

*Architectural Koyaanisqatsi:
10-year, 100-year, 1000-year buildings*

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Adjunct Faculty, University of Texas School of Architecture
Senior Associate at BES, a division of Terracon



Chapter 1

10-year
100-year
1000-year
buildings

Mormon Temple, 1853

Salt Lake City

*designed to last for **eternity***

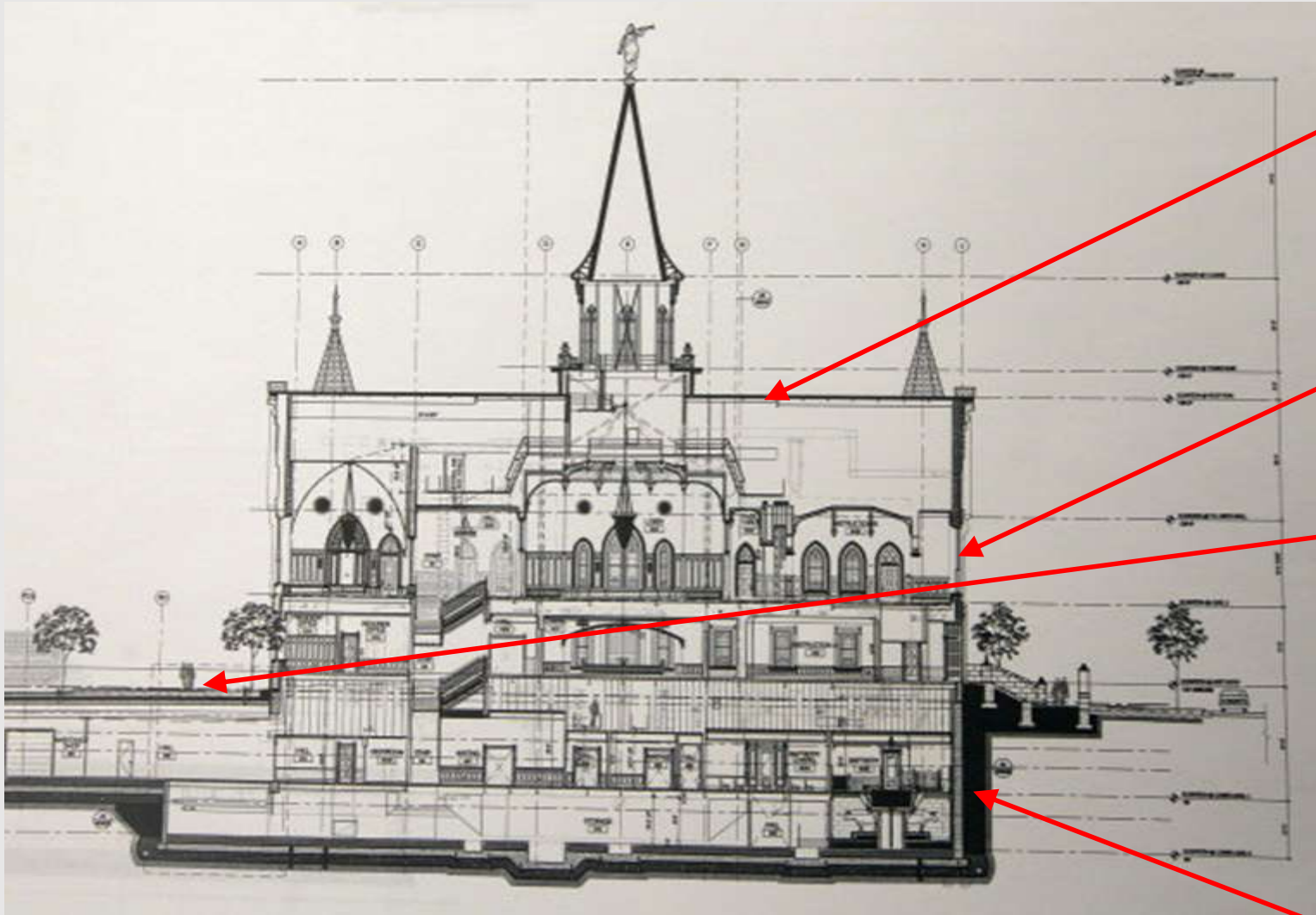




Mormon Temple, 1853

Salt Lake City

Architect Truman O. Angell

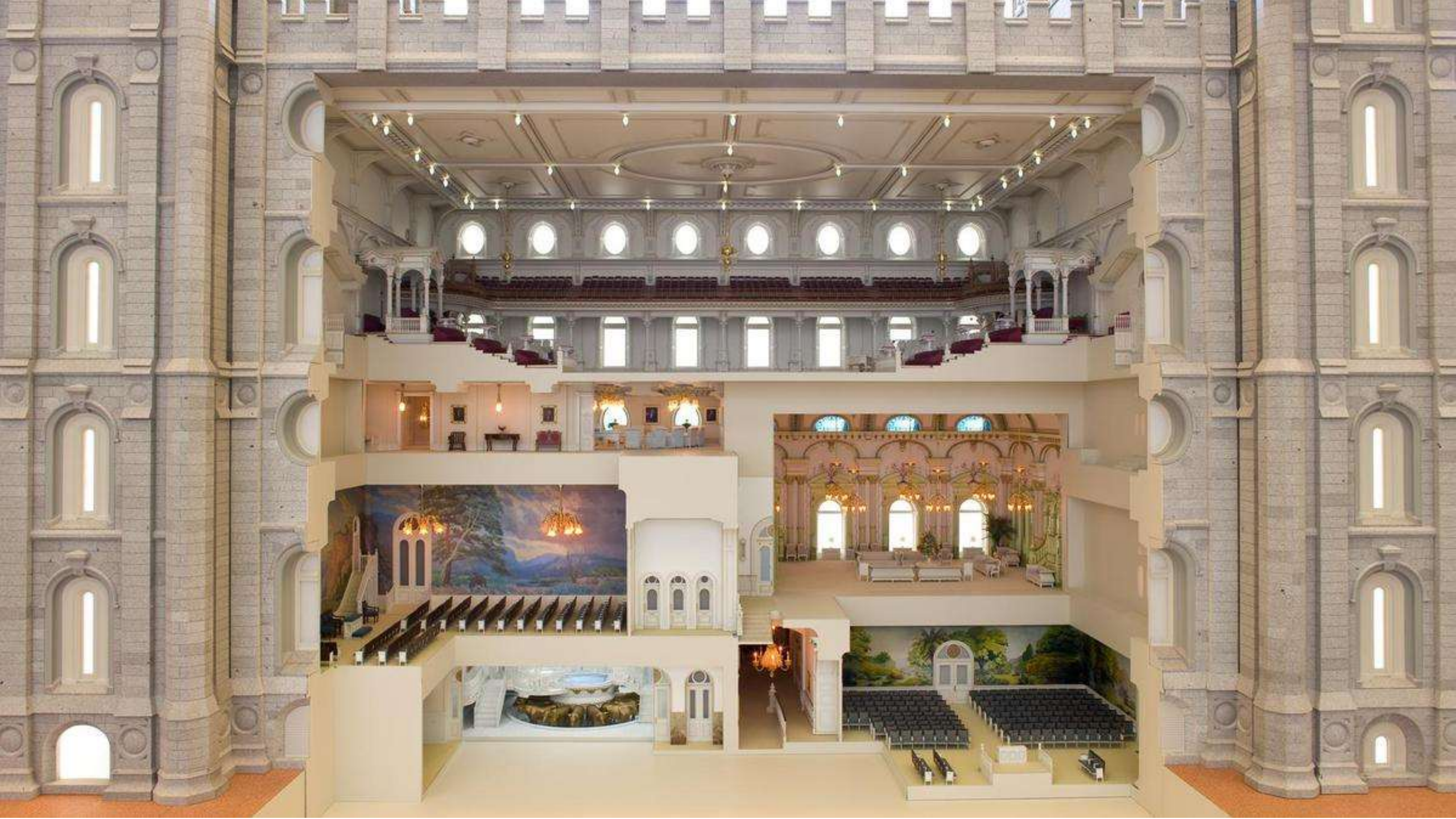


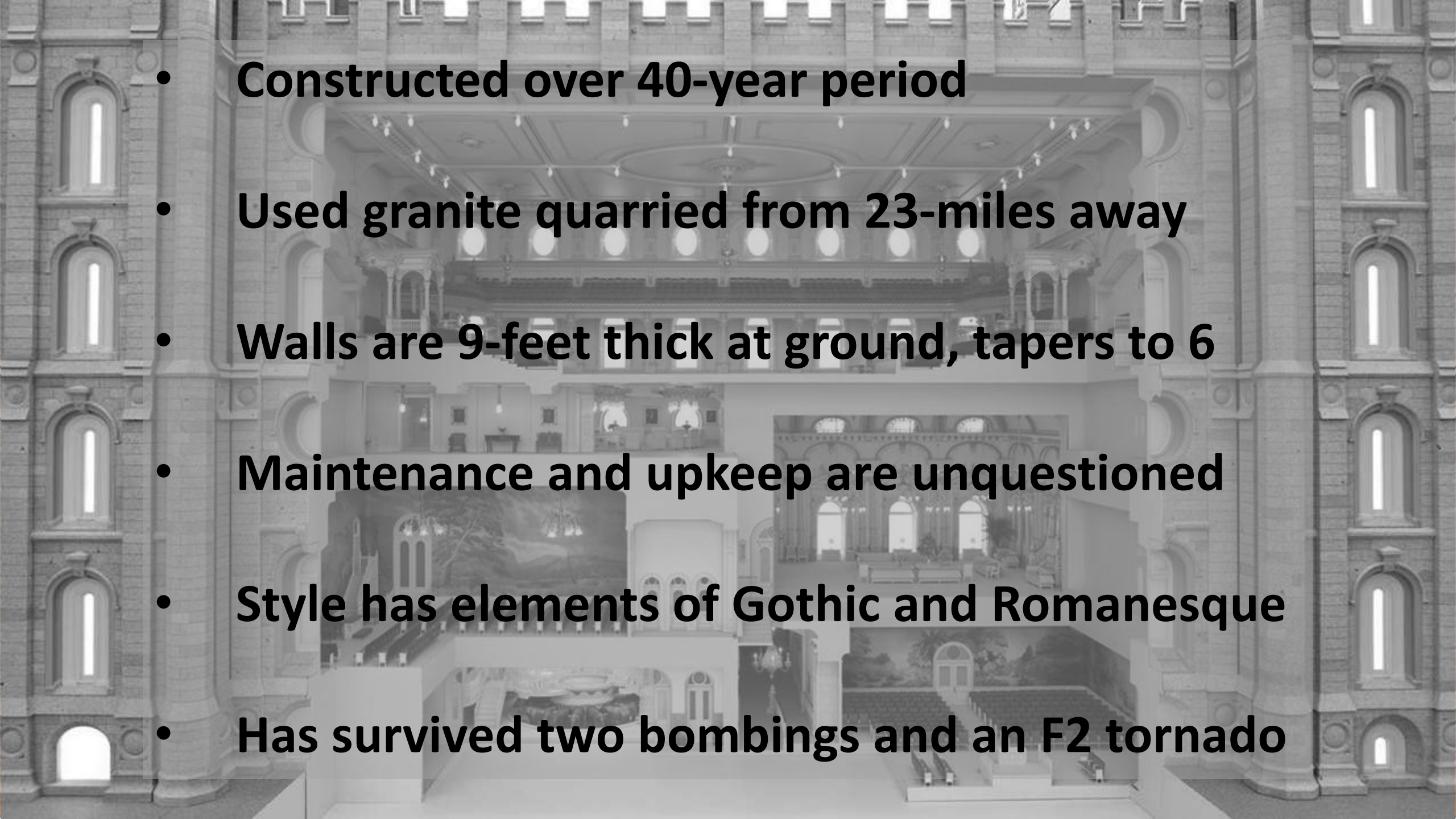
Roofing

Fenestration

Green roof with occupiable space below

Below-grade waterproofing



- 
- **Constructed over 40-year period**
 - **Used granite quarried from 23-miles away**
