SECTION 2 – DEVELOPMENT DESIGN REQUIREMENTS

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2.0 Introduction

The purpose of this section is to outline the general design requirements for the construction of Municipal Services in the City of Mississauga. These requirements, however, are only general and do not relieve the Developer of the responsibility for submitting a finished product of competent Engineering design and construction.

All development applications must adhere to all City standards and requirements, recommended/ proposed deviation(s) shall be specifically addressed during the development review process.

2.1 Right-of-ways

2.1.0 Geometric Design

2.1.0.0 Roadways

Roadway geometric design will be in accordance with the City of Mississauga Geometric Design Standards as outlined on City Standard Drawing. Road widths and Right-of-Ways will be in accordance with the most recent City of Mississauga Standards:

2211.060 - Minor Local Residential Road (8.0m pavement on 17m road allowance)

2211.070 - Local Residential Road (new subdivisions) (8.0m pavement on 20m road allowance)

2211.080 - Minor Residential Collector Road (10m road on 22m road allowance)

2211.090 - Local Industrial Road (12.5m road on 24m road allowance)

2211.100 - Industrial and Residential Collector Road (14.5m road on 26m road allowance)

2211.110 - Minor Arterial Road (15.5m road on 30m road allowance)

2211.120 - 4 Lane Divided Arterial Road (2-8m lanes, 7.0m island on 35m road allowance)

2211.130 - 6 Lane Arterial Road (23m road on 35m road allowance)

2211.140 - Buffer Road (8.0m road on 17m road allowance)

2211.150 - 5 Lane Residential Collector Road (17m road on 30m road allowance)

2211.151 - Local Residential Road (Pavement offset, 8.0m road on 18m road allowance)

2211.152 - Local Residential Road (Pavement offset, 8.0m road on 20m road allowance)

2211.153 - City Centre Specific (14.5m road on 25m road allowance)

NOTE: Any development proposal that has nonstandard widths or -crosssections should be- referred to a P.U.C.C. meeting prior to a first engineering submission being made.

2.1.0.1 Boulevards

- Lay-bys

2230.031- Parking Lay by Detail

2230.030- Mountable Concrete Curb with Standard Gutter at Bus & Parking Laybys

- Bus Pads

NOTE: Where future transit service is planned or anticipated, road geometrics, lane widths, curb radii, and other transportation infrastructure shall accommodate transit vehicle operations to MiWay requirements. Turning movement analyses may be required to demonstrate accommodation of standard and articulated transit vehicles. To support MiWay transit service, lane widths of 3.50m are recommended, excluding curb and gutter. The minimum lane width is 3.35m, excluding curb and gutter. The applicant shall consult with MiWay regarding planned routing on new roadways. Final service plans are to be determined by MiWay based on a number of factors, including projected ridership and available resources.

- Applicants shall contact MiWay.Infrastructure@mississauga.ca to obtain the current transit infrastructure standards and requirements

2240.083 – Raised Cycle Track at Nearside & Farside Bus Stops - Constrained
2240.085 – Raised Cycle Track at Nearside & Farside Bus Stops - Preferred
2240.086 – Bike Lane Transition to Cycle Track at Nearside Bus Stops - Preferred
2240.087 – Bike Lane Transition to Cycle Track at Farside Bus Stops - Preferred
2240.088 – Bike Lane Transition to Cycle Track at Nearside Bus Stops - Retrofit
2240.089 – Bike Lane Transition to Cycle Track at Farside Bus Stops - Retrofit
2240.090 – Bike Lane at Nearside & Farside Bus Stops - Constrained
2240.091 – Multi-use Trail set behind Nearside & Farside Bus Stops - Preferred
2240.092 – Multi-use Trail set in front of Nearside & Farside Bus Stops - Constrained
2250.010 – Concrete Bus Stop Platform
2250.030 – Standard Concrete Shelter Pad
2250.040 – Accessible Bus Stop - Sidewalk in front of Bus Shelter
2250.050 – Accessible Bus Stop - Sidewalk behind Bus Shelter
2250.060 – 16m Enhanced Shelter Concrete Pad
2250.061 – 12m Enhanced Shelter Concrete Pad
2250.062 – 8 m Enhanced Shelter Concrete Pad
2250.080 – Concrete Bus Pad

2260.010 – Bus Stop Nearside
2260.020 – Bus Stop Farside
2260.030 – Bus Stop Midblock
2270.050 – Typical Cross Section Concrete Bus Bay
2270.060 – Concrete Bus Bay Nearside, Farside, Midblock
2271.010 – Terminal Bus Stop Configurations for Standard 40 Bus
2271.020 – Terminal Bus Stop Configurations for Articulated 60 Bus

- Public Uses
    - Greenfield – Streetscape design by default
        - Urban Design Guidelines and Reference Notes
        - Green Development Standard
    - Infill – Streetscape commitments based on existing community needs and development application requirements
        - Infill Housing Design Guidelines

2.1.0.2 Driveway Entrances

Driveway entrances and curb cuts shall be in accordance with the most recent standard drawings for this purpose.

Special designs, dependent upon the expected usage, will be required for commercial and industrial driveways (see also Section 6 – Condominium Development Requirements).

All new residential driveways must be paved with 50mm OPSS 1150 HL8 and topped with 25mm OPSS 1150 HL3F from curb to garage on a base of a minimum of 150mm Granular 'A' or 19mm crusher run limestone meeting the requirements of OPSS 1010.

Paving of the driveway is to be undertaken in two separate phases. Phase 1 being the grading of the granular, and the placing of 50mm of HL8 is to be completed at the time of sodding the lot. Phase 2, being the placing of the 25mm HL3F, which will be completed at the time of top course asphalt pavement on the roadway.

The grade of asphalt cement in residential and industrial driveways is to be PG 64-28.

Boulevard driveway slopes should not exceed 8% and should not be less than 2%. Widths of curb depressions for driveways are to be in accordance with the following.

- semi-detached and townhouses 3.8m (12.5 ft)
- detached dwellings under 12m (40 ft) frontage 5m (16.4 ft)

- detached dwellings over 12m (40 ft) frontage 6.5m (21.3 ft)
- Dual driveway access (e.g., circular driveways or multiple curb cuts) may require special approval and is subject to site-specific zoning and boulevard access modification.
- You must request a curb cut permit if modifying the boulevard portion of the driveway.

A minimum 0.6m separation at the curb shall be provided between driveways within cul-de-sacs and elbows along with corner lots and lots abutting walkways. Driveways are to be indicated on the above ground general plan.

The minimum clear distance between the edge of driveway and a utility structure or hydrant shall be 1.2m.

All new industrial driveways shall consist of a minimum of 40mm HL-3, 85mm HL-8 and 350mm of OPSS 1010 Granular 'A'.

For industrial commercial driveways, specific designs based on anticipated loads are required.

2.1.0.3 Special Designs

Special road designs, which are not covered by City of Mississauga Standards, shall be in accordance with the most recent provisions of the geometric design standards manual and urban street geometrics, as adopted by the Municipal Engineers Association.

i.e. Special Design will be required in high density residential, commercial and industrial areas.

Pavement design shall be in accordance with the most recent City of Mississauga Standards and the Ontario Provincial Standard Drawings and Specifications.

Complete mechanical analyses of the proposed sub-grade are to be taken at maximum intervals of 150m along proposed roads. On small sites, a minimum of two mechanical analyses will be required.

