College of Engineering

Drexel E-Repository and Archive (iDEA)
http://idea.library.drexel.edu/

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Please direct questions to archives@drexel.edu

Building Usability

Issues that architects and engineers face while designing buildings that are usable, accessible, and enhance overall user experience.

A Bit About Me

- Trained as Engineer & Architect
- Principal of Architectural firm for 9 years
  - Jordan-Mitchell , Inc.
  - We specialized in health care, banks and
- 1988 Joined Drexel to build the brand new Architectural Engineering program
- Teach Architectural Engineering Design
  - And lots of other things
  - Play with web – many sites

James E. Mitchell — Engineer, Architect, Teacher

| Home | Schedule | Courses | Papers | CV/Resume |

AE Resources

Contact

Associate Professor
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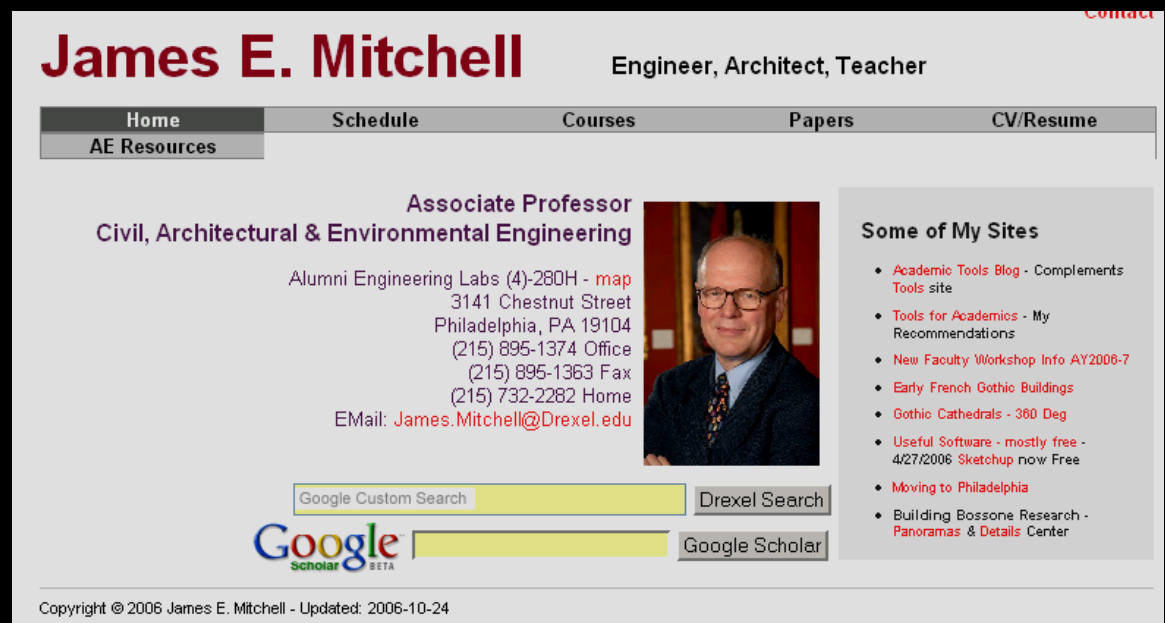(215) 732-2282 Home
EMail: James.Mitchell@Drexel.edu

Some of My Sites

- Academic Tools Blog - Complements Tools site
- Tools for Academics - My Recommendations
- New Faculty Workshop Info AY2006-7
- Early French Gothic Buildings
- Gothic Cathedrals - 360 Deg
- Useful Software - mostly free - 4/27/2006 Sketchup now Free
- Moving to Philadelphia
- Building Bossone Research - Panoramas & Details Center

Google Custom Search | Drexel Search

Google Scholar BETA | Google Scholar

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A Tour of Drexel University

What did you see?