 - **Walls are 9-feet thick at ground, tapers to 6**
 - **Maintenance and upkeep are unquestioned**
 - **Style has elements of Gothic and Romanesque**
 - **Has survived two bombings and an F2 tornado**



What do we
teach in
architecture
schools?



A hand-drawn sketch of an open book, rendered in white lines on a black background. The book is shown from a top-down perspective, with the pages slightly curved. The text is centered on the pages.

Chapter 2

The Architect



Malcolm
Wells

*The
Architect*

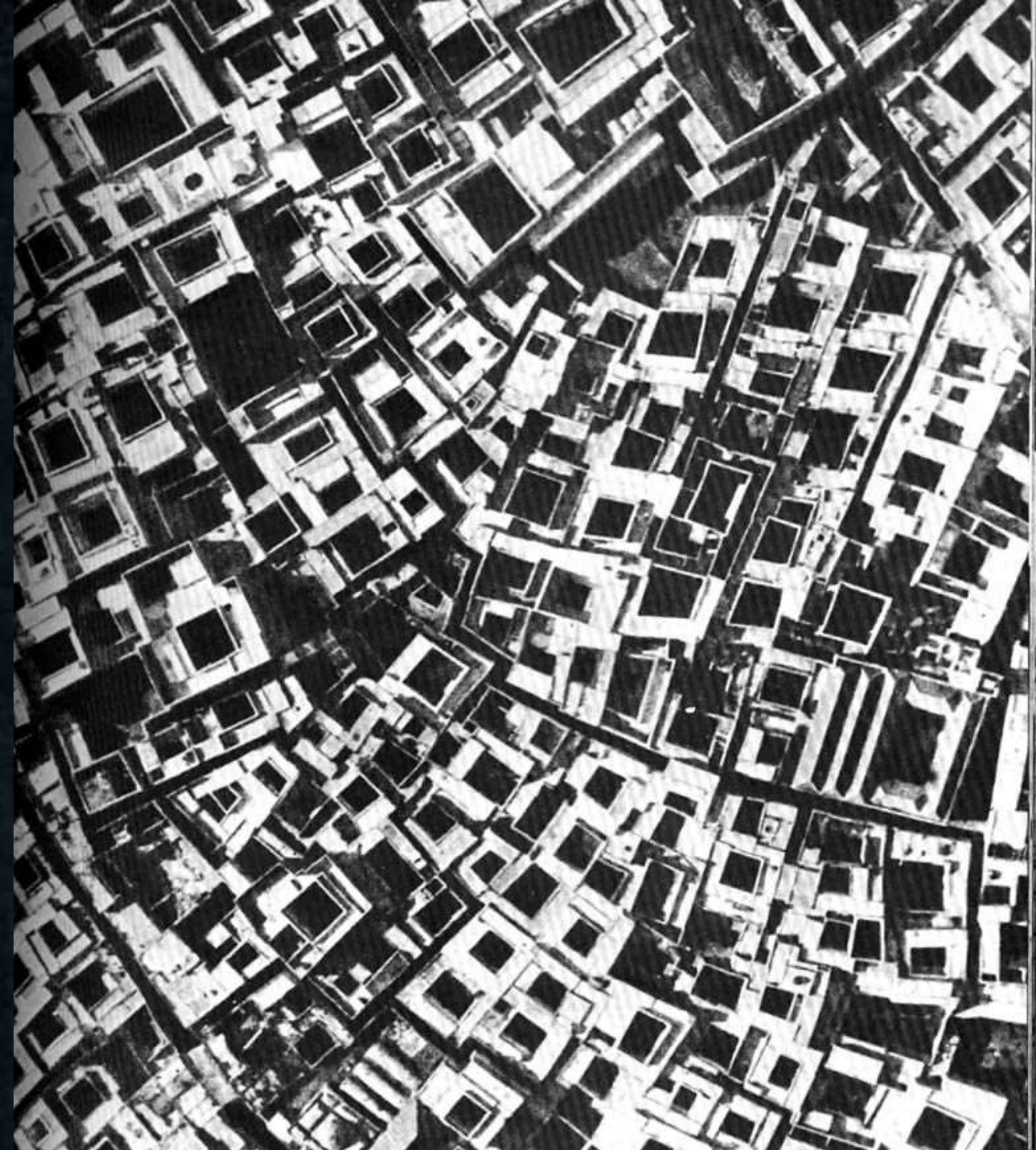




Architecture Without Architects

A Short Introduction
to Non-Pedigreed
Architecture

Bernard Rudofsky





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to Non-Pedigreed
Architecture

