# TSSA Inflatable Training 2024

Les Simonffy, Inspector, TSSA
Dean McLellan, Supervisor, TSSA
Sonny Silva, Supervisor, TSSA
Joelle Javier, Engineer, TSSA

PARTNERING
FOR A
SAFE ONTARIO

# Topics:

- Operating an Inflatable in Ontario
  - Mechanic Requirements
  - New Devices
  - Renewals
    - Attestation
    - Operational Inspections
- Inflatable Design
  - ASTM Requirements
  - Flame Test – New Devices
  - Evacuation
- Incidents
  - Reporting
  - Inflatable Incidents
- Training
  - Operators/Event Requirements


# Operating an Inflatable in Ontario

# Operating a Ride in Ontario

**License to Operate**

- Insurance
- Obtain a Certified Mechanic (ADM-AR, ADM-WS, ADM-I, ADM-GK, ADM-B,….)
- Operating Schedule
- Fees

**Technical Dossier for Engineering Review**

- Licensee (owner) to hire an Ontario P.Eng to prepare a technical dossier with drawings, schematics, manuals and etc. for the amusement ride/device.
- TSSA Mechanical and Electrical Engineers reviews the technical dossier for compliance

**Initial Inspection**

- Once the TSSA Engineers files (approves) the technical dossier, the licensee can call for inspection
- Only after an inspection is passed, that the licensee can get a permit.

**Subsequent years: Periodic Inspection (permit renewal)**

- Inflatable device permits are renewed annually (end of calendar year)
- Some requires periodic inspection
- Some requires attestation only + possible operational inspection

# Regulated Devices

- These devices regulated in Ontario under Ontario Regulation 221/01 – Amusement Devices s 2.(1) and include:
- Amusement rides and devices: rollercoasters, Ferris wheels, mechanically assisted bounces, bumper cars, etc.
- Water slides
- Go-karts
- Inflatables
- Zip lines
- Bungee jumps






# Regulatory Definition and Exemptions

## O.Reg. 221/01

- Amusement Device
  - means a machine, contrivance, structure, vehicle or device, or component attached or to be attached thereto, used to entertain persons by moving them or causing them to be moved and includes the area peripheral thereto if such area is integral to the device;

- Air-supported Structure
  - means a structure that incorporates a structural and mechanical system and uses a high-strength fabric or film that achieves its strength, shape and stability by pre-tensioning with internal air pressure

# Regulatory Exemptions

## O.Reg. 221/01

- Air supported pillows that meet the following criteria:

  - i. they are protected from ambient weather conditions,
  - ii. they are less than 900 mm thick, and
  - iii. they do not have inflated walls.

- 24.1 Air supported structures that are buildings or that are used solely for advertising or spectator participation.

# Regulatory Definition and Exemptions

- Regulated inflatables typically have the following characteristics:
  - Have an inflated floor
  - Inflated floor is used for bouncing or traversing a course
  - May be covered or open top
  - Includes inflatable slides

# Regulatory Definition and Exemptions

- Technical Standards and Safety Authority (TSSA) regulates many inflated devices, such as:
  - Inflatable bouncy castles, obstacles with inflated floors and crawl-throughs
  - Inflatable wet/dry slides
  - Inflataparks
  - Inflatable bungee runs, etc.
  - Sealed air devices if used as amusement device

# Inflatable Decision Tree

EXAMPLES OF LICENSED DEVICES


Bungee cords used



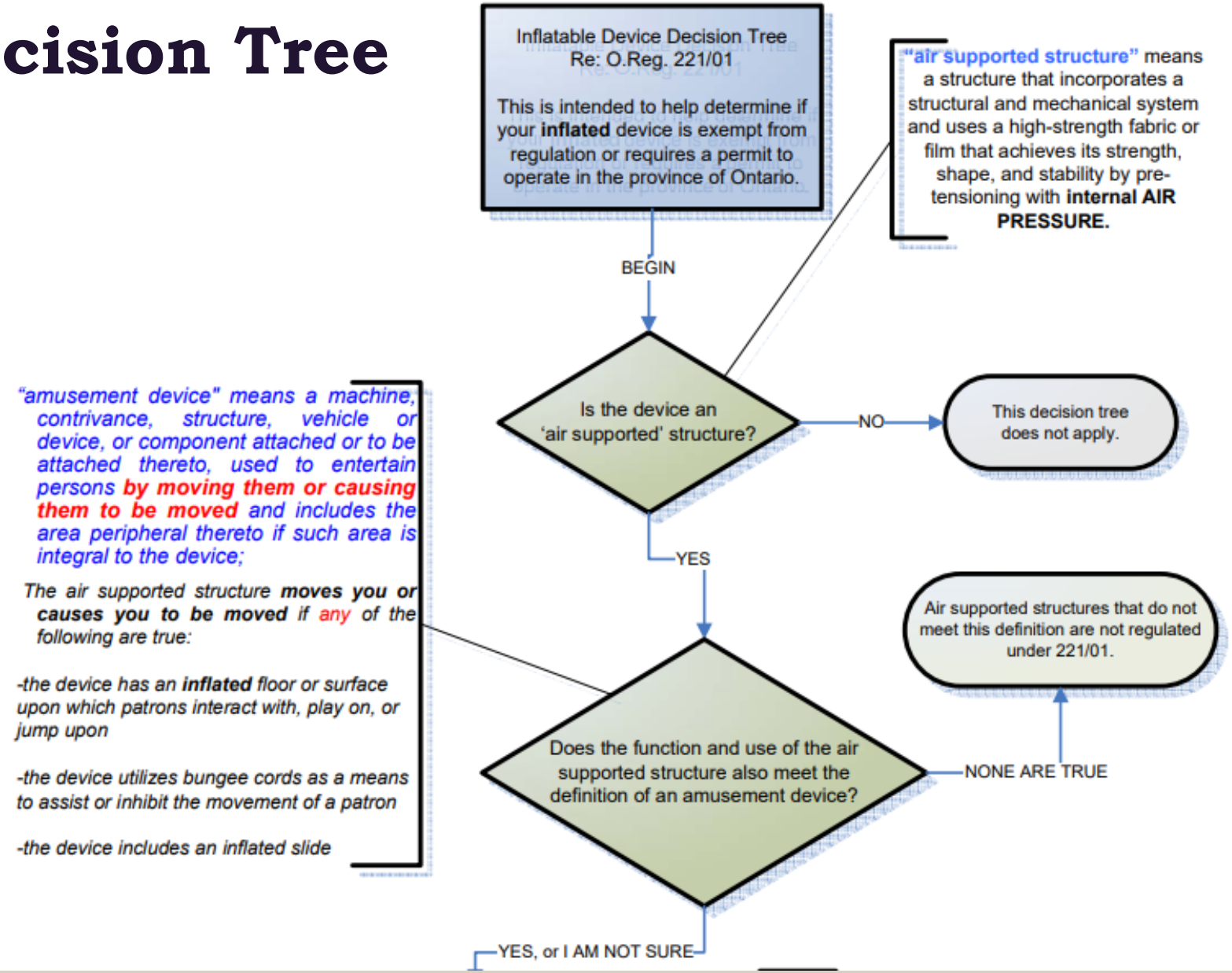



EXAMPLES OF EXEMPTED DEVICES

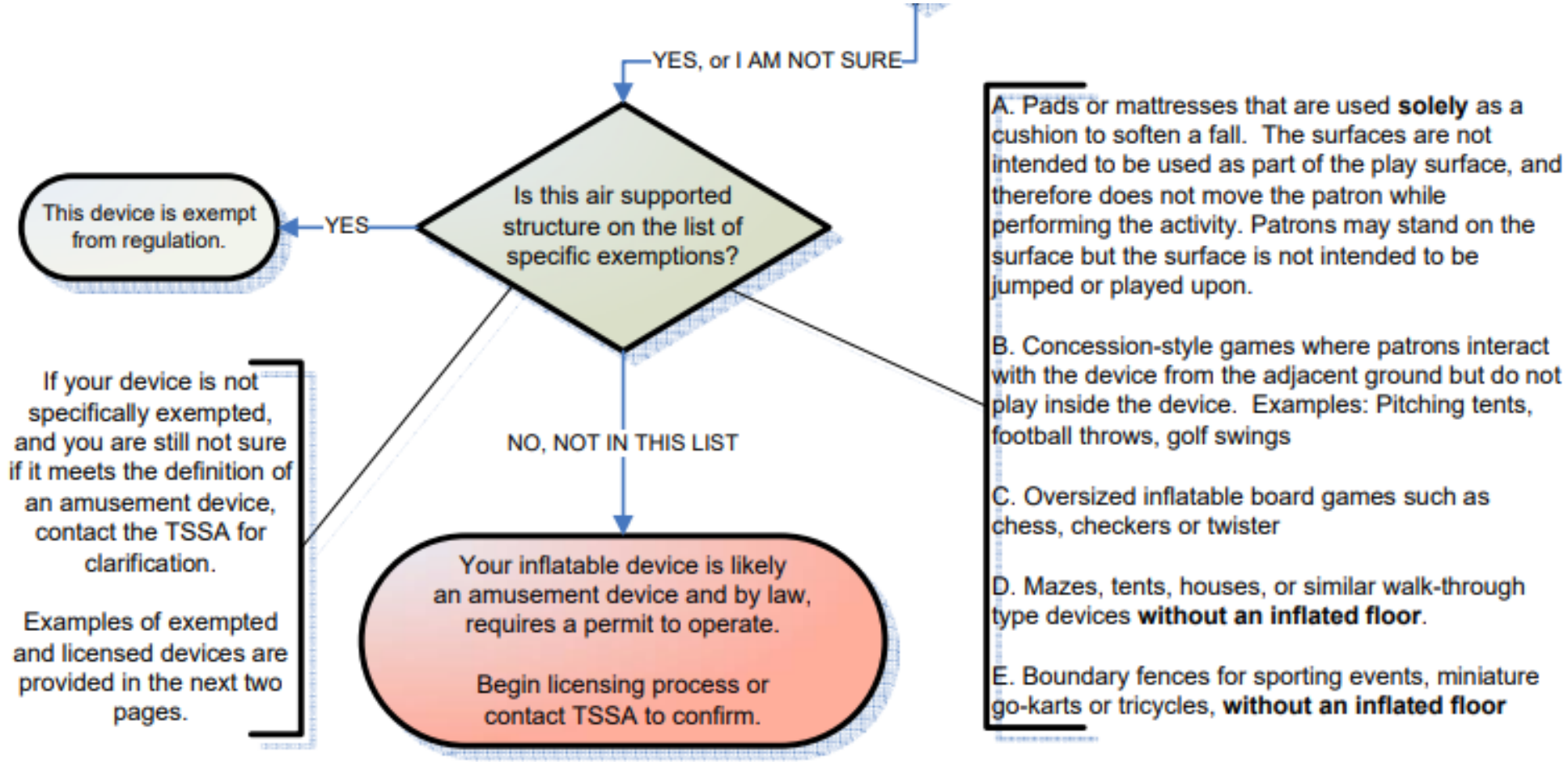
Putting Game
Concession Style

Inflated perimeter
without floor

# Inflatable Decision Tree



# Inflatable Decision Tree



# Ontario Regulated Ride or Not?


NO

# Ontario Regulated Ride or Not?

YES

# Ontario Regulated Ride or Not?

NO

# Ontario Regulated Ride or Not?

NO

# Ontario Regulated Ride or Not?

NO

YES - as an Amusement Ride and not as inflatable


# Who regulates inflatables

# Harmonization Efforts

- Alberta, **Ontario**, New Brunswick, Nova Scotia, PEI, Saskatchewan
- NWT in discussion
- BC only initial inspection

- Newfoundland, Quebec, Manitoba


# New Devices

# Documents Required in the Dossier

- Application Form and Specification Sheet(s)
- Drawings/Pictures
  - Dimensions
  - Anchor points
  - Operator/Attendant Locations
  - Entrance, Exits, Emergency Exits
  - Details, Special features
  - For multi-piece – additional configurations if any
  - Site layout (if applicable)

# Documents Required in the Dossier

- Windload calculations
- Capacity calculations
- Manufacturer's Manual
  - Operations, Setup/teardown, Maintenance, Inspection
- Operations Manual
  - Based on manufacturer's manual but specific to your company, to each inflatable
  - Blank sample of periodic inspection and maintenance checklists
  - Operator/attendant training, qualifications and responsibilities

# Documents Required in the Dossier

- Manuals for auxiliary devices
  - For ex. Manuals for harnesses for bungee runs, deflation alarm manuals..etc.
- Flame Test Certificate
- Equipment Repair/Replacement Criteria
- Field test report

# Documents R

345 Carlingview Drive
Toronto, ON M9W 6N9
Tel: 416.734.3300
Fax 416.231.5435

Version 2024-Feb

## Inflatable Devices
Specification Sheet

| Document Revision # | 1 | Device Number | 1 |
|---|---|---|---|
| | | Date | |

### 1.0 GENERAL

| | | | | | |
|---|---|---|---|---|---|
| 1.01 | Owner's Company Name and Address | | 1.03 | Operating License Number | |
| 1.09 | Licensee's Name for This Device | | 1.06 | Type of Technical Dossier | |
| 1.10 | Manufacturer's Name for this Device | | 1.43 | Designed as Fixed or Portable | |
| 1.39 | Manufacturer's Name and Address | | 1.44 | Used as Fixed or Portable | |
| 1.40 | Serial Number | 1.41 Model | 1.42 Year of Manufacture | 1.45 | Inflatable Device Type |

### 2.0 RIDERS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2.01 | Types of Riders | | | | | | |
| 2.02 | Capacity (Riders) | 2.05 | Height Restrictions | Min mm / Max mm | 2.06 | Weight Restrictions | Min kg / Max kg |
| 2.03 | Comments on Capacity/ Rider Combinations | | | | | | |
| 2.04 | Other Rider Eligibility Criteria | | | | | | |

### 3.0 OPERATIONS

| | | | |
|---|---|---|---|
| 3.01 | Minimum Number of Operators Required | | |
| 3.02 | Minimum Number of Attendants Required | | |
| 3.03 | Maximum Operating Windspeed | | kph |
| 3.04 | Means of Monitoring Windspeed | | |

### 4.0 INFLATABLE DETAILS

| | | | | | |
|---|---|---|---|---|---|
| 4.01 | Ride Description (Describe theming, summary of features and etc. ) | | 4.04 | Auxiliary Devices (List all or write N/A) | |
| 4.02 | Effective floor area inside inflatable (or platform) | $m^2$ | 4.03 Minimum Overhead Clearance Required | mm | 4.05 Minimum Side Clearance Required | mm |

### ANCHORING

| | | | | | |
|---|---|---|---|---|---|
| 4.06 | Type of Ballast Permitted (If applicable) | | 4.11 | Stake Type | |
| 4.07 | Min. Qty. of Top Anchor Points Required | indoor / outdoor | 4.12 | Stake Length | in |
| 4.08 | Min. Qty. of Ground Anchor Points Required | indoor / outdoor | 4.13 | Stake Diameter | in |
| 4.09 | Ballast weight req'd per anchor point (indoor) | kg | 4.14 | Weight of Inflatable (uninflated) | kg |
| 4.10 | Ballast weight req'd per anchor point (outdoor) | kg | | | |

### BLOWER

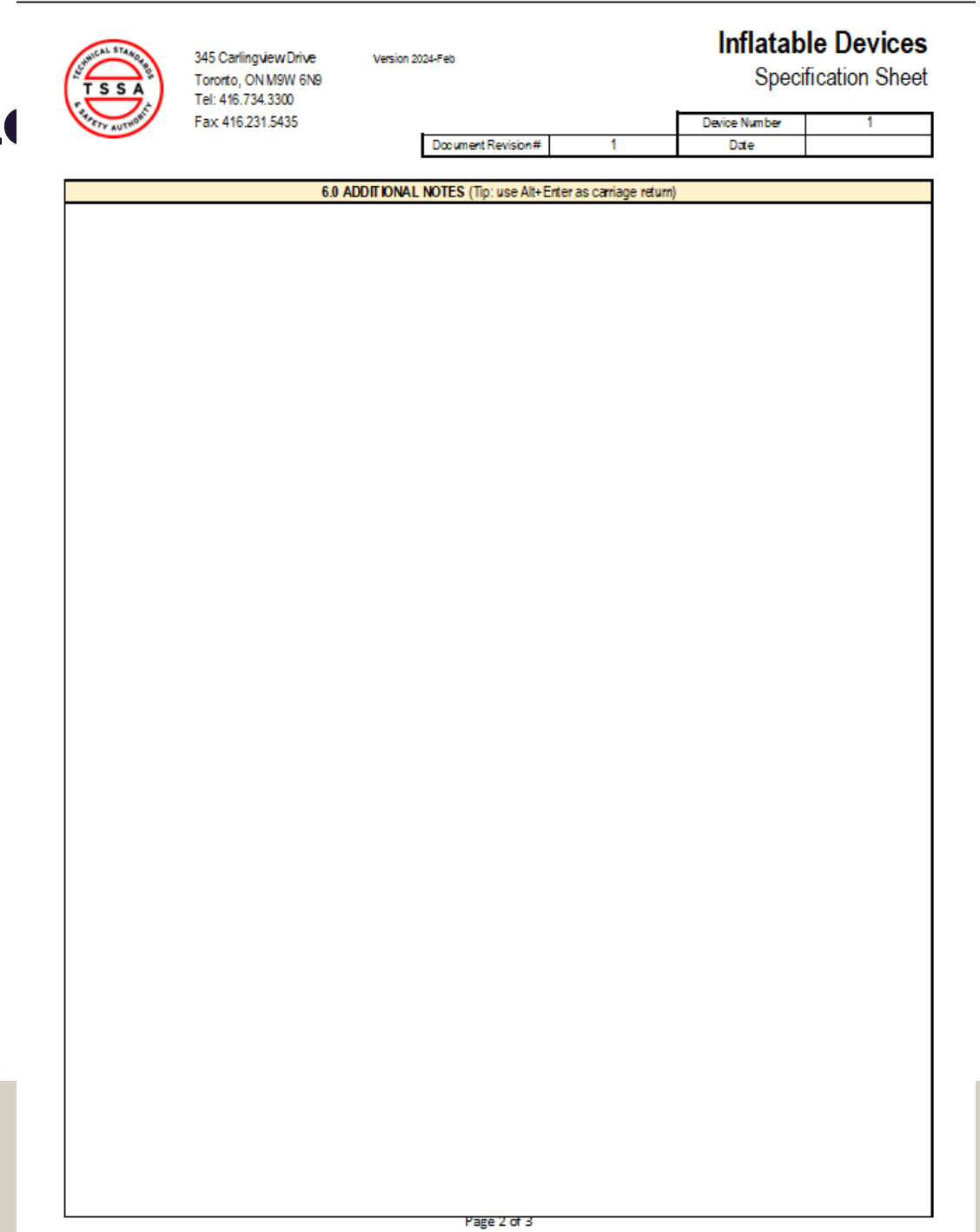
| | | | |
|---|---|---|---|
| 4.15 | Blower Output (each) and Qty. Req'd | | lp |
| 4.16 | Blower Certification (ULC, CSA, etc.) | | |
| 4.17 | Blower Voltage | | V |
| 4.18 | Static Pressure Range | Min psi / Max psi | |
| 4.19 | Blower Volumetric Flow | | cfm |

### 5.0 MULTIPLE PIECE INFLATABLES OR SPECIAL FEATURES

| | | | | | |
|---|---|---|---|---|---|
| 5.01 | Number of Inflatable Pieces* | | 5.03 | Can be used as separate pieces?* | 5.06 Means of Attaching Multiple Pieces | |
| 5.02 | Description of Configuration (multiple pieces)* | | 5.04 | Deflation Alert System Required? | 5.07 Is inflatable used with water? | |
| | | | 5.05 | If Req'd, Deflation Alert System Make/Model | 5.08 Is there an emergency exit? | |

*For multiple configurations of inflatables, please fill out a separate inflatable specification sheet for each configuration/piece

# Documents Re



345 Carlingview Drive
Toronto, ON M9W 6N9
Tel: 416.734.3300
Fax 416.231.5435

Version 2024-Feb

**Inflatable Devices**
Specification Sheet

| | | | |
|---|---|---|---|
| | | Device Number | 1 |
| Document Revision # | 1 | Date | |

**6.0 ADDITIONAL NOTES** (Tip: use Alt+Enter as carriage return)

Page 2 of 3

# Documents R

345 Carlingview Drive
Toronto, ON M9W 6N9
Tel: 416.734.3300
Fax: 416.231.5435

Version 2024-Feb

## Inflatable Devices
Specification Sheet

| | | | |
|---|---|---|---|
| | | Device Number | 1 |
| Document Revision # | 1 | Date | |

**7.0 DOCUMENT CHECKLIST** (Update Reg and Code Year Reference as Needed)

| Documents Required | Drawings/documents shall include or contain: | Applicable Reg & Code Clauses (includes but is not limited to) | Provided ? |
|---|---|---|---|
| Drawing/Rendering/Picture of Inflatable (where applicable) | Drawing showing Inflatable Dimensions<br>Sidewall heights measured from inflatable floor | O. Reg. 221/01 9. (2) (c-d) | |
| | Slide Cover Length/slide slope | | |
| | Anchor points - Location of top and ground tethers (identify required and optional) | | |
| | Anchoring diagram (howto tie tethers, howdeep to bury stakes, howballast is secured) | | |
| | Location of operators and attendants | | |
| | Location of Ingress, Egress and Emergency Exit (if applicable) | | |
| | Drawing showing special features, obstacles and etc. | | |
| | For multi-piece obstacles - additional configurations if any | | |
| Site Layout (if applicable) | Required for fixed devices | O. Reg. 221/01 9. (2) (b) | |
| Windload calculations | | ASTM F2374-22 5.6.4 | |
| Capacity Calculations | | ASTM F2374-22 5.15 & Appendix X3 | |
| Manufacturer's Manuals | Operations, Setup/Teardown, Maintenance and Inspection | ASTM F2374-22 Section 6 | |
| Operations Manual | Based on Manufacturer's Manuals, including riding positions | ASTM F2374-22 Section 7 | |
| Blank sample of periodic inspection and maintenance checklist | Daily, Weekly, Monthly, Etc. | ASTM F2374-22 Section 7 | |
| Operator/Attendant Training Qualifications and Responsibilities | | ASTM F2374-22 Section 7 | |
| Manuals for Auxiliary Devices (if applicable) | | ASTM F2374-22 5.16 | |
| Flame Test Certificate | | ASTM F2374-22 5.9.2 | |
| Equipment Replacement Criteria (where applicable) | | ASTM F2374-22 7.6.2 | |
| One of: | a report of a prototype test carried out by the manufacturer of the amusement device that includes a statement by the manufacturer that it is not necessary to carry out a field test on the amusement device | O.Reg. 221/01 9. (h) (i) | |
| | a report of a field test carried out on the amusement device by the manufacturer, the professional engineer who certifies the technical dossier in accordance with subsection (2.1) or the licence holder, | O.Reg. 221/01 9. (h) (ii) | |
| | a statement by the licence holder that a field test will be carried out on the amusement device and a report filed with the director before an inspection under clause 8 (1) (d) or clause 10 (3) (c) is arranged with an inspector, or | O.Reg. 221/01 9. (h) (iii) | |
| | a statement by the manufacturer that no tests are necessary to ensure the safety of the amusement device and the reasons why, | O.Reg. 221/01 9. (h) (iv) | |

# Documents Required in the Dossier

## FAQ

- What if I don't have a manufacturer's manual?
- What if the manual I got is insufficient?
- Do I really need all these documents?

