

# CATALYTIC PARKING

CREATING NEW POSSIBILITIES IN AN INTEGRATED SUBURBAN PARKING GARAGE

Leslie M. Maienschein-Cline

A thesis submitted in partial fulfillment of the  
requirements for the degree of Master of Architecture

Committee

Gundula Proksch | Rick Mohler | Ann Marie Borys

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Abstract

Catalytic Parking: Creating new possibilities in an integrated suburban parking garage

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Parking garages are ubiquitous and indispensable to modern suburban life, yet they are one of the most unpopular and criticized building types. Though they are important places of arrival and departure, movement and transition, parking garage design is typically the result of a depressingly pragmatic adherence to functional efficiency. As a critique of the status quo, this thesis proposes treating parking as a catalyst for innovative suburban development. By leveraging the scale of parking garages and integrating rather than separating parking from its surroundings, this thesis seeks to create a new suburban typology.

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TO MY PARENTS, WHO TAUGHT ME HOW TO PARK.



## 1 **INTRODUCTION**

### **THE PROBLEM WITH PARKING GARAGES**

Since their widespread adoption in the 20<sup>th</sup> century, cars have been a shaping force of the built environment.<sup>1</sup> They have fundamentally altered how we approach and experience cities. Cars also represent an important part of the American psyche: “The car is so fundamental to the concept of personal mobility for many Americans that it will not go away, no matter how much some might wish it to be so.”<sup>2</sup>

Nowhere is this reflected more than in the intertwined relationship between the car and the suburbs. Many cities have been retrofitted to accommodate the car, but the suburbs were planned to prioritize cars and encourage driving.<sup>3</sup> While the compact form of cities give residents choice of transportation mode, the car is by far the dominant mobility mode in the suburbs; it is “fundamental to the way places are experienced and understood.”<sup>4</sup>

1. *Rudgear Rd and S Broadway, Walnut Creek, CA*  
2. *S Main St, Walnut Creek, CA*



After WWII, the combination of many social, political and economic factors led to the rapid growth of car-dependent suburbs.<sup>5</sup> The land-use patterns of these new suburbs separated housing subdivisions from supporting commercial areas with no provision for public transit, making car ownership a necessity for residents. Suburban shopping centers and the strip mall also speak to the importance of the car. These centers provided easy automobile access and plentiful parking to attract shoppers who would invariably come by car.<sup>6</sup>



The suburbs have continued to grow and have developed dense pedestrian-oriented downtowns set in the middle of low-density residential development, thus creating an "endless need for parking."<sup>7</sup> The parking garage address this need and is the building type that facilitates the transition between the car-oriented built environment and a walkable downtown.<sup>8</sup>

3. *Alpine Rd and Mt. Diablo Blvd, Walnut Creek, CA*

4. *S Main St, Walnut Creek, CA*



Although a ubiquitous and indispensable building type familiar to almost everyone, parking garages are also one of the most unpopular.<sup>9</sup> Most people want to “ignore, cover-up, put underground and hurry through” them.<sup>10</sup>

5. S Main Parking Garage, Walnut Creek, CA  
6. Plaza Escuela Parking Garage, Walnut Creek, CA



This attitude also applies to architects and designers; compared to other elements in the built environment, the amount of creativity, energy and planning that goes into the design of parking garages is minuscule.<sup>11</sup> Though unloved, parking garages are an important transition space and are central to the arrival and departure experience, they elicit complex emotions and shape how people experience the built environment.<sup>12</sup>



The societal norm is to approach parking from a standpoint of pure functionality. This depressingly pragmatic adherence to an efficiency of turning radii, parking, and drive aisle widths leads to homogenous, boring and unpleasant spaces.<sup>13</sup>

7. S Main Parking Garage, Walnut Creek, CA  
8. S Main Parking Garage, roof



It also creates buildings that are totally separated from their context including parking garages in suburban downtowns that are primarily accessed by car but whose density necessitates multi-story parking.<sup>14</sup>

In many suburban downtowns, parking garages account for a large proportion of total land-use, construction-expenditures and are often the largest and tallest buildings around.<sup>15</sup> Hiding parking garages away behind retail or disguising with a faux facade does not capitalize on this.



9. Plaza Escuela Parking Garage, entry, Walnut Creek, CA  
10. Plaza Escuela Parking Garage, exterior



This approach also leads to the proliferation of faux historical precedents and outdated notions of urban form that are based on a pre-car city that has little in common with today's suburbs.<sup>16</sup> It seeks to disguise rather than embrace and exploit the potential of suburban parking.

It also ignores the importance of the parking garage to the success of the downtown area and ignores its potential as a place of arrival and departure.<sup>17</sup> Finally, this approach is boring, repetitive and results in a similar suburban aesthetic everywhere while creating an unpleasant parking experience. In sum, it fails to creatively address the parking garage as the important building type that it is.

11. *Broadway Pointe, parking garage above retail, Walnut Creek, CA*  
12. *S Main Parking Garage, Walnut Creek, CA*

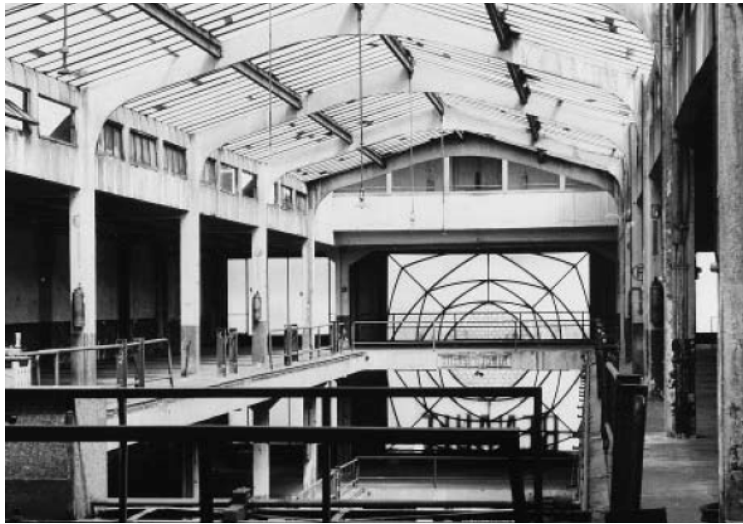
## THESIS PROPOSAL

This thesis is critique of the societal norm that deems parking garages must be ugly, utilitarian spaces that are best hidden and separated from its surroundings. Instead of a necessary evil, parking should be viewed as a potential amenity.