*Note: See Fire route requirements for reference (By-law 1063-81 as amended)

2.1.0.4 Pavement Design (Roadways)

Soil analysis must be conducted by a licensed Geo-technical Engineering firm that is acceptable to the City of Mississauga. Digital copies of the soil analysis, along with proposed road designs, shall be submitted to the City Development Engineering & Construction team via ePlans.

Minimum thicknesses of asphalt and granular materials shall be as indicated on City Standard Drawing No. 2220.010.

The Granular "B" Type 1, shall have a maximum of 65% passing the 4.75mm sieve.

In all cases:

- Proof rolls on subgrade material must be completed ahead of granular placement.
    - Base course asphalt shall be OPSS 1150 HL8 on residential roads and heavy-duty binder course (HDBC) in accordance to OPSS 1150 and/or 1154 for industrial and arterial roads.
- The wearing course of asphalt shall be:

Local Roads	OPSS 1150	HL3
Collector Roads	OPSS 1150	HL3
Industrial Roads	OPSS 1150	HL3
Arterial Roads	OPSS 1150	HLI

    - Asphalt job mix designs, approved by the developer's Geo-technical consultant, shall be submitted to the City of Mississauga (link to email/ contact) for review a minimum of 5 working days prior to the commencement of paving for review.
    - The asphalt mix designs shall have a minimum asphalt cement content of 5.00% for H.L-8 asphalt's, and 5.3% for H.L-3 asphalt.
    - The grade of asphalt cement for HL-8 and HL-3 asphalt on residential roads shall be PG 58-28J. HL-8 asphalt may contain up to a maximum of 20% RAP mixes containing more than 15% RAP, will have PG 58-34 asphalt cement.
    - No RAP is allowed in any Heavy Duty Binder Course (HDBC) high stability mixes, including H.L-1 and is limited to 10% RAP on H.L-3 surface course asphalt mixes. The average A/C content of all tests must be no lower than the A/C content specified in the JMF.
    - The grade of asphalt cement for industrial and arterial road mixes shall be PG 64-28XJ.

- O.P.S.S.1010 Granular "A" and Granular "B" materials are to be used for road construction in the City of Mississauga. The granular materials must not contain any crushed concrete or recycled asphalt pavement.
- The depth of Granular 'B' as indicated is applicable to situations where subgrade material and all trench backfill material had been placed and compacted as per OPSS and the water content is within 2% of optimum moisture content. Where the moisture content is above 2% of optimum within 1m of subgrade crusher run limestone shall be utilized for the granular 'A' and 'B'. If the water content is greater than 7.5% above optimum moisture content, road construction is to be revaluated or deferred.

2.1.0.5 Placement of Top Course Asphalt

A. Subdivision

Top Course Asphalt Requirements:

- Complete all sidewalk works.
- Complete all curb works.
- Complete all boulevard works.
- Complete top course asphalt driveway paving or as approved.
- Raise manhole frame and grates as well as catchbasin frame and grates and paint rims with orange, fluorescent paint to make them visible to drivers. Warning signs are to be placed at all access points to the subdivisions indicating that there are raised manholes and catchbasin frame covers ahead. Placement of top course asphalt shall be completed within two weeks of raising the frames and grates.
- Flush and sweep surface prior to evenly applying tack coat.

B. Other Development Applications

Top Course Asphalt requirements to be outlined by City of Mississauga in conjunction with applicable Development Agreement.

2.1.0.6 Curbs and Gutters

All new streets shall have curb and gutter construction.

Curb and gutter is to be designed and constructed to the most recent City Standards and Ontario Provincial Standards where applicable.

Curb depressions and AODA standards are applicable to each intersection or pedestrian road crossing.

A driveway entrance is required for each lot as detailed within Section 2.01.01.02.

A minimum of 150mm of OPSS 1010 granular material compacted to 98% Standard Proctor Density will be required as a base for all types of curb installations.

Concrete job mix designs, approved by the developer's Geo-technical consultant, shall be submitted to the City of Mississauga (link to email/ contact) for review a minimum of 5 working days prior to the commencement of pouring for review.

Two-stage curb installation must be in accordance with City standard 2230.010

Minimum grade on curb is 0.75% on cul-de-sac bulbs and outside road elbows.

Concrete Specification

The concrete sidewalk shall be constructed according to OPSS 353, 904 & 1350. The concrete shall meet the most stringent requirements of OPSS or the contract documents. The concrete shall meet the requirements of the most current OPSS 1350, be a C-2 mix (32 MPA, 5 – 8% air content), as described in the most current CSA 23.1.

The expansion joints shall be constructed at locations described within the OPSS.

Expansion joints shall be constructed where the newly poured concrete meets a rigid object such as previously poured concrete, street poles, retaining walls, etc. The expansion material shall extend the full depth of the concrete.

The concrete shall be cured as per OPSS 904. The rate of application of the curing compound shall be as per the manufactures recommendation or at a minimum rate of 0.2 l/m² if not noted.

All surfaces not sprayed with curing compound shall be covered shortly after finishing works are complete and when the surface will not be affected by the cover material (initial set). Uncured or uncovered concrete as per OPSS will be rejected.

2.1.0.7 Sidewalks

2.1.0.7.0 Location

Sidewalks shall be constructed on City of Mississauga streets as shown on the City's Road Cross-Section Standards and should be located on the same side as the streetlight poles.

In areas of infill/redevelopment applications, City staff will provide site specific requirements for sidewalk

2.1.0.7.1 Specification

Sidewalks shall be designed and built according to the most recent City of Mississauga Standards and specifications, which include:

- 2211.158 - Sidewalk Driveway Entrance Detail for a Private Condominium Road
- 2240.010 - Concrete Sidewalk
- 2240.011 - Alternative Standard Concrete Sidewalk
- 2240.012 - Sidewalk Non-Key Curb Detail
- 2240.030 - Commercial Industrial Driveway Curb Returns at Street Curb
- 2240.040 - Concrete Sidewalk Abutting Curb or Curb and Gutter
- 2240.041 - Concrete Splash Pad
- 2240.050 - Concrete Walkway

Concrete sidewalks shall normally be a minimum of 130mm thick and 180mm thick across commercial or industrial driveways respectively.

No special bedding requirements are normally necessary where sidewalks are constructed upon earth which has been properly consolidated to 98% Standard Proctor and has a bearing capacity of at least 75 kPa.

Sidewalks shall not be constructed on organic soils.

Where fill is required to bring the sidewalk to approved grade, the fill shall be OPSS-1010 Granular 'A' material compacted to a minimum of 95% Standard Proctor Density.

The concrete sidewalk shall be constructed according to City standard drawings, and OPSS 351, 904 & 1150. The concrete shall meet the requirements of OPSS 1350, be a C-2 mix (32 MPA, 5 – 8% air content), as described in the most current CSA 23.1.

Expansion joints shall be installed as per City standard drawings and the expansion joint material shall extend to the full depth of the sidewalk with no concrete extending to the other each side of the joint.

The expansion joints shall be constructed at locations described within the OPSS. Expansion joints shall be constructed where the newly poured concrete meets a rigid object such as previously poured concrete, street poles, retaining walls, etc.