# Filed Dossier

TSSA Filed Technical Dossier, AD # [redacted]



345 Carlingview Drive
Toronto, Ontario M9W 6N9
Tel.: 416.734.3300
Fax: 416.231.1626
Toll Free: 1.877.682.8772

www.tssa.org

**NOTICE OF FILING A TECHNICAL DOSSIER WITH CONDITIONS**

**Work Order No.:** [redacted]

**Submitter/Applicant:** [redacted]

**Technical Dossier:** AD New - Inflatables
**AD Type:** AD Inflatables

**Licencee:** [redacted] LS INC
**Licencee Dev Name:**
**Manufacturer:**
**Manufacturer's Device Name**

ELEVATING AND AMUSEMENT DEVICES SAFETY PROGRAM
FILED
Apr 15 2024
J. Javier P.Eng.

**Device Mobility:** Portable
**Installed at address:** Various

**Engineer:** [redacted]

Technical Standards and Safety Authority (TSSA) has reviewed and filed your Technical Dossier under the following Installation Number and is subject to the conditions described below. When contacting TSSA regarding this file, please refer to the Work Order No. provided above.

**Installation Number:** [redacted]
**Condition(s):**

1. RECOMMENDATION: For indoor use, the operator shall monitor the device position at all times. If there is evidence of significant deviation from designated position of the device due to sliding, indoor ballasts shall be reconsidered.
2. Operator shall ensure that only participants of similar size and built are allowed in the device at any given time.
3. Only trained personnel shall be allowed to operate this device. Proof of the operator training shall be available for inspection.
4. Incidents must be reported to the TSSA. A guideline regarding incident types and protocol, including contact information can be found at www.tssa.org and click on "Report an Incident or Safety Violation".
5. THIS DEVICE MUST BE INSPECTED PRIOR TO OPERATION. The licensee must verify that this AD is operational before requesting an inspection.
6. No person shall use any electrical equipment unless it has been approved. (See O. Reg 438/07 for more info.) Electrical equipment is deemed to be approved if it:
   • has been certified to conform to the applicable standards for the electrical product or device.
   • bears a label of approval from a field evaluation agency
7. The AD number tag shall be attached to the inflatable and the serial number shall be permanently marked on the device.
8. Note to inspector: Please record the manufacturer issued serial no. (if available) upon inspection and send to TSSA Engineering to update Box 1.40. This item alone will not be considered a Revision. Licensee shall record this no. on their copy of the dossier.
9. A 2 second flame test compliant to NFPA 705 using a sample from the actual device being registered shall be conducted. The Licensee or the ADM-I for this device shall conduct the flame test at the time of initial inspection and have the TSSA inspector witness it.

Technical Standards and Safety Authority

# Ontario Amusement Device Permit

*Technical Standards and Safety Act*

This Permit is issued to allow the operation of the following Amusement Device:

**Device Name:**
Inflatable Slide

**Permit Number:**
000399474

**Type:**
Inflatable

**Device Number:**
64740689

**LANSDOWNE STADIUM GP INC**
1015 BANK ST
OTTAWA ON K1S 3W7

Expires on: 2024-12-31

Issued by the Director


**OPERATION OF THIS DEVICE WITHOUT A VALID PERMIT IS AN OFFENCE UNDER THE ACT.**
This permit shall be kept in the vicinity of the amusement device to which it relates.

Issued under the ***Technical Standards and Safety Act, 2000***
Amusement Devices Regulation (O. Reg. 221/01)

# Inflatable Design Requirements

# What is the current Inflatable Standard?

- Answer: ASTM F2374-22

- The current standard only applies to new inflatable devices
- If your inflatable was registered to a while back, it might fall under CSA Z267-00 or an older version of ASTM F2374

# ASTM F2374 – Inflatable Standard

- How/Where can you get a copy?
  - Buy one, or
  - Sign up to be an ASTM F24 member

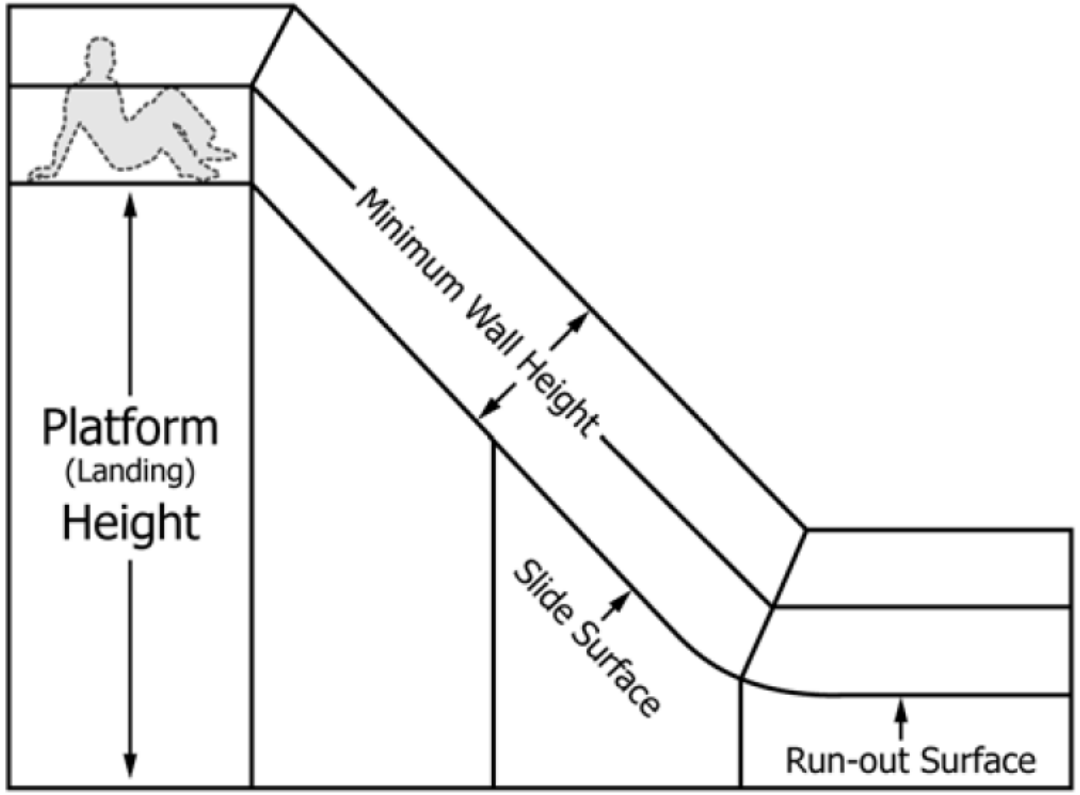
# 5.3 Parts of the Inflatable Device

- Obstacle
- Platform
- Playing Area
- Ramp or Step
- Run-out

# Containment Walls

# Inflatable Height Measurements

- Playing Area or Pl




**SIDE VIEW**

**FIG. 1 Slide Platform and Wall Height Measurements**

# Inflatable Height Measurements

- Containment W

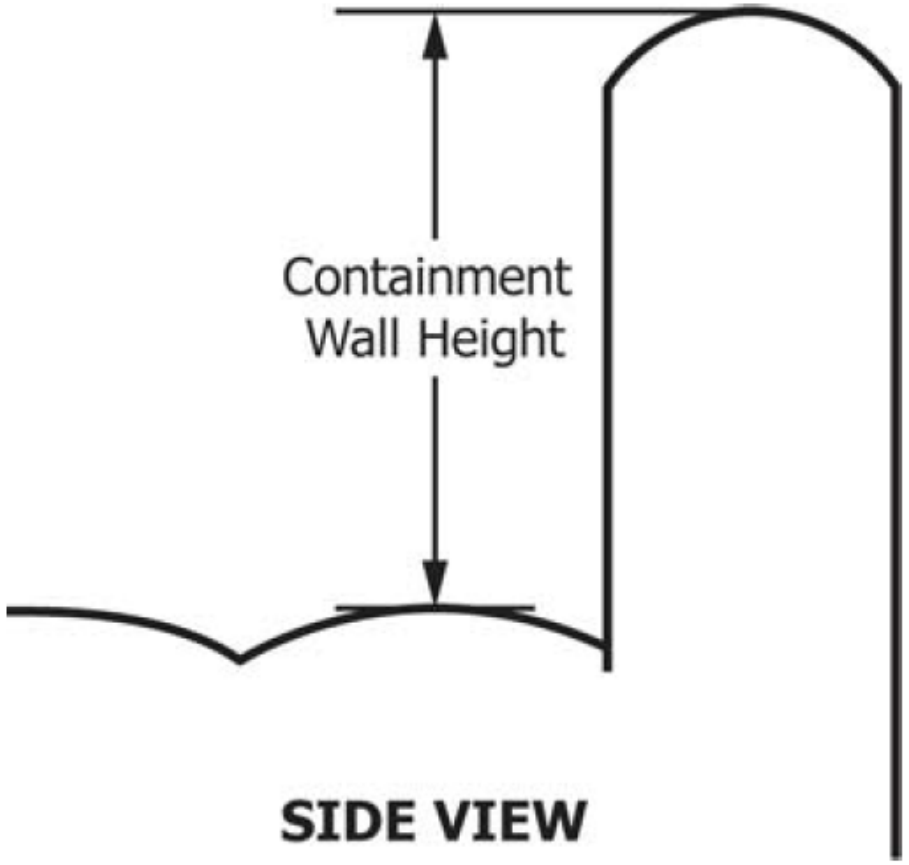



FIG. 2 Containment Wall Height Measurement

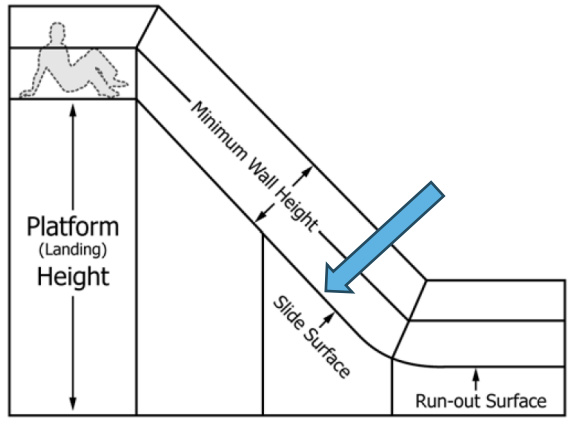



FIG. 1 Slide Platform and Wall Height Measurements

# Inflatable Height Measurements

- Containment Wall

5.12.4.1 Supporting containment walls shall either be inflated or shall be enclosed with netting or mesh per 5.9.5.

5.12.4.2 Minimum height for containment walls shall be as follows.

(1) Inflatable bounce houses and combination devices with a bounce house element

—1.25 × the maximum patron height requirement for the device.

(2) Inflatable slides and exterior slides on combination units

—28 in. (0.7 m) for devices with maximum patron height up to and including 60 in. (1.5 m); 36 in. (0.9 m) for devices with maximum patron height greater than 60 in. (1.5 m). This corresponds approximately to the sitting height of the tallest patron allowed on the device.

(3) All other inflatable amusement devices with an inflated mattress (for example, obstacle courses, games)

—36 in. (0.9m) above mattress height.

NOTE 1—This is a minimum requirement applied to a broad range of inflatable amusement devices; the containment analysis may indicate higher walls for some devices in this category

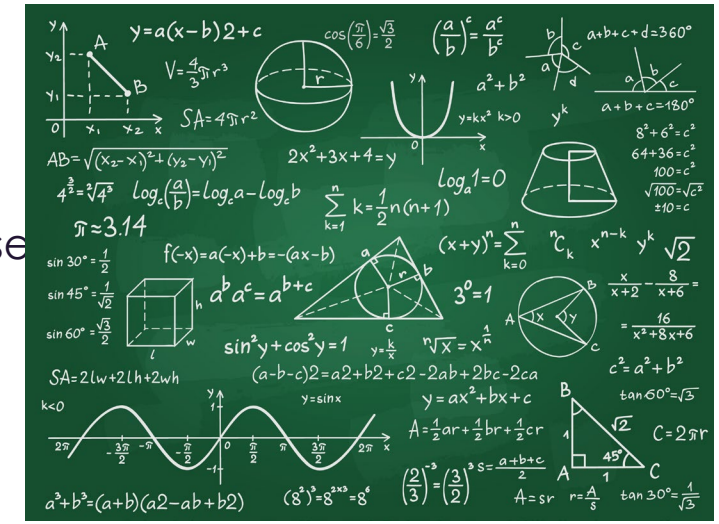
# Inflatable Height Measurements

- Containment Wall

5.12.4.2 Minimum height for containment walls shall be as follows.

(1) Inflatable bounce houses and combination devices with a bounce house

—1.25 × the maximum patron height requirement for the device.



If the max patron height for this device is 1219 mm or 48 in or 4 ft..
What is the minimum containment wall height?

Answer:
1523.75mm
60 in
5ft

# Inflatable Height Measurements

- Containment Wall

5.12.4.2 Minimum height for containment walls shall be as follows.

(3) All other inflatable amusement devices with an inflated mattress (for example, obstacle courses, games) —36 in. (0.9m) above mattress height.


Answer:
900 mm
36 in
3ft

# Inflatable Height Measurements

- Containment Wall

5.12.4.2 Minimum height for containment walls shall be as follows.

(3) All other inflatable amusement devices with an inflated mattress (for example, obstacle courses, games) —36 in. (0.9m) above mattress height.


5.12.5.2 Inflatable obstacle courses shall include design features such as protective covers over elevated landings to prevent patrons from standing in those areas.

# Capacity

# Capacity


## Formula to Calculate Patron Capacity

**Step 1)** $\frac{\text{Maximum Patron Height}}{2} + 3 \text{ Inches} = (R)$

**Step 2)** $\frac{3.14 \times R \times R}{12} = (AO)$

**Step 3)** Size of Internal Space $\frac{W \times L}{144} = (MEA)$

$\frac{MEA}{AO}$ = Device Patron Capacity

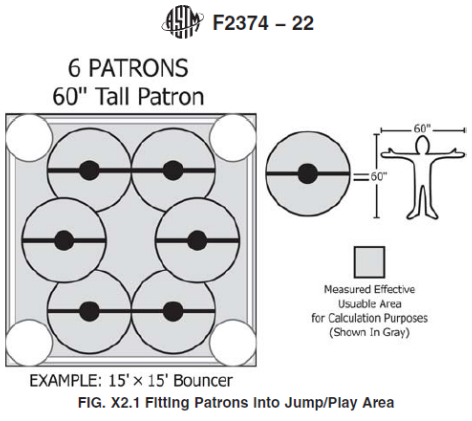


FIG. X2.1 Fitting Patrons into Jump/Play Area

# Capacity

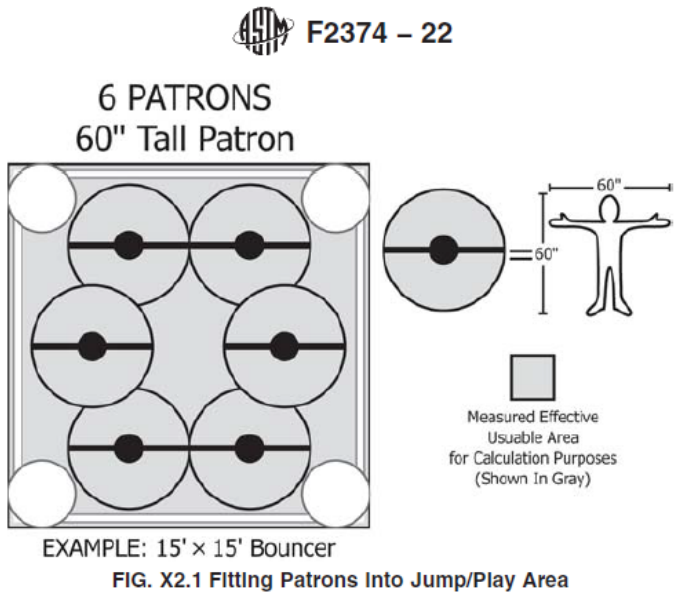
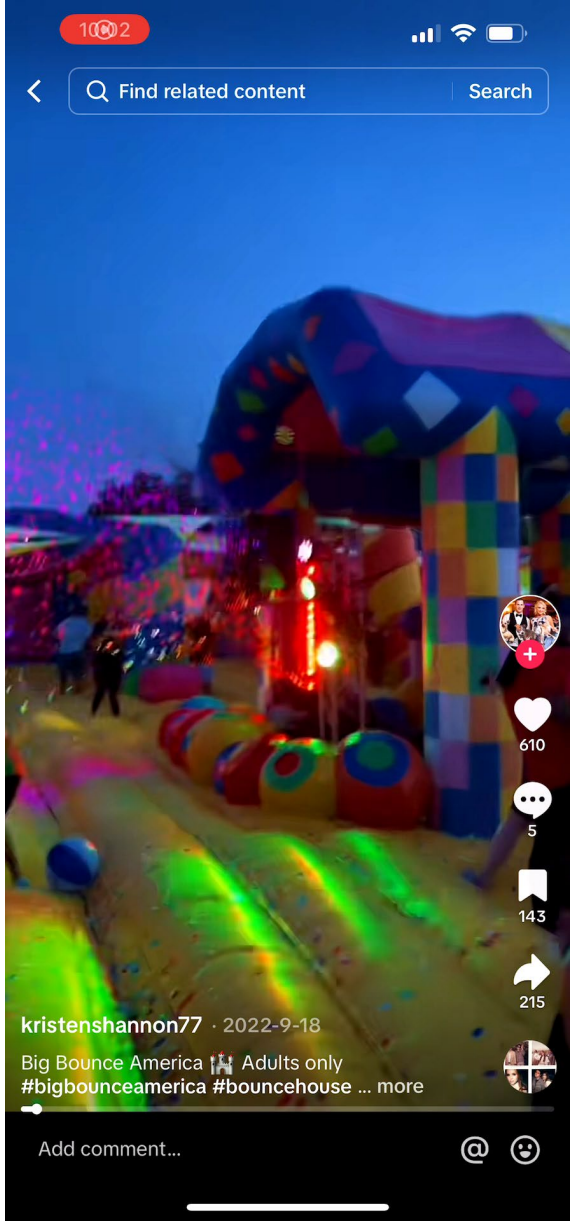


FIG. X2.1 Fitting Patrons into Jump/Play Area

# Anchoring System

# Anchoring System

- Inflatables shall be provided with an anchorage system to prevent unplanned displacement during operation
- Anchorage shall work for designed operating conditions
- Minimum 4 anchor points
- Anchorage system shall be designed by a professional engineer

# Anchoring System

- Wind Force Calculations

*(1)* For inflatables with height ≤ 10 ft (3 m) and length ≤ (2.5 × width), the wind force shall be calculated using Eq 1:

$$F_{H/V} = C_w \frac{\rho}{2} V^2 A \times S.F. \quad (1)$$

where:

$F_{H/V}$ = force, lbf (N);
$C_w$ = wind coefficient (see 5.6.4.3*(1)(a)*);
$\rho$ = density of air, 0.002378 slug/ft$^3$ (1.24 kg/m$^3$);
$V$ = maximum wind speed with gusts over 3-second period, mph (m/s) (see 5.6.4.1);
$A_{H/V}$ = area (see Fig. 3) (see 5.6.4.3*(1)(b)*);
$S.F.$ = Safety Factor for the purpose of designing the anchor system (≥1.5).

