Application of PBD to New Building Design

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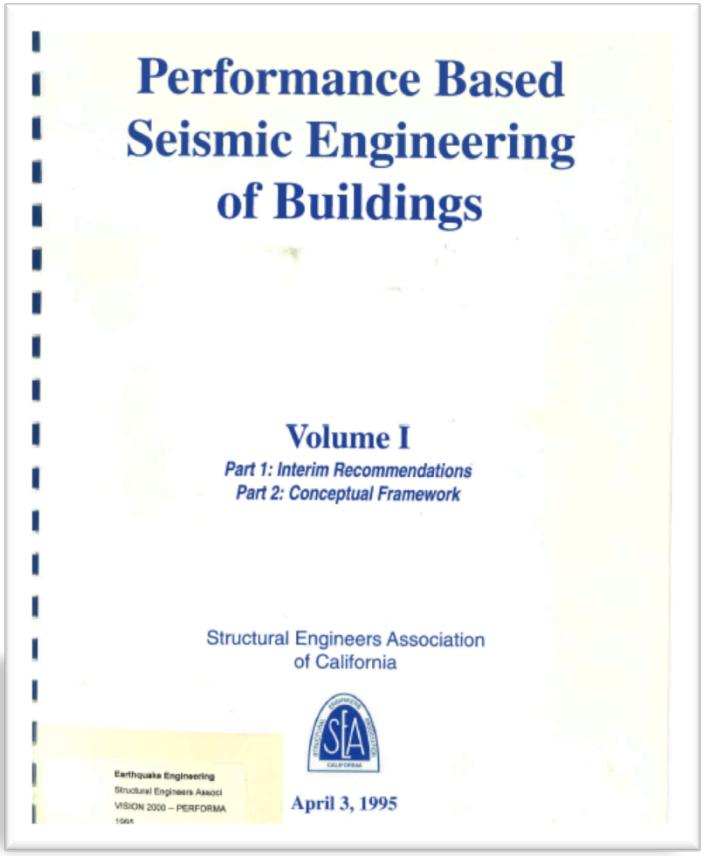
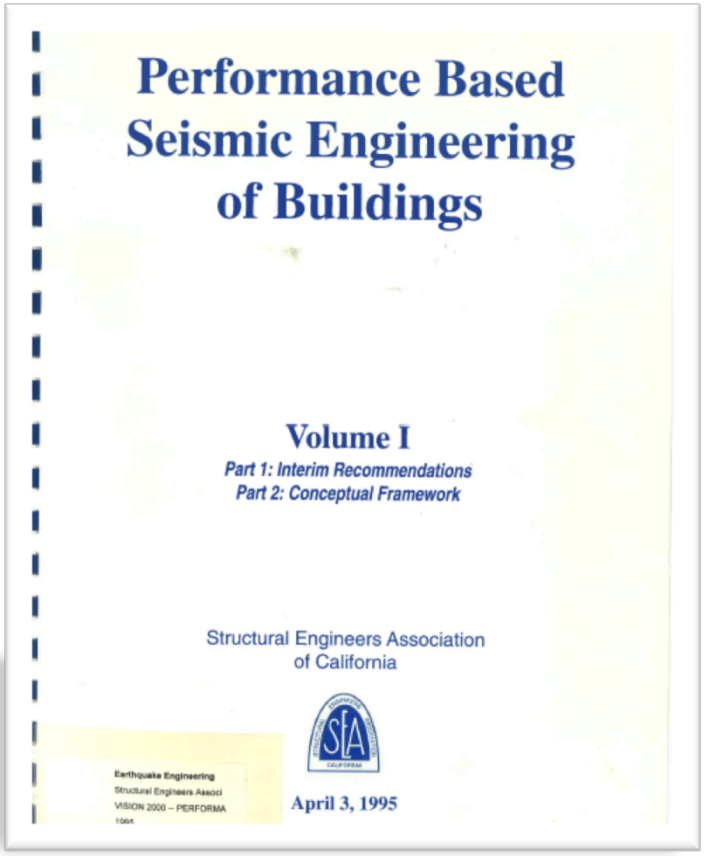
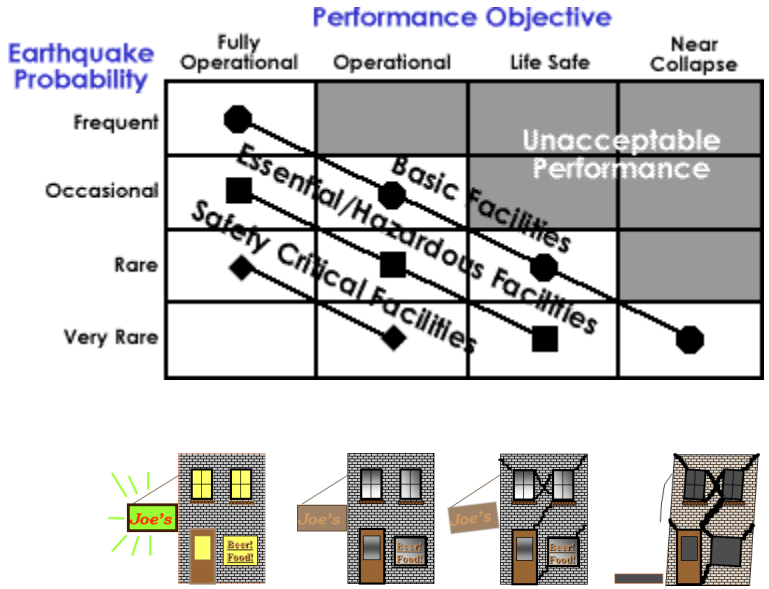
Performance-Based Design



