Building Advisory B23-009
March 18, 2025

Subject: Temporary Bleachers for Public Events

Background:

This Advisory provides guidance on the permitting, design and placement of temporary bleachers for events like parades, block parties, street festivals, musical performances and sporting events. It is intended to assist plans examiners in evaluating applications and to inform event organizers and contractors about compliance with the National Building Code – Alberta Edition [NBC(AE)].

1 - Scope

This Advisory applies to temporary bleachers requiring a building permit as per NBC(AE). It covers:

- Professional involvement in design
- Use of pre-engineered bleacher systems
- Placement and safety considerations
- Types of temporary bleachers
- Applicable NBC(AE) requirements

2 - Types of Temporary Bleachers

Event organizers primarily use pre-engineered bleachers designed for modular assembly and disassembly. These structures are commonly rented from specialized companies or owned by large event organizers for repeated use. The main types include:

- **Portable Bleachers**: Lightweight and movable, often made of aluminum or galvanized steel, they have typically under 5 rows and used for short-term events. Some units include wheels for easy relocation.
- **Telescopic (Retractable) Bleachers**: Extend and retract, commonly found in indoor venues but occasionally used for temporary covered event spaces. Telescopic bleachers are less common for outdoor temporary events.
- **Transportable (Trailer-Mounted) Bleachers**: Bleachers mounted on trailers for easy relocation are common at fairs, parades, rodeos and mobile event setups**.**
- **Modular (Pre-Engineered) Bleachers**: Most common type for temporary large-scale events**.** Modular sections can be assembled and configured as needed. They are available in small (5-10 rows) to large (multi-tiered, 20+ rows) formats. They are often made of aluminum or steel for durability and easy assembly.
- **Permanent or Semi-Permanent Bleachers**: Installed in stadiums, sports fields and large venues**.** Can be fixed in place with concrete footings. While not temporary, semi-permanent designs may allow disassembly for seasonal use.

3 - Design & Professional Involvement

NBC(AE) Design References
Temporary bleacher design and installation references are found in NBC(AE) **Part 3** - Fire protection, occupant safety, and accessibility requirements and in NBC(AE) **Part 4** - Structural design, including load-bearing capacity and stability.

As stated in Division B of NBC(AE) under Article 3.3.2.12., design of bleachers must satisfy the following minimum requirements:

- Steps provided in aisles of bleachers of the telescopic type shall
  a) have risers not more than 250 mm high, and
  b) have treads with a run not less than 280 mm.

- If the vertical distance between seating platforms in bleachers is more than 280 mm, an intermediate step shall be provided the full width of the aisle and proportioned to provide 2 equal risers between platforms.
- If the vertical distance between seating platforms in bleachers is more than 450 mm, 2 intermediate steps shall be provided the full width of the aisle so that there are 3 equal risers between platforms.
- If the passageway between rows of seats is not a closed deck, footboards shall be provided so that
  a) the total width of the footboards shall be not less than three quarters of the center-to-center spacing between rows of seats, and
  b) the spacing between footboard members shall be not more than 25 mm.
- Openings above footboards and below the seats in rows of bleacher seats shall be provided with intermediate construction so that there is no opening that would permit the passage of a sphere of more than 100 mm in diameter.

NBC(AE) Article 3.3.2.9 indicates the design requirements for guards installed on bleachers:

- The backs and ends of bleacher seats more than 1 200 mm above the ground or floor that are not adjacent to a wall shall be protected with a guard a) not less than 1 070 mm high above an adjacent aisle surface or foot rest, and b) not less than 920 mm high above the centre of an adjacent seat board.
- If the front of a bleacher is more than 600 mm above the ground or floor, it shall be protected with a guard not less than 840 mm high above the front footrest.
- The size of any opening in a guard required by Sentences (2) and (3) shall not allow the passage of a sphere whose diameter is more than 300 mm.

NBC(AE) Article 4.1.5.14. sets the minimum requirements governing the structural design for guards and handrails associated with bleachers. The minimum requirements include:

- specified horizontal load applied outward at the minimum required height of every required guard,
- concentrated load applied at any point,
- minimum specified horizontal load applied inward at the minimum required height,
- design of individual elements within the guards including solid panels and pickets.

Live loads for temporary bleachers must comply with NBC(AE) Table 4.1.5.3. Alternative solutions may be considered but require engineering justification.

