

Outdoor Stage Safety

Planning to Prevent Tragedy

A rash of stage and rigging collapses at four outdoor music festivals last summer left 12 dead and scores more seriously injured, propelling the issue of outdoor stage safety into the public spotlight. It was reported that severe weather, including very high winds, was behind the accidents at the Ottawa Bluesfest last July 17, Tulsa's Brady Block Party on August 6, the Indiana State Fair on August 13, and Belgium's Pukkelpop Music Festival where four stages came down on August 18. But, weather wasn't the only factor.

Temporary stages and high-tech mobile rigging equipment were in use at each of these events, as they were at the Big River Jamboree in Canmore, Alberta, where the stage collapsed on August 1, 2009, killing a young woman and injuring 75 others. That accident led to 33 charges being laid against three companies involved in the incident, along with a \$5 million lawsuit filed on behalf of two boys who claim in part that organizers failed to secure the loudspeaker that crushed their mother.

Now that this case is finally making its way through Alberta courts, and with public safety and millions of dollars in lawsuits at stake – not to mention the possibility of steep fines and jail terms for organizers and suppliers who may ultimately be found criminally responsible – we can no longer avoid the larger issue of the fitness of temporary facilities for use at outdoor events.

In the wake of these accidents, public authorities and industry insiders alike are calling for more stringent and more uniform standards for mobile stages.



Collapsed stage at Ottawa Bluesfest. Photo: Sandra Luty

Mobile Stage Standards

Traveling shows are becoming larger and more complex, with flown oversized video displays, multiple lighting trusses, longer and heavier loudspeaker line arrays, laser effects, and in some cases pyrotechnics. As a result, stages are enormous. The made-in-Canada stage that collapsed in Ottawa, for example, was 44 metres wide – almost half the length of a football field. The largest mobile stage on the market, it is approved for use throughout Canada and the USA.

While portable stages and towers are highly engineered at the factory, they can be complicated to assemble on-site to factory specifications, and individuals entrusted with their setup may have vary-

ing degrees of competence and knowledge. The stage used by the Ottawa Bluesfest is typically erected over several days by workers from the Quebec-based supplier, following which it is inspected by both a company engineer and an independent engineer. It was checked daily by Bluesfest stage staff, and a company representative remained on the site during all performances. Yet, it still failed.



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There is a great need for on-site engineering inspections. Some jurisdictions maintain specific requirements regarding wind loads for temporary structures compared to local permanent structures, while others have no guidelines in place whatsoever.

Promoters and venues usually have specific contingency plans in place when an outdoor event is rained out, but the potential for a severe wind occurrence is frequently overlooked – in more than one of last summer’s stage collapses, there were no formal mass evacuation plans in place. But, what constitutes “severe wind”? Wind conditions vary widely across North America: it is normal in the plains of the mid-west for winds to reach 125 kilometres per hour, and straight-line winds and downbursts are becoming increasingly common in eastern regions that are not traditionally identified as being at-risk for high wind events.

Even when high winds are anticipated, there may be insufficient time to lower equipment to safety. Chain motors travel very slowly, usually less than three metres per minute – much too long to lower loudspeaker arrays, lighting trusses, and stage roofs to the ground.

Not only is more oversight needed during the assembly, maintenance, and inspection of these structures, but procedures for cancellation and evacuation need to be in place. One approach is to have an “authority having jurisdiction” present – someone on the site, with no ties to the promoter, who operates under pre-determined criteria to cancel the show whenever that is warranted. Perhaps, in order to remove questions of personal politics or other controversial elements from the decision, an impartial computerized system could be implemented to determine whether a par-

ticular show should be cancelled when severe weather is expected.

The Professional Lighting and Sound Association (PLASA) publishes standards for temporary stages, but adherence to these is voluntary. Its existing standard (ANSI E1.21-2006 – Temporary Ground-Supported Overhead Structures Used To Cover Stage Areas and Support Equipment in the Production of Outdoor Entertainment Events), covers only the portable stage roofs often used for outdoor events. The new draft version (BSR E1.21 - 201x) covers the design, manufacture, and use of all the portable structures used to support scenery, lighting, and sound equipment, as well as stage roofs.

Engineers and municipal building inspectors may be unaware of PLASA and its published standards, since the organization’s membership includes primarily those who supply technologies and services to the event, entertainment, and installation industries worldwide; however, an expert in performance systems would be familiar with them. For this reason, it would be prudent to involve a theatre consultant or other professional with expertise in performance systems and structures in planning any outdoor performance event.

Permanent Structures Safer

All this notwithstanding, there is simply no escaping the fact that a permanent structure is much safer than any mobile staging solution could ever be.

Permanent structures provide built-in safety features such as buried cable ducts and raceways. Appropriate electrical connections at multiple locations can be provided, eliminating the need for cables running across surfaces and the accompanying trip hazards. Permanent facilities are also less susceptible to human

errors in setting up shows, since much of the structure is already in place.

A permanent infrastructure can be simple: at the Mississauga Celebration Square, for example, tiedown anchors similar to those used for aircraft are provided on either side of the permanent stage to allow temporary stages to be safely added when required. It also features a wind sensor that yields an accurate reading of local wind conditions, quite apart from storm warnings that may or may not be issued by Environment Canada for the wider region. This is especially helpful considering that the high-rise buildings surrounding the Square might funnel wind through the stage area without warning.

And, let’s follow the money: it’s a fact that permanent facilities are more economical over the long term. The cost of building a permanent outdoor venue is easily justified if one looks at the annual cost of hosting a festival. The expense of the stage rental alone has been “in excess of six figures” annually for the Ottawa Bluesfest, according to Bluesfest executive director Mark Monahan. For the past five years, that adds up to over half a million dollars, at the very least.

The cost of a permanent venue might be amortized over 10 or 20 years, but the structure will last at least 50 years, amply justifying the expenditure. Furthermore, rental revenues will offset the capital outlay, and those rentals can be scheduled throughout the year.

And, there’s another, even more important, return on the investment that really can’t be reckoned on a spreadsheet, and that’s quality of life for the municipality. Permanent facilities have the added advantage of increasing opportunities for holding community events outside the festival season. For that reason alone, municipalities would do well to consider them a very sound investment. *MW*