What I had in mind

- Some issues of building usability

New building - Famous architects – Pei, Cobb, Freed

Stair to an empty terrace

Entrance – That usually doesn't open

Hazardous corner

Unused,
expensive space

No provision for trash

Stair with unsettling motion

Existing Building - Strange Fire Cabinet

Confusing Signs

Fan to fight summer heat

Telltale to visualize air flow
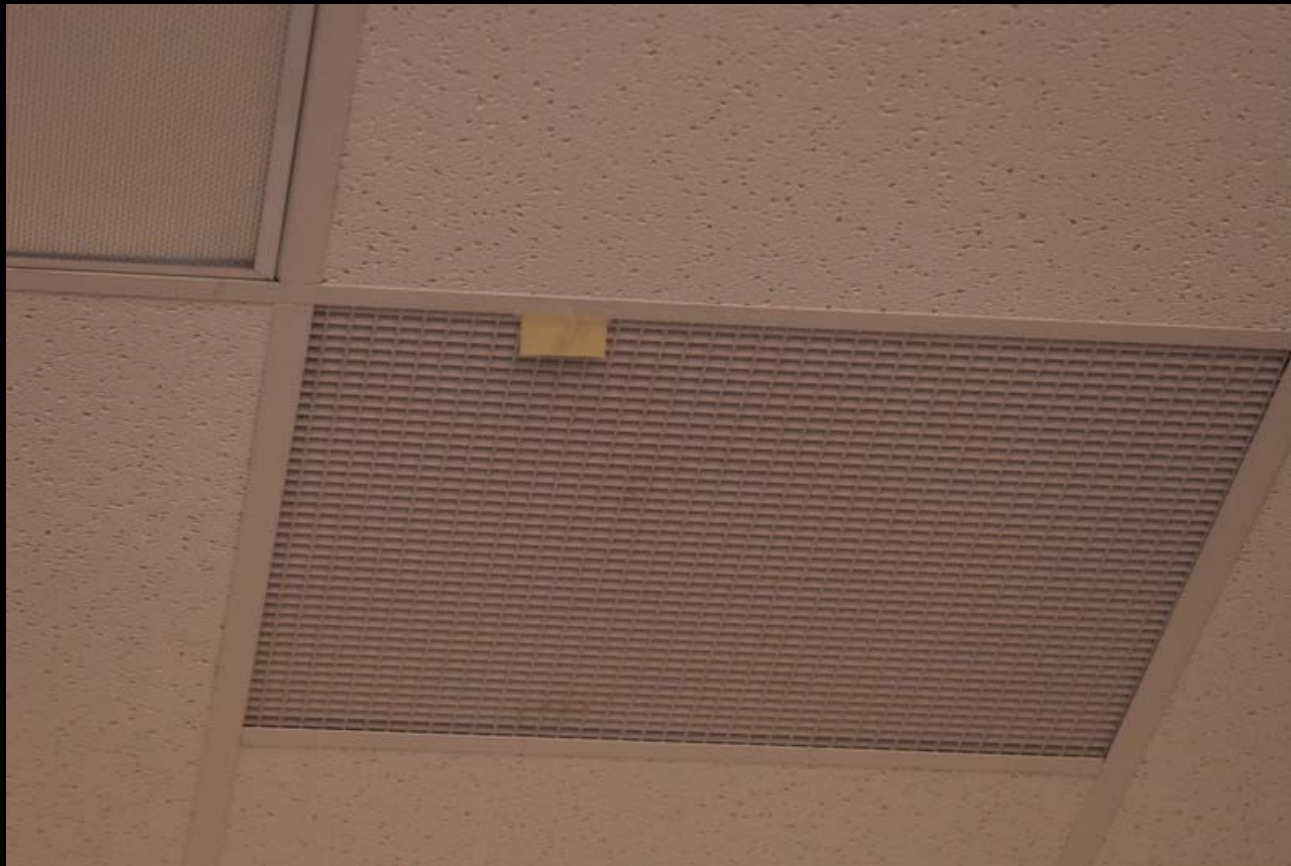
Sweaters for Winter Cold

Uncontrollable Thermostat

What are Your Pet Peeves about Buildings?

