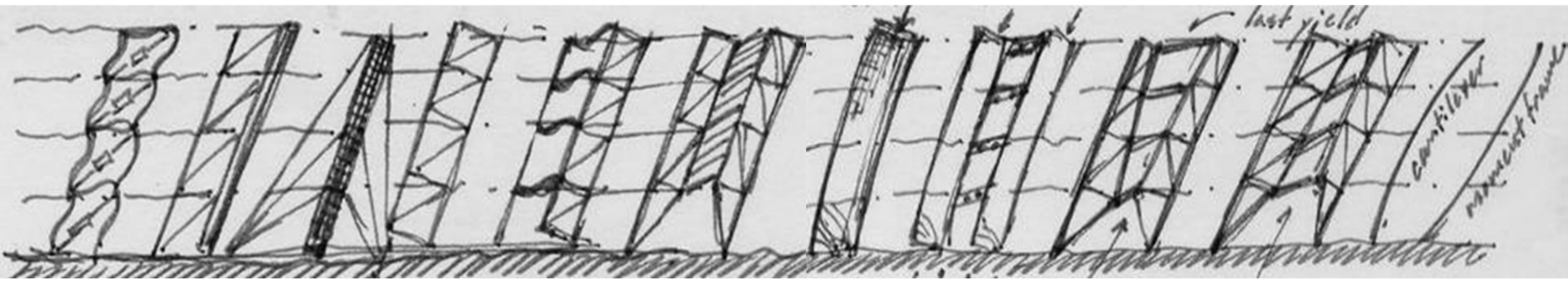
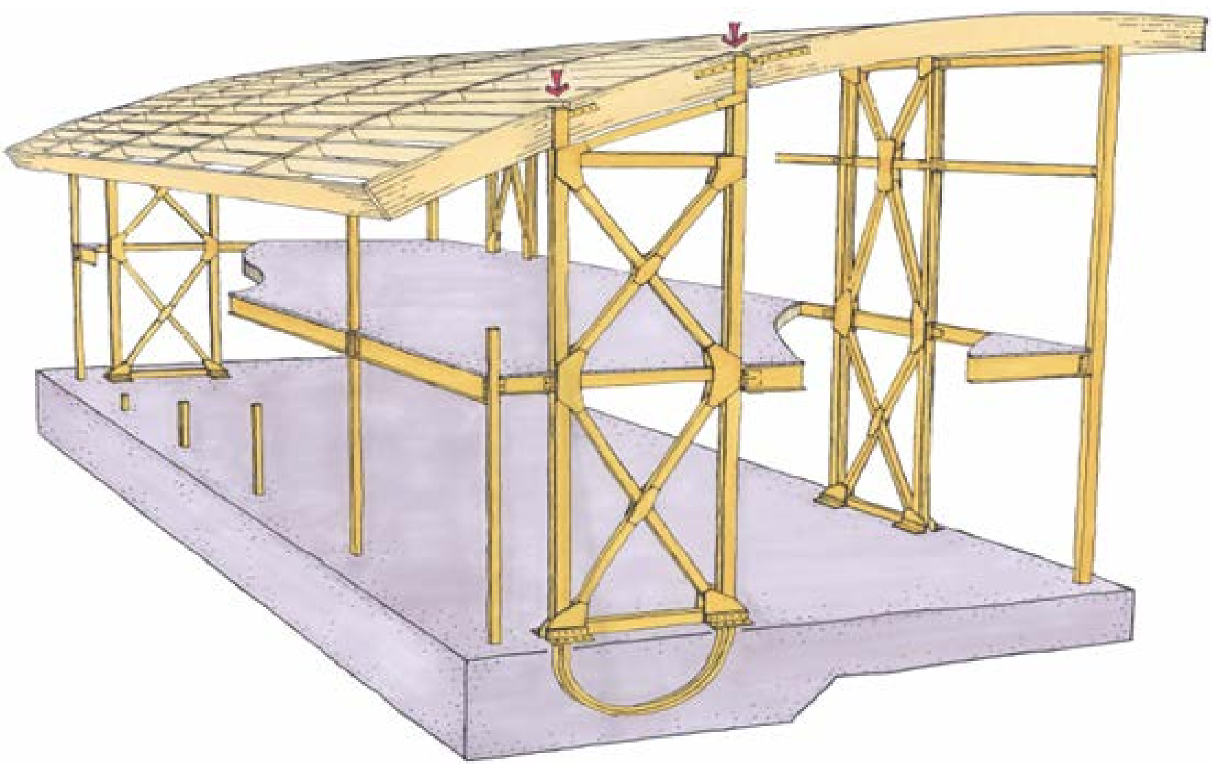
design choices are

