Technical Safety Authority of Saskatchewan

SAFETY Bulletin

March 2, 2020

TO: ALL AMUSEMENT RIDE AND DEVICE OWNERS OPERATING IN THE PROVINCE OF SASKATCHEWAN

RE: WELDING AND NON-DESTRUCTIVE TESTING (NDT) OF STRUCTURAL REPAIRS

This safety bulletin is being provided to all amusement ride and device owner/operators operating in Saskatchewan, to inform and prevent delayed operation of rides and devices which require Welding and NDT by the ride manufacturer, and no documentation is available.

When a crack or other metal defect (such as lamination and delamination tears) are observed in a structure or component of an amusement ride or device, the ride or device shall be immediately removed from operation.

Verification of this Welding and NDT testing is outlined in the Safety Bulletin SB-ARD1.

Failure to produce such documentation may cause delays in approvals for operation.

Thank you for your assistance in this safety issue.

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SAFETY Bulletin

AMUSEMENT RIDES AND DEVICES SAFETY BULLETIN

Welding and Non-Destructive Testing (NDT) of Structural Repairs

When a crack or other metal defect (such as lamination and delamination tears) are observed in a structure or component of an amusement ride or device, the ride or device shall be immediately removed from operation.

An assessment by the Original Equipment Manufacturer (OEM) is required to determine whether the metal defect is critical to the safe operation of the ride or device. The ride or device may be returned to service when:

1. The OEM has completed the assessment noting that the ride or device may operate without repair;
2. The OEM has completed the assessment recommending a crack monitoring program and noting limitations before the repair becomes necessary; or
3. A repair has been completed in accordance with a repair plan.

Repair Plan and Repair Report

The OEM shall provide and/or approve a repair plan to return the ride or device to its original design performance. The repair plan shall provide full and complete details describing the repair, including:

- Description of the amusement ride or device (name, serial number, etc.);
- Repair preparations;
- Welding details such as groove or fillet details; in accordance with AWS or CSA standards;
- Welding procedure criteria including welding process, base metal, filler metal, preheats, position, electrical characteristics, etc. in accordance with AWS or CSA standards;
- The Welding Procedure Specification (WPS) number and revision (or sufficient details for the repair company to select a WPS);
- Non-destructive testing (NDT) requirements and acceptance criteria;
- Other acceptance and workmanship criteria for repair evaluation;
- Any other requirements established by the OEM or within the applicable standard used for repair;
- All welding shall be performed by a certified welder in accordance with AWS or CSA standards; and
- All welding inspections shall be performed by a certified or competent welding inspector.

The repair plan shall be documented on the Amusement Rides and Devices Repair Report.

Where an OEM is no longer in business, the actions required by the OEM shall be performed by a professional engineer[1] .

[1] "Professional engineer" means a professional engineer as defined in the Engineering and Geoscience Professional Act.

A Welding Procedure Specification (WPS) shall be available either by the OEM or repair company. WPS's shall be in accordance with AWS or CSA standards.

All companies and persons performing welding shall be certified in accordance with the standard~~s~~ of *ASTM F770-2015.* Ownership, Operation, Maintenance and Inspection of Amusement Rides and Devices, in Canada.

This includes:

- *CSA W47.1 Certification of companies for fusion welding of steel*
- *CSA W47.2 Certification of companies for fusion welding of aluminum*
- *CSA W59 Welded Steel Construction*
- *CSA W59.2 Welded Aluminum Construction*

(Note: ASTM F770 now references welding per F1193-16 requirements)

All NDT shall be performed by persons certified for the method of NDT to *CGSB 48.9712 Non-destructive testing — Qualification and certification of NDT personnel* and evaluated by persons certified to level II.

Inspection

An inspector, independent of the repair organization, shall verify the repair conformed to the repair plan, all welds met the acceptance and workmanship criteria established, and that all further requirements established by the OEM or within the applicable standard used for repair have been met.

The inspector has knowledge of the applicable standards for amusement rides and devices and holds a welding inspection certification or is competent to perform the inspection work through training or experience in metals fabrication, inspection or testing.

Statements to be made on completion of work

The repair company and the inspector shall sign and date a copy of the repair report.

Records

The maintenance records of the amusement ride or device shall include a copy of the completed and signed repair report and should include all supporting documentation related to the repair including NDT reports, WPS, Welder Qualification Records (WQR) NDT technician certification, applicable NDT procedures, associated calibration records and reports (See ASTM F2974-15 section #9 for more info). These records shall be kept on-site with the ride or device.

Chief Inspector, TSASK