



# **Metrolinx Equipment Acceptance Process Standard**

MX-SEA-STD-008

Revision 00  
May 2026

# Metrolinx Equipment Acceptance Process Standard

MX-SEA-STD-008

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*an Agency of the Government of Ontario*

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# Preface

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This is the first edition of the Metrolinx Equipment Acceptance Process Standard (MX-SEA-STD-008). This standard describes the Engineering Management and Safety Process used to accept and introduce new Maintenance-of-Way equipment (namely Track Units), and other pieces of equipment which are not permanent fixtures of the operating rail network but intended to be used on Metrolinx Interoperable Heavy Rail Infrastructure for construction, production and maintenance by Metrolinx and its vendors.

The Metrolinx Equipment Acceptance Process Standard is intended for any vendor/party/project that would like to introduce new maintenance-of-way equipment that is novel to Metrolinx. Ownership and Operator of the proposed equipment is to be considered separately. This standard aims to only review the technical suitability and compatibility with the Metrolinx Heavy Rail Network.

The technical content within the Metrolinx Equipment Acceptance Process Standard (MX-SEA-STD-008) was developed by the Metrolinx Systems Assurance office within the Engineering and Safety Division, which includes specialized subject matter experts.

This Standard is available for external users to download via the Metrolinx public download site at: [www.metrolinx.com/en/metrolinx-technical-standards](http://www.metrolinx.com/en/metrolinx-technical-standards)

Suggestions for revision or improvements can be sent to Metrolinx Systems Assurance, Attention: Director, Systems Assurance, who will introduce the proposed changes to Metrolinx Systems Assurance. The Director, Systems Assurance, 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.

May 2026

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# Reference Publications

Table 1: Reference Publications

Document Number	Document Title	Relation
AREMA 2025	Manual for Railway Engineering - American Railway Engineering and Maintenance-of-Way Association (AREMA)	Manual
CSA R114:22	Canadian Method for Risk Evaluation & Assessment	Guidance
GOI-TU-DG Dec 2015	CN Track Unit Classification	Compliance
CROR (Jan 2025)	Canadian Rail Operating Rules	Guidance
EN 50126-1:2017	Railway Applications - The Specification and Demonstration of Reliability, Availability, Maintainability and Safety (RAMS) Part 1: Generic RAMS Process	Compliance Guidance
EN 50126-2:2017	Railway Applications - The Specification and Demonstration of Reliability, Availability, Maintainability and Safety (RAMS) Part 2: Systems Approach to Safety	Compliance Guidance
EN 50151-3-1:2017+A1:2019	Railway applications - Electromagnetic compatibility Part 3-1: Rolling stock - Train and complete vehicle	Compliance
MOI	Metrolinx Operating Instructions	Guidance
MXGEI	Metrolinx General Engineering Instructions - 2025	Guidance
SOR/86-304	Canada Occupational Health and Safety Regulations	Guidance
SOR/2015-26	Canadian Railway Safety Management System Regulations (2015)	Guidance
RC-0506-02TRK	Metrolinx Track Standards	Compliance
MX-CPG-STD-001	Metrolinx Work Planning Standard	Compliance

Document Number	Document Title	Relation
R.S.C., 1985, c. 32 (4th Supp.	Canadian Railway Safety Act 1985 Part II	Guidance
CSA Z150	National Standard of Canada - Safety Code on Mobile Cranes	Guidance
CSA B354	National Standard of Canada - Self-propelled boom-supported elevating work platforms	Guidance
ANSI B30	Safety Standards for Cranes, Hoists and Rigging	Guidance
ANSI B56.1	Safety Standards for Low, High Lift Trucks	Guidance
ISO 20474	General Safety Requirements for Earth-Moving Machinery	Guidance
NFPA 505	Fire Safety Guidance for Powered Industrial Trucks	Guidance
AAR MoSaRP	Association of American Railroads (AAR) Manual of Standards and Recommended Practices	Guidance
APTA RT-OP-S-001-02	Standard for Rail Transit Track Inspection and Maintenance	Standard
MX-STC-STD-002	GO & UP Fleet Radio Devices Installation	Standard
AAR M-211	Coupler Systems	Standard
AAR S-117	Coupler and yoke design, testing, and inspection	Standard
2006	Metrolinx Act	Guidance

