

APPENDIX B - EASEMENTS

General

Where underground services or utilities are placed outside road allowances or blocks of land under the ownership of the Town, permanent easements are required.

With the exception of easements required for rear lot catchbasin leads, any easements proposed for utilities, storm sewers, sanitary sewers and watermains shall be reviewed with the Town prior to the first submission.

Rear Yard Catchbasin Leads

Easements will be required for all rear lot catchbasin leads. All catchbasin leads shall be constructed on the lot property line and the catchbasin located on one lot. The lead shall be 250 mm minimum in diameter and concrete encased from the rear lot catchbasin to the street line. Rear lot catchbasin leads shall connect to storm sewer manholes wherever possible.

Easement widths shall be a minimum of 3.0 metres wide for leads with a maximum cover of 2.7 metres. The easement shall be centered over the pipe. Where 3.0 metre wide easements cannot be attained between dwellings, "hour glass easements" will be permitted with the width of the easement decreasing between the dwellings based on the side yard setbacks permitted for the dwellings (typically 2.4 metres minimum). The easement width beyond the house envelope based on minimum front and rear yard setbacks shall be the standard 3.0 metre width.

For leads being constructed with cover deeper than 2.7 metres, the easement widths shall be increased based on consultation with the Town.

Storm, Sanitary Sewer and Watermain Easements

Ideally easements between adjacent lots shall be located on one side of the common lot line. Pipes shall generally be centered on the easement for easements containing one pipe. Easements straddling lots lines may be permitted if deemed appropriate by the Town. The minimum width of all easements shall be determined in consultation with the Town.

All pipes with a diameter of less than 900 mm constructed within easements between side lot lines shall be concrete encased as set out below. All pipes 900 mm or larger in diameter constructed between side lot lines shall be increased in strength by one class from that required based on the earth loading.

The bearing capacity of native soils must be preserved for all pipes being constructed between proposed buildings. This shall be achieved by:

- Extending the building foundations to the depth of the underside of pipe adjacent to the building.
- Placing the pipe in a sleeve constructed by tunneling.

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- Installing the pipe by vertical trenching with steel sheeting left in place and cut off 0.3 metres above the building foundation. The depth of the steel sheeting below the pipe invert is to be determined by a Geotechnical Engineer. Sufficient struts are to be left in place to ensure that the steel sheeting does not move during the backfilling operation.

The trench excavation and reinstatement or tunneling operation is to be monitored by a Geotechnical Engineer and certification will be required that the soils have the required bearing capacity to support the building being proposed adjacent to the pipe installation.

Concrete Encasement

Concrete encasement shall have a square cross-section with a concrete thickness of not less than 0.150 metres. The concrete shall be 15 MPa strength and vibrated in place.

Pipes Constructed in Sleeves

In lieu of concrete encasement of pipes, the Town will consider allowing pipes to be constructed in steel sleeves. The specific instances where this will be permitted along with the detailed requirements must be determined in consultation with the Town.

APPENDIX C

FUNCTIONAL TRAFFIC STUDY

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Traffic Study Criteria

The list presented below is essentially the check list which is followed during this submission review process. It is understood that an applicant can submit plans which adhere to current engineering standards or alternative road-cross sections and design standards can be brought forward provided justification is submitted. The review process examines the details of the submission and measures and evaluates the details against the applicable standards.

A list of twenty-nine items is summarized in the table below. In effect the list begins by determining ultimate vehicle demand flows, confirms the roadway network types and classifications and makes sure that the critical design elements of the road network is confirmed. The list is further complimented by items which deal with the provision of adequate parking for all land uses, proper access for major attractors and generators followed by the formation of a satisfactory traffic control device plan.

Depending upon the circumstance additional items can be added which deal with traffic calming measures and devices.

There are essentially twenty-nine (29) items forming a process that affect the planning and design process. Associated with each item are specific criteria which require measurement, calculation and / or demonstration of adherence to standards and operating parameters. The following table presents each of the items and the associated criteria. It is recognized that not all items may be applicable to all applications.

Items identified with an asterisk indicate that this item must be completed at the initial stages of secondary plan submissions. All other items can be submitted at the time of subdivision application, but it must be emphasized that a proper geometric and standards fit must occur.