All utility structures are required to be isolated from the main concrete by "boxing out" the structure with forms. The formwork shall form a square box and be no closer than 150mm from any point of the utility structure as determined by the City representative. The area inside the box, surrounding the structure shall be filled with C-2 concrete, or concrete that matches the concrete mix of the main concrete pour. The finish within the box shall match the design finish. Expansion joint material shall be placed between the main concrete and the concrete surrounding the pole, as well as around the utility structure itself, or be constructed as per the detail shown in City Standard 2240.010.

The concrete shall be cured as per OPSS 904. The rate of application of the curing compound shall be as per the manufactures recommendation or at a minimum rate of 0.2 l/m² if not noted.

All surfaces shall be covered shortly after finishing works are complete and when the surface will not be affected by the cover material (initial set). Uncured concrete will be rejected. See curb notes.

2.1.0.8 Transit Concrete Pads & Platforms

Transit infrastructure including bus stops, boarding and landing pads, shelters, shelter pads, transit lay-bys, bus bays, operator facilities, and related appurtenances shall be designed and constructed in accordance with current MiWay standards. applicants shall contact MiWay.Infrastructure@mississauga.ca to obtain the current transit infrastructure standards, drawings, and requirements. Final location and design of all transit infrastructure shall be approved by MiWay and the City of Mississauga.

Existing transit infrastructure and transit operations shall be maintained during and following construction unless otherwise approved by MiWay. Where transit infrastructure is present and is to be maintained or is approved for relocation or modification, the applicant shall update all

applicable engineering drawings to reflect the approved conditions. If a transit terminal is present at or adjacent to the subject site, transit service and infrastructure shall be maintained. Should plans propose a permanent impact on the existing terminal, a terminal shall be accommodated elsewhere on the site. The applicant shall consult with MiWay to confirm infrastructure is designed to meet current and future transit needs.

Where construction activities impact transit infrastructure or transit service, temporary transit facilities and operational measures may be required as determined by MiWay. Temporary measures may include temporary bus stop locations, temporary pedestrian landing pads, temporary shelters and temporary signage. Temporary transit facilities shall remain in place until permanent infrastructure has been reinstated and accepted by MiWay. Transit infrastructure shall not be removed, relocated, or closed without prior approval from MiWay. The applicant shall contact MiWay.Infrastructure@mississauga.ca for "MiWay's Infrastructure Requirements and Notification Schedule" document, which outlines required notification timelines and temporary infrastructure.

All works associated with transit infrastructure required as a result of a development, including installation, relocation, temporary facilities, restoration, and replacement, shall be completed at the Developer's sole cost and to the satisfaction of the City and MiWay.

2.1.1 Street Name & Traffic Signs

2.1.2 Plan

A separate plan(s) shall be submitted via ePlans showing the proposed location of signs to be installed as part of development applications. The plan shall be part of the engineering drawings which must be approved by the Development Engineering & Construction team. The above ground plan may be used for this purpose provided the signs can be clearly shown without cluttering other details.

2.1.3 Street Name Signs

Street name signs shall be placed at every intersection and shall be double sided. These signs shall be placed in the locations and shall be of the type shown on City Standard Drawings Manual.

Temporary street name signs, approved by the Development Engineering & Construction team, must be erected at intersections upon completion of base asphalt. These signs must be maintained in legible condition until such time as the permanent

street name signs are in place, permanent signage is to be in place prior to topworks assumption.

All traffic signage installed in the boulevard are to include traffic sleeves following STD 2430.160.

2.1.4 Traffic Control Signs

Traffic control signs shall be located as shown in City Standard Drawing Manual. Where the positioning is not covered by the standard drawing, the location must conform to the most recent versions of the Uniform Traffic Control Devices for Ontario or the Highway Traffic Act Regulations for Ontario. Placement of signage in nonstandard locations are subject to field fit in coordination with City of Mississauga staff.

Signs are to be located on the right-hand side of the roadway. Signs in any other position will be considered only as supplementary to the signs in the normal position.

Signs shall be mounted at right angles to the direction of and facing the traffic they are intended to serve.

Signs are to be aluminium, anodized both sides, according to the following requirements:

Sizes:

600mm	1.6mm utility series
600mm - 900mm	2.0mm No. 65ST6
over 900mm	3.2mm No. 65ST6

All traffic control signs are to be made with high intensity type reflective sheeting approved by the Ministry of Transportation Ontario, the current standards of the Manual of Uniform Traffic Control Devices for Ontario, the Highway Traffic Act Regulation for Ontario and the Development Engineering & Construction team, including colours.

Additional Information:

Ontario Traffic Manual – Ontario Traffic Council

City of Mississauga Transportation and Works Standard Drawings

2.1.5 Roadway Markings

The Developer will design pavement markings for all roadways over two lanes in width or as required by the Development Engineering & Construction team. The design shall be in accordance with the Manual of Uniform Traffic Control of Ontario and as approved by the Development Engineering & Construction team.

Developments may be subject to temporary road marking requirements at the City's discretion.

> NOTE: Developments may be engaged to coordinate with City of Mississauga for urban improvement initiatives in areas subject to heavy public exposure (i.e. artistic road crossings) Please see OTM Book 11 – Pavement, Hazard and Delineation Markings (PDF) for additional details.

2.1.6 Traffic Signals

Proposed traffic signal handwells, power service pedestals and conduit are to be designed in accordance with City of Mississauga Standard Drawings Manual and OPSD. Ministry of Transportation Ontario PHM-125 base plans are to be supplied to the City via ePlans showing intersection geometrics, conduits and power service pedestals. Traffic signal power service pedestals are also to be indicated on the subdivision electrical drawing.

Following development approval and agreement review/ execution, Traffic Operations/ Signals team will coordinate with development teams to provide development requirements.

2.2 Streetlighting

2.2.0 Lighting Levels and Uniformity Ratio

Project specific streetlighting requirements will be provided through the development application review process. Detailed design criteria and standards are contained within the City's most recent Streetlighting Design Manual and is to be completed by qualified person (QP).

2.2.1 Light Source

Refer to Streetlighting Design Manual.

2.2.2 Light Fixtures

The light luminaire and pole shall be per the approved list of City of Mississauga Streetlight standards and Alectra.

2.2.3 Approval and Construction

Approval of plans for streetlighting must be obtained from City of Mississauga Streetlighting team and Alectra. The Developer must guarantee and maintain the lighting for one year after the electrical system assumption in accordance with the development agreement with Alectra Energy charges will be paid by the City upon energization of the streetlighting.

2.2.4 City Street Lighting – Partial Acceptance Criteria

1. Purpose

This document outlines the requirements for partial acceptance of street lighting infrastructure installed by a developer or applicant prior to the city assuming monitoring and energy consumption responsibilities for the lighting system.

Partial acceptance allows the city to monitor the street lighting system while the developer/applicant remains responsible for maintenance, repairs, and warranty obligations until final acceptance is granted.

2. Submission Requirements

Prior to requesting partial acceptance, the developer/applicant must provide the following information to the City Street Lighting Unit: a) Asset Inventory A complete inventory of all street lighting assets, including:

- Pole information
- Luminaire type

• Associated adaptive control node numbers

b) As-Built Drawings Final as-built drawings showing the installed street lighting system, including pole identification numbers, circuiting, luminaire types, and associated adaptive control nodes.

c) Electrical Inspection and Clearance Confirmation that all street lighting infrastructure has received Electrical Safety Authority (ESA) inspection and clearance, or approval from the applicable electrical authority.

d) Lighting Control System Commissioning Confirmation that the adaptive lighting control system has been fully commissioned, and that all luminaires are properly communicating with the lighting control network.

