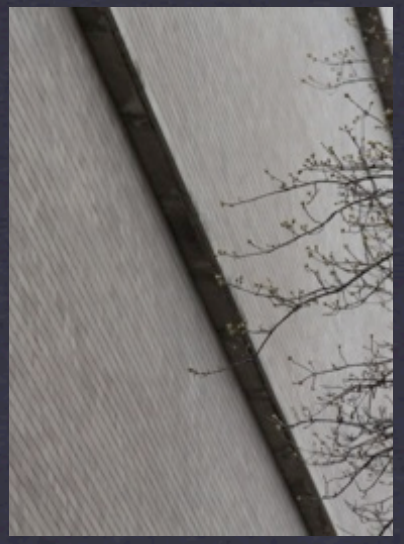
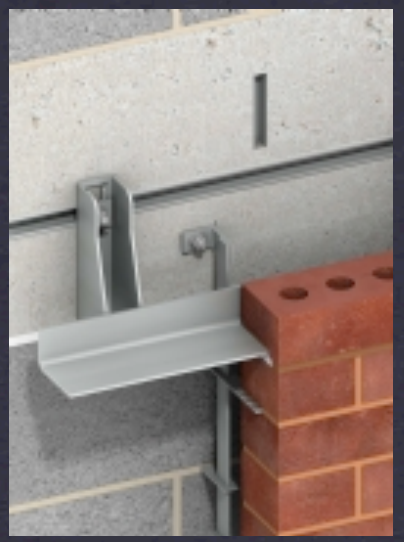
ARCH 1230

BUILDING TECHNOLOGY II

Professor Montgomery

FALL 2012





SUBJECT

EXTERIOR WALLS

chapter 19

designing exterior wall systems

DATE FALL 2012

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CLADDING W/ MASONRY & PRE CAST CONCRETE

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this week

objective:

overview of the design considerations of exterior wall systems.

- primary functions of exterior walls
- secondary functions of exterior walls
- barrier walls versus rainscreens
- basic concepts: load bearing versus cladding/ curtain walls

DESIGNING EXTERIOR WALL SYSTEMS

first impressions

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PRIMARY FUNCTIONS OF AN EXTERIOR WALL:

1. KEEP WATER OUT
2. PREVENT AIR LEAKAGE
3. CONTROL LIGHT
4. CONTROL RADIATION OF HEAT
5. CONTROL CONDUCTION OF HEAT
6. CONTROL SOUND

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SECONDARY FUNCTIONS OF AN EXTERIOR WALL:

7. RESIST WIND LOADS
8. CONTROL WATER VAPOR
9. ADJUST TO MOVEMENT
10. RESIST FIRE
11. WEATHER GRACEFULLY
12. EASY TO INSTALL

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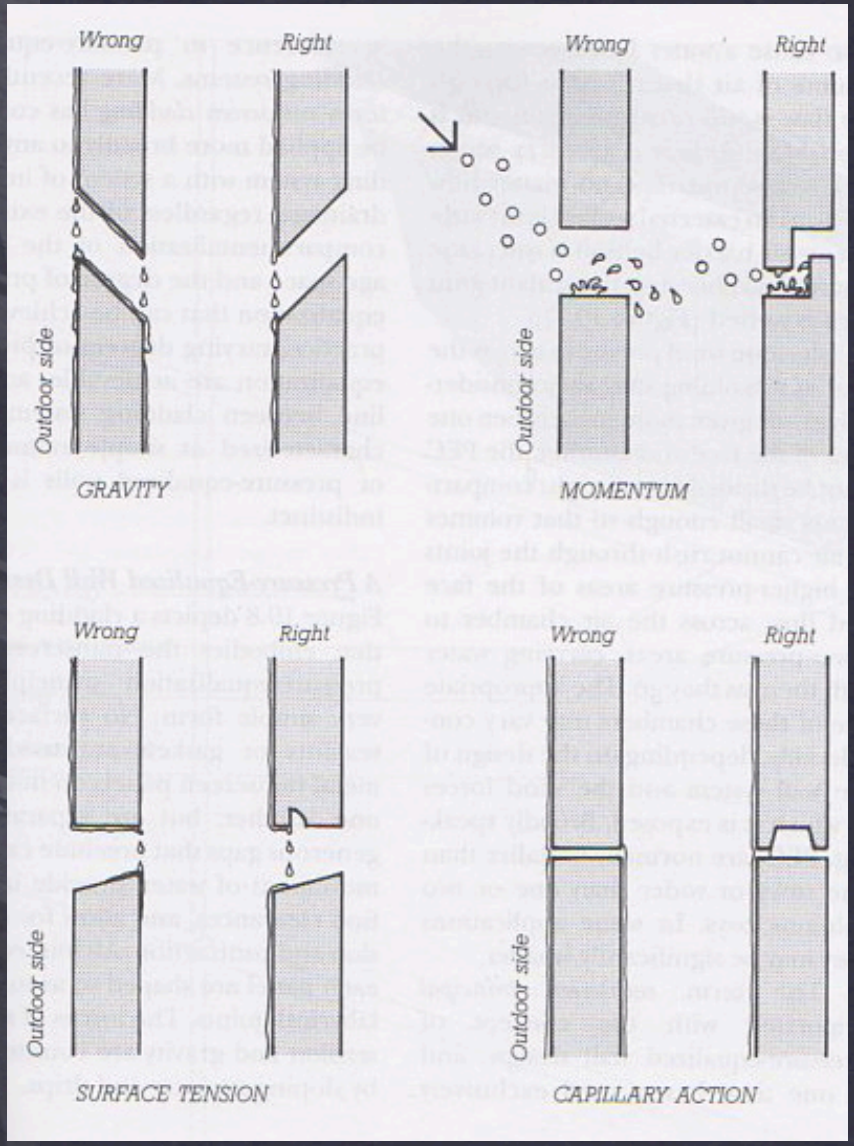