# Documents

Table 2: Documents

Document Number	Document Title	Relation
MX-SEA-TMP-001	Equipment Acceptance Compliance Template	Compliance Template
MX-SEA-FRM-001	Equipment Acceptance Intake Form	Form

# Definitions

Table 3: Definitions

Term	Definition	Source
Acceptance	Status achieved by a product, system or process once it has been agreed that it is suitable for its intended purpose	EN 50126-1:2017
Availability	Ability of an item to be in a state to perform a required function under given conditions at a given instant of time or over a given time interval, assuming that the required external resources are provided	EN 50126-1:2017
Asset owner	Groups and individuals that are responsible for asset ownership, asset maintenance, inventory management, document control, asset handover and reliability engineering	MX-ALM-STD-001
Compliance	State where a characteristic or property of a product, system or process satisfies the specified requirements	EN 50126-1:2017
Configuration Management	Process of identifying and documenting the characteristics of a facility's structures, systems and components (including computer systems and software), and of ensuring that changes to these characteristics are properly developed, assessed, approved, issued, implemented,	EN 50126-1:2017

Term	Definition	Source
	verified, recorded and incorporated into the facility documentation.	
Design	Activity applied in order to analyze and transform specified requirements into acceptable solutions	EN 50126-1:2017
Equipment	For the purpose of this standard: it is On-Track Maintenance-of-Way Track Units and associated machinery/attachments.	
Failure	Loss of ability to perform as required	EN 50126-1:2017
Function	Specified action or activity which can be performed by technical means and/or human beings and has a defined output in response to a defined input	EN 50126-1:2017
Hazard	Condition that could lead to an accident	EN 50126-1:2017
Hazard Analysis	Process of identifying hazards and analyzing their causes, and the derivation of requirements to limit the likelihood and consequences of hazards to a tolerable level.	EN 50126-1:2017
Hazard Record	Document in which hazards identified, decisions made & solutions adopted.	EN 50126-1:2017
Track Unit	Track Unit (TU) is defined as any vehicle or machine capable of on-track operation utilized for track inspection, track work, and other railway activities when on a track. These units, such as tampers or hi-rail vehicles, must be operated at a specialized "track unit speed" that allows them to stop within half the range of vision.	<a href="https://tc.canada.ca/en/rail-transportation/rule-s/canadian-rail-operating-rules/definitions">https://tc.canada.ca/en/rail-transportation/rule-s/canadian-rail-operating-rules/definitions</a>

# Abbreviations

Table 4: Abbreviations

Acronym	Full Name
AFP	Alternative Financing and Procurement
AIP	Approval In Principle
CMREA	Canadian Method for Risk Evaluation and Assessment for Railway Systems CSA R114-22
CPG	Capital Projects Group
CTC	Consent To Construct
CTR	Consent To Revenue Service
CTT	Consent To Test
ESAC	Engineering Safety and Assurance Case
EQAC	Equipment Acceptance Certificate
FMECA	Failure Modes, Effects, & Criticality Analysis
FRACAS	Failure Reporting, Analysis and Corrective Action System
ID	Identification
IP	Investment Panel
ISA	Accredited Independent Safety Assessor against CMREA, EN 50126/8/9
PDD	Process Description Document
PFD	Process Flow Diagram
RACI	Responsible Accountable Consulted Informed