3. Operational Verification

Prior to granting partial acceptance, the City Street Lighting Unit will conduct operational testing and verification to confirm:

- All luminaires are operational
- Adaptive control nodes are functioning correctly

• Communication with the lighting management system is established

- The developer/applicant must provide all necessary information and system access required for this verification.

4. Integration into City Monitoring System

Following successful verification, the street lighting assets will be integrated into the City's lighting management system for monitoring purposes, including energy consumption tracking, in accordance with the Ontario Minimum Maintenance Standards (MMS) and the City's standard maintenance monitoring practices.

5. Maintenance Responsibilities

During Partial Acceptance During the partial acceptance period:

- The developer/applicant remains responsible for all maintenance and repair of the street lighting infrastructure.
- If the City identifies operational issues, the developer/applicant will be notified and required to restore the lighting system to full operational condition.

All repairs must comply with the minimum response and repair timelines outlined in the Ontario Minimum Maintenance Standards (MMS).

6. Repair Notification and Verification

Upon completion of repairs, the developer/applicant must notify the City Street Lighting Unit so that City staff may verify that corrective work has been completed and the lighting system is operating properly.

7. Warranty Requirements

All street lighting infrastructure must remain under the applicable warranty period during the partial acceptance stage. Any defective equipment or components must be repaired or replaced by the developer/applicant as required.

An Energization certification and a final streetlighting certification is to be provided to the Streetlighting department and certified by the utility engineering consultant to obtain preliminary and final acceptance.

Certification letters can be found in Appendix C below.

2.3 Residential Lot Drainage & Sodding

2.3.0 General

Lots (including drainage ditches or swales) are to be completely topsoiled and sodded with a minimum depth of 100mm of topsoil and Nursery Sod in keeping with City of Mississauga standards. Grading Plan. Refer to site grading plan terms of reference in Appendix A.

Grade areas to:

- Provide proper surface drainage and maximize usable land area.
- Preserve existing trees where possible.
- Direct drainage away from houses
- Minimum yard slope 2%
- Minimum driveway slope 2% and all driveways are encouraged to slope *away* from the dwelling.
    - Maximum driveway slope 8% (from standard sidewalk location)
    - Any drainage from a reversed from a reversed slope driveway must be connected to the municipal storm sewer and establish high point at property line
    - Maximum grade between houses in any direction:
    - 3: 1 (Horizontal: Vertical), use steps and/or retaining walls if this requirement cannot be met.
    - Provide a 0.60 m wide flat access strip (at 2%) along at least one side of the building where side yard setback permits. (Usually along the garage side or side door entrance).
    - Clearstone rather than topsoil and sod are required for combined side yards between two buildings which are 1.20m or less. For side yards greater than 1.2m clear stone may be required at the discretion of the Development Engineering & Construction team.

Overland Flow Route:

- Maximum ponding depth is 0.35m
- Where overland flow is directed between two dwellings, the depth and width of the swale must be such that the 100 year flow does not come in contact with the dwelling.

Basement windows will not be permitted on the side of the dwelling abutting the overland flow route swale.

- French drains may be considered for infill developments in areas where the 2% minimum slope cannot be achieved, subject to approval by the Development Engineering & Construction team. Their use must ensure proper drainage and not compromise adjacent properties or infrastructure.

2.3.1 Type of Drainage Pattern

Back to front drainage may be considered if the side yard building setback is a minimum of 1.2m for each lot totalling 2.4m of open space between the dwellings, should the existing grading necessitate this as the most practical solution.

Standards:

2851.010 – grading detail lots greater than 12 meters
2851.020 – grading detail for lots less than 12m width
2851.030 – typical split lot grading detail (backsplit)
2851.040 – typical split lot grading detail
2851.050 – typical split lot grading detail (walkout)

2851.090 – Townhouse on rear lane lot grading

Rear yards which drain through abutting lower back-to-front type lots are permitted where:

- Sufficient fall is available between the adjacent streets to achieve desired grades for swales and yards.
- Cut-off swales along the rear lot lines are to direct run-off from the upper lots into the lower lot side yard swales.
- Downspouts on the upper lot do not direct flow to the lower lots.
- No more than one upper lot shall drain into the lower lot side yard swales.

2.3.2 Rear Yard

- A minimum of 75% of the rear yard area is to be usable (2% to 4% slope) as per (Standard 2851.060)
- Retaining walls are to be employed where necessary to achieve the required rear yard areas.

2.3.3 Swales

A) Longitudinal slope Minimum 2%
B) Side slopes - Maximum 3: 1 (Horizontal: Vertical)
C) Rear Yard Swale to rear Lot Catch Basin:
   - Maximum length of rear yard swale
   - On lots less than 12 m in frontage - three lots
   - On lots 12m and greater in frontage - two lots
   - Location of Centreline of Swale 1.0m maximum offset from rear lot line
   - Maximum swale depth - 450mm
   - Minimum swale depth 150mm
D) Sideyard Swale Details:
   - Maximum 250mm (450 allowable if combined side yard in more than 3.6m)
   - Minimum 150mm
   - Refer to detail 2851.080 Cross- Section

Refer to City Standard 2851.060 Lot Grading and Drainage Notes.

2.3.4 Retaining Walls

- Retaining walls are generally required where reconciliation between grades exceeds the specified maximum of 3:1 slope.
- Details of retaining walls over 0.60m are to be submitted with grading plans and stamped by a Professional Engineer. It is preferable that the Engineer who stamped the plan certifies the wall construction. Walls less than 0.6m in height must adhere to OPSD (Ex. STD 3120.100, 3121.150 and 3190.100)
- Proposed retaining walls are generally scrutinized within City/ Region owned right-of-way. Where deemed necessary walls located in the ROW like all other City assets will be subject to a maintenance period of no less than one year. Retaining wall maintenance will not commence until receipt of wall certification outlined above. In some cases this may also require supplementary certification confirming the footing block is founded on grounds with adequate baring capacity as observed by a geotechnical engineer.
- Construct retaining walls entirely on the upper lot so that tie backs do not cross property boundaries.

- Certification by the consultant stating that the retaining wall is designed and constructed to meet the most recent design standards as to granular backfill, structural integrity, materials, tie backs, line and grade is required.
- For retaining walls 0.6m to 1.0m in height light weight pre-fabricated concrete retaining wall products may be utilized. For retaining walls greater than 1.0m in height, heavy block or wet walls are to be utilized.
- Fencing is required where retaining wall height exceeds 0.6m as Per standard No.2851.060.

2.4 Erosion & Sediment Control

2.4.0 General

In accordance with the City of Mississauga Erosion and Sediment Control By-law No. 512-91,, as amended, an Erosion and Sediment Control Permit must be obtained prior to undertaking any land disturbing activities on development sites greater than one (1) hectare in size or on development sites of any size that are adjacent to a body of water. Copies of the By-law and the permit application package are available through the Development Engineering & Construction Environmental Services team.

All erosion and sediment controls are temporary applications constructed prior to any land disturbing activities on the site and shall be maintained throughout the duration of the construction period. *Permits can be issued based on Stage 1 - Earthmoving Operations and Stage 2 - Servicing Works.*

All activities on the site shall be conducted in a logical sequence to minimize the area of bare soil exposed at any one time.