Note: Where there are no specific requirements in the NBC(AE) for certain items, or if the safety of occupants is a concern, requirements from National Fire Protection Association (NFPA) 102, “Standard for Grandstands, Folding and Telescopic Seating, Tents, and Membrane Structures” may be used as a guide. As NFPA 102 is not referenced in the NBC (AE), its requirements are not mandatory. However, bleacher owners/installers are encouraged to use requirements of NFPA 102 for guidance related to items like:

- horizontal distance of back-to-back seats.
- space between the back of each seat and the front of each seat.
- depth of footboards (footrests) and seat boards.
- openings between the seat board and the footboard.
- height of railings and guards above the aisle surface.
- provision of rails in the cross aisles located within the seating area.

Professional Involvement Requirements

Temporary bleachers require design and review by a Professional Engineer licensed in Alberta. Structural drawings and calculations must be sealed and signed by a Professional Engineer. The design must consider live loads, wind loads and stability against overturning or sliding (NBC(AE) Part 4).
In addition, provisions must be included in the design for guards and handrails as stipulated in Part 4 under Article 4.1.5.14 of NBC(AE) regarding minimum specified horizontal load, concentrated load applied at any point, size of the openings and others.

Use of Pre-Engineered Bleachers

Most bleachers used for temporary events are **pre-engineered** and designed for modular assembly.

- Rented Bleachers**:** Rental companies provide pre-certified units with manufacturer documentation confirming compliance with NBC(AE).
- Owned Bleachers: Some large event organizers own and reuse bleachers annually. These must be properly maintained, inspected and reassembled per manufacturer specifications.

Any modifications to pre-engineered units require re-evaluation by a Professional Engineer**.**

Select Compliance Bleachers
Some rental companies or event organizers may use bleachers that due to age of construction may way warranty select compliance with NBC(AE). Steps to address non-compliance:

- Pre-engineered bleacher systems must have manufacturer-supplied drawings demonstrating compliance with NBC(AE). Verify available manufacturer documentation.
- Site conditions, anchorage and set up must follow manufacturer's specifications.
- Any modifications to pre-engineered units require re-evaluation by a Professional Engineer. Obtain a review by a Professional Engineer to confirm safety and stability.

Whether building or reviewing your own bleachers, or looking into rental options, always make sure that your bleachers follow the Building Code. Ensure they have safe and accessible stairs and walkways, proper guardrails and footboards and no gaps that are larger than 4" diameter. This will ensure they are safe for everyone to use and prevent injuries.

Site-Built (Non-Engineered) Bleachers
Constructing bleachers from site-built wood framing (e.g., dimensional lumber) presents significant safety risks. Small-scale bleachers must meet live load requirements, lateral stability, proper anchorage and guardrail standards**.** According to the NBC(AE), the design is still required to be performed by a professional engineer. All bleachers must be subject to inspections before use by the public.

Event organizers are strongly encouraged to use pre-engineered or professionally reviewed units for all temporary seating.

4 - Location & Safety Considerations

Temporary bleachers must be positioned to ensure safety, accessibility, and emergency access.

Fire & Emergency Access
Must not obstruct fire hydrants, fire department connections (Siamese connections) or emergency vehicle access routes.

Public Accessibility
Sidewalks & Public Pathways: Bleachers must allow a minimum 1.5 m clear width for wheelchair passage.
Entrances & Exits: Bleacher placement must not block building exits or reduce required egress widths.
Temporary Ramps & Stairs: Accessible seating must be provided where required, with proper handrails and guardrails per NBC(AE).

Structural & Operational Safety
Temporary arrangements may make use of either owned or third-party rental which may be available with supplier assembly. The concern for user safety and the requirements of the NBC may be neglected when assembling the system. Improperly assembled bleachers or stages can be the cause of injury or even death if they fail in use.

- Anchorage & Stability: Bleachers must be adequately secured to prevent movement due to wind or uneven ground.
- Load Limits: Maximum occupant capacity must be clearly posted.
- Inspection & Maintenance: Event organizers must inspect bleachers before use to ensure they are in good condition and properly assembled.

If the staging or bleacher units are owned or rented follow the manufacturer's requirements for assembly and if you have any question as to your or anyone's ability to safely assemble a stage or bleacher or other structure do not attempt to

assemble. Contact the manufacturer or representative for assistance. If you are renting units, you may wish to arrange for the provider of the staging or bleachers to assemble the units.

5 - Best Practices for Large Modular Bleacher Setups at Major Events

For large-scale events, modular bleachers are often assembled into expansive seating configurations exceeding 300 m² in plan area or accommodating hundreds to thousands of spectators. While individual modular bleachers are pre-engineered, their collective assembly introduces additional considerations for structural stability, emergency access, egress and fire safety.