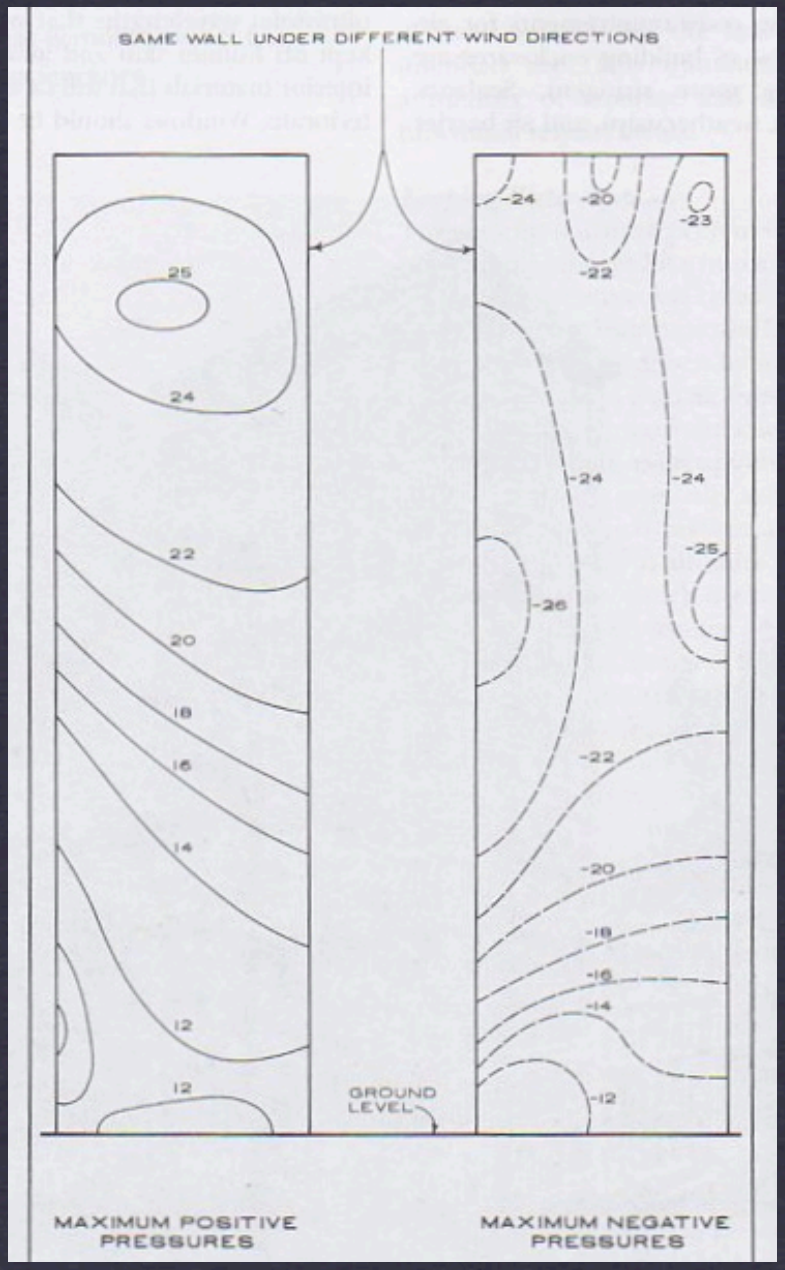

SECONDARY FUNCTIONS OF AN EXTERIOR WALL:

