

Construction Systems in Architecture

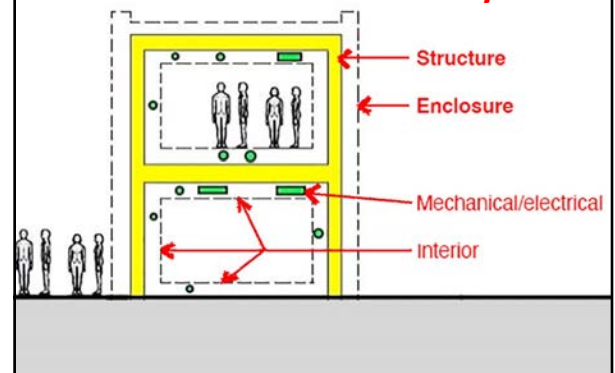
Jonathan Ochshorn

Cornell University, July 11, 2024

www.jonochshorn.com

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Structural and construction systems



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Construction systems

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I. Introduction

A. Performance criteria vs. Expressive Content:

- 1. Performance:** "The function of walls, floors, and roofs is to enclose space in such a way that some or all of the physical environmental conditions, either inside or outside the enclosed space, can be regulated within acceptable limits."

— Neil Hutcheon and Gustav Handegord, *Building Science for a Cold Climate*, 1983

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2. Expression: "Almost every period of architecture has been linked on to research into construction. The conclusion has often been drawn that architecture is construction. It may be that the effort put forth by architects has been mainly concentrated on the constructional problems of the time; that is not a reason for mixing different things. It is quite true that the architect should have construction at least as much on his fingers' ends as a thinker his grammar. And construction being a much more difficult and complex science than grammar, an architect's efforts are concentrated on it for a large part of his career; but he should not vegetate there."

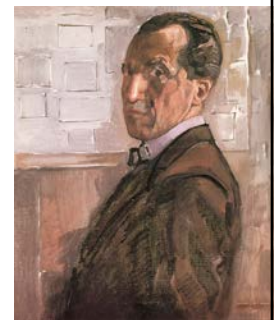


— Le Corbusier, *Towards a New Architecture*, 1923

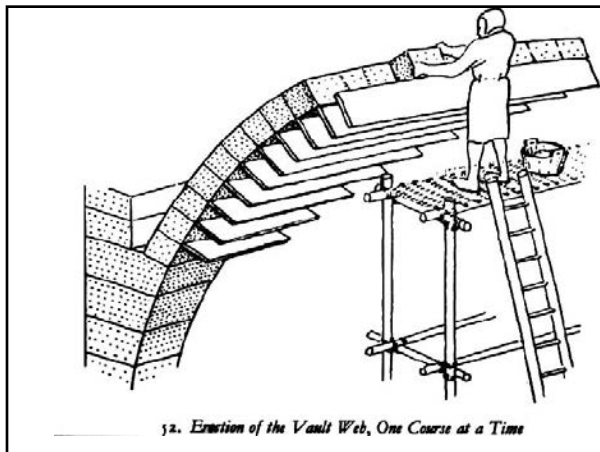
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3. Utility vs. intuition: "If one takes technique, utilitarian requirements, etc., as the point of departure, there is a risk of losing every chance of success, for intuition is then troubled by intelligence."

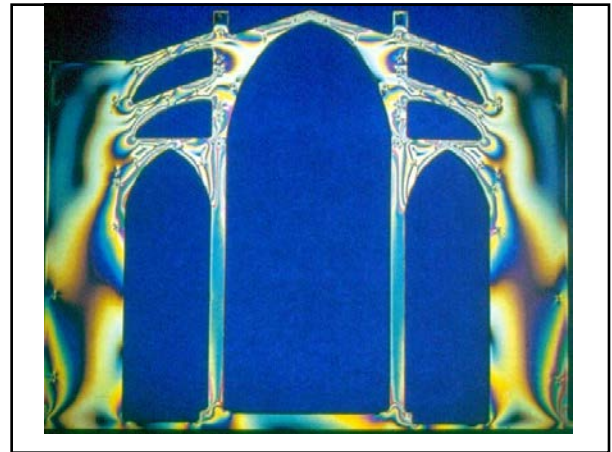
— Piet Mondrian, *L'Architecture Vivante*, Autumn, 1925



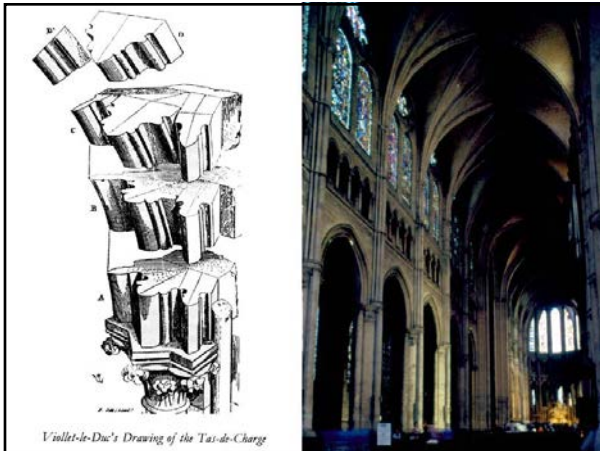
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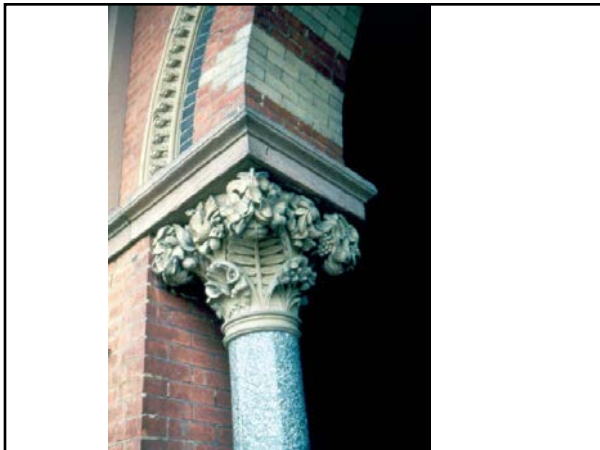


