

FACILITIES CIVIL ENGINEERING STANDARD - PAVEMENT STRUCTURES

MX-FAE-STD-C005

Facilities Architecture & Engineering
Revision 00
October 2025



Facilities Civil Engineering Standard - Pavement Structures

MX-FAE-STD-C005

Publication Date: October 2025

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Preface

This is the first edition of the Facilities Civil Engineering Standard–Pavement Structures (MX-FAE-STD-C005). The purpose of this standard is to provide minimum civil engineering requirements and design guidance to designers for Metrolinx-owned assets.

This standard is to be followed by Engineering and Design Consultants working on Metrolinx projects and internal Metrolinx staff.

The technical content within the Facilities Civil Engineering Standard–Pavement Structures (MX-FAE-STD-C005) was developed by the Metrolinx Facilities, Architecture, and Engineering’s Civil Engineering Team within the Asset Management and Maintenance Division, which includes specialized subject matter experts.

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Suggestions for revision or improvements can be sent to Metrolinx Facilities, Architecture, and Engineering (FAE) Civil Engineering Team, Attention: Senior Manager, FAE Civil Engineering, who will introduce the proposed changes to Metrolinx FAE Civil Engineering. The Senior Manager, FAE Civil Engineering, ultimately authorizes the changes. A description of the proposed change shall be included along with information on the background of the application and any other useful rationale or justification. Proposals for revisions or improvements shall include your name, company affiliation (if applicable), email address, and phone number.

October 2025

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1. General

1.1 Purpose

1.1.1 This standard outlines the requirements for pavement structures at Metrolinx stations and facilities, ensuring their design supports vehicular and pedestrian traffic. The focus is on providing long-lasting, stable surfaces appropriate for transit environments.

1.2 Scope

1.2.1 Typical pavement structures are illustrated in Figure 1 to 3:

Figure 1: Asphalt Pavement Structure

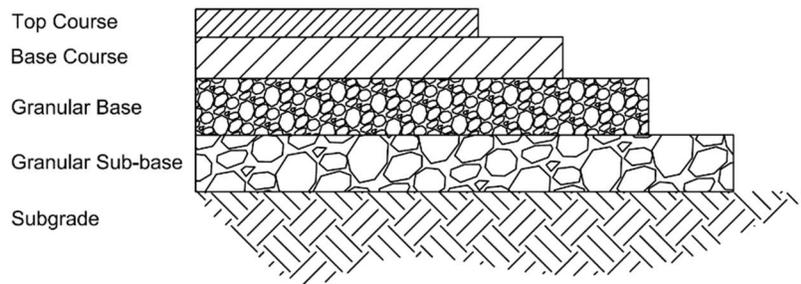


Figure 2: Concrete Pavement Structure

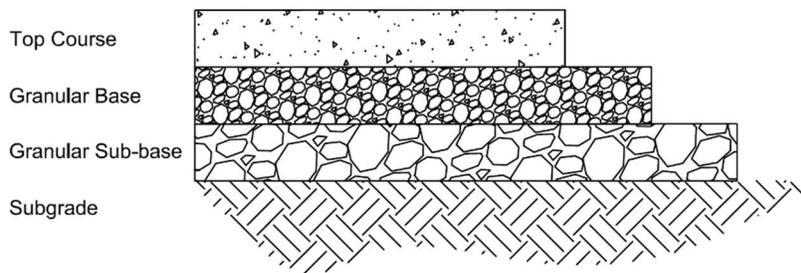
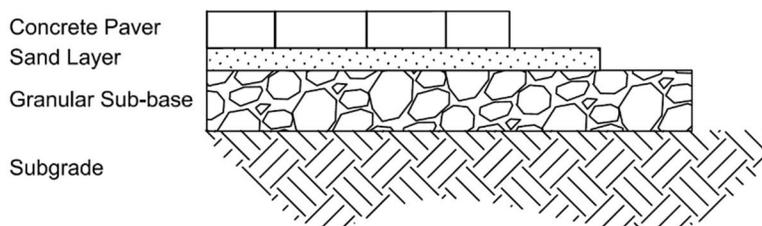