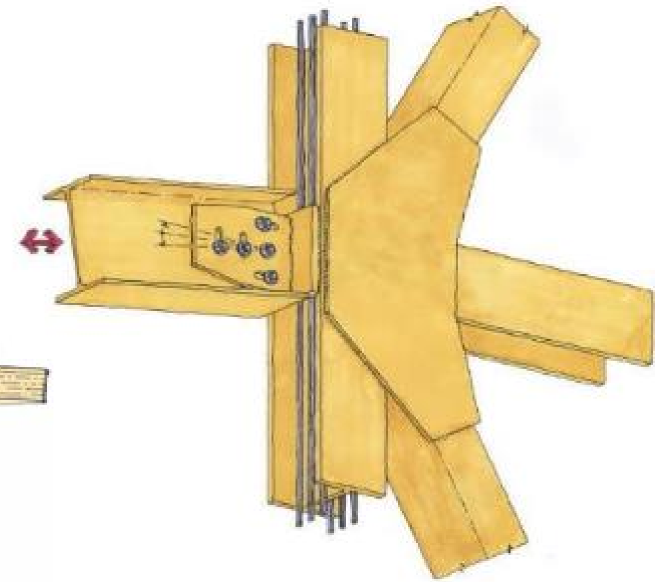


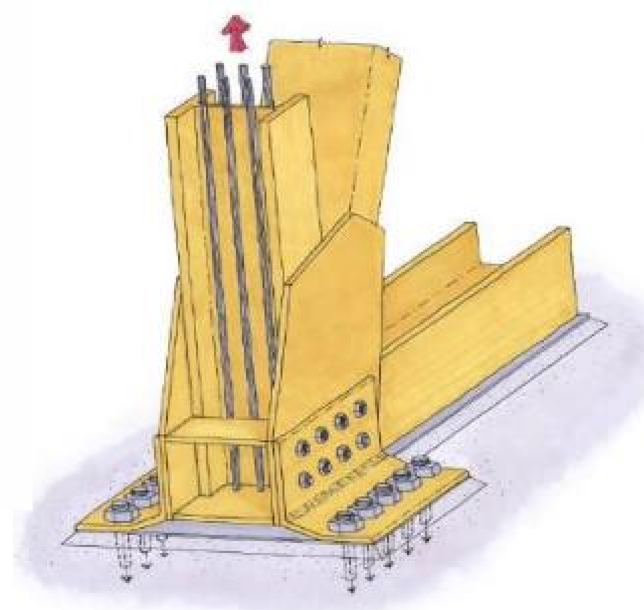
Performance Investments

Orinda City Offices, Orinda

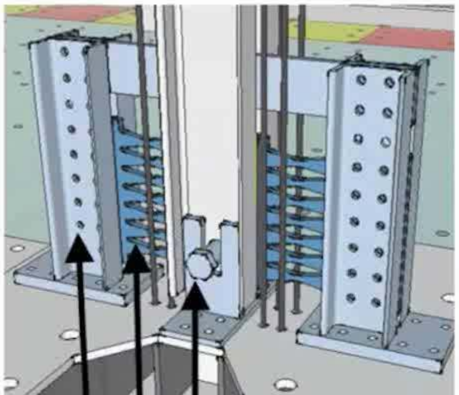
Architect: Siegel and Strain







TEST A1 CONFIGURATION



Pin Moves Center of Fuse Up and Down

Fuse is Steel Plate with Specially Designed Cutouts

Small Frame Restrains Motion of Sides of Fuse

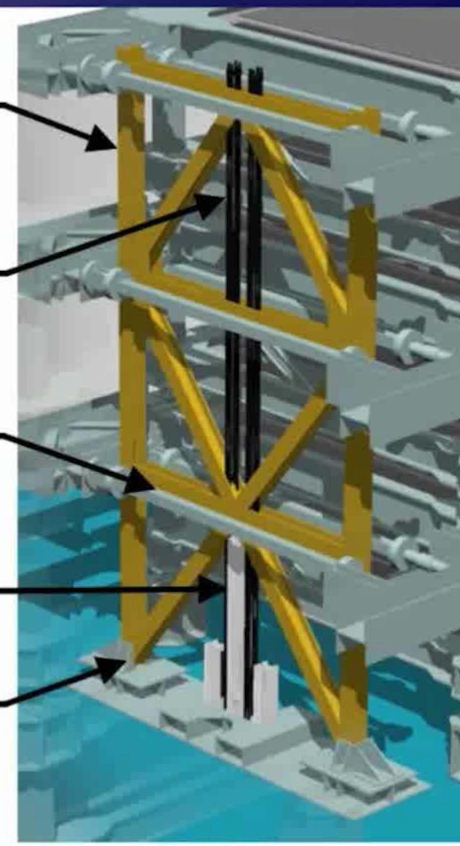
Steel Frame Remains Essentially Elastic, but is Allowed to Rock at the Base