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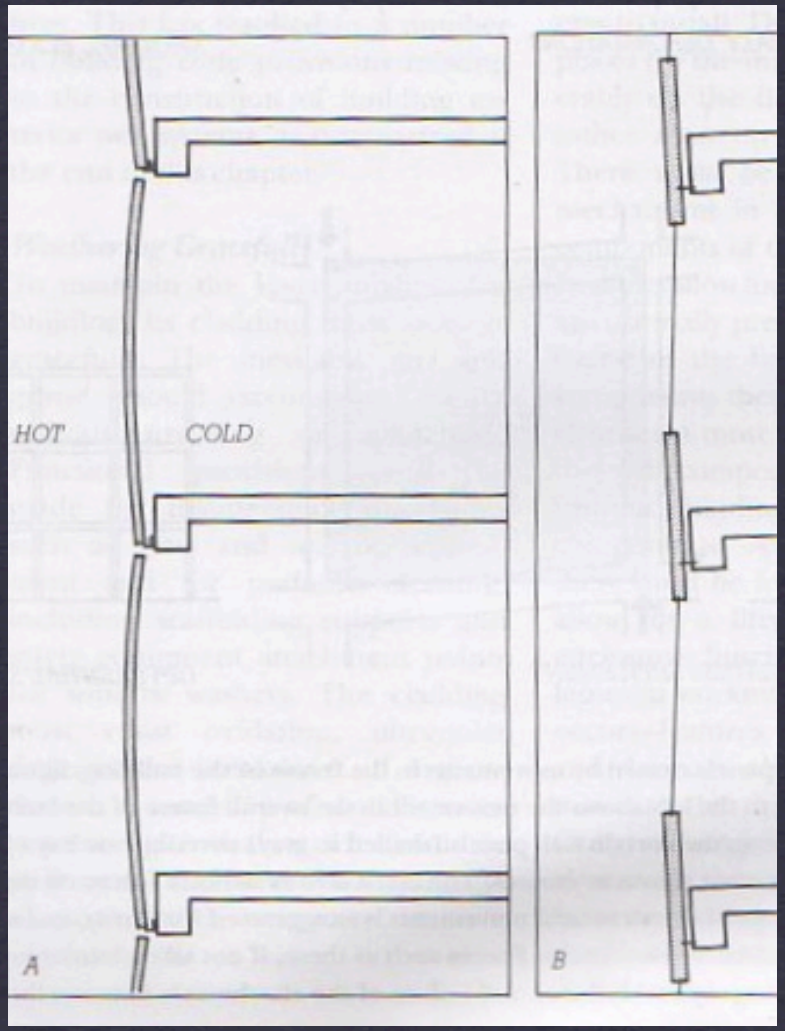

SECONDARY FUNCTIONS OF AN EXTERIOR WALL:

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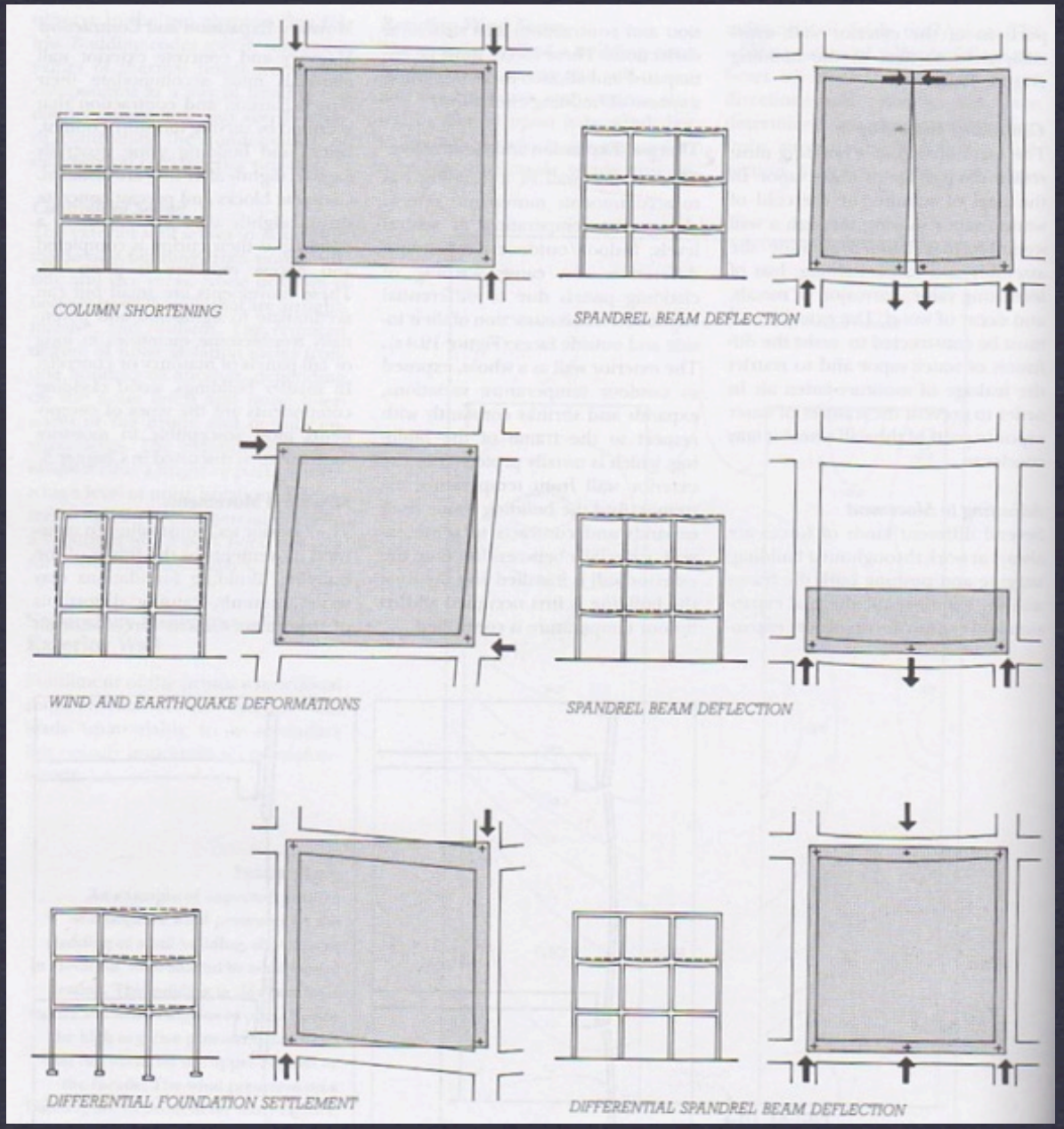