Figure 3: Paver System Structure



- 1.2.2 Assets governed by this standard include:
- a) Parking lot, PUDO, Station internal roadways;
 - b) Bus Loop, Bus Bay, Bus platforms;
 - c) Rail Platforms;
 - d) Sidewalk, multiuse pathway, station plaza; and
 - e) Curbs and gutters
- 1.2.3 This standard excludes site layout, planning, and design, which are addressed in Metrolinx Design Standards and the GO Design Requirements Manual (DRM). The following areas are also excluded:
- a) Rail corridors, except for rail platforms;
 - b) Bus Rapid Transit (BRT) or Light Rail Transit (LRT) corridors, except for BRT and LRT stations and facilities;
 - c) BRT and LRT stops;
 - d) Rail Maintenance Facilities (RMF) and/or layovers; and
 - e) Municipally owned infrastructure, including roadways and multi-use pathways.
- 1.2.4 This document shall be read in conjunction with the Metrolinx Facilities Civil Engineering and Building Envelope Standard—General (MX-FAE-STD-C001).

2. Definitions & Abbreviations

2.1 Definitions

2.1.1 The capitalized terms used in this standard shall have the meaning prescribed in Table 1.

Table 1: List of Definitions

Term	Definition
Asphalt Pavement	A flexible pavement system made of compacted asphalt layers over a granular base.
Base Course	For asphalt pavement structure, a layer of material placed between the subbase and surface course to provide load distribution and drainage.
Compaction	The process of increasing soil or aggregate density by applying mechanical force to improve pavement stability.
Concrete Pavement	A rigid pavement system made of reinforced or plain concrete slabs over a granular base.
Expansion Joint	A space between two pavement sections designed to accommodate expansion and contraction movement.
Granular Base	A compacted layer of aggregate material that supports the pavement structure.
Longitudinal Slope	The gradient of pavement along its length, affecting drainage and vehicle movement.
Pavement Structure	The combination of layers (subgrade, base, and surface) designed to support traffic loads.
Paver System	A surface treatment using interlocking concrete or stone pavers over a granular base.
Subbase	A secondary aggregate layer beneath the base course that provides additional support.
Subgrade	The native material that forms the foundation for a pavement structure.
Surface Course	The top layer of pavement that provides durability, smoothness, and skid resistance.
Tack Coat	A thin layer of asphalt emulsion applied between pavement layers to promote adhesion.

2.2 Abbreviations

2.2.1 The abbreviations used in this standard shall have the meaning prescribed in Table 2.

Table 2: List of Abbreviations

Abbreviation	Definition
AASHTO	American Association of State Highway and Transportation Officials
CSA	Canadian Standards Association
OBC	Ontario Building Code
OPSD	Ontario Provincial Standard Drawings
OPSS	Ontario Provincial Standard Specification
QA/QC	Quality Assurance / Quality Control
SPMDD	Standard Proctor Maximum Dry Density

3. Pavement Structures

3.1 Design Requirements

3.1.1 General Design Requirements

3.1.1.1 Pavement designs for concrete and asphalt pavements shall comply with the following, in order of precedence:

- a) Metrolinx Standards;
- b) Local municipal requirements;
- c) Ontario Provincial Standards (OPS);
- d) AASHTO's Mechanistic-Empirical Pavement Design Guide (MEPDG); and
- e) AASHTO Guide for Design of Pavement Structures (1993).

3.1.2 Geotechnical Requirements

3.1.2.1 Pavement designs shall be supported by a comprehensive geotechnical report. At a minimum, the report shall include:

- a) **Soil Data:** Information on subgrade soil type, condition, groundwater level, and frost penetration depth. Borehole spacing shall not exceed 150 m, and a minimum of 2 boreholes shall be completed for each portion of the site requiring different pavement types, such as parking areas, pick-up drop-off areas, bus loops, plazas, platforms, etc. Borehole spacing and depth design shall follow Canadian Foundation Engineering Manual (CFEM);
- b) **Water Table:** Indication of high-water table presence based on seasonal fluctuations in the water table;
- a) **Drainage Considerations:** Analysis of surface and subgrade drainage, including pavement slope design, subgrade slope design and recommendations for design components installed in the management of the water table, and others;
- b) **Subgrade Stabilization:** Recommendations for subgrade improvement or stabilization, if necessary; and
- c) **Design Parameter Recommendations:** Design parameters based on AASHTO pavement design guidelines (1993).

