently underway and will be reported to the Works Committee later this year. Until more

explicit policies have been developed, permit parking should not be introduced on major arterial roads and any proposals to do so should be considered by the Works Committee. Specific permit parking proposals for other streets should be considered by Community Councils.

14. Heavy Truck Prohibitions

Heavy trucks are prohibited on most local and collector roads (except if actually delivering or receiving goods in the immediate vicinity). Proposals to introduce truck traffic prohibitions on local or collector roads should be considered by Community Councils. Similar proposals should generally not be supported on arterial roads, and any such proposals to introduce these restrictions should be considered by the Works Committee.

15. Traffic Calming

Traffic calming can be a very effective way of controlling motor vehicle speeds on residential (usually local) streets. Speed humps and other significant traffic calming measures such as chicanes, however, should not be used on arterial roads or expressways. Traffic calming proposals on local and collector roads should be considered by Community Councils.

16. Winter Service

A higher level of service for snow clearing is appropriate on roads of higher classification, such as expressways and major arterials, because more people depend on roads carrying higher volumes of traffic and higher levels of transit service. A comprehensive review of winter service levels was undertaken in 1999 by Works and Emergency Services staff to ensure that winter maintenance contracts could be let in time for the 1999/2000 winter. Further work will be done this year to fine-tune winter services for next winter. This will include a closer comparison with the road classification system to ensure as much compatibility as possible between the two systems. In general, the winter service level for a particular street will depend on road classification. Local streets with bus routes, steep grades or sharp curves will, however, get a higher level of service than other local streets.

17. Road Closures

In cases where City Council authority is required to close a road, proposals to do so should be considered by Community Councils for local and collector roads and by the Works Committee for higher order roads.

18. Future Decisions on Road Classification and Associated Traffic Operations Policies

As new land areas are developed, a mechanism needs to be in place to assign a classification to each new road. Similarly, if a change to an existing road classification is sought, a mechanism will be needed to adjudicate this. Changes to new traffic operations policies which are, or may be, dependent on road classification should also have a clear and consistent decision-making mechanism. It is proposed that in all cases the Works Committee should review these matters and make recommendations to City Council, with input from Community Councils.

19. Other Issues

In general, in cases not covered by the specific sections above, routine traffic operations matters (where policies and practices are well-established) should continue to be considered by Community Councils, except that matters relating to major arterials and expressways should be considered by the Works Committee. Issues of strategic transportation importance having City-wide significance, boundary issues, issues regarding the standardization or harmonization of transportation policies and other matters where no clear policy has been established should also be considered by the Works Committee.

Conclusions:

A new road classification system has been proposed for Toronto, based on the classification systems of the former municipalities and road classification guidelines developed by the Transportation Association of Canada, but including some new features which recognize the multi-modal nature of transportation in Toronto. It divides streets into local, collector, minor arterial and major arterial roads and expressways. The new system has been used to classify all streets under the jurisdiction of the City of Toronto into these five classes.

Transportation policies have been developed in conjunction with the road classification system, and recommendations have been made regarding the respective roles of Community Councils and standing committees in dealing with transportation, traffic operations and road operations policies in the context of road classification. No changes to individual traffic by-laws (such as speed limit changes on particular streets) will occur as a result of the adoption of this report. Such changes, as is currently the case, need the usual Committee and consultation processes.