THIS IS A MOP SINK

http://www.baddesigns.com/mopsnk.html

What happens when YOU "get it wrong"

- "Frustration" is the usual answer for computer programs.
- May lose money

In buildings we can kill or maim

- Hyatt Regency Hotel
- 114 Dead
- 200 Injured
- July 17, 1981

Proposed Design[4]   Actual Design[5]

http://www.engr.utexas.edu/wep/COOL/AcidRiver/allaboutbridges_Disasters_hyatt.htm
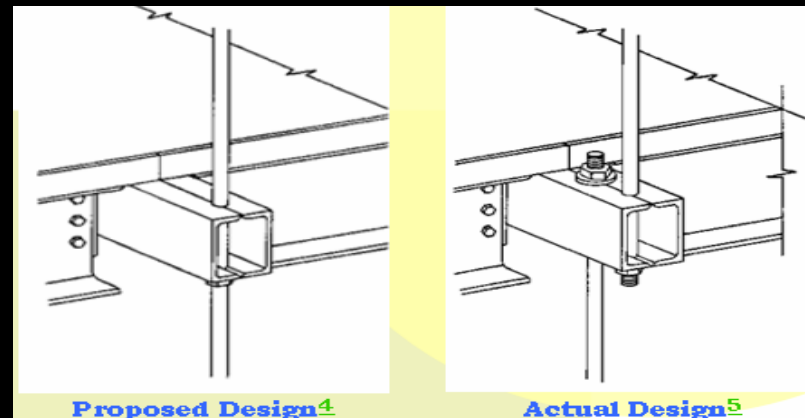
Padlocked fire Exit

- **Whose usability does this address?**

What's Different about Buildings?

- Many simultaneous users doing different, unpredictable (in detail) things
- Many different user types
- All senses involved
- Physical motion
- Long time span – Up to 1000s of years

Building Stakeholders

- Builders
  - ◆ Owners
  - ◆ Architects
  - ◆ Engineers
  - ◆ Contractors
- Operators
  - ◆ Maintenance
  - ◆ Security
  - ◆ Emergency
  - ◆ Housekeeping
- Government

- Occupants = "Users"

How do building designers strive for Usability?

- ● Codes
  - ◆ Zoning
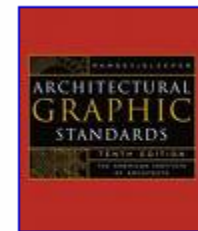 - ◆ Building
  - ◆ Aesthetic
  - ◆ Environmental
  - ◆ Life Safety
  - ◆ Health
  - ◆ Disabilities

- ● Standards
  - ◆ Materials
    - • Steel
    - • Concrete
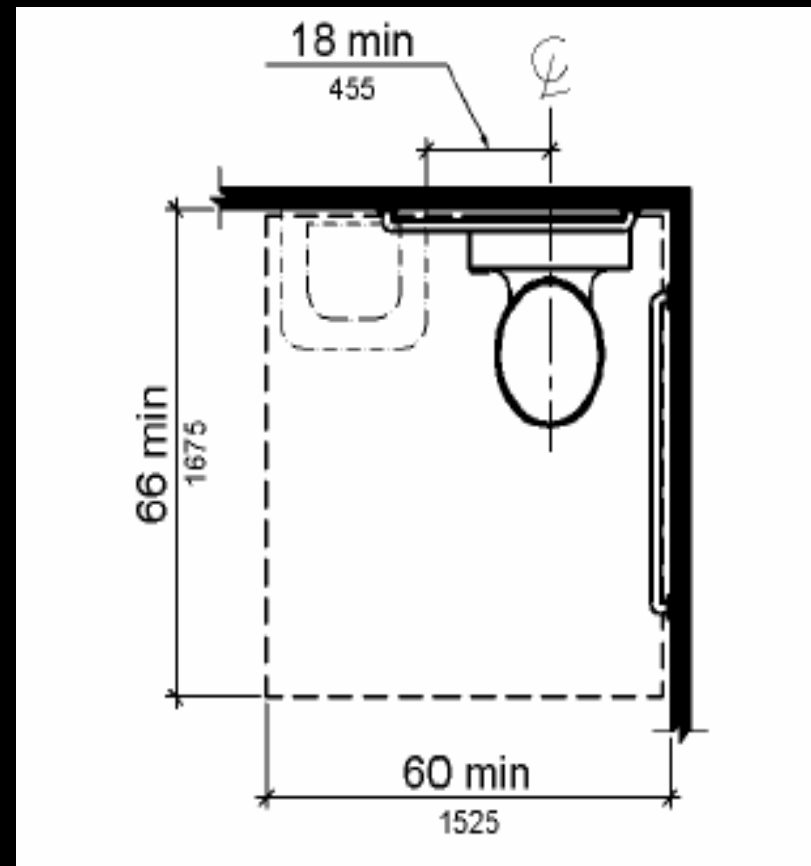   - • ++++
  - ◆ Layout
    - • Graphics Standards

