

Our Ref: APPARSA-2019-02

Electrical and Mechanical Engineering Group

2 September 2019

Attn: All Amusement Ride Operators, Ride Managers, and Specialist Professional Engineers in Amusement Ride Engineering

Dear Sir/Madam

REVIEW OF ANNUAL OPERATING PERMIT INSPECTION PROCEDURES FOR WATER RIDES, AND REMINDER TO RIDE OPERATORS TO CHECK FOR STRUCTURAL DEFECTS DURING ROUTINE MAINTENANCE OF WATER RIDES

This circular is to inform the industry of the change in the annual operating permit (OP) inspection procedures for water rides, and to remind the ride operators to check for structural defects during routine maintenance of water rides.

Review of annual operating permit inspection procedures for water rides

2. Currently, for OP applications and renewals, ride operators are required to engage a civil or structural professional engineer (PE) to inspect key structural elements (both concrete and non-concrete) that form part of the amusement ride, and submit the civil or structural PE's inspection report to BCA.
3. During BCA's recent OP and routine inspections on water rides, there were observations of corrosion, spalling of concrete, or cracks in some ride structures. Such defects could be caused by the presence of or contact with chlorinated water, which is detrimental to the structural elements of the rides. If left unchecked, the defects may propagate and affect the structure safety of the rides as well as the safety of users.
4. For water rides whose structural elements are exposed to aggressive environment (e.g. chlorine, marine environment, etc.), a hands-on inspection is to be carried out during the annual OP inspection to ascertain whether there is any surface or underlying structural defects. The hands-on inspection comprises a close-up visual inspection with tactile assessment (i.e. physical contact with the structural elements). The tactile assessment will involve the use of probing tools (e.g. tapping rod) to detect underlying defects (e.g. delamination and hollowness in concrete structures which could give an indication of early signs of spalling concrete). This requirement will be applicable to the relevant OP applications submitted in ARIES on or after **2 December 2019**.
5. The civil or structural PE must ensure there is sufficient coverage of the tactile inspection on the concrete structural elements. Structural elements of the amusement ride in areas accessible by users shall be included in the inspection. Where applicable, temporary access (e.g. staging) is to be provided to facilitate the hands-on tactile inspection. Please refer to the link https://www.bca.gov.sg/AmusementRideSafety/others/Annual_Inspection_Guide_V1_1.pdf, for the amendments in blue to Section 5.1 of BCA's Annual Inspection Guide for Amusement



Rides in Singapore. The civil or structural PE must include the above findings in their inspection report submitted to BCA during OP renewal.

Operators to check for structural defects during routine maintenance of water rides

6. Under Section 31(1)(a) of the Amusement Rides Safety Act and Regulation 16(1)(d) of the Amusement Rides Safety Regulations 2011, a ride operator must ensure that an amusement ride is at all times maintained in a state of good repair and in a safe working condition, and in accordance with the necessary requirements (see **Annex A** for details). BCA would like to remind ride operators to inspect their water rides closely and look out for signs of defects, such as corrosion, spalling of concrete, or cracks in the ride structures, during routine maintenance of the rides. Ride operators should then carry out the necessary repairs on their water rides thereafter. The repairs should ensure that adequate durability protection is provided against chlorinated water splashing, which is detrimental to the structures.

7. Please convey the contents of this circular to all relevant staff in your organisation.

Clarification

8. For further information or clarification, please submit your enquiry through BCA's Online Feedback Form at <https://www.bca.gov.sg/feedbackform> or call us at (65)1800-342 5222 (1800-DIAL BCA). Thank you.

Yours faithfully



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GROUP DIRECTOR
ELECTRICAL AND MECHANICAL ENGINEERING GROUP
for COMMISSIONER OF AMUSEMENT RIDES SAFETY



ANNEX A – Regulatory requirements on ride operators to ensure proper maintenance of amusement rides

Section 31 of Amusement Rides Safety Act- Amusement ride to be maintained in safe condition

31.—(1) It shall be the duty of the person responsible for an amusement ride —

- (a) to ensure that the amusement ride is at all times maintained in a state of good repair and in a safe working condition; and
- (b) to comply with such directions as the Commissioner may give from time to time concerning the maintenance and safety of the amusement ride.

(2) If the person responsible for an amusement ride contravenes subsection (1), he shall be guilty of an offence and shall be liable on conviction —

- (a) to a fine not exceeding \$100,000 or to imprisonment for a term not exceeding 12 months or to both; and
- (b) in respect of a continuing contravention, to an additional fine not exceeding \$500 for each day or part thereof during which the contravention continues,

and if the contravention continues after the conviction, the person shall be guilty of a further offence and shall be liable on conviction of this further offence to a further fine not exceeding \$1,000 for every day or part thereof during which the contravention continues after conviction.

Regulation 16 of Amusement Rides Safety Regulations 2011- Duties of operators of amusement rides

16.—(1) The operator of an amusement ride shall, in addition to any duty imposed on him under the Act —

- (d) ensure that the amusement ride is at all times maintained in accordance with —
 - (i) the maintenance requirements as specified by the designer or manufacturer of the amusement ride; or
 - (ii) in the absence of any maintenance requirements referred to in sub-paragraph (i), such other maintenance requirements as devised or endorsed by the qualified person appointed under section 6(2)(a) or 24(2)(a) of the Act or regulation 14(2)(a) in respect of the amusement ride;