Bernard Rudofsky

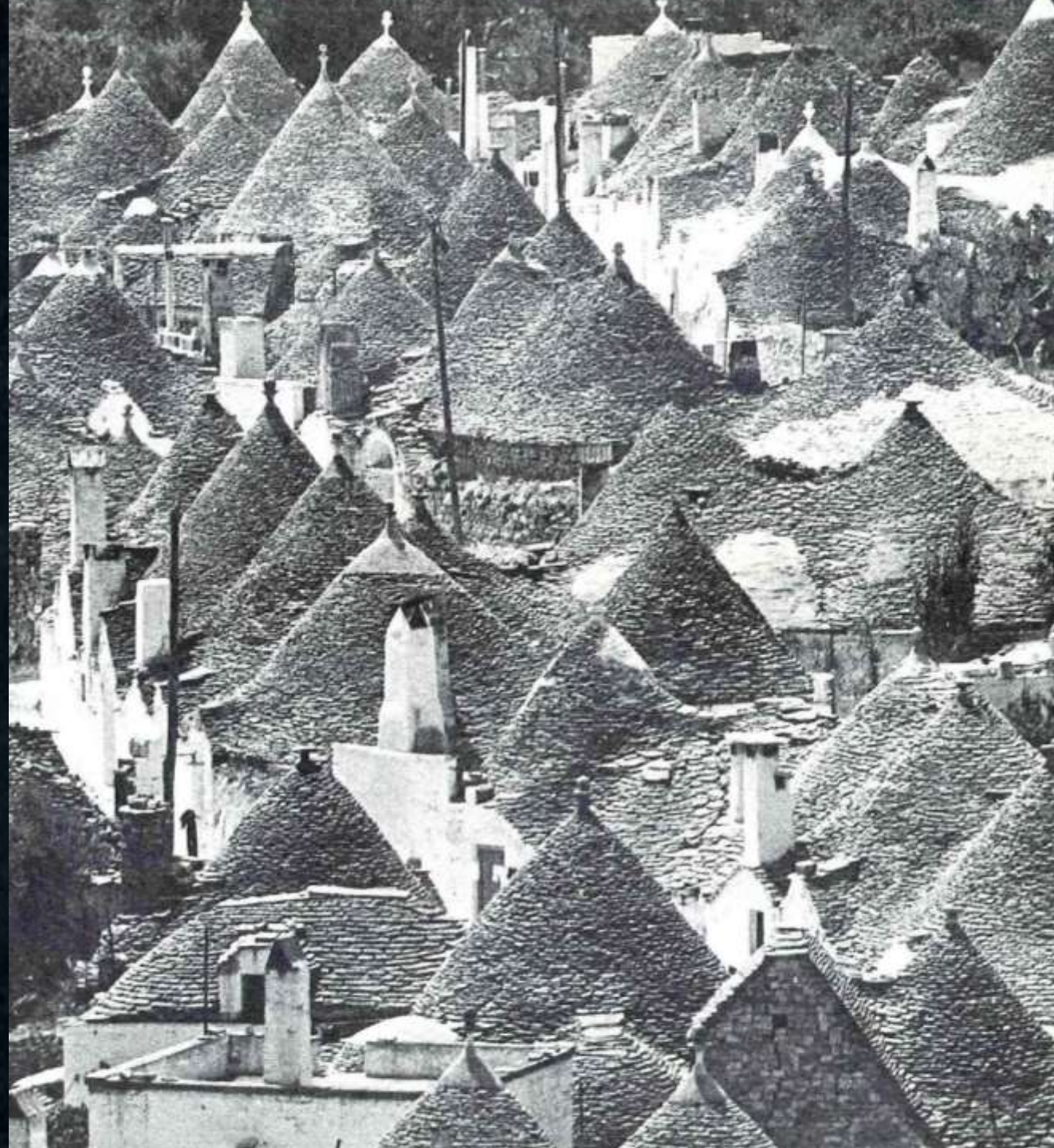




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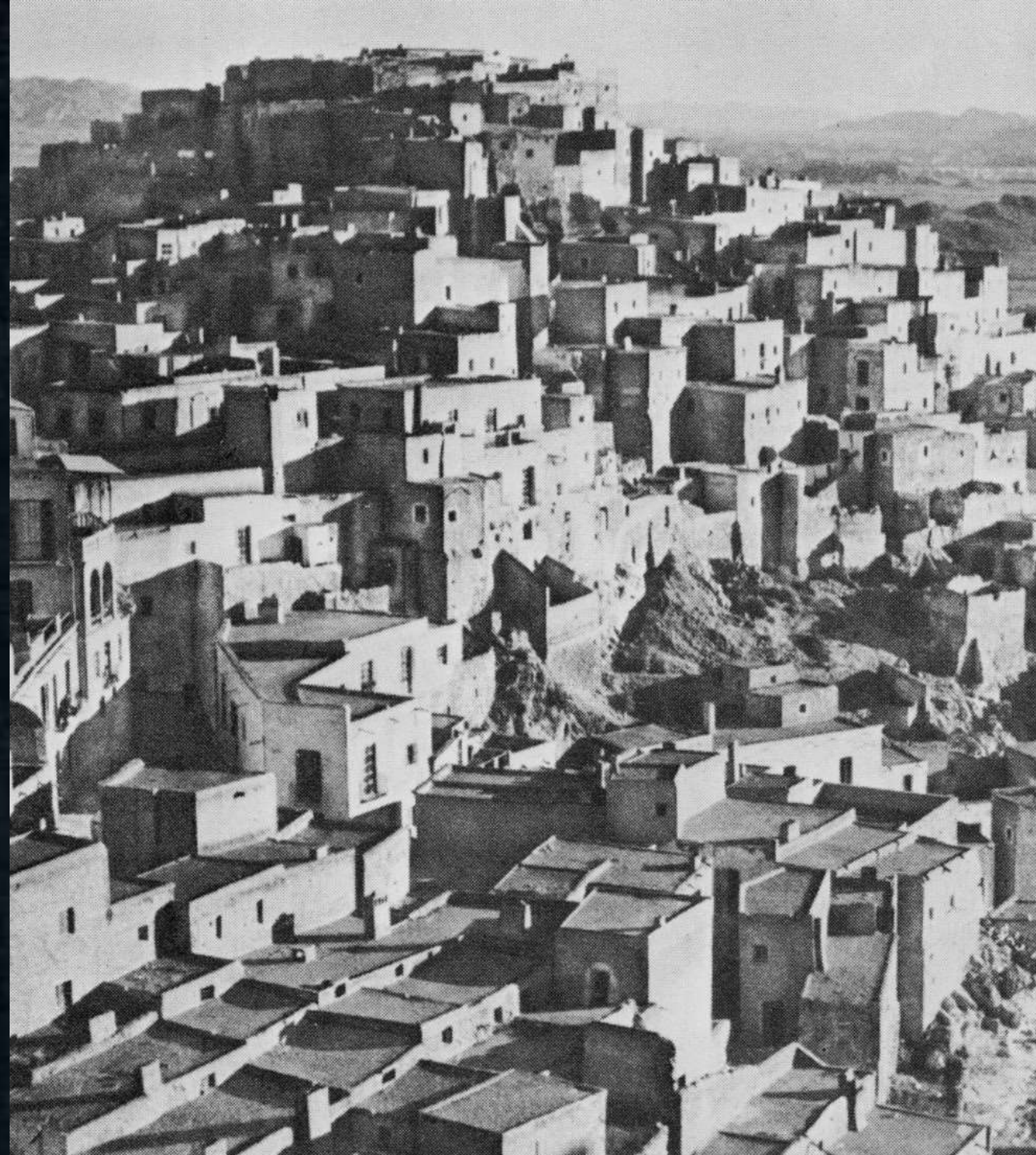




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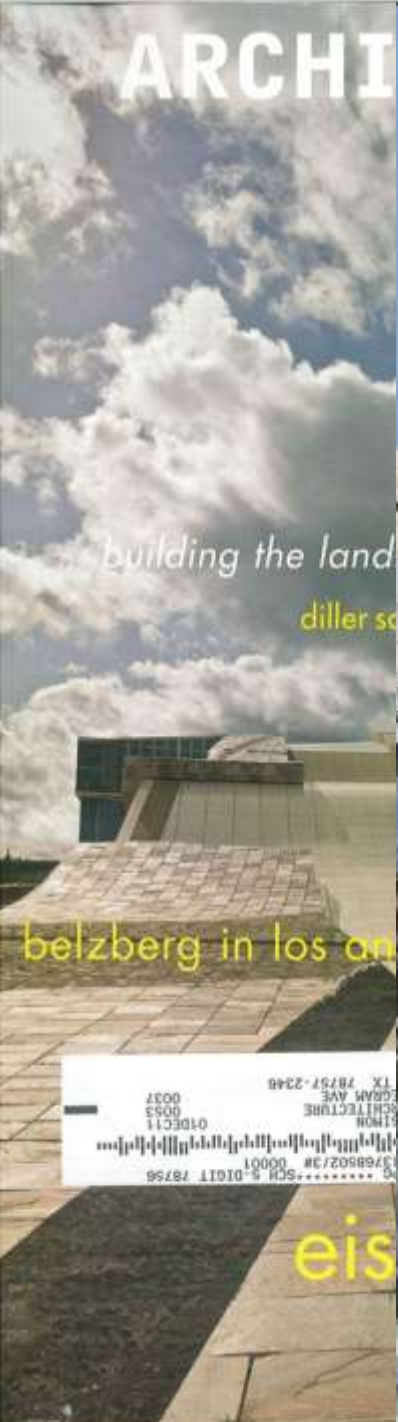
ARCHITECTURAL RECORD



JAKOB + MAC



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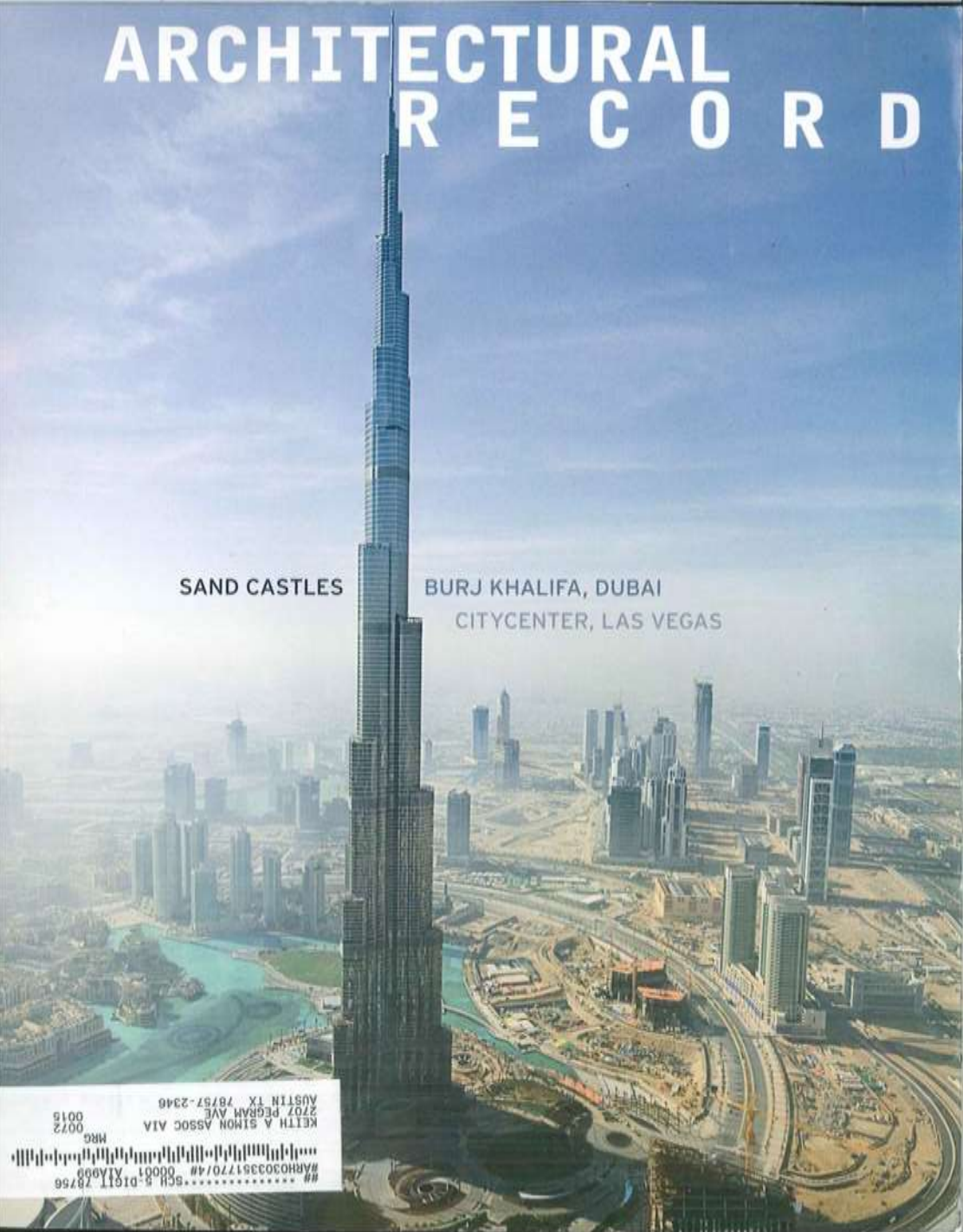
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CITYCENTER, LAS VEGAS

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Chapter 3

The Emperor
has no
clothes!