All disturbed ground left inactive shall be stabilized by seeding, sodding, mulching or covering, or other equivalent control measure. The period of time of inactivity shall not exceed 30 days, unless otherwise authorized by the Development Engineering & Construction team, prolonged exposure of disturbed site surfaces require documentation of site controls be coordinated with the City for stormwater management in ponding areas and dust control measures during dryer seasonal conditions .

All erosion and sediment controls should comply with the requirement of “The Erosion and Sediment Control Guidelines from Urban Construction,” issued by the Greater Golden Horseshoe Area Conservation Authorities.

2.4.1 Sediment Basins

Temporary sediment basins shall be constructed on sites having a disturbed drainage area of greater than 2 hectares or having an average slope greater than 12%.

The basin shall be designed to settle out soil particles that are 0.04mm in diameter or larger from surface water runoff and/or storm sewer flows, and shall meet the following requirements:

- The minimum basin volume shall be 125 m3 per hectare of contributing drainage area.

  NOTE: The total basin volume consists of storage zone volume and the settling zone volume.

- The surface area of the basin shall be designed using the following equation:

$$A = 1.2\,Q$$

where Vs = Settling velocity

(0.0021 m/s for 0.04mm diameter soil particle)

A = Surface area of basin (m^2)

Q = Peak inflow rate (m^3/s)

  NOTE: The peak inflow rate shall be calculated using a 1:10 year return period based on the City of Mississauga Standard Intensity Duration Frequency Rainfall Curves (City Standard Drawing No. 2111.010) *(Q=C x i x A)*

  The basin length to width ratio shall be greater than 2 and, if less than 10, a baffling system is required to be used to prevent "short circuiting" and to minimize "dead zones".

- The storage zone depth shall allow for one year of estimated sediment yield based on the Universal Soil Equation.

  The Universal Soil Equation is:

$$E = 2.24\,R\,K\,Ls\,Vm$$

where E = Amount of soil loss per unit area for the time interval represented by the factor R (tonnes/ha)

R = Rainfall factor (Joule/ha)

K = Soil Erodibility Factor (tonnes/Joule)

Ls = Topographic factor (dimensionless)

Vm = Erosion control factor (dimensionless)

NOTE: Factors used in the Universal Soil Loss Equation shall be in accordance with the most recent Ontario Ministry of Transportation published data.

To determine the volume of soil loss per unit area assume a soil density of 1 tonne/m^3.

The minimum storage zone volume of the basin shall be 50m^3 per hectare of contributing drainage area.

- The ratio of the basin length to the settling zone depth is to be less than 40 to prevent scouring of the storage zone. The minimum settling zone depth shall be 0.6m.
- The outlet of the basin shall be designed to provide a minimum of 24 hours of detention time and to prevent turbulence and re-suspension of settled particles.
- The basin shall have a maximum side slope of 3:1.
- The basin shall have a minimum freeboard of 0.3m.
- The basin shall be provided with an emergency spillway.
- 1.8m high chain link fence shall be erected along the perimeter of any sediment basin. A warning sign shall be attached to the security fencing stating that the area is off limits to the general public and advising that the basin is used for sediment control purposes and that the enclosed area is subject to flash flooding.

  See City Standard drawings 2940.010,2940.020,2940.021

- For Subdivision the temporary sediment basins are not to be removed until 80% of the development has been developed and sodded.

2.4.2 Catchbasin Sediment Control

During construction, all catch basins shall be provided with sediment control, in accordance with the following requirements.

Catchbasin Sediment Trap

Catch basin (CB) sediment traps shall be provided for CBs located adjacent to and within active construction site areas draining 2 hectares or greater and less than 4 hectares and shall be constructed in accordance with City Standard Drawing No. 2930.010

Regular maintenance of sediment traps is required, removal is required when the depth from the underside of frame to top of the accumulated sediment is reduced to 300mm.

Catch basin Sediment Barrier

All rear lot catch basins or catch basins within unpaved areas draining less than 2 hectares shall be provided with a sediment control barrier in accordance with City Standard Drawing No.'s 2930.020 or 2930.030

Roadway Catch Basin Sediment Control Device

Under appropriate drainage circumstances, all roadside catch basins shall be provided with sediment protection in accordance with City Standard Drawing No. 2930.040 or 2930.050

2.4.3 Sediment Control Fence

Sediment control fences shall be placed along all downslope sides of a site along the edges of a drainage channel passing through the site, and along the perimeter of all other areas sensitive to sediment accumulation. The sediment control fence shall be constructed in accordance with City Standard Drawing No. 2940.010, fence is required to be properly keyed in place, failure to do so may result in breach of sediment material from the containment area. Such circumstances are often (depending on severity) subject to investigation and may even be subject to fines by environmental authorities.

2.4.4 Vegetative Buffer Strips

A minimum 3m wide *undisturbed* buffer strip shall be *maintained* along the limits of the development adjacent to existing road boulevards. Where a sediment control fence is required, it shall be constructed in front of the buffer strip.

2.4.5 Environmentally Sensitive Area Requirements

In areas that have been identified as sensitive and confirmed such by either City staff or other applicable municipal agency additional ESC requirements may be required. These additional requirements will be addressed as part of the development application review process.

2.4.6 Stockpile Protection/ Onsite Material Management

All stockpiles containing more than 100m^3 of material shall be located a minimum of 10m away from a roadway, drainage channel or an occupied residential lot. The maximum side slopes for stockpiles shall be 1.5 horizontal to 1.0 vertical. Shear slopes (1:1) have been found to be a suitable nesting ground for Cliff Swallows a known protected species in Ontario. The City advises that stockpiles should be worked to avoid being left with shear faces to mitigate unwanted settlement of the protected species.

Runoff from all topsoil stockpiles shall be controlled by a sediment control fence or other approved devices. If remaining for more than 30 days, topsoil stockpiles shall be stabilized by vegetative cover, or other means.

2.4.7 Stone Pad Construction Entrance - Construction Access

To reduce the tracking of mud onto a paved street, a mud mat *in accordance with City Standard Drawing* No.2970.010 shall be constructed at the site entrance and exit leading onto any existing road. . This stone pad must be maintained as required given the site conditions to ensure mud tracking is kept to a minimum.

2.4.8 Rock Check Dam

Rock check dams are to be installed in ditches and swales in accordance with City Standard Drawing No. 2980.010, to be constructed during earthworks and maintained until construction is:

A. Substantially complete OR

B. The drainage area's surface is restored

2.4.9 Site Conditions/Inspection

All disturbed ground left inactive shall be stabilized by seeding, sodding, mulching or covering, or other equivalent control measure. The period of time of inactivity shall not exceed 30 days, unless otherwise authorized by the City staff.

All erosion and sediment control devices are to be inspected by the Owner(s)/designate once per week and after each rainfall of 1 cm or greater to ensure that they are in proper working condition. City staff reserve the right to audit development team staff for ESC reports and must be provided with requested records within 48 hours of the initial request.

2.5 Drawings

Specifications for Engineering Drawings

Size: ARCH A-E | (594mm x 84lmm)

Format: PDF

Materials for Final Submission: PDF

“As-Constructed” drawings: PDF

Materials for Preliminary: PDF

Submissions: PDF

2.5.0 General Drawing Requirements

Work on the drawings is to be done neatly and legibly and maintained as plan readable.

All PDF drawings are to include the signature and digital seal of the Professional Engineer responsible for the design.