Acronym	Full Name
RAM	Reliability, Availability and Maintainability
RAMS	Reliability, Availability, Maintainability and Safety
RCD	Reference Concept Design
RIS	Railway Industry Standards
SA	Systems Assurance
SCC	Safety Certification Committee
SDS	System Design Safety (Also referred to as System Design Safety)
SLIM	System Lifecycle Integration Management
SRP	System Review Panel
SSEM	System Safety and Engineering Management
ToR	Terms of Reference
V&V	Verification & Validation

# 1. Introduction

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## 1.1 Purpose

- 1.1.1 This document provides a standard defining the Equipment Acceptance Process Standard (EQAP) for On-Track Maintenance of Way Equipment and associated equipment/attachments, referred to throughout this standard at "Track Units."
- 1.1.2 The EQAP aims to provide clarity on the themes and/or expectations of the submission for evaluation. The equipment acceptance process further provides an approval path for equipment that is novel to the North American market, which is progressive but has not achieved the appropriate compliance custom within the North American Heavy Rail industry. This process only maps out the pathway for Equipment Acceptance; however does not mean that the proposed equipment is fit for purpose, nor does it qualify the machine for use on any other sister railway. Potentially, a submitted equipment may have a multi-use function where this process is unable to determine all use permutations; each individual use case must be evaluated for risk level at the time of proposed work with the Major Track Closure and RCAC Work Plan Process.
- 1.1.3 North American Railway operators have an obligation to ensure products are evaluated against AREMA for all classes of railways, from Class 1 to Short Lines. Generally, the Equipment Acceptance process aims to evaluate equipment against North American Norms due to the interoperability of railways. This process also does not replace any compliance expectations other sister railways may have regarding the usage of equipment on subdivisions where Metrolinx is a tenant.

## 1.2 Application

- 1.2.1 This document applies to the acceptance of all novel Track Units and associated equipment/attachments operating on infrastructure controlled or operated by Metrolinx, or any associated track maintenance equipment for which Metrolinx has a safety responsibility and obligation, including equipment operated by Metrolinx contractors. This document does not apply to Rapid Transit.

## 1.3 Health and Safety Responsibilities

- 1.3.1 The general health and safety responsibilities are described within the relevant legislative framework set out in section 2.4.

## 2. Scope

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### 2.1 Scope of Equipment Acceptance Process Standard

- 2.1.1 This process outlines the steps required to permit technical approval of Track Units for use on Metrolinx Heavy Rail Corridors, which incorporates best practices from AREMA MOW, AAR, APTA, Transport Canada, MTO, Sister Railroads and Metrolinx Rules and Standards.
- 2.1.2 Alternatively, safety & certification protocols practices of Rail Safety and Standards Board (RSSB) and standards published under the Railway Industry Standards “RIS” heading can be applied on a case-by-case basis with full justification that demonstrates equal or an improvement on Primary North American Industry Standards. The goal is to ensure that equipment is safe, reliable, and compliant with common North American Railway-Specific Standards, in consideration of Track Unit operations as defined by the CROR, while minimizing risk.
- 2.1.3 This Equipment Approval Process does not include the requirements/obligations of the Operational Readiness Panel (ORP), which may have operational operational-specific lens to the operating limitations of the submitted equipment.

### 2.2 Existing Equipment

- 2.2.1 Existing equipment already in operation on Metrolinx Corridor as of date of approval of the initial revision of this Equipment Acceptance Standard, our Contractors, Sister Railways will be grandfathered with a moratorium of 5 years. The premise behind this moratorium is they are existing AREMA/AAR-compliant machines already adhering to North American industry standards and practices. Following the 5-year moratorium, grandfathered equipment must have an approved Equipment Acceptance Certificate to continue use.
- 2.2.2 Equipment with AREMA/AAR and demonstrated North American use within a Heavy Rail Environment may be afforded a streamlined approval process based on a case-by-case basis.

