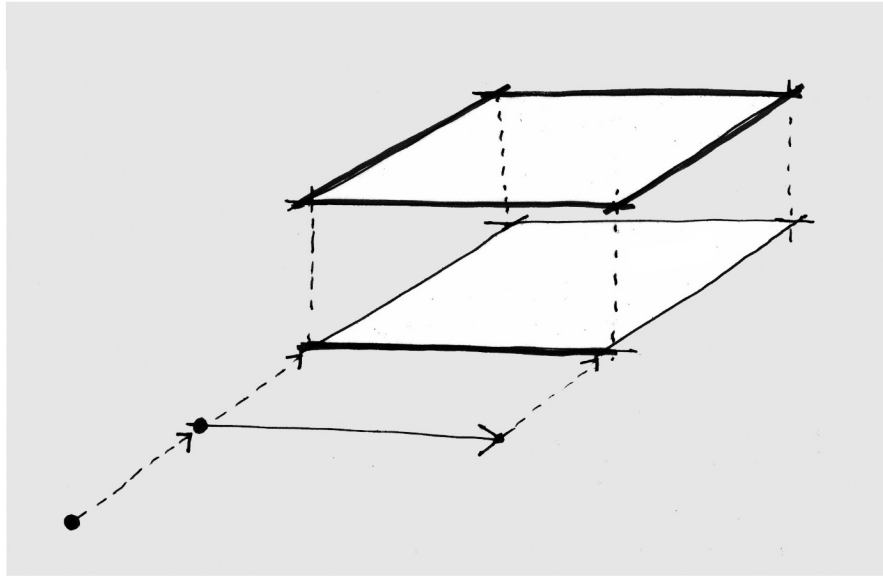




four points





A typical parking lot can be defined with very basic architectural elements of points, lines and planes - all of which exert forces and influence the feeling of a place.

## FOUR POINTS OF ARCHITECTURE

Only considering the parking lot as a necessary evil or strictly the province of civil engineers is severely limiting, and provides us with the customary suburban landscape. Can a parking lot be approached in an architectural manner?

### EDGE

The articulation of a form depends to a great degree on how its edge conditions are resolved. The image of a form will be compromised if a space is inadequately defined or contained by buildings and landscape. If its edges leak excessively, its form will be immeasurable and obscure. Edges have characteristics of dimension, adornment, continuity and enclosure. For example, a sidewalk by itself is an abstraction. Meaning is acquired only in conjunction with uses other than pure circulation.

### GROUND PLANE

For the horizontal plane to be seen as a ground figure, there must be a perceptible change between its surface and the plane upon which it lies. Characteristics of color, texture, pattern and porosity can manipulate the appearance of the floor. A change in elevation, geometry or orientation can be used to visually reinforce the field's independence from the larger spatial context.

### OVERHEAD PLANE

A horizontal plane located overhead defines a volume of space between itself and the ground plane. The form of the space is determined by the plane's shape, size and height above the ground plane. This volume is further reinforced visually if vertical linear elements are used or the base plane is correspondingly articulated. Characteristics of transparency, opacity, density and texture can affect the appearance of the overhead plane.

### ORDER

Order without diversity can result in monotony. Diversity without order can produce chaos. Principles of axis and hierarchy are visual devices that allow diverse forms to co-exist within a unified whole. Hierarchy defines the significance of a form and its functional role relative to the other forms of the organization. Characteristics of size, shape and placement are associated with determining hierarchy. Visual signification of primary, secondary and even tertiary spaces eliminates ambiguity and clarifies possibility.



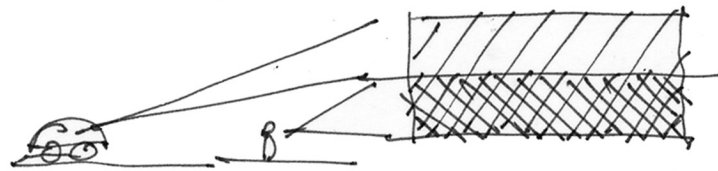
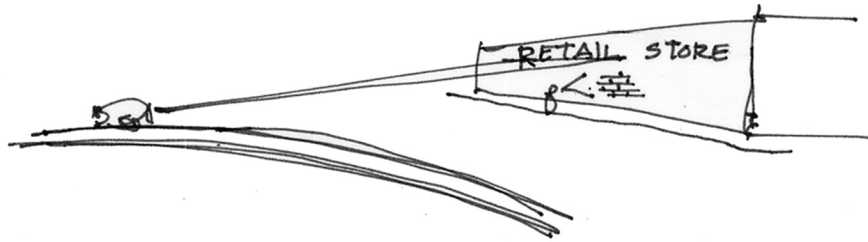