Post-Tensioning Strands Bring Frame Back to Center After Shaking Stops

Pinned Struts Transfer Load to the Frame but Allow Uplift

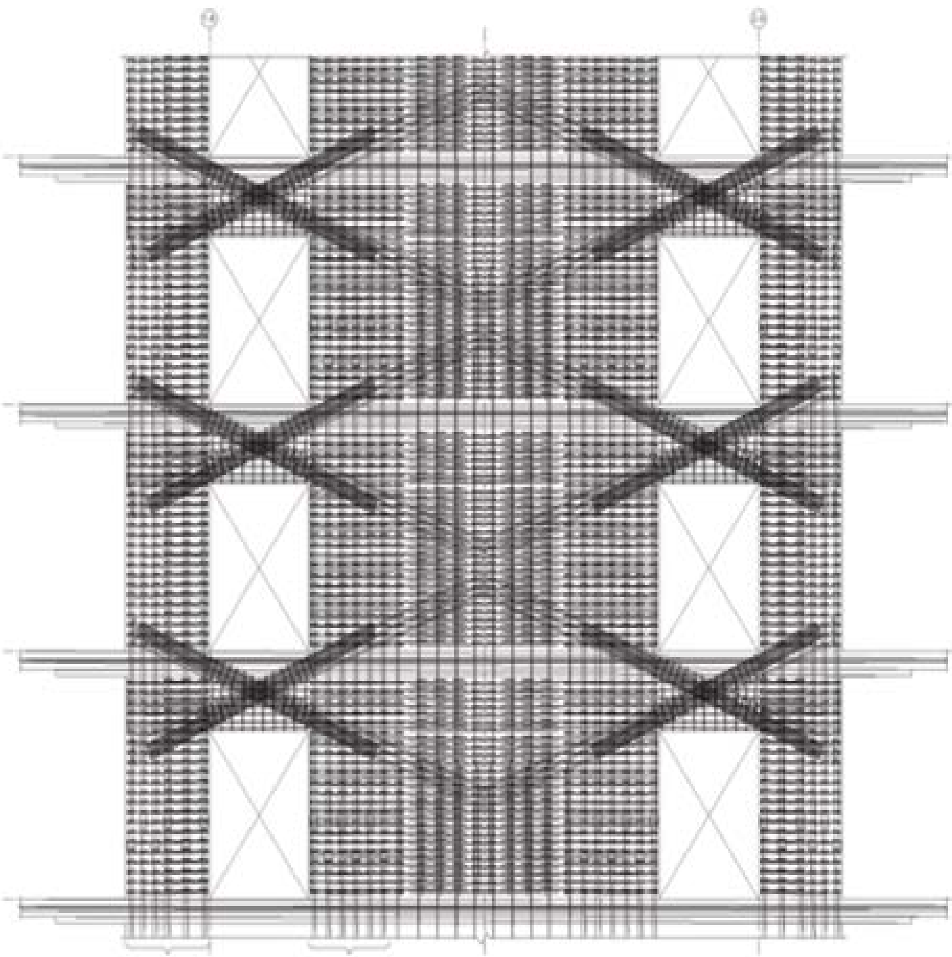
Center Column Connects Frame to Fuse

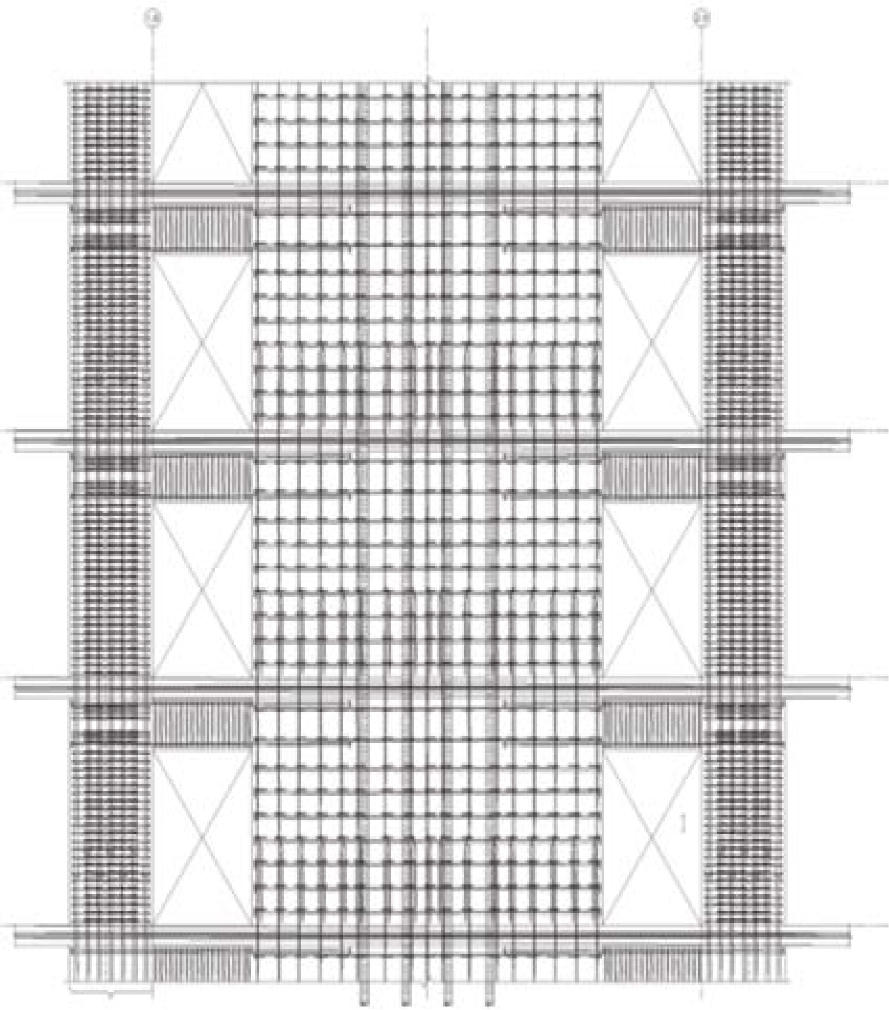
Base of Frame is Free to Uplift

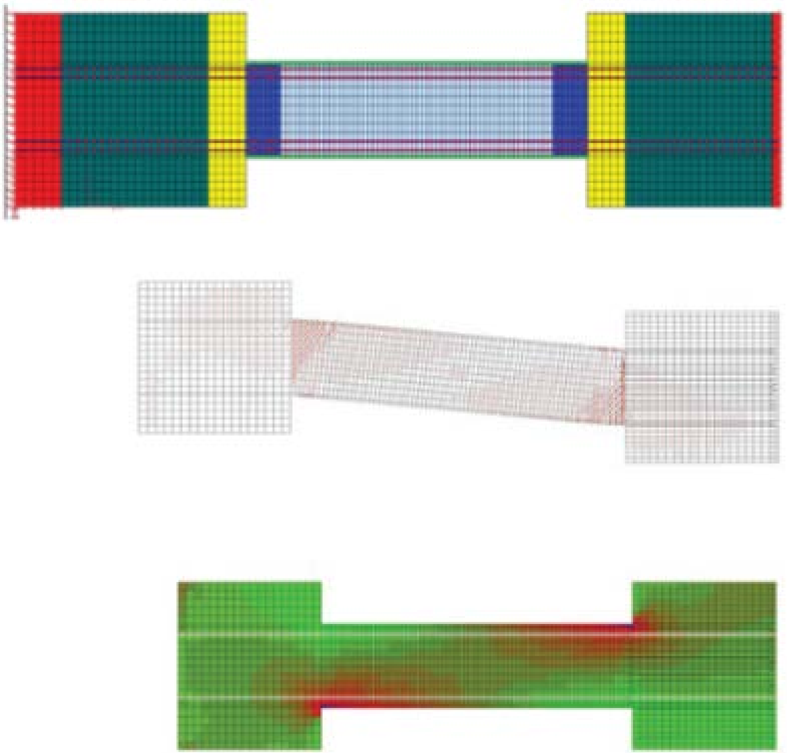
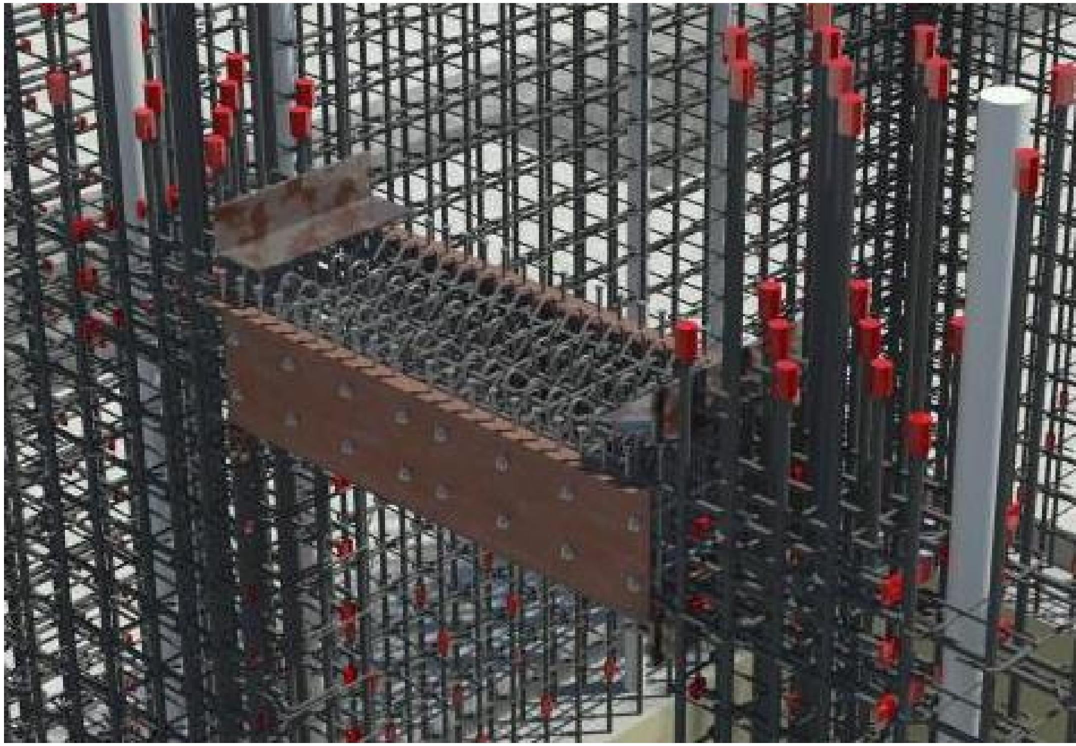