The applicant is to relate all wording to a current and existing City of Mississauga benchmark value without applying any shift. Any submissions that show elevation values related to a datum other than the 1928 Canadian Geodetic Datum (i.e. The Mississauga Datum) will not be accepted.

All drawings must include a revision block which must contain a note indicating the submission phase to which they apply, and a space must be provided for the initials of the city staff who reviewed the submission. The caption for this space should read “reviewed by”.

2.5.1 General Plans

2.5.1.0 Aboveground Plans

General plans showing aboveground services and appurtenances are to be drawn to a scale of 1 to 1000 or larger and shall indicate but not be limited to the following:

- School signs
- Street signs
- Future land use signs
- Barricades

- Fencing
- Retaining walls
- Rear lot/block catchbasins
- Screen planting
- Any required easements including dimensions and descriptions
- Driveway location for corner lots
- Driveway locations and building envelopes for detached dwellings less than 12 metres, Semi-detached dwellings and townhouse dwellings
- A typical detail showing building envelopes, driveway location and widths, driveway curb cut and dimension for detached dwellings less than 12 metres, semi-detached dwellings and townhouse dwellings
- Bus stop platforms - Existing and proposed transit infrastructure including bus stop platforms, pedestrian landing pads, shelters, shelter pads, bus bays, and accessible pedestrian connections.
- Community mail box

2.5.1.1 Underground Plans

General plans showing all below ground services and appurtenances are to be drawn to a scale of 1 to 1000 or larger and are to include any required easements. Plans shall clearly identify and number all maintenance holes, catch basins, rear lot catch basins, ditch inlet catch basins, and related storm structures in accordance with the applicable City of Mississauga standard drawings and drawing specifications. Structure numbering shall be consistent across all underground plans, storm drainage plans, plan-profile drawings, and as-constructed drawings.

2.5.1.2 Storm Drainage Plans

Storm drainage plans are to be drawn to a scale of 1 to 1000 or larger (a scale not exceeding 1 to 5000 will be accepted for large external drainage areas) and are to indicate the total area to be drained by the proposed storm sewers. The storm drainage plan is to be compatible with the grading plan and the City's latest contour mapping. The storm drainage plan shall indicate but not be limited to the following:

- Existing contours
- Drainage patterns of adjacent lands
- Runoff coefficients and areas (ha) of tributary areas outside the development **and** for each section of the storm sewers within the development
- Direction of runoff (overland flow)
- Street names
- Manhole/ catch basin numbers
- Sewer sizes and slope
- Directions of flow in the sewers
- Any stormwater control structures such as catchbasins or swales, on the lots, blocks or land parcels required to collect/ capture runoff
- Temporary or permanent quantity and quality storm water management facilities
- Overland flow route
- Culverts and other drainage appurtenances

Note: Refer to section 8 of the Development Requirement Manual

2.5.1.3 Grading Plans

Requirements for grading plan see Grading Plan Terms of Reference.

2.5.2 Plan-Profile Drawings

Plan-profile drawings are to be drawn to a horizontal scale of 1 to 500 and a vertical scale of 1 to 50 and are to conform to the following:

- Where two or more sheets are required for one street, match lines must be used and there is to be no overlap or duplication of information
- Where intersecting streets are shown on a plan-profile, only the diameter of the pipe and direction of flow of the intersecting sewers are to be shown. This also applies to easements for which a separate plan-profile has been drawn.

- On plan-profile drawings the type of sewer (sanitary or storm), the diameter, length, grade and class of pipe are to be shown on the profile elevation band of the profile portion of the drawings only. Only the sewer type, pipe type, diameter and flow direction are to be shown in the plan portion
- Where possibility of conflict with other services exists, connections are to be plotted on the profile
- Pavement/road base designs for the particular roadway are to be indicated on all plan-profile drawings
- The detail information from all borehole logs is to be plotted on the profile section of the drawings and located sample locations are to be drafted on the plan section. If this interferes with some other detail such as a manhole, the exact location may be altered sufficiently for clarity. Borehole information should contain a borehole plot plus a brief description of soils and the water level. The borehole log must extend a minimum of (1) metre below the lowest manhole in the vicinity.
- Gutter drainage details for temporary turning radii and cul-de-sacs

2.5.3 As-Constructed Drawings

2.5.3.0 General

Prior to final acceptance of a subdivision by the City of Mississauga, the Developer's Engineer shall provide a complete set of ”As-Constructed” (AC) drawings for the review by Development Construction of the City of Mississauga. Digital submissions to be coordinated with City staff following C-Plan guidelines

With the submission of the As-Constructed drawing set, an As-Constructed Sewer Summary sheet is to be filled out and submitted to Development Construction for review.

Sample A - As Constructed Sewer Summary Template

In addition to the above, the Region of Peel has additional requirements that consist of, “As-Constructed” digital files which can be found in the Region of Peel Design Criteria and Development Procedures Manual, latest edition.

These drawings shall show the location both horizontally and vertically of everything which is on or under the lands to be accepted by the City.

These drawings shall be sealed and signed by a Registered Professional Engineer and stamped "As-Constructed" and dated.

2.5.3.1 Drafting Requirements for "As-Constructed" Drawings

Storm Sewers, Sanitary Sewers, Watermains, Streetscape and perimeter park grades be "As-Constructed" in all cases. Other additional "As-Constructed" information may be required in certain instances. Direction will be given by the Construction staff on an individual project basis, as required.

2.5.3.2 Storm Sewers

All sewer invert elevations, if different than proposed, are to be indicated on the “As-Constructed” (AC) drawings, where invert elevations differ the proposed invert is to remain in place with a ~~strikethrough~~ and the as-constructed invert should be added to the left or right of the original proposed invert in the profile banding where possible and leaders may be utilized when necessary to maintain drawing legibility.

> **NOTE:** If the difference is greater than 150mm affected portions of sewer (in profile) to be redrawn. Hydraulic calculations must be revised and are to be provided, reflecting these changes, for review and approval.

Any manhole locations which differ by more than 1.50m from proposed are to be redrawn in both plan and profile.

Any material substitutions or field fit changes shall be indicated on the AC drawings, if different than approved proposed:

1. Type of manhole
2. Pipe size
3. Grade of sewer
4. Type of sewer material
5. Class of pipe
6. Type of bedding

Stormwater Management

A topography survey is to be provided for the storm water management pond prior to servicing approval and/or prior to assumption of the swim pond.

Also refer to Section 8- Storm Drainage Design Requirements

2.5.3.3 Sanitary Sewers

All sewer invert elevations, if different than proposed. If difference is greater than 150mm affected portions of sewer (in profile) to be redrawn.

Any manhole location which differs by more than 1.50m from proposed to be redrawn both in plan and profile.

The following shall be indicated on the "as-constructed" drawings, if different than proposed:

1. Type of manhole
2. Pipe size
3. Grade of sewer
4. Tee chainage from downstream manhole
5. Type of sewer pipe material
6. Class of pipe
7. Type of pipe bedding
8. Original ground at centre profile to remain on all plans
9. Lateral ties and elevations

2.5.3.4 Watermains

All watermain elevations, if different than proposed. If difference is greater than 150mm, affected portions of watermain (in profile) to be redrawn.

All alignment changes greater than 150mm to have offsets revised in plan. If alignment changes exceed 1.5 metres, watermain to be redrawn in plan as well as indicating revised offsets.

All main valves are to be tied to permanent features, such as buildings, manholes, catchbasins, etc...