3.1.3 Pavement designs shall ensure specified compaction across all layers, including the native earth, granular base, sub-base, and cover material, to achieve stability, durability and quality. Compaction shall comply with OPSS.MUNI 310, OPSS.MUNI 314, OPSS.MUNI 501, OPSS.MUNI 902, and OPSS.MUNI 1001.

3.1.4 Soil and granular materials shall be placed and compacted to achieve the maximum dry densities specified in Table 3 unless technical justification is provided and approved by the Owner of this Standard.

Table 3: Minimum Compaction Requirement

Material Type	Minimum Target Density
Earth Backfills	95% SPMDD
Granular Bedding and Cover Material	98% SPMDD
Granular Base and Subbase Pavements	98% SPMDD

- 3.1.4.1 For pavement over underground structures such as conduits, tunnels, or sewers, specific site conditions shall be reviewed by a geotechnical engineer to determine the appropriate pavement structure design.
- 3.1.5 Site Grading
- 3.1.5.1 Site grading requirements for various areas with pavement cover at Metrolinx stations and facilities are summarized in Table 4.

Table 4: Site Grading Requirements

Location	Required Slope
Roadways	Longitudinal slope: minimum 1% to maximum 3%; and Cross slope: minimum 1% to maximum 2% (road widths larger than 6 m shall be crowned at centreline).
Parking and/or Pick-Up/Drop-Off Areas (PUDO)	Preferred slope is 1% to 3%; 3% to 5% is acceptable in isolated areas, less than 20 m in length, in order to reduce need for retaining walls; and 0.5-1% is acceptable in isolated areas less than 20 m in length.
Rail Platforms	Longitudinal Slope: Minimum 0% to Maximum 1% (where no structures are present) Longitudinal Slope: Minimum 0.5% to maximum 1.5% (between a structure and the rail platform) Cross Slope: Minimum 1% to Maximum 2%. Cross slope shall slope away from rail tracks.
Bus Routes/Loops	Longitudinal Slope: Minimum 1% to maximum 3% Cross Slope: Minimum 1% to maximum 3% (crowned at centerline)
Bus Platforms	Minimum 0.5% to maximum 1% slope
Plazas	Minimum 0.5% to maximum 2% slope
Sidewalks	Longitudinal Slope: Minimum 0% to Maximum 4% Cross Slope: minimum 2% (preferred), 4% maximum
Multi-Use Pathway	Longitudinal Slope: Minimum 0% to Maximum 4% Cross Slope: 2% Typical slope, 4% maximum

- 3.1.5.2 For new projects, site constraints may necessitate exceptions to the grading requirement in order to reduce the need for retaining walls and structures. This is acceptable, provided that technical justification is provided and approved by the Owner of this Standard.
- 3.1.5.3 For retrofit projects, efforts shall be made to improve site grading to meet accepted tolerances shown in Table 4. At a minimum, grading adjustments shall not worsen existing conditions if improvement to the required specifications is not feasible.
- 3.1.6 Material Selection - New Projects
- 3.1.6.1 Surface treatments for new projects are specified in Table 5. An assessment of the optimal surface material shall consider maintainability, access to underground infrastructure, service life, and upfront cost. Minimum pavement structure requirements are provided in Section 3.1.8.