A hand-drawn sketch of an open book, rendered in white lines on a black background. The book is open, showing two pages. The text is written in a white, monospaced font. The top page contains the text "Chapter 4" and the bottom page contains the text "Durability..at long last!".

Chapter 4

Durability..at
long last!

Stewart
Brand

*How
Buildings
Learn*



Stewart
Brand

*How
Buildings
Learn*



Stewart
Brand

*How
Buildings
Learn*



Stewart
Brand

*How
Buildings
Learn*



Stewart
Brand

*How
Buildings
Learn*





Durability

Performance

Life Cycle Cost

Human Centered

Institutional

Experience

Flipper




Fashion

First Cost

Style

Developer

Magazine Centered



When the height of
fashion moves on,
they're the ones left
behind, stuck in a
building that was
designed to look good
rather than work well,
and now...

...it doesn't even look good.

- Stewart Brand

Arts and Crafts

1890-1920

Red House (1860) William Morris and Philip Webb





From The Archives

c. 1910 Arts & Crafts (Craftsman)

Austin, Texas

Bedrooms	4
Full Baths	2
Heated Sq. Ft.	2,750
Stories	1
Acres	0.2
Lot Size	75' x 130'

The Bailey-Houston House



Front view

Beautifully restored 1910 Craftsman Bungalow on oversized lot in Hyde Park

The Bailey-Houston House which has been designated a City Historic Landmark is considered to be Austin's premier Craftsman bungalow.

Scroll down for more information



Living room

Spacious living room with original long leaf pine paneling, river rock fireplace, beamed ceiling, built-in bookcases



Living/Dining

Built-in bookcases separate the formal living and dining rooms



Kitchen

Enlarged kitchen with tile floor, many windows, built-in cupboard



Listing No. 2754

ARCHIVE LISTING

[MORE OLD HOUSES](#)

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Selling An Old House?

ADD A LISTING

- [Why List Your House?](#)
- [Pricing and Services](#)
- [Agent Services](#)

Your Feedback

"The website is a pleasure to manage listing information from a

Victorian
1837-1901

The Carson Mansion, 1886
Samuel and Joseph Cather Newsom



The Painted Ladies, 1890
Matthew Kavanaugh





INDEPENDENCE
1776-1777
Historic Site

International Style

Art Moderne

Art Deco

1920-1945

Kiefhoek housing, Rotterdam, by Jacobus Oud



Fagus Factory, Alfeld,
Walter Gropius







Postmodernism

1960-1990

Portland Municipal Services Building
Michael Graves
1982



Water pumping station, Isle of Dogs, London,
1988 (John Outram) Reid and Peck / RIBA



Wexner Center for the Arts, 1989
Peter Eisenman





Brutalism
1950-1975

Boston City Hall, 1968
Kallmann McKinnell & Knowles

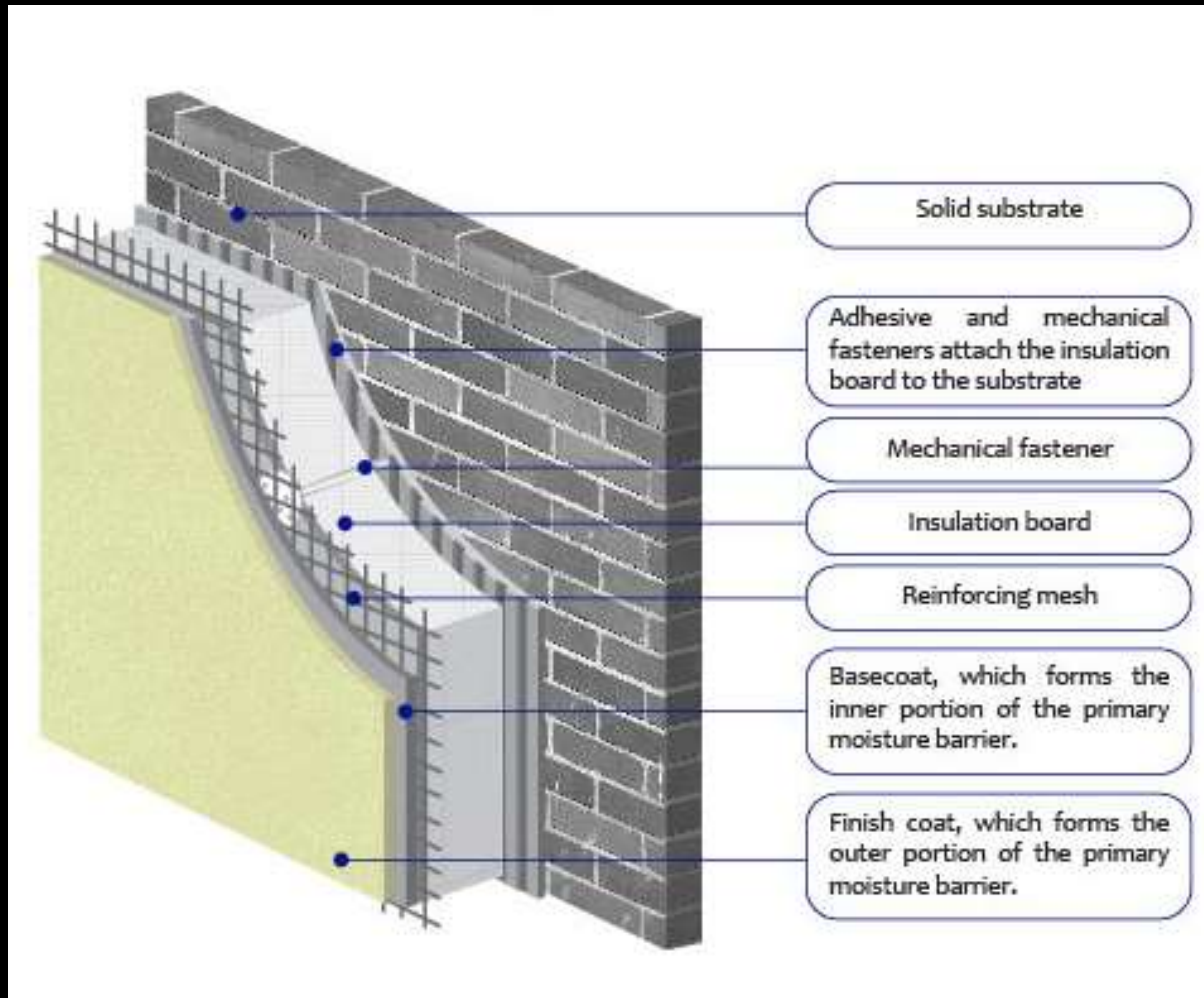










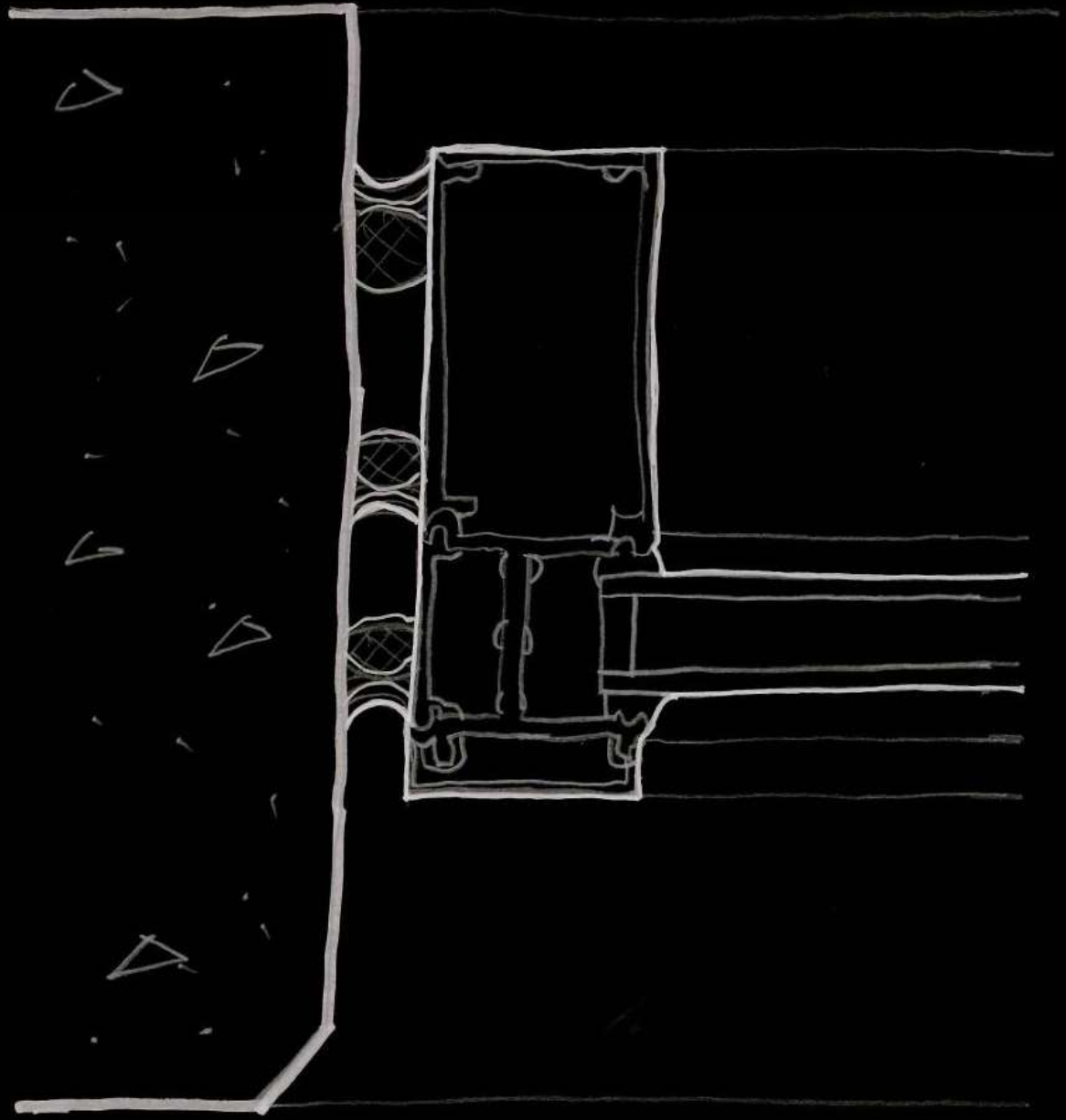


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A hand-drawn sketch of an open book, rendered in white lines on a black background. The book is shown from a top-down perspective, with the pages slightly curved. The text is written in a white, serif font. The words "Chapter 5" are positioned at the top center, and the word "Redundancy" is centered on the lower page.