This thesis proposes an alternative approach to suburban mixed-use development. The role of the car should be embraced and celebrated by treating parking as a catalyst for innovation. By leveraging the scale of parking garages, their role as places of arrival and departure, and by integrating rather than separating parking from its surroundings, this thesis seeks to create a new suburban typology.

## **2 THE PARKING GARAGE AS A BUILDING TYPE**

Parking garages are a manifestation of the city-forming force of car culture. They play a necessary and important role in a region's transportation network and have a significant visual impact on their surroundings. They also represent a large amount of land and money used.<sup>1</sup> With a historical development that has been focused on maximizing the efficiency of the functional performance of the parking garage, other important characteristics of the parking garage have been ignored.<sup>2</sup>



## HISTORY

The earliest parking garages were constructed at the end of the 19<sup>th</sup> century as places to store and shelter cars. Because early cars did not have roofs, these first parking garages were enclosed, warehouse-like structures, designed to protect the car from the elements. Their elaborate facades reflected the prestige associated with car ownership while their utilitarian interiors reflected their role as a storage place.<sup>3</sup> Without electrical lighting, many of these early garages were organized in a courtyard scheme, allowing light into the center of the building.<sup>4</sup>

As cities and car ownership grew in the early 20th century, planners struggled with how to deal with automobile traffic that was clogging city streets and how to incorporate parking garages into the built environment. Parking garages grew bigger to accommodate increased demand.<sup>5</sup>

1. Garage Ponthieu, Paris, Auguste Perret, 1905
2. Motor Mart, Boston, Ralph Harrington, 1927



In the 1930s, roofs were added to cars, making the enclosure of the parking garage unnecessary and soon most garages were designed without facades. Instead, a strictly utilitarian organization of ramps, drive aisles and parking stalls dominated parking garage design. The emphasis on the utilitarian function of car storage remained the main component of parking garage design through the mid-century. Engineers developed a myriad of efficient circulation and parking schemes while experimenting new with materials and structural systems.<sup>6</sup> Improvements in concrete technology and pre-tensioned concrete slabs eventually led to the dominance of clear-span structures that could span 50 to 60 feet, easily accommodate larger car sizes and maximizing flexibility.<sup>7</sup> The depth needed for the concrete beams to make these spans became the dominate visual feature in the standard garage.

3. Miami Parking Garage, Robert Law Weed, 1949  
4. N Main Garage, Walnut Creek, CA



This adherence to functionalism “requires little, but in so doing makes for a homogeneous order, and for matter wrought sparingly and brutally.”<sup>8</sup> As they proliferated, the large brutal concrete frames of parking structures became scars on the urban landscape. In the 1980s, cities began to push back and started to regulate parking garage aesthetics. Concealment was viewed as the best policy with the idea that “a better garage would be ‘one hidden or buried, one decorated or marked and screened or draped.’”<sup>9</sup>

The emphasizes on concealment continues today and has led to the elevation being the primary way a parking garage is judged. Concealing parking is a “risk-averse, sanitized response”<sup>10</sup> to the brutalistic concrete parking garage and ignores the beauty of some mid-century exposed parking garages such as Robert Weed’s parking garage in Miami (figure 3). The architecture of the surface is superficial and leads to an appearance that is separate from the underlying parking structure.<sup>11</sup> This focus on the exterior surface of the parking garage also does not improve the experience of the user within the garage and it does not attempt to bridge the separation between the parking experience and the urban experience.

5. Trinity Square Garage, Gateshead, England, The Owen Luder Partnership, 1967  
6. Santa Monica Garage, California, Brooks + Scarpa, 2011

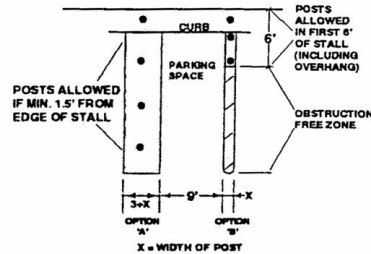
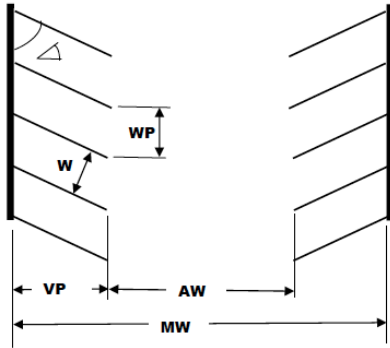


## CHARACTERISTICS

While concealment attempts to minimize the adverse consequences of a building form determined solely by function, it also ignores the parking garage's potential as a place of arrival and departure, movement and transition. While the city may have the grand train station, ferry terminal or airport, the suburb has the parking garage.



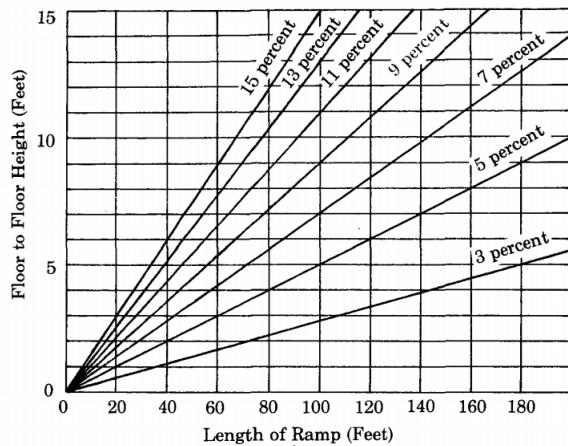
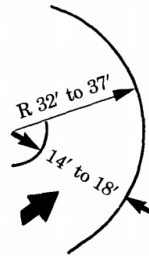
7. Olympic Place Garage, entry, Walnut Creek, CA
8. Olympic Place Garage, ground level