Table 5: Minimum Surface Treatment Requirements

Location	Surface Treatment	Section Reference
Rail Platforms ¹	Asphalt-Type 1	3.1.8.1
Light-Duty Multi-Use Pathways	Asphalt-Type 2	3.1.8.2
Heavy-Duty Multi-Use Pathways	Asphalt-Type 3	3.1.8.3
Vehicular Parking Areas & Pick-Up Drop-Off (PUDO) Areas	Asphalt-Type 4	3.1.8.4
Staff Parking Areas at Bus Maintenance Facilities (without bus load)		
Fire Routes-Integrated into Entrance Roadways, PUDOs, parking, etc.	Asphalt-Type 5	3.1.8.5
Sidewalks	Concrete-Type 1	3.1.8.6
Rail Platforms ¹	Concrete-Type 2	3.1.8.7
Pedestrian Plaza Areas and Walkways	Concrete-Type 3 and/or Pavers	3.1.8.8 and/or 3.1.8.11
Bus Platforms	Concrete-Type 3	3.1.8.8
Bus Access Roads & Bus Parking Bays (In Bus maintenance facilities, bus loops, terminals, etc.)	Concrete-Type 4	3.1.8.9
Staff Parking Areas at Bus Maintenance Facilities (with bus load)		
Fire Routes-Integrated into Bus Terminals and Bus Loops		
Curbs and gutters	Concrete-Type 5	3.1.8.10

Note 1: Rail platforms may have either asphalt or concrete surface treatments.

3.1.7 Material Selection - State of Good Repair (SOGR) and Retrofit Projects

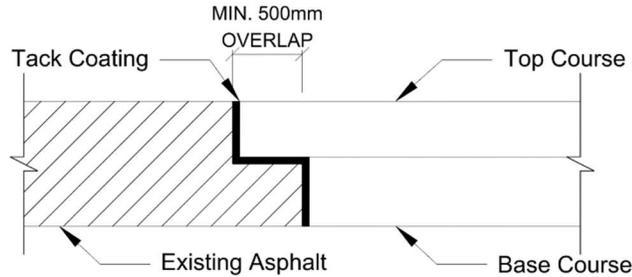
3.1.7.1 For SOGR projects, an assessment shall be completed to determine whether localized repairs or full/partial pavement replacement are required based on the project scope, existing pavement condition, prior wear in the area, and cost considerations. Where replacement is necessary, the pavement structures specified in Section 3.1.8 and summarized in Table 5 shall be implemented. At a minimum, the existing pavement structure shall be reinstated to match existing conditions, ensuring no reduction in performance or durability. Upgrades to the pavement structure, as specified in Section 3.1.8, shall be considered where feasible. Architectural requirements for any localized surface repairs shall comply with the Metrolinx Architectural Material and Finishes Design Standard (DS-24).

3.1.7.2 For projects requiring asphalt resurfacing, the following shall be completed:

- a) Review the condition of the sub-base, base, and binding courses to ensure they meet the performance requirements relative to the expected service duration of the pavement asset. If deficiencies are identified, undertake repairs to restore these layers as follows:
 - 1) Where the planned service duration of the asset exceeds the design life of the new asphalt, repairs shall support the design life of the asphalt pavement; or
 - 2) Where the planned service duration of the asset is shorter than the design life of the new asphalt (e.g. due to planned decommissioning or demolition), repairs shall align with the remaining service duration of the asset.
- b) Remove and replace areas with settlement, cracks, or subbase deficiencies prior to asphalt replacement; and
- c) Apply tack coat to all surfaces prior to installation of the new asphalt pavement.

3.1.7.3 For partial asphalt replacement, a minimum overlap of 500 mm should be maintained between the new and existing asphalt pavement to ensure proper integration. Tack coat shall be applied to both the vertical and horizontal surfaces of the joint to enhance bonding and durability. The overlapping joint should be completed in accordance with the standard practices illustrated in the following Figure 4.

Figure 4: Asphalt Lap Joint Detail



3.1.7.4 For bus bay, bus loops, and bus terminal areas, material selection shall be based on the following:

- a) For construction areas less than or equal to 50% of the specific area being retrofitted, the new pavement structure may match the existing one; and
- b) For construction areas greater than 50% of the specific area being retrofitted, the new pavement structure shall comply with Section 3.1.6 for new construction.