*(a)* For calculating the horizontal wind force: $C_w$ = 1.5. For calculating the vertical wind force: $C_w$ = 0.7.

*(b)* For calculating the horizontal wind force: $A_H$ = area of exposed vertical surface in the wind direction, ft$^2$ (m$^2$). For calculating the vertical wind force: $A_V$ = plan/surface area of floor, ft$^2$ (m$^2$). For staked anchoring systems, Table A2.1 represents the combination of the simultaneous forces.

*(2)* For inflatables with height >10 ft (3 m) or with length >(2.5 × width), the wind force shall be calculated using Eq 2:

*(2)* For inflatables with height >10 ft (3 m) or with length >(2.5 × width), the wind force shall be calculated using Eq 2:

$$F_{H/V} = q_w C_{pe} A \times S.F. \quad (2)$$

where:

$F_{H/V}$ = force, lbf (N);
$A_{H/V}$ = area (see Fig. 3);
$q_w$ = velocity pressure, psf (N/m$^2$);
$C_{pe}$ = pressure coefficient; (see 5.6.4.3*(3)*);
$S.F.$ = Safety Factor for the purpose of designing the anchor system (≥1.5).

*(3)* The pressure coefficient, $C_{pe}$, shall be selected based on the ASCE 7 description. For example: for a square building, the effective Cp shall be 0.8 for the windward wall and –0.5 for the leeward wall or:

$$C_{pe} = 0.8 + 0.5 = 1.3$$

The velocity pressure $q_w$ shall be calculated using the ASCE 7 Exposure category C formula in accordance with Eq 3 or Eq 4, depending on the units:

$$q_w = 0.00256 K_z K_d K_{zt} V^2 \quad \text{(Imperial Units)} \quad (3)$$

# Anchoring System

- Design to max wind speed of minimum 25 mph (40 kph)
  - Sustained gusts over 3 seconds
- Max operating wind speed shall be at least 5 mph (8 kph) less than designed max wind speed

# Anchoring System

- 5.6.6 Anchoring systems for inflatable amusement devices shall be fixed stationary objects, installed or weighted in accordance with the design.

# Anchoring System

- 5.6.7 Anchorage points installed near an entrance and exit of an inflatable amusement device shall be connected in such a manner as to minimize the potential for tripping, abrasions, or other injuries.

# Anchoring System

- Staked Anchoring

5.6.8.1 Appendix X2.2 provides staking recommendations and information on pullout capacity for 1 in. diameter straight shaft stakes based on stake length, stake inclination, guy angle, and soil consistency. If the staked anchoring system is designed using other types of stakes, the design shall show how the specified anchors meet the requirements for pullout capacity

# Anchoring System

5.6.8 *Staked Anchoring:*

5.6.8.1 ~~Appendix A2.2 provides staking recommendations and information on pullout capacity for 1 in. diameter straight shaft stakes based on stake length, stake inclination, guy angle, and soil consistency.~~ Staked anchoring shall at minimum meet the pullout capacity for a 1 inch diameter, 18 inch long straight shaft stake as per Annex _A2.2_ and Table _A2.1. If the staked anchoring system is designed using ~~other types of~~ stakes other than those specified in Annex Table A 2.1, the design shall show how the specified anchors meet the requirements for pullout capacity.

# Anchoring System

TABLE X2.1 Pullout Capacity for Various Stake Configurations and Soil Types

TABLE X2.1 Pullout Capacity for Various Stake Configurations and Soil Types

| Table Correction Factor ($C_f$) | Soil Consistency[E] | Pullout Capacity for 1 in. Diameter Steel Stake[F] ($P_c$) in pounds | | | | |
|---|---|---|---|---|---|---|
| | | 40 in. | 36 in. | 30 in. | 24 in. | 18 in. |
| BASELINE ($P_b$)[A] | Hard | 2900 | 2500 | 1900 | 1350 | 800 |
| | Very Stiff | 1855 | 1600 | 1215 | 865 | 510 |
| | Stiff | 930 | 800 | 610 | 430 | 255 |
| | Medium | 465 | 400 | 305 | 215 | 125 |
| $C_f$ = 0.65 | Medium | 305 | 260 | 200 | 140 | 80 |

Pull Out Capacity ($P_c$) = Baseline Capacity ($P_b$) × Correction Factor ($C_f$)

$P_c = P_b \times C_f$

# Anchoring System

- Staked Anchoring

5.4.8.2 Stakes shall have a minimum tensile strength of 36 000 psi

When selecting a stake, the designer/engineer shall also take into consideration the following:

a. corrosion resistance
b. properties for the installation environment
c. tensile strength requirements

# Anchoring System

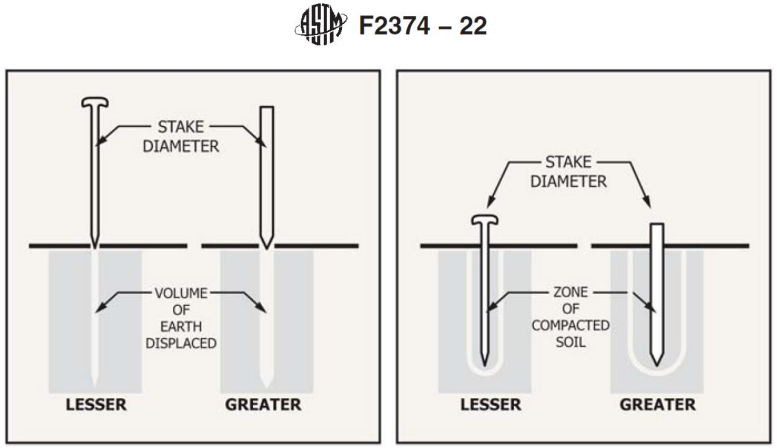
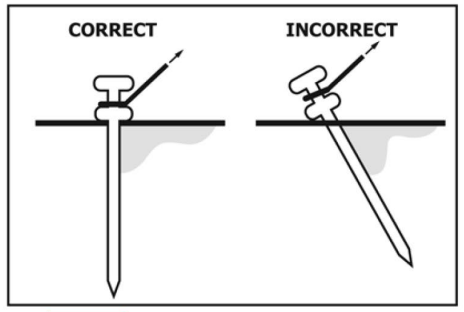



FIG. X6.1 Holding Power Varies with Anchor Diameter




X6.4 For optimum holding power, stakes should be inserted perpendicular to the plane of the ground at the point of insertion as demonstrated in Fig. X6.2.

# Anchoring System

- Non-staked anchoring
- 5.6.10 The manufacturer shall ensure that all ropes and fasteners are capable of meeting the design loads and are suitable for the intended use.

- 5.6.10.1 Anchoring rings or wire form shall be welded closed or cast (solid), and shall have a minimum working load equal to the calculated vertical, horizontal or combined load. The minimum breaking strength shall be 3 times the working load.

# Anchoring System

- Non-staked anchoring

# Anchoring System

- Non-staked anchoring

# Anchoring System

- Non-staked anchoring

# Anchoring System

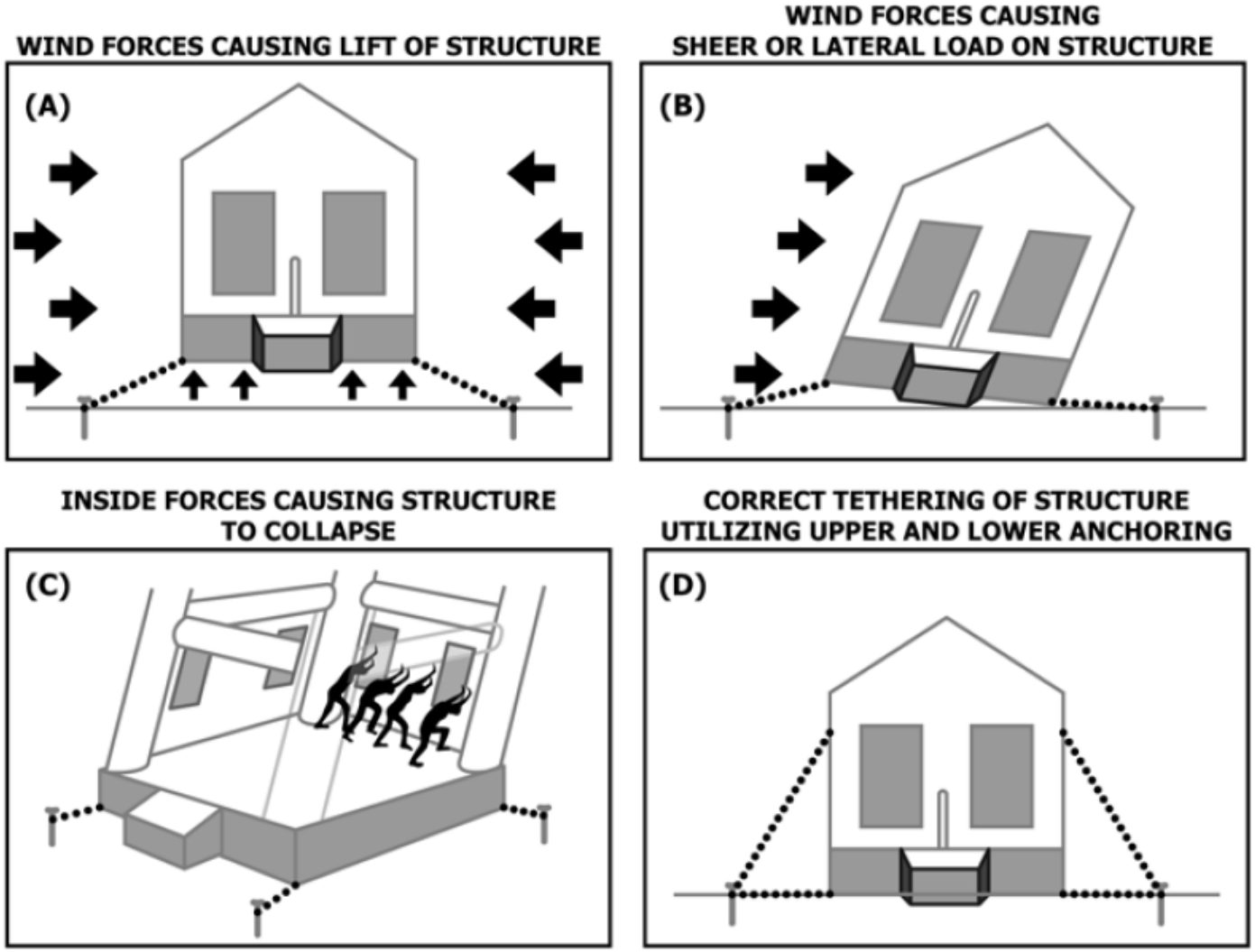
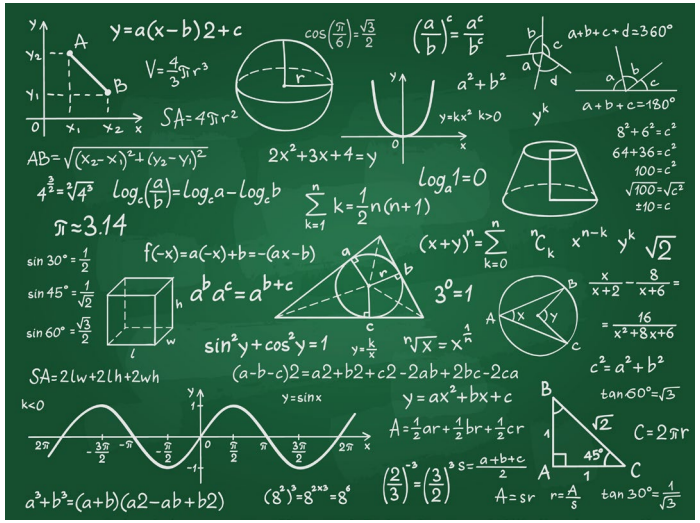



FIG. A2.1 Anchoring Design Force Assessment

# Anchoring System




- Quiz time..
  - True or False:
    - If an inflatable is designed to a max wind speed of 30 mph, you can operate it at 30 mph.

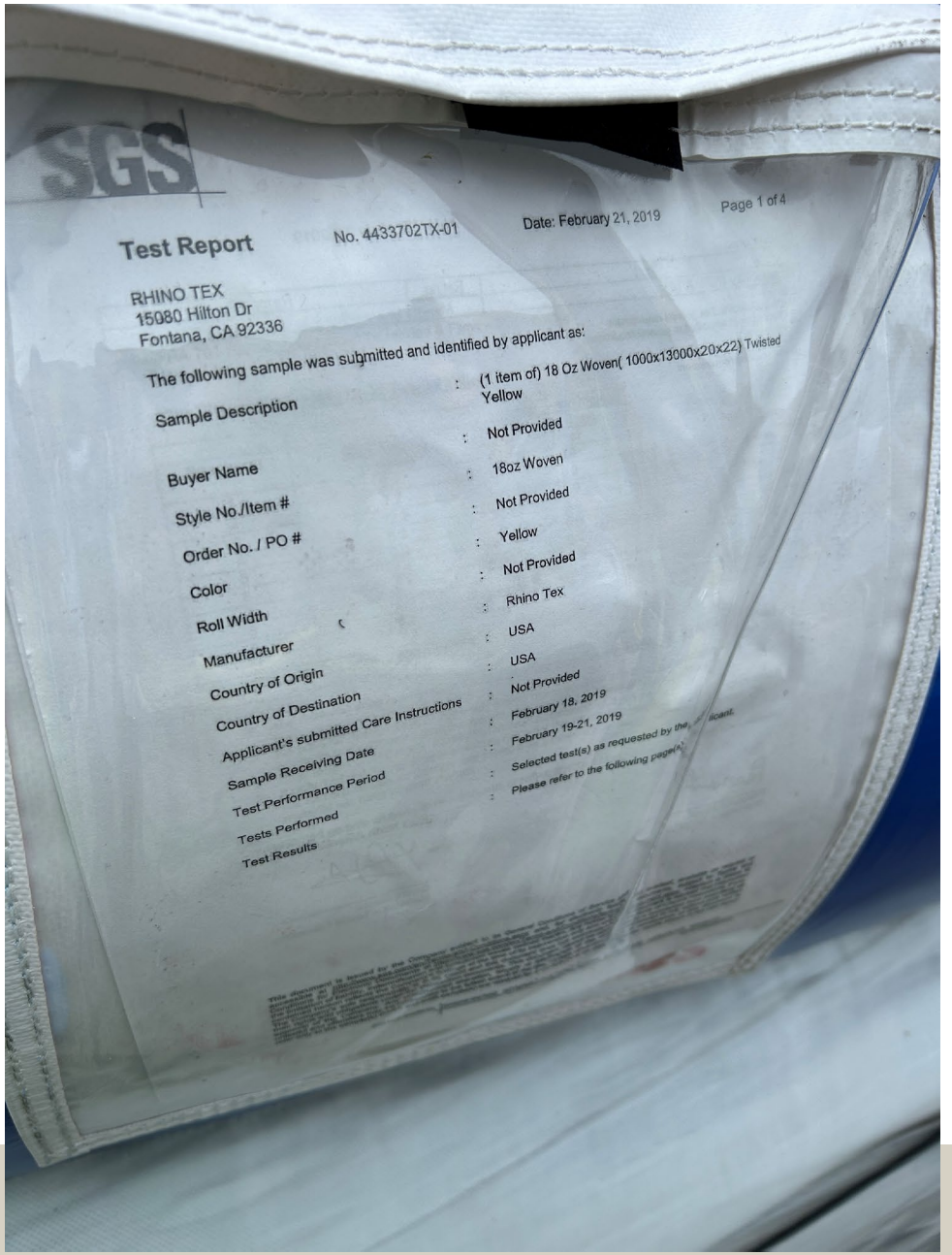
# Flammability

# Flammability

5.9.2.1 Fabrics used for inflatable amusement devices shall comply with the flame propagation performance criteria of NFPA 701 (2019) Test Method 2.

Fabrics used for internal gusset shall comply with the flame propagation performance of NFPA 701 (2019) Test Method 1 or Test Method 2.

# Flammability



SGS

Test Report No. 4433702TX-01 Date: February 21, 2019 Page 1 of 4

RHINO TEX
15080 Hilton Dr
Fontana, CA 92336

The following sample was submitted and identified by applicant as:

| | | |
|---|---|---|
| Sample Description | : | (1 item of) 18 Oz Woven( 1000x13000x20x22) Twisted Yellow |
| Buyer Name | : | Not Provided |
| Style No./Item # | : | 18oz Woven |
| Order No. / PO # | : | Not Provided |
| Color | : | Yellow |
| Roll Width | : | Not Provided |
| Manufacturer | : | Rhino Tex |
| Country of Origin | : | USA |
| Country of Destination | : | USA |
| Applicant's submitted Care Instructions | : | Not Provided |
| Sample Receiving Date | : | February 18, 2019 |
| Test Performance Period | : | February 19-21, 2019 |
| Tests Performed | : | Selected test(s) as requested by the applicant. |
| Test Results | : | Please refer to the following page(s). |

# Flammability

NFPA 705 – 2018 (Field Flame Test)

- Purpose -To provide AHJs with a means to test flame retardancy of textiles and films in the field
- NFPA 705 does not have a known correlation to the lab test NFPA 701.

# Flammability

NFPA 705 – 2018 (Field Flame Test)

- Materials required:
  - Sample should be from the device being tested
  - Sample should be dry
  - Min. size: 1.7mm x 101.6mm (1/2 in. by 4 in.)
  - Open Flame – common wood kitchen match or source with equivalent flame properties

# Flammability

NFPA 705 – 2018 (Field Flame Test)

- Procedures:
    1. Test should be performed in a draft-free and s
       combustibles
    2. Sample should be suspended preferably by m
       similar – long axis vertical and flame supplied
        - Bottom edge should be 12.7mm or ½ in. c

    3. After 12 seconds of exposure, the match is to be
       sample

# Flammability

NFPA 705 – 2018 (Field Flame Test)

- How do I know if the test is a PASS?
  - During exposure, flame should not spread over the complete length of the sample, or for longer samples in excess of 101.6mm (4 in.) from the bottom of the sample
  - There should not be more than 2 seconds of after-flame
  - Materials that break or drip flaming particles should be rejected if materials continue to burn after the reach the floor

# Flammability

# Flammability

NFPA 705 – 2018 (Field Flame Test)

Is this a PASS or a FAIL?

# Flammability

Q: What's the difference between NFPA 701 and NFPA 705?

A: NFPA 701 is done in a lab, NFPA 705 is a field test

# Flammability

Q: Where can I cut a sample for the NFPA 705 test?

A: Any part that will not destroy your inflatable. All inflatable fabric is expected to meet the NFPA 705 test including the inside baffles (clarified with code committee).

# Flammability

- Flammability

Q: Who is responsible for doing the NFPA 705 test?

