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**Hotel Hilton Nicosia,
Engomi, Cyprus**

Safety in Design – The Role of the Designers

Alfredo Soeiro, ISHCCO & UP

Motivation for study

- Directive 92/57/EEC - Temporary or mobile construction sites
- “Whereas unsatisfactory architectural and/or organizational options or poor planning of the works at the project preparation stage have played a role in more than half of the occupational accidents occurring on construction sites in the Community;”

Coordinator at project preparation stage

- Article 2

Definition

“(e) 'coordinator for safety and health matters at the project preparations stage' means any natural or legal person entrusted by the client and/or project supervisor, during preparation of the project design, with performing the duties referred to in Article 5;”



PhD Research

- Bianca Vasconcelos (2009-2013)
- Universidade Porto (Portugal) and Universidade Pernambuco (Brasil)
- Supervisors: Alfredo Soeiro and Beda Barkobebas Jr.
- What is the percentage of accidents prevented during the design?



Method

- Analyze fatal or serious accidents
- Define types of design:
 - Structures, architecture and other
- Classify the major causes of the accidents in two groups:
 - Preventive measures possible during design phase
 - Otherwise



Detailed Analysis

- Descriptive information
 - Causes
 - Seriousness
- Analytical information
 - Factor
 - Preventive measures
- Design phase useful
 - Type of design
 - Designer guidance

MAARD Scheme

1. Descriptive information (accident causes, seriousness of accident)
2. Preventive measures that should have been taken
3. Could design prevent the accident?
4. If no then analysis stops
5. If yes which type of design?



MAARD Guidelines

55 recommendations for preventive measures

Examples

- Design parapets to avoid temporary guardrails
- Design curved or reinforced glass/plastic skylights
- Design permanent walkways over sloped roofs

MAARD Indicators

Source	Conceptual design	Execution planning	Equipment selection
Brasil	27,6	41,4	13,8
Canada	23,6	18,4	5,0
USA	40,7	22,8	23,6
Portugal	38,4	28,5	3,3
Singapore	45,0	25,0	2,5
%	35,1	27,2	9,6

Main Results

- Percentage of accidents avoidable in conceptual design and in preparation

35,1

27,2



Thank you!

alfredo.soeiro@ishcco.org