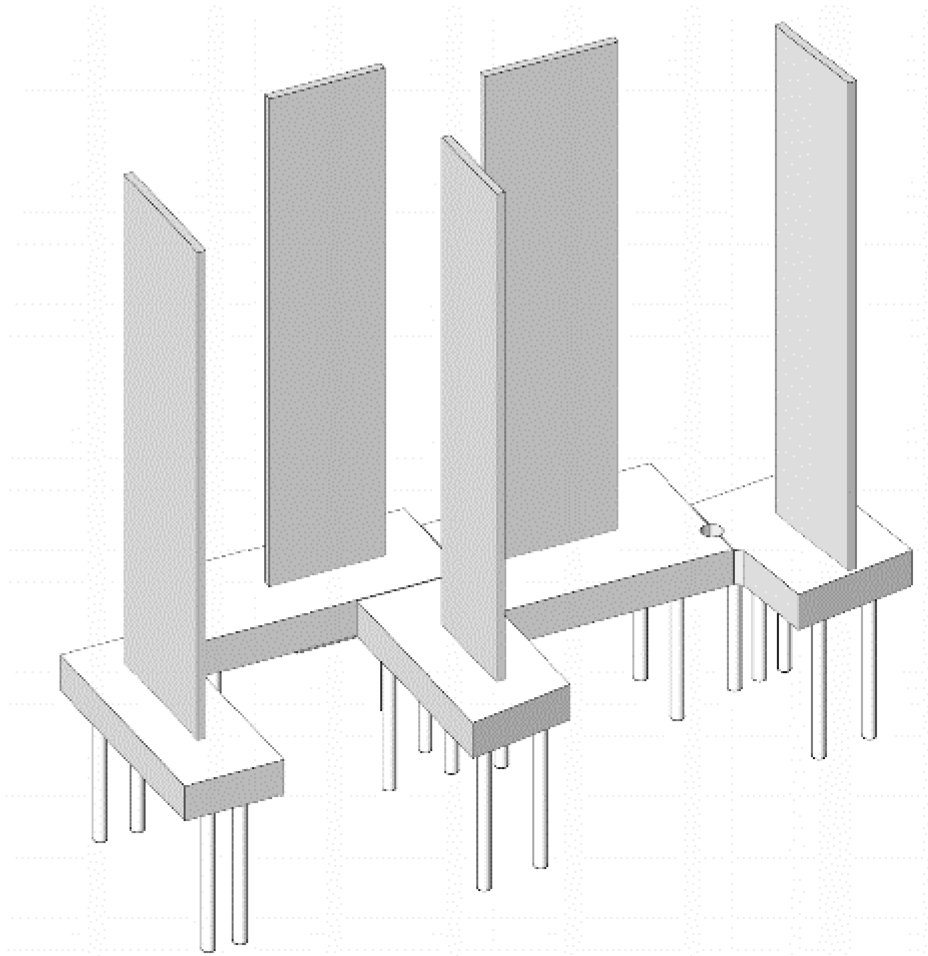
SF Public Utilities HQ, SF

Architect: KMD/Stevens





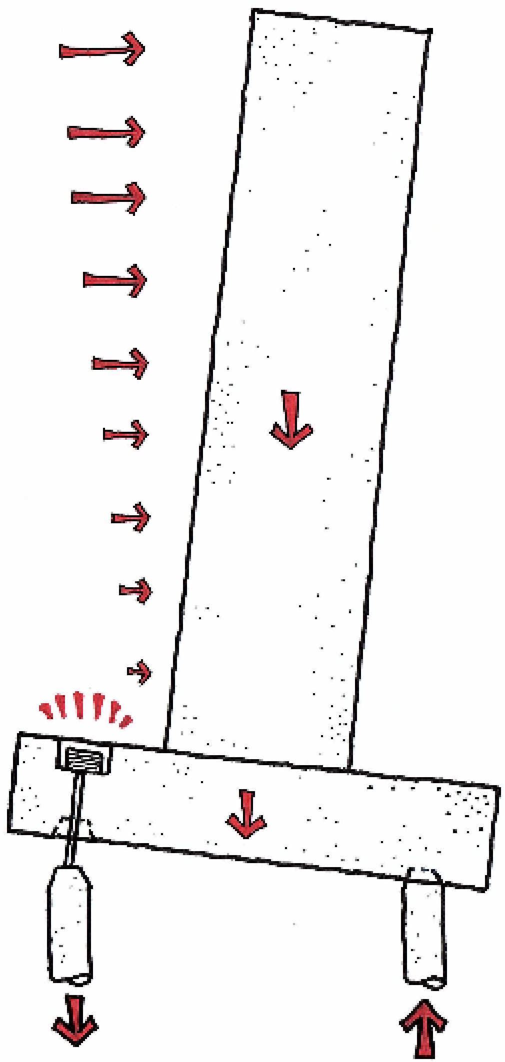





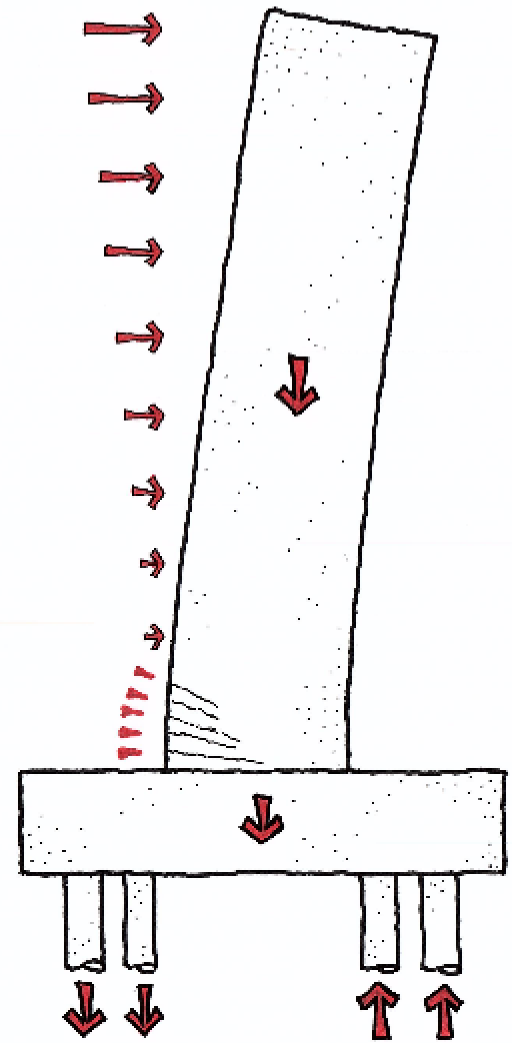
1296 Shotwell St, SF

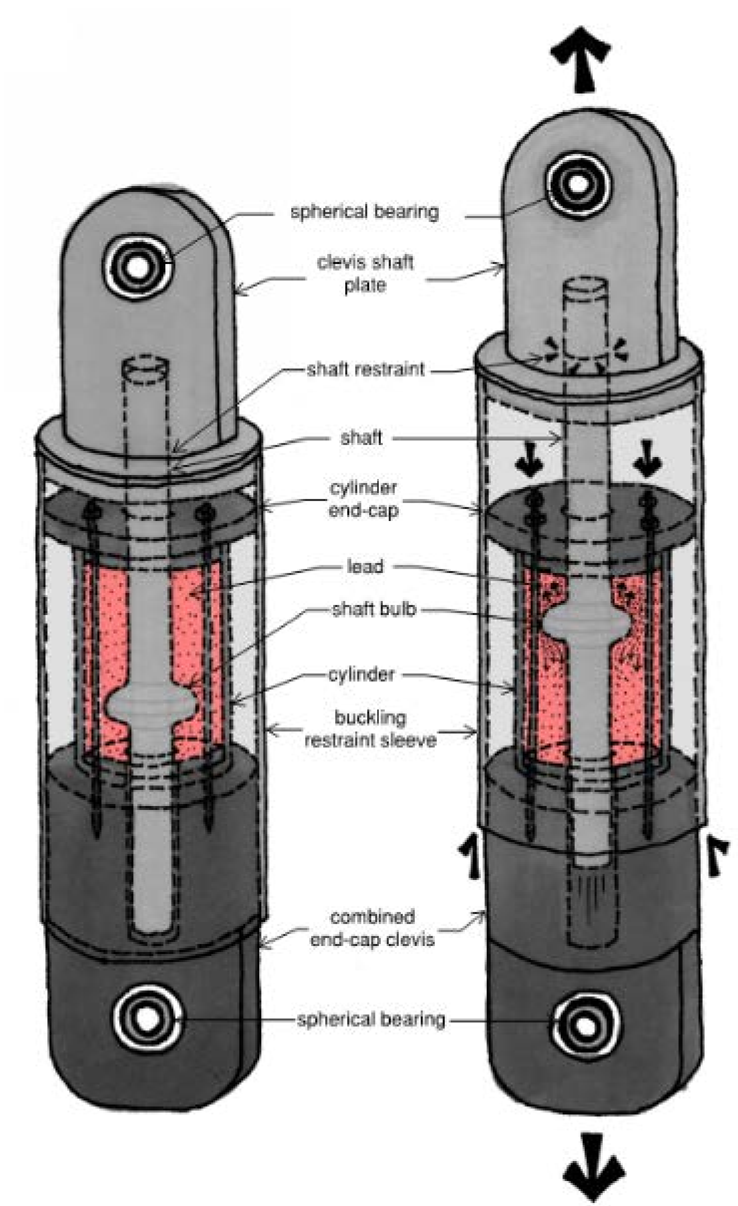
Architect: Herman Coliver Locus