A: ADM-I Mechanic witnessed by TSSA or your engineer with a letter attesting of conformance to 705

# Flammability

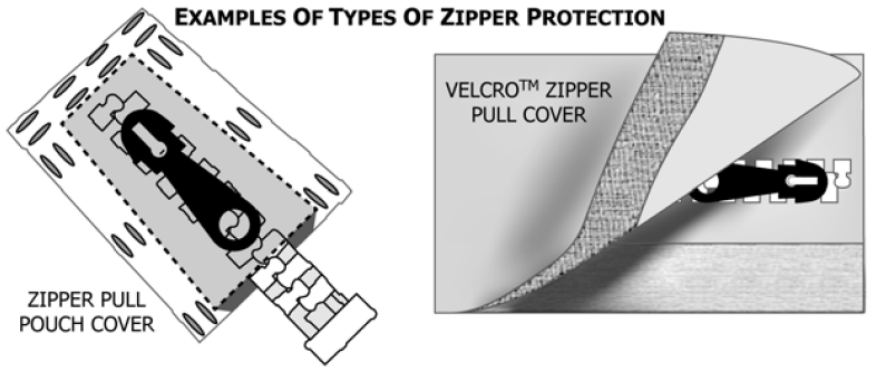
Q: My device failed the NFPA 705 test, now what?

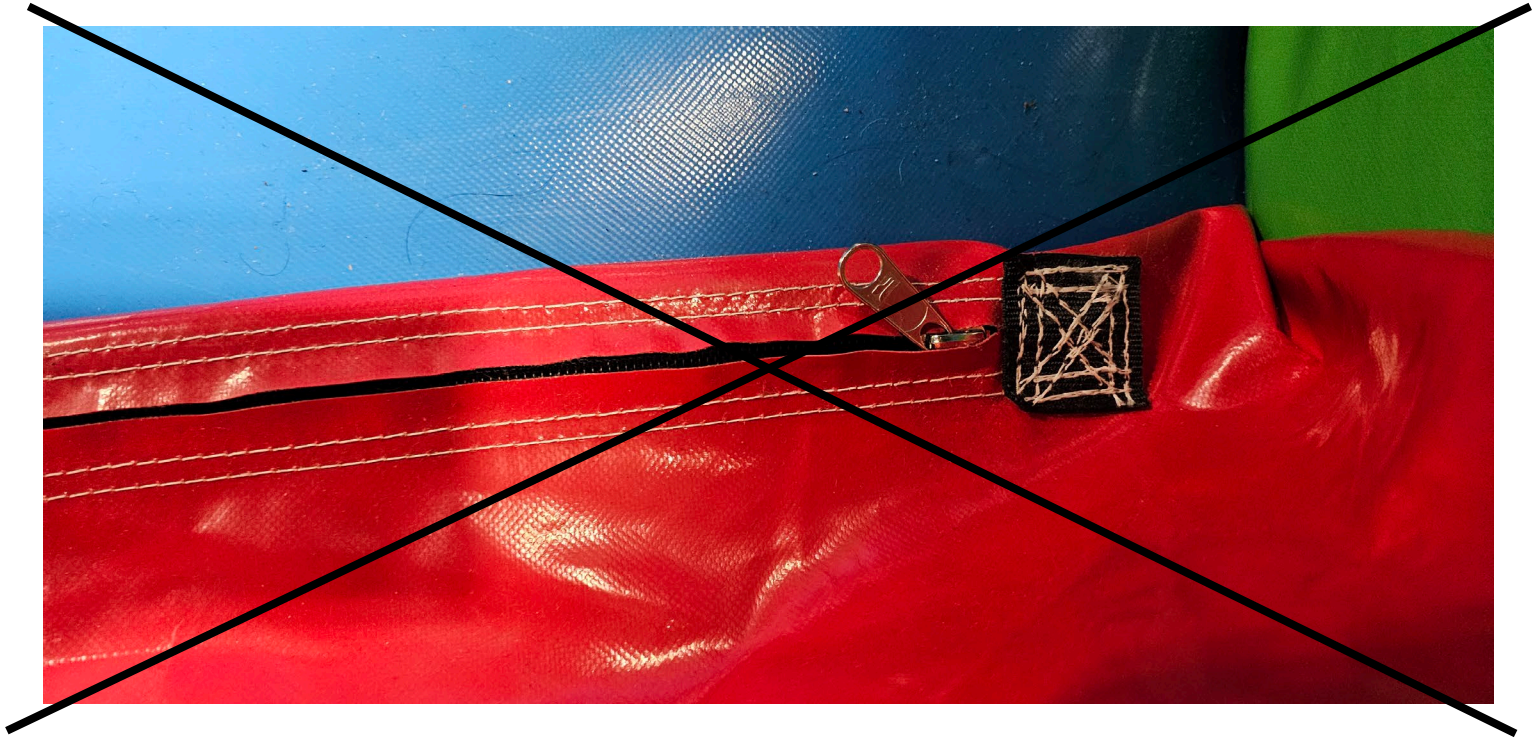
A: Not able to operate device

# Zippers, Netting/Mesh

# Zippers

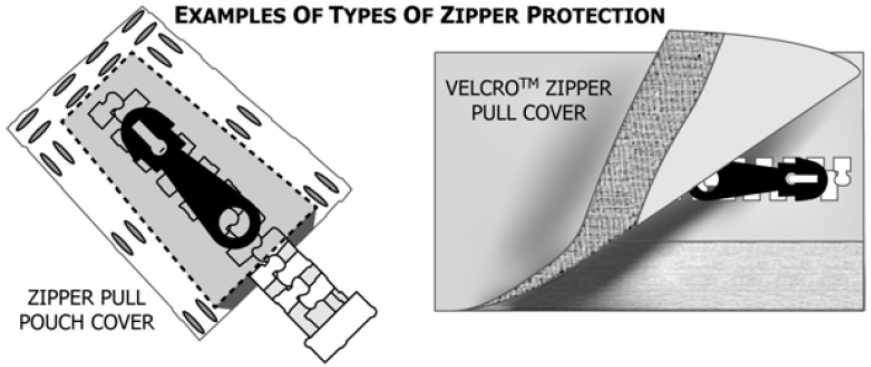
- Entrance and Deflation Ports

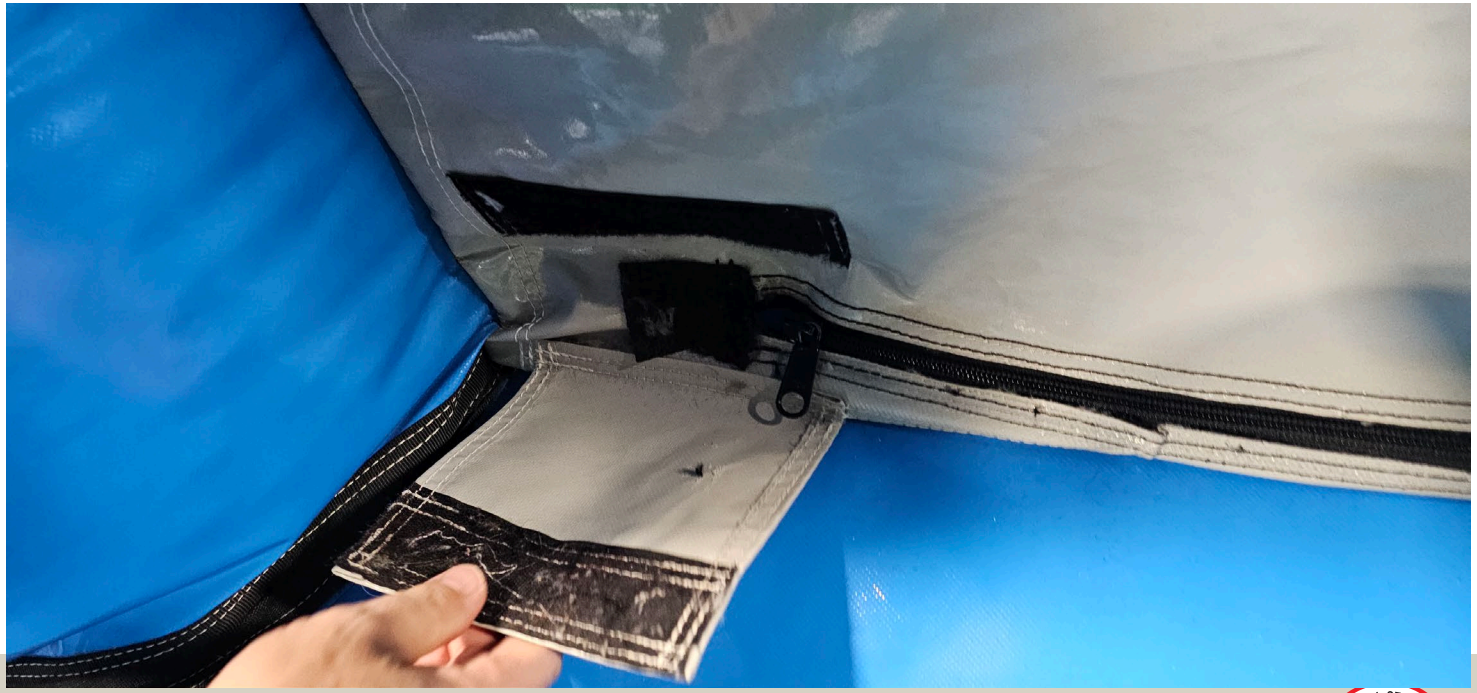


# Zippers

- Entrance and Deflation Ports



# Netting of Mesh

- *5.9.5 Netting or Mesh:*

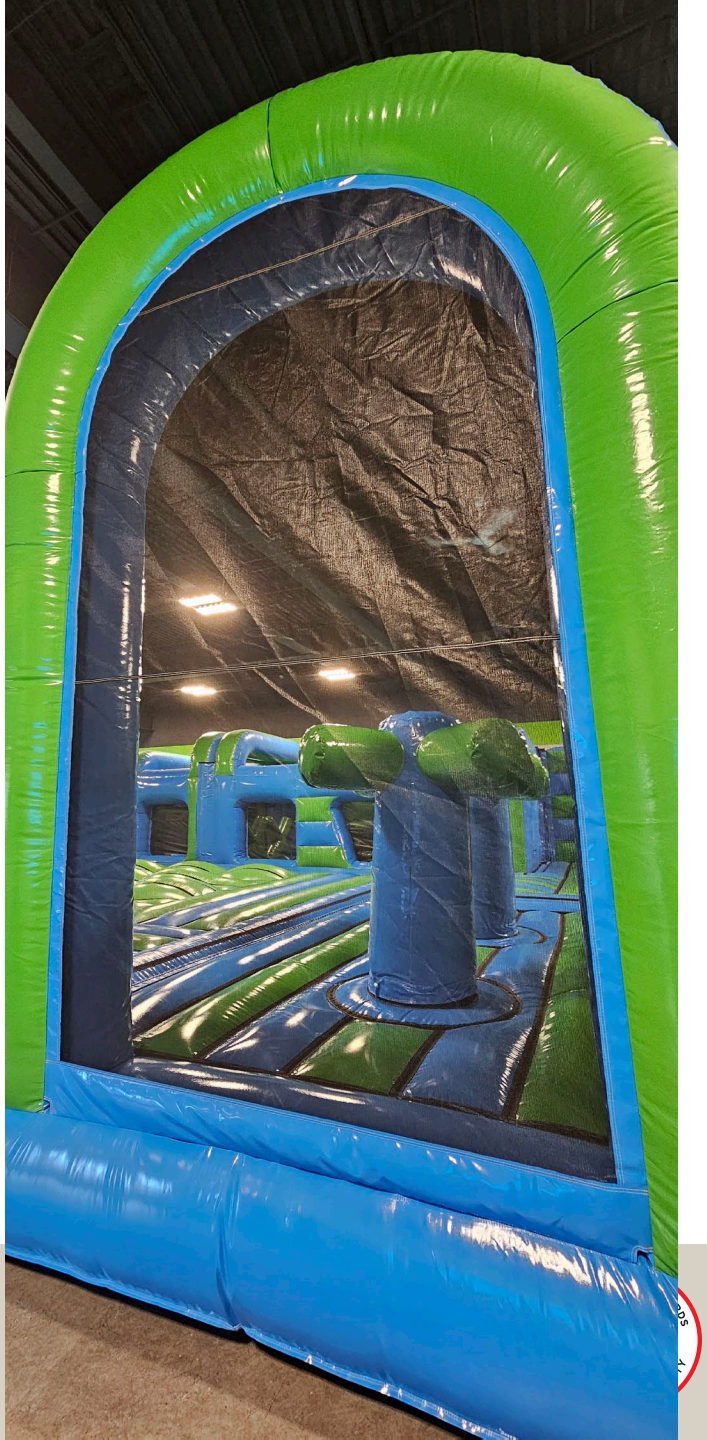
5.9.5.1 Netting or mesh shall not significantly impair the operator/attendant's ability to observe patrons' use of the device.

5.9.5.2 Netting or mesh used to contain patrons shall:

*(1)* Be strong enough to contain the largest/heaviest user for whom the inflatable is designed;

*(2)* Meet the requirements for Class 2 Barrier Nets/Mesh in Practice F2375-09 (2017); and

*(3)* Pass the *Prototype Test Procedure for Maximum Hole Size of No-Hold Netting* in Practice F2375-09 (2017), but using a test rod of 0.315 in. (8 mm) diameter substituted for the test rod size specified in Practice F2375-09 (2017).

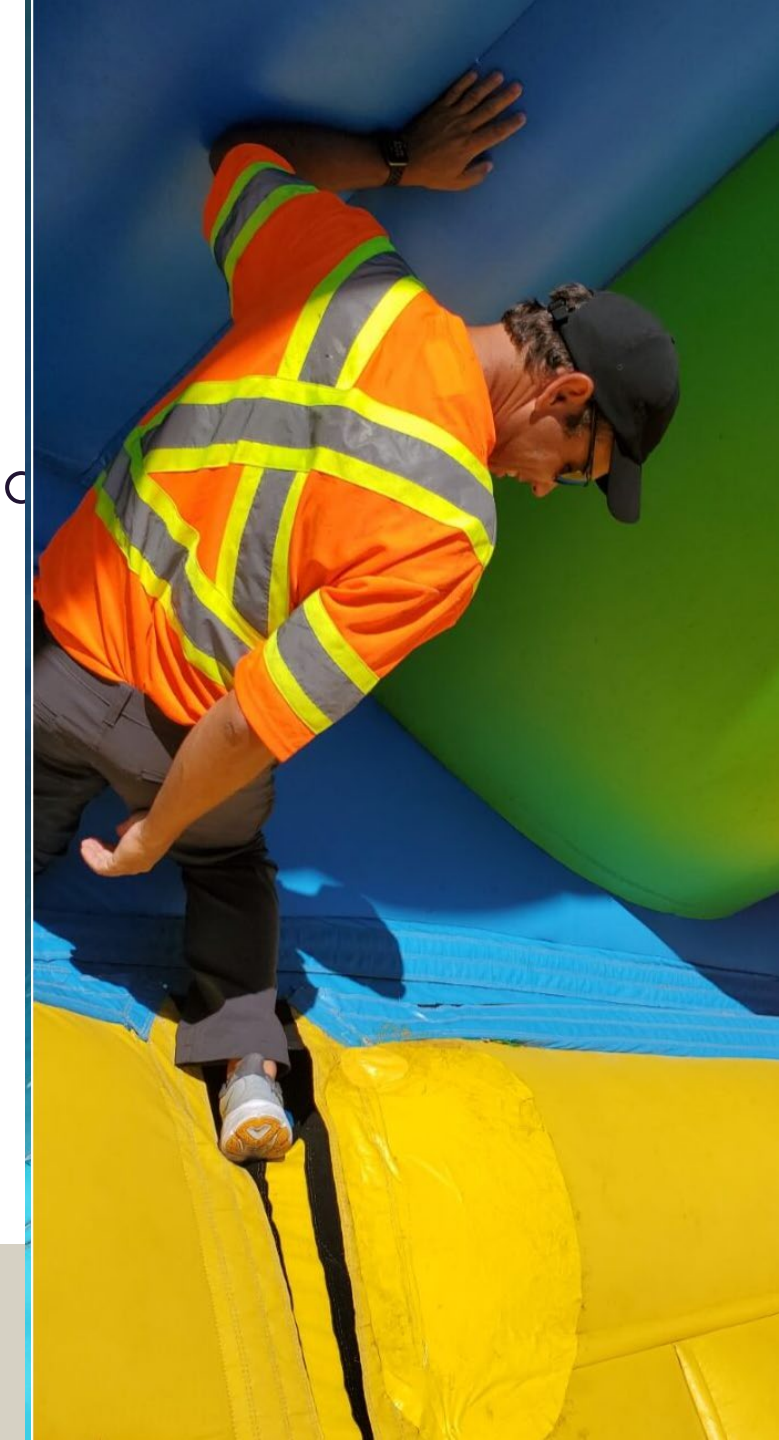


# Netting or Mesh

# Methods of Construction

# Methods of construction

- No hard or sharp angles/edges
- Hard objects shall be padded or positioned to minimize ha
- Joints and seams shall be strong enough



# Entrapment

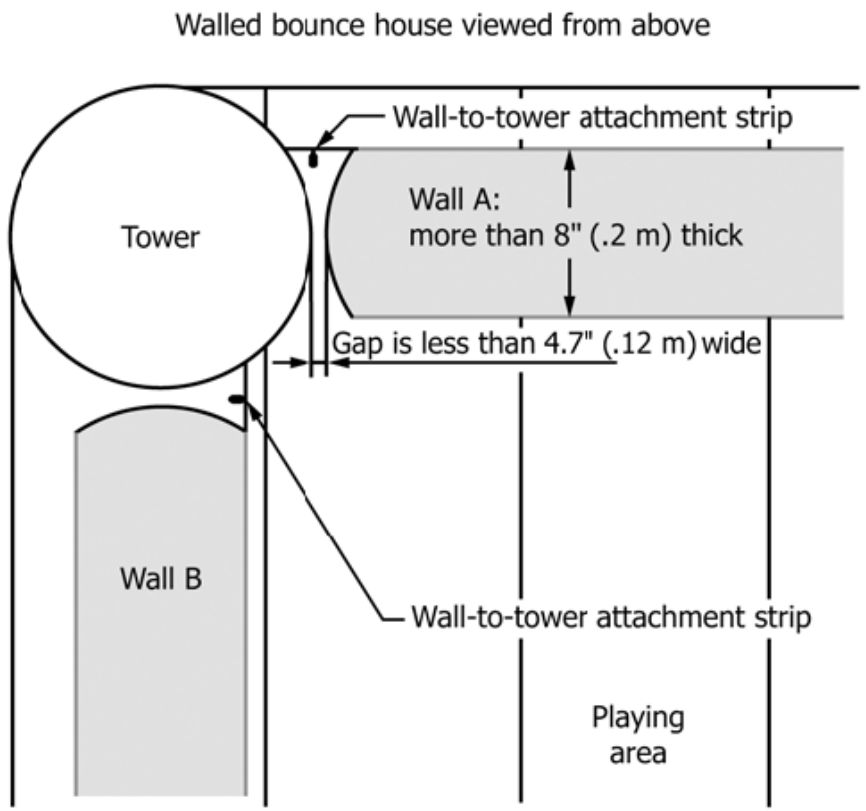
# Entrapment

Handrails

5.11.1 Entrapment of the Head and Neck:

5.11.1.1 Inflatable devices shall be constructed so that any openings do not create head and neck entrapment hazards by either head-first or feet-first passage. Situations in which this type of entrapment occur include the following:

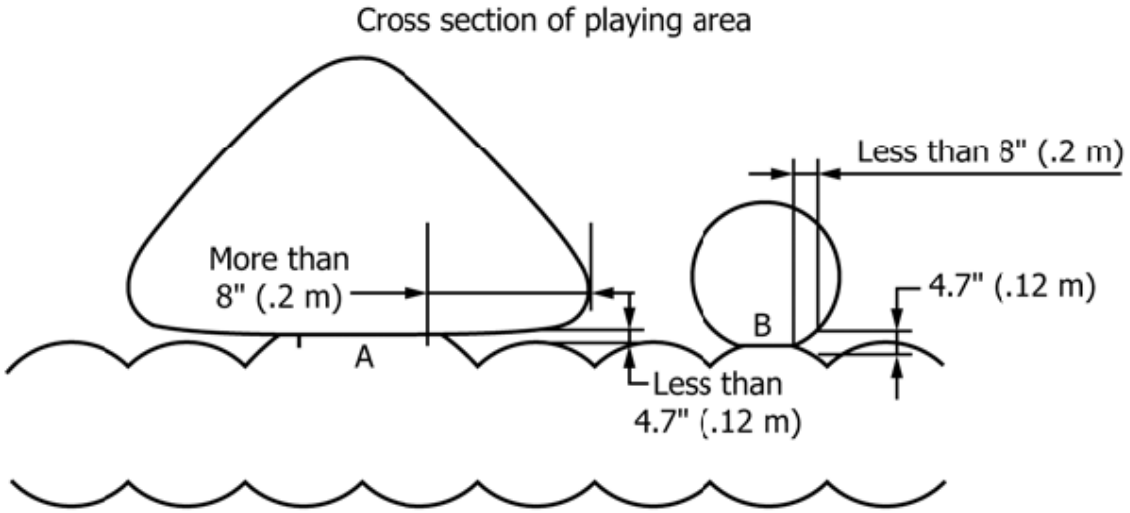
# Entrapment




The wall-to-tower attachment strip on Wall A (positioned to rear of gap) forms an entrapment point. The position of the attachment strip on Wall B guards out the entrapment hazard.

