

Friday, March 22, 2013

Workshop Session 2

Time of Session: 10:00-10:45AM

Session Title: The Role of Safe Rooms in Disaster Resistant Universities

Speaker: **Ernst W. Kiesling**, Texas Tech University

Room: 236

Head Count: 40

Note Taker: Hannah Galloway

10:00 Introduction

10:00 Ernst begins the presentation

10:01

- Ernst has been focused on shelter quality.
- There is good discussion here [at this workshop].
- It is very important to know what the self-image of you students are.

10:02

- Safe Rooms – An overview
- They [safe rooms] must withstand pressure and debris.
- Important Design Elements

10:04

- Warning time is short, especially during tornadoes—it is very short.
- The safe room should be accessible without going outdoors.
- Operating Policies are important.
- IMPORTANT: Mobile home parks—We need to develop safe rooms/ shelters there. Mobile homes are very dangerous.

10:07

- Texas Tech University
- Some buildings are massive
- Ed Bates, Tulsa, OK – Design
- Broken Arrow University—Adequate safe space

10:09

- It's a good model to follow
- You need to tie down the shipping containers being used as shelter.
- They made dorms out of shipping containers
- Athletic Facilities
- Building has underground spaces.
- Check for roof vulnerability.

10:11

- Design Challenges for Safe Rooms
- Wind induced pressure.
- Structural Design

- Debris Impact: Rely on testing
- Debris Launcher at Texas Tech

10:13

- Missile Impact Simulation
- Goal: Successful Performance = Missile shatters

10:15

- Genesis of Wind Research
- Began with Lubbock Tornado in 1970: 26 people killed. 1/3 of the city damaged.
- Studied effects of about 150

10:17

- Inspiration for Above Ground safe rooms

10:19

- School in Xenia, OH
- Before storm vs. After storm pictures

10:20

- Developments in Utilization
- 1997: Jarrel, Texas—Most of people who stayed in their homes were killed.
- What could have been done to save these lives?
- This gave safe rooms public attention (Because of the media coverage.)

10:23

- FEMA 320: IMPORTANT
- Also see FEMA 361

10:24

- Barlett Shelter, Oklahoma City 1999

10:25 NSSA: National Storm Shelter Association

- ^^ An industry association is born.
- Standards Compliance Verification Process
- 1. Produce member pledges...
- 2. Code of Ethics
- 3. Get professional assurance

- 4. Obtain 3rd party approval (FEMA 320)
- 5. Test Shelter
- 6. Put a seal on the shelter

10:28

- Plywood and Steel

10:29

- Moore, OK: Tornado Damage to Elementary School
- Guidelines

10:30

- Impetus for community
- ICC/NSSA 500-2008 Standard
- FEMA revised versions on their policy (361 & 320)
- If FEMA is involved—You must meet their guidelines.

10:33

- Hardened Interior Space
- Jefferson Elementary
- Community Steel Shelters

10:35

- Safe Rooms can meet all demands
- Residential Safe Rooms
- Below the slab safe rooms
- Cut out hole in garage
- Concrete safe rooms above ground
- Steel safe rooms above ground
- Fiberglass safe rooms underground shelters (Issue: They may begin to float)

10:40

- Signs of Progress
- 2015 Building Codes will require safe areas
- It will take time.

10:42

- Informational Sources:
- www.NSSA.cc

- 18777006772 (NSSA)
- For testing 8067426772 (NSSA)

10:43

- We are going to produce a computer model.

10:44 Question and Answer time

- Question: How do you decide where the community shelters are located?
- Answer: They should be accessible. Texas will build 40-60 shelters along the coast. X amount of people for every X radius. 5 sq. feet per person. Texas decided to use dome shaped shelters, and the visual of these shelters make them easily known.

- Question: How do you deal with older, historical buildings?
- Answer: It can be made to fit the standards. IBC will require safe rooms. We need to accommodate fire protection.