Chapter 5

Redundancy





Chapter 6

Water Managed vs. Barrier
Hydrostatic Pressure
& other sexy topics

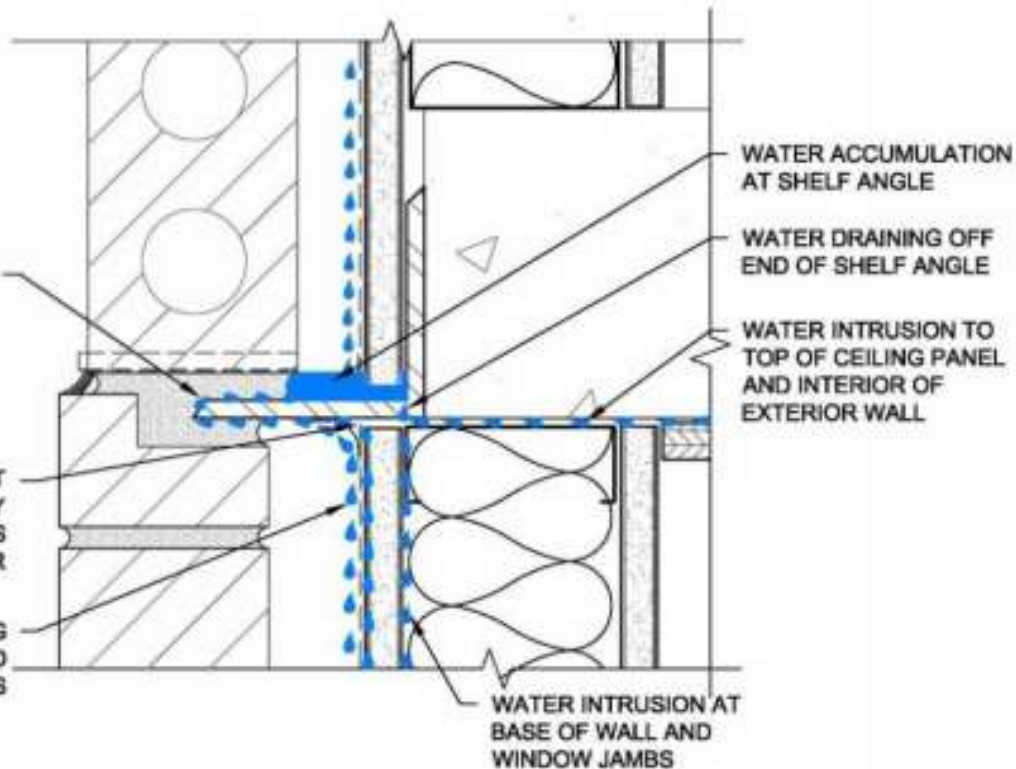
Clad Your Buildings in Garbage



WATER MIGRATION VIA ABSORPTION AND SURFACE TENSION TO WEATHER BARRIER BELOW SHELF ANGLE

WATER INFILTRATION PAST WEATHER BARRIER AT POORLY BONDED TAPE OR DEFICIENCIES (CUTS) IN WEATHER BARRIER

ADDITIONAL WATER DRAINING TOWARD SHELF ANGLE AND FLASHING AT LOWER FLOORS



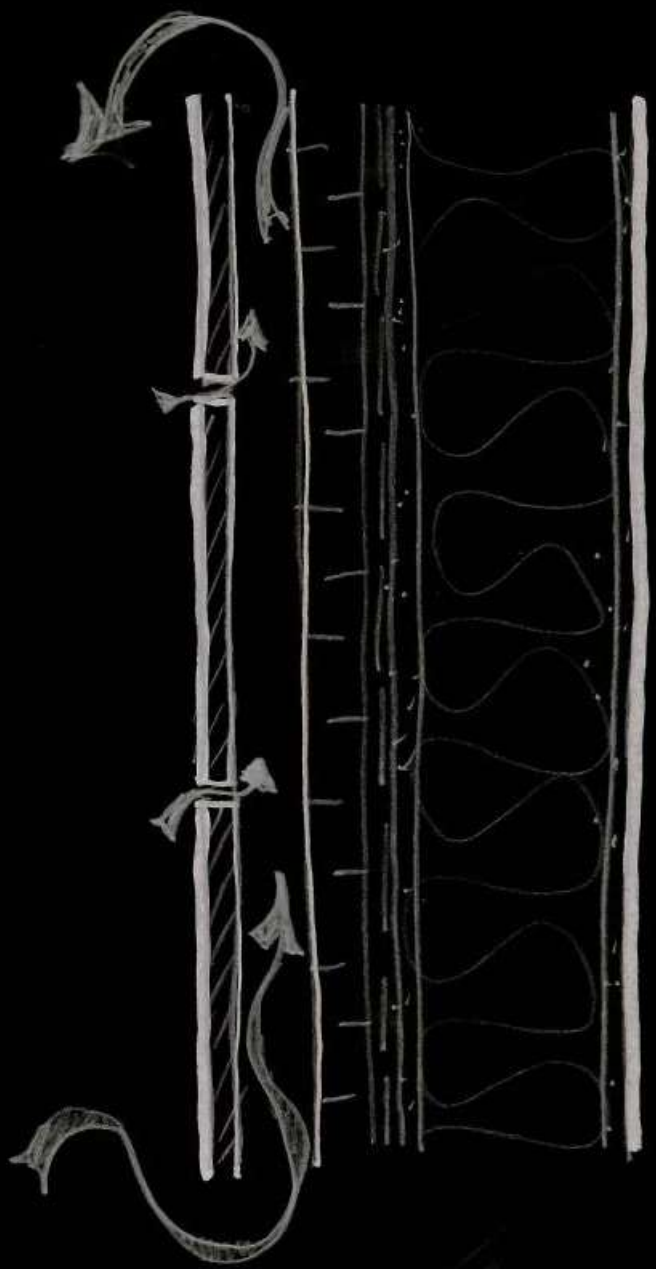
WATER ACCUMULATION AT SHELF ANGLE

WATER DRAINING OFF END OF SHELF ANGLE

WATER INTRUSION TO TOP OF CEILING PANEL AND INTERIOR OF EXTERIOR WALL

WATER INTRUSION AT BASE OF WALL AND WINDOW JAMBS





Bohlin Cywinski Jackson

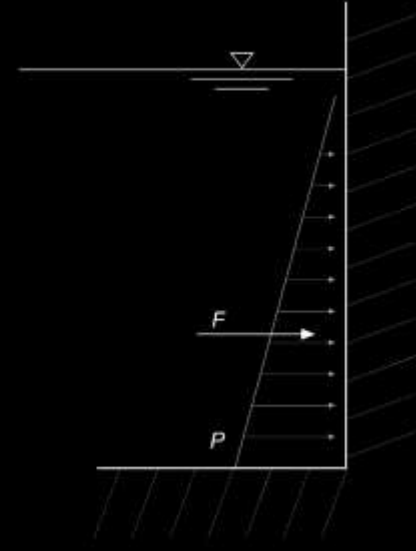
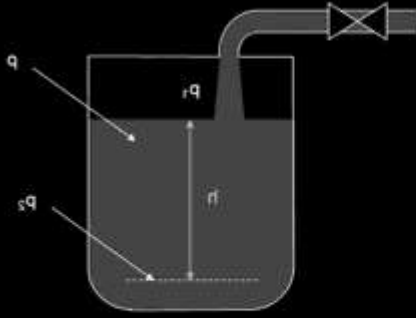