- Procedures that will enable design and construction of buildings with predictable seismic performance

Performance-Based Design





Contemporary Use of PBD Today

Important Facilities
(Salt Lake City EOC)

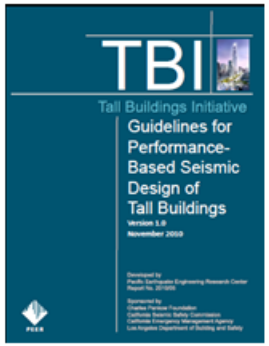
Undefined Structural Systems
(Google, Mountain View)

High-rise Buildings
(Rincon Center, SF)

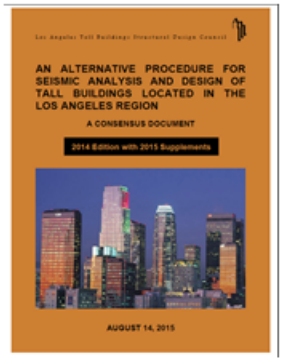
Reasons for Use of PBD Today

The Holy Books of PBD Today

ASCE 41

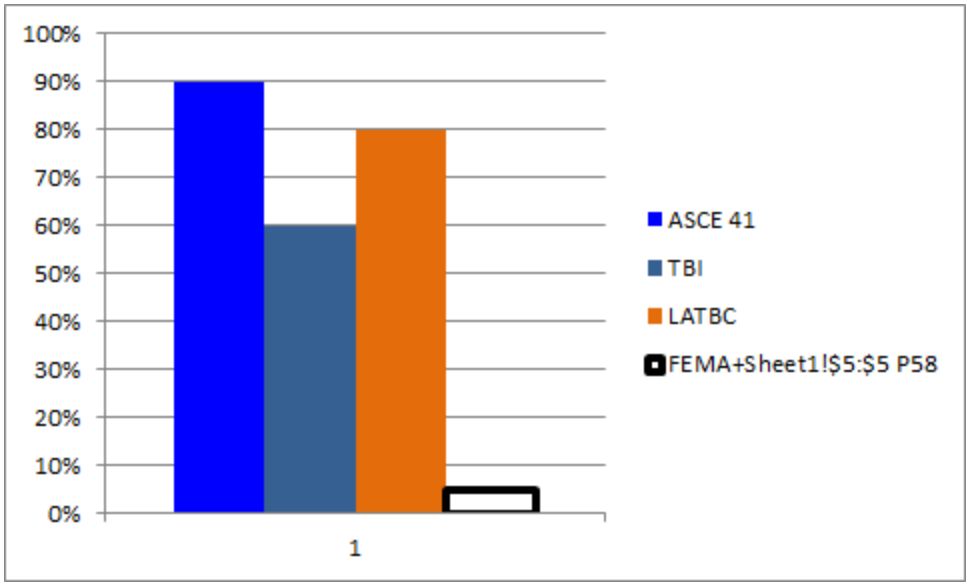


PEER TBI

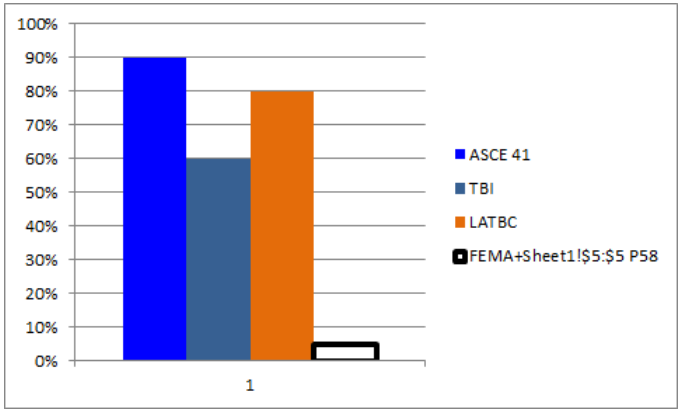


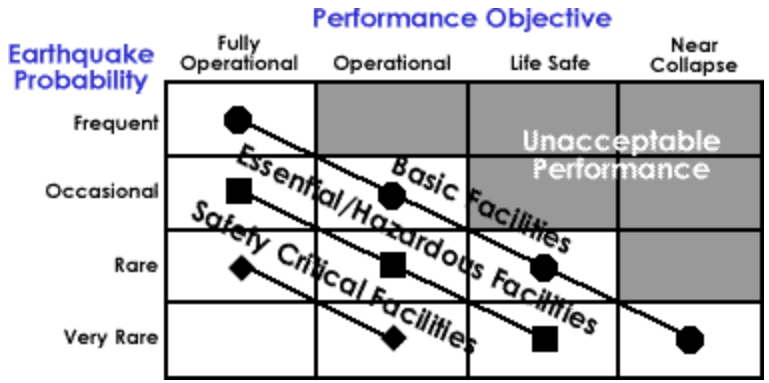
LA Tall Buildings

FEMA P58



Why this disparate use?





Why this disparate use?

- Familiarity and ease of use
- Acceptability by building officials
- Developer-friendly results
- Disenchantment with the results of performance assessment
- Lack of real interest in higher performance

Lack of real interest

Path Forward

- Disenchantment
  - The results of PEER/FEMA P58 assessments are pessimistic relative to actual experience
  - Driven by:
    - Large uncertainties
    - Unrealistic structural models
    - Conservatism in fragilities
    - "A tree falls in the forest" syndrome
- Further research and development can solve these

Path Forward

- Ease of Use
  - Commercial software and familiarity will solve this

Path Forward

- Building Official Acceptance
  - May come with time
  - Will need definition of equivalent performance goals

Path Forward

- Real Interest in performance
  - We need a really big, really destructive earthquake