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B. Surface vs. content



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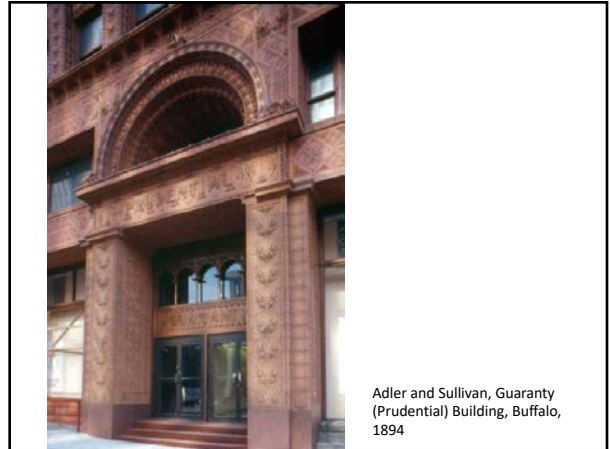
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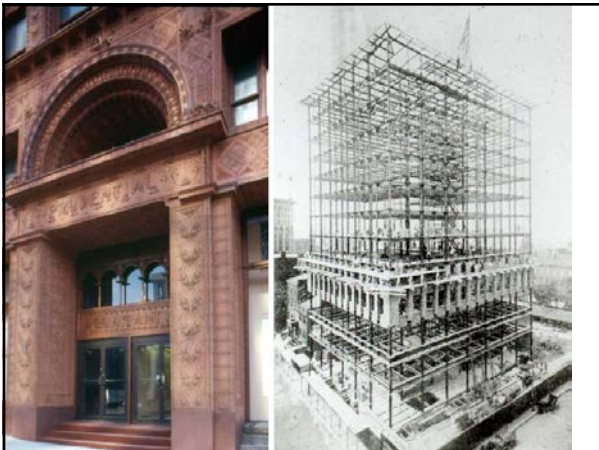
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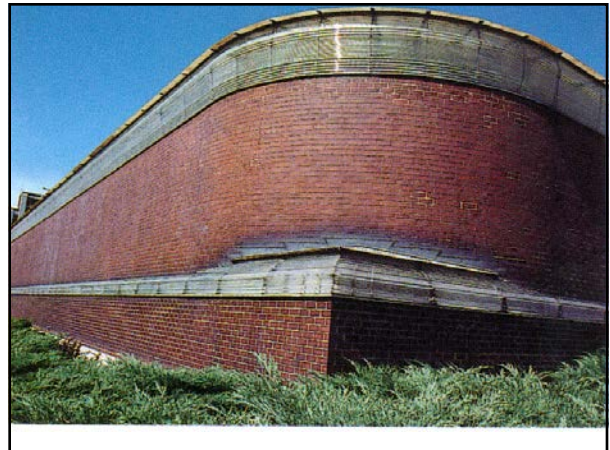
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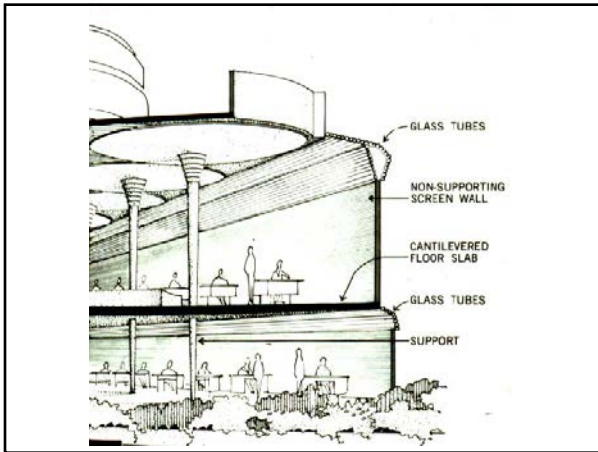
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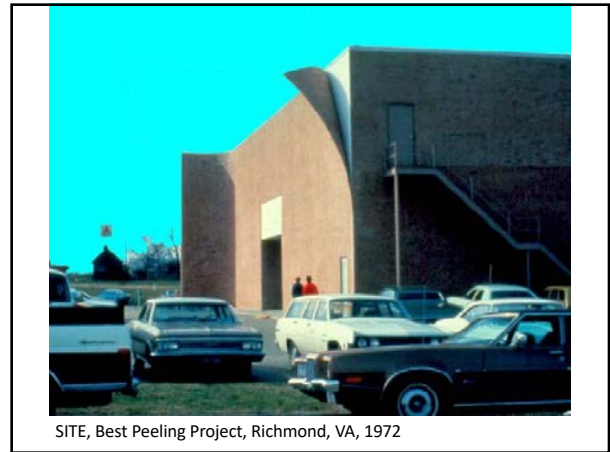
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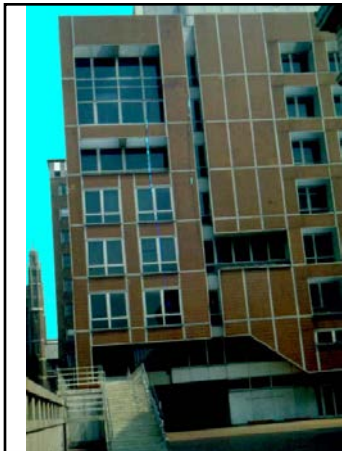


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SITE, Best Peeling Project, Richmond, VA, 1972

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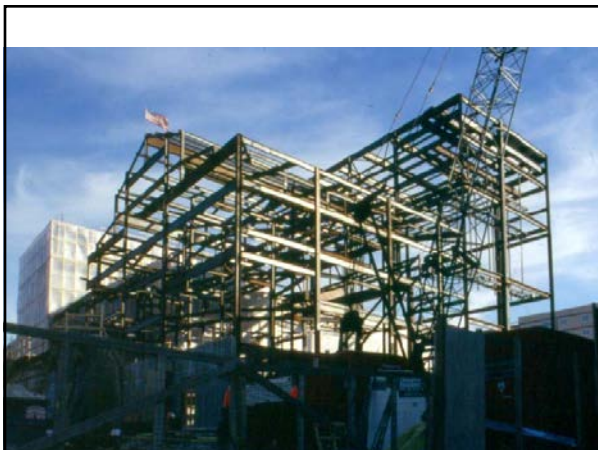


Mitchell Giurgola,
Fairchild Life Sciences
Center, NYC, 1980

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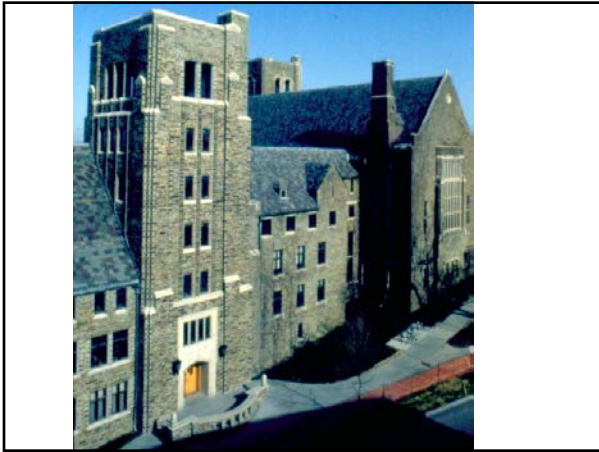
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Stirling, Schwartz Center,
Cornell University

Brunelleschi (sort of...), Basilica
di San Lorenzo, Florence

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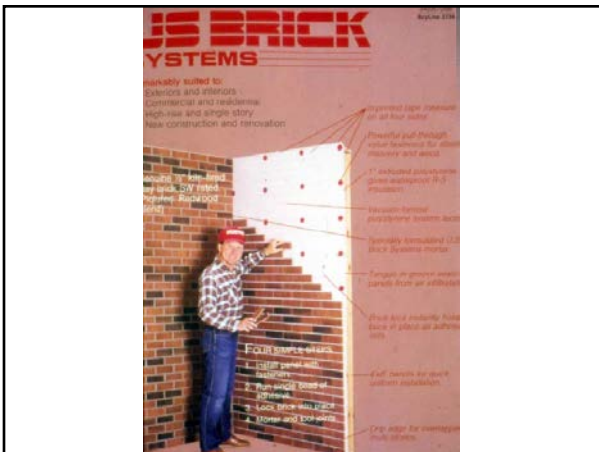


