



<b>Elevating and Amusement Devices Safety Division</b>	Ref. No.: 544 / 22
<b>GUIDELINE</b>	Date: June 10, 2022

IN THE MATTER OF:

**THE TECHNICAL STANDARDS AND SAFETY ACT 2000, S.O. 2000, c. 16**  
- and -  
**ONTARIO REGULATION 221/01 (Amusement Devices) made under the**  
*Technical Standards and Safety Act, 2000*  
- and -  
**the Amusement Devices Code Adoption Document dated June 1, 2001,**  
**as amended by AD CAD 541 / 21**

**Subject:** Alteration Guideline and Alteration Checklist for Amusement Rides and Devices  
**Distribution:** Posted on TSSA website

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**1. Effective Date**

- 1.1 This Directors Guideline becomes effective June 10, 2022 and is to be used in conjunction with alterations performed under the **ASTM F24 Standards**, as adopted in Code Adoption Document (CAD) Amendment 541-21.

**2. Introduction**

- 2.1 The purpose of this Director's Guideline, in conjunction with Code Adoption Document (CAD) Amendment 541-21, is to:
- (a) classify different types of alterations/modifications into the following categories: Major, Minor A, Minor B, or Amendment;
  - (b) provide requirements on who can submit and do the work for the alteration/modification; and
  - (c) provide instruction on the use and submittal of the alteration checklist.

**3. Alterations**

- 3.1 An "alteration" is any work performed on an amusement ride or device other than work performed as maintenance or repair..

**3.2 Type of Alteration Work**

Columns 3 to 6 of the Alteration Checklist classify the type of work as one of the following types:

- (a) **Alteration: Modification / Change** (column 3)  
means a change in the original design, inherent safety or operational characteristics of the amusement ride or device. The change may be made to a component, assembly, design feature, or the amusement ride or device as a whole.
- (b) **Alteration: Addition** (column 4)  
Means the addition of a new component, device or a design feature, not previously provided.
- (c) **Replacement with same** (column 5)

means the substituted device, assembly or component is the same as the original.

- (d) **Replacement with different make and model** (column 6)  
means that the substituted device, assembly or component is the same as the original in its design, performance and safety characteristics, except that it is of a different make and/or model.

*Note: The list of alterations/modifications/amendments in the attached Alteration Checklist is not all encompassing. Please contact TSSA engineering for clarification on any alteration/modification/amendment not listed.*

#### **4. Type of Design Submission**

- 4.1 Columns 3, 4, 5, and 6 of the alteration checklist contain information needed to determine the type of submission required.
- 4.2 By selecting the alteration scope (see column 1 of the alteration checklist), the submission type is identified in columns 3, 4, 5, and 6. These entries are listed as one of the following:
- a. Major – means an alteration as outlined in section 10(1) of O.Reg. 221/01 and the alteration checklist
  - b. Minor A – means a minor A alteration as outlined in the alteration checklist
  - c. Minor B – means a minor B alteration as outlined in the alteration checklist
  - d. Minor A-/Minor B- – means a Minor A or B alteration as outlined in the alteration checklist that does not require TSSA inspection
  - e. Amendment – means an amendment as outlined in the alteration checklist
  - f. Blanks – means work that would not constitute an alteration
  - g. mrr – this work may proceed as a maintenance, repair and replacement activity and no submission required, change should be recorded in the logbook
  - h. n/a – means not a possible change
  - i. New – means not an alteration but a new installation

#### **5. Requirements for Design Submissions and Inspections**

##### **5.1 General:**

- 5.1.1 A design submission or notification (in the case of a Minor B) must clearly specify, for each alteration covered, whether the type of the alteration work is a "modification", "addition", or "replacement".
- 5.1.2 Where multiple alterations scopes are undertaken, the "highest ranking" submission shall define the submission type.

Example: An alteration combination of Minor B and Major will be designated as a Major alteration.