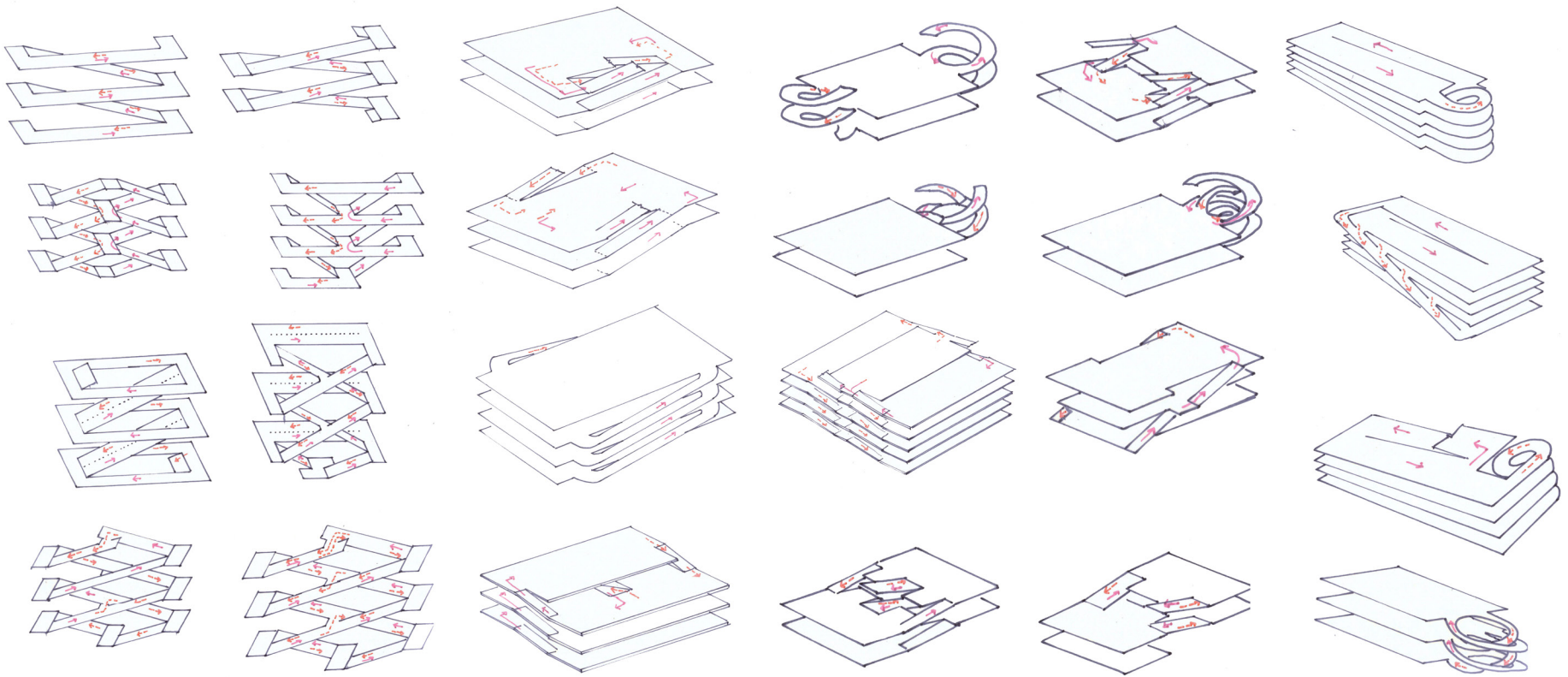
## A PLACE OF FUNCTION

The functional design of the parking garage is determined by the following dimensions, relating to the needs of the car. First is the parking module, defined as the width of a drive aisle plus parking stalls on both sides. This can range from 50 to 62 feet in width. A standard garage layout places two or more parking modules side by side. Second is the width required for a car to turn 180°; this is a minimum of 75 feet (based on a 37 foot outside turning radius). Third is the distance needed for vertical car movement via ramps. Ramp slopes vary from a 5% sloped ramp with parking to a 20% sloped speed ramp. These basic functional dimensions can be arranged in many ways from garages where the entire floors slope, to ones with flat floors with speed ramps (see figure 10).<sup>12</sup>

TYPE OF PARKING STALL	SIZE OF PARKING STALL			AISLE WIDTH REQUIRED	
	WIDTH	LENGTH	DEPTH (PERPENDICULAR TO AISLE)	ONE WAY	TWO WAY
A. Parallel	8.5'	22'	8.5'	12'	20'
B. 30 Degree	8.5'	18'	16.4'	12'	20'
C. 45 Degree	8.5'	18'	18.7'	12'	20'
D. 60 Degree	8.5'	18'	19.8'	16'	20'
E. 75 Degree	8.5'	18'	19.6'	23'	23'
F. 90 Degree	8.5'	18'	18'	25'	25'
G. Compact	7.5'	15'	15'	25'	25'



9. The dimensions of parking; parking module, turning radius, ramps



10. A variety of typical parking garage circulation systems

## A PLACE OF ARRIVAL AND DEPARTURE

The parking garage is often the first and last place visitors encounter in their trip to the suburban downtown. It is the first and last opportunity a downtown has to orient or delight, or confuse or annoy. In this role, the parking garage can be look to the architectural successes of other transportation-oriented buildings that are places of arrival and departure, notably the train station, the bus depot, the ferry terminal and the airport. These buildings celebrate arrival and departure through signage, grand entrances and a choreographed circulation through space that links the building's interior to its greater context.<sup>13</sup>

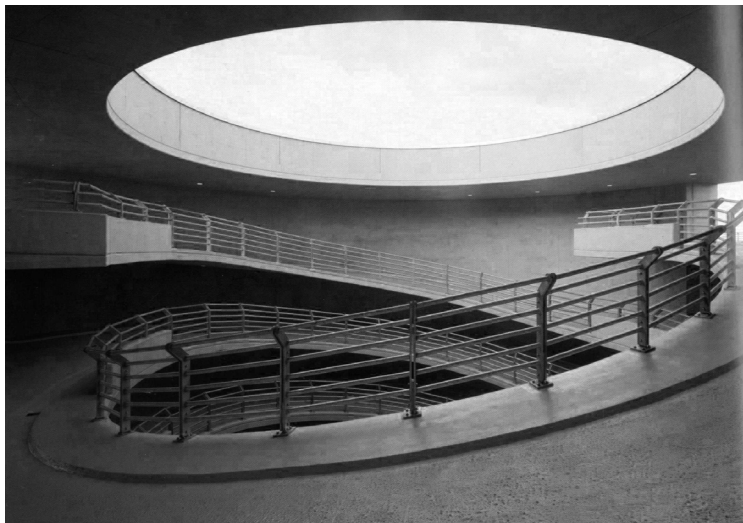


11. Locust St Garage, entrance, Walnut Creek, CA  
12. Locust St Garage, exit



## A PLACE OF MOVEMENT

Once drivers enter the parking garage, they are in a place of movement. The movement of the car in the garage is slow and oblique as opposed to the car's fast and straight movement on streets. Within the garage, car movement is determined by the ramp. The ramp sets the parking garage apart from other buildings and creates oblique conditions that can be exploited to create dynamic spaces inside the garage. This characteristic can also be expressed on parking garage's exterior.<sup>14</sup>