Traffic Study Items:**1. Road Network Layout and Design Volumes**

The built out traffic flows are to be determined on each internal road (especially collector roads) for the typical weekday AM and PM peak hours. In addition if the development application contains a collector road which forms an intersection with a bounding arterial road the typical weekday AM and PM peak hour turning volumes must be identified. Similarly for collector to collector road intersections within the development application the typical weekday AM and PM peak hour turning movements must be identified. It is imperative that any associated exclusive turning lanes, particularly left turns are provided with their ultimate storage and taper length dimensions. It is understood that collector roads at intersections with other collector roads and arterial roads will require a right-of-way widening to permit the introduction of necessary vehicle turning lanes and proper sight triangles.

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2. Internal Road Classification and Right-of-Way

Standards are available from accredited associations identifying the acceptable range of traffic flows that a type of road can satisfactorily accommodate either in 24 hours or during the weekday roadway peak hours. The road type and classification being considered must be capable of serving the traffic flow demand within the identified level.

3. Horizontal Curves, Vertical Curves, Intersection Angles and Safe Vehicle Stopping and Turning Decision Criteria

Acceptable standards are contained in Manuals available from the Ontario Ministry of Transportation, the Transportation Association of Canada and Institute of Transportation Engineers. All road elements are to be evaluated and made to conform to the applicable criteria.

4. Intersection Spacing

Standards are available from accredited associations and also available from Peel Region and the City of Brampton that identify the minimum spacing of intersections from each other. The development application must meet these minimum standards.

5. Intersection Turning Lanes and Traffic Signals or Traffic Circle

The forecast demand volumes and the forecast intersection turning movements will dictate the appropriate traffic control device (collector to collector and collector to arterial intersections) as well as the intersection lane configuration. The forecast demand volumes will be used to calculate required storage and taper lengths for any turning lanes. If a traffic signal is to be considered then signal warrant analysis must be conducted. A traffic circle can be considered as an alternative to a collector road and collector road intersection controlled by a traffic signal. Appropriate design plans to be formulated

6. Street Elbows

Certain internal local roads may have centre line radii greater than 90 degrees in order to continue lot fabric. At these locations pavement width analysis must be conducted to ensure that opposing vehicles (automobiles, as well as an opposing automobile and emergency service vehicle) can negotiate the manoeuvre with no impacts. In addition individual driveways must be located such that the road manoeuvring area and sidewalk is not compromised.

7. Rear Laneways

The laneway layout and operation must be thoroughly addressed. This includes pavement widths, shoulder treatments, garage (building) set-backs (including ability to manoeuvre one large and one mid-sized automobile into and out of the garage), automobile, emergency vehicle and garbage truck circulation and turning movement capability. The

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- assessment must be undertaken along a typical cross-section of the laneway as well as at each intersection or bend formed by a laneway.
8. **Temporary Turn Arounds and Cul-de-Sacs**

Any proposed temporary turn around or cul-de-sac must be capable of satisfactorily accommodating service and emergency vehicle turning capability.
 9. **On Street Parking**

The location of on-street parking must be done in a consultative manner with all disciplines involved in the preparation of the development application. The location of on-street parking will be guided by many factors including adjacent land uses, roadway geometrics and traffic demand flows. It is expected that there will be no parking in laneways. It is expected on local roads that parking will be permitted on one side. It is expected that parking will be introduced in a sensitive manner on collector roads. Additional pavement on collector roads must not encourage speeding or diminish the operation of future transit. Consideration of parking bays with protected intersection conditions minimizing pedestrian walking distances are considered appropriate (indent parking).
 10. **Traffic Calming**

All roadway cross-sections must consider pavement widths that are conducive to reducing vehicle speeds. On street parking should be strategically placed such that the additional pavement does not encourage greater vehicle speeds. If necessary traffic calming devices can be considered excluding speed bumps or humps or other devices are not acceptable to transit or emergency service vehicles. Should further traffic calming features be desired the traffic tables, medians and boulevard treatments can be considered.
 11. **Headlight Screening**

“Window Streets” or other internal roads may parallel a bounding arterial road. Vehicle headlight movements must be examined on the local road and preventative measures must be brought forth which prevent headlight glare from reaching the eye level of drivers on the bounding arterial road.
 12. **Service and Emergency Vehicle Circulation**

All internal roads including any laneways must demonstrate that the available driving service is capable of efficiently accommodating the free flow movement of emergency and service vehicles.
 13. **Curb Radii**