### 2.3 Scope and Scenarios

- 2.3.1 The process is intended to be for pre-acquisition or pre-confirmation of any Novel On-Track Maintenance-of-Way equipment (“Track Units”) on Metrolinx Heavy Rail Corridors prior to adoption/procurement. This process does not impede a vendor from bidding for work with the intention of using the spotlighted submitted equipment as means and methods of accomplishing the work. Risks associated in the use of the specific submitted Track Units will be further evaluated separately within the Metrolinx Work Planning Standard (MX-CPG-STD-001).

- 2.3.2 If circumstances exist where the procurement of Track Units were executed prior to the application/submission of the equipment for approval with requirements not in alignment to this process and standards, the Submitter shall retrofit the submitted equipment in alignment of AREMA, Transport Canada, AAR, APTA and Metrolinx Standards until satisfactory, safe and operationally compliant. Where a purchase or supplier agreement already pre-exists with a clear description of goods and requirements to be delivered; the submission must include a contractual requirement decomposition and provide compliance traceability matrix to evidence supportive requirement fulfilment. If a requirement overlap exists with line items of Equipment Acceptance Compliance Template (MX-SEA-TMP-001), the submitter shall only need to decompose the requirements where a gap exists.
- 2.3.3 The Submitter/Vendor may demonstrate/justify that the standards to which the equipment is manufactured against are equal or an improvement upon existing standards. All equipment must be able to operate within existing Transport Canada CROR rules with respect to Track Units and must not hinder the interoperable operation of any sister railways who rely on Metrolinx to uphold and perform due diligence on any shared Track Running Rights on Metrolinx. [Example, CN/CPKC operate trains which can consist of rolling stock, cars borrowed from logistics partners of BNSF, CSX, UP, UP]
- 2.3.4 The submitter may use this Equipment Acceptance Process Standard as the baseline for equipment acceptance however additional requirements not highlighted within this document may arise during the evaluation process. The submitter is urged to perform their own due diligence in exhausting all applicable standards which demonstrate conformance and highlights safety history/performance of the submitted equipment.
- 2.3.5 The Submitter shall also disclose any past derogations, deviations, and whitepapers related to prior equipment decision requests.

## 2.4 Relevant Legislation

- 2.4.1 The relevant legislation associated to this Equipment Acceptance Process Standard adopts a North American approach with the understanding that Metrolinx must maintain an interoperable network with our sister Railroads. Although Metrolinx is a Provincial Railway, the Metrolinx Network is a subnetwork within the corridors and subdivisions of other Federal Railways, such as VIA, and multi-national railways, such as CN, CPKC, and AMTRAK. For the purposes of evaluation/acceptance of Track Units, emphasis shall be placed on adherence or improvements on standards as described by Transport Canada, AREMA, AAR, APTA, CSA, and any shared requirements with CN, CPKC, VIA, and AMTRAK.
- 2.4.2 This observance to North American norms does not exclude machines in conformance to other applicable international standards; however, further analysis must be performed by the submitter to demonstrate such to the evaluation body.

### 2.4.3 Regulations of relevance to this Standard are:

- a) Canada Occupational Health and Safety Regulations (SOR/86-304);
- b) Canadian Railway Safety Management System Regulations (2015) (SOR/2015-26);
- c) Canadian Railway Safety Act 1985 Part II (as amended);
- d) Metrolinx Act, 2006;
- e) National Standard of Canada - Safety Code on Mobile Cranes (CSA Z150);
- f) National Standard of Canada - Self-propelled boom-supported elevating work platforms (CSA B354);
- g) Safety Standards for Cranes, Hoists and Rigging (ANSI B30);
- h) Safety Standards for Low, High Lift Trucks (ANSI B56.1);
- i) General Safety Requirements for Earth-Moving Machinery (ISO 20474);
- j) Fire safety guidance for Powered Industrial Trucks (NFPA 505);
- k) Association of American Railroads (AAR) Manual of Standards and Recommended Practices; and
- l) Canadian Railway Safety Act

### 2.4.4 Operational Rules

2.4.4.1 Additionally, Metrolinx aligns with the Canadian Railway Operating Rules (CROR) for Mainline operation. This is further supplemented with the Metrolinx Operating Rules as well as Metrolinx General Engineering Instruction. All submitted Track Units shall be able to operate within the rules and restrictions associated with the equipment.