Auburn Rural Studio

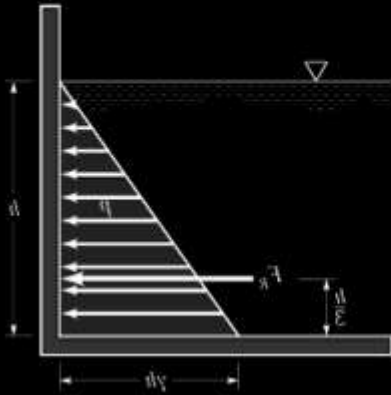


Trinity White Architecture

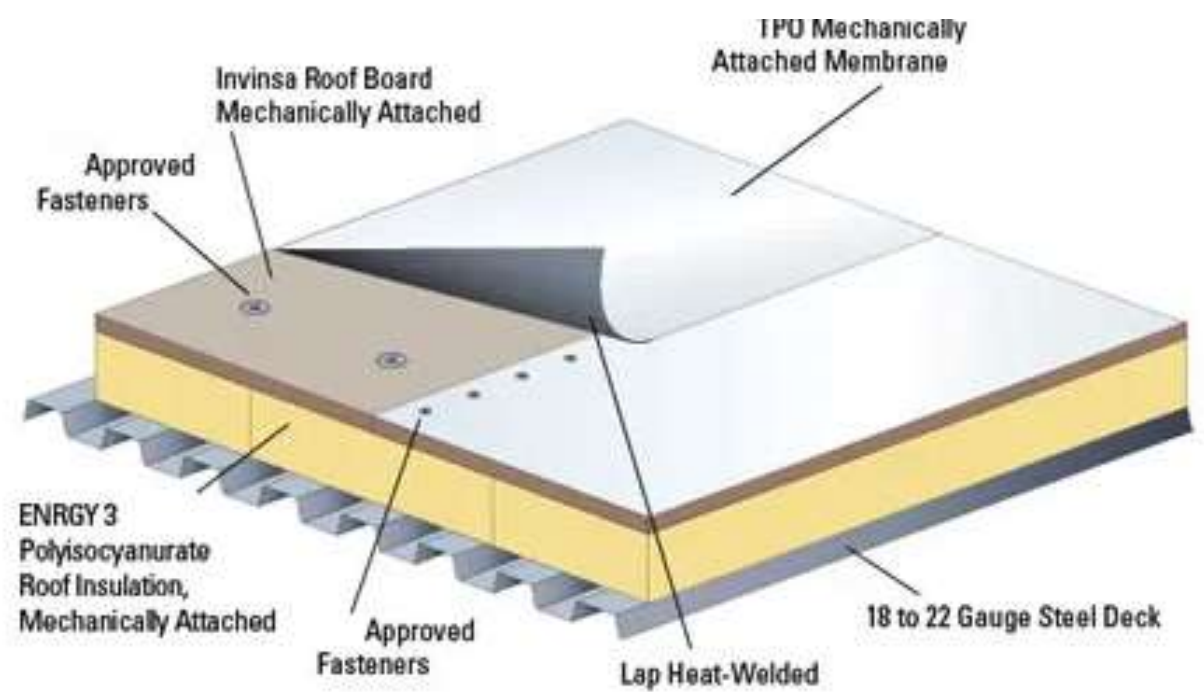
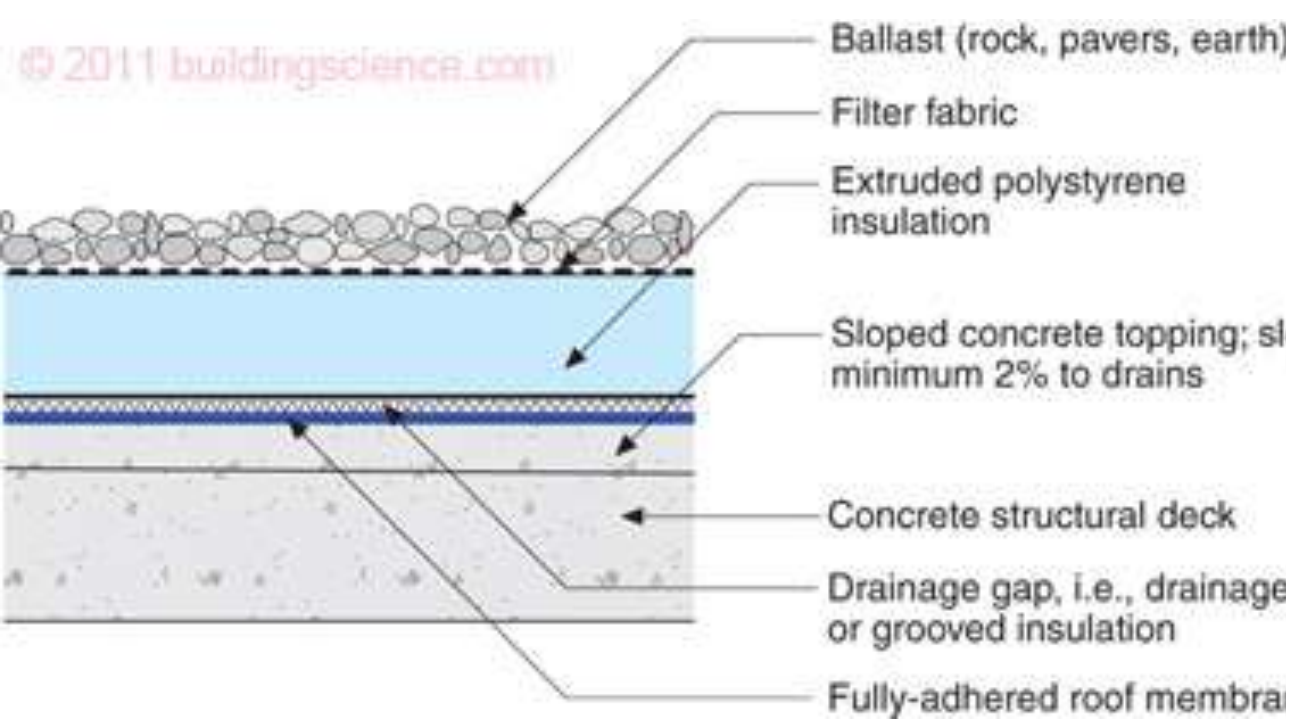




$$P = \rho gh$$



© 2011 buildingscience.com





Chapter 7

Maintenance
First Cost
Life Cycles

The Multifamily Irony





Chapter 8

Performance

vs.

Style

The Polyester of Brick
- John Waters







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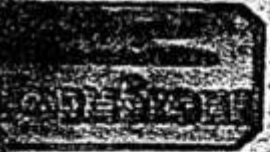
Mr. Wilbur B. Green, 1514 Ridge Road

Wilbur B. Green

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[The Darkroom - Baltimore Sun FORMSTONE-27-A-DAVIS2.jpg](#)



1905













Blue sign with white text, partially obscured by scaffolding.

1947



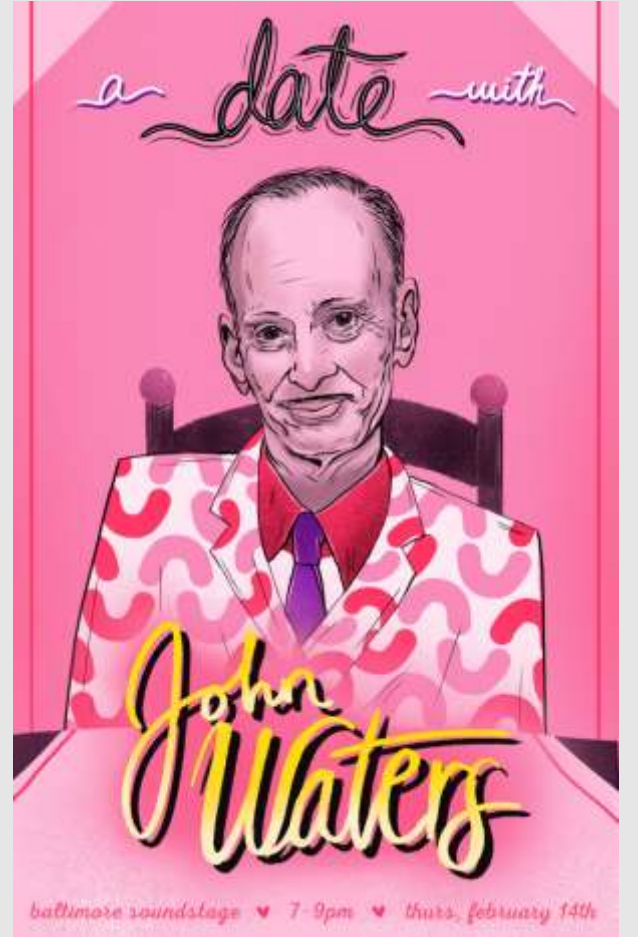
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By Handwerker - Own work, CC BY-SA 3.0,
<https://commons.wikimedia.org/w/index.php?curid=18520152>

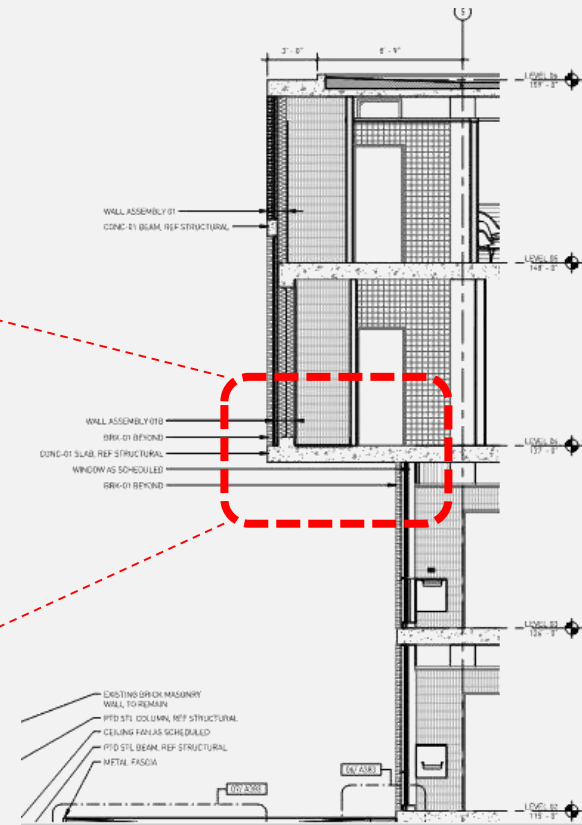
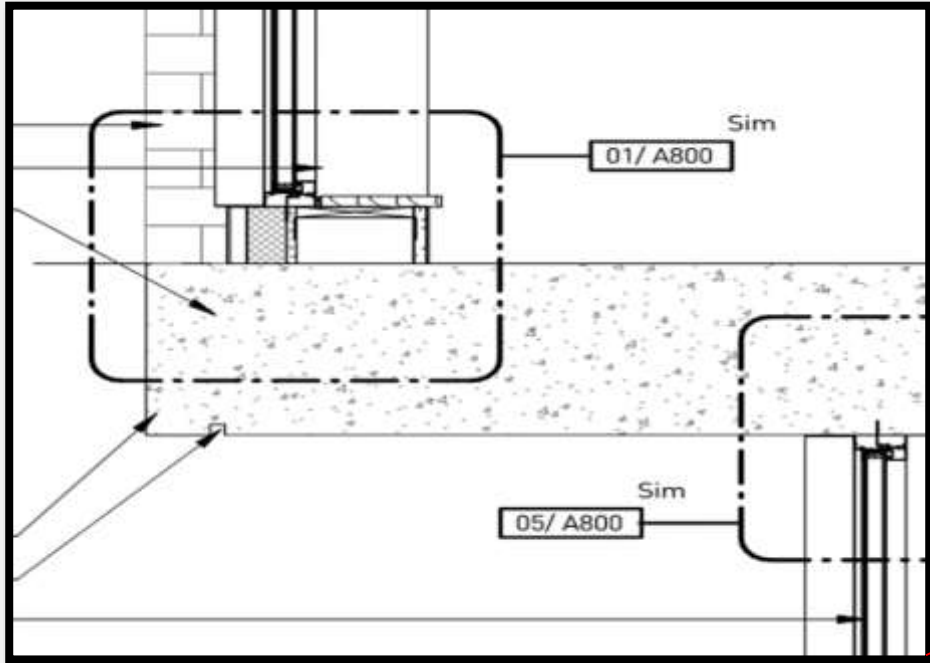