SITE, Best Peeling Project, Richmond, VA, 1972

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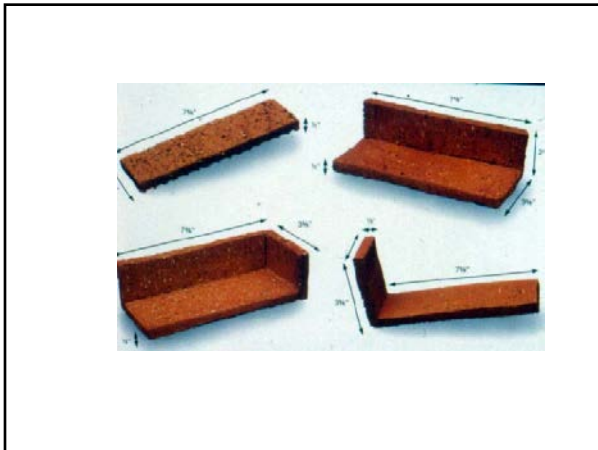
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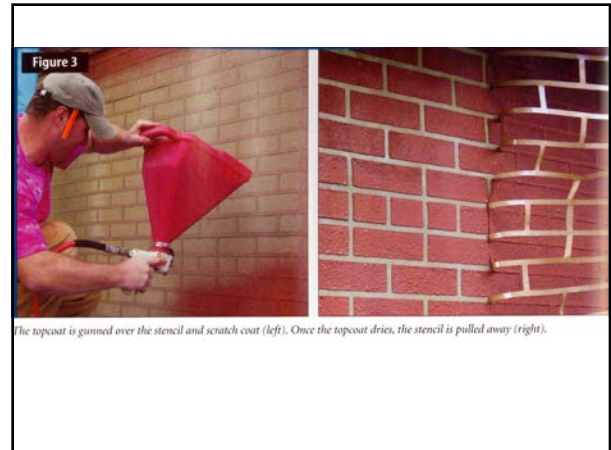
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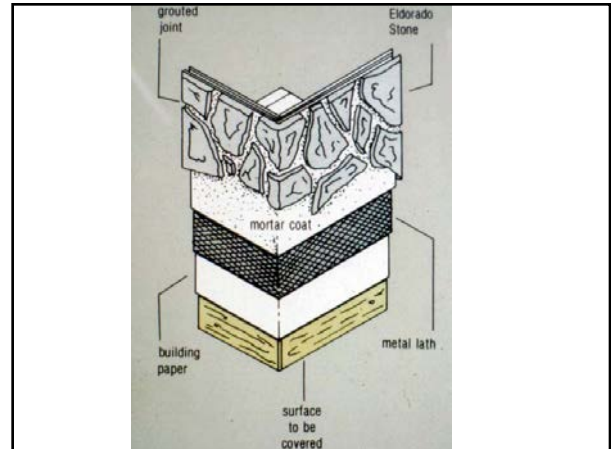
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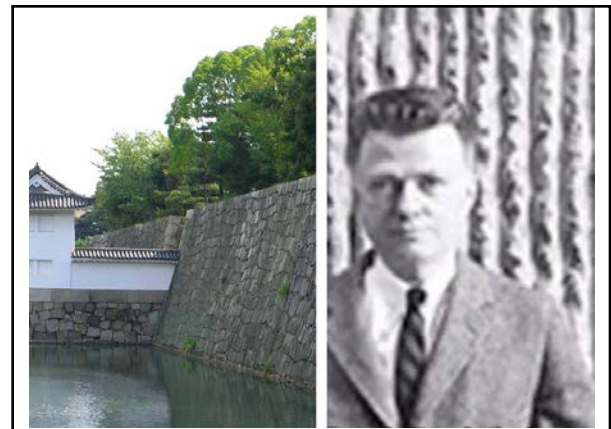


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OMA: fake stone in Fukuoka, Japan housing (left); fake concrete in Milstein Hall

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Nijo Castle, Kyoto, Japan (1603) and Paul Rudolph at Yale A & A Building (1963)

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C. Construction materials vs. systems

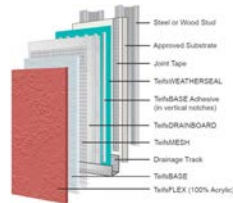
Materials

- “The Things to be prepared are these, Lime, Timber, Sand, Stone, as also Iron, Brass, Lead, Glass and the like.”

- --Leone Battista Alberti, *Ten Books on Architecture*

Systems

Exterior Insulation and Finish System

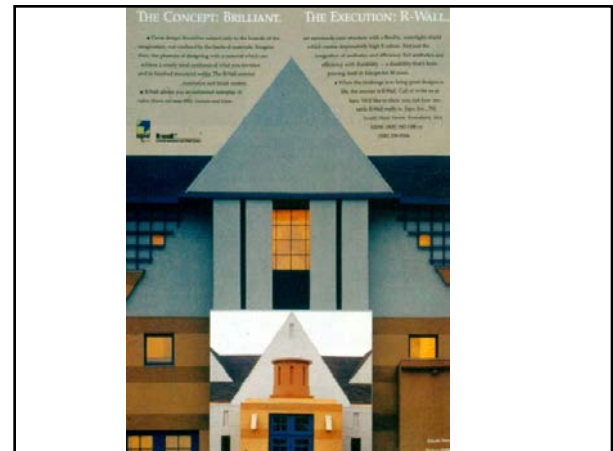


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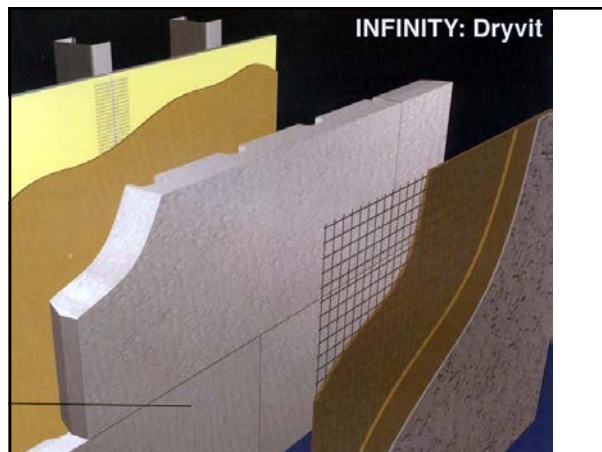
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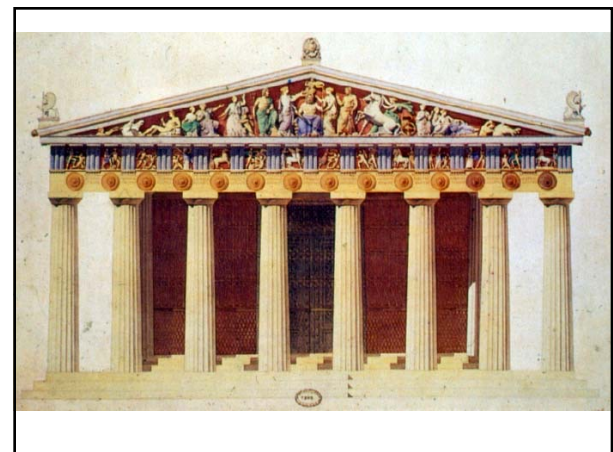
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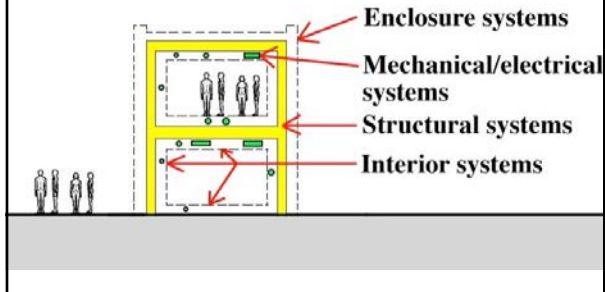