Curb radii can be introduced which reduce vehicle speeds and benefit pedestrians. The curb radii must demonstrate to scale that sufficient

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- capacity is provided for vehicle turning demands and that all service and emergency vehicles can efficiently negotiate turns.
14. **Corner Roundings**
- The ability to minimize the required space providing the necessary clear sight line distances for vehicle turning and stopping can be accomplished through corner roundings. Each intersection must be examined to verify that the clear vehicle sight lines are available. Any special circumstances must be justified.
15. **Pedestrian and Handicapped Accommodation**
- Sidewalks must be available to serve primary pedestrian flows. At curb locations grading must be provided to accommodate wheelchair movements.
16. **Surface Treatments**
- As part of traffic calming at intersections and in an effort to accommodate major pedestrian flows consideration can be given to providing alternative surface treatments. These surface treatments are meant to give textural and noise signals to drivers that increased awareness is necessary.
17. **Round About and Traffic Circles**
- Any proposed round about must be designed to meet forecast traffic demands as well as the turning paths required for all municipal services including transit and emergency vehicles. Larger vehicles such as moving trucks should also be examined. Pedestrian cross-walks must be properly located to provide maximum visibility to all users. Traffic Circles would normally be employed on higher volume roads.
18. **Driveway Locations**
- Driveways to individual uses must respect the adjacent traffic flow demands and resultant intersection lane configuration requirements. The driveway location must minimize impacts on the role and function of adjacent boundary lanes particularly turning lanes. At internal collector to collector road intersections consideration should be given to a land use form that is served by rear laneways thereby reducing the impact on intersection lane functions. Similar considerations should be given to driveway locations where the collector road intersects with a bounding arterial road.
19. **Sidewalks**
- The placement of sidewalks must conform to Municipal guidelines. Continuity and connectivity are imperative to providing an environment which encourages walking. Special pedestrian crossing outside of intersection locations must be examined in detail and the justification for pedestrian actuated controls brought forward.

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20. Bicycle Paths and Lanes

Bicycle paths and lanes must be in conformity with the Municipal goals and objectives. Those bicycle routes whether lanes or paths must be clearly identified and the appropriate geometric standards incorporated into the roadway cross-sections or where bicycles cross a roadway.

21. Designated Car Pool Spaces

Upon defining the transit route network there could be numerous retail, commercial, office and institutional uses that are in close proximity to the transit service. An estimate of the number of parking spaces by use which can be provided to car pooling use is to be identified. If site plans are available the preferred location of the car pool spaces can be denoted. These spaces are considered shared and do not require a change to the overall parking supply.

22. Transit Route Pattern

The primary route pattern to serve the development application will be identified.

23. Bus Stop and Pedestrian Pad

Major bus stop locations along each route will be identified. At these locations the necessary concrete pad to serve boarding and de-boarding passengers will be identified and included in the development application.

24. Development Integration

Opportunities should be examined at significant locations where adjacent land uses can provide an integration opportunity with transit. This could range from integrated shelter / building conditions to a minor pick up and drop off area in the vicinity of the bus stop.

25. Major Public Generators and Attractors – Driveway and Entrance Locations

Within the development application there could be uses such as public schools, high schools and community centres, parks, etc. These land uses generate unique vehicle circulation and parking demands. The vehicle flow demands should be examined in the context of planning driveway and entrance locations which minimize impacts on bounding intersections and major pedestrian flows.

26. Major Public Generators and Attractors – On Street Parking Assessment

Many of these generators are also located next to parks. The bounding road network should be examined to determine if on-street parking can serve multiple parking demands. How the on-street parking is incorporated with the roadway cross-section should be examined in

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- detail. The intent is not to increase the asphalt surface area in a continuous manner which leads to increased vehicle speeds.
27. **Major Public Generators and Attractors –
Traffic Device Plan for Entrances Providing Direct Access**
- The appropriate traffic control device plan which directly serves these uses must be brought forth. The accommodation of pedestrian flows must also be identified.
28. **Traffic Control Device Plan**
- The development application must provide the definition and location of all traffic control devices to be installed.
29. **On Street and Off Street Parking Supply**
- The development application must demonstrate through scaled plans that the required parking supply for residents and visitors can be achieved. On street parking must respect vehicle sight line requirements, parking space width and length, emergency vehicle needs, snow storage and intersection setbacks. No portion of a vehicle parked in a driveway can protrude onto the curb.