# Entrapment

5.11.4.1 Adjacent inflated surfaces shall be more than 4.75 in. (120 mm) apart if the aperture formed is more than 8 in. (200 mm) deep (see examples in Fig. 7). The measurements shall be taken in the unloaded condition (that is, without pressure being applied to push the inflated surfaces farther apart).




The large slide fixed at A forms an entrapment point.
The ball fixed at point B does not form an entrapment point.

**FIG. 7 Body Entrapment Assessment Examples**

# Protective Covers

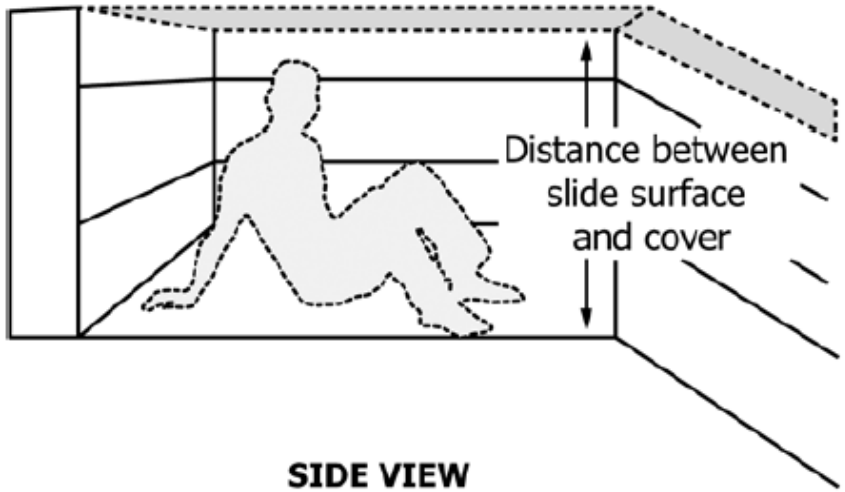
# Protective covers

- Shall extend at least 1/3 the slope length of the slide as measured from the top of sliding surface

FIG. 8 Protective Cover Over Slide and Climb Areas

# Protective covers

- (2) Minimum distance between the play surface and the underside of the protective cover, illustrated in Fig. 9, shall be the same as the minimum containment wall height for the slide defined in 5.12.4.2(2).




**SIDE VIEW**

FIG. 9 Clearance Between Slide Surface and Protective Cover


**FRONT VIEW**

FIG. 8 Protective Cover Over Slide and Climb Areas

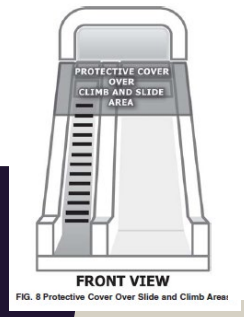
*(2) Inflatable slides and exterior slides on combination units—*

28 in. for devices with maximum patron height up to and including 60 in.

36 in. for devices with maximum patron height greater than 60 in.

# Protective covers

- Inflatable slides and exterior slides on combination devices shall include design features to prevent patrons from standing, jumping, or diving down the slope, such as a protective cover over the top of the slide and climb areas and the associated transition platform as shown in Fig. 8.



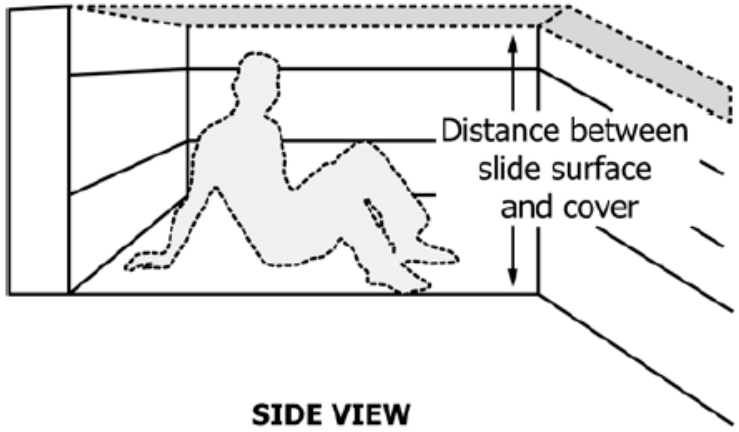
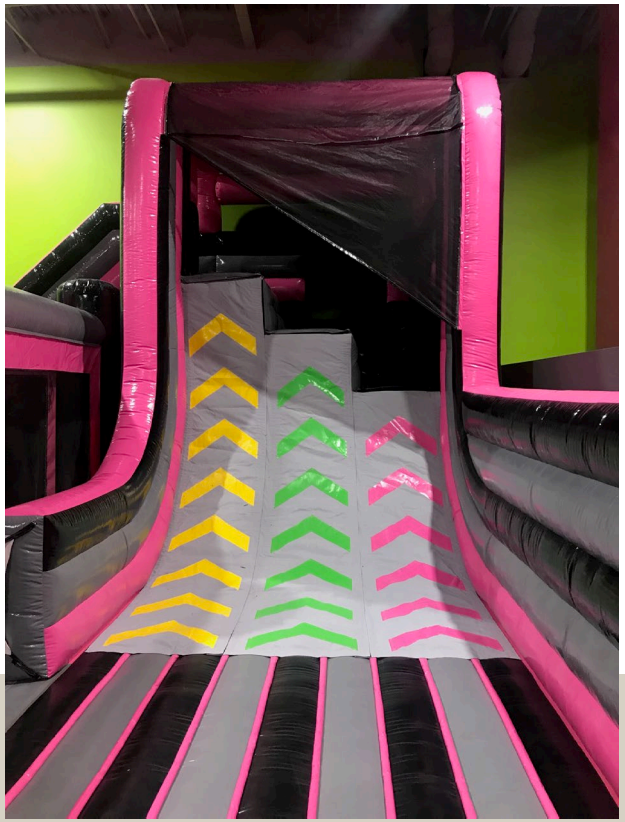




FIG. 9 Clearance Between Slide Surface and Protective Cover



# Protective covers

- Inflatable slides and exterior slides on combination devices shall include design features to prevent patrons from standing, jumping, or diving down the slope, such as a protective cover over the top of the slide and climb areas and the associated transition platform as shown in Fig. 8.

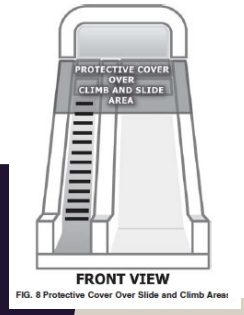


FIG. 8 Protective Cover Over Slide and Climb Area

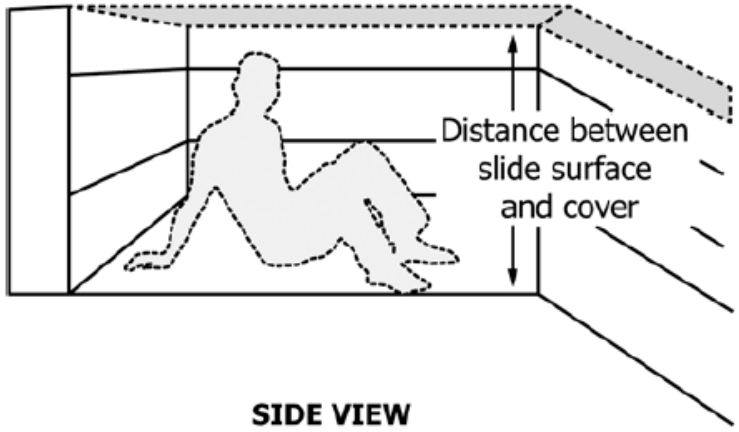
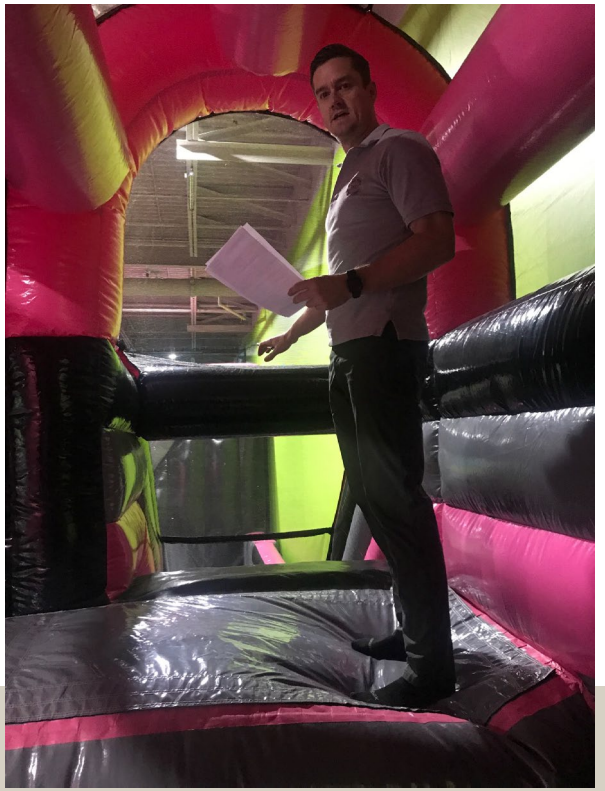


FIG. 9 Clearance Between Slide Surface and Protective Cover

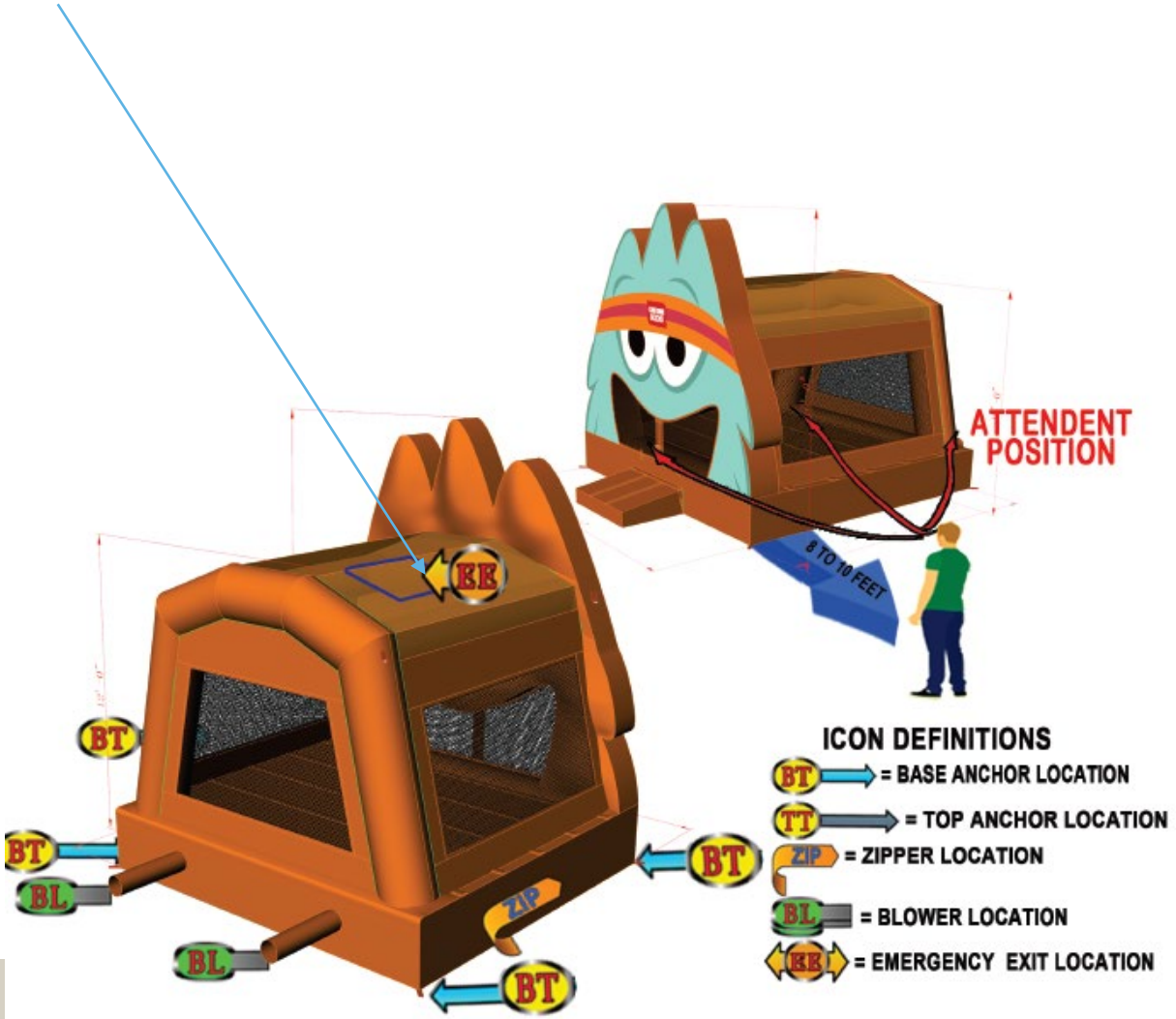


# Emergency Exits

# Emergency exits

- Fully enclosed inflatables shall have a secondary escape opening in the roof of the structure with opening on minimum 400 $in^2$
- Shall be clearly marked
- If zips or zippers are used, shall be able to open on both sides

# Emergency exits



# Emergency exits

# Ancillary/Auxiliary Equipment

# Ancillary equipment

- Manufacturer shall provide list and operating instructions for ancillary devices
- Annex A1 – specifies standards for some ancillary equipment. For example, F2397-18 for head gear

# Ancillary equipment

# Ancillary equipment

- Blowers
  - Check your local requirements for electrical certification


# Ancillary equipment

- Blowers
  - guarding for moving parts
  - non-return airflow valve
  - marking
    - HP
    - Static pressure
    - Volumetric flow

# Ancillary equipment

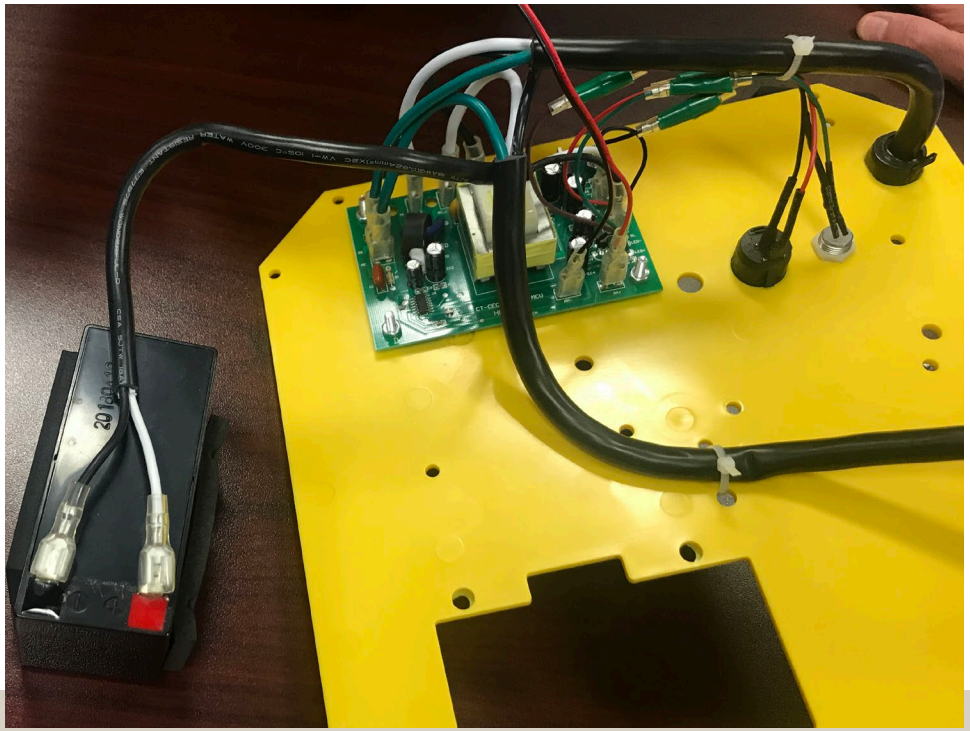
- GFCI

# Deflation Alert System

- Required for inflatables with platforms or play areas >8ft (2.4m) off the ground
- Deflation Alert System shall have:
  - Automated means to monitor the onset of deflation and **alert the operator/attendant**
  - Automated means to monitor the loss of blower function and a supplemental means to allow operator/attendants to monitor other failure modes that cause rapid deflation which can result in a loss of adequate air support to maintain the structure of the inflatable device.

# Deflation Alert System

- Deflation Alert System

# Deflation Alert System

## Watchdog Compliance Issue

- Working with Watchdog manufacturer right now
- Advisory will be released later this year
- Don't use it unless you received a field evaluation for it
- Operators/attendants to monitor the devices and the blowers periodically to ensure it's working

# Deflation Alert System

- Deflation Alert System



**Pressure Alarm**

**$ 1,590.00** excl. VAT

**Elevated Airbag Safety with the BAGJUMP Pressure Alarm**

The BAGJUMP Pressure Alarm takes safety to a new level by providing real-time monitoring and immediate responses to changes in airbag pressure. This ensures an even safer environment, offering peace of mind to both operators and users. It is fully compliant with the latest industry standards and can be easily integrated with your existing systems.

# Deflation Alarms

- Recap
  - Watchdogs currently does not meet electrical certification requirements
  - Inflatables filed to ASTM F2374 requires a deflation alert system for devices with platforms >8ft

# Ancillary equipment

- Impact Attenuation

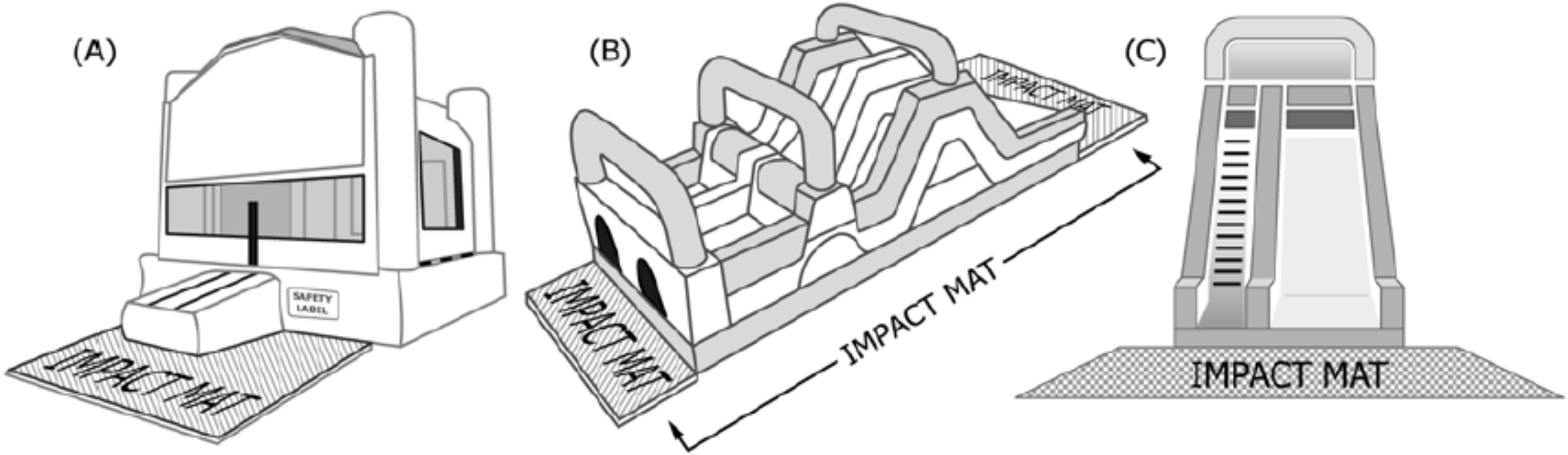



FIG. 10 Examples of Impact Mat Placement

# Ancillary equipment

- Impact Attenuation

# Ancillary equipment

- Impact Attenuation
- Q: Do I need an impact attenuation mat when setting up on grass?