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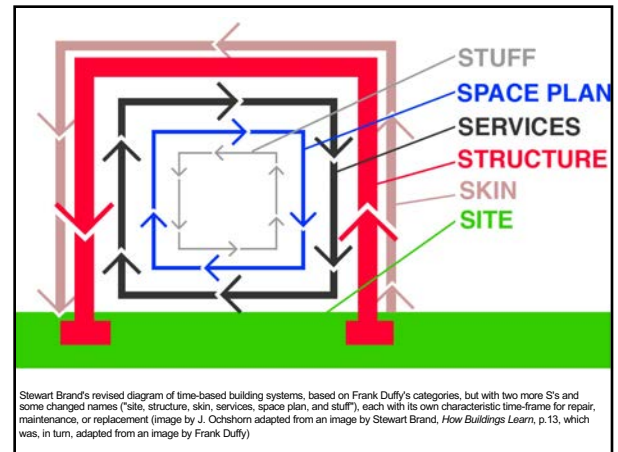


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II. Construction systems

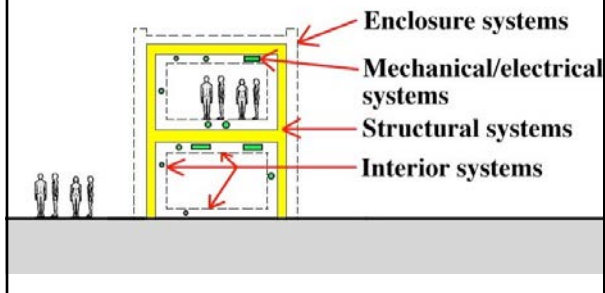


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II. Construction systems



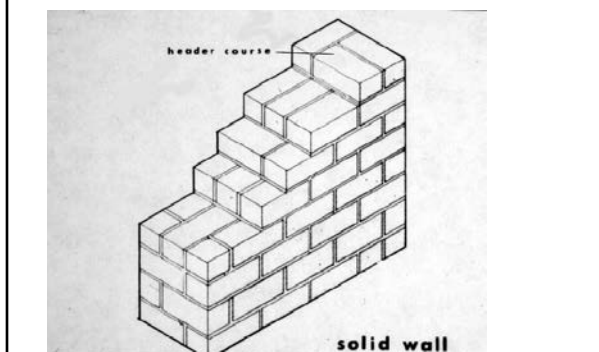
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A. Structure (previous lecture)

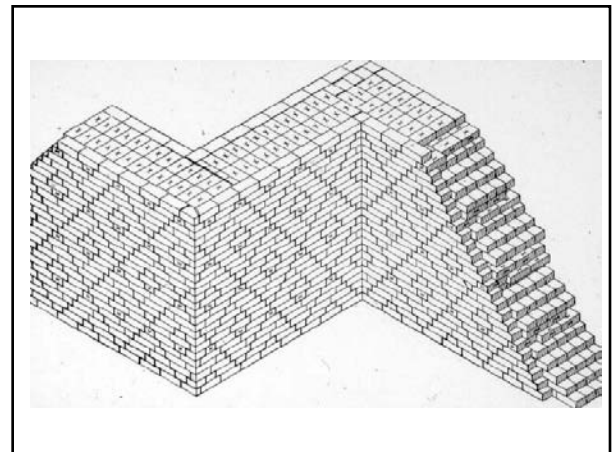


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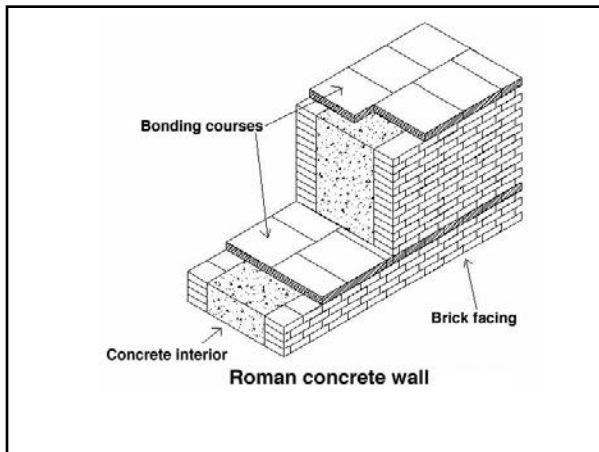
B. Enclosure