13. Parkhaus Haniel, Dusseldorf, Paul Schneider-Esleben, 1953

14. Car-Park Rotundas, Hamburg Airport, Von Gerkan, Marg & Partner, 1990-2002

## A PLACE OF TRANSITION

Upon parking, a driver leaves the car and becomes a pedestrian, walking through the garage and into the surrounding environment. Here, the parking garage plays an important role in allowing the transition from the private realm of the car to the public realm of the city.<sup>15</sup> However, when the parking garage is separated from its surroundings this transition is sudden and disorientating. Embracing the transition from the private to the public can allow the parking garage to become a unifying element between the individual and the larger suburban environment.<sup>16</sup>



15. Locust St Garage, Walnut Creek, CA  
16. Plaza Escuela Garage, Walnut Creek, CA

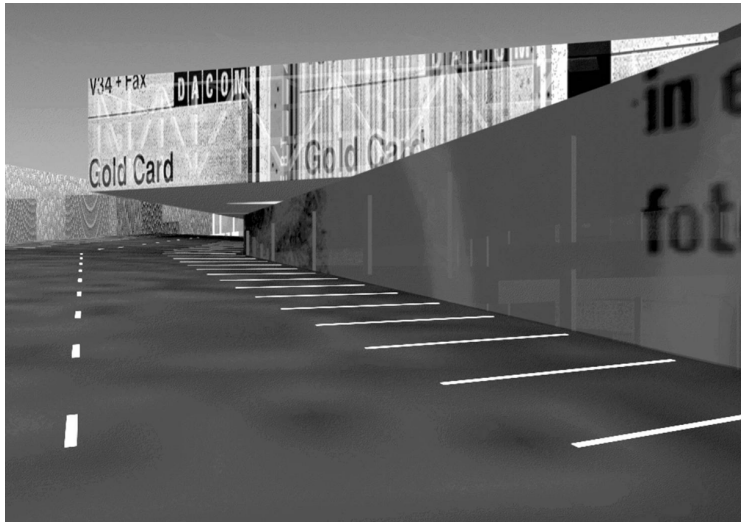
## CASE STUDIES

Throughout its history, the functional requirements of parking cars: the width of parking stalls, drive aisles, turning radii and ramps have been the main considerations in parking garage design.<sup>17</sup> While concealment has attempted to improve the urban experience of passersby,<sup>18</sup> it separates the parking garage from its surroundings and ignores the experience of the parking garage users, the motorist and pedestrian.

Architecture can address this shortfall by embracing the parking garage as a place arrival and departure, movement and transition. It can reorganized standard parking garage elements in a “liberating way” to create a rich sequence of spatial experiences.<sup>19</sup> The following case studies illustrate different ways of doing this.

PARKHAUS/CARSTADT  
Amsterdam  
NL Architects, 1995

Parkhaus/Carstadt, by NL Architects in the Netherlands, proposes a new kind of parking garage that is integrated into, not separated from, Amsterdam's medieval fabric. By folding a one kilometer street back on itself, NL Architects creates a form that integrates cars, people and retail with each other and with the surrounding city. Retail space is slipped underneath the continuously ramping parking surface, taking advantage of the space created under ramps. By integrating parking and retail, NL Architects have created a design that smooths the transition between parking and its surroundings to the benefit of all.<sup>20</sup>