Diagram of simplified facade



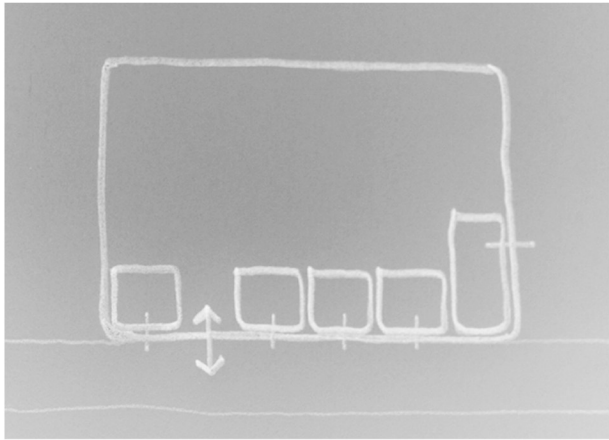
Street edge and building edge

## EDGE

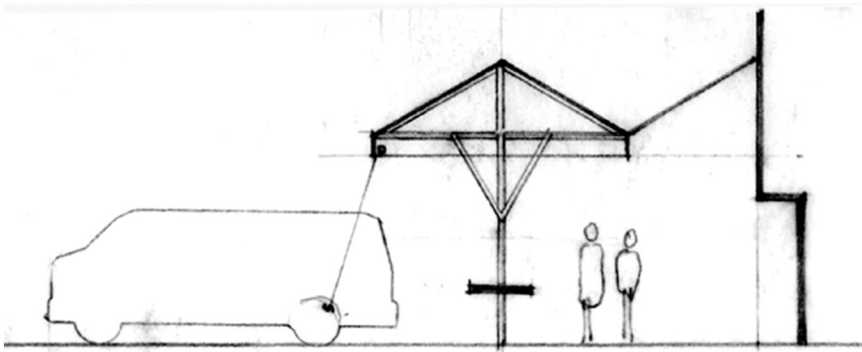
There are two distinct edges of a parking lot: (a) where the parking lot touches the building/sidewalk and (b) where the parking lot touches the street/sidewalk.

The upper half of the facade is simplified and dedicated to conveying the store name to the passing motorist. The lower half of the facade is also simplified and serves as billboard for daily specials as well as a backdrop to sales items too bulky to display inside. The facade is generally solid for interior display space. Natural light, views and humanizing details are given no consideration.





Big box wrapped with display and/or entrances



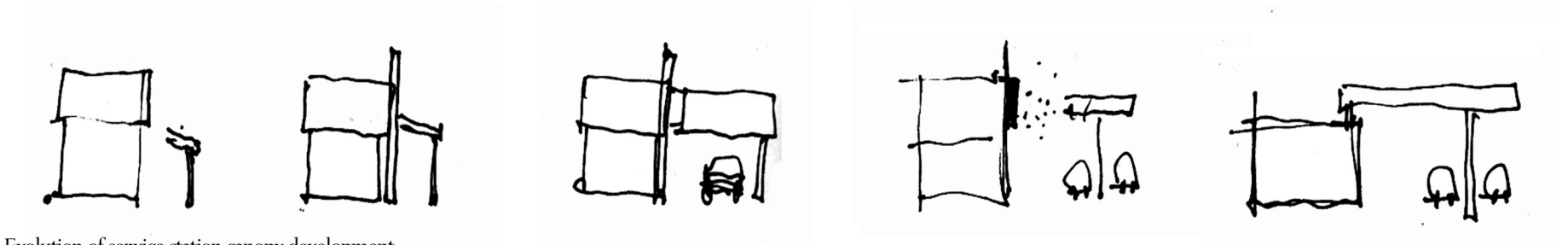
Farmer's Market - Roanoke, Virginia  
 Architect : Centerbrook Architects with HSMM, 1979

EDGE

Additional entrances and display windows could be introduced to enliven the facade of the typical big box. This is feasible as some departments such as pharmacy, sporting goods, home improvement, seasonal/garden, and electronics already have separate check-out registers and personnel .

Locally, a built precedent for this type of an approach to the edge condition is the canopy arcade clipped to the face of existing buildings to create a farmers' market in Roanoke.

Another precedent source can be found in the transformation of the traditional country store into the modern convenience store with the addition of gas pumps and sheltering canopy.



Evolution of service station canopy development







Granite cobblestones near 1910 train station  
Lynchburg, Virginia

## GROUND PLANE

The typical parking lot is an expanse of asphalt paving sloped to various drains. The practical ideal would have all the lot sloping from building face, but if the site location mandates, additional perimeter and strip drains will accommodate a parking lot sloped toward the building. The drain inlets have no relationship to the paving, the parking pattern or the building.

In the class "What Makes A Town?" Professor Donna Dunay noted the curb-free exit from the grocery store to the parking lot. The easy transition to the parking lot with a grocery cart reduces the former typical six-inch curbed sidewalk to a concrete apron. Making small adjustments in the conventional increases the pedestrian friendliness of the grocery store parking lot.

The ubiquitous asphalt paving is part of the cheapness and disposability of these parking lots. A romantic return to the cobblestone past will not take place due to labor and material costs and issues of durability and accessibility. However, the possibility of other materials exists in conjunction with other functions.

## ON MATERIALITY

It is important to note that a mere change of materials from the typical does not, by itself, generate architecture, no more so than changing downtown concrete sidewalks to brick pavers generates a lively, traditional Main Street. However it can be a place to start.





Mono-texture of new asphalt paving



Paint stripe clinging to deteriorated asphalt

## ASPHALT PAVING

Significant issues arise with the pervasive black asphalt paving.

Color and Texture. As asphalt begins to cool, it begins to age. Oxygen and water in the asphaltic binder begin to break down, and the aggregates begin to loosen. The first sign of this deterioration is the color fading. Regular seal coats of coal-tar emulsion are required to replace the aging binder. Asphalt has a mono-texture, unless stamped and faux-finished.

