Safe by Design


HEALTH
& SAFETY
CONTACT

SAFETY CONTACT **Brazil 2014 Football World Cup Construction Fatalites** **Stadium**

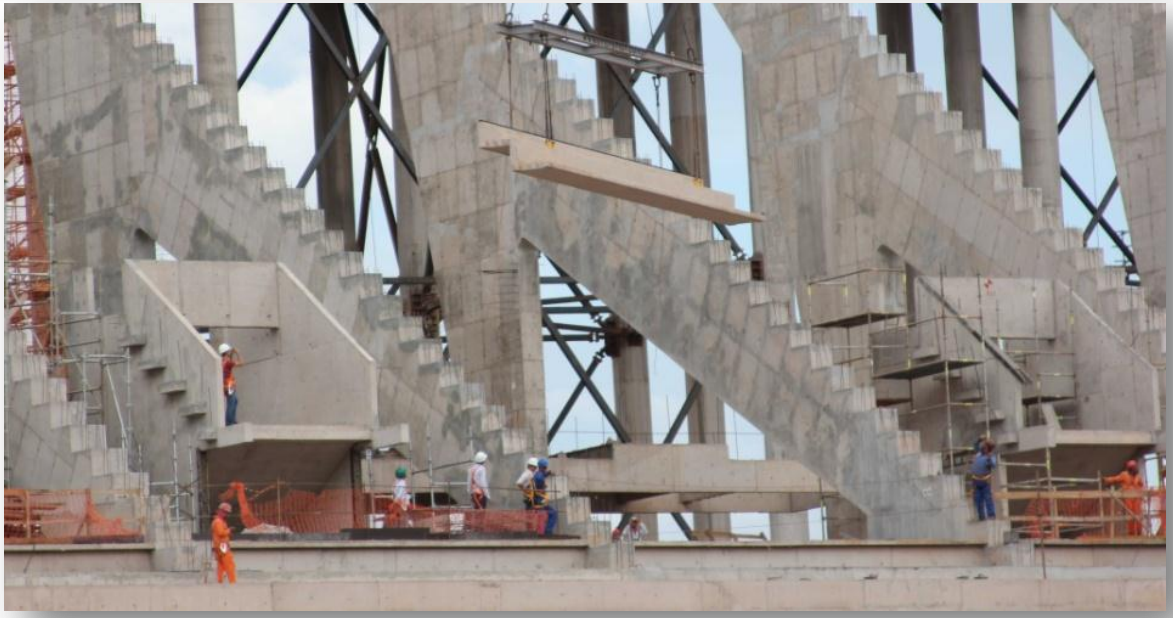
DESCRIPTION

The following information from Iberdrola colleagues in Brazil relates to 8 fatalities sustained during the construction of 5 new stadiums in Brazil which along with 7 other existing venues will host the FIFA 2014 Football World Cup.

11/06/2012

Garrincha Stadium(Brasilia).

A 21 year-old construction worker died after falling from a height of approximately 30m whilst working on the mounting of a concrete slab.