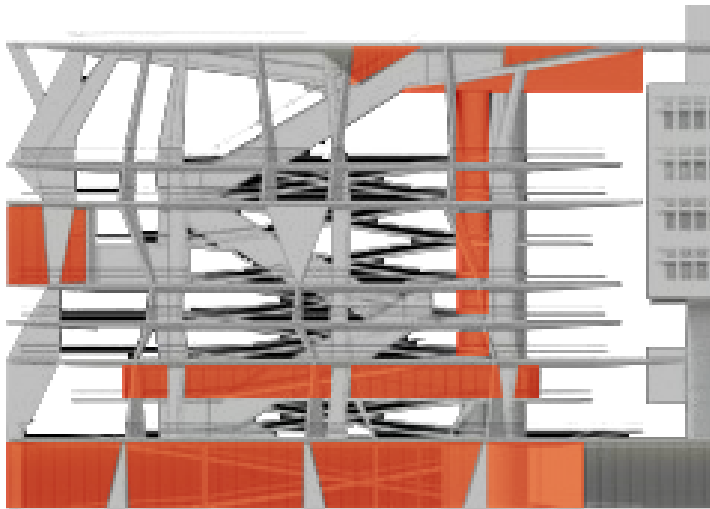


17. Parkhouse/Carstadt parking surface adjacent to retail  
18. Parkhouse/Carstadt aerial view

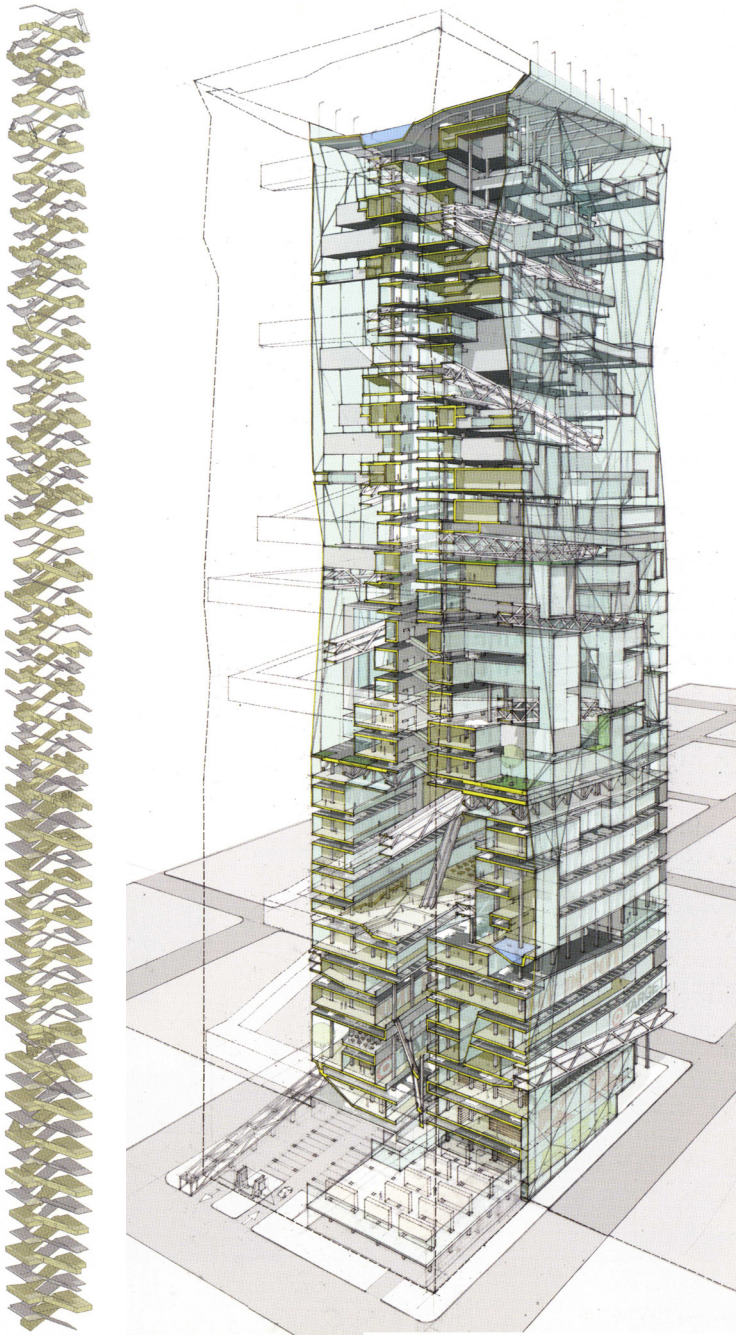


1111 LINCOLN RD  
Miami Beach, FL  
Herzog and de Mueron, 2011

1111 Lincoln Road, completed in 2011 by Herzog and de Meuron in Miami Beach, Florida is one of the few built examples of a parking garage whose design philosophy questions the societal norm for pragmatic adherence to function. This 7-story garage was planned to catalyze development of the area and acts as an extension of the adjacent pedestrian mall with. Highlighting this, one retail space is located on the fifth floor to draw people up from the ground. The varying floor heights (from 10 feet to 30 feet), supported by sculptural, muscular columns, provide a “variety of spatial experiences” and speak to the idea of “making parking beautiful as well as functional.” In their radical design for this parking garage, Herzog and de Meuron created a building that has become more than just a place to store cars. Banquets, parties and weddings are held here and it has become a tourist destination as well as a place to just go on a run. This nuanced approach rejects “cookie-cuttter urban development” by combining unorthodox components that respond to localized market and urban conditions.<sup>21</sup>



19. 1111 Lincoln Rd  
20. 1111 Lincoln Rd, section showing mixed-uses

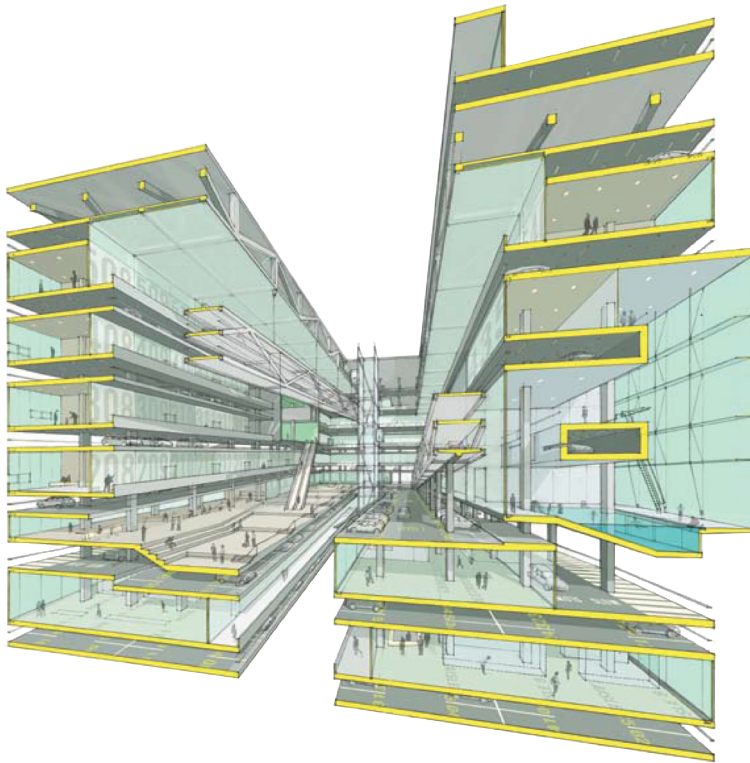


PARK TOWER  
*Lewis.Tsurumaki.Lewis Architects, 2005*

Park Tower, a theoretical exercise by LTL Architects, combines “suburban patterns with an urban footprint” and integrates parking with retail, office, hotel and residential. This integration within a high-rise building creates dynamic spaces and transforms the suburban commute into “a seductive urban ascent.” The design is composed of a double helix that allows for an intertwining of all program components and the “interdependence between spatial function and parking space becomes the catalyst for architectural innovation.”<sup>22</sup>

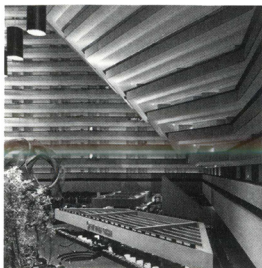
In addition to showing the spatial potential for integrating parking with other programs, Park Tower embodies important design principles of LTL’s “opportunistic architecture.” First, by tackling the problems of parking head on, this visionary design shows how, in LTL’s words, “the seed for radical solution can be found within items that initially pose the greatest resistance.”<sup>23</sup>

21. Park Tower, double helix circulation diagram  
 22. Park Tower, entire building section perspective

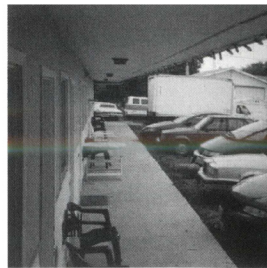


Each chunk of the tower shows a different and playful exchange between the car and the corresponding program. The combination of parking with hotel/motel creates a “..grand lobby space with a prosaic motel. Alternating spirals of rooms and parking surface circle a social atrium which is animated by two internal express ramps and the requisite glass elevator. Here one has the motel convenience of parking below your room, while enjoying the spatial amenities of an urban hotel.”<sup>24</sup>

Park Tower exhibits how architecture can intentionally bring disparate component into contact with one another, can manipulate hierarchies and can “liberate unexamined possibilities within known program.”<sup>25</sup>