3.1.8 Pavement Design

3.1.8.1 Asphalt-Type 1:

- a) Rail platforms shall be designed with Asphalt Type 1 (or Concrete Type 2, see 3.1.8.7) to support passenger loading onto trains subject to maintenance vehicles under 3,800 kg. Asphalt platforms may be equipped with snow-melting systems to facilitate snow clearing in winter months;
- b) Required pavement structure:
 - 1) Top Course Asphalt: minimum 50 mm HL3;
 - 2) Base Course: minimum 100 mm of 19 mm crushed limestone;
 - 3) Optional Insulating Layer: 50 mm extruded polystyrene (XPS) insulation (only required if there is a snow-melting system); and
 - 4) Granular Base: Customized based on site-specific geotechnical conditions.

3.1.8.2 Asphalt-Type 2:

- a) Asphalt Type 2 shall be designed for multi-use pathways used by pedestrians, bicycles, and other forms of active transportation, typically to accommodate two-way traffic. These pathways are also occasionally used by small maintenance vehicles under 3,800 kg, such as pickup trucks or snow removal equipment;

- b) Required pavement structure:
 - 1) Top Course Asphalt: minimum 80 mm HL3 (installed in 2 lifts);
 - 2) Granular Base: minimum 150 mm Granular A; and
 - 3) Granular Sub-Base: minimum 200 mm (50 mm crushed aggregate).
- c) The granular base shall extend a minimum of 200 mm beyond the walkway edge;
- d) Asphalt shall be completed with a tamp edge at a 45-degree angle; and
- e) The Professional Engineer responsible for the design shall determine if modifications are necessary due to wet conditions or site grading constraints. These modifications shall be approved by the Owner of this Standard.

3.1.8.3 Asphalt-Type 3:

- a) Asphalt Type 3 shall be designed for multi-use pathways subject to maintenance vehicles over 3,800 kg.
- b) The structural design shall be based on specific loading conditions. A geotechnical engineer shall review the anticipated loads and provide a recommended structural design to ensure durability and performance.

3.1.8.4 Asphalt-Type 4:

- a) Asphalt Type 4 shall be designed for regular passenger vehicle traffic and other occasional maintenance vehicles under 15,000 kg;
- b) Required pavement structure:
 - 1) Top Course: minimum 40 mm HL3;
 - 2) Base Course: minimum 40 mm HL8;
 - 3) Granular Base: minimum 150 mm Granular A; and
 - 4) Granular Subbase: minimum 200 mm Granular B.

3.1.8.5 Asphalt-Type 5:

- a) Asphalt Type 5 shall be designed for areas subject to vehicles over 15,000 kg (e.g. garbage trucks and emergency vehicles);
- b) Required pavement structure:
 - 1) Top Course: minimum 40 mm HL3;
 - 2) Base Course: minimum 80 mm HL8;
 - 3) Granular Base: minimum 150 mm Granular A; and
 - 4) Granular Subbase: minimum 250 mm Granular B.

3.1.8.6 Concrete-Type 1:

- a) Concrete Type 1 shall be designed for sidewalks to facilitate pedestrian access and connect stations to adjacent municipal areas;
- b) Required pavement structure:
 - 1) Finished concrete thickness: minimum 125 mm; and
 - 2) Granular base: minimum 150 mm Granular A.
- c) Concrete shall comply with OPSS.MUNI 1350 and CSA A23.1 Exposure Class C-2, with a minimum compressive strength of 32 MPa at 28 days;
- d) Sidewalks shall be finished with a broomed texture;
- e) Sidewalk curb ramps shall be designed with tactile plates at intersections. Tactile plates shall comply with Metrolinx Site Appurtenances Standards;
- f) Contraction joints:
 - 1) Contraction joints shall be spaced at a maximum 2 m interval;
 - 2) Contraction joints shall be 5 mm wide and complete with a saw cut to a depth of one-quarter (1/4) of the concrete thickness; and
 - 3) Contraction joints shall be finished in a manner to maintain a uniform and flush walking surface.
- g) Expansion joints:
 - 1) Expansion joints are to be spaced at maximum 6 m intervals;
 - 2) Expansion joints are to be placed between sidewalk and abutting curb;
 - 3) Expansion joints are to be placed at the juncture between new and old concrete works;
 - 4) Expansion joints shall be installed adjacent to structures (walkways, curbs, columns, utility poles, hydrants, manholes, etc.) or at the discretion of Metrolinx;
 - 5) Expansion joints shall be constructed using 12 mm wide bituminous fibre to the full thickness of the concrete structure. The top surface of the bituminous fibre shall be flush with the concrete surface. The fibre shall be vertical and straight in alignment; and
 - 6) Expansion joints shall be finished in a manner that maintains a uniform and flush walking surface.

