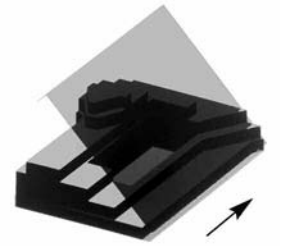
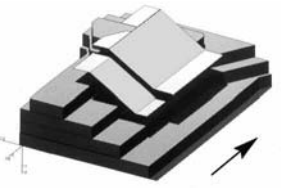
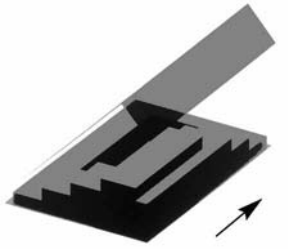
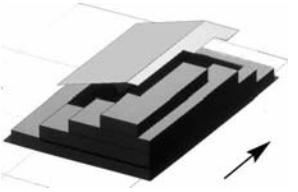


High Summer Envelopes Bound Interstitial Space: (Top) Interstitium A; (Bottom) Interstitium C.





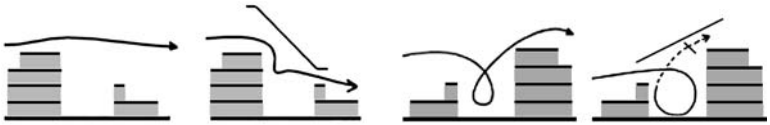
Courtyard Covers: (Top) Cover A; (Bottom) Cover C.



contrast sets different limits on courtyard covers that must remain inside the interstitial space between the building mass and the summer envelope.

Courtyard covers, designed to control both sun and wind in the courtyards, stay within the interstitium to avoid overshadowing neighbors in summer. Cover A is in two parts, high on the west to capture wind and shaped to accommodate variations in wall height. Cover C is low on the west, rising above the building-mass and is shaped on its leeward edge to protect stepping walls from direct sun. In both cases, the covers successfully meet shading requirements, but ventilation of their courtyards is a different matter altogether.

Courtyard covers, in addition to protecting from summer sun, are designed to channel wind gently downward to people on the patio floor. Courtyard A is the more difficult to solve for ventilation. Without a cover, there is little or no air movement inside the courtyard. High building-mass on the west forces wind up and over the building. Even with the cover in place, there is still no air movement at the patio level. In contrast, the lower mass on the windward side of building C improves the chance for good ventilation. Without the cover, breezes barely reach the patio floor. But



Wind Flow over Open and Covered Courts: (Left) Site A; (Right) Site C.

with the cover in place, ventilation is good to excellent. Beyond that advantage derived from massing, cover C is designed with a baffle that further enhances ventilation.

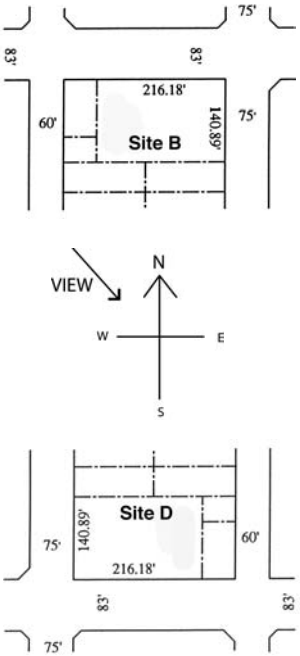
Comparison of Sites B and D

Sites B and D are both elongated east to west. Courtyards will also run east and west. Site B has streets on the north and east while site D has them on the south and west.

It is important to note that illustrations for B and D use a different viewpoint from A and C. Illustrations for A and C showed views from the southeast, so that north in the pictures generally conformed to the orientation of site plans. However, to better understand building massing and courtyard-cover shapes for sites B and D, the viewpoint for illustrations has been shifted to the northwest. (Note view arrow on site plans.)

As in the previous two cases, the covering envelopes are different. Both are high on the south and low on the north. But envelope B provides more potential building volume because shadows can extend across the street on the north.

Both resulting buildings have greater mass on the south than on the north but building B is taller with more floors resulting in more extreme courtyard conditions: deep winter shade and hot summer sun. Building D has similar sun conditions but not so extreme because the building is not so tall and the courtyard is more open to ambient light from the sky. In both cases, the cover provides summer protection for the courtyard but the lack of winter sun cannot be solved without a design change in the building mass.



East–West-Elongated Sites: (Top) Site B; (Bottom) Site D, rotated 180 degrees from site B.