Hotel



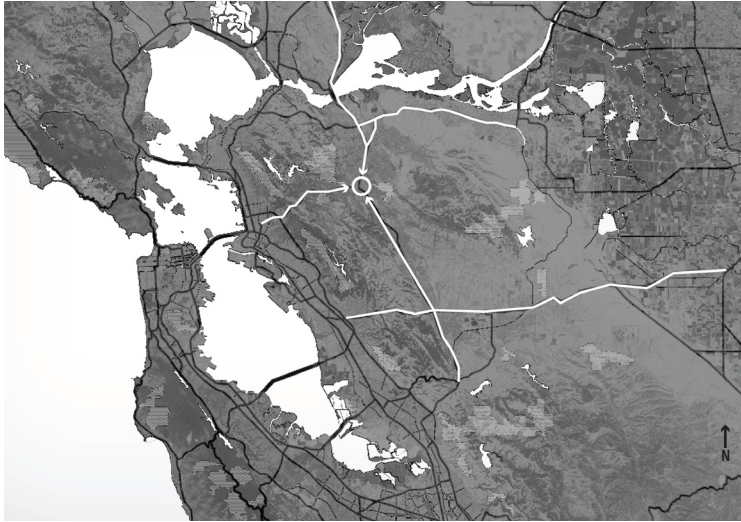
Motel

23. Park Tower, hotel/motel section perspective  
 24. Park Tower, hotel/motel concept

## SUMMARY

These case studies illustrate three examples of how a parking garage can be more than just a place of function and the potential for integrating parking with other program. NL Architects, Herzog and de Mueron and LTL have embraced and exploited the functional requirements of the car to create buildings that provide spectacle, compelling spatial experiences and create a heightened awareness of the car's relationship with its surrounding environment.

Inspired by these and other examples, this thesis envisions parking as a catalytic force in the suburban downtown that embraces and celebrates the role of the car. By integrating parking with other program, a new suburban typology will result.

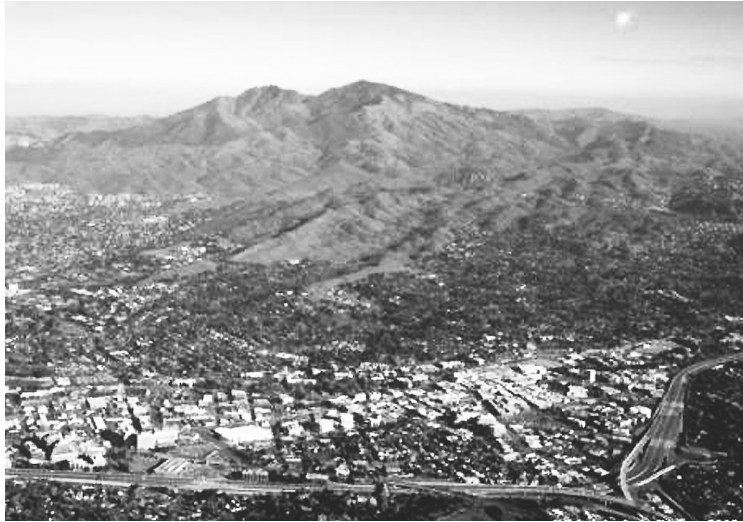


### **3 SITE ANALYSIS AND DESIGN METHODOLOGIES**

Walnut Creek, California, a suburb in the San Francisco Bay Area, provides a good case study for illustrating the vital role of the parking garage in the suburban downtown. Walnut Creek's regionally renowned and bustling downtown is supported by numerous parking garages.<sup>1</sup> These garages offer little in the way of positive user experience and subtract from the overall downtown character and visitor experience.

Through focusing on a proposal for a currently under-developed site in downtown Walnut Creek, this thesis challenges current development patterns that continue to promote the hidden parking garage.

1. Bay Area, freeways leading to Walnut Creek  
2. Walnut Creek, aerial view



## HISTORY OF WALNUT CREEK, CA

Walnut Creek (pop. 65,000) is located 25 miles east of San Francisco at the base of Mount Diablo. The city is located at the busy intersection of Interstate 680 and Highway 24. Walnut Creek is a major cultural, job and retail center of the East Bay, the most populous region in the Bay Area with a population of 2.5 million people.<sup>2</sup>

Walnut Creek began as a small farming and ranching community in the 1850's. Called "The Corners," Walnut Creek was located along two major carriage and train routes and from early on, acted as a regional commercial hub.<sup>3</sup>



3. Aerial view, looking east toward downtown Walnut Creek and Mt. Diablo

4. Aerial view, intersection of Hwy 24 and I-680 adjacent to downtown Walnut Creek



The city grew slowly until rapid expansion after WWII. Many housing subdivisions were built in the 1950's and 1960's. To meet growing demand from new residents, Broadway Shopping Center, a car-oriented retail development was built just south of downtown in 1951. Continued growth was aided by the expansion of the highway system with the construction of I-680 and the expansion of Highway 24 in 1963.<sup>4</sup>



Walnut Creek continued to grow throughout the 1970's and pristine rolling hills were replaced with new, sprawling housing subdivisions. In 1973, residents were successful in blocking construction of a new subdivision and voted to protect thousands of acres of undeveloped rolling hills, called "the open space." Today, the City of Walnut Creek has the most acres of "open space" of any municipality in California and it is an important and well-used asset to residents.<sup>5</sup>



While construction of new housing and population growth slowed in the 1980's, Walnut Creek's downtown development took off. The arrival of the Bay Area Rapid Transit (BART) in 1973 heralded in a new era of mid-rise commercial office building construction just to the north of the traditional downtown. Due to the explosive growth of commercial buildings and a great increase in traffic, Walnut Creek residents took action again and passed Measure A in 1985, which strictly limited building heights in the downtown area. These height restrictions remain and continue to shape downtown development today.<sup>6</sup>



A state-of-the-art regional theater was completed in 1990, giving downtown Walnut Creek a strong cultural anchor. The old Broadway Shopping Center was expanded and rebranded as Broadway Plaza, a walkable pedestrian shopping experience. The renovated Broadway Plaza features 90 shops and acted as a catalyst for future development of the entire downtown area.<sup>7</sup>

7. Office building on Mt. Diablo Blvd, Walnut Creek, CA
8. Broadway Plaza Fountain, Walnut Creek, CA



## DOWNTOWN WALNUT CREEK

Today, Downtown Walnut Creek has grown to be one of the premiere shopping destinations in the Bay Area and also contains a significant amount of office space.<sup>8</sup> Over the past 20 years, Downtown Walnut Creek has grown more upscale and has many high-end retail and restaurants. Major brands include Nordstrom, Macys, Nieman Marcus, Tiffany's, Coach, Burberry, Apple and Uniqlo, among many others. Downtown also has a vibrant restaurant and bar scene.