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BARRIER WALL

RAINSCREEN

DESIGNING EXTERIOR WALL SYSTEMS

two strategies

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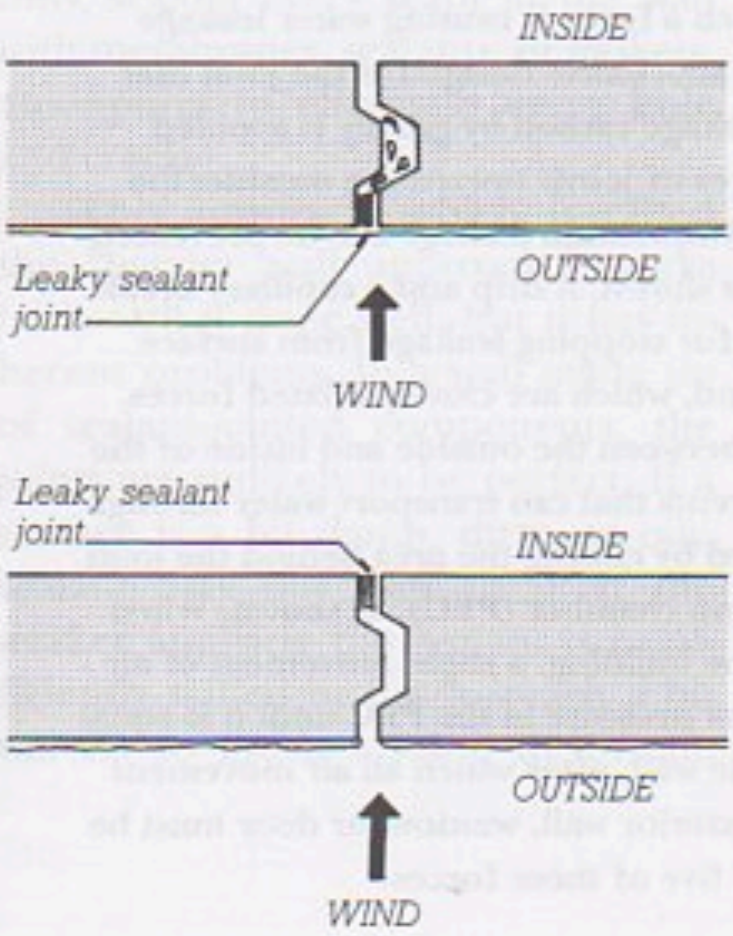