5.16.6.1 (3) The natural or artificial outdoor surfacing in the landing areas shall conform to the impact attenuation requirements in Specification F1292-18ε1.

# Labels and Signages

# Manufacturer Labels

## Information Plate

Company Logo

**[Manufacturer's Name]**

[City, State, Country]

MODEL NAME/NUMBER: _____

SERIAL NUMBER: _____ DATE OF MANUFACTURE: _____

NO. BLOWERS REQUIRED: _____ OF SIZE/HORSEPOWER _____

MIN. VOLUME FLOW: _____ MIN. STATIC PRESSURE: _____

MAX. PATRONS PER DEVICE: _____ MAX. WEIGHT PER PATRON: _____

NO. ATTENDANTS NEEDED TO SUPERVISE PATRON USE OF THIS DEVICE: _____

MAX. WIND SPEED: _____

Evacuate and deflate device if sustained wind speed reaches or exceeds this!

*This inflatable device was built in conformance with ASTM International Standard F2374*

**FIG. X4.1 Sample Information Plate for an Inflatable Amusement Device**

# Manufacturer Labels

## Safety Label

# Owner/Operator

## Signages

# Owner/Operator

## Signages

# Operations/Maintenance/Inspection

# Operating Instructions

- Dimensions of the device
- Installation, operation, inspection, maintenance and storage
- Environmental conditions
- Anchoring procedures
- Maintaining proper inflation
- Safety instructions for gas blowers
- GFCI instructions
- Min. no. of installers, operators, attendants
- Location of entrances and exits

# Operating Instructions

- Installation, operation, inspection, maintenance and storage
  - Dress code for patrons
  - Safety instructions
  - Separating patrons based on size
  - Emergency procedures
  -

# Renewal Process

Technical Standards and Safety Authority
345 Carlingview Drive
Toronto, Ontario, M9W 6N9
licencingandregistration@tssa.org
Tel: 416.734.3300
Fax No: 416.231.4903
Customer Service: 1.877.682.8772
www.tssa.org

# Renewal Form for Amusement Device Business License (ADL)

***Issued* Under Ontario's Technical Standards and Safety Act**

**Amusement Devices Regulations**

**Section A:** *Please note that it is mandatory to complete all parts of the section listed below*

| | | |
|---|---|---|
| Current Amusement Device License No: | | |
| **Company** (Owner/Operator=): | | |
| Corporation No: /Business Identification No: | | Name of Contact: |
| Bus. Telephone No: | | Email Address: |
| **Please provide complete Mailing address in the fields provided below** | | |
| Street No: | Street Name: | Unit/Suite: |
| City/Town: | Province: | Postal/Zip Code: |
| Bus. Telephone No: | | Fax No: |
| **If your business location address is different from your mailing address, please complete this section** | | |
| Street No: | Street Name: | Unit/Suite: |
| City/Town: | Province: | Postal/Zip Code: |
| Bus. Telephone No: | | Fax No: |

**Section B**: *Please note that it is mandatory to complete all parts of the section listed below:*

**Classes of Amusement Devices to be operated, erected & maintained and Company's Activities**
The mechanic (s) listed below can maintain or erecting (as specified) each amusement device operated by the licensee and have knowledge of the **Technical Standards andSafety Act**, Amusement Devices Regulations, and Codes applicable to the work they perform

| Classes of Amusement Devices | Mechanic Name | Mechanic Certificate Number | Check all that apply | | Mechanic Signature |
|---|---|---|---|---|---|
| | | | Staff (employee of licence holder) | Contracted Mechanic | |
| Amusement Rides | | | | | |
| Go- Karts | | | | | |
| Water Slides | | | | | |
| Bungee Jumping | | | | | |
| Inflatable | | | | | |
| Zip Line | | | | | |
| Others (example; stimulator, free fall descending) | | | | | |

**Section C**: **Declaration of Mechanic for Amusement Devices** *(Please note that it is mandatory to complete all parts of the section listed below)*

The Applicant/Licensee Mechanic hereby states that "The Mechanic (by signing Section B), confirms that he/she is either directly employed with the licensee or is under contract with the licensee to erect and maintain the amusement devices operated by the Applicant/Licensee, pursuant to O.Reg.221/101, section 5(2)(b). The agreement is valid for the renewal season."

Applicant's Name:_____ Applicant's Signature: _____

**Operating Schedule:**

As per O.Reg 249/00 s.6(4), owners are required to submit a copy of their Operating Schedule (to the extent known) by email adoperatingschedules@tssa.org or to be made available to the inspector upon request. Approved Amusement Devices Operating Schedule Template

I am authorized to execute this form on behalf of the above noted company and understand my obligation as it relates to O.Reg 221/01 s.5 (3).

| Date (dd-mmm-yyyy) | Applicant's Official Title | Applicant's Name | Signature |
|---|---|---|---|

**FORM #: AD-010-v1**



**Section D**: *Please note that it is mandatory to complete all parts of the section listed below*

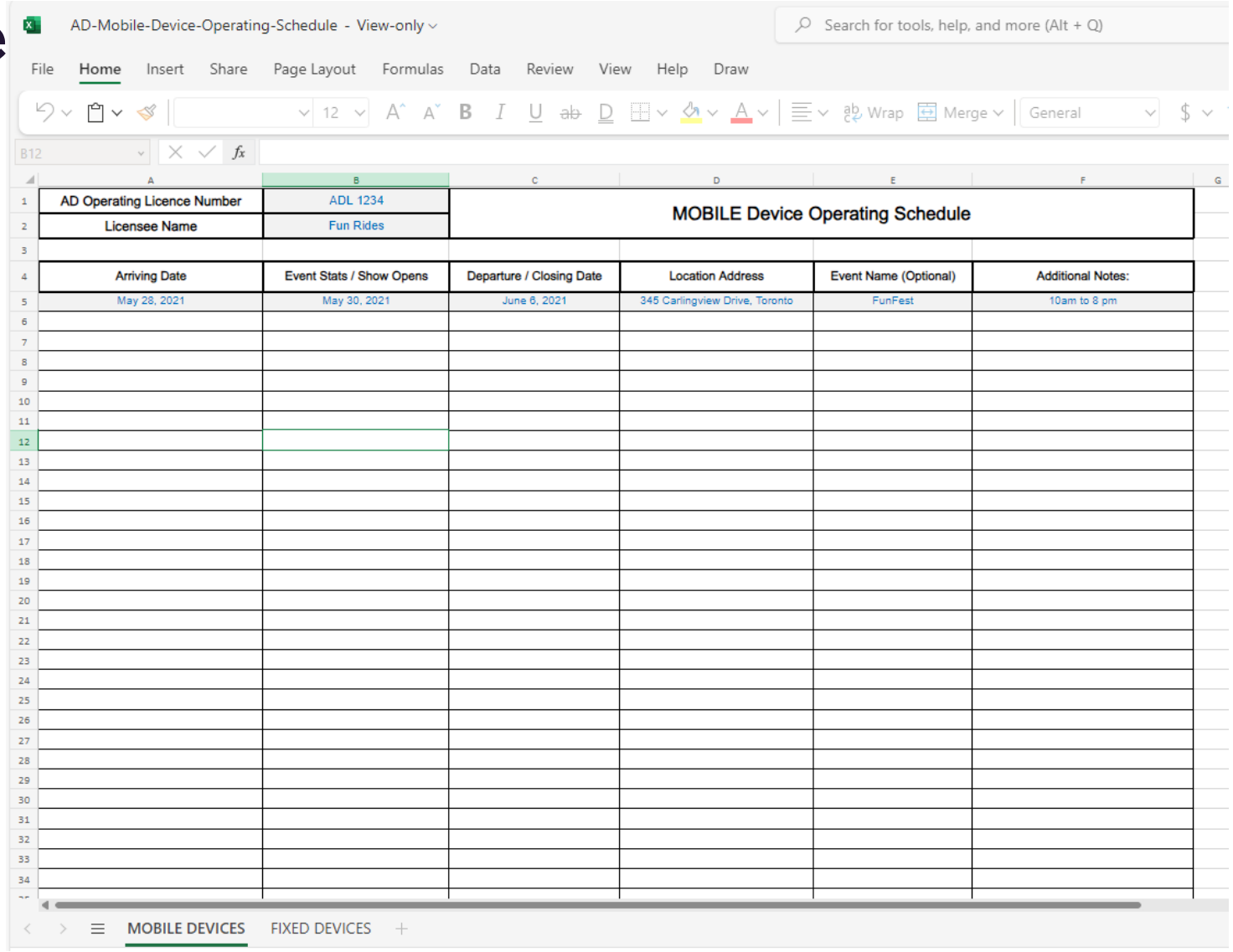
| Declaration of Applicant | Applicant's Signature |
|---|---|
| **The applicant, authorized by the Company, confirms that**<br>(a) The officials designated have full knowledge of the Technical Standards and Safety Act, Amusement Devices Regulations and the Code Adoption Document.<br>(b) Relative to O. Reg 221/01 s.5 (3) which states, every person who carries on the business of operating amusement devices shall obtain and maintain liability insurance in respect of the business in the amount not less than $2,000,000 per occurrence with a carrier licensed in Ontario and/or Canada<br>A public liability policy has been procured in respect of the business.<br>The limit of liability on the policy is a minimum of $2M per occurrence.<br>The public liability policy was purchased from an insurance company that is licensed under the Insurance Act and is therefore subject to OSFI regulations.<br>The policy has been endorsed with a 30-day notice of cancellations clause.<br>An original Certificate of Insurance is attached and forms part of this application. | |
| **If a licence is granted the licensee shall:**<br>(a) Ensure that no erection or maintenance is performed unless the work is performed by a Mechanic in Training under the supervision of a mechanic and that no mechanic is assigned work beyond the scope of his/her experience and training as stated in the Regulations.<br>(b) Ensure that the erection, operation and maintenance of each amusement device operated by the licensee is carried out in accordance with the Technical Standards and Safety Act, Amusement Devices Regulations, and the Code Adoption Document | |

**STEP 1:** Submit Renewal "Form for Amusement Business License (ADL)"

by email:
licencingandregistration@tssa.org

by mail:
Attention: Licensing & Registration Department
345 Carlingveiew Dr
Toronto ON M9W 6N9

# Operational Schedule



AD-Mobile-Device-Operating-Schedule - View-only

Search for tools, help, and more (Alt + Q)

File Home Insert Share Page Layout Formulas Data Review View Help Draw

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | AD Operating Licence Number | ADL 1234 | MOBILE Device Operating Schedule | | | |
| 2 | Licensee Name | Fun Rides | | | | |
| 3 | | | | | | |
| 4 | Arriving Date | Event Stats / Show Opens | Departure / Closing Date | Location Address | Event Name (Optional) | Additional Notes: |
| 5 | May 28, 2021 | May 30, 2021 | June 6, 2021 | 345 Carlingview Drive, Toronto | FunFest | 10am to 8 pm |

MOBILE DEVICES FIXED DEVICES

# Portal

## TSSA Client Portal

### A one-stop shop for doing business with the TSSA

**Log in or sign up for TSSA Client Portal**

TSSA is consolidating its online services. Access TSSA's highest-volume applications and perform online transactions through the TSSA Client Portal's automated self-service functions. Use the links below to find the services you need. First, sign up as a new portal user to:

- Create and update accounts
- Submit an exam request
- View exam results
- View issued order
- Submit and pay for applications
- View inspection reports and permits, licences or certificates
- Pay a TSSA invoice (account setup not required)

Learn more about the TSSA Client Portal

See FAQs on the TSSA Client Portal

**Need more TSSA Client Portal support?**

**Training and support**

### Online applications available in the TSSA Client Portal

**Inspection Scheduling:**

- Request for Installation Inspection of a Boiler & Pressure Vessel (BPV)
- Request for BPV Inspections: New Manufacturing (Shop Fabrication), Repair, Alteration, Welder/Brazer

**Public Information:**

- Public Information Requests for documents

**Training, Certifications & Exams:**

- Request an exam booking

**Customer Management:**

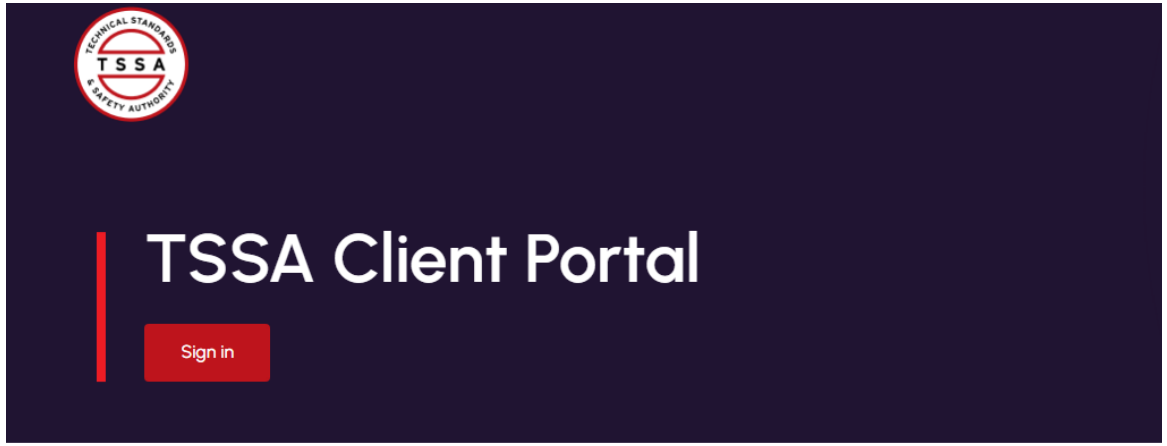
- Request for Change of Ownership (for customers of Fuels and Elevating & Amusement Devices only)
- Register in Ontario as a Fuel Safety Contractor
- Request for Ontario Licence to Transport Fuel

**Boilers & Pressure Vessels:**

- Apply for BPV Design Registration
- Request for BPV Variance

**Licensing & Registrations:**

- Renew Amusement Device Permit




**Welcome to the TSSA Customer Portal!**

Click here to Sign in as an existing portal user or Sign up as a new portal user.

Once you have successfully created your portal username and password, please link to your existing TSSA account.

If you do not have a TSSA account, please proceed to creating an account.