- 5.1.3 All individual documents composing the technical dossier for any Major or Minor A alteration or Amendment shall be listed on the Document Transmittal. The Document Transmittal shall bear the **signature and seal, or electronic equivalent, of the professional engineer** who prepared or approved the design submission pursuant to section 9(2.1) of O.Reg. 221/01..
- 5.1.4 In the case of Minor B alterations, the technical dossier documents (or Notification) may be signed by the Licensee or his/her representative **and** the certified mechanic with the appropriate designation who either performed or supervised the work to which the alteration relates.

- 5.1.5 Alterations and Amendment should be submitted on the appropriate Specification Sheets (depending on device type).
- 5.1.6 Major, Minor A and Amendment submissions shall be accompanied by the applicable sections of the alteration checklist and should have an itemized list of items affected by the alteration scope. The scope of the alteration shall be identified with an 'X' in column 0 adjacent to each column 1 item that is part of the scope of alteration.
- 5.1.7 The licence holder shall keep a copy of the filed technical dossier, including any amendments or alterations to it, at the location of the amusement device, pursuant to section 9(8) of . O. Reg. 221/01.
- 5.2 **Major Alteration:**
- 5.2.1 Major alterations shall meet the requirements of sections 10 (2), (3) and (5) of O.Reg. 221/01.
- 5.2.2 The technical dossier for the alteration shall be filed before the major alteration commences pursuant to section 10(4) of O.Reg. 221/01.
- 5.3 **Minor Alteration type A and B**
- 5.3.1 The technical dossier for the alteration shall include the required documents from section 10(2) of O.Reg. 221/01.
- 5.3.2 For a Minor B submission,
- a. Requirements of O.Reg. 221/01 sections 9(2) (h) (ii), 9(2) (j), and 10(5) (b) may be fulfilled by a certified mechanic. However, where the modification or replacement requires a specification that is not on the original dossier, an engineer may still be required.
  - b. Sections 9(2.1) and (2.2) of O. Reg. 221/01 do not apply.
- 5.3.3 The technical dossier for the alteration shall be submitted for review not later than 14 days after returning the amusement ride or device to service. Engineers or mechanics are advised to submit alteration documents in advance of the work start to ensure that no expense will be incurred should the proposed alteration or a requested variance be rejected.
- 5.3.4 Minor A and B alterations are permitted to be returned to service after work completion, provided that a successful field test report is included in the technical dossier for the alteration. The engineer or mechanic who completed the alteration shall ensure that an alteration inspection has been requested within 30 days after returning the amusement ride or device to service.
- 5.4 **Amendment**
- 5.4.1 Amendment submissions shall include a detailed description of the proposed changes. The submitter may use the Additional Notes section on the specification sheet or use their own letterhead.
- 5.4.2 Where the amendment affects a document in the technical dossier, each document required to be submitted with the technical dossier shall be included in the submission, pursuant to section 9(7) (b) of O.Reg. 221/01.
6. **Alteration Checklist**
- 6.1 The Alteration Checklist provides useful information to assist in determining:
- a. the scope of the alteration
  - b. requirements associated with specified scope
  - c. exemptions to a requirement
  - d. type of submission required

## 6.2 Parts of the Checklist

- 6.2.1 Column 0:  
Submitters shall mark Column 0 with 'X' to identify the scope of the alteration or amendment
- 6.2.2 Column 1:  
Column 1 contains the Alteration section numbers from section 10(1) of O.Reg. 221/01 for Major Alterations and other section numbers as outlined on the alteration checklist
- 6.2.3 Column 2:  
Column 2 describes the scope and applicable description of alterations  
2a – primary title of the alteration activity  
2b – specific type of component or change to the component  
2c – specific condition regarding the change
- 6.2.4 Column 3, 4, 5, 6:  
The headings of Columns 3 to 6 define the “Type of Alteration Work” as Modification Change, Addition, Replacement with Same, and Replacement with Different.

The contents of Columns 3 to 6 define the “Type of Submission Required” as, Major, Minor A, Minor B and Amendment.