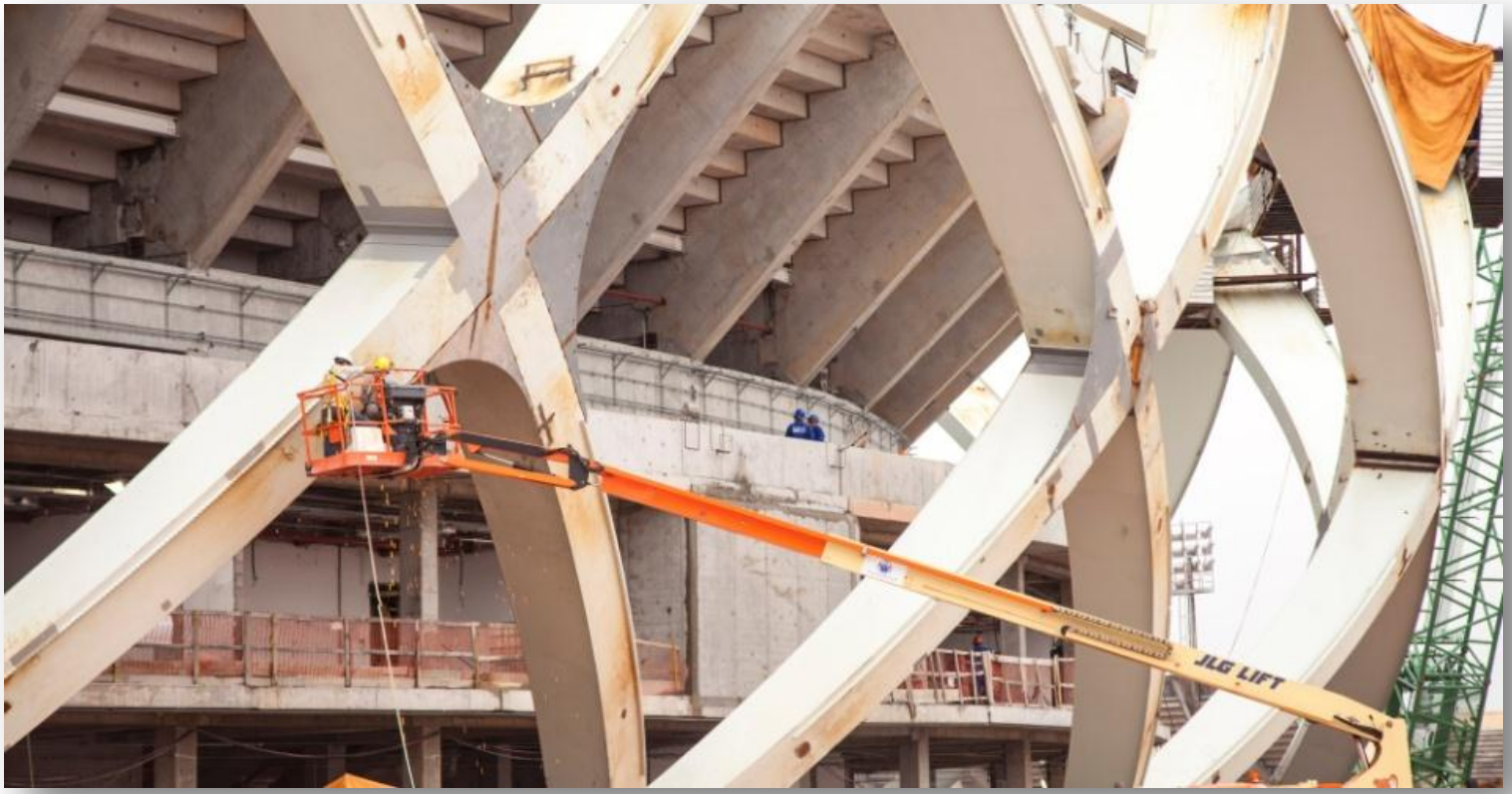
SAFETY CONTACTBrazil 2014 Football World Cup Construction Fatalites

Stadium

28/03/2013

Amazonia Stadium(Manaus).

Construction worker Raimundo Nonato Lima Costa 49 years-old died after falling five metres, while attempting to climb between a concrete column and a scaffolding platform.



SAFETY CONTACTBrazil 2014 Football World Cup Construction Fatalites

Stadium

27/11/2013

Itaquerão Stadium (São Paulo).

Two workers were killed when a crane collapsed while hoisting a 500-ton piece of roofing at the stadium that will host the World Cup opener in Sao Paulo.

SAFETY CONTACTBrazil 2014 Football World Cup Construction Fatalites

Stadium

14/12/2013
Amazonia Stadium (Manaus).
22-year-old Marcleudo de Melo Ferreira fell 40 metres when he was working on an overhead lighting installation.

14/12/2013
Arena Amazônia (Manaus).
A 50-year-old worker suffered a heart attack while working at the complex access area.

SAFETY CONTACTBrazil 2014 Football World Cup Construction Fatalites

Stadium

07/02/2014

Amazonia Stadium (Manaus).

A 55-year-old Portuguese man became the third worker to die at this venue in less than a year after being struck on the head by a component while disassembling a crane used to install the stadium's roof.