Addressing issues of color offers choices such as rolled aggregate surfaces, concrete that can be colored and stained, stone, tiles, wood blocks and planking, brick paving and resin paving.

Impervious Surface. Asphalt paving further increases the impervious surface of a site. Stormwater must be managed. Runoff containing toxins and automobile wastes must be mitigated. Solar heat gain raises heat index of surrounding air temperature, and heated runoff affects the livability of receiving streams and creeks.

Addressing issues of permeability offers choices such as soil pavement, permeable paving, geosynthetic textiles and gravels.

Other Functions. Heated sidewalks, driveways and lots can be desirable in many cold areas. Heat can be provided with circulating anti-freeze tubing, geothermal systems or electric current. A quick Google search turns up Helsinki, Minnesota, Alaska, Moscow and Lugano as places that have successfully deployed such systems. An infrastructural investment such as this would call for a corresponding upgrade in surface material.







Even inefficient surface parking is still very affordable.

#### PAVING COSTS

The average parking space with its circulation in a surface parking lot costs about \$2500 to \$3000 to construct. This includes grading, subbase and paving.

The same space in a structured parking deck is nearly three times more expensive, or approximately \$10,000 to \$15,000 per.

The same space underground with plaza above triples again to start at \$45,000 per.



Image : Bjarne Jellesen



Piazza San Marco - Venice, Italy

Image : Remick Moore



Piazza del Campo - Siena, Italy

## DRAINAGE AS A DESIGN INFLUENCE

Piazza San Marco has developed over one thousand years of effort. It has experienced several paving patterns and surfacings. Inclusion of drainage has always been very important as the piazza is the lowest point in Venice. Squares of dark-colored, field blocks alternate with rectangular, white block designs along broad parallel bands. The squares pitch to a center drain which leads to a below-grade drainage system.

Piazza del Campo is also strongly influenced by drainage, actually to collect rainwater rather than draining it away. The arc-shape of the plaza slopes downward more than twelve feet to a central drain point. The nine sections are demarcated by stone drainage channels. The fields consists of the characteristic orange clay brick laid in a herringbone pattern.







Brick and stone slab paving

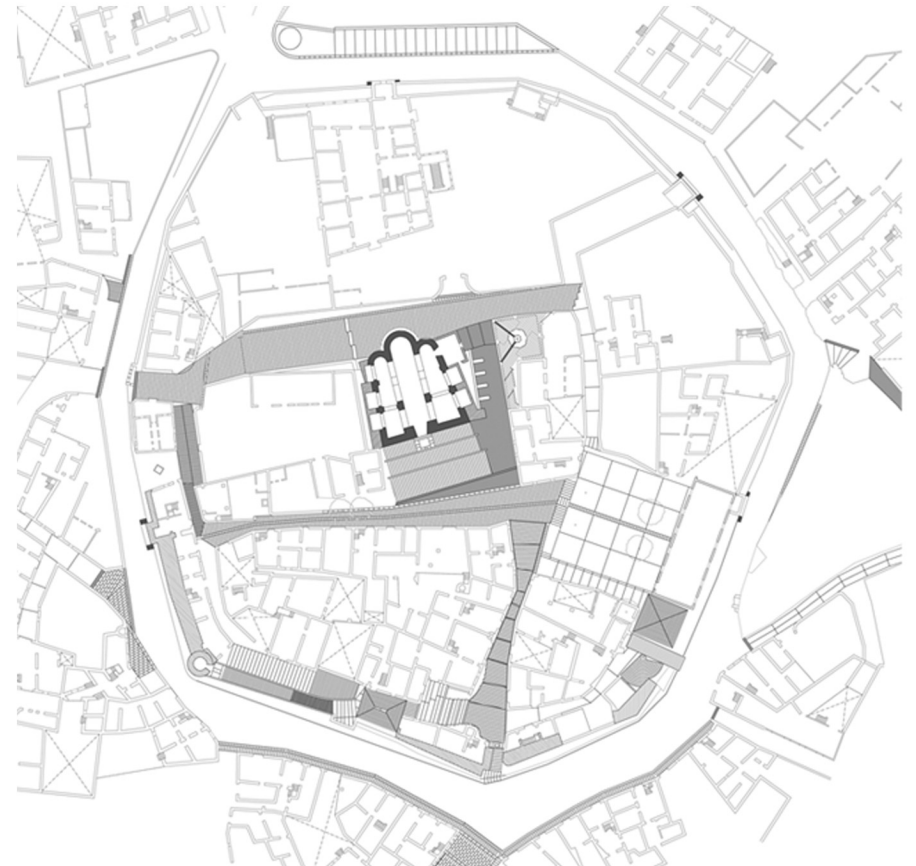
Images : Josep Lluís Mateo - MAP Arquitectos (plan) / Ferrarí Freixa (photos)