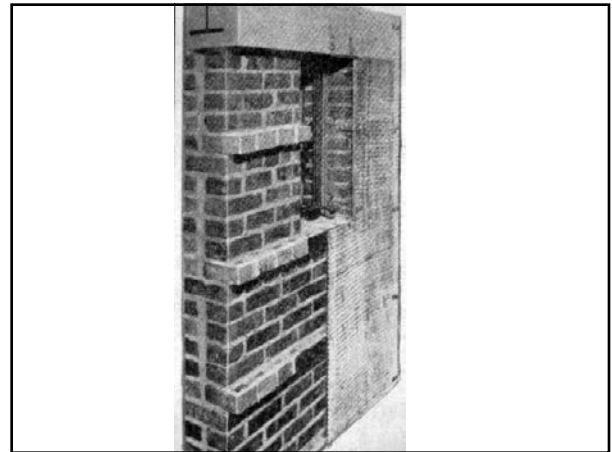
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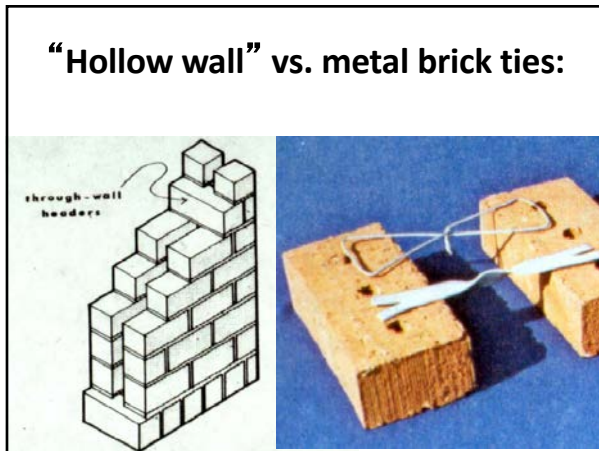
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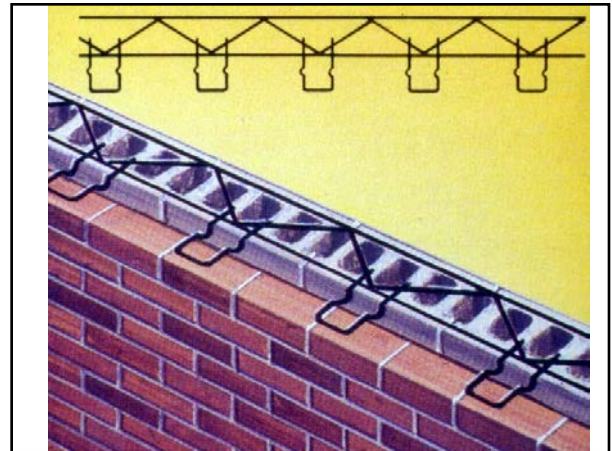
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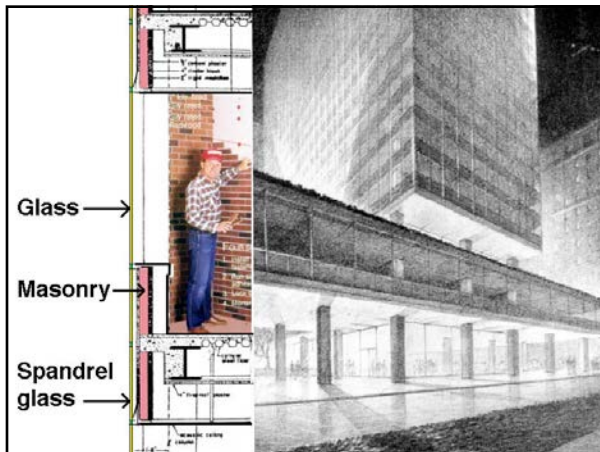
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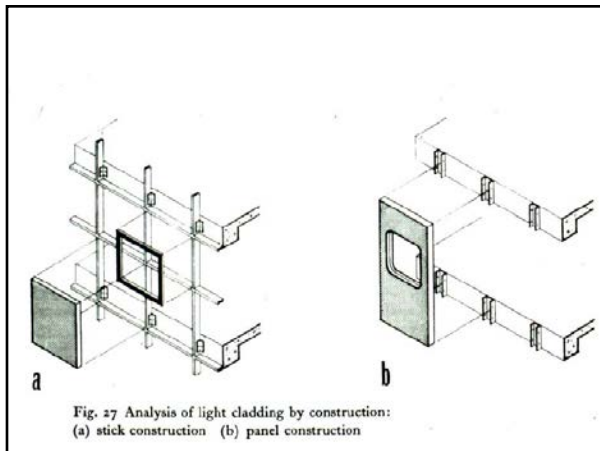
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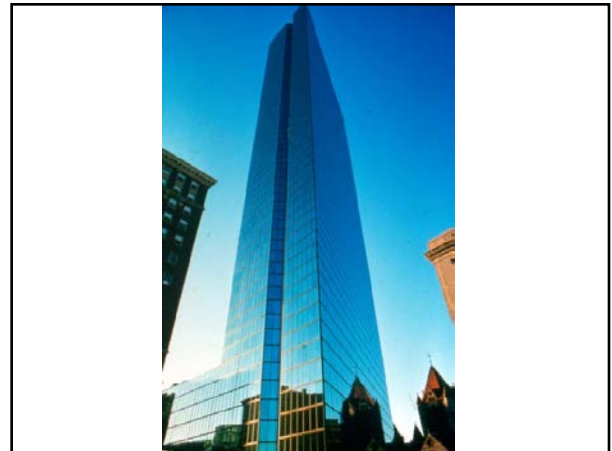
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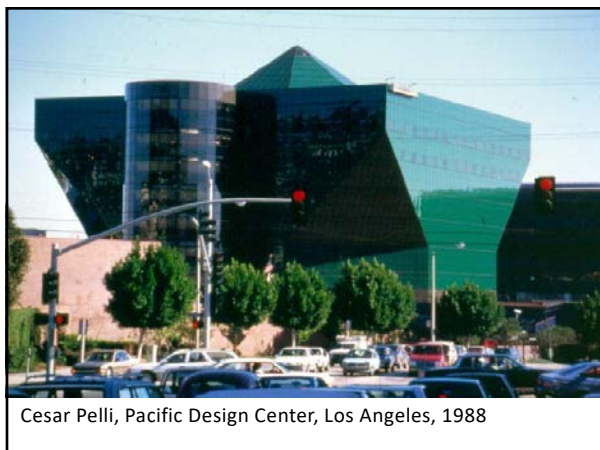
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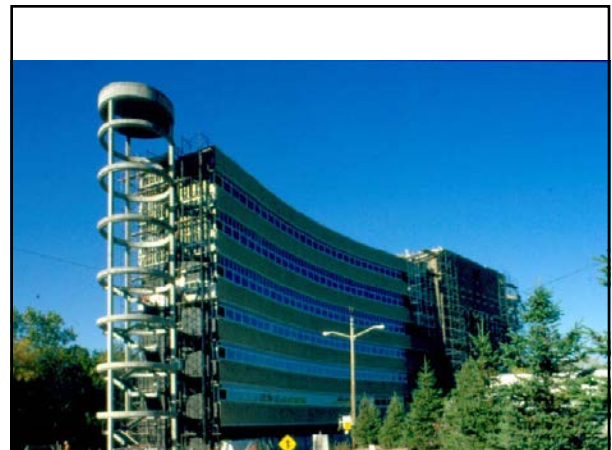
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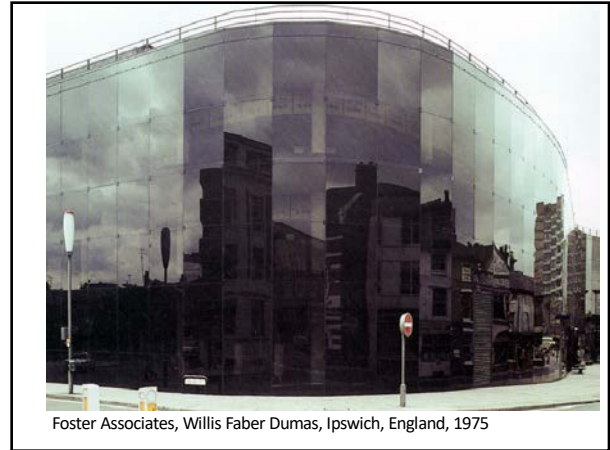
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Foster Associates, Willis Faber Dumas, Ipswich, England, 1975

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Grimshaw & Partners, Channel Tunnel RR Terminal, Waterloo, London, 1993

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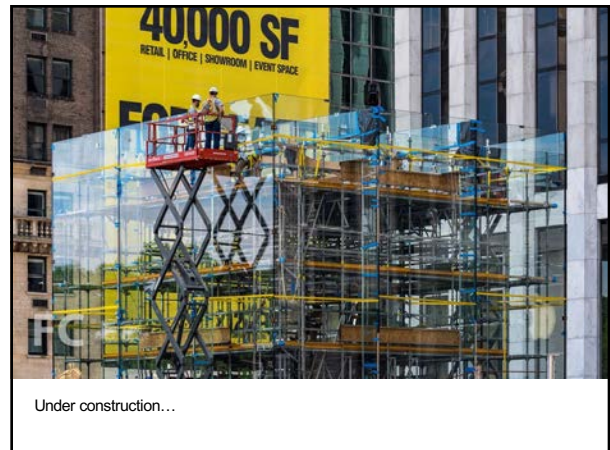
Bohlin Cywinski Jackson, Apple Store (Fifth Avenue), NYC, 2006