Interior **Graphic Standards**
180 x 254 pixels - 7k - jpg
images.bestwebbuys.com

Architectural **Graphic Standards** ..
209 x 254 pixels - 11k - jpg
images.bestwebbuys.com

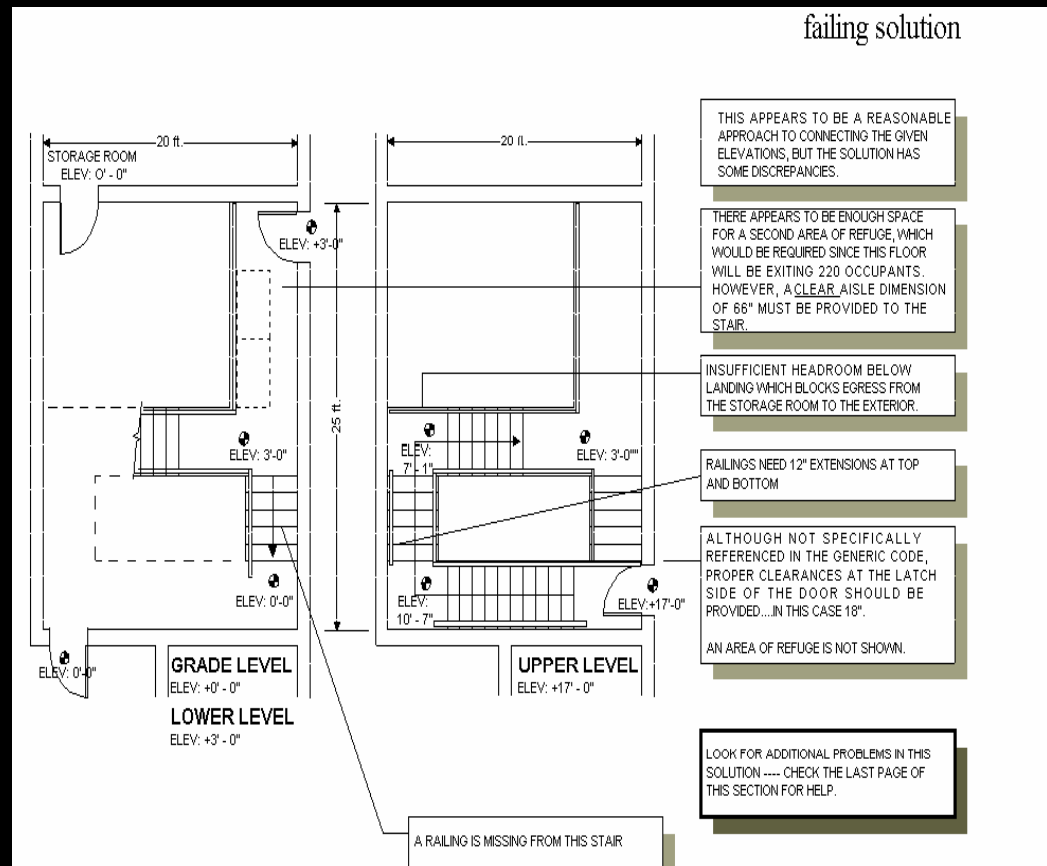# ADA – Amercian with Disabilities

- Accessible
  - Clearances
  - Slopes
  - Steps
- Like the web disabilities requirements, but more inclusive

Licensing

- **Who**
  - ◆ Architects
  - ◆ Engineers
- **Steps**
  - ◆ Education
  - ◆ Internship
  - ◆ Exams

failing solution

What affects Usability in Buildings?

- Stakeholder's different interests
- Money – some things cost more
- Knowledge – or lack of it
- Legal Fear
- Time – usually = money
  - Designers
  - Contractors
- Existing conditions – very important in buildings

Are there connections between our fields?

- **Yes**
  - Computers are increasingly used throughout design
  - They are used increasingly to build operate buildings
  - Our concerns about safety will be increasingly yours

- **No**
  - We operate in a more complex domain
  - We must address more senses

Are there lessons from our field

- Standards and Codes
- Analytic vs. visual creators – necessity of both
- Big changes may well come from disasters
- Don't forget people – it's easy to do so

Questions?

Laon Cathedral