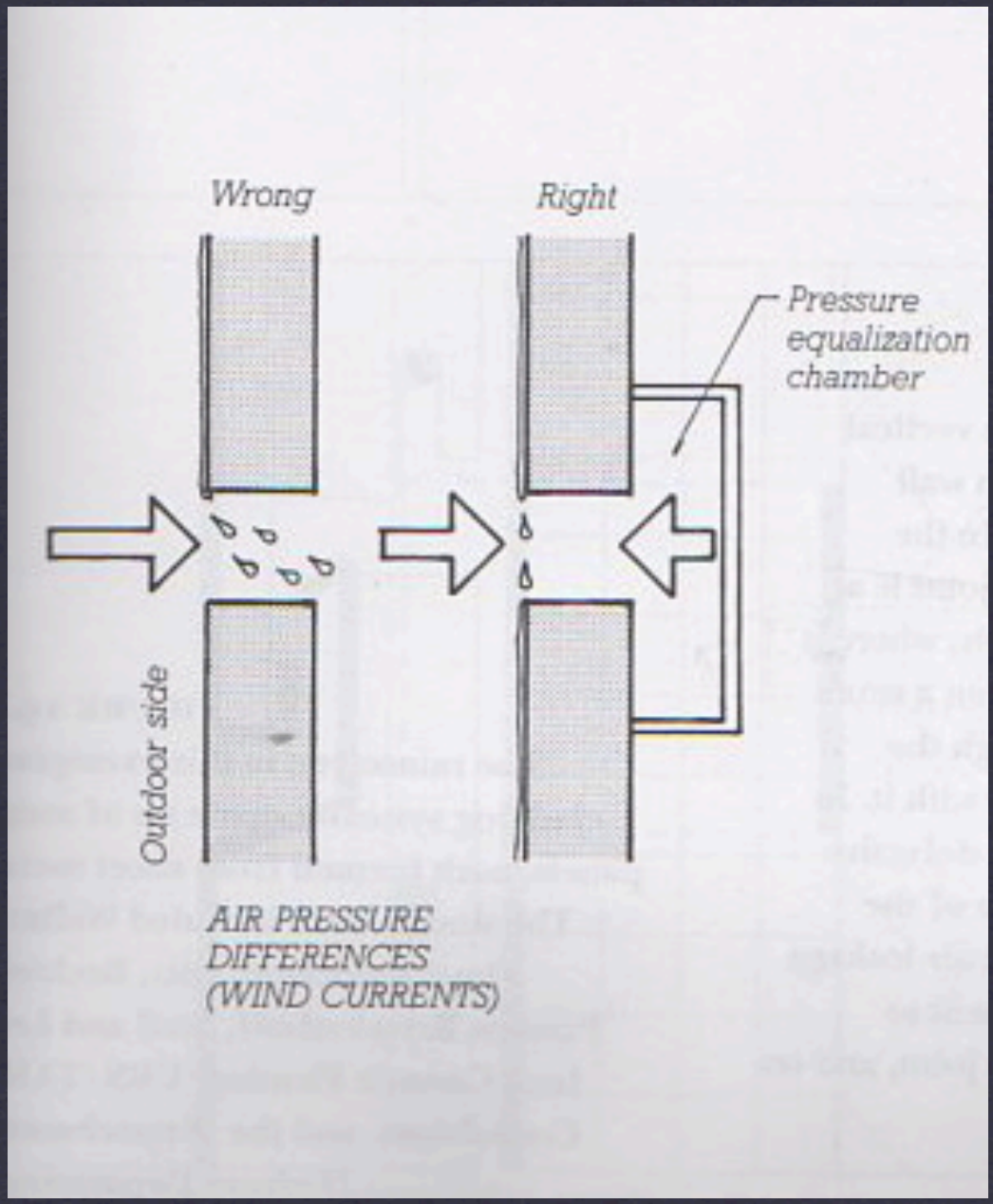

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rainscreen

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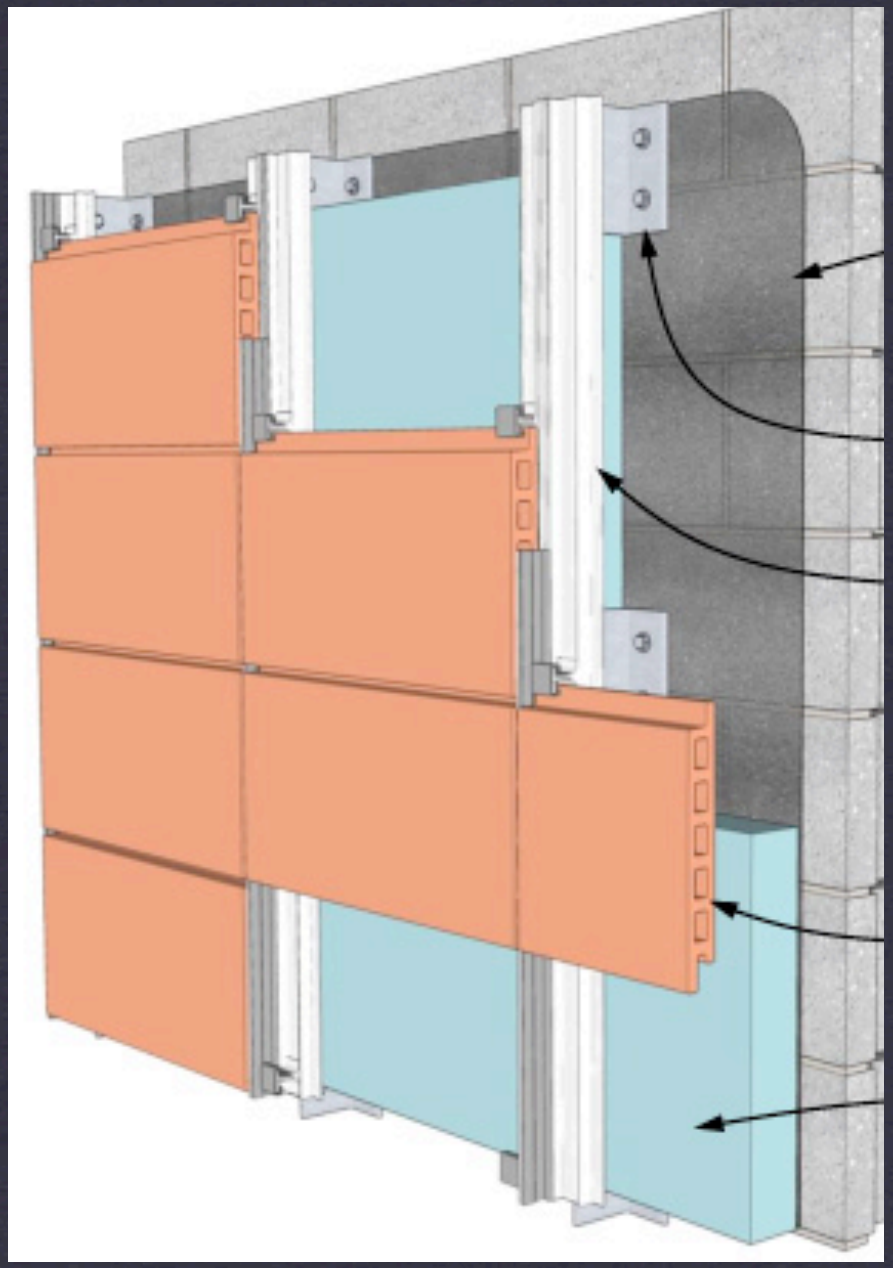