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Roger Neate

Director, Ontario Regulation 221/01 (Amusement Rides and Devices), appointed under the *Technical Standards & Safety Act, 2000*

*This Director's Guideline has been developed in consultation with the TSSA Amusement Devices Advisory Council.*

0	1	2a	2b	2c	3	4	5	6
Complies to code, Mark with 'x'	Alteration Number	Alteration Checklist for Director's Guideline 544/22			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	O.Reg 221/01	Alterations/Amendments listed in O.Reg. 221/01 *All alterations listed in column 2a of this section are directly from the O.Reg. 221/01. **Items in column 2b are specifics of the alteration						
	8. (4)	Application for a permit after five years since a permit was last obtained for the amusement device			Amendment	n/a		n/a
	10. (1) (a)	changing the maximum capacity or speed of an amusement device						n/a
		1	decrease maximum capacity or speed		Minor A	n/a		
		2	increase maximum capacity or speed		Major	n/a		
	10. (1) (b)	changing the load bearing structure of an amusement device			Major	Major		n/a
		1	Reinforcement of existing structure		Minor A	n/a		n/a
		2	Platform (loading, unloading, and etc. )		Minor A	Minor A	Minor A	Minor A
	10. (1) (c)	changing the source of power for the main drive or control mechanism of an amusement device			Major	n/a	mrr	Major
	10. (1) (d)	changing the method of guiding the passenger-carrying units of an amusement device			Major	n/a		n/a
	10. (1) (e)	changing the use of an amusement device from a primary use by adults to children & vice versa			Minor A	n/a		n/a
	10. (1) (f)	relocating an amusement device that was originally designed as non-portable						n/a
		1	designed as fixed, used as fixed		Major	n/a		
		2	designed as portable, used as fixed		Minor A	n/a		
		3	designed as portable, used as portable			n/a		
	10. (1) (g)	changing an amusement device from ground-mounted to trailer-mounted or vice versa if the change would require an alteration in the design or the operational characteristics of the device, including a change to the area peripheral to the device if that area is accessible to the public			Major	n/a		n/a
	10. (1) (h)	replacing passenger carrying units with passenger carrying units differing from original design or manufacture			Major	n/a	mrr	Major
		examples: mechanical bull attachments, carousel seats						
		same/meets specifications as the original			Major	n/a	mrr	Minor A
		different specifications as the original, or original specifications			Major	n/a	n/a	Major
	10. (1) (i)	adding passenger carrying units to an amusement device with passenger carrying units differing from original design or manufacture			Major	Major		n/a
	1	<b>General</b>						
	1.1.	Specification sheet information change (see other applicable scope if applicable)						
		(a) Ride name, serial number and other non-safety-related changes			Minor B-	n/a		
		(b) Maximum operational windspeed			Minor A-	n/a		
	1.2.	Operations and Documentation						
		(a) Height requirements			Amendment	n/a		
		(b) Weight requirements			Amendment	n/a		
		(c) Age requirements			Amendment	n/a		
		(d) Rider eligibility criteria			Amendment	n/a		
		(e) Operators and/or attendants						
		location			Amendment	Amendment		
		decrease in <u>minimum</u> number required			Minor A	n/a		
		increase in <u>minimum</u> number required			Amendment	Amendment		
		change in number as long as minimum required is met						
		(f) Means of communication						
		same/meets specifications as the original			Amendment	Minor B	mrr	mrr
		different specifications as the original, or original specifications			Amendment	Minor B	n/a	Minor B
		(g) Evacuation and emergency procedures			Amendment	n/a		
		(h) Operating, Maintenance, Inspection, Training program						
		inherent safety remains unchanged, no other modification to the device			Amendment*	n/a		
		inherent safety affected by change (also see other applicable scope)			Minor A	n/a		
		*minor updates may be accepted from the licensee or the device manufacturer on a case-by case basis, check with TSSA engineering						
		(i) Replacement of a missing technical dossier			Amendment	n/a		
	1.3	Drawings (pneumatic/hydraulic/electrical schematics, layout, assembly and etc.)			see applicable alteration			