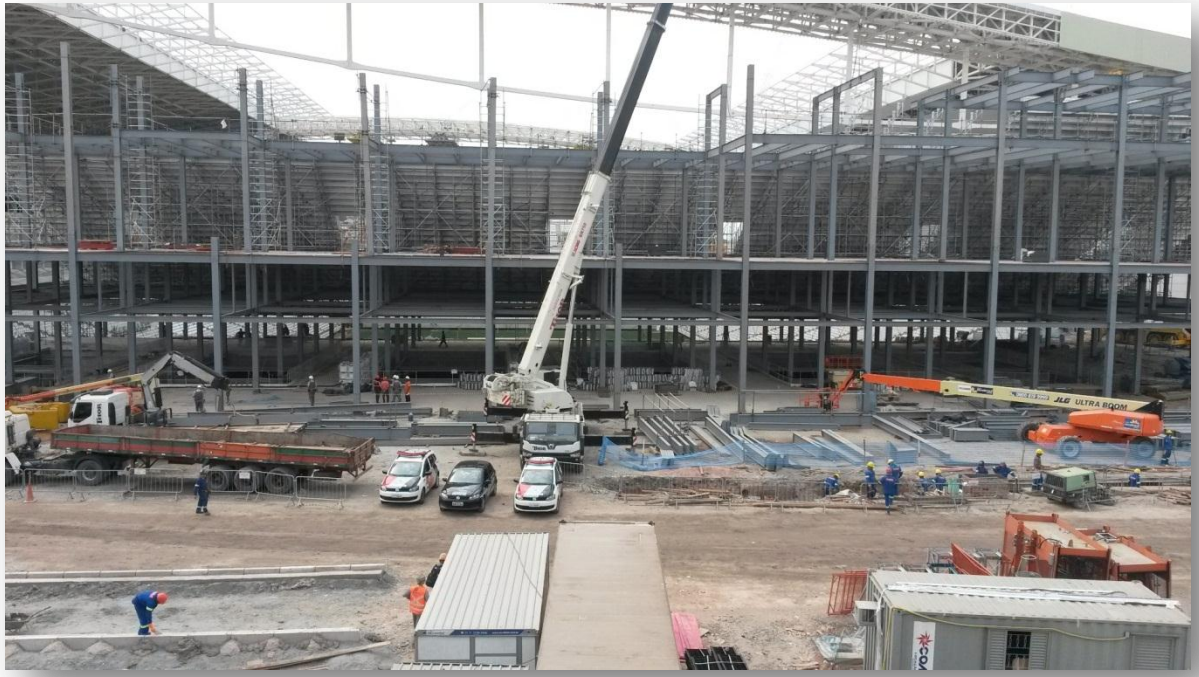
SAFETY CONTACTBrazil 2014 Football World Cup Construction Fatalites

Stadium

29/03/2014

Itaquerac Stadium (Sao Paulo)

Fabio Hamilton da Cruz , a 23 year-old construction worker died after falling approximately 26 feet whilst installing temporary seats.