Broad step paving at building entry

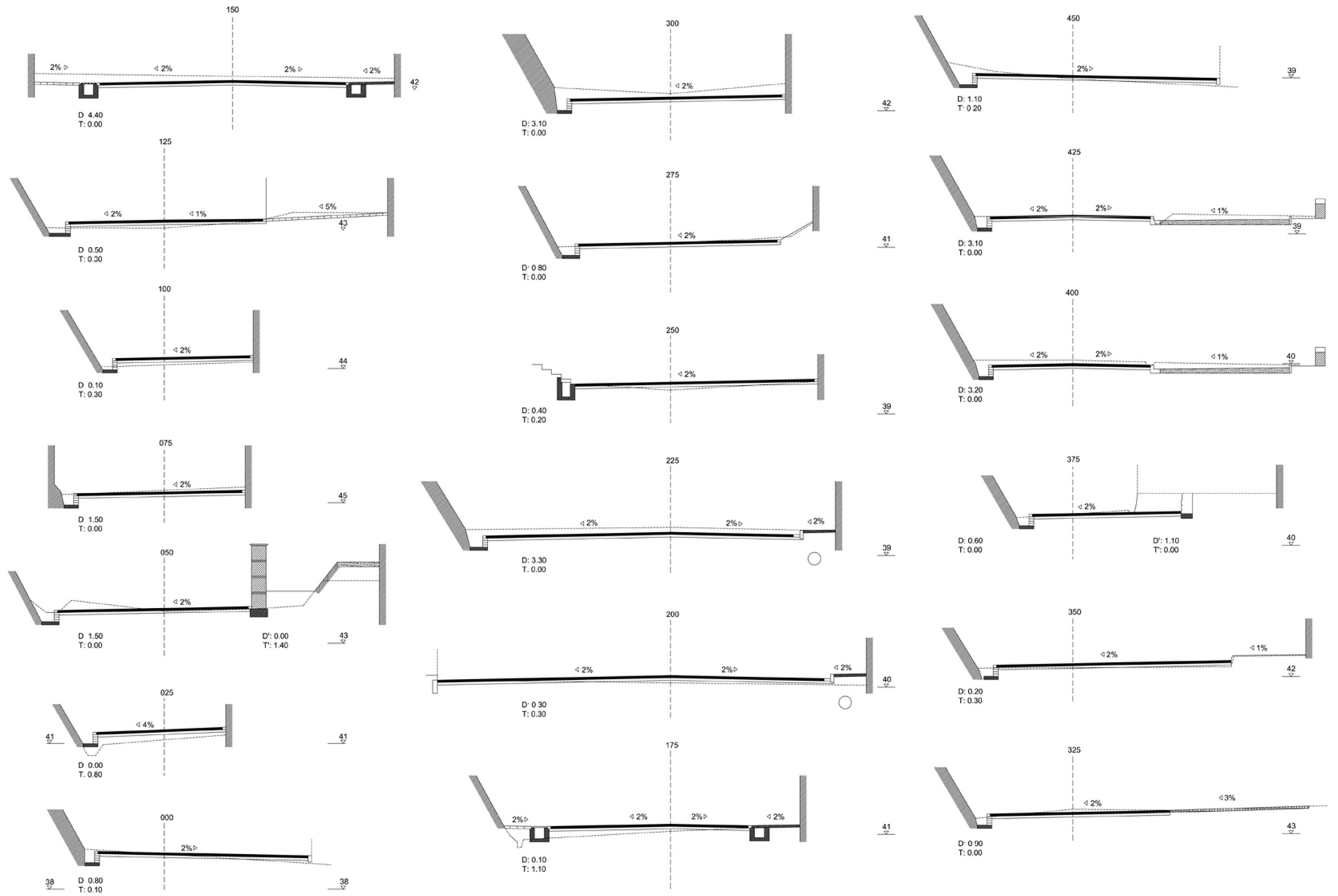
## FLOOR SURFACE

Ullastret, settled in the 6th century, is one of the oldest fortified towns in Catalonia, Spain. The floor paving of the medieval walled center town required extensive rehabilitation. Paving materials consist of sawn local granite slabs and handmade bricks with accents of concrete. A network of drainage channels carries away surface water, while separating paving materials, patterns and steps.



Site plan of paving patterns - Ullastret, Spain  
Architect : Josep Lluís Mateo, 1998





Paving sections - Ullastret, Spain  
 Architect : Josep Lluís Mateo, 1998







A mature tree specimen can serve as a point of reference on the horizon and it can also make a distinct place under the shelter of its canopy.

#### OVERHEAD PLANE

The typical parking lot has no definition or spatial presence. It also impacts the environment significantly in terms of dust, noise, heat, glare and air pollution. The asphalt surface serves as a solar heat island - heating up the surrounding air, the soil below, and the runoff that taints water resources. The resulting heat actually serves to speed up the deterioration of asphalt surfaces.

A natural and sustainable solution to these concerns is to plant and retain trees, preferably large-stature ones. By evapotranspiration, a tree "sweats" and dissipates heat. The canopy provides a cooling effect to the adjacent surfaces and air.

Large stature trees can also provide an architectural answer to the lack of spatial definition.





Mature large-stature trees make distinct places.



The screen and green approach fails to make a place even for shopping cart return and provides an ineffectual shade.

## CURRENT LANDSCAPING ORDINANCES

Zoning ordinances regulate the application of perimeter and interior lot landscaping, frequently described as the "screen and green" approach.

Perimeter landscaping is typically a ten feet wide strip, containing one tree minimum per fifty feet of right-of-way frontage with the balance in assorted shrubs and plants. The intent of perimeter landscaping is to conceal or limit the visibility of parking areas from the right-of-way and the passing motorist.