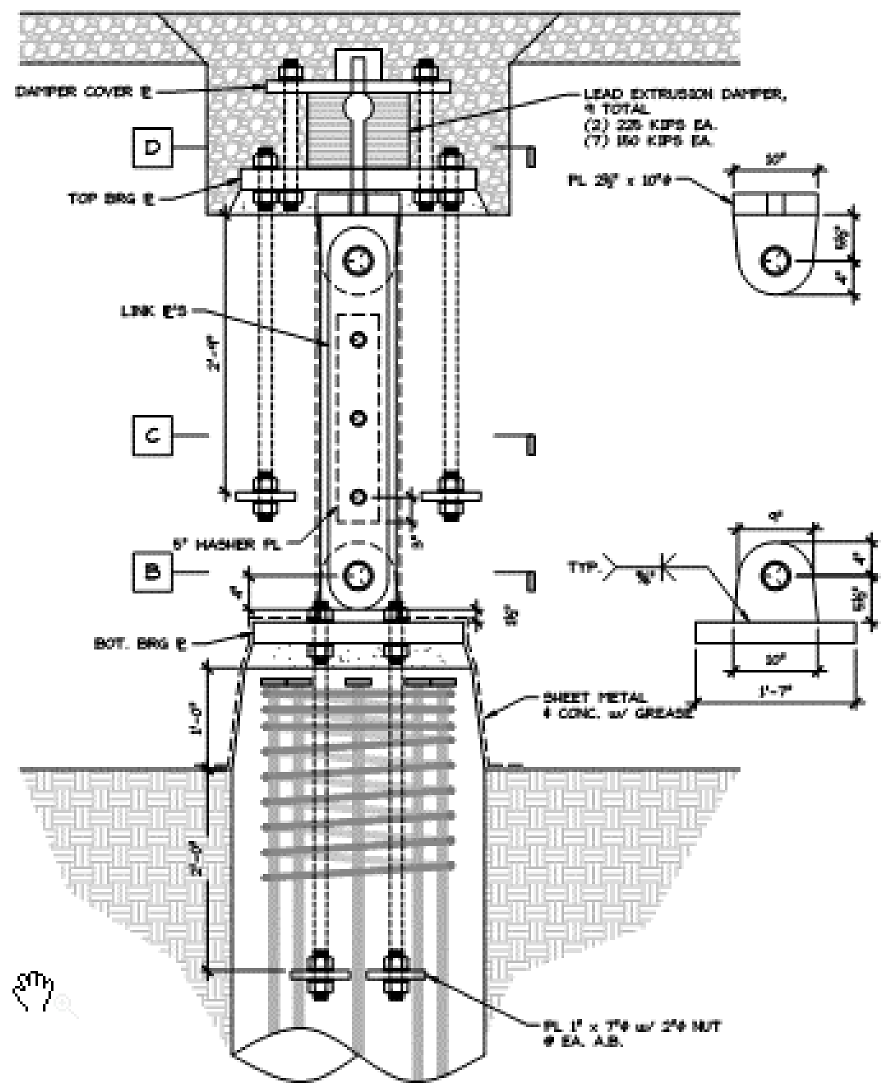
Performance Based Design

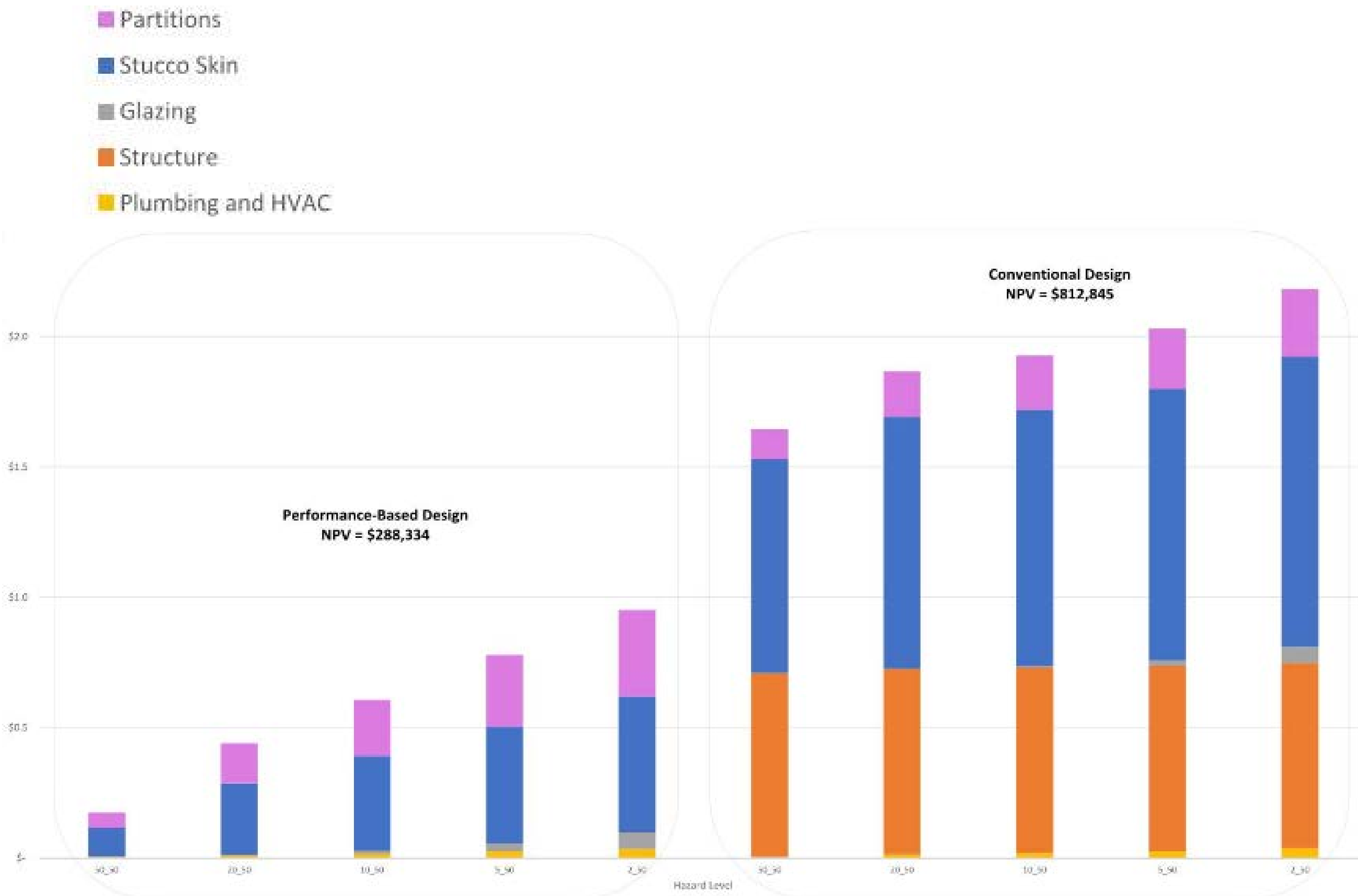


Conventional Design




spherical bearing
clevis shaft plate
shaft restraint
shaft
cylinder end-cap
lead
shaft bulb
cylinder
buckling restraint sleeve
combined end-cap clevis