0	1	2a	2b	2c	3	4	5	6
Conforms to code, Mark with 'x'	Alteration Number	Alteration Checklist for Director's Guideline 544/22			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	1.4	Design						
		(a) access/egress (including for emergency), stairs, ramps, platforms			Minor A	Major		
		(b) fencing			Minor A	Minor A		
		(c) clearances from structures and other amusement devices			Minor A	n/a		
		(d) rider clearance envelope			Minor A	n/a		
		(e) restraints			Major	Major	mrr	Major
		(f) braking system			Major	Major	mrr	Major
		(g) evacuation equipment			Minor A	Minor A	mrr	Minor A
		(h) ancillary equipment (ex. VR goggles)			Minor A	Minor A	mrr	Minor A
	1.5	Hydraulic/Pneumatic Equipment						
		(a) part of safety related control system (SRCS)			Major	Major	mrr	Major
		(b) power unit (pump, tank, compressor, and etc.)			Minor A	Minor A	mrr	Minor A
		(c) control valves			n/a	Minor B	mrr	Minor A
		(d) actuators (cylinder, motor, and etc.)			n/a	Minor B	mrr	Minor A
	1.6	Electrical						
		(a) part of safety related control system (SRCS)			Major	Major	mrr	Major
		(b) Controller			Major	Major	Major	Major
		(c) Operator station/panel			Major	Minor A	Minor B	Minor A
		(d) Service stop			n/a	Minor A	mrr	Minor B
		(e) Emergency stop						
		same characteristics (ex. mechanical to mechanical)			n/a	Major	mrr	mrr
		diff. characteristics (ex. mechanical to solid state, safety rated (SIL, PL), etc)			n/a	Major	mrr	Minor A
		(f) Operating Devices (Pushbuttons, Switches, Capacitive, Inductive)						
		same characteristics (ex. mechanical to mechanical)			n/a	Minor A	mrr	mrr
		diff. characteristics (ex. button to presence detection, mechanical to solid state)			n/a	Minor A	mrr	Minor A
		(g) Type of Motor Control (Motion Control - Across the Line, Y-D, Soft Start, SCR, VFD, Field)			n/a	Major	mrr	Minor A
		(h) Software System						
		safety critical function			Major	Major	mrr	n/a
		operational excluding safety critical			Minor A	Minor A	mrr	n/a
		(i) Electrical Equipment (other than above, slip rings, sensors, limit switches, relays)			Major	Minor B	mrr	Minor B
		same characteristics (ex. mechanical to mechanical)			n/a	Minor A	mrr	mrr
		diff. characteristics (ex. mechanical to solid state, optical, magnetic, radio frequency, RFID)			n/a	Minor A	mrr	Minor A

0	1	2a	2b	2c	3	4	5	6
Conforms to code, Mark with 'x'	Alteration Number	Alteration Checklist for Director's Guideline 544/22			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
2	Alterations to Inflatables							
2.1.	Anchoring and staking (a) Number of anchor points (b) Type of anchors (c) Weight of anchors			Minor A Minor A Minor A	Minor A Minor A Minor A			
2.2.	Design (a) Containment walls (b) Protective covers (fall protection) (c) Slide covers (for slide surface)			Major Minor A Minor A	Major Minor A Minor A			
2.3.	Ancillary equipment (a) Blower (b) Deflation alarm (c) Impact attenuation mats (d) Other equipment (ex. VR goggles, lights and etc.)			Major Minor A n/a Minor A	Minor A Minor B- Minor B- Minor A	mrr mrr mrr	Minor B- Minor B- Minor B- Minor B-	
2.4	Multi-piece inflatables (a) Change in configuration (ex. Provisions to operate 1 pc w/o other pcs)			Minor A-	Major			
3	Alterations to Go-Karts							
3.1	Track (a) Track barriers (b) Track layout (including changing track width)			Major Major	Major n/a	mrr	Major n/a	
3.2	Go-Kart Design (a) Roll bar (b) Seatbelts (c) Remote kart control (ex. Kartrol) (d) Wheels adding provisions to slicks			Major Major Minor A Minor A Minor A	Major Major Minor A n/a Minor A	mrr mrr mrr	Minor A Minor A Minor A	
3.3	Operations (a) Increasing or Decreasing Maximum number of karts allowed on track (b) Types of karts allowed on track at the same time (c) Operator(s)/attendant(s)			Amendment Amendment see 1.2 (e)	n/a Amendment see 1.2 (e)			
3.4	Personal Safety Equipment (a) Helmets same/meets specifications as the original different specifications as the original, or original specifications undefined			Major Major	n/a n/a	mrr n/a	mrr Minor A	
3.5	Karts in fleet (a) Addition of karts in fleet - same make and model as existing fleet (b) Addition of karts in fleet - different make and model from existing fleet * means new karts shall not operate until inspected by TSSA			n/a n/a	Minor B* Minor B*	Minor B* Minor B*	Minor B* Minor B*	

