

Event safety, crowd control and risk management

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What will be discussed?

What is event safety?

What is the legal part of event safety?

How to design event area?

What is crowd management?

How to measure risks on your event?

„Event safety guide“

Swedish Civil Contingencies Agency, Sweden 2011

„Managing crowds safely“

A guide for organisers at events and venues

Health and Safety Executive Books, UK 2000

„Guide to safety at sports grounds“ (Green guide)

Department for culture, media and sport, UK 2008

Event safety

Difference between two concepts – safety and security.

Safety is a protection against unintentional situations during events (accidents, weather, human factor, miscalculations, system breakdowns ect)

Security is a protection against intentional situations (terrorism, crimes, sabotages ect)

Legal responsibility

An organizer is liable for

- audience,
- participants and performers,
- staff,
- relations with authorities,
- influence on society, PR,
- Influence on infrastructure,
- influence on environment.

Event safety

The **event safety** is how to ensure for your audience, performers and team:

- being safe (no injuries or death);
- feeling safe (even if there are no direct risks);
- have a positive experience.

Legislation

Precautionary principle

- Organizer is responsible for safety;
- If it is uncertain, that something is safe – it must be regarded as un-safe!
- Organizer should not let perform, start or go on with the event before it's clear that the situation is unsafe.

If it's uncertain, then:

- a) evaluate;
- b) make the situation safe;
- c) don't let perform.

Choice of event location -

Capacity calculation

Calculation is qualified guesses.

Calculation should be as control of the organisation earlier planning, if uncertain, must lower the capacity.

Four calculations to be used as a base:

A – amount of audience

B – entrances capacities

C – exits capacities

D – emergency exits capacities

The lowest value (A,B,C or D) shows the correct maximum number of the audience.

Emergency exit and inner corridor emergency way minimum in Estonia width must be 1,2 m for first 120 people, plus 0,40 m for every extra 60 people.

So concerthall with 1500 people (also temporary hall) must have emergency exits

$$1500 - 120 = 1380$$

$$1380 : 60 = 23$$

$$23 \times 0,40 \text{ m} = 9,2 \text{ m} + 1,2 \text{ m} = 10,4 \text{ m width of exit doors or gates (and corridors).$$

If people move 70-80 person/min/m the hall should be empty within 2-3 minutes, but -

PEOPLE ARE NOT MACHINES!!!

Event area map

Song Festival Ground

during last

Youth Song Celebration

2017 in Tallinn



Design of Event Venue Area

Crowd management

An audience consists of individuals.

Individuals in a crowd –

- are guided by needs and goals (comp Maslow)
- takes the easiest path from point A to B (between focus areas)
- selects the path where the individual can walk straight as long as possible (even if there are equally attractive ways)
- uses visible shortcuts
- selects path with the least bends and turns
- avoids detours or walking opposite direction even if the straight path is overcrowded
- tries to move in „normal walking speed“

Crowd management

Focus areas

Strong: entrance in the beginning, exit in the end, scene (front), toilets, 3+ hr events food area

Weak: merchandise, serving area, children area ect

All focus areas needs of space to work efficiently: room for queues, access for service transportation, production area, audience area.

! Important is that the need of focus areas are not collide and in conflict with each other!

Crowd management

Focus areas

Important is to identify the need of space for

- audience area
- backstage area
- VIP area
- queues
- safety distances

Need of space for in/out flow

- audience flow,
- delivery goods and wast collection
- "Green way" for emergency vehicles

Crowd management

Desicion of location

Consider –

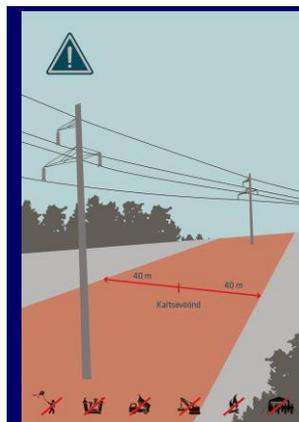
- Area – is there enough for the event purpose?
- Sustainability – will land and surfaces overcome the wear?
- Tranports and crowd flows – is the area suitably designed?
- Roads, load-in doors, evacuation and back-stage doors- corridors - are the doors, gates, elevators ect suitable?
- Current infrastructures – how does it effect?
- Close by activities – how do they affect and vice versa?

Current infrastructure

Example: 2017. Rae county local song and dance festival. For childrens there was a trampoline just under the high power lines – extremely dangerous.



Photo by
Tara Kesteven
Facebook



Any kind of activities must be authorized by electric power line supplier!