spherical bearing

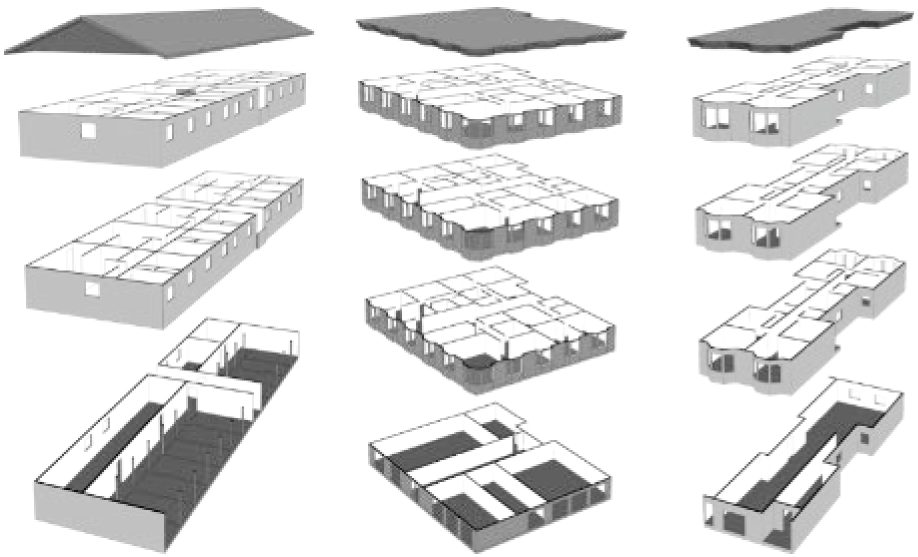

DAMPER COVER ℄
LEAD EXTRUSION DAMPER,
9 TOTAL
(2) 225 KIPS EA.
(7) 150 KIPS EA.
D
TOP BRG ℄
LINK ℄'S
C
5" WASHER PL.
B
TYP.
BOT. BRG ℄
SHEET METAL
& CONC. w/ GREASE
1'-7"
1'-0"
2'-0"
PL 1" x 7"φ w/ 2"φ NUT
@ EA. A.B.