## 3. Process

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### 3.1 Equipment Acceptance Working Group

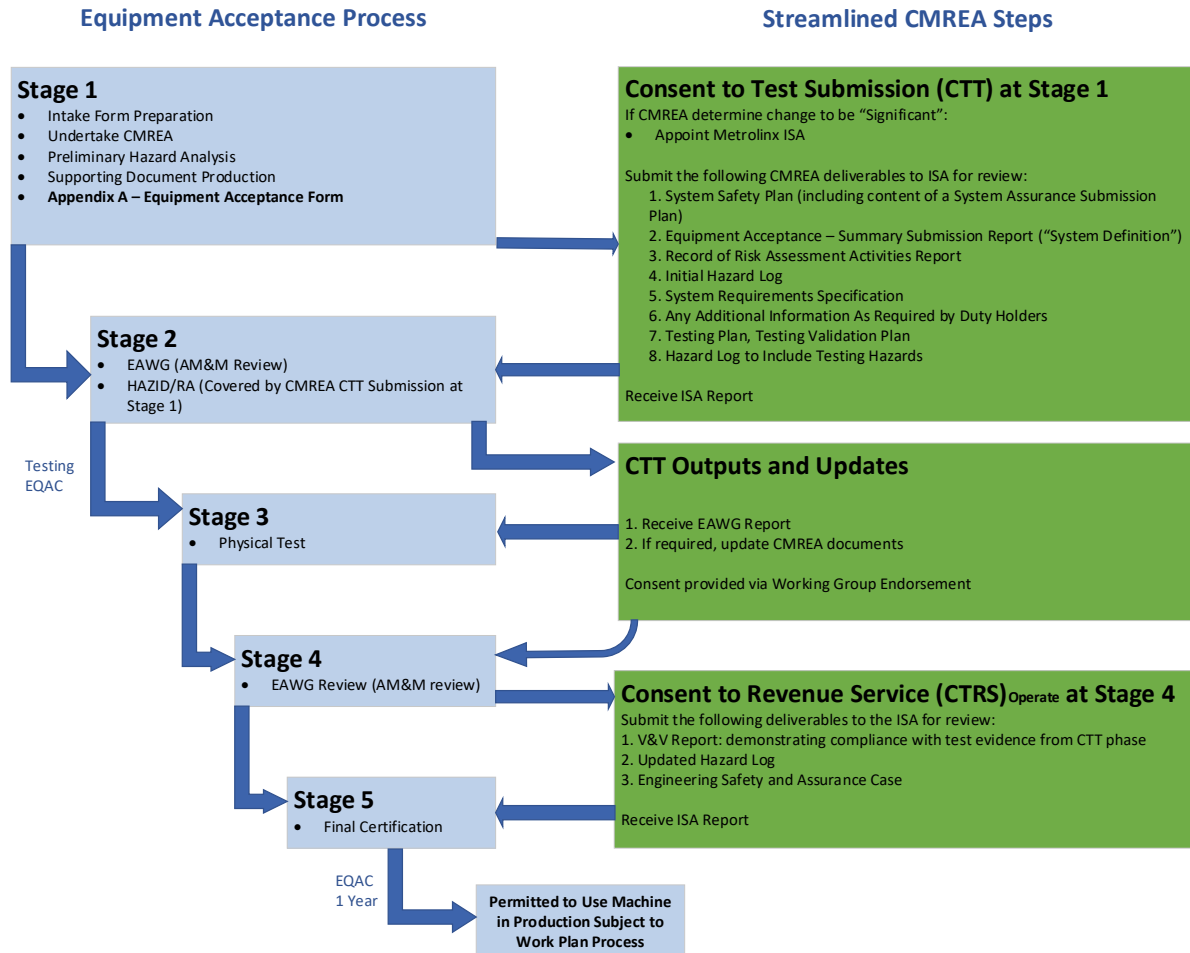
3.1.1 The process will be administrated by the System Safety and Engineering Management (SSEM) team and will consist of an Equipment Acceptance Working Group with representatives from relevant disciplines and shall be approved by the affected Engineering and Safety Division VP/Director or delegate. The baseline relevant disciplines shall include, but not limited to:

- a) Track;
- b) Signals & Communications/Train Control;
- c) Civil Infrastructure;
- d) Fleet;
- e) Electrification;
- f) Systems Assurance;
- g) System Safety Assurance; and
- h) System Lifecycle Integration Management (SLIM).

3.1.2 The individual names of the Working Group will be selected by each asset class at the time of convening. Maintenance considerations now fall under each respective Asset Class.

## 3.2 The Stages

**Figure 1: Process Diagram**



### 3.2.1 Stage 1

3.2.1.1 Complete Equipment Acceptance Intake Form (MX-SEA-FRM-001) for Preliminary Review of Equipment. (Pro-Forma)

3.2.1.2 Determine On-Track Equipment Purpose and Scope

- a) Determine the significance of the change the equipment introduces to the existing system.
  - i. Submit CMREA Significance of Change Safety Assessment. (ref. MXSD-SSA-GDE-0003).
- b) Complete Hazard Identification and Risk Assessment and provide evidence of Safety Risk Management

- i. Complete Preliminary Hazard Analysis (PHA) for compatibility with existing network.
  - ii. Provide risk assessment of the proposed equipment to identify appropriate mitigations to hazards inherent to the equipment itself and the user interface, ergonomics and human factors.
- c) Initiate submission-based Metrolinx Safety Assurance Governance Framework for product acceptance.
- d) Vendor to provide a completed Compliance Matrix and Risk Assessment of the proposed equipment to identify appropriate mitigations to hazards inherent to the equipment itself and the user interface, ergonomics, and human factors. This can take the form of a Safety Case.
  - i. Complete Equipment Acceptance Compliance Template (MX-SEA-TMP-001) or supply an equivalent document which also fulfils the intent. If an equivalent compliance matrix is supplied, please ensure each ID row is accounted;
  - ii. Provide Compliance to Procurement or Supplier Agreement (If Applicable); and
  - iii. Where any gap or variance exists between the submitted equipment in question and standard North American or Metrolinx Standard; provide justification and appropriate evidence.
- e) Identify the specific work tasks for which the Track Units will be applied (e.g., tamping, grinding, rail inspection);
- f) Determine if the equipment is standard general or specialized (e.g., hi-rail vehicles, track geometry machines);
- g) Review operational environments: track gauge, clearance, freight or passenger corridors, track loading assessment, axle spacing and conditions such as speed limits and weather extremes;
- h) Identify if Machine is already in-use on Mainline in a North American Railway that adheres to AREMA. Provide evidence and reference if applicable;
- i) Provide Safety KPI's and Performance History of applicable equipment;
- j) Engineering Conformance Certificate of submitted equipment to North American/Metrolinx standards;
- k) If any retrofits were performed, appropriate Conformance certificate certifying the work;
- l) Operator Training Plan;
- m) Maintenance Training Plan;
- n) Warranty Period and Coverage Description;

- o) Maintenance Record Procedure;
- p) Summary submission report and submission package;
- q) Adherence to:
  - i. CENELEC EN 50126X Standards;
  - ii. AREMA MOW CH 27/AAR; and
  - iii. Alternate RSSB/RIS Standard w/Justification, Gap Analysis and Mitigations.