Arrive Hotel

Austin, TX

Baldrige Architects





Thermal Comfort

- Air Temperature
- Humidity
- Air Flow/Circulation
- **Mean Radiant Heat**
- Metabolism
- Clothing



Human Comfort Cold Winter



Passive House Institute US

Feels: **comfortable!**

Temperate glass and wall surfaces and *no drafts*



© Passive House Institute US 2013

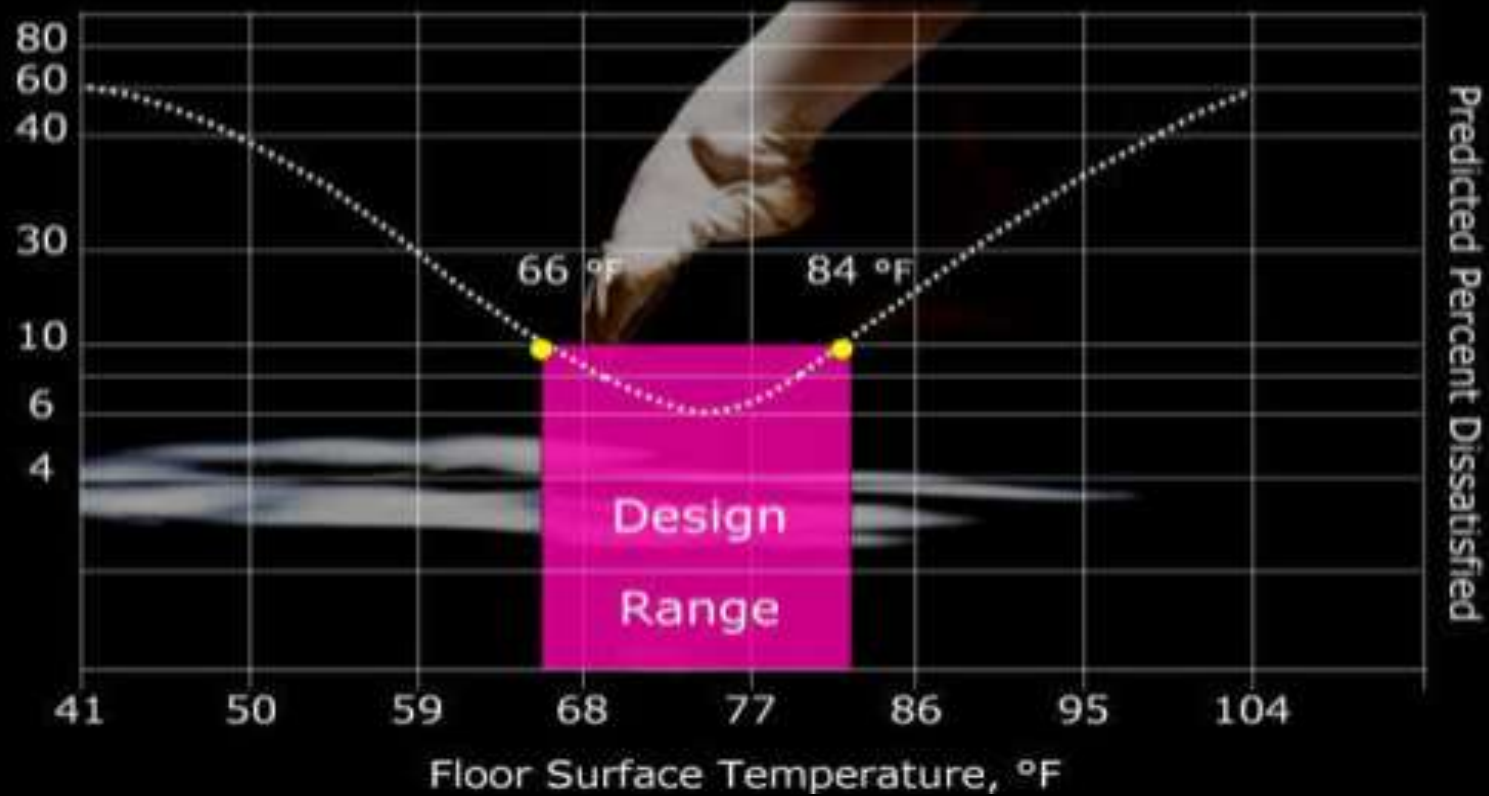
PHIUS comfort definition: all interior surfaces w/in

7 dF



Robert Bean FLOORING COMFORT

Floor Temperatures





Dew Point Calculator

IMAGE PERMANENCE INSTITUTE

Home

How to Use

About

Welcome to the Dew Point Calculator

Use the sliders to explore combinations of temperature (T), relative humidity (RH), and dew point (DP) to compare the preservation quality of your environment. Knowing the dew point can help achieve long-term preservation of collection materials for libraries, museums, and archives. To report on your storage environment use the [PEM2](#) to record data and [eClimateNotebook](#) to analyze it.

Click to Solve for:

Temperature % RH Dew Point

70

50

51



Temperature Scale: °F °C

Preservation Evaluation

Type of Decay	Environment Rating	Preservation Metric
Natural Aging	RISK	PI 39
Mechanical Damage	OK	% EMC 9.2
Mold Risk	GOOD	Days to Mold No Risk
Metal Corrosion	OK	% EMC

Record and Compare Values

T	RH	DP	PI	Days to Mold	EMC

Save

Clear

Export

The dew point temperature determines what combinations of temperature and RH will be possible in the storage environment. At a constant dew point, when the temperature goes up, the RH goes down and when the temperature goes down, the RH goes up. Controlling the dew point is key to managing the risk of material decay. What's your dew point? If you know the T & RH in

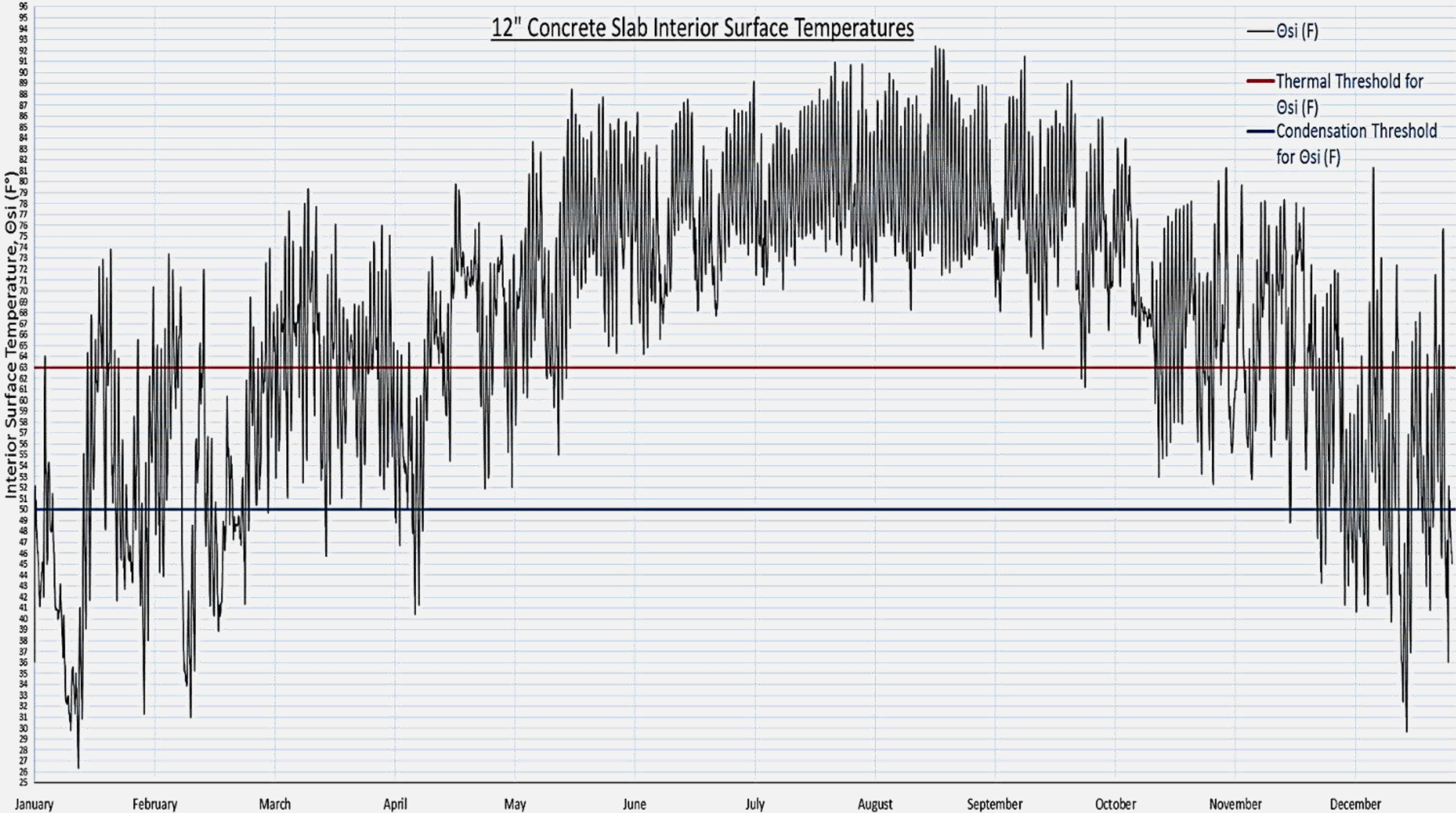
Dew Point Condensation Potential

Calculation of the Interior Surface Temperature (θ_{si}) of the Cantilevered Assembly