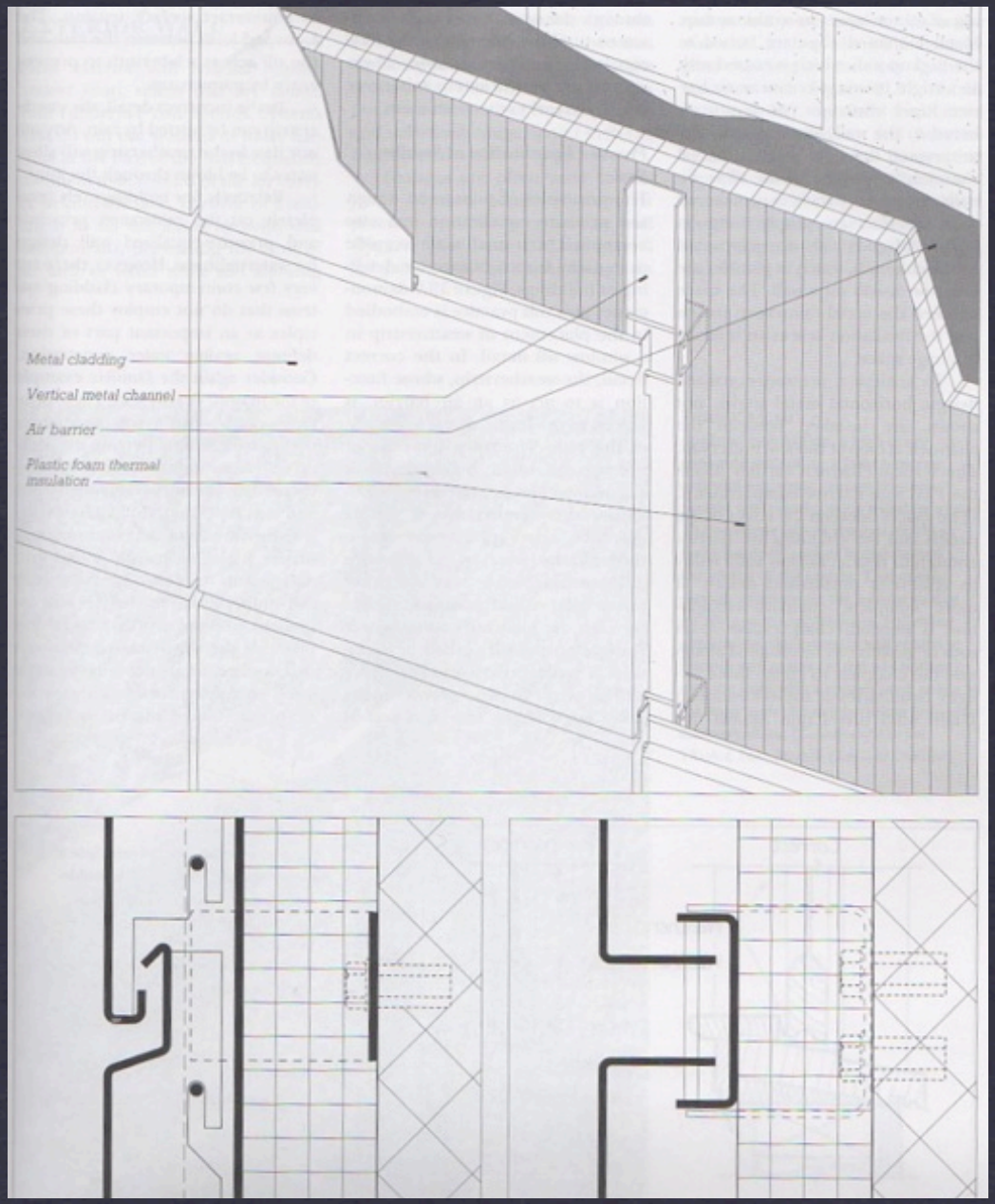

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rainscreen

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