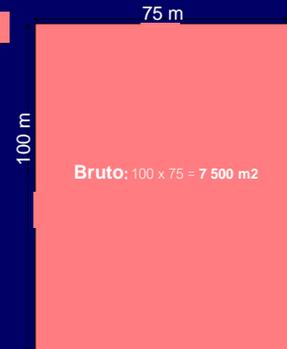


On 2017 in Kohila a final show of childrens summer camp took place just in front of electric power substation and the building was used as an decoration (not coordinated with local power supplier).
 PHOTO: Juulija Kuum/Raplamaa Sõumid

Area design

Gross area

Venue total area



Area design

Gross area

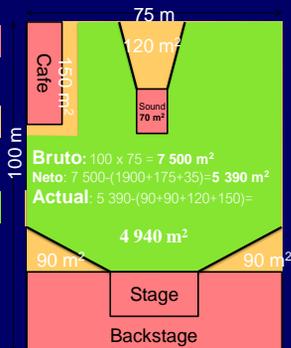
... minus
 Temporary structures=

Net area

... minus area
 audience won't use=

Actual area

... i.e. the area the
 audience actually can
 use.



Crowd management

Guidlines: audience density

- 2,0 pers/m² – normal level
- 3,5 pers/m² – Swedish max standing in tent
- 4,7 pers/m² – max level in Green Guide in UK
 movement is dictated by the mass
 max flow 0,5 m/sec
- 7-10 pers/m² – not safe
 individuals loose control
 individuals can be „sucked“ into the crowd
- 10< pers/m² – technically possible but danger!

Crowd management

Audience pressure

1 kN = 100-kilo pressure per 1 m²

- 0,50 kN **Test:** The pressure from one person lying on a test person
- 0,62 kN **Test:** Discomfort (no usage of hands)
- 0,80 kN **Test:** Discomfort (use hands)
- 1,00 kN **Measuring:** median value hevy metal concert in 4000 prs crowd
- 1,10 kN **Case:** Death at constant pressure after 5-6 min
- 3,43 kN **Test:** 5 pers in simulated panic can achive the pressure
- 5,00 kN UK recommendation, minimal level for stage barrier strength
- 6,20 kN **Case:** Death at constant pressure after 15 sec
- 7,00 kN **Measuring:** Peak at big rock concert in front of stage
- 15,0 – 25,0 kN The strenght of Mojo Barriers UK or Safe Barriers SWE

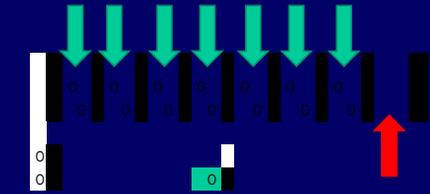
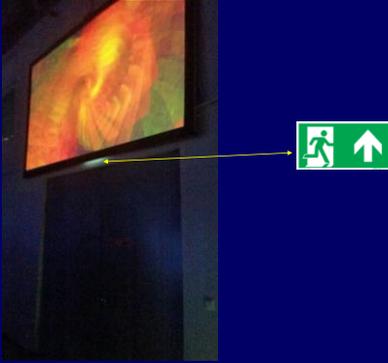
Crowd management

Focus paths

Monitor and steer the flows by

- Develop crowd management routines for an event
- Good signing
- Good lights and surface
- Open approach to the focus areas
- Crowd managers (B team)
- Inform peaple about stops, detours ect
- Split flows (IN and OUT)

Emergency signs



Split crowd flows – IN and OUT

Risk management

Threat - phenomenon that can cause occurrence with negative consequences.

Risk - a specified threat.

Risk management is a balance of

- 1) Probability for
- and
- 2) (negative) consequences an incident can lead to.

Example: The threat "crowd pressure" can be transformed into a risk if, for example, the exit is not properly built or there are no proper barriers in sides of audience tribune.

Risk analysis is a tool

- base for safety planning
- risk awareness and consensus in the organisation
- understanding for safety measures

Identify the most dangerous ones – and work systematically to minimize the risk you can.

Risk management

Impact

		Low 1	Medium 2	High 3
High	3			
Medium	2			
Low	1			

Probability

Risk analysis

What might happen	Pro-bability 1-3	Impact 1-3	Risk value (P x I)	Where?	When?	What can we do to <u>avoid it</u> ?	What we'll do <u>if it happens</u> ?	Whos area of res-ponsible?

- Deal only with risks $P \times I > 2$;

- Do the analysis within the organization as well as with experts (security company ect) outside;

- If $P \times I > 4$, create plan B (C, D if needed);

- Create risk management routines for your organisation as well as every event.