**Don't want to Sign In? Make Payments as a Guest**

Pay for Invoices as Guest

**Useful Links**

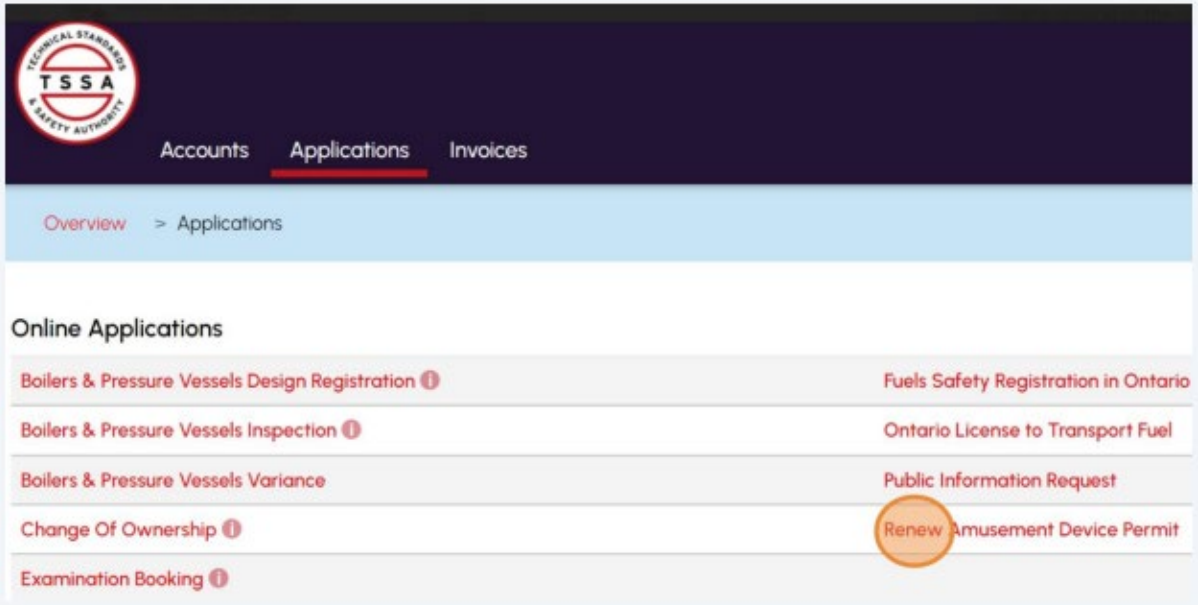
TSSA Website →

Training Documents

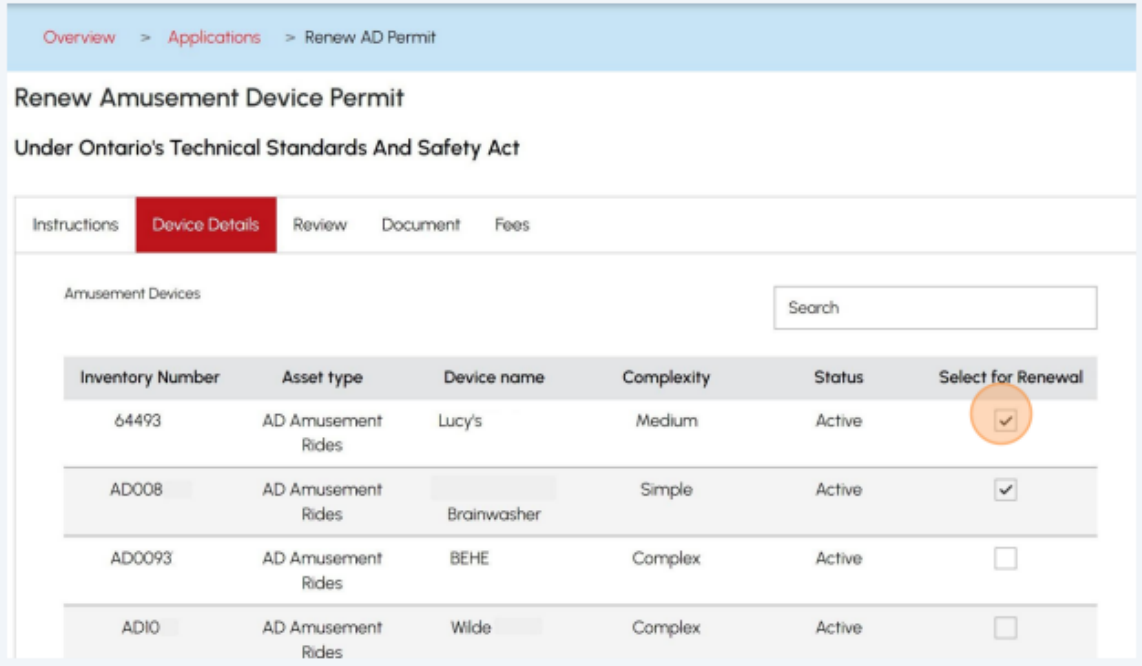
News →

# Portal

2 Click the **"Renew Amusement Device Permit"** link under **"Online Applications".**




5 Place a checkmark beside the inventory. You can select single or multiple **inventories/ devices** to be renewed.

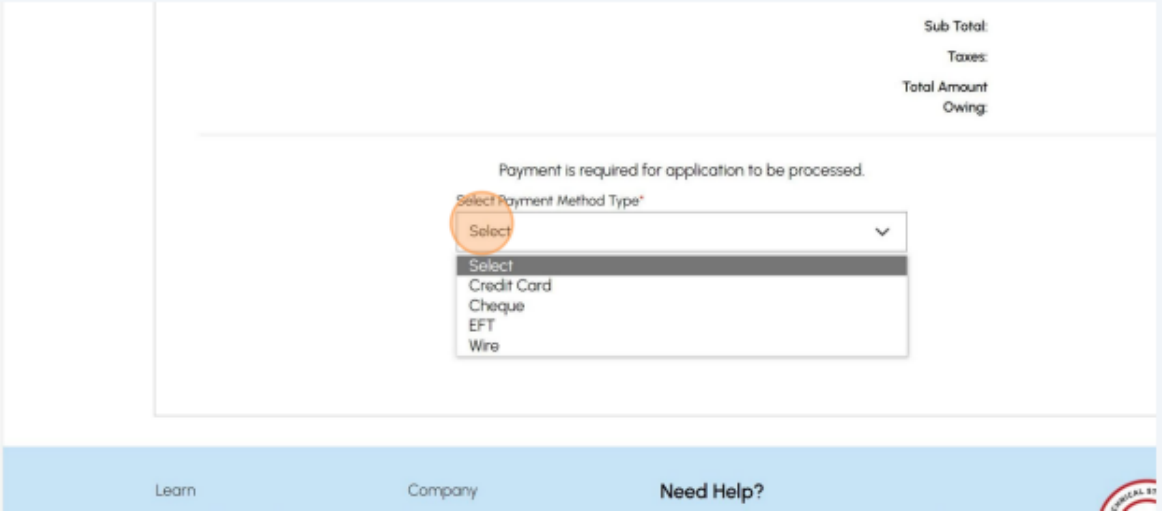


# Portal

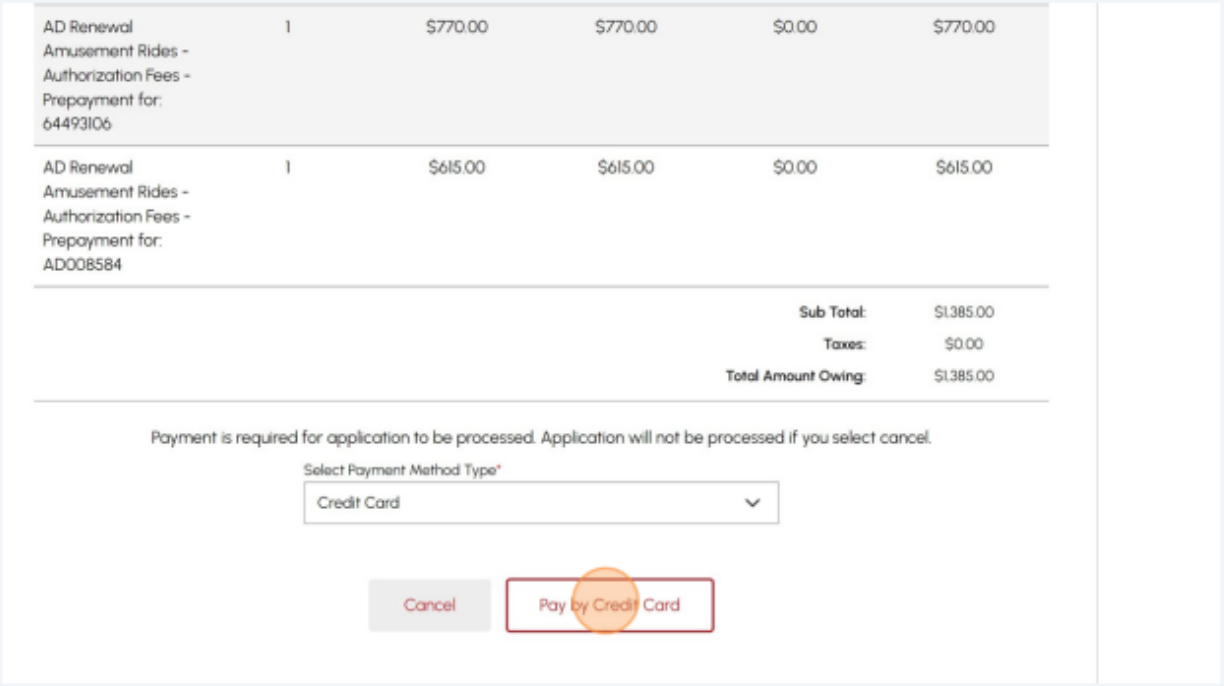
**14** The detailed **prepayment fees** for the application will appear. **Review** the details.

Select one of the following methods of payment:

- Credit Card
- Cheque
- EFT
- Wire




**17** If you select **"Credit Card"** for the method of payment. Click on **"Pay by Credit Card".**



# Portal

- Training (tssa.org)

# New Fees

## Amusement Devices Fee Schedule

*(Fees may be subject to change in the event of errors or omissions)*
All fees subject to HST where applicable

| | Fee Type | Effective May 1, 2021 to April 30, 2024 Fee | Effective May 1, 2024 Fee |
|---|---|---|---|
| **Engineering Services** [1,2,3] | | | |
| **New Installations or Major Alterations** *(Includes engineering, initial inspection, travel & 1 subsequent inspection)* | | | |
| Inflatables | Flat | $ 400.00 | $ 420.00 |
| Waterslides & Ziplines | Flat | $ 1,165.00 | $ 1,223.50 |
| Go-Karts | Flat | $ 1,570.00 | $ 1,648.50 |
| **Amusement Rides and Devices** *(including Mechanically Assisted Bounce, Bungee Jump and Free Fall Devices)* | | | $ - |
| Complex and Medium | Flat | $ 1,570.00 | $ 1,648.50 |
| Simple | Flat | $ 1,025.00 | $ 1,076.50 |
| **Other Services** | | | |
| Safety Assessment *(up to 2 hours included)* | Minimum | $ 340.00 | $ 357.00 |
| Minor A / Minor B *(includes 1 hour engineering, 1/2 hour inspection and travel)* | Minimum | $ 326.00 | $ 342.50 |
| Minor A- / Minor B- | Flat | $ 171.00 | $ 179.50 |
| Amendment to filed technical dossier | Flat | $ 171.00 | $ 179.50 |
| Variance per device | Flat | $ 500.00 | $ 525.00 |
| Hourly engineering labour rate | Hourly | $ 171.00 | $ 179.50 |
| **Expedited Services** *(Additional charge to engineering review per application - if available)* | | | |
| New or Major Alterations | Flat | $ 500.00 | $ 525.00 |
| Other Services | Flat | $ 250.00 | $ 262.50 |
| **Inspection Services** [1,2,3] | **Fee Type** | **Fee** | **Fee** |
| **Follow-up/subsequent inspection** *(includes up to 1 hour of inspection and travel) - additional hours billed at 1.5 times the regular hourly rate* | Minimum | $ 350.00 | $ 367.50 |
| **Other inspections** *(includes up to 1/2 hour inspection and travel)* | Minimum | $ 155.00 | $ 162.50 |
| **Hourly inspection labour rate** | Hourly | $ 155.00 | $ 162.50 |
| **Permits (Annual)** [1,2,7] | **Fee Type** | **Fee** | **Fee** |
| Inflatables | Flat | $ 260.00 | $ 273.00 |
| Waterslides & Ziplines | Flat | $ 625.00 | $ 656.50 |
| Go-Karts | Flat | $ 770.00 | $ 808.50 |
| **Amusement Rides and Devices** *(including Mechanically Assisted Bounce, Bungee Jump and Free Fall Devices)* | | | |
| Complex [4] | Flat | $ 1,310.00 | $ 1,375.50 |
| Medium [4] | Flat | $ 770.00 | $ 808.50 |
| Simple | Flat | $ 615.00 | $ 646.00 |
| **License, Certification, Examination Fees and Other** [1,2] | **Fee Type** | **Fee** | **Fee** |
| **Business License** *(annual)* | Flat | $ 342.00 | $ 359.00 |
| **Ontario certificate of qualification as an amusement device mechanic** *(biennial)* | Flat | $ 81.00 | $ 85.00 |
| **Examination** [5] | Flat | $ 75.00 | $ 78.50 |
| **Invigilation** [6] | Flat | $ 536.00 | $ 563.00 |
| **Other** | | | $ - |
| Installation number plate replacement | Flat | $ 64.00 | $ 67.00 |
| Replacement of an amusement device permit | Flat | $ 69.00 | $ 72.50 |

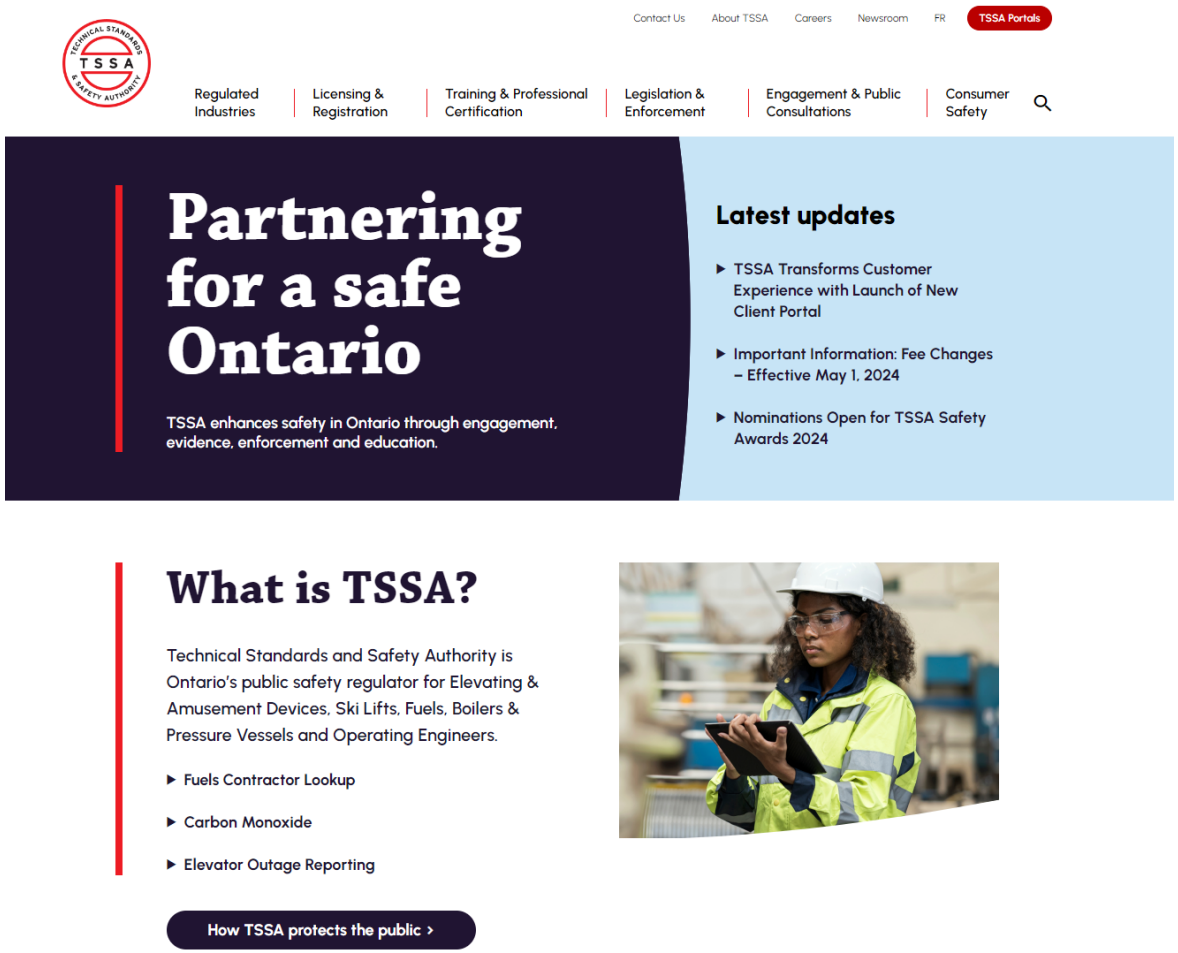
**Notes**

1 - All customer requested services to be prepaid (includes flat and minimum fees).
2 - All prepaid fees are non-refundable
3 - All minimum fees include specified hours. Excess time above the specified included hours will be billed at the applicable hourly labour rate in ¼ hour increments. All labour rates are per inspector or engineer. Flat fees relating to engineering services or initial inspection may be subject to additional billing if engineering submissions are inadequate or require excessive engineering review/initial inspection time. Overtime rates will apply for services delivered outside normal business hours at the request of the customer.
4 - Complex rides that exceed 8 hrs of periodic/operational inspection and Medium rides that exceed 5 hrs of periodic/operational inspection, will be subject to additional billing at the hourly inspection labour rate
5 - Examination fees are payable for all examinations and re-writes taken by the candidate, regardless of whether the outcome is a pass or a failure. An exam re-write counts as a separate examination and will be billed accordingly.
6 - Invigilation fees will be billed on a per invigilator per exam basis. As a result, multiple invigilation fees may be applied for one sitting if two or more examinations are administered simultaneously or two or more invigilators are required to properly administer the examination (i.e. a large number of students and/or multiple rooms are involved). Should a customer request on-site invigilation, the TSSA will determine how many invigilators are required based on the specifics of the customer request. On-site invigilation fees are charged specifically for the service of on-site invigilation, and do not replace or subsidize the regular examination fees that are charged on a per-student basis.
7 - Permit fees cover all safety administration and oversight. No separate fees charged for periodic inspections. Inspection billing only occurs when more than one follow-up inspection is required due to non-compliance. Follow-up inspection charges are billed as per the fee schedule.

Version 1.5

# https://www.tssa.org/

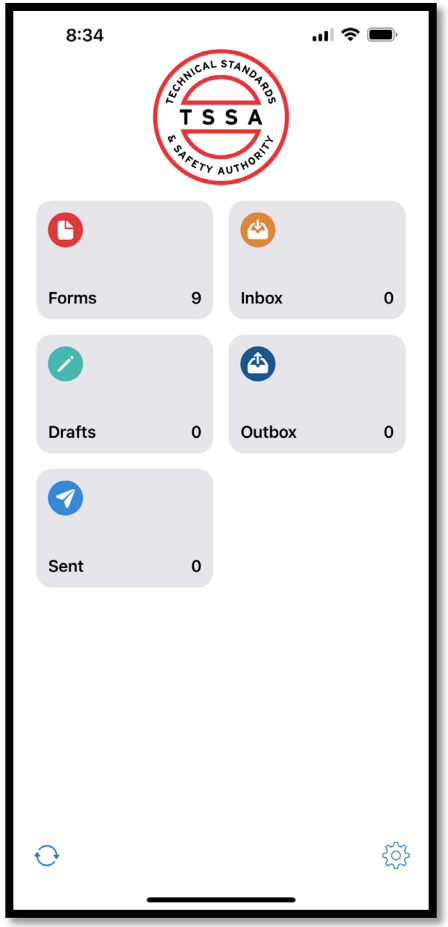
## Mini tour

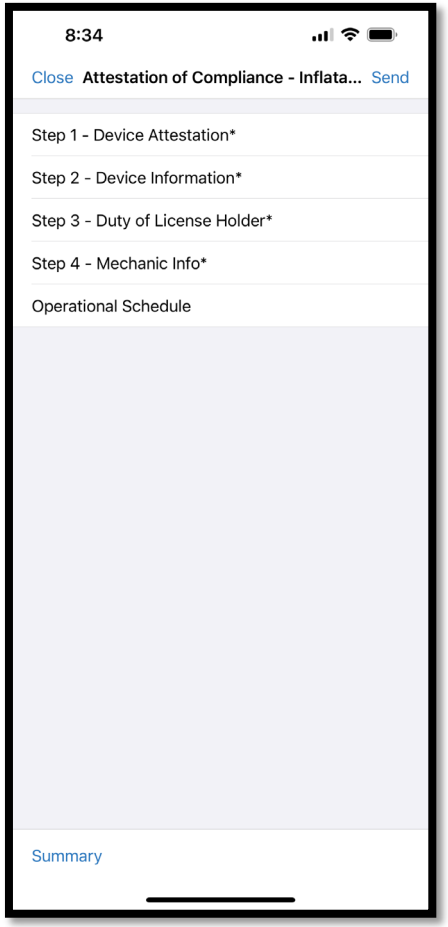


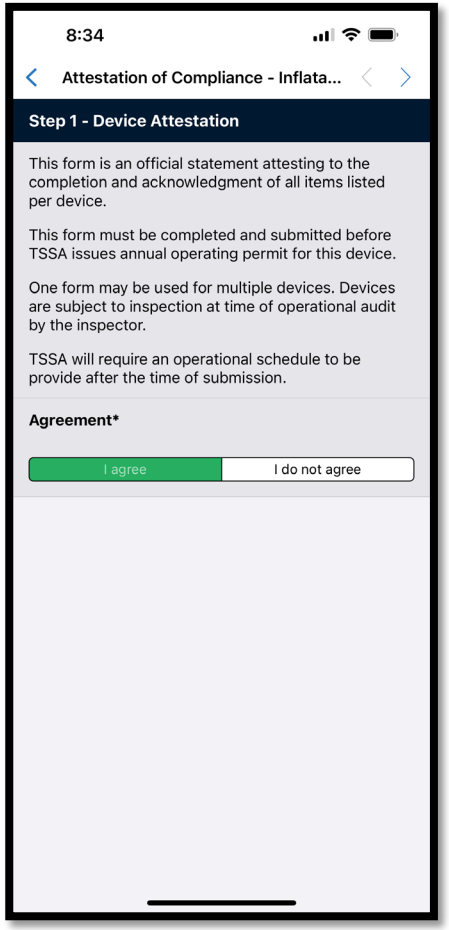
# Attestation /Periodic Inspection Process

# TSSA Inflatable Attestation Inspection Process

- Steps to download the Mobile App on iOS
- Steps to download the Mobile App on Android
- Steps to download the Mobile App on Windows
- Steps to sign in to the Mobile App




9:41

Done Attestation of Compliance -...

Attestation of Compliance - Inflatable - AD - 2024

18357196119

| Reference Number: | Form Name: |
|---|---|
| 20240223-1316306119-18357196119 | Attestation of Compliance - Inflatable - AD - 2024 |
| Submitter Name: | Date Sent on Device: |
| Sonny Silva \| ssilva@tssa.org | Feb 23, 2024 9:40:21 AM EST |

## STEP 1 - DEVICE ATTESTATION

This form is an official statement attesting to the completion and acknowledgment of all items listed per device.

This form must be completed and submitted before TSSA issues annual operating permit for this device.

One form may be used for multiple devices. Devices are subject to inspection at time of operational audit by the inspector.

TSSA will require an operational schedule to be provide after the time of submission.

**Agreement** I agree

## STEP 2 - DEVICE INFORMATION

Company Information

**Licensee Name** Sonny Testing

DEVICE LIST 1 OF 1

**Installation number** Tssa 1234

**Attach Photo Of Device Inflated From A Distance**




9:41

Done Attestation of Compliance -...

3 of 3

| | |
|---|---|
| ...vledgement that all documentation ...bove is to be on site when operating | Yes |
| Acknowledgement of Staking and Anchoring requirements in CAD 541-21 | Yes |
| Acknowledgment of advisory AD 540/19 "Drop off inflatables" | Yes |
| AD Tag present and attached to Inflatable | Yes |
| Inflatable Device is free of physical damage | Yes |
| Height signs and warning labels are present | Yes |
| Correct Inflation of device as per dossier | Yes |
| Blowers certified for use in Canada | Yes |
| All Previous orders resolved | Yes |

## STEP 3 - DUTY OF LICENSE HOLDER

A licence holder shall ensure with respect to each amusement device operated by the licence holder that the device is operated in accordance with this Regulation, the technical dossier filed with the director and the manufacturer's instructions, where applicable, relating to the device;

licence holder shall ensure that the maintenance of each amusement device operated by the licence holder includes,

the carrying out of all safety-related recommendations issued by the manufacturer with respect to the amusement device;





the checking and examination of all parts and functions at intervals sufficient to ensure the safe operation of the amusement device;

the cleaning, lubricating and adjusting of all parts at intervals sufficient to ensure the safe operation of the amusement device; and

the repairing or replacing of worn, defective, damaged or broken parts on the amusement device. O. Reg. 221/01, s. 11 (3).

**Agreement** I agree
**License Holder Name** Sonny Silva
**Signature**

## STEP 4 - MECHANIC INFO

**Mechanics Name** Sonny Silva
**Mechanics Licence Number** 065
**Phone Number** 4164078890
**Mechanics Signature**

## OPERATIONAL SCHEDULE

Schedule

SCHEDULE 1 OF 1

Schedule

Technical Standards and Safety Authority

# Ontario Amusement Device Permit

*Technical Standards and Safety Act*

This Permit is issued to allow the operation of the following Amusement Device:

**Device Name:** Inflatable Slide
**Permit Number:** 000399474
**Type:** Inflatable
**Device Number:** 64740689

**LANSDOWNE STADIUM GP INC**
1015 BANK ST
OTTAWA ON K1S 3W7

Expires on: 2024-12-31

Issued by the Director

**OPERATION OF THIS DEVICE WITHOUT A VALID PERMIT IS AN OFFENCE UNDER THE ACT.**
This permit shall be kept in the vicinity of the amusement device to which it relates.