### 3.2.2 **Stage 2**

- 3.2.2.1 Equipment Acceptance Working Group Reviews Submission, Performs Initial Compliance Check and determines if Applicable Standards were applied correctly. (2-3 Week Review Period)
- 3.2.2.2 Complete Hazard Identification and Risk Assessment and provide evidence of Safety Risk Management.
- 3.2.2.3 Complete Interface Hazard Analysis (IHA) for compatibility with existing network.
- 3.2.2.4 Complete System Safety Risk Assessment
- 3.2.2.5 Complete Construction Safety Risk Assessment
- 3.2.2.6 Follow submission-based Metrolinx Safety Assurance Governance Framework for product acceptance.
- 3.2.2.7 Ensure that the equipment meets the baseline technical specifications as identified within the Equipment Acceptance Template with the requirements under AREMA Chapter 27.
- 3.2.2.8 Review any available manufacturer certifications or prior usage in railways with similar operating environments.
- 3.2.2.9 Identify Asset Class Specific Requirements
- 3.2.2.10 Equipment Acceptance Working Group members to provide comments within a Consolidated Comment Review record.
- 3.2.2.11 Vendor to provide a comprehensive demonstration and testing regime showcasing capability to comply with technical and operational requirements. The evaluation of the testing regime will be a part of the submission review by the working group. Any test witnessing requirements.
- 3.2.2.12 Considerations:
  - a) Equipment must be able to abide by CROR Track Unit Operating Rules [[tc.canada.ca/en/rail-transportation/rules/2024-2025/canadian-rail-operating-rules](https://tc.canada.ca/en/rail-transportation/rules/2024-2025/canadian-rail-operating-rules)]

### 3.2.3 **Stage 3**

3.2.3.1 An equivalent Consent to Test certificate shall be issued upon successful submission review/approval of Step 1 & 2. Vendor to physically demonstrate subject equipment on Metrolinx track. Applicable Standards (Compliance Matrix) and evidence of Safety Risk Management must be exercised and tested during testing demonstration.

3.2.3.2 Follow submission-based Metrolinx Safety Assurance Governance Framework for acceptance.

3.2.3.3 An Equipment Acceptance Certificate (Testing) shall be issued upon successful acceptance of the submission.

### 3.2.4 **Stage 4**

3.2.4.1 Equipment Acceptance Working Group Reviews Final Documentation and Demonstration Test Results. New Comment Cycle if needed (14 business day review period)

3.2.4.2 Follow submission-based Metrolinx Safety Assurance Governance Framework for product acceptance.

### 3.2.5 **Stage 5**

3.2.5.1 Equipment Assurance Certificate (14 business day Sign-Off Period)

3.2.5.2 Equipment Acceptance Certificate (EQAC) to be issued.

**Note:** Guidance from Metrolinx System Safety & Engineering Management, Systems Assurance, ([SSEMSystemAssurance@metrolinx.com](mailto:SSEMSystemAssurance@metrolinx.com)) team may be required.

## 3.3 **Equipment Acceptance Certificate (EQAC)**

### 3.3.1 **Validity/Type**

3.3.1.1 The initial Equipment Acceptance Certificate Testing (EQAC Testing) is valid for a period of testing not greater than 4 months.

3.3.1.2 The initial Equipment Acceptance Certificate is valid for 1 year from the date of issuance.

3.3.1.3 Renewed Equipment Acceptance Certificates will be valid for up to a 5-year interval.

### 3.3.2 **Renewal**

3.3.2.1 EQAC renewal can be applied using an update to original submission in addition to operational performance history within Metrolinx Territory. The renewal shall include examples of maintenance records of type. The update will include updating the original Hazard Log for any additional or new risks which have arisen. The renewed acceptance may be longer than the initial acceptance validity period. The

Renewal may directly apply for Stage 4 for renewal with the updated documentation.

## **4. Future Improvements**

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The Equipment Acceptance Process Standard is intended for continued improvements and will be enhanced to include and capture equivalent machines, processes, and standards for Light Rail Transit (LRT) and Subway.

Additional guidance for Ancillary and Attachments to be in a future update/addendum.

End of Document