0	1	2a	2b	2c	3	4	5	6
Complies to code, Mark with 'x'	Alteration Number	Alteration Checklist for Director's Guideline 544/22			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	4	Alterations to Waterslides						
	4.1	Design						
		(a) Waterslide structure (including access, egress, platform and etc.)			Major	New	Major	Major
		Reinforcement of existing structure			Minor A	n/a		
		Platform (loading, unloading, and etc. )			Minor A	Minor A	Minor A	Minor A
		(b) Waterslide flume			Major	New	Major	Major
		(c) Water flow meter			Major	Minor B	mrr	Minor B
		(d) Water level indicator			Minor B-	Minor B-		
		(e) Water flow rate			Major	n/a		n/a
		(f) Depth of splash down/runout area			Major	n/a		n/a
		(g) Splashdown/runout design, layout, orientation and etc.			Major	n/a		n/a
		(h) Water features (ex. sprinkler and etc.)			Minor A	Minor A		n/a
		(i) Braking system			Major	Major		n/a
		(j) Conveyor system (i.e. for watercoasters)			Major	Major	Minor A	Major
	4.2	Passenger carrying unit						
		(a) Tubes, Mats, Rafts, Boats (changes dossier requirements)			Major	n/a	mrr	Minor A
		same/meets specifications as the original			Major	Minor A	n/a	Major
		different specifications as the original, or original specifications undefined						
	4.3	Operations						
		(a) Dispatch interval			Amendment	n/a		
		(b) Method of dispatch interval (ex. Addition of stop/go systems)			Minor A	Minor A		
		(c) Operator(s)/attendant(s)			see 1.2 (e)	see 1.2 (e)		
		(d) Rider Position (see 4.4 (g) for change related to accommodations)			Minor A	n/a		
		(e) Lifejackets						
		no impact on ride path/ride dynamics of a body slide			Amendment	Amendment		
		impact on ride path/ride dynamics of a body slide			Minor A-	Minor A-		
	4.4	Waterslide Accommodation Guideline (see guideline)						
		(a) Dispatch interval during an accommodation						
		(b) Change in access to device (excluding lift or elevator)						
		(c) Number of operator(s)/attendant(s) (increase for accommodations)						
		(d) Communication method (operational, see 1.2. (f) for other communication changes)						
		operational change			n/a	n/a		
		changing or adding a device for communication			Minor B-	Minor B-		
		(e) Allowance of tandem rider (not permissible outside of accommodations)						
		as appropriate per device- ride path and ride dynamics are not affected			Minor B-	n/a		
		as appropriate per device- ride path and ride dynamics are affected			Amendment	n/a		
		(f) Allowance of person in splash down (attendant/caregiver)			Minor B-	n/a		
		(g) Rider Position			Minor B-	n/a		
		(h) Lifejackets						
		no impact on ride path/ride dynamics of a body slide			Minor B-	Minor B-		
		impact on ride path/ride dynamics of a body slide			Amendment	Amendment		
	5	Alterations to Bungee Jump, Bungee Ride or Bungee Assisted Bounce						
	5.1	Personal safety equipment						
		(a) lanyard, carabiners, connection hardware, harness and etc.			Major	Minor B	mrr	Minor B
		(b) helmets			Major	Minor B	mrr	Minor B
	5.2	Bungee Jump (See 1. General)						
	5.3	Bungee Ride (See 1. General)						
	5.4	Bungee Assisted Bounce						
		(a) Bouncing surface (trampoline or inflatable)			Major	Minor A	Minor B-	Minor A
		(b) Method of bounce assist/drive system (ex. Winch, hydraulic)			Major	Minor A	mrr	Minor A
		(c) Anchoring			Minor A	Minor A		