Ties and elevations to all stubs.

The following shall be indicated on the "as-constructed" drawings, if different than proposed:

1. Pipe size
2. Type and class of pipe
3. Type of bedding
4. All fitting changes (bends, reducers, blocking, etc...)
5. Type and manufacturer of valves and hydrants
6. Original ground profile over watermain (if applicable) to remain

2.5.3.5 Erosion and Sediment Control Plans

The erosion and sediment control plans are to be prepared in accordance with the requirements of Erosion and Sediment Control By-law No. 512-91, as amended. Copies of the By-law *and*

permit application package can be obtained from the *Development Engineering & Construction – Environmental Services team*.

Appendix A – Grading Plan Terms of Reference

Terms of Reference
Grading Plan

MISSISSAUGA

City of Mississauga
Planning & Building Department
Building Division
Development Engineering & Construction
www.mississauga.ca

What is it?

A Grading Plan is a drawing that shows the existing elevations/grades on both the lands being developed and adjoining lands along with the proposed grading changes to the site. The plan is to reflect existing and proposed drainage patterns (existing and adjoining lands), all new structures, existing & proposed easements, access points/driveways and parking areas. Existing and proposed elevations demonstrate the topography to help ensure that the proposed site development drainage pattern will not impact existing lands/drainage patterns and that the grading is subject to sound engineering design.

Who prepares it?

The Grading Plan is to be prepared by a Professional Engineer licensed in Ontario or a licensed Ontario Land Surveyor (OLS). The drawing must be stamped, dated and signed by the licensed professional qualified to design site grading/drainage plan.

When is it required?

A Grading Plan may be required in support of an Official Plan Amendment, Rezoning, Draft Plan of Subdivision / Condominium, Site Plan Control, Consent to Sever applications and infill lands not subject to site plan control and/or development Agreements. A site Grading Plan may also be required for Building Permit applications.

How to prepare it?

A Grading Plan should include, but not be limited to the following:

GENERAL INFORMATION (to be included on all grading plans)

1) City standard title block including address or legal description
2) Metric scale of 1:250, 1:300, 1:500 or similar. Bar scale to be included.
3) North arrow
4) Key Plan for site location, at a scale of approximately 1:10,000
5) Legend identifying existing and proposed site grading information, sump pump discharge location, roof leaders/downspouts discharge location and direction, areas/limits of surface ponding, hard and soft surface materials, window wells, fences, retaining walls, catch basins, etc.
6) Property lines (existing/ultimate), street names, registered plan numbers and parts
7) Locations of all doors and proposed grades outside and abutting each building entrance
8) Street centerline elevations along and beyond the frontage of the site
9) Location and details of all existing man-made or natural features on or adjacent to the site, including:
   - Natural features such as trees and watercourses;

- Easements and public utilities;
- Embankments and catch basins;
- Curbs, hydro poles, light standards, fire hydrants, transformers and fences, etc.

10) Existing driveway width along the lot line, as well as existing/proposed widths at the street line where modifications are required
11) Differentiate between existing and proposed works by using lighter/greyed print to show existing features, text, and line work; and darker/black print to show proposed works
12) Location and identification of trees being protected and their associated hoarding zones

DETAILED GRADING INFORMATION (to be included on all grading plans)

1) **Show existing grades within the site and beyond the property limits** at a sufficient distance (including existing building line elevations) to clearly define the existing drainage pattern for the area. Elevations along and beyond the property limits on adjoining lands are to be carefully examined to ensure the impact of external drainage is considered in the design.

2) **Provide proposed grades around the perimeter and within the site**, labelling drainage swale percentages, slope ratios, swale inverts and directional flow arrows. Proposed grades must be compatible with those existing on adjacent lands. Indicate how drainage/runoff as a result of new construction will be managed and self-contained within the site to ensure the adjacent properties are not adversely affected. Indicate the limits wherein the existing grades and drainage pattern will be maintained.

3) **Differentiate between existing and proposed works** by using lighter/greyed print to show existing features, text, and line work; and darker/black print to show proposed works.

4) **Proposed swales** are to be supported with invert elevations at regular intervals and percentages of slope with a minimum of 2.0% where achievable. Swales are to be sodded and well defined in relation to the existing adjacent grades. Allowable driveway slopes shall be between 2.0 % and 8.0%. Provide cross sections to clarify the proposed grading, particularly in relation to the adjacent private lands and municipal right-of-ways.

5) **Cross sections** are to show all relevant information required to properly assess the proposal. Label slopes "3:1 Max" where applicable. The proposed grading shall be in accordance with the City of Mississauga, Development Requirement Manual: https://www.mississauga.ca/file/COM/Section7Revised2010.pdf

6) **Show all roof water leaders and sump pump discharge location(s)**, including direction of discharge, and how it will be managed within the subject property boundaries. Discharge shall not adversely affect abutting and/or City-owned lands and infrastructure, including ditches and sidewalks. Applicants are encouraged to design the weeping tile elevation to be at least 1.0 meter above the seasonal groundwater elevation so that sump pumps do not operate continuously. In cases of high ground water table where a sump pump could run

continuously if a sump pump was implemented, the applicants should consider raising the basement elevation to be at least 1.0 metre above the elevation of the storm sewer obvert.

7) **Ponding limits** and depths are to be depicted on the drawing, and the maximum ponding depth in parking areas is not be exceed 250mm.

8) **Identify the areas to be sodded and/or hard-surfaced** including artificial turf. Label all surface materials on the drawing. Hard surfacing and artificial turf must be Zoning compliant. For additional info, contact Zoning at 311 or 905-615-4311.

9) **Indicate any proposed retaining walls**, along with the type of material, top and bottom of wall elevations at each end at 10 m intervals along its length or where a change in height occurs. Provide cross sections to support proposed retaining walls. Retaining walls near a lot line and greater than 0.6m in height require certified structural details, cost estimates, and structural certification upon completion. The retaining wall in its entirety including footing, must be constructed within the subject lands.

10) **Where municipal storm sewer is available for connection**, an internal storm system may be required to drain the site. A Storm Connection Approval from the Storm Drainage Section is required for any direct connection to the municipal storm sewer. Show location of abutting municipal storm sewer where the internal storm sewer connects. For additional information, contact the Storm Drainage Section at ENV.Approvals@mississauga.ca.

11) **Include a note referencing the specific City of Mississauga Benchmark** number, elevation, and location/description used to establish the elevations on the plan. See Standard Note #1 below. The established benchmark elevation can be found at: http://www.mississauga.ca/portal/services/maps

    All existing and proposed elevations are to relate to an active, local (within close proximity) and existing published City of Mississauga benchmark value, without adjustments. Submissions that show elevations values related to a datum other than the 1928 Canadian Geodetic Datum (i.e. the Mississauga Datum) will not be accepted.

GRADING PLAN STANDARD NOTES – LANDS COVERED BY A DEVELOPMENT AGREEMENT

1) "Elevations are referred to the City of Mississauga Benchmark No. ___, located (insert description on benchmark sheet), having a published elevation of ____ metres."