- $\theta_{si} = \theta_i - U * R_{si} * (\theta_i - \theta_e)$

θ_i :	Room temperature	70° F
U :	U-value of the assembly	1.19 <i>(12" Concrete Slab at 150 pcf)</i>
R_{si} :	Interior surface film resistance	0.74
θ_e :	Outdoor temperature	<i>Austin Climate Data</i>

12" Concrete Slab Interior Surface Temperatures



RESULT: hours/year below required thresholds

Concrete Slab Thickness	Thermal Comfort	Condensation
12"	2920 (See Graph Below)	1077 (See Graph Below)
<i>Alternative Concrete Slab Thicknesses</i>		
18"	2307	243
12" with 1" ccSPF	0	0





Chapter 9


Control Layers
&
Discontinuities

**Thermal-bridge
Free**

- $\Psi \leq 0.006 \text{ BTU/ hr. ft } ^\circ\text{F}$







*Drainable EIFS...
you are my
hero!!!*



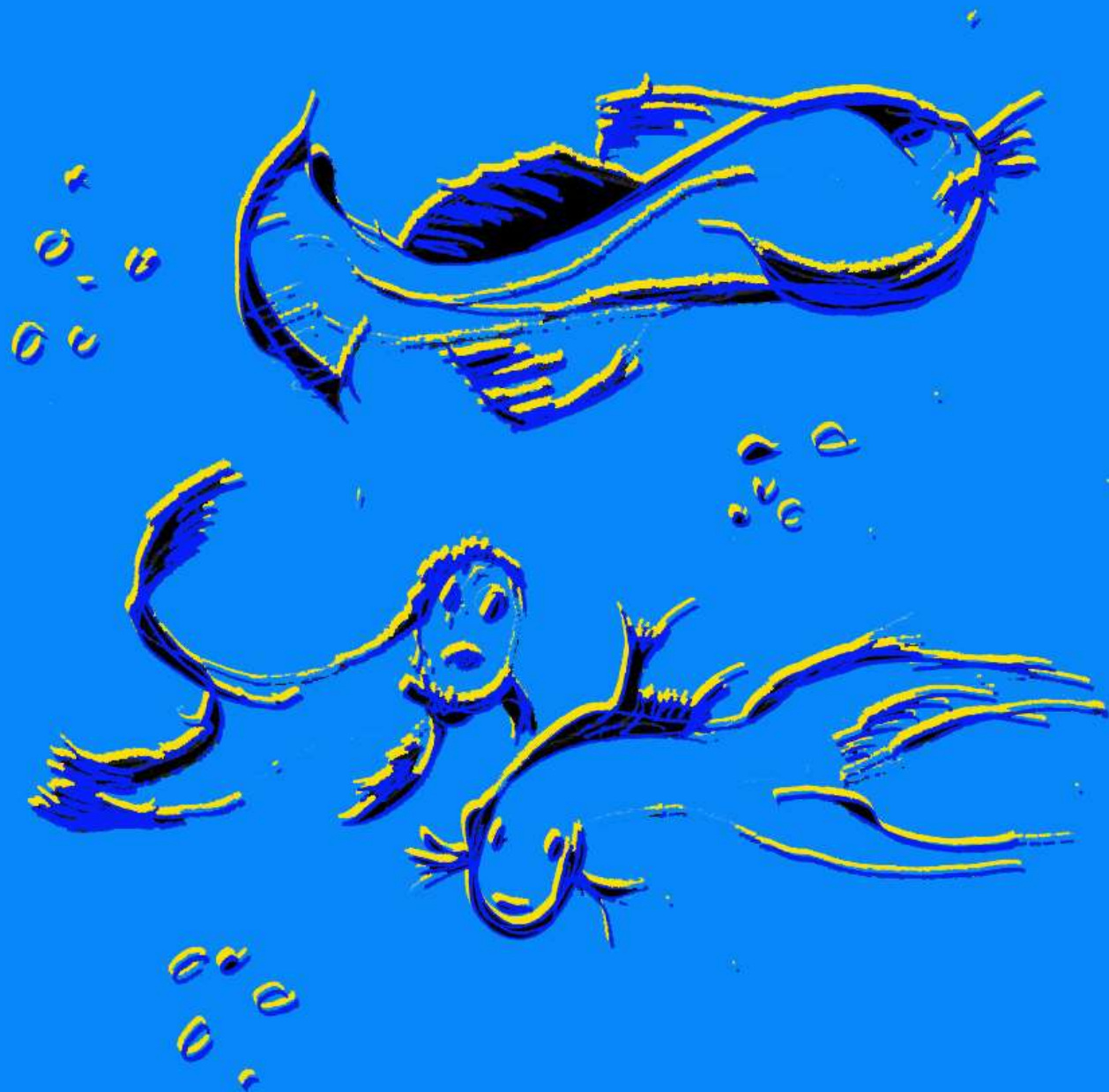


Chapter 10

Like Water

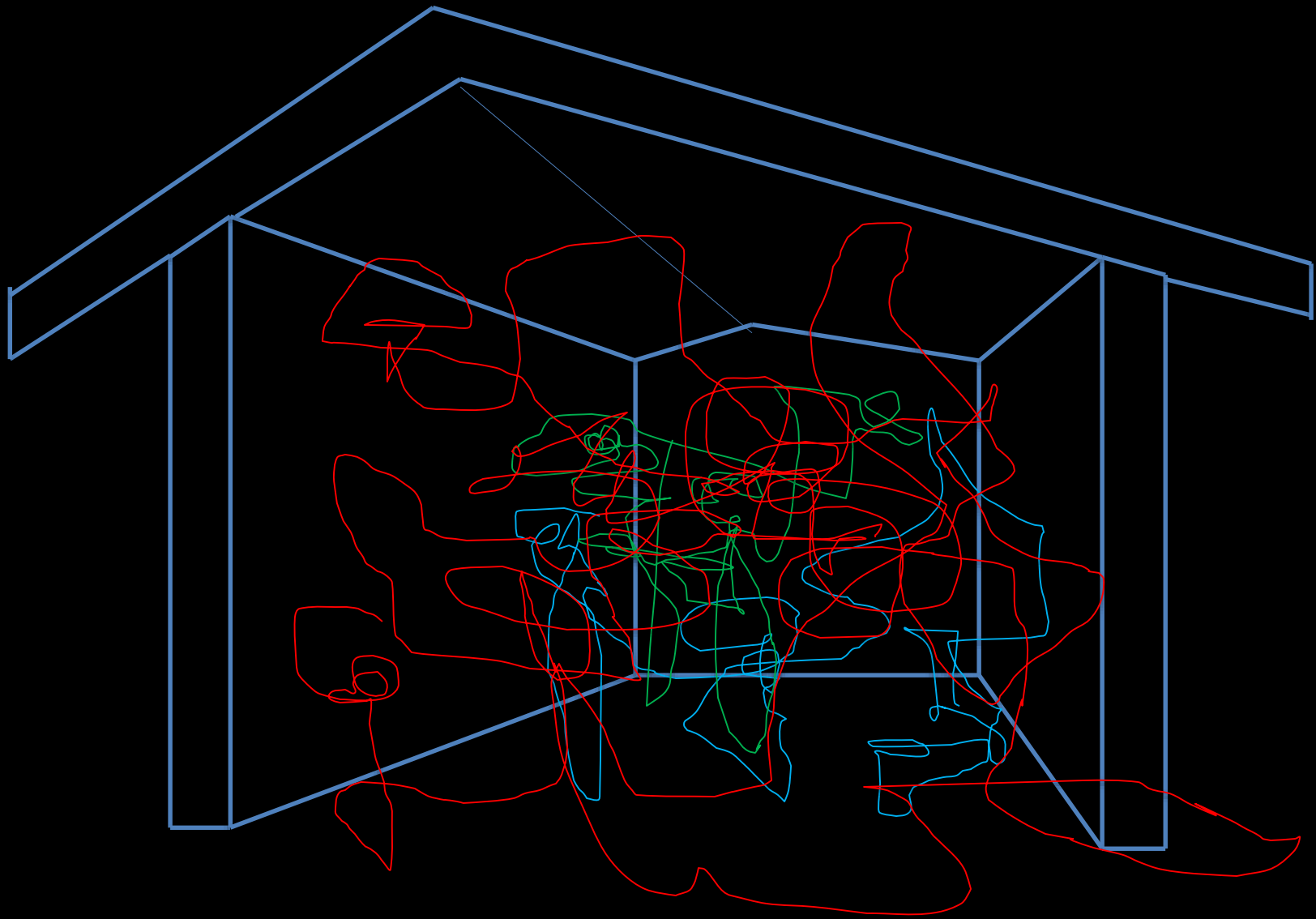
This is Water

- David Foster Wallace



Center for Advancement of
Public Action, Vermont
Tod Williams Billie Tsien





Keith A. Simon

keith.simon@terracon.com

512-800-4485