0	1	2a	2b	2c	3	4	5	6
Complies to code, Mark with 'x'	Alteration Number	Alteration Checklist for Director's Guideline 544/22			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
6	Alterations to Ziplines							
6.1	Personal safety equipment	(a) lanyard, carabiners, connection hardware, harness and etc.	same characteristics (ex. Triple locking carabiner to another triple locking carabiner)	diff. characteristics (ex. Double locking carabiner to a triple locking carabiner)	n/a Major	Minor B Minor B	mrr n/a	Minor B Major
		(b) helmets	same/meets specifications as the original	different specifications as the original, or original specifications undefined	Major	n/a	mrr	mrr
			different specifications as the original, or original specifications undefined		Major	n/a	n/a	Minor A
6.2	Trolley/Pulley/Passenger carrying unit	same/meets specifications as the original	different specifications as the original, or original specifications		Major	n/a	mrr	Minor B
					"	"	n/a	Major
6.3	Braking system				Major	Major	mrr	Major
6.4	Design including structural supports	(a) slope/speed of the zipline	(b) supporting structure (trees, poles, and etc.)	replacement of trees, poles, and etc. arborist reduction in tree grade, arborist/engineer to confirm tree suitability	Major	n/a		
					Major	Major	Major	Major
		(c) platform			Minor B- Minor A	n/a Major	n/a mrr	n/a Minor A
		(d) wire rope/cable/rider suspension means	same characteristics (ex. Steel wire rope of same specs)	diff. characteristics (ex. Steel wire rope to track cable)	Major	n/a	mrr	Minor B
		(e) anchoring			Major	n/a	n/a	Major
		(f) belaying method (double lanyard to continuous or interlocked belay)			Minor A	Minor A	mrr	Minor B
6.5	Operations	(a) rescue plan	(b) rescue equipment	(c) operator/attendant	Amendment Major see 1.2 (e)	Amendment Minor B see 1.2 (e)	mrr	Minor B
7	Alterations to Freefall Descender							
7.1	Personal safety equipment	(a) lanyard, carabiners, connection hardware, harness and etc.	same characteristics (ex. Triple locking carabiner to another triple locking carabiner)	diff. characteristics (ex. Double locking carabiner to a triple locking carabiner)	n/a Major	Minor B Minor B		Minor B Major
		(b) helmets	same/meets specifications as the original	different specifications as the original, or original specifications	Major	n/a	mrr	mrr
			different specifications as the original, or original specifications		Major	n/a	n/a	Minor A
7.2	Structural support/mounting structure				Major	Major	Major	Major
7.3	Freefall descender unit	(a) Main unit	with CHANGE to mounting height or clearance requirements	with NO CHANGE to mounting height or clearance requirements	Major	New	Minor A	Minor A
					Major	New	Minor B	Minor B
		(b) Webbing			Major	n/a	mrr	Minor A
7.4	Operations	(a) rescue plan	(b) rescue equipment	(c) operator/attendant	Amendment Major see 1.2 (e)	Amendment Minor B see 1.2 (e)	n/a	n/a
		(d) Impact attenuation surface			Minor A	Minor A	mrr	Minor A
8	Mechanical Bulls/Simulators							
8.1	Change in Attenuation Surface (inflatable mattress)				Major	n/a	Minor B-	Minor A
8.2	Change in Passenger Carrying Unit			* means device shall not operate with the new PCU until inspected by TSSA	Major	Major*	Minor B-	Minor A