Engineering & Design Requirements

- Professional Oversight: A Professional Engineer (P.Eng.) licensed in Alberta must review and approve the final site-specific configuration, ensuring all modular sections work together as a stable system.
- Structural Stability: The entire setup must be evaluated for load distribution, lateral bracing, wind resistance and anchorage to prevent displacement or collapse.
- Load Compliance: All bleachers must meet the minimum 4.8 kPa live load requirement for grandstands and bleachers per NBC(AE) Table 4.1.5.3.
- Tiered Seating Safety: If the setup includes multi-tiered seating, the design must ensure safe access, adequate guardrails and proper load transfer.

Seating Configuration & Egress Compliance

- Row Length Limits: NBC(AE) establishes the maximum number of seats per row before an aisle is required. Organizers must ensure proper aisle spacing and accessibility.
- Aisle Widths & Exits: Aisles must be of sufficient width to accommodate safe and efficient evacuation**.** Minimum aisle widths and the number of aisles must comply with NBC(AE) Section 3.3. Exits must be distributed to avoid congestion during emergency egress.
- Guardrails & Fall Protection: Bleachers with elevated seating platforms must have guardrails and handrails per NBC(AE) Section 3.4.6.

Site & Fire Safety Considerations

- Fire Access & Hydrants: The placement of large bleacher setups must not obstruct**:**
  - Fire hydrants
  - Siamese connections for sprinklered buildings
  - Fire department access routes
  - Emergency vehicle staging areas
- Space Below Bleachers (if indoors): NBC(AE) requires sprinkler protection in the space beneath tiered seating in indoor arenas or enclosed venues (where applicable).
- Flame-Resistant Materials: Temporary structures, including seating components and coverings should be non-combustible or treated with fire retardants where required.
- Emergency Lighting & Signage: If the bleacher setup is used at night or in enclosed spaces, proper exit signage and emergency lighting must be provided per NBC(AE) Section 3.2.7.

Accessibility & Public Safety

- **Wheelchair-Accessible Seating**:
  - Large bleacher setups must include designated barrier-free seating areas per NBC(AE) Section 3.8.
  - Ramps or lifts must be provided if seating is elevated.
- **Ground Conditions & Anchorage:**
  - Soft surfaces (grass, gravel, sand) require additional stabilization to prevent shifting.
  - Bleachers on pavement or concrete must be properly anchored.

Large modular bleacher setups require site-specific engineering, strategic placement, and adherence to NBC(AE) safety requirements. By following these best practices, event organizers can ensure a safe, compliant and well-managed seating arrangement for large crowds at major events.

6 - Permit Application Requirements

Building Permit
If any type or size of bleachers are proposed to be used or used in connection with a temporary event, in addition to the items required to be submitted with a building permit application, applicants must submit the following for review:

- A site plan showing bleacher placement and clearances from hydrants, pathways and building exits.
- Engineered stamped drawings or manufacturer documentation for pre-engineered units. The date on engineer's stamp on structural drawings shall be within the current NBC(AE) cycle.
- Installation and anchorage details.

Event organizers are strongly encouraged to apply for permits well in advance of their event to allow sufficient time for review, approval, and any required revisions. Organizers should also factor in the scheduling of mandatory inspections before the event starts to ensure compliance with safety requirements. Early planning helps avoid last-minute delays and ensures a smooth setup process.

The assembly must be inspected before public use to confirm proper installation, anchorage and compliance. Event staff must conduct daily inspections to ensure bleachers remain stable, properly assembled and free of damage or obstructions.

Road Permit
In addition, road permits must be obtained for events like Calgary Stampede or a street festival, refer to Bleacher permit web page for more information. Only 20% of the parade route is permitted to have bleacher seating. No bleachers may be installed in front of surface parking lots, at Transit bus stops and zones and in front of construction sites. The bleachers must be 0.3 meters away from the edge of the curb. There must be one meter of space between the back of the bleachers and any building behind them.

Development Permit
If you are having more than one temporary event this season where bleachers are used at the same address (parcel), at the conclusion of each event all structures including bleachers must be dismantled and the site restored to the original condition. If the site is not restored to original condition, The City of Calgary may require a Development Permit. If you are unsure if your scope of work requires a development permit, contact the Planning Services Centre at Calgary.ca/contactPD

This interpretation was accepted by the Codes and Standards Technical Interpretation Committee (CSTIC – March 18, 2025).

Chief Building Official
The City of Calgary