3.1.8.7 Concrete-Type 2:

- a) Rail platforms shall be designed with Concrete Type 2 (or Asphalt Type 1, see Section 3.1.8.1) to support passenger loading onto trains subject to maintenance vehicles under 3,800 kg. Concrete platforms may be equipped with snow-melting systems to facilitate snow clearing in winter months;
- b) Required pavement structure:
 - 1) Finished Concrete: minimum 150 mm Portland Cement with broomed texture;
 - 2) Optional Insulating Layer: 50 mm extruded polystyrene (XPS) insulation (only required if there is a snow melting system); and
 - 3) Granular Base: Customized based on site-specific geotechnical conditions.
- c) All concrete shall comply with OPSS.MUNI 1350 and CSA A23.1 Exposure Class C-1 and achieve a minimum compressive strength of 35 MPa at 28 days;
- d) The platform edge shall include precast concrete blocks and tactile tiles designed in accordance with Metrolinx Standard Drawing PC-001;
- e) Contraction joints:
 - 1) Shall be spaced no more than 24 times the slab thickness, or 4.5 m, whichever is less; and
 - 2) Shall be saw cut to a depth of one-quarter (1/4) of the concrete thickness, maintaining a uniform and flush walking surface.
- f) Expansion joints:
 - 1) Shall be adjacent to structures, such as walls, curbs, columns, utility poles, hydrants, and manholes;
 - 2) Shall be designed using 12 mm wide bituminous fibre to the full thickness of the concrete structure. The fibre shall be vertical and straight in alignment;
 - 3) Shall be diamond-shaped around columns;
 - 4) Shall be designed at the interface between new and existing concrete; and
 - 5) Shall have a finish that maintains a uniform and flush walking surface.

3.1.8.8 Concrete-Type 3:

- a) Concrete Type 3 shall be designed for bus platforms, pedestrian walkways, and plazas and subject to maintenance vehicles under 3,800 kg;
- b) Required pavement structure:
 - 1) Finished concrete thickness: minimum 150 mm; and
 - 2) Granular base: minimum 250 mm Granular A.
- c) All concrete shall comply with OPSS.MUNI 1350 and CSA A23.1 Exposure Class C-1 and achieve a minimum compressive strength of 35 MPa at 28 days;
- d) Platforms shall be finished with a broomed texture;
- e) Tactile plates and curb ramps shall be designed for pedestrian crossings in accordance with Metrolinx Site Appurtenances Standards;
- f) Contraction joints:
 - 1) Shall be spaced no more than 24 times the slab thickness, or 4.5 m, whichever is less; and
 - 2) Shall be saw cut to a depth of one-quarter (1/4) of the concrete thickness, maintaining a uniform and flush walking surface.
- g) Expansion joints:
 - 1) Shall be adjacent to structures, such as walls, curbs, columns, utility poles, hydrants, and manholes;
 - 2) Shall be designed using 12 mm wide bituminous fibre to the full thickness of the concrete structure. The fibre shall be vertical and straight in alignment;
 - 3) Shall be diamond-shaped around columns;
 - 4) Shall be designed at the interface between new and existing concrete; and
 - 5) Shall have a finish that maintains a uniform and flush walking surface.

3.1.8.9 Concrete-Type 4:

- a) Concrete Type 4 shall be designed for roads and parking areas to support bus or other heavy vehicle loads;
- b) Required pavement structure:
 - 1) Top Course: 250 mm Portland Cement concrete; and
 - 2) Granular Base: 250 mm Granular A.

- c) All concrete shall comply with OPSS.MUNI 1350 and CSA A23.1 Exposure Class C-1, with a minimum compressive strength of 35 MPa at 28 days;
- d) Final surface texturing of the concrete surface shall follow OPSS 350;
- e) Concrete pours shall be monolithic between the bus access road and bus bays within bus loops; and
- f) Joints in concrete pavement shall comply with OPSD 552.010.