2) "I hereby certify that the proposed grading for the building, appurtenant drainage and storm water management works comply with sound engineering design, and that the proposed grading is in conformity for drainage and relative elevations with the overall grading and drainage plans for this development."
   _____ (Signature and Stamp)

3)

a. "Driveway surfaces must be zoning compliant. The portions of the driveway within the municipal boulevard will be paved by the applicant."

b. "At the entrances to the site, the municipal curb and sidewalk will be continuous through the driveway and a curb depression will be provided for each entrance."

c. "All proposed curbing within the municipal boulevard area for the site is to suit as follows:
   i. All curbing must be compliant with City standards within the municipal right of way.
   ii. All entrances to the site are to be in accordance with City of Mississauga Standards 2240.030/2240.031 (as applicable) and 2230.20. Driveway and entrance curb radii dimensions shall be in accordance with OSPD 350.010. 2240.010 to match current condition or 2240.011 (as applicable)."

d. "All excess excavated material will be removed from the site."

e. "The applicant will be required to contact all utility companies to obtain all required locates prior to the installation of hoarding within the municipal right-of-way."

f. "The applicant will be responsible for the cost of any utility relocations necessitated by the site plan."

g. "Prior to commencing construction, all required hoarding in accordance with the Ontario Occupational Health & Safety Act and regulations for construction projects, must be erected and then maintained throughout all phases of construction."

h. Should any work be required within the municipal right-of-way, a Road Occupancy Permit will be required. PUCC approval will be required. For further information, please contact the PUCC/Permit Technologist, at 905-615-4950 or by email at tw.pas@mississauga.ca. See the website link below."
https://www.mississauga.ca/services-and-programs/transportation-and-streets/roads-andsidewalks/apply-for-a-road-occupancy-permit/

GRADING PLAN STANDARD NOTES – LANDS NOT COVERED BY A DEVELOPMENT AGREEMENT

1) "Elevations are referred to the City of Mississauga Benchmark No. ___, located (insert description on benchmark sheet), having a published elevation of _____ metres."

2) "I have reviewed the plans for the construction of _____ located at _____ and have prepared this plan to indicate the compatibility of the proposal to existing adjacent properties and municipal services. It is my belief that adherence to the proposed grades as shown will produce adequate surface drainage and proper facility of the municipal services without any detrimental effect to the existing drainage patterns or adjacent properties."

_____ (Signature and Stamp)

3)

a. "All surface drainage will be self-contained, collected and discharged at a location to be approved prior to the issuance of a building permit."

b. "Driveway surfaces must be zoning compliant. The portions of the driveway within the municipal boulevard will be paved by the applicant."

c. "At the entrances to the site, the municipal curb and sidewalk will be continuous through the driveway and a curb depression will be provided for each entrance."

d. "All proposed curbing within the municipal boulevard area for the site is to suit as follows:
   i. All curbing must be compliant with City standards within the municipal right of way.
   ii. All entrances to the site are to be in accordance with City of Mississauga Standards 2240.030/2240.031 (as applicable) and 2230.20. Driveway and entrance curb radii dimensions shall be in accordance with OSPD 350.010. 2240.010 to match current condition or 2240.011 (as applicable)."

e. "All excess excavated material will be removed from the site."

f. "The existing drainage pattern will be maintained except where noted."

g. "The applicant will be required to contact all utility companies to obtain all required locates prior to the installation of hoarding within the municipal right-of-way."

h. "The applicant will be responsible for the cost of any utility relocations necessitated by the site plan."

i. "Prior to commencing construction, all required hoarding in accordance with the Ontario Occupational Health & Safety Act and regulations for construction projects, must be erected and then maintained throughout all phases of construction."

j. "Should any works be required within the municipal right-of-way, a Road Occupancy Permit will be required. PUCC approval will be required. For further information, please contact the PUCC/Permit Technologist, at 905-615-4950 or by email at tw.pas@mississauga.ca or see the website link below."

https://www.mississauga.ca/services-and-programs/transportation-and-streets/roads-andsidewalks/apply-for-a-road-occupancy-permit/

ADDITIONAL RESOURCES

See link to City of Mississauga, Development Requirements Manual for further information: https://www.mississauga.ca/publication/transportation-and-works-development-requirements-manual/

Appendix B – As Constructed Storm Sewer Summary

DEVELOPMENT ______________________ DATE ______________________

CITY FILE NO. ______________________ CONSULTANT ______________________

MISSISSAUGA

AS CONSTRUCTED STORM SEWER SUMMARY

Location/Street Name	From Upstream MH#	To Downstream MH#	Designed Upstream Invert Inv (m)	As Constructed Upstream Invert Inv (m)	Designed Downstream Invert Inv (m)	As Constructed Downstream Invert Inv (m)	Designed Type of Pipe	As Constructed Type of Pipe	Designed Slope s (%)	As Constructed Slope s (%)	Designed Nominal Diameter D (mm)	As Constructed Nominal Diameter D (mm)	Designed Length of Section L (m)	As Constructed Length of Section L (m)	Designed Velocity of Flow with Pipe Flowing Full V (m / s)	As Constructed Velocity of Flow with Pipe Flowing Full V (m / s)	Designed Capacity of Pipe Flowing Full Q (m^3 / s)	As Constructed Capacity of Pipe Flowing Full Q (m^3 / s)	Designed Time of Flow in Section $t = {}^{L}/_{V*60}$ (min)	As Constructed Time of Flow in Section $t = {}^{L}/_{V*60}$ (min)

Appendix C – Agreement Streetlighting Infrastructure Certification Letters

FIRM LETTERHEAD
(ELECTRICAL CONSULTANT)

SAMPLE AGREEMENT STREETLIGHTING INFRASTRUCTURE PRELIMINARY ENERGIZATION CERTIFICATION LETTER

To: City of Mississauga
Planning and Building Department
Development Engineering & Construction
300 City Centre Drive
Mississauga, ON L5B 3C1

Date:

Attn: **Development Construction**

Re: **Preliminary Energization Certification of Agreement Streetlighting Infrastructure**
Municipal Address and Property Description
City File Number
Registered Plan Number (if applicable)

This letter is to certify that the Streetlighting Infrastructure have been installed in accordance with the drawings and specifications for City File/Agreement _____[*Insert City File Number*]_____.

The associated streetlighting node numbers (Adaptive Controls) were provided to the City's Street Lighting Unit on _____[*Insert Date*]_____ and were received by _____[*Insert Name or Group*]_____.

Sincerely,

Stamp and **Signature** of Professional Engineer

For: (Name of Certifying Firm)

FIRM LETTERHEAD
(ELECTRICAL CONSULTANT)

SAMPLE AGREEMENT STREETLIGHTING INFRASTRUCTURE FINAL CERTIFICATION LETTER

To: City of Mississauga **Date:**

Planning and Building Department
Development Engineering & Construction
300 City Centre Drive
Mississauga, ON L5B 3C1

Attn: Development Construction

Re: Final Certification of Agreement Streetlighting Infrastructure
Municipal Address and Property Description
City File Number
Registered Plan Number (if applicable)

This letter is to certify that all/current Streetlighting Infrastructure have been completed in accordance with the drawings and specifications, as may be amended from time to time under City approval and authority and which form part of the Agreement for City file *[Insert City File Number]*.

Streetlighting was energized on *[Insert Date]*. The associated streetlighting node numbers (Adaptive Controls) were provided to the City's Street Lighting Unit on *[Insert Date]* and were received by *[Insert Name or Group]*. The Street Lighting Unit has since completed an inspection, and all identified deficiencies were resolved by *[Insert Date]*.

Sincerely,

Stamp and **Signature** of Professional Engineer

For: (name of Certifying Firm)