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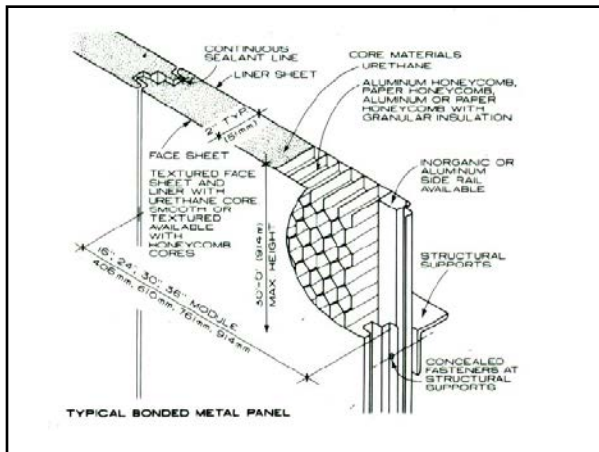
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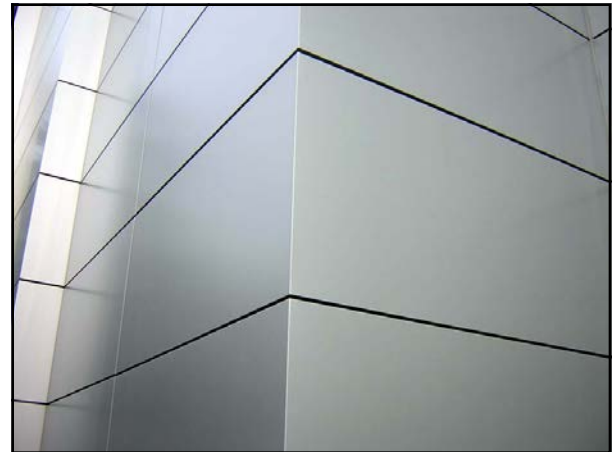


Under construction...