Mt. Diablo Boulevard divides downtown into the traditional downtown area and the newer developments (including Broadway Plaza). The traditional downtown area retains its historic character with small, one to three story buildings, filled with independent and small retailers, restaurants and services.<sup>9</sup> The area has small tree-lined streets, back-alleys and scattered small parking lots as well as on-street parking.

9. Locust Street, Walnut Creek, CA

10. Locust and Bonanza Street, Walnut Creek, CA



The several blocks to the south of Mt. Diablo have seen significant large development over the past 20 years with the construction of entire block and multi-block developments.<sup>10</sup> These new developments attempt to break down their enormous mass through modulation to create the appearance of many buildings out of one. The overall style of these developments is Mediterranean inspired, though some of the developments are more successful aesthetically than others. Most new large developments also include parking garages. Currently, Broadway Plaza is undergoing a major expansion and renovation and there are several other developments planned in downtown.<sup>11</sup>



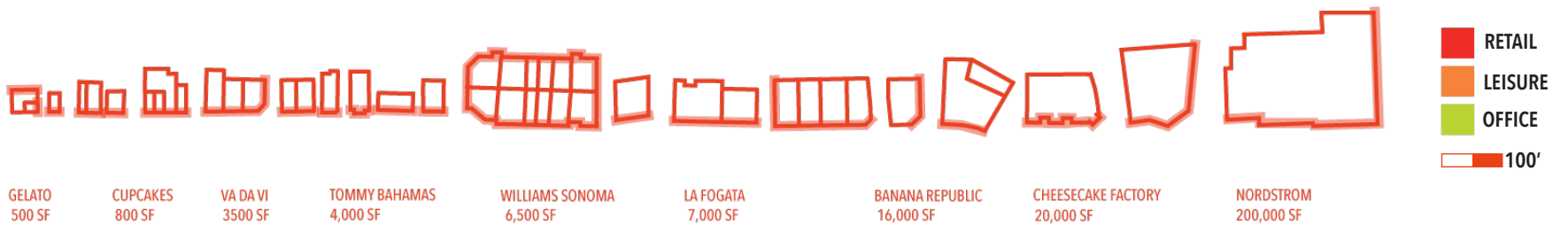
Walnut Creek's General Plan 2025 emphasizes the city's desire for continued infill development in downtown that will "maintain and enhance Walnut Creek's vibrant downtown core as livable and walkable."<sup>12</sup> With retail, apartment buildings, offices, restaurants, and leisure opportunities as well as a library, city hall, civic park, and local courthouse, Downtown Walnut Creek has become a much-used center of the city and region. Stemming from Downtown Walnut Creek's continued success, parking downtown is a major concern.<sup>13</sup>

11. Broadway Plaza, Walnut Creek, CA

12. Broadway Pointe , corner of Mt. Diablo Blvd and Main Street, Walnut Creek,CA



13. Downtown Walnut Creek building uses and sizes





## PARKING IN DOWNTOWN WALNUT CREEK

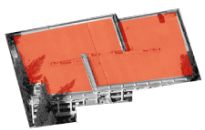
Parking in downtown is a major concern for residents, visitors and employees and the city recognizes parking as being vital to the viability and vibrancy of downtown.<sup>14</sup> This is evident both in the amount of area devoted to parking downtown as well as parking garage's being included as "Places to See" on the city's website.<sup>15</sup>

There are several types of parking spaces in downtown Walnut Creek from the elusive curbside spot to small surface lots to multi-story and underground parking garages. New garages are typically located above ground-floor retail with exteriors designed to make the garage look like a building. In addition to free garages that are part of new developments, there are three city-owned garages downtown that charge a very small fee.

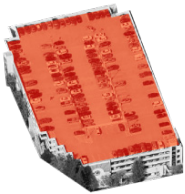
Nygaard and Associates, a traffic consultant conducted a parking study in 2009 and found that many people disliked parking in the current garages due to the unpleasant experience.<sup>16</sup>



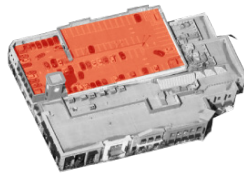
16. Downtown Walnut Creek, Parking Garages