3.1.8.10 Concrete-Type 5:

- a) Curbs and gutters are integrated across multiple site areas, including pedestrian walkways, plazas, bus loops, pick-up/drop-off areas, and parking areas. They serve to guide traffic, manage drainage, and enhance site functionality, ensuring cohesive design across locations;
- b) Curbs and gutters shall be designed with concrete and comply with local municipality standards. If no local requirements exist, the design shall conform to OPS standards;
- c) Concrete shall comply with OPSS.MUNI 1350 and CSA A23.1 Exposure Class C-2, with a minimum concrete compressive strength of 32 MPa at 28 days;
- d) Curbs shall not function as standalone retaining structures for roadways or parking areas. A retaining structure, designed by a Professional Engineer, is required when:
 - 1) The finished grade on the non-roadway side of the curb exceeds 0.3 m above the bottom of the curb; or
 - 2) The finished grade on the non-roadway side of the curb is below the top of the curb.
- e) Curb ramps shall comply with OPSD 310.033 and align with the direction of travel. Ensure a minimum clear width of 1,600 mm, excluding any flared sides;
- f) Expansion joints shall be designed at intervals no greater than 6 m. Joints shall coincide with and be similar in construction to those in the adjacent sidewalks and road bases;
- g) Expansion joints shall be included at all transition points between new and existing concrete curbs; and
- h) A 150 mm diameter perforated, single-wall, corrugated, and rigid HDPE sub-drain, wrapped in a geotextile sock, shall be incorporated continuously beneath all curbs and gutters.

3.1.8.11 Pavers:

- a) Paver systems are designed for pedestrian walkways and plazas, subject to occasional maintenance for vehicles under 3,800 kg. For paver systems subject to frequent vehicular load, pavement structure shall be evaluated by a geotechnical engineer and provide a recommended structural design to ensure durability and performance;
- b) Required pavement structure:
 - 1) Unit paver: 80 mm depth with a minimum dimension of 100 mm and a maximum dimension of 400 mm;
 - 2) Bedding Sand: minimum 25 mm depth; and
 - 3) Base: minimum 150 mm Granular A.
- c) Precast concrete pavers shall conform to CSA A231.2;
- d) Concrete paver shall not be cut or trimmed to less than half of its original dimensions;
- e) The joint width shall be 2-3 mm and filled with joint sand or high-performance polymeric jointing sand;
- f) The top radius/chamfer width shall be 2 mm;
- g) The design shall include concrete curbs or engineered edge restraints to prevent movement or distress in the pavers. Assessment of the edge restraint based on site conditions shall be conducted by a Professional Engineer;
- h) Acceptable colours for pavers shall range from light grey to dark grey. White and black shall not be accepted, unless noted otherwise within the applicable Metrolinx Architecture Standards; and
- i) Pavers shall be locally available, and it is preferred that they be a stock item to ensure ease of repair and replacement.

3.2 Quality Assurance and Quality Control (QA/QC)

3.2.1 The following QA/QC activities shall be included in the project agreement to ensure proper documentation and certification by the Professional Engineer responsible for the design throughout construction. At project completion, all QA/QC documentation shall be submitted to the Owner of this Standard for review and approval.

- a) Summary of Compaction Test Results: Compaction testing shall comply with OPSS.MUNI 501, including:
 - 1) One test per 150 linear m of backfill for sewer and water main trench for backfill materials. A minimum of one test per trench; and
 - 2) One test per lift for each increment or fraction of 500 square metres of granular base or subbase on each site, curb, or sidewalk.
- b) Surface Course Asphalt Placement Records: The Professional Engineer shall submit documentation confirming that the asphalt mix is designed for placement at ambient air temperatures above 7 °C. If cold-weather paving is planned, a separate asphalt mix engineered for lower temperatures shall be documented.
- c) Pavement Design Documents: Specifications shall require the submission of mix design details, including:
 - 1) Material Mix Design (asphalt or concrete); and
 - 2) Material Testing Report (asphalt or concrete).