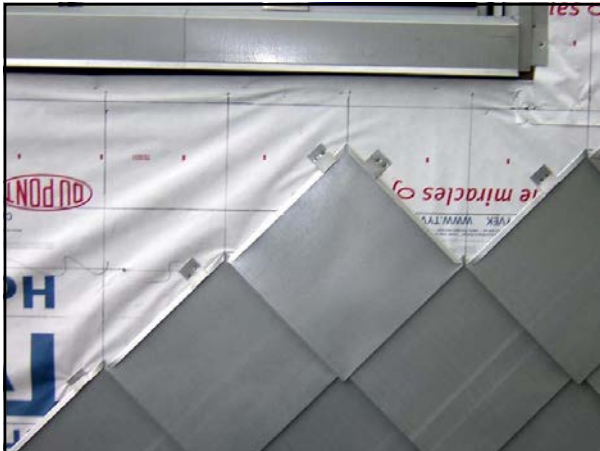
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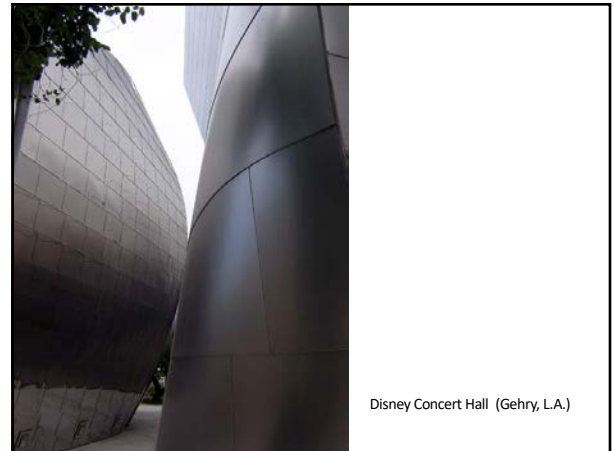
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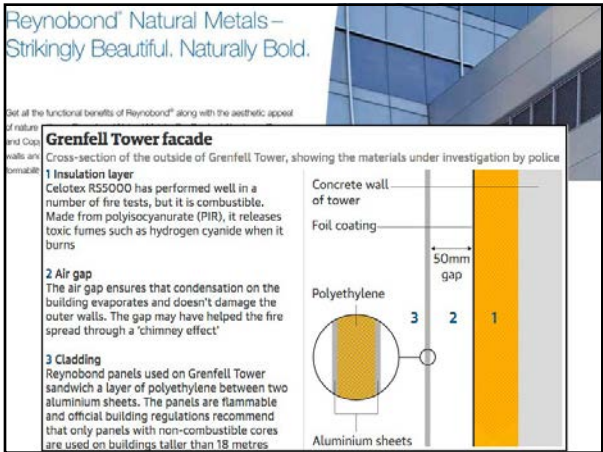
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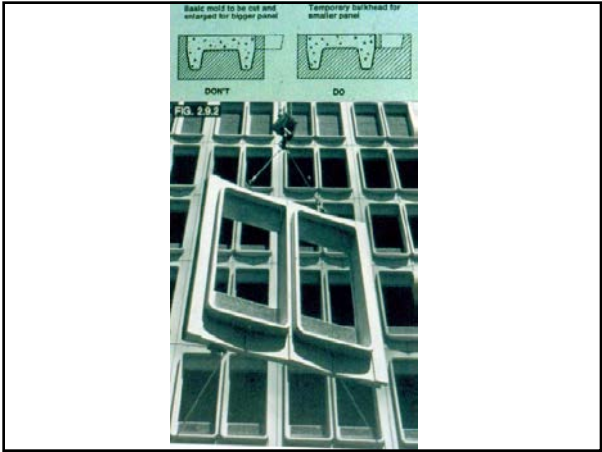
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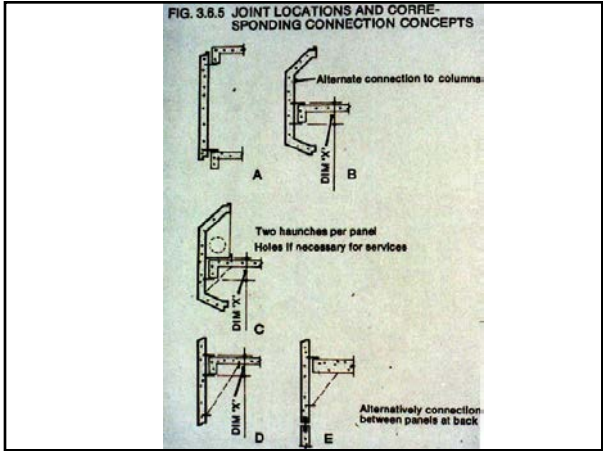
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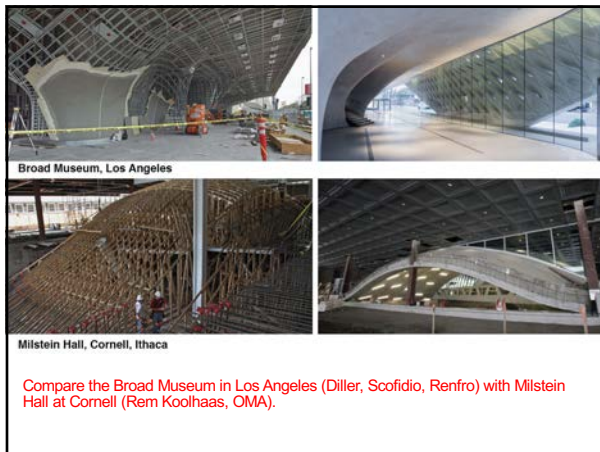
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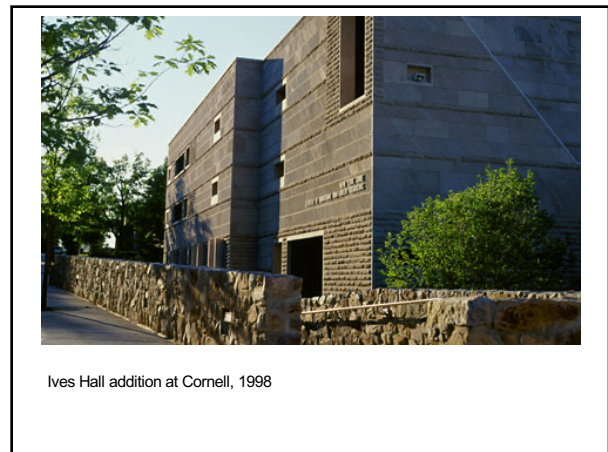
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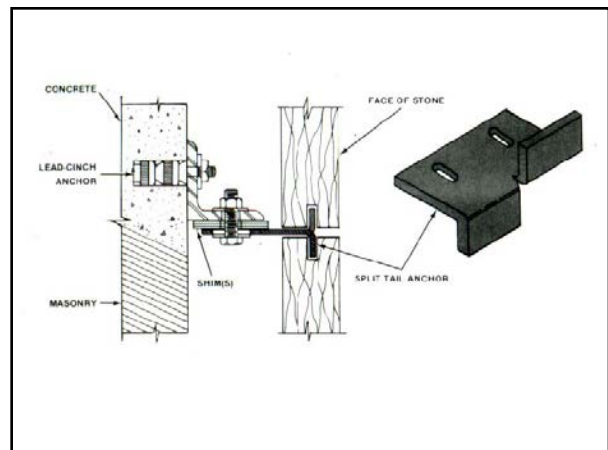
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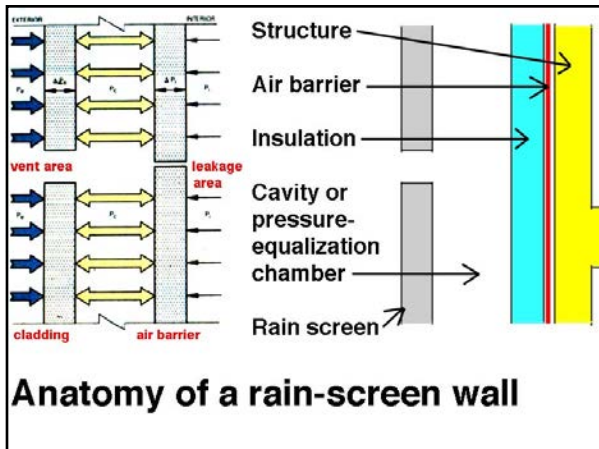
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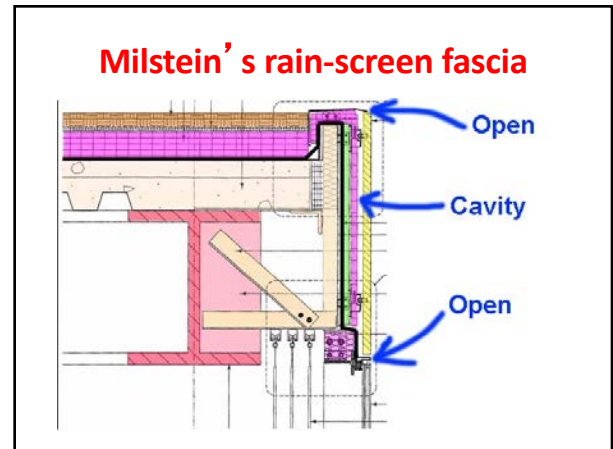
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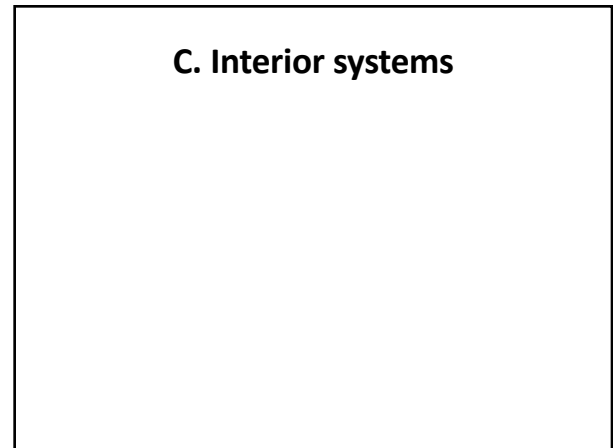
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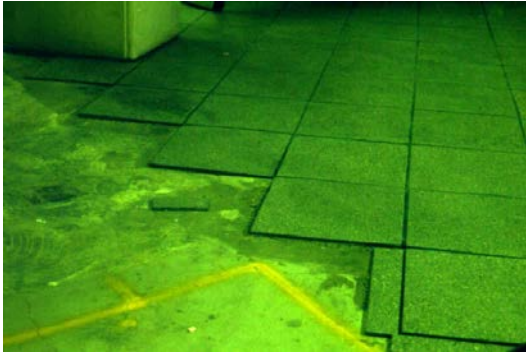


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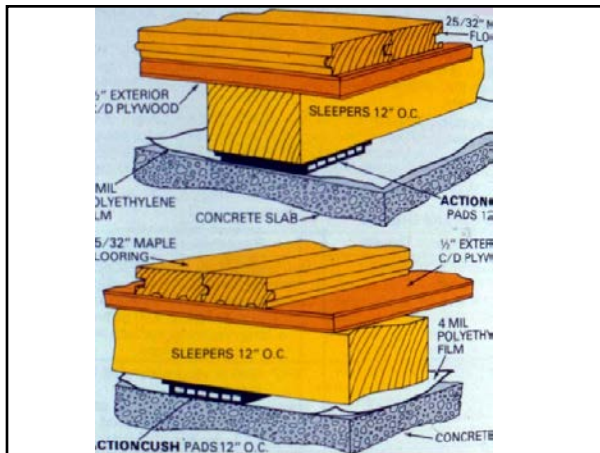
Floors



