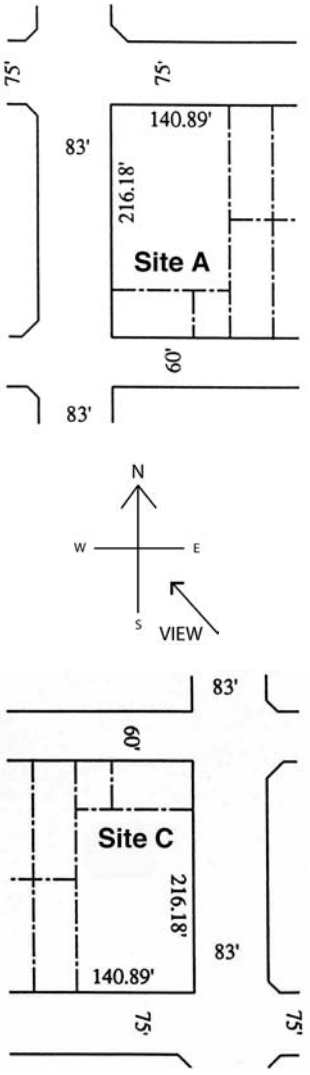


North–South-Elongated Sites: (Top) Actual corner site A in Los Angeles; (Bottom) Site C, rotated 180 degrees from site A.

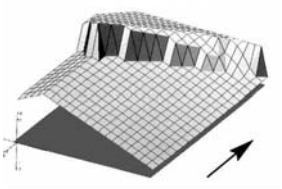
While the setting effectively changes with each site rotation, certain design conditions are fixed. The rules for solar envelope generation remain constant, but the space inside the envelopes changes dramatically. Regardless of the size or shape of the envelopes, several conditions applying to the resulting buildings remain unchanged. Each building maximizes the space of its corresponding solar envelope at a floor-to-floor height of 14 feet (4.3 m). Walls are designed with no wind openings; they are closed at the street level to increase shop frontage and to avoid street dust and noise. Windows at the upper levels are presumed to be a hit or miss proposition and not reliable for ventilating the courtyard. All useful airflow occurs only through the courtyard opening.

Comparison of Sites A and C

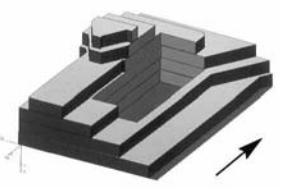
Sites A and C both run long in the north–south direction but different arrangements of surrounding properties alter envelope outlines. Generally, where streets touch the site, envelopes rise; where mixed-use properties touch, envelopes drop.

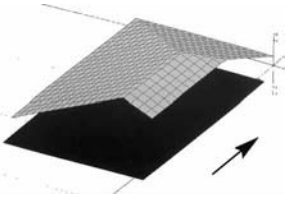
In any courtyard elongated in a north–south direction, people will generally find continuous choices for comfort just by crossing shadow boundaries, the direction and distance of movement corresponding with different rhythms. Seasonally, they will usually find comfort by shifting northward in winter and southward in summer. Daily, they will follow a broad boundary moving from west to east. Only between 9 a.m. and 3 p.m. in summer is the courtyard likely to be uncomfortably flooded with sunshine. That 6-hour period sets the condition for designing a courtyard cover. Otherwise there is a dilemma: to be in the hot sun or to stay out of the courtyard completely.

While open courtyards in this orientation provide ample choices of sunlight and shadow most of the year, they can deny wind for ventilation. This may be an advantage in winter but on a

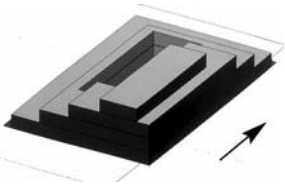


Solar Envelopes:
(Top) Envelope A;
(Bottom) Envelope C.
(Viewed from the southeast.)





Building Masses:
(Top) Building A;
(Bottom) Building C.



hot summer day, cooling breezes from the Pacific Ocean pass over the building, leaving the courtyard hot and still.

Envelope rules for both sites are the same but directions of adjoining streets and properties are different, thus affecting the size and shape of the envelope. Envelope A is high on the north and west where shadows can be cast across streets to meet 20-foot shadow fences at commercial properties. Envelope C, on the other hand, is high on the south and east for the same reason. Understanding the difference is basic to designing for sun and wind.

The two buildings admit sunlight differently into their own courtyards. Because building A is high on the west, winter sun enters the courtyard throughout the morning and midday but not in the afternoon, discouraging winter afternoon use. In contrast, building C favors winter afternoon use; its high mass on the east and south blocks winter morning sun, but sunlight floods the courtyard throughout the midday and afternoon.

Summer envelopes, defining the upper boundaries of the interstitium, slope in different directions on the two sites. The envelope for site A slopes down to the east and is determined by afternoon rays of the summer sun. In contrast, the envelope for site C slopes down to the west following rays of the morning sun. The