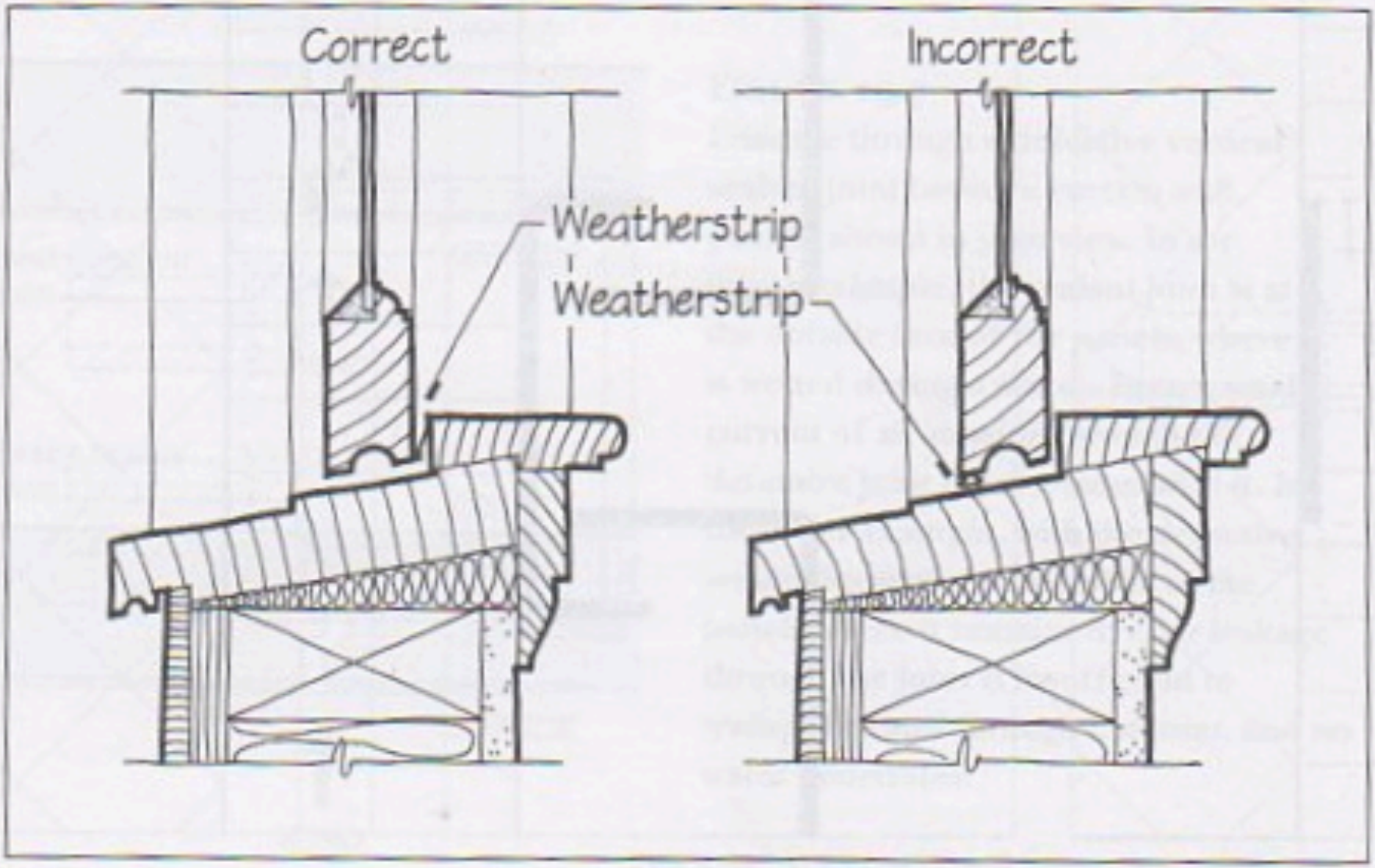

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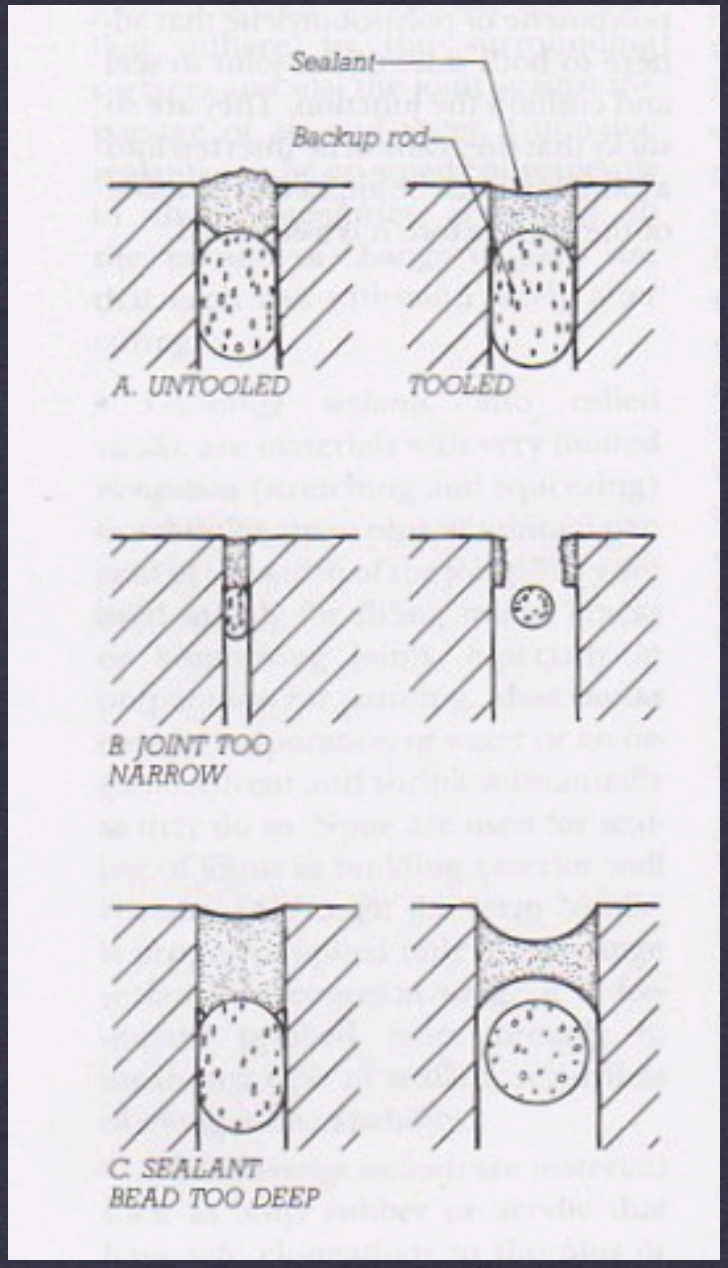