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Walls



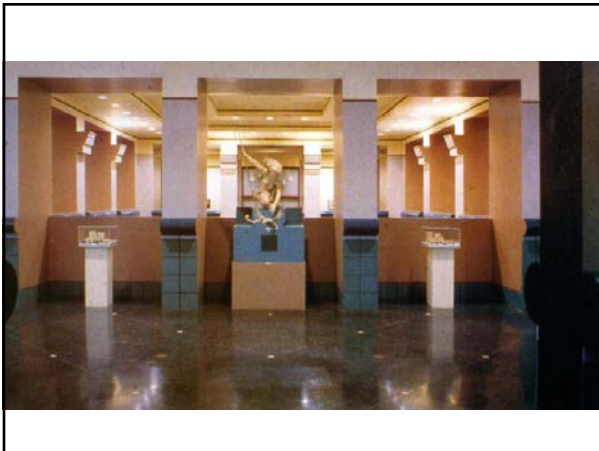
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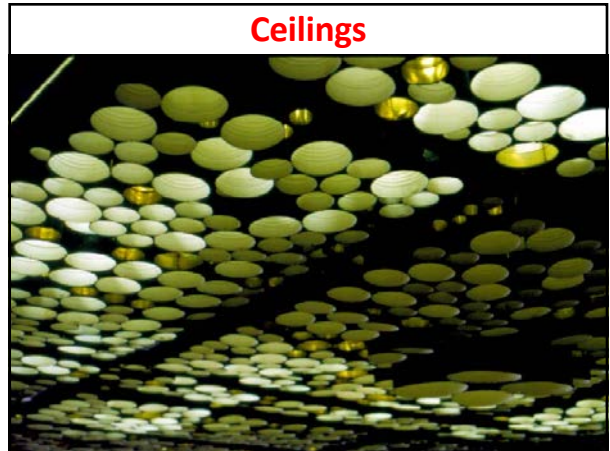
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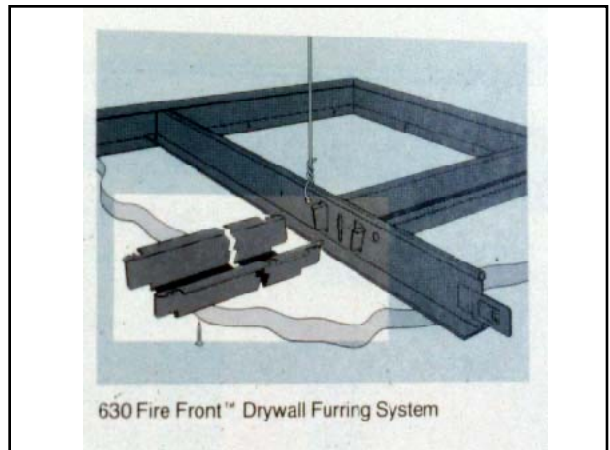
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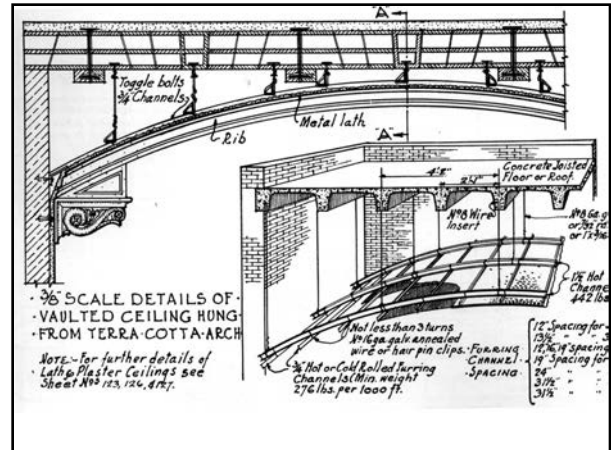
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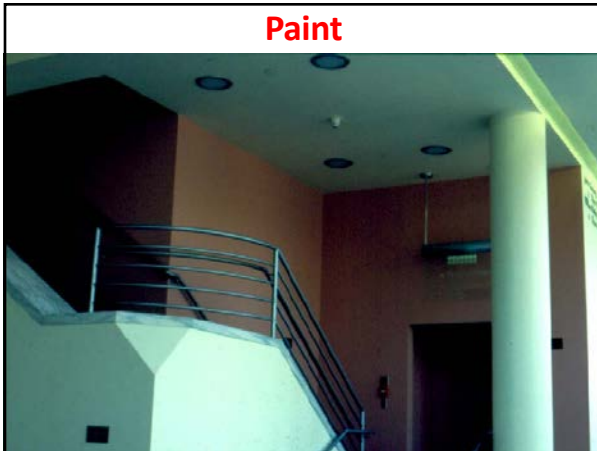
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Paint

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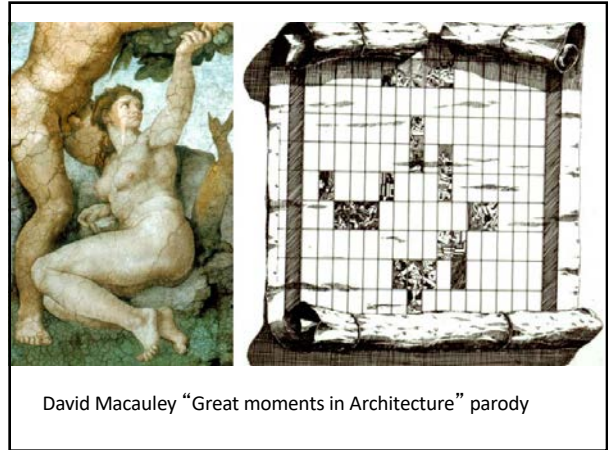
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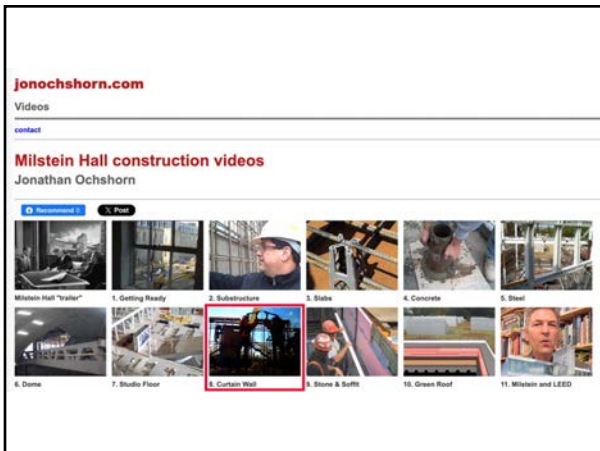


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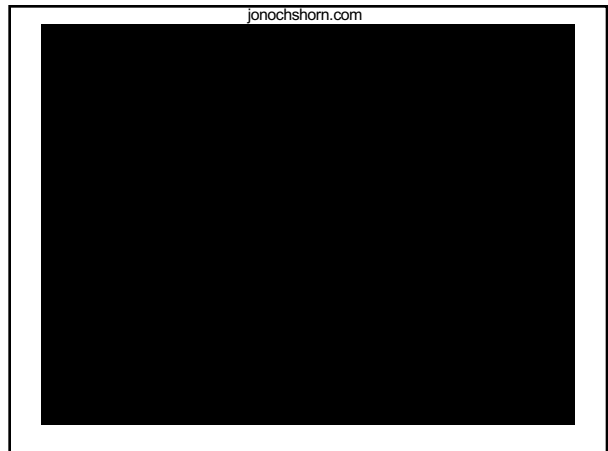


David Macauley "Great moments in Architecture" parody

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