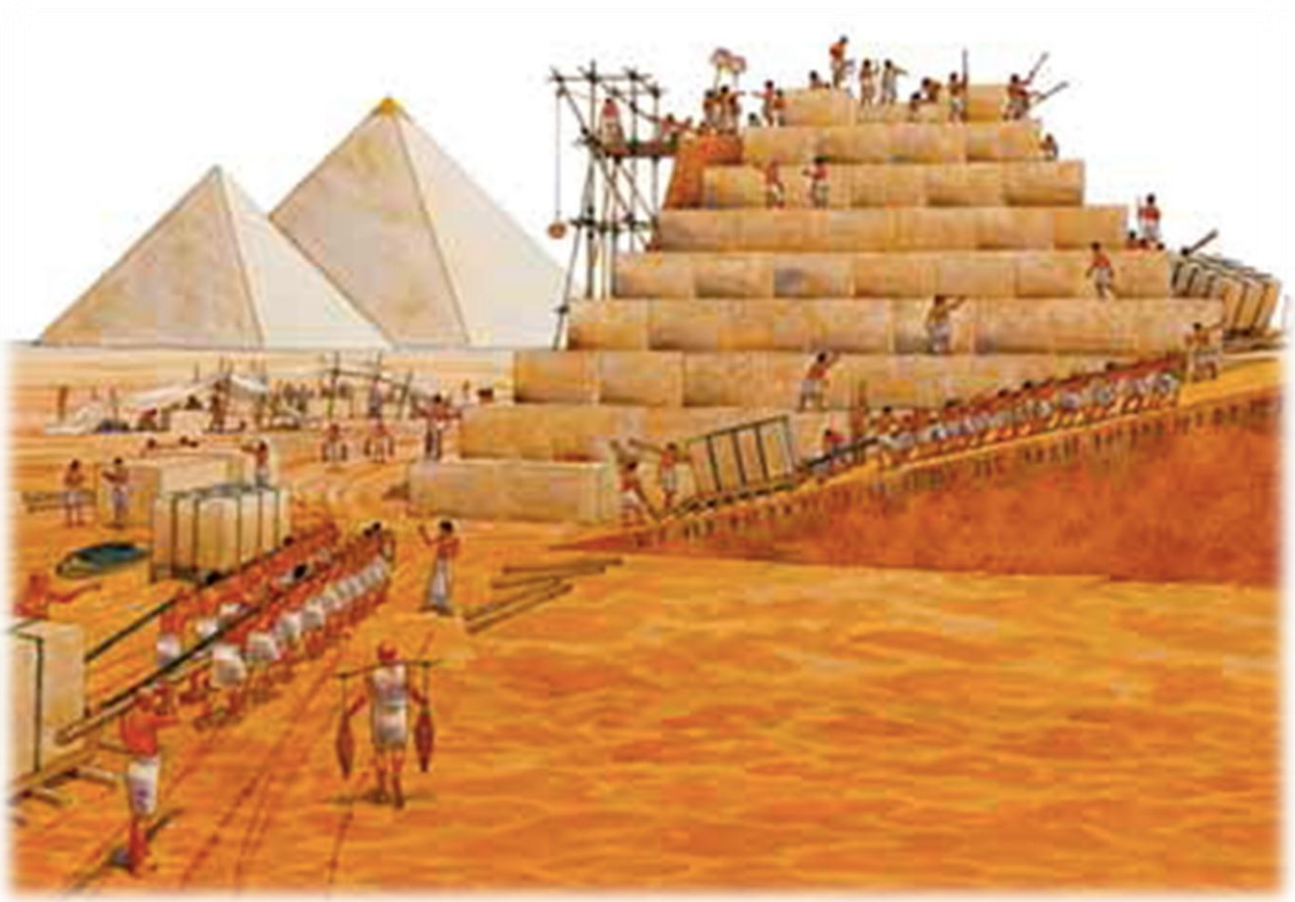


SAFETY CONTACTBrazil 2014 Football World Cup Stadium Construction Fatalites

SOME LEARNED LESSONS:

- The fact that a number of the accidents occurred with young workers (21 & 22 year-old) brings into question the experience, competency and training. The first fatality at Brasilia involved an apprentice carpenter .
- Work at a height of more than 2m, will be performed using a safety harness which shall be hooked onto a stable structure or on a line of life.
- In works that require the use of cranes, we must insure that the supports are fit for purpose and suitable for the application. In addition, ground surveys will be performed prior equipment being installed to ensure the land where the equipment positioned is highly stable, especially after strong rains or on sandy soils that show poor ground compaction.
- Overhead manoeuvres of heavy or large elements must be performed using approved procedures (lifting plans, method statements & risk assessments) to ensure all risks controls are fully applied.
- We must insure that all work equipment has been subject to a regular compliance inspection regime and is fit for purpose.
- During the disassembly of large equipment/ plant clearly demarcated exclusion areas shall be strictly adhered too at all times.
- The majority of the accidents took place in the final hours of the working shift. Investigation into the accident involving the crane dismantle at Itaquerao revealed the operative had already worked a 14 hour shift.

The Good Old Days…



Qatar World Cup Deaths

London Olympics 2012

Definitions?

Design: A plan or drawing produced to show the look and function or workings of a building, garment, or other object before it is made:

Designer: a person who plans the look or workings of something prior to it being made, by preparing drawings or plans.

Construction Design & Management Regs.

Lack of pre-construction information

Fragile roof specifications

Dust creating processes

Structural steel work that cannot accommodate safety nets

Glazing that cannot be accessed safely

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On-site spraying of dangerous/hazardous substances

Lack of fire containment during construction phase

Designed environments producing adverse lighting, noise, vibration, temperature, humidity etc.

Roof mounted services without the provision of safe access for inspection or maintenance

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Our Industry?

Transformer access

Link-box maintenance and inspection

Switchgear weight/handling

Cable jointing materials

Exposed live bus-bars

Working at height without suitable access provision

17

Strategic Technology Project

- Joint DNO program – has been running for 17 Years
- Project Managed by EATL
- Projects selected by member companies
- Drivers – cost, efficiency and asset safe lifespan and design

- LTOS – live tank oil sampling
- Switchgear oil degradation analysis - predictive maintenance
- SF6 Switchgear – better performance than expected
- Challenge manufacturer assumptions - make it safer
- New cable technology – insulation degradation
- Gas diffusion analysis techniques

Risk Assessment for Designers?

