IN THE MATTER OF:

THE TECHNICAL STANDARDS AND SAFETY ACT 2000,
S.O. 2000, c. 16
- and -
ONTARIO REGULATION 209/01 (Elevating Devices) made under the
Technical Standards and Safety Act, 2000
- and -
Section 5.20 of the Elevating Devices Code Adoption Document
dated June 1, 2001, as amended

Subject: Periodic Engineering Review and Assessment of Above-surface Passenger Ropeways
(Aging Ski Lifts)

Sent to: All Passenger Ropeway Contractors and Consultants

1. DIRECTOR’S GUIDELINE

1.1 General

1.1.1 All persons operating above-surface passenger ropeways in Ontario shall comply with Section 5.20
of the Elevating Devices Code Adoption Document, adopted in the Elevating Devices Regulation,
and in accordance with the requirements stated in this Guideline.

1.2 Frequency for Periodic Engineering Review and Assessment

1.2.1 All above-surface passenger ropeways shall be subject to periodic engineering assessment as follows:

a) first or initial engineering assessment:
   - maximum 22,500 hours of operation,
   - without exceeding 15 years from the initial start-up;
   ("initial start-up" means first permitted for use anywhere.)

b) second engineering assessment:
   - maximum 37,500 hours of operation,
   - without exceeding 25 years;

c) third engineering assessment:
   - maximum 45,000 hours of operation,
   - without exceeding 30 years;

d) subsequent periodic engineering assessments:
   - at every interval of 7,500 hours of operation,
   - without exceeding 5 years after the third engineering assessment.
Despite the frequency stated in 1.2.1, reporting due dates may deviate somewhat as permitted by the Director. Where such deviations occur the next reporting date noted on the registered copy of the Periodic Engineering Review and Assessment report will apply. For a current listing of device installation numbers and their next scheduled frequency for the Periodic Engineering Review and Assessment, contact TSSA or obtain a copy of the Aging Ski-Lift Periodic Engineering Review and Assessment Schedule from the web site. The latest edition of the “Aging Ski Lift Periodic Engineering Review and Assessment Schedule” is available from the TSSA web site.

1.3 Periodic Engineering Review and Assessment of Above-surface Passenger Ropeways

1.3.1 The Periodic Engineering Review and Assessment shall identify passenger ropeway parts that are affected by:
   a) fatigue and vibration of both moving components and fixed structures causing cracks and fractures of connections and parent metal; and
   b) environmental factors like snow, ice, rain, temperature, humidity, and dust causing corrosion and deterioration of structural, mechanical and electrical components, and shall determine the extent of their deterioration, and evaluate their security at time intervals established in section 1.2 of this bulletin.

1.3.2 The following sources shall be used as guides to assess the security of the passenger ropeway parts:

   a) The latest version of CSA Standard Z98
      The latest version of CSA Standard Z98 shall be used as a guide to establish criteria to assess safety of parts impacted by an aging ropeway. Those parts of passenger ropeway installation requiring alteration, replacement and/or repair shall meet the requirements of the latest adopted version of CSA Standard Z98, and

   b) The requirements by Manufacturer/Designer of the Passenger Ropeway
      The requirements by Manufacturer/Designer of the Passenger Ropeway shall be used as a guide for those parts of the passenger ropeway installation requiring alteration, replacement and/or repair shall meet the requirements established by the manufacturer/designer of the passenger ropeway. Where manufacturer or designer is no longer in business, an engineer shall establish requirements for alteration, replacement and/or repair, and

   c) Non-Destructive Testing (NDT) of Critical Components
      Non-Destructive Testing of Critical Components shall be undertaken for all above-surface passenger ropeway critical components. Any components to be tested that are not directly accessible shall be disassembled. The method of non-destructive, acceptance/rejection criteria, and other tolerances shall be in accordance with the specification specified by the manufacturer/designer. Where manufacturer or designer is no longer in business, an engineer shall perform that action.