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joints

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DESIGNING EXTERIOR WALL SYSTEMS

air barrier

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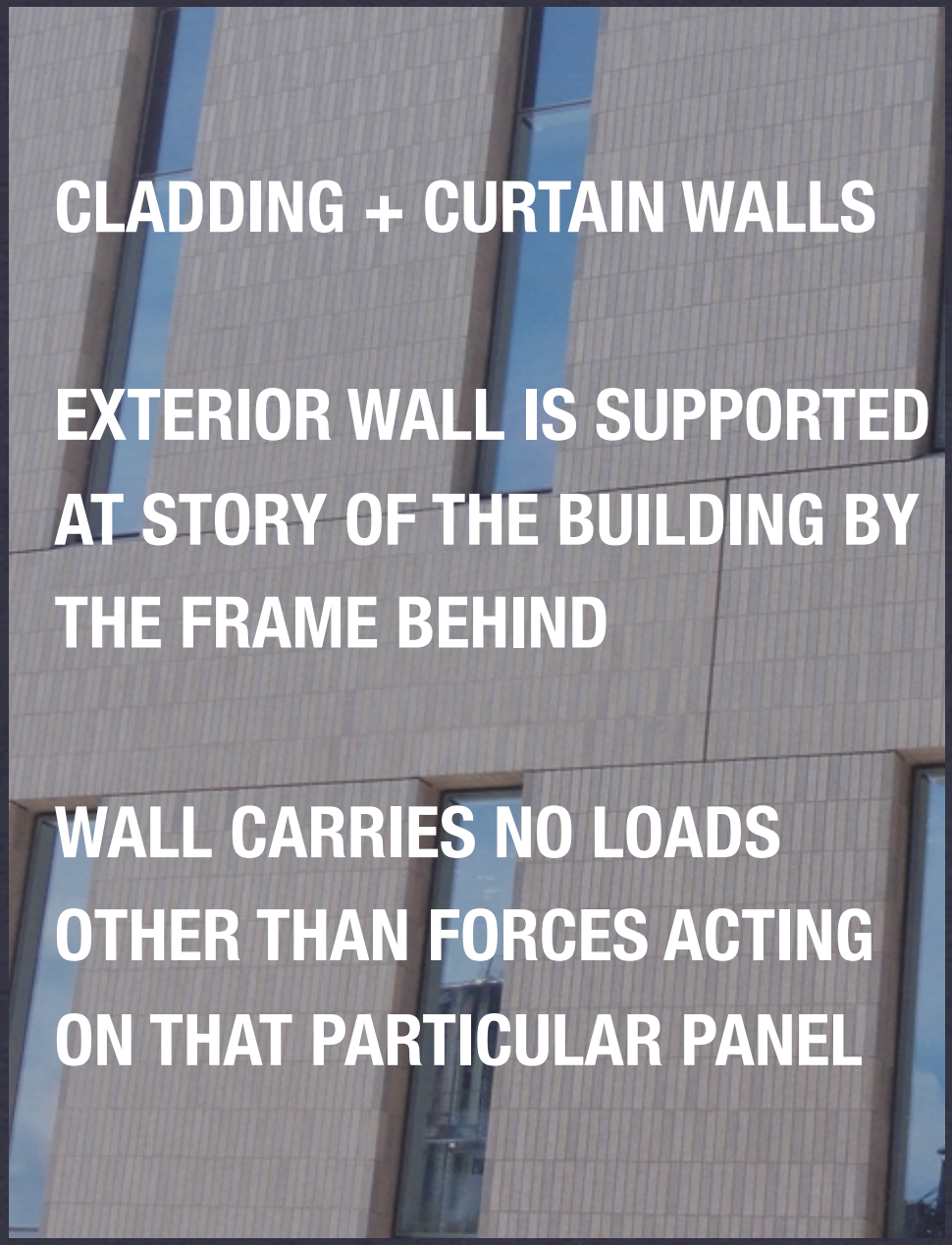
LOAD BEARING WALLS

MASONRY UNITS SUPPORT UNITS ABOVE FROM FOUNDATION TO ROOF

WALL CARRIES SOME LOAD OF THE FLOOR LOADS



CLADDING + CURTAIN WALLS

EXTERIOR WALL IS SUPPORTED AT STORY OF THE BUILDING BY THE FRAME BEHIND

WALL CARRIES NO LOADS OTHER THAN FORCES ACTING ON THAT PARTICULAR PANEL

DESIGNING EXTERIOR WALL SYSTEMS

basic concepts

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wrap up

EXTERIOR WALLS ARE SIGNIFICANT FOCUS OF AESTHETIC VISION FOR A BUILDING, BUT MUST ALSO BE RESOLVED W/ GREAT ATTENTION TO TECHNICAL PERFORMANCE

- the relationship of the cladding and the structural framing must be carefully considered and detailed.
- movement, along with air and water penetration are significant issues for exterior wall designs
- craftsmanship is required to avoid visual and technical weaknesses.
- durability / longevity of cladding system is a challenge