- Life Cycle of the Design
  - On the drawing board
  - Specification
  - Industry or Accepted best Practice
  - Pre-Construction
  - Construction – Build
  - In Use
  - Maintenance
  - De-Commissioning

Risk Assessment Tools for Designers & Engineers

- Physical, Chemical, Biological, Environmental
  - HAZID & HAZOP
  - Peer & Industry Standards
  - Building Control & Warrant requirements
  - FMEA
  - LOPA
  - SIL & SIF
  - ALARP
  - BATNEEC
  - Etc, etc., etc.,

HV Test Probe Incident

- Two engineers killed as a result of an explosion in an oil-filled RMU.
- Metal locating pin fell into oil tank due to loose nut.
- 180 MVA fault level.
- Test probes now modified.
- Safe storage of probes implemented.


HSE


IN AFFECTIONATE MEMORY OF
DAVID DRYDEN
AND
INNES MACKINNON
WHO DIED, FOLLOWING A TRAGIC
ACCIDENT AT THIS SUBSTATION ON
15TH APRIL 1997
FONDLY REMEMBERED AND
GREATLY MISSED BY FAMILY
FRIENDS & COLLEAGUES

Design, Process Safety or Asset Management ?

Five killed in Connecticut power plant blast

Safety by Design

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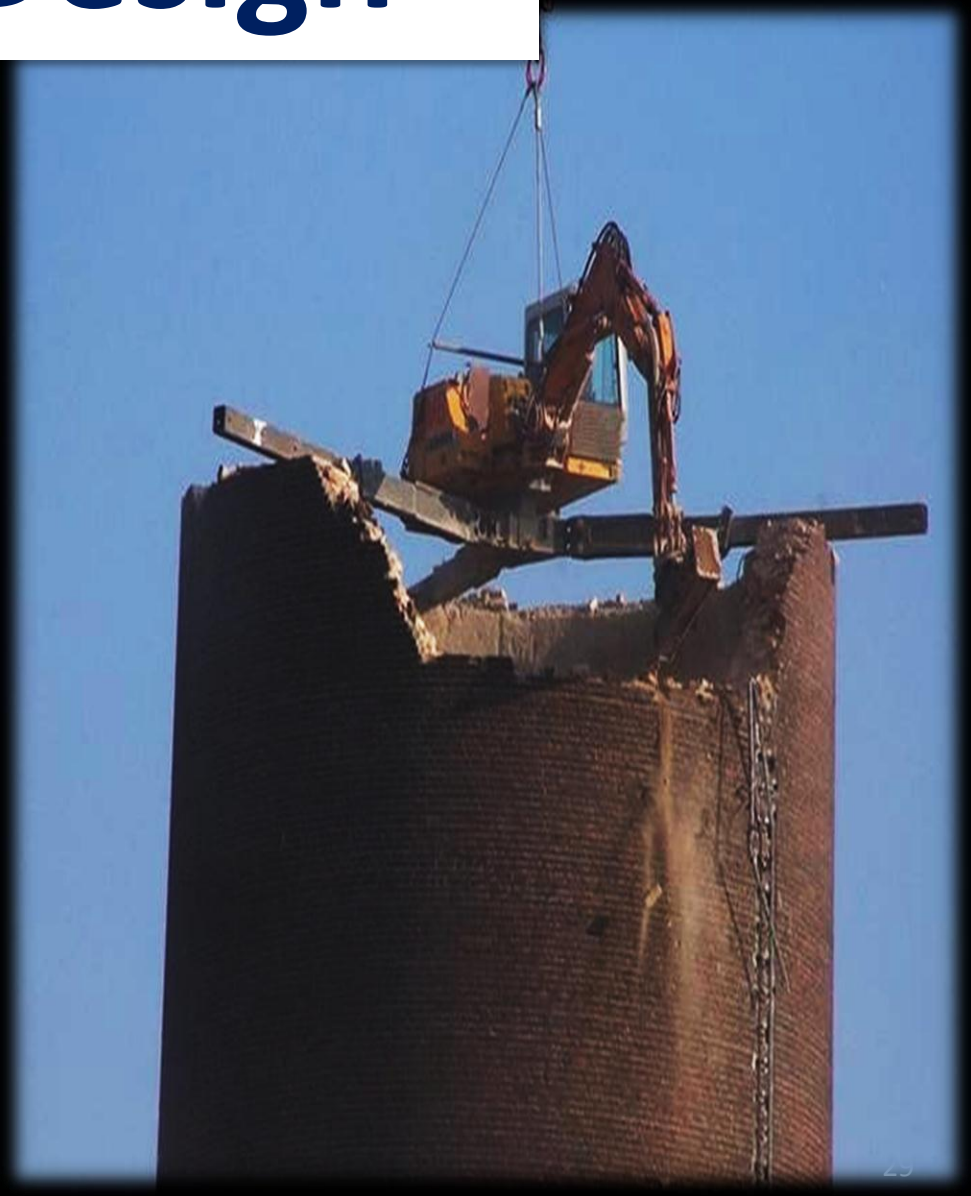