   Critical components are those parts of ropeway, the failure of which would immediately jeopardize passenger safety. The list of critical components of an above-surface ropeway shall include, but not be limited to the following:

   MOVING COMPONENTS:
      - Carrier(s), including grip, hanger, chair, or gondola;
      - Drive and return sheaves including shafts;
      - Line sheave assemblies and their attachments;
      - Tension systems and their attachments; and
      - Wire rope, including haul ropes, track ropes and counterweight ropes
FIXED STRUCTURES

- Drive terminal structure;
- Return terminal structure;
- Towers and cross-arms; and
- Catwalks

Identification of every critical component of an above-surface passenger ropeway shall be based on its definition and requirements contained in the latest adopted version of CSA Standard Z98 – Passenger Ropeways. According to the CSA Standard Z98, critical component means “a component or system of components, the failure of which would immediately jeopardize passenger safety”.

All critical components shall be tabulated with identification, including the type of non-destructive testing conducted, rejection/acceptance criteria, findings, and recommendations. The recommendations may contain establishing program of inspection/maintenance, steps to repair, replace, and/or alter the critical components.

1.4 **Reporting Engineering Review and Assessment Findings**

1.4.1 A professional engineer shall certify the engineering review/assessment report. The report shall address:
   a) guidelines established in Section 1.3; and
   b) the requirements to correct all non-compliance related findings to achieve compliance with the requirements of Section 5.20 of the CAD under the Elevating Devices Regulation.

1.4.2 An owner shall attest that he/she will comply with the requirements of the certified engineering review and assessment report to achieve compliance with the requirements of Section 5.20 of the CAD under the Elevating Devices Regulation.

1.5 **Compliance**

1.5.1 The engineering review and assessment report prepared in accordance with the requirements of Section 1.4 of this Guideline shall be submitted to the Technical Standards and Safety Authority (TSSA) for its registration.

1.5.2 Prior to registering the report, TSSA shall evaluate an engineering and assessment report for its technical integrity and conformance to the requirements of this Guideline. The report shall be registered without conditions, registered with conditions or rejected with explanation.

1.5.3 An owner of an above-surface passenger ropeway shall not operate the ropeway prior to the registration of the certified engineering review and assessment report.

1.5.4 The requirements of Directors Order 169/02-r1 have been superseded with the release of this Guideline.

1.5.5 The requirements of 3.5(g) shall be incorporated into aging assessments prepared for the 2013/14 operating season and all aging assessments thereafter.
2. BACKGROUND

2.1 General

The Elevating Devices Regulation made under the Technical Standards and Safety Act (TSS Act) adopts the Elevating Devices Code Adoption Document (CAD). This Guideline is prepared in keeping with the Section 5.20 of the CAD that reads:

“Every above-surface passenger ropeway shall be subjected periodically to a complete engineering review and assessment to ensure its continued operational safety in accordance with guidelines set by the director.”

Section 5.20 of the CAD is intended to deal with the impact on the safety of above-surface passenger ropeway as a result of its age. Even though a ropeway is maintained to keep up with its original or current design/manufacturing specification during its life, over the period of time the following elements will still weaken parts of the ropeway that can fail accidentally:

- Fatigue and vibration of both moving components and fixed structures causing cracks and fractures of connections and parent metal; and
- Environmental factors like snow, ice, rain, temperature, humidity, and dust causing corrosion and deterioration of structural, mechanical and electrical components.

Above-surface passenger ropeways include those ropeways on which passengers are transported in rope-supported carriers and are not in contact with the ground or snow surface. Chair lifts, gondola lifts, and reversible ropeways are above-surface passenger ropeways.

Periodic engineering review and assessment of every above-surface passenger ropeway will ensure continued compliance with the TSS Act, Elevating Devices Regulation, and CAD, which in turn is intended to ensure continued operational safety.

This Guideline expounds upon the following criteria to meet the intent of Section 5.20:

- frequency for periodic engineering review and assessments;
- guidelines for periodic engineering review and assessment of above-surface passenger ropeways;
- reporting engineering review and assessment findings; and
- compliance.

This Guideline has been developed in consultation with the TSSA Ski Industry Advisory Technical Committee.