Issued under the ***Technical Standards and Safety Act, 2000***
Amusement Devices Regulation (O. Reg. 221/01)

# Inflatables exempt from Attestation

- Inflatable Parks, Big Inflatable Events


Microsoft Teams

# Inflatable Meeting Prep

2024-04-29 20:32 UTC

Recorded by
Sonny Silva

Organized by
Joelle Feliz Javier

# Operational Inspections

# Submitting Operational Schedule

# Operational Inspections

- Inflatable Operational
  - Goal is to get to each operator once in season

- Operating Schedule – update regularly

# Operational

## Field inspection

- Operational check list

Technical Standards and Safety Authority

www.tssa.org

Clear All | Print | Save

**Amusement Device Operational Checklist**

***Technical Standards and Safety Act***

Amusement Devices Regulation

| | | | |
|---|---|---|---|
| Inspector Name: | | Date (dd-mmm-yyyy): | |
| Location of Inspection: | | | |
| Device No.: | | Device Serial No.: | |

| Description | Pass | Fail | N/A | Comments |
|---|---|---|---|---|
| **SAFETY SIGN AND CLEARANCES** | | | | |
| 1. Safety Instructions | | | | |
| 2. Height Restrictions | | | | |
| 3. Fencing Around Ride | | | | |
| 4. Guarded Exits | | | | |
| 5. Ride Set Up Location | | | | |
| 6. PCU Clearances | | | | |
| 7. Pathway to Ride | | | | |
| **OPERATOR RESPONSIBILITIES** | | | | |
| 1. Number of Attendants | | | | |
| 2. Attendant ID | | | | |
| 3. Attendant Alertness | | | | |
| 4. Ride Secured When Not In Use | | | | |
| 5. Pre-loading | | | | |
| 6. Correct Stopping | | | | |
| 7. Restraint Fastening | | | | |
| 8. Over Loading | | | | |
| 9. Under Loading | | | | |
| **AMUSEMENT DEVICE RIDE** | | | | |
| 1. Ride Speed | | | | |
| 2. Ride Duration | | | | |
| 3. Wind Speed | | | | |
| 4. Ride Cleanliness | | | | |
| **DOCUMENTATION** | | | | |
| 1. Daily Log Books | | | | |
| 2. Training Records (Passports) | | | | |
| 3. Emergency Procedure | | | | |
| **OTHER OBSERVATIONS** | | | | |

# Operational

## Safety signage and clearances

- Safety instructions on the unit.
- Height reference sign for attendant.
- People kept from blower area?

- Set up, level? power lines?
- Space between multiple units

| SAFETY SIGN AND CLEARANCES | | | | |
|---|---|---|---|---|
| 1. Safety Instructions | | | | |
| 2. Height Restrictions | | | | |
| 3. Fencing Around Ride | | | | |
| 4. Guarded Exits | | | | |
| 5. Ride Set Up Location | | | | |
| 6. PCU Clearances | | | | |
| 7. Pathway to Ride | | | | |

# Operational

## Operator / attendant

- Correct number of them?
- Are they easily identifiable?
- Are they paying attention?
- How are people stopped when
  There is no attendant?

Are they loading correctly?

| OPERATOR RESPONSIBILITIES | | | | | |
|---|---|---|---|---|---|
| 1. Number of Attendants | | | | | |
| 2. Attendant ID | | | | | |
| 3. Attendant Alertness | | | | | |
| 4. Ride Secured When Not In Use | | | | | |
| 5. Pre-loading | | | | | |
| 6. Correct Stopping | | | | | |
| 7. Restraint Fastening | | | | | |
| 8. Over Loading | | | | | |
| 9. Under Loading | | | | | |

# Operational

## Attendants

- Correct number of them?
- Are they easily identifiable?
- Are they paying attention?
- How are people stopped when
  There is no attendant?
  Are they loading correctly?

# Operational

## attendants

# Operational

## No self-serve rides

# Operational

## Checklist

- Wind speed, what is max? How to tell on site?

| AMUSEMENT DEVICE RIDE | | | | |
|---|---|---|---|---|
| 1. Ride Speed | | | | |
| 2. Ride Duration | | | | |
| 3. Wind Speed | | | | |
| 4. Ride Cleanliness | | | | |

# Operational

## Blowers and Generators

-Are blowers/gens CSA?

-Is the blower Anti syphon means functioning?

-Is the blower grounded?

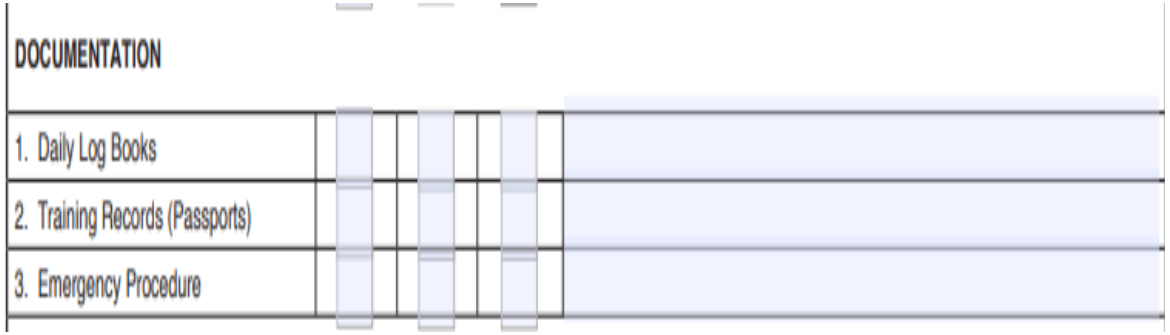
-Is GFCI required?

-Is generator exhaust being sent into the inflatable?

# Operational

## Checklist

- Set up log, daily inspections and the technical dossier are all on site and up to date.
- Operator training record on site.
- Operator should know emergency procedures for, blower outage, fabric tear, etc.



| DOCUMENTATION | | | | |
|---|---|---|---|---|
| 1. Daily Log Books | | | | |
| 2. Training Records (Passports) | | | | |
| 3. Emergency Procedure | | | | |

# Operational

## Electrical equipment

# Incident Reporting

https://www.tssa.org/

Contact Us | About TSSA | Careers | Newsroom | FR | TSSA Portals

Regulated Industries | Licensing & Registration | Training & Professional Certification | Legislation & Enforcement | Engagement & Public Consultations | Consumer Safety

# Partnering for a safe Ontario

TSSA enhances safety in Ontario through engagement, evidence, enforcement and education.

## Latest updates

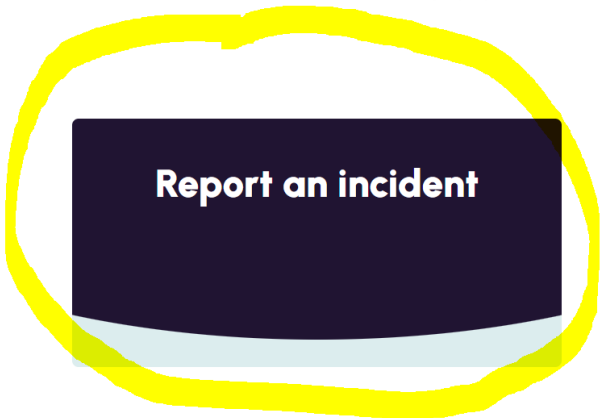
- TSSA Transforms Customer Experience with Launch of New Client Portal
- Important Information: Fee Changes – Effective May 1, 2024
- Nominations Open for TSSA Safety Awards 2024

## What is TSSA?

Technical Standards and Safety Authority is Ontario's public safety regulator for Elevating &

 Scroll Down on home page to see incident reporting

# I want to...



- Report an incident
- Look up a fuels contractor
- Change or update my business information
- Book an exam
- Request a public record
- Contact Ombudsman
- Make a payment online
- Look up a BPV Organization (COA)
- Look for a form or document

Incident reporting is a key part of making Ontario a safe place to work, live and play. For industries regulated by the Technical Standards and Safety Authority (TSSA), reporting all incidents is the law.

Generally speaking, an "incident" is an occurrence that results in adverse consequences to people or property, although each regulated industry has guidelines that specify the exact definition of an incident.

Reporting incidents protects the public and helps industries prevent future issues.

You must advise the TSSA of all reportable incidents by calling 1-877-682-TSSA (8772) and pressing 1 to be connected to our incident hotline managed by the Spills Action Centre.

Please call 9-1-1 for emergencies that require immediate assistance from the police, fire department or ambulance.

## Incident Reporting Based on Industry Sector

### Amusement Devices (AD)

To report an incident involving an amusement device, please refer to the **AD Incident Reporting Guidelines (pdf)** and complete the **Amusement Device Incident Reporting Form (pdf)**.

| Elevating and Amusement Devices Safety Division | Ref. No.: | Rev. No.: |
|---|---|---|
| | 531 / 09 | 1 |
| DIRECTOR'S GUIDELINE | Date: | Date: |
| | January 6, 2010 | November 20, 2012 |

**Subject:** Guideline for the reporting of
1) incidents
2) equipment exposed to harmful events affecting safe operation and
3) equipment found in a hazardous state (by a mechanic or license holder)

**Applicable to:** All Amusement Device Licence Holders, Contractors, Consultants, and Certificate Holders

## 1. Introduction

Ontario Regulation 221/01 (Amusement Devices) as amended by O.Reg 249/08, which came into effect on January 1, 2009, contains updated requirements related to the reporting of incidents.

## 2. Purpose of this Guideline

This guideline is intended to aid in compliance with section 17 of Ontario Regulation 221/01 (Amusement Devices) titled **Reporting of Incidents**. Section 17 requires that any incident involving an amusement device be reported to the Director. The specifics of this requirement vary depending on the nature of the incident.

The **Reporting of Incidents** section of the regulation addresses issues related to;

- types of incident(s),
- harmful events which may impact the safety of a device,
- devices found in a hazardous condition,
- who should report, method of reporting and reporting timelines,
- requirements related to preserving the scene,
- returning a device back into operation, and
- thorough investigation of incidents.

A copy of section 17 is attached as Appendix 'A'.

# Incident Reporting

Clear Form | Print Form

**Amusement Devices Incident Reporting Form**
as required by O.Reg 221/01

TYPE - LOCATION - SHUTDOWN

| In case of death, serious injury or immediate hazard call: | 877-682-8772 | Email: ad-incident@tssa.org ⊗ = Shut Down ☎ = Call | AMUSEMENT DEVICE Installation Number |
|---|---|---|---|

**Occurrence Type**

- ☐ death *s17.(1)* ⊗☎ ☐ injury with medical attention *s17.(1)* ⊗☎ ☐ injury without medical attention *s17.(2)*
- ☐ equipment-property damage *s17.(2)* ☐ equipment in a hazardous condition *s17.(4,5)* ⊗☎
- ☐ fire, impact, lightning strike *s17.(3)* ⊗☎
- ☐ voluntary reporting of an instance of elevated exposure to risk *(No Injury and not covered in s17.(1) through s17.(5))*

**Device Type**

☐ Go-Kart ☐ Water Slide ☐ Bungee ☐ Zip Line ☐ Inflatable Bounce ☐ Roller Coaster Other (specify):

| Ride Name | Location / Address of the Amusement Device Incident | Occurrence Date | Occurrence Time |
|---|---|---|---|
| | | | |

**Note: If the incident type is 17.(1), (3), (4) or (5), the device shall not to be returned to service until:**

☐ **Cause identified, and** ☐ **Safety of the device is restored, and** ☐ **Inspector gave permission to return to service**

**or**

☐ **Returned to service per the Incident Reporting provision 531/09 s5. See completed attestation report attached.**

# Incident Reporting

PERSONS

| Injured Person or N/A (use one form per each injured person) | | N/A ☐ |
|---|---|---|
| **Name:** | **Address:** | **Telephone No:** |
| | | |
| **Sex:** ☐ Male ☐ Female | **Age:** | |
| **Describe injuries and medical / hospital help received (use additional sheet if required)** | | |
| | | |

| **Witness** – if any witness to the incident | | |
|---|---|---|
| **Name:** | **Address:** | **Telephone No:** |
| 1. | | |
| 2. | | |

| **Reported by:** | ☐ Owner | ☐ Contractor | ☐ Other: | |
|---|---|---|---|---|
| **Completed by:** | **Name** | | **Date:** | |
| | | | **Telephone:** | |
| | **Position** | | **Fax:** | |
| | | | **Email:** | |

# Incident Reporting

| Summary of Reporting Requirements | | | | |
|---|---|---|---|---|
| **Reg** | **Occurrence Type** | **Notification** | **Written Reports** | **Device Status** |
| **s17.(1)** | Death<br>Injury requiring services of a medical practitioner | Licence holder must notify the Director immediately | The licence holder shall submit a written report to the Director within 24 hours of becoming aware of the incident | Shut Down until 17.(7) fulfilled.<br>See also incident reporting guideline 531/09-r1 provision 5. |
| **s17.(2)** | Injury other than 17.(1) or property damage | Licence holder must notify the Director within 24 hours of becoming aware | The licence holder shall submit a written reports to the Director within 7 days of becoming aware | Return to Service per License holders standard operating procedures |
| **s17.(3)** | Equipment exposure to harmful events impacting safe operation | | | Shut Down until 17.(7) fulfilled. |
| **s17.(4)** | Mechanic finds equipment in a condition that constitutes an immediate hazard | The mechanic must notify the licence holder immediately | The licence holder shall submit a written report to the Director within 7 days of the finding | |
| **s17.(5)** | Licence holder finds or becomes aware of equipment in a condition that constitutes an immediate hazard | The licence holder must notify the Director within 24 hours of the finding | The licence holder shall submit a written report to the Director within 7 days of the finding | |

17.(7) No person shall return an amusement device referred to in subsection 17.(1), 17.(3), 17.(4) or 17.(5) to service until the cause of the incident, occurrence or condition is identified, the safety of the device restored and an inspector gives permission to return the device to service.

# Incident Reporting

| **Attestation for Return to Service** (if other than *Critical Injury* defined by OHS Act O.Reg 834) | |
|---|---|
| **Note: ALL items MUST apply before returning a device to service** | |
| ☐ Incident was investigated by a TSSA certified amusement Device Mechanic or Ontario Licensed Professional Engineer | 5.b) i) |
| ☐ The incident was not a result of an electrical or mechanical failure or deficiency of the device | 5.b) ii) |
| ☐ Operators at this device are competent in their load / unload / patron assist duties and the incident was not as a result of operator error | 5.b) iii) |
| ☐ The incident and return to service was reported immediately to the Director by telephone. (877-682-8772) | 5.b) iv) |
| ☐ This report will be sent within 24hrs. | 5.b) iv) |
| ☐ The injury is less severe than ***Critical Injury*** as define by Occupational Health and Safety Act | 5.b) v) |
| Mechanic / Engineer Name: | Mechanic ADM # Phone: |

# Incident Reporting

NEAR MISSES

# Incidents

**Table B1: State of Safety Measures for Amusement Devices (2014 – 2023)**

| Description | Fiscal Year | | | | | | | | | | Total | Avg. | 5-year Trend |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | | | |
| Incidents | 521 | 647 | 922 | 439 | 709 | 1,195 | 1378 | 97 | 543 | 995 | 7,446 | 745 | Increasing |
| Non-Permanent Injuries | 454 | 585 | 848 | 377 | 661 | 1,100 | 1,235 | 89 | 527 | 979 | 6,855 | 686 | Increasing |
| Permanent Injuries | 25 | 24 | 42 | 33 | 23 | 29 | 26 | 1 | 8 | 8 | 219 | 22 | No Trend |
| Fatalities | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | No Trend |
| Observed Injury Burden (FE/mp) | 0.02 | 0.08 | 0.11 | 0.08 | 0.11 | 0.15 | 0.15 | 0.12 | 0.01 | 0.03 | N/A | 0.09 | N/A |

# Incidents Quiz

- Check Teams Poll


# Ask a Friend (TSSA)

# 2018-2023 Inflatable Incidents Worldwide

# Phoenix

**May 1, 2024**

## Toddler of Phoenix first responder dies after bounce house goes airborne

By Sydney Bishop and Brammhi Balarajan, CNN

2 minute read ·

# UK

## Entrapment - Inflatables

## IMMEDIATE ACTION REQUIRED.

On 25.08.2023 PIPA released a report into the safety handrails located on inflatable slides.

The report was conducted in response to an inspector question relating to a recent incident in Europe, where a child tragically lost its life by hanging on a webbing rope in the middle of a play zone inflatable. Our thoughts and condolences go out to the family.

The inflatable in question was a FAIL under EN14960 as the webbing loop was located around 1,000mm from the bed. A tragedy which should never have happened, and we sincerely hope the manufacturers are held accountable.

As some of you may be aware, EN14960 requires a fully bound opening with a lower edge limit above 600mm from the platform to be tested using 2 head probes. One representing a child head, the other representing a child's shoulders. The test involves 1 simple rule, if head probe 1 fits, The shoulder probe 2 must be able to follow to avoid a hanging risk.

The results can be simplified as follows:

- If shoulder probe 2 follows, it's a PASS.
- If shoulder probe 2 doesn't follow, it's a FAIL.

In the case of Betterbounce slide handrails, and many other manufacturers, the lower edge limit of these handrails falls way under this 600mm rule so is **NOT in an area that requires testing** and as such has **always been a PASS.**

Afterall, the consequences of getting stuck at 500mm does not lead to hanging and according to BSEN14960 the child can remove itself freely without injury.

# UK

## Entrapment - Inflatables

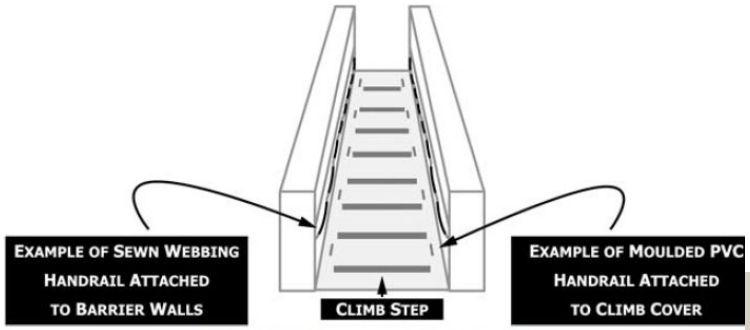


FIG. 11 Slide Ingress, Entry Climb Area

# Entrapment

## CPSC Warns Consumers to Immediately Stop Using "My Bouncer Little Castle" Bounce Houses Due to Strangulation Risk; Death of 4-Year-Old Boy Reported

# AD Minor Alterations

# Minor B and Minor B- Alterations

## AD 544-22

| Type of Work | Who can submit | Inspection Required | Ride can operate prior to inspection? |
|---|---|---|---|
| Major | Engineer | Yes | No |
| Minor A | Engineer | Yes | Yes (field test) |
| Minor A- | Engineer | No | Yes (field test) |
| **Minor B** | **Mechanic** | **Yes** | **Yes** |
| **Minor B-** | **Mechanic** | **No** | **Yes** |
| Amendment | Engineer | No | Yes |

# Question

- How do you know what type of alteration needs to be submitted?
  - Check Advisory 544-22
  - Check with your submitter, inspector or TSSA engineering ☺

# Alteration Checklist

## AD 544-22

| 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 |
| | | **Job Reference:** | | | Type of Submission Required | | | |
| | **2** | **Alterations to Inflatables** | | | | | | |
| | **2.1.** | Anchoring and staking | | | | | | |
| | | | (a) Number of anchor points | | Minor A | Minor A | | |
| | | | (b) Type of anchors | | Minor A | Minor A | | |
| | | | (c) Weight of anchors | | Minor A | Minor A | | |
| | **2.2.** | Design | | | | | | |
| | | | (a) Containment walls | | Major | Major | | |
| | | | (b) Protective covers (fall protection) | | Minor A | Minor A | | |
| | | | (c) Slide covers (for slide surface) | | Minor A | Minor A | | |
| | **2.3.** | Ancillary equipment | | | | | | |
| | | | (a) Blower | | Major | Minor A | mrr | Minor B- |
| | | | (b) Deflation alarm | | Minor A | Minor B- | mrr | Minor B- |
| | | | (c) Impact attenuation mats | | n/a | Minor B- | mrr | Minor B- |
| | | | (d) Other equipment (ex. VR goggles, lights and etc.) | | Minor A | Minor A | mrr | Minor B- |
| | **2.4** | Multi-piece inflatables | | | | | | |
| | | | (a) Change in configuration (ex. Provisions to operate 1 pc w/o other pcs) | | Minor A- | Major | | |

# Thank you

**Contacts:**

**Workforce Planning: edadinspection@tssa.org**

**Licensing and Registration: licensingandregistration@tssa.org**

**Engineering Program Support: addesignsubmittal@tssa.org**

**Customer Service: customerservices@tssa.org**

PARTNERING
FOR A
SAFE ONTARIO