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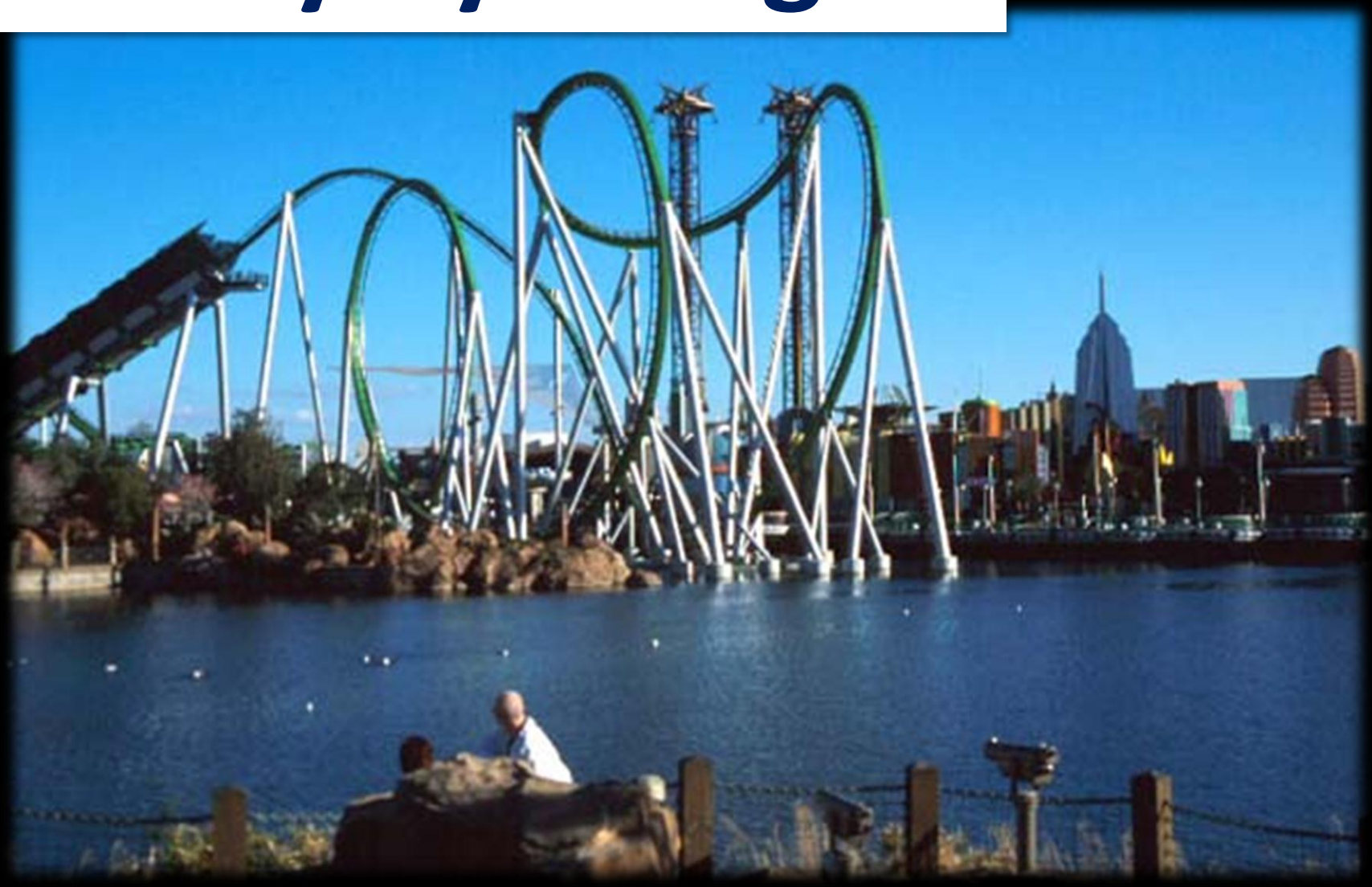

‘MAY THE LESSONS OF THE PAST SERVE US WELL IN THE FUTURE’

Ultimate Design

Health & Safety by Design

Thank You