3. INSTRUCTIONS

3.1 Those recommendations of the engineering review and assessment report requiring major and minor alterations of the above-surface passenger ropeway shall be dealt in accordance with the requirements of the Technical Standards and Safety Act, Elevating Devices Ontario Regulation, and Code Adoption Document. All alterations may be submitted as one design submission. The design submission for major alteration(s) must be registered and inspected prior to the operation of the ropeway.

3.2 The fee prescribed in the fee schedule for evaluation of engineering review and assessment report will be charged to the submitter of the report.
3.3 Submit one electronic copy to TSSA for registration. If package contains drawings exceed 11x17 forward one paper copy of the engineering review and assessment report to TSSA. Upon registration of the report, TSSA will return a registered electronic copy.

3.4 Where the latest adopted version of CSA Standard Z98 – Passenger Ropeways and this Guideline requires action by a designer or manufacturer who is no longer in business, that action shall be performed by a professional engineer as defined in the Elevating Devices Regulation.

3.5 This Guideline establishes in-depth inspection and compliance requirements to ensure security of critical components of an above-surface passenger ropeway. In order to expedite registration of “Reporting Engineering Review and Assessment Findings” in accordance with Section 1.4 of this Guideline, it is critical that consistent “methodology” is applied to confirm compliance with this Guideline:

a. Compile “as built” specification of the ropeway necessary to assess security of critical components of an above-surface passenger ropeway.

b. Identify critical components of an above-surface passenger ropeway subjected to fatigue, vibration, and environmental exposure for their inspection.

c. Prepare list of critical components and non-destructive testing methods to be applied for their inspection.

d. Where critical components to be inspected are not directly accessible, any disassembling required must be performed where deemed necessary.

e. Evaluate the findings of the inspection with a view to confirm the security of critical components.

f. Determine action (repair, replacement and/or alteration) taken or to be taken to secure the integrity of critical components.

g. In addition to the assessment criteria listed in section 1.3 and Z98 requirement 12.8.3 (NDT a minimum 20% of carriers per year), aging assessments of carriers should examine prior NDT reports in conjunction with any replacement modification and repair records to determine if a greater number of carriers require yearly NDT, (see 1.5.5 for effective date).

3.6 Necessary non-destructive testing (NDT) may be spread (staggered) over a period not exceeding five years to assist planning for compliance with this Guideline in accordance with the “Frequency for Periodic Engineering Review and Assessment” established in Section 1.2.

3.7 The current “Periodic Engineering Review and Assessment” Report confirming compliance with this Guideline in keeping with the “Frequency for Periodic Engineering Review and Assessment” established in Section 1.2 shall be linked by reference to all previous “Periodic Engineering Review and Assessment” Report(s) for a specific passenger ropeway in order to justify and resolve the following conditions (where applicable):

- Next NDT cycle (other than Section 1.2 of this Director’s Order) for newly replaced parts identified in the previous “Periodic Engineering Review and Assessment” Report(s);
- Compliance with all outstanding recommendations and conclusions identified in the previous “Periodic Engineering Review and Assessment” Report(s);
- Compliance with “Notice of Registration of Design Submission with Conditions” attached to previous “Periodic Engineering Review and Assessment” Report(s) registered with the TSSA.

3.8 The current “Periodic Engineering Review and Assessment” Report shall be linked to previous (where applicable) “Periodic Engineering Review and Assessment” Reports for a specific passenger ropeway by
referencing the design submission (DS) number listed under “Notice of Registration of Design Submission with Conditions” attached with the previous “Engineering Review and Assessment” Report registered with the TSSA.

3.9 This Guideline is not intended to replace any requirements contained in the latest adopted version of CSA Standard Z98 – Passenger Ropeways and Ontario Regulation.

3.10 This is a reminder that “Operation and Maintenance” requirements under Section 32 of the O.Reg 209/01 must be adhered to at all times. When replacing parts of a ropeway, Section 32(5) of the O.Reg 209/01 applies. All work must be performed by qualified persons.

Roland Hadaller, P.Eng.,
Director, Ontario Regulation 209/01(Elevating Devices) appointed under the Technical Standards and Safety Act, 2000,

This Guideline has been developed in consultation with the Ski Lift Devices Advisory Council.