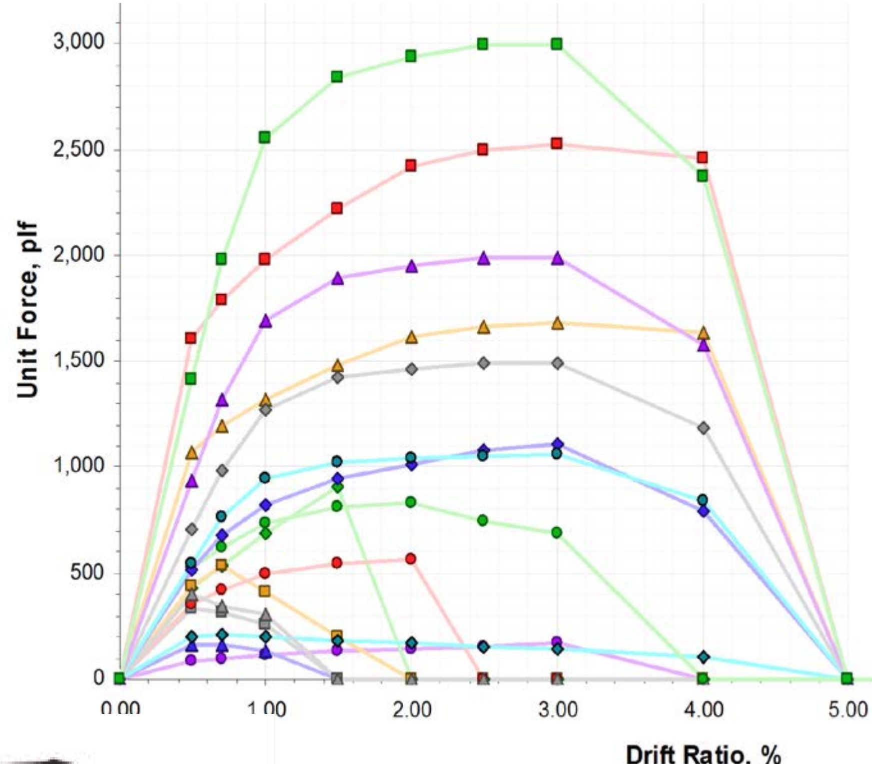


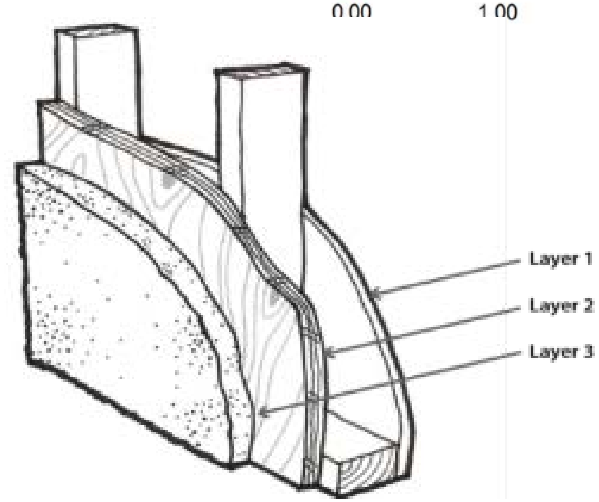
Economic Loss Modeling, FEMA P58 and SP3

F E M A   P 8 0 7

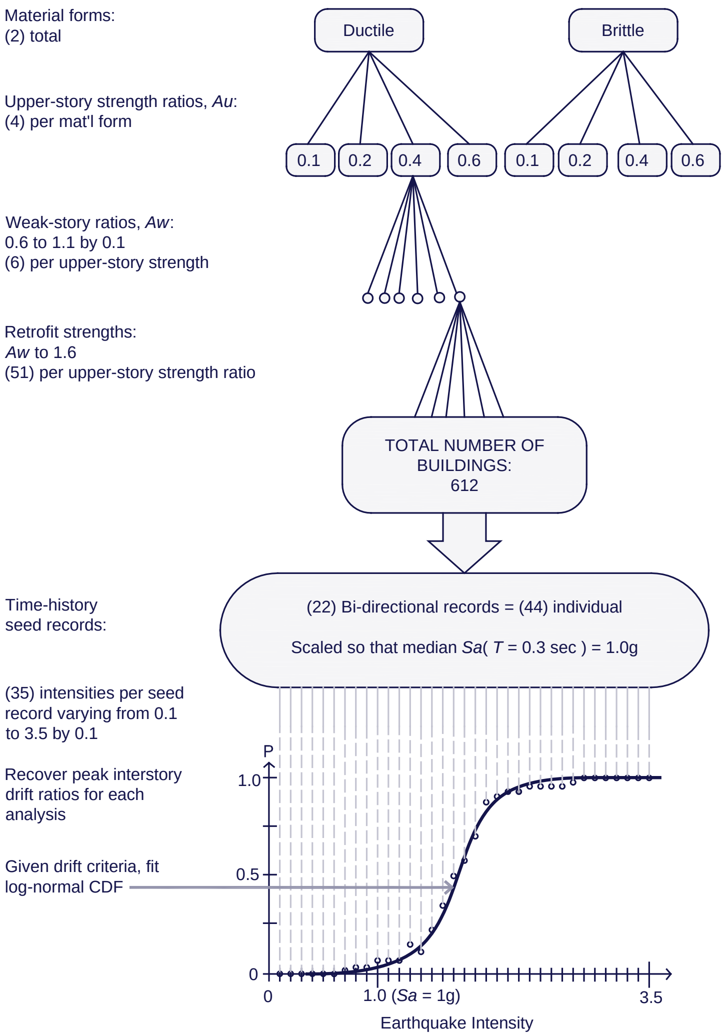
Seismic Evaluation and Retrofit of Multi-Unit Wood-Frame Buildings With Weak First Stories

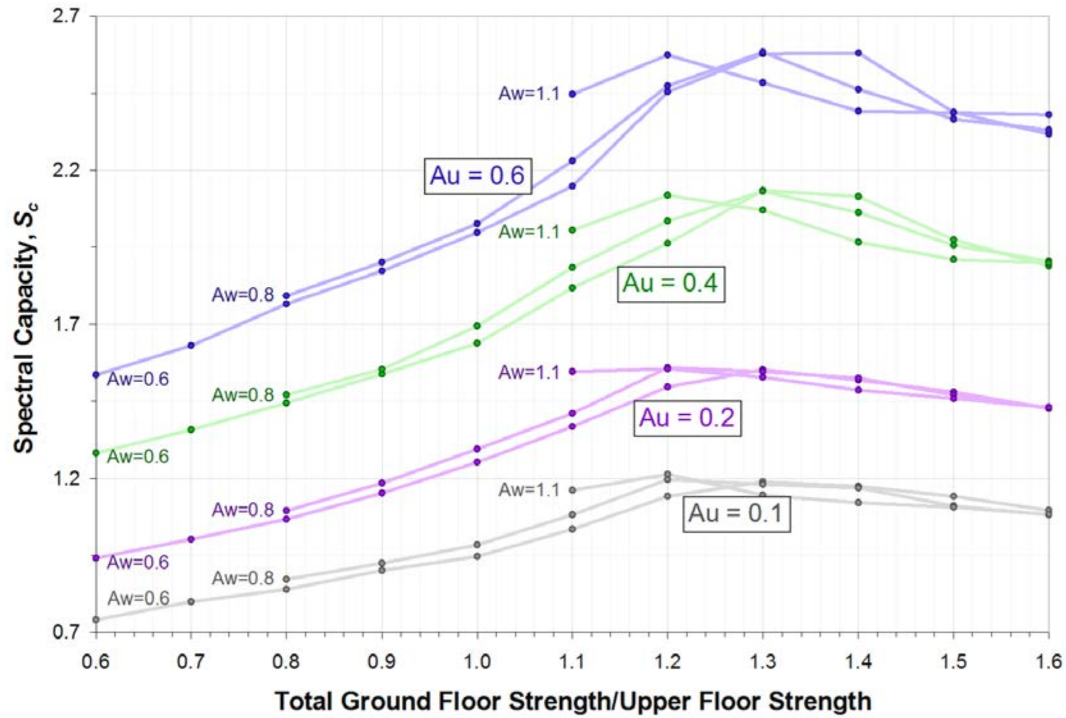



Unit Force, plf
3,000
2,500
2,000
1,500
1,000
500
0
0.00
1.00
2.00
3.00
4.00
5.00
Drift Ratio, %