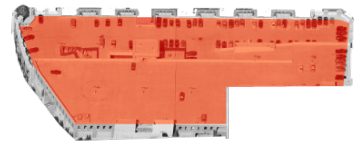
N BROADWAY GARAGE  
422 STALLS



S MAIN ST GARAGE  
756 STALLS



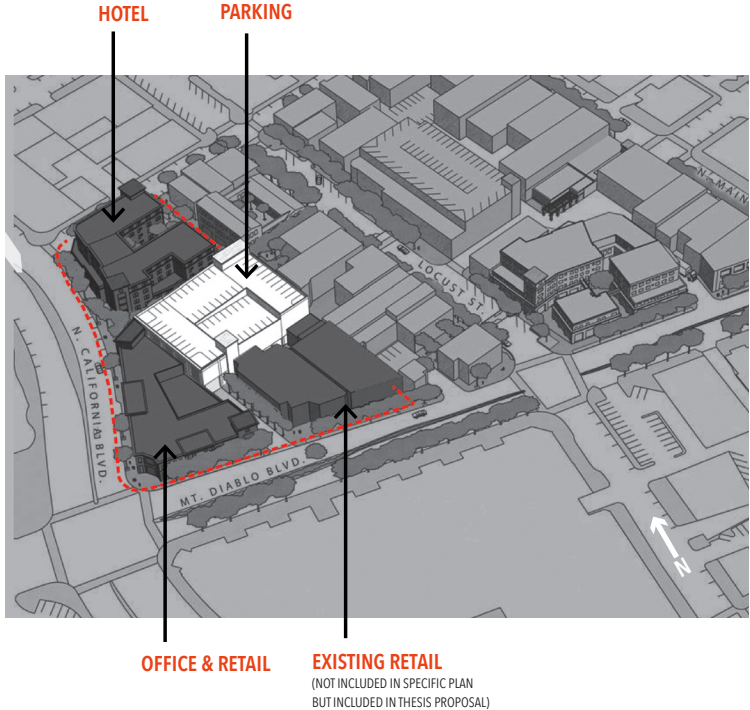
BROADWAY POINTE GARAGE  
224 STALLS



OLYMPIC PLACE GARAGE  
601 STALLS



**THE LOCUST ST/MT DIABLO BOULEVARD SPECIFIC PLAN**

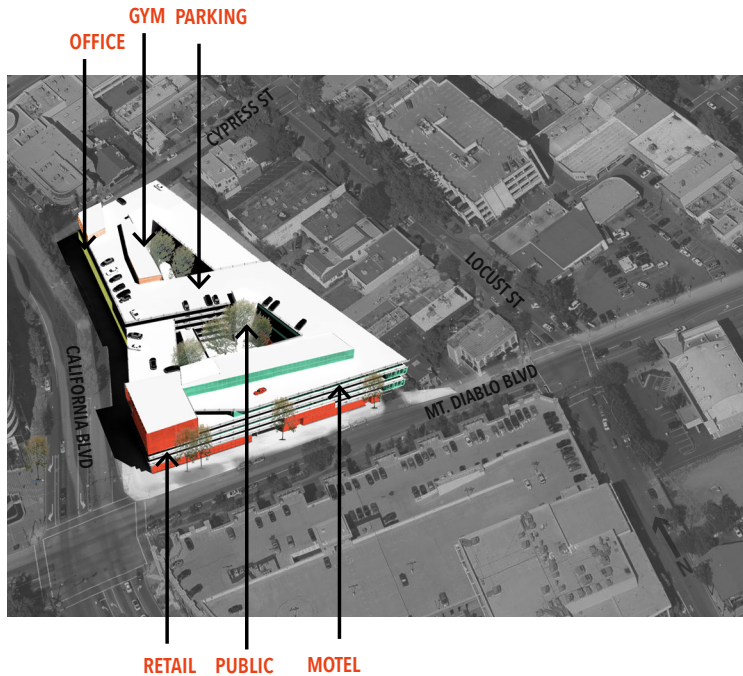


<b>RETAIL</b>	40,000 SF
<b>OFFICE</b>	12,000 SF
<b>HOTEL</b>	93 ROOMS + 2000 SF AMENITY
<b>PARKING</b>	412 STALLS

The Locust Street/Mt. Diablo Boulevard Specific Plan, adopted by the City of Walnut Creek in July 2010, proposes development plans and suggested program and massing for a series of underutilized prime development sites in the downtown area. Developed with significant public input and an analysis of market potentials, the Specific Plan seeks to maintain and enhance Walnut Creek’s vibrant downtown. This thesis considers three adjacent opportunity sites targeted in the Specific Plan (see Figure 17). These three sites occupy half of a large block and are bordered by Mt. Diablo Blvd to the south, California Blvd to the west and Cypress St to the north.<sup>17</sup>

Although the parking garage is mentioned throughout the report as being essential to future development in the downtown and an essential element within the Specific Plan, its remains treated as a utilitarian necessity that is best hidden. By treating the parking as such, the Specific Plan is merely replicating and providing more of the unpleasant development pattern and aesthetic existing in adjacent blocks.

17. Aerial view, Locust St./Mt. Diablo Boulevard Specific Plan



RETAIL	42,000 SF
OFFICE	13,800 SF
MOTEL	100 ROOMS + 8000 SF AMENITY
PARKING	412 STALLS
+GYM	13,500 SF
+ PUBLIC	12,000 SF

## PROGRAM

This thesis employs the Specific Plan proposal as a point of departure for programming the site. Changes to the Specific Plan proposal include the addition of a gym and public courtyard space and changing the hotel into a motel. The gym and the courtyard additions will expand the potential users of the building and the courtyard will provide a much needed large outdoor public space in downtown. The motel will provide a more unique and more convenient overnight experience than a standard hotel would.

Integrating parking with these program elements will create varied spaces for each that are unlike anything else existing in Walnut Creek. These unique and highly visible spaces will be geared to appeal to high-end, experience drive tenants. As previously discussed, integration also helps connect the parking garage with its surroundings. This thesis illustrates that a more creative approach to parking can yield a more vibrant and exciting development that will better enhance Walnut Creek's downtown.



## SITE ANALYSIS

Located at the western edge of Downtown Walnut Creek, this site occupies a prime entry point from Hwy 24 and I-680 into the downtown. Its current auto-oriented McDonalds and Chevron station do not fit with current zoning guidelines that require a more intensive and pedestrian-friendly development.<sup>18</sup> To provide a more regular and larger parcel to develop, the project site has been expanded to include two large retail stores adjacent to the three considered opportunity sites.



The level site is defined by its main bordering streets, Mt. Diablo Blvd and California Blvd which are major arterials and are heavily trafficked throughout the day. Their intersection is sprawling and intimidating for pedestrians, but marks the entry into downtown. This site is also located along an important view corridor; driving east along Mt. Diablo Blvd, motorists are greeted with a spectacular view of the road's namesake mountain, hovering over downtown.

19. Site location at entry into downtown  
20. Aerial view, site location



Located at the edge of the pedestrian-retail district of downtown, the site's conditions differ on all of its sides. Several large office buildings, eight to ten stories high lie across California Street to the west of the site. To the east are the backsides of small single-story retail and restaurants that face Locust Street, a pleasant, tree-lined street with significant pedestrian foot-traffic and many of small, independent restaurants and stores. Across Mt. Diablo Blvd is one of Walnut Creek's newer whole-block developments, Olympic Place. This monolithic structure includes ground floor retail along Mt. Diablo Blvd with a 600+ parking garage above as well as a 14-screen cineplex. While this development has created a pedestrian-friendly condition of the south side of Mt. Diablo, there is little foot-traffic as there is nothing on the project site to attract the pedestrian. The juxtaposition of scale between Olympic Place and the buildings to the east of the site is typical of the abrupt change in scales along Mt. Diablo Boulevard. To the north, Cypress street is more pedestrian-oriented with primarily older, smaller buildings and on-street parking.

- 21. Corner of Mt. Diablo Blvd and California Blvd, view east
- 22. California Blvd, view north
- 23. Cypress St, view west

## DESIGN APPROACH

In re-considering the parking garage, this thesis assumes that the current car-dependent nature of the American, and especially, Californian suburb, will continue for sometime. While it recognizes the negative environmental impacts of driving, these and larger societal issues surrounding driving are outside the scope of this thesis. Instead, recognizing and accepting the continued reliance on the car and thus the continued necessity and importance of the parking garage, this thesis argues for a architectural response to this unloved building type that celebrates its many roles, rather than conceal them.

This thesis offers a general critique of the suburban antipathy towards, but reliance on the parking garage. It aims to inspire a new architectural approach to addressing parking requirements in suburban downtowns by expanding purely functional design considerations to include experiential ones.