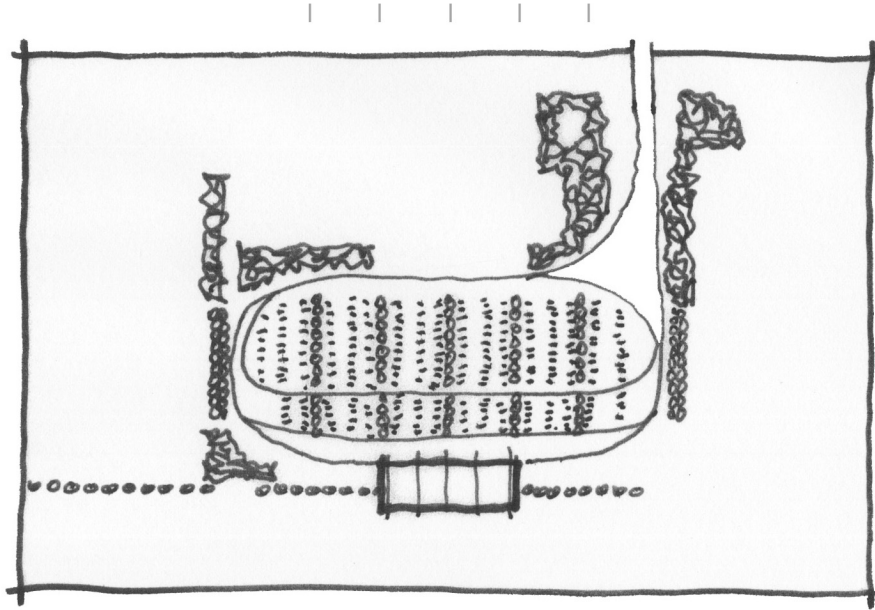
Interior lot landscaping is typically a modest percentage (5-10%) of the gross parking area. Interior lot landscaping can be tree islands adjacent to the lot, islands at the end of parking bays, rows of trees between parked vehicles or in landscaped medians. The intent of interior lot landscaping is to accommodate stormwater run-off, shady expanses and orderly circulation of vehicles and pedestrians.

The minimum planting area for parking lot trees is typically given as sixteen square feet - a four by four square. This implies an ornamental tree with a maximum height of thirty feet. A true shade tree grows well beyond thirty feet and requires far more than planting area than sixteen square feet.

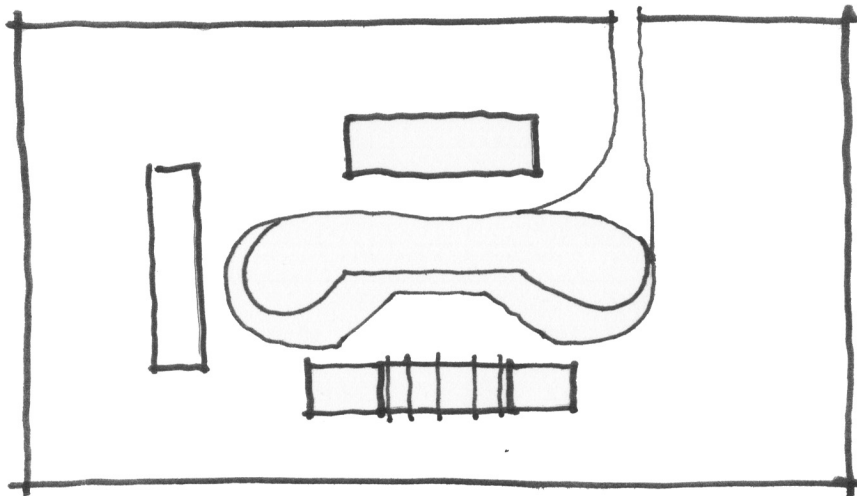
Some ordinances use a desired canopy size at maturity to guide the initial planting scheme. However, the typical parking lot is a harsh environment for living plant materials - frequently trees die or are stunted by lack of moisture, extreme heat, exposure to toxic run-off and car hits. Few, if any, assessments of canopy growth are made, and fewer penalties are ever levied.







Original site plan for Dulles Airport - Chantilly, Virginia  
 Landscape Architect : Dan Kiley, 1963



Aerial image of Dulles Airport forty years after construction. Kiley's flanking groves have been encroached, and the parking lot trees have suffered from the difficult growing conditions.

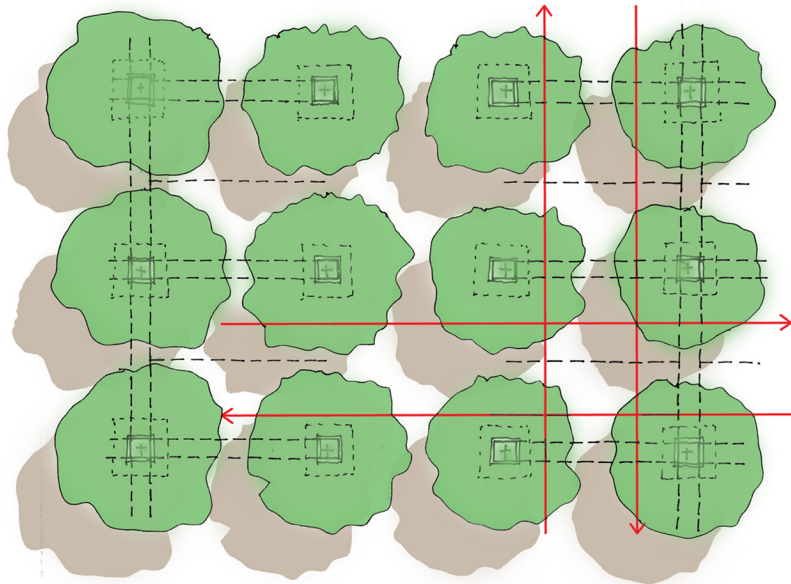
TREE GROVE

Much has been written about the swooping concrete roof of Saarinen's Terminal and the Mobile Lounges that mediate between plane and terminal. Kiley's landscape task focused on the traveler's transition from automobile to terminal. Kiley saw the parking lot as "a vast entry plaza, its rectangular expanse distributed into the maximum number of minute parking units, its rounded ends providing ample turning radii for high-volume traffic." Dense groves of evergreens at twenty feet on center (to allow mowing in both directions) frame the surface lot. Five rows of London plane trees divide the lot and focus on the terminal's column supports.

Note: The London plane tree is a hybrid sycamore reaching 75 to 100 feet, with a mature spread averaging 80 feet.







Parking sketch derived from Kiley's description of Dulles' tree grove - 20 feet on center grid

## PARKING IN A GROVE

Kiley's writings frequently reference spacings of 15 feet and 20 feet as necessary to achieve a strong spatial effect - the antithesis of the typical retail parking lot.

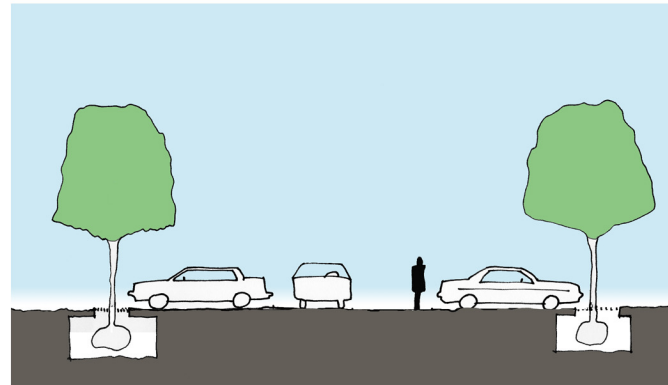
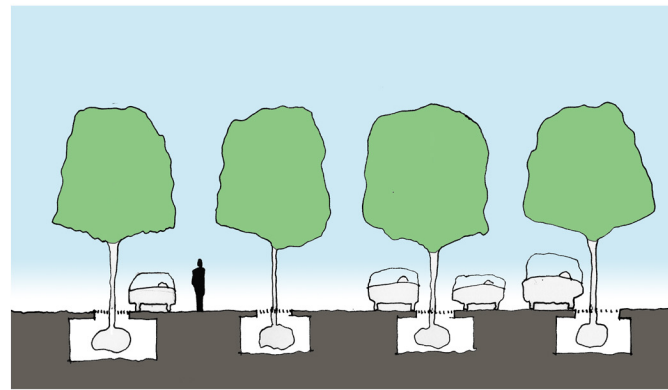
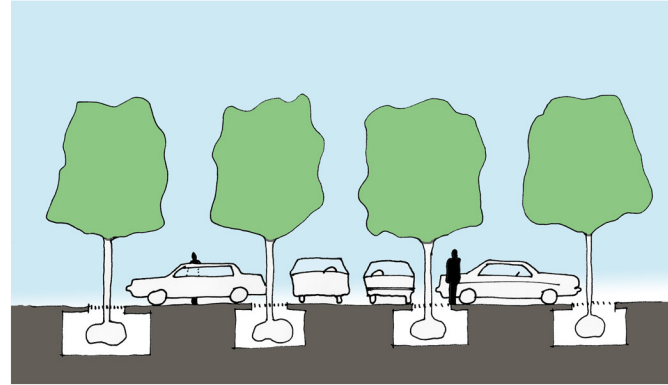
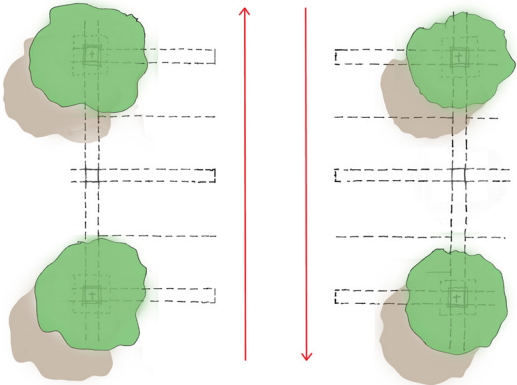
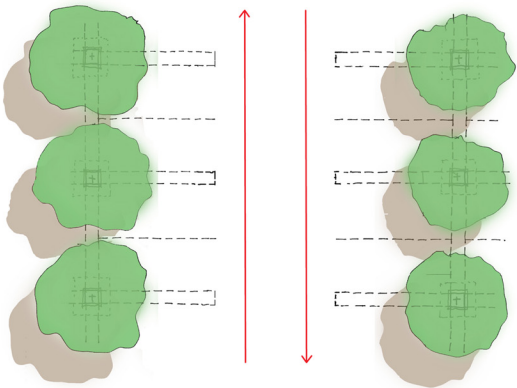
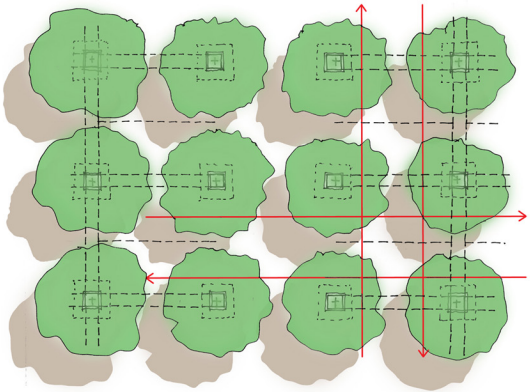
What would it be like...to park in a grove?

A diagram was made of Kiley's description - a twenty foot grid of trees for mowing in two directions; then laying this over a standard 90 degree double-sided parking module. Continued sketching began to reveal the possibilities for "parking in a grove."

## ON DRAWING

Travel and first-hand experience provide a better understanding than mere magazine or book images. If such first-hand experience is not available, then a drawing or re-drawing of an image can provide one a knowledge and understanding than only looking would produce. Diagramming a written thought can make the thought your own. Without lifting pencil, continue drawing...lines, circles, squares...anything as a diagram of someone else's thought becomes not just your own, but another perspective of a design problem with which you're currently involved.

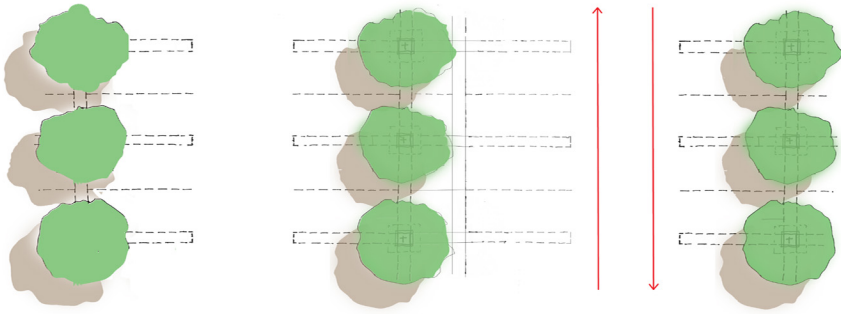




A series studying the effect of grid versus line and successively wider spacing led to the conclusion that given a certain quantity of trees, alternating areas of density and openness would be preferable to a loose and ineffectual grid.

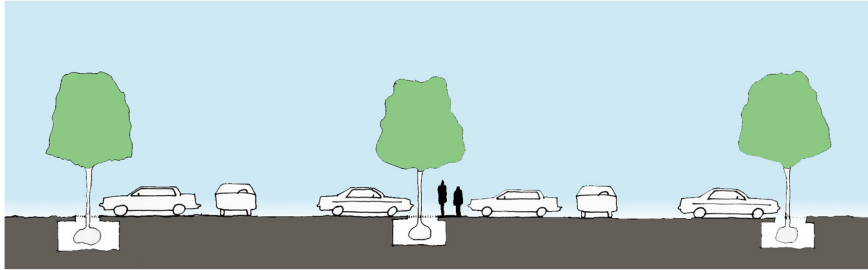




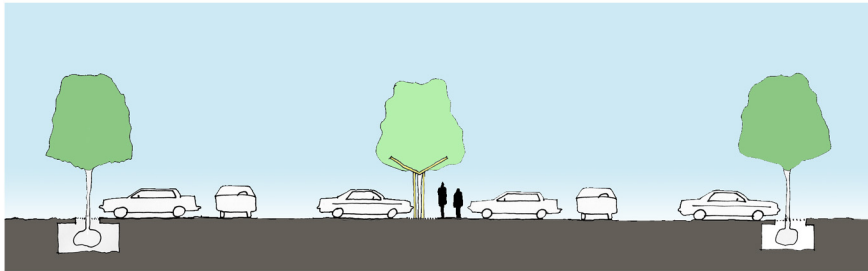


## DEVELOPING A PEDESTRIAN-ORIENTED SPINE

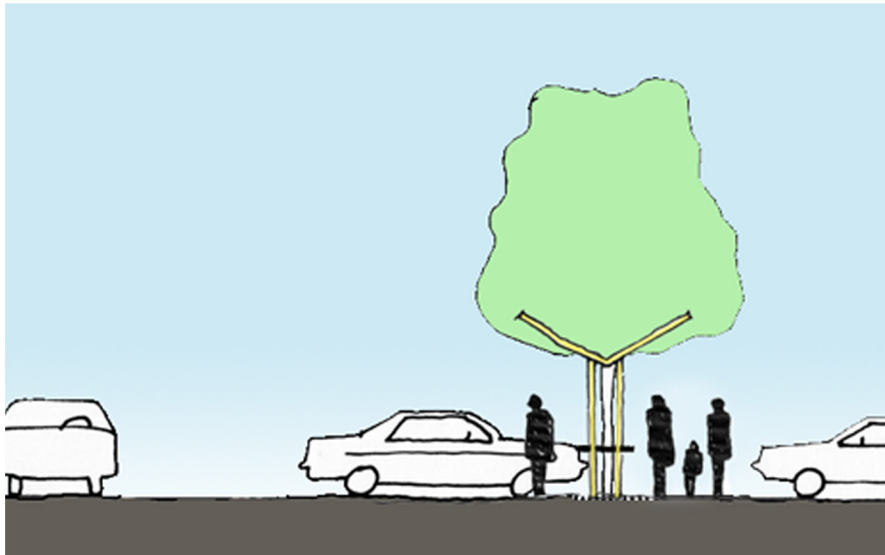
Parking lot landscaping ordinances encourage the development of landscaped medians as pedestrian circulation. In plan, this requires an appropriately paved walking surface to one side of a row of trees.



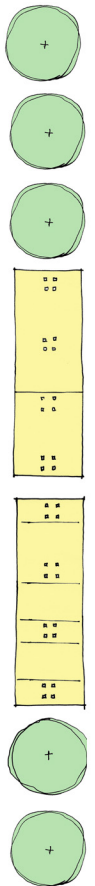
An off-centered row of trees forms a pedestrian edge.

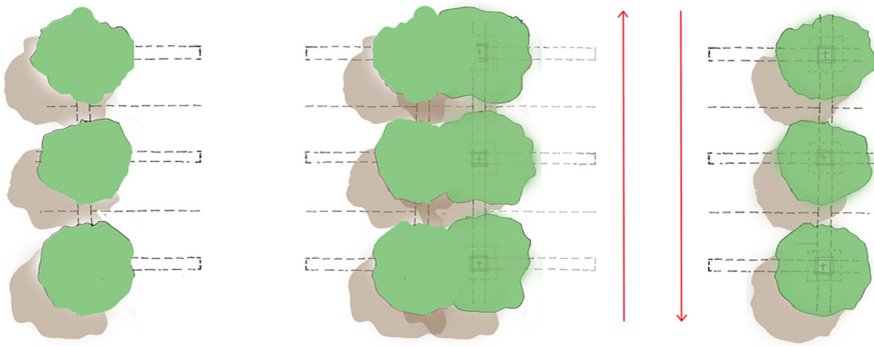


A linear canopy element can be inserted into the tree row.



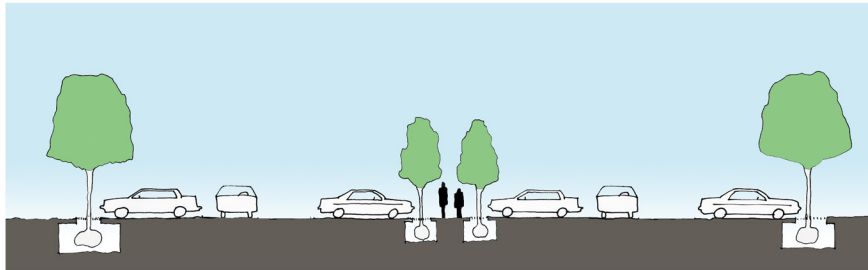
The architectural canopy has additional functionality, and supports more programme.



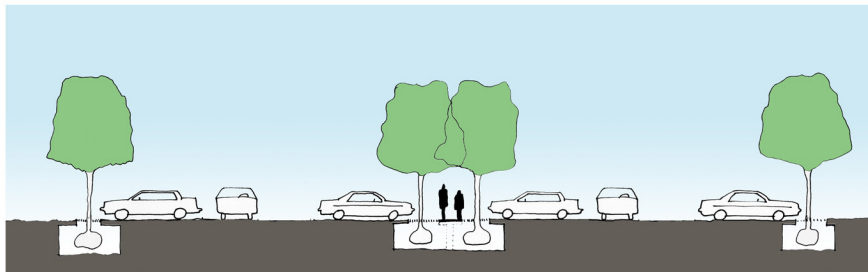


## DEVELOPING A PEDESTRIAN-ORIENTED SPINE - BY DOUBLING

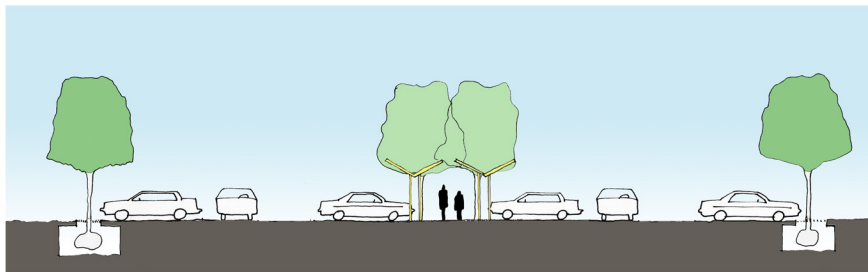
A axis is strengthened by doubling the elements. A new place is made.



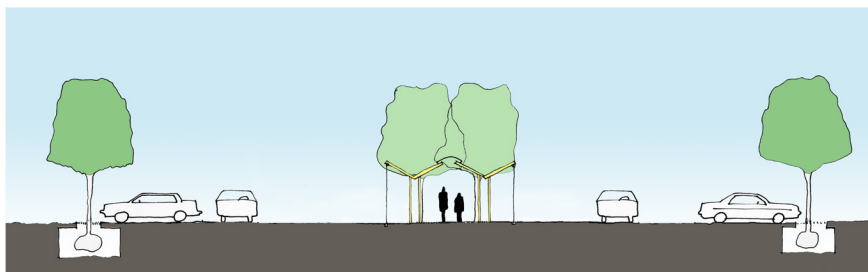
If doubled, even ornamental trees of small stature can generate a spine.



True shade trees of larger stature benefit from the increased size of the planting well. The arcing branches frame a room, an alley.



The dimensions of this natural spine can be re-created with an architectural intervention.



More enclosure elements can be added to create a new space.