Layer 1
Layer 2
Layer 3

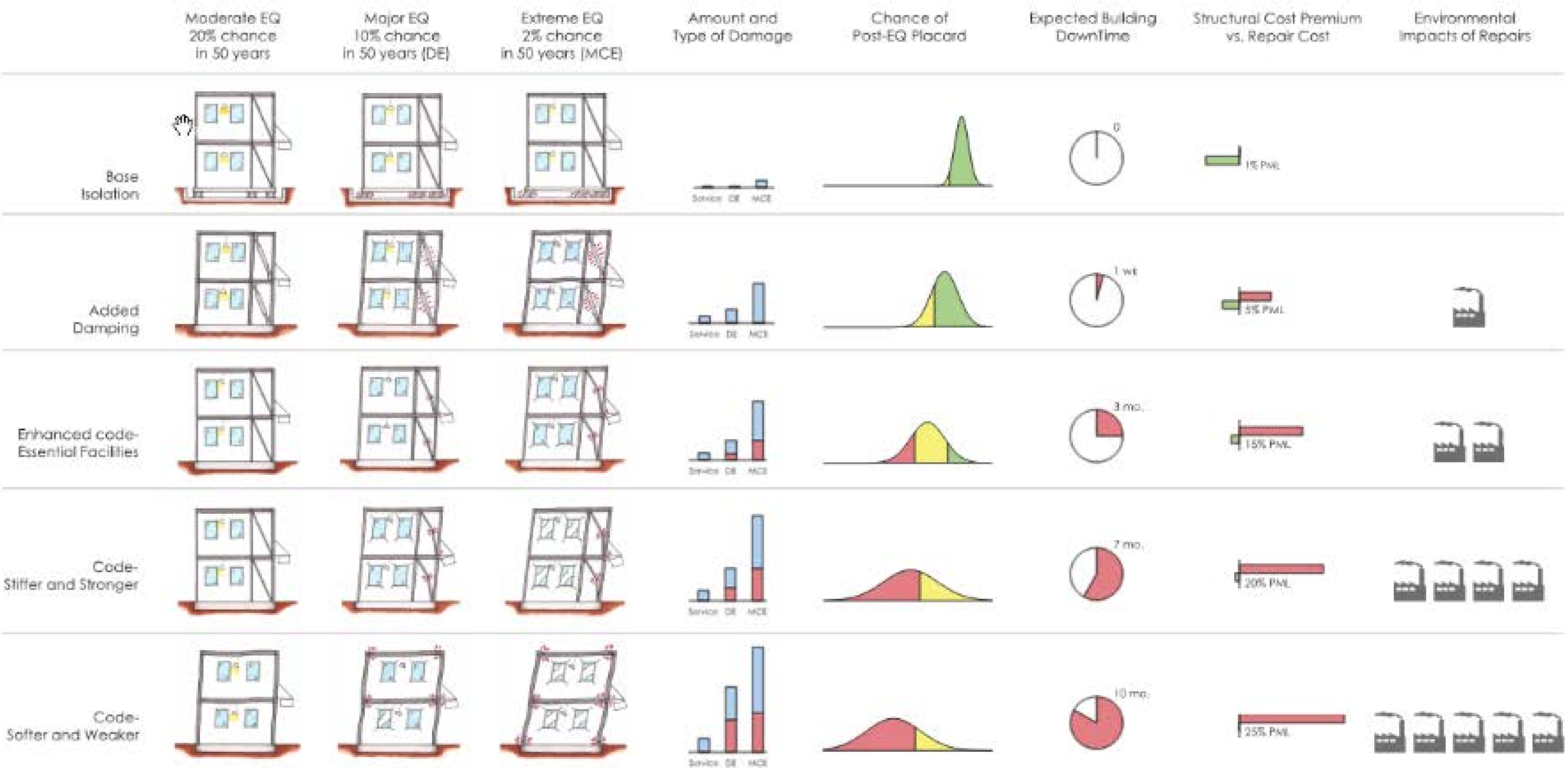
Surrogate Structures





UNDERSTANDING PERFORMANCE-BASED DESIGN

Information for Smart Design Decisions



Earthquake damage for code compliant buildings varies depending upon the level of shaking experienced and the characteristics of the building's structural system.

Damage to non-structural components, which can be more costly and disruptive than damage to the structure, can be measured and managed.

The odds of getting a green tag (safe), yellow tag (restricted), or red tag (unsafe) vary based on design choices.

Design choices affect the amount of time required before a building can be occupied after an earthquake.

The red bar respresents PML (probable maximum loss). It is a measure of the repair cost as a percentage of building replacement cost.

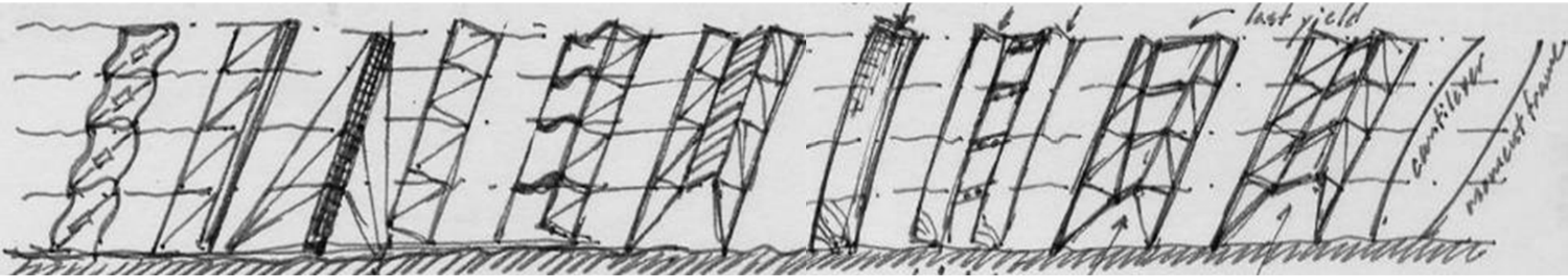
The green bar represents the relative structural investment cost for an enhanced seismic performance.

The materials and work required for post-earthquake repair have environmental consequences that can be measured.

Design Decisions Affect How Earthquakes Impact New Code-Compliant Buildings

The FEMA P-58 methodology can help inform decisions by calculating expected dollar losses, repair time, chances of receiving an unsafe placard, casualties, environmental impacts, and the uncertainty of each. See www.atcouncil.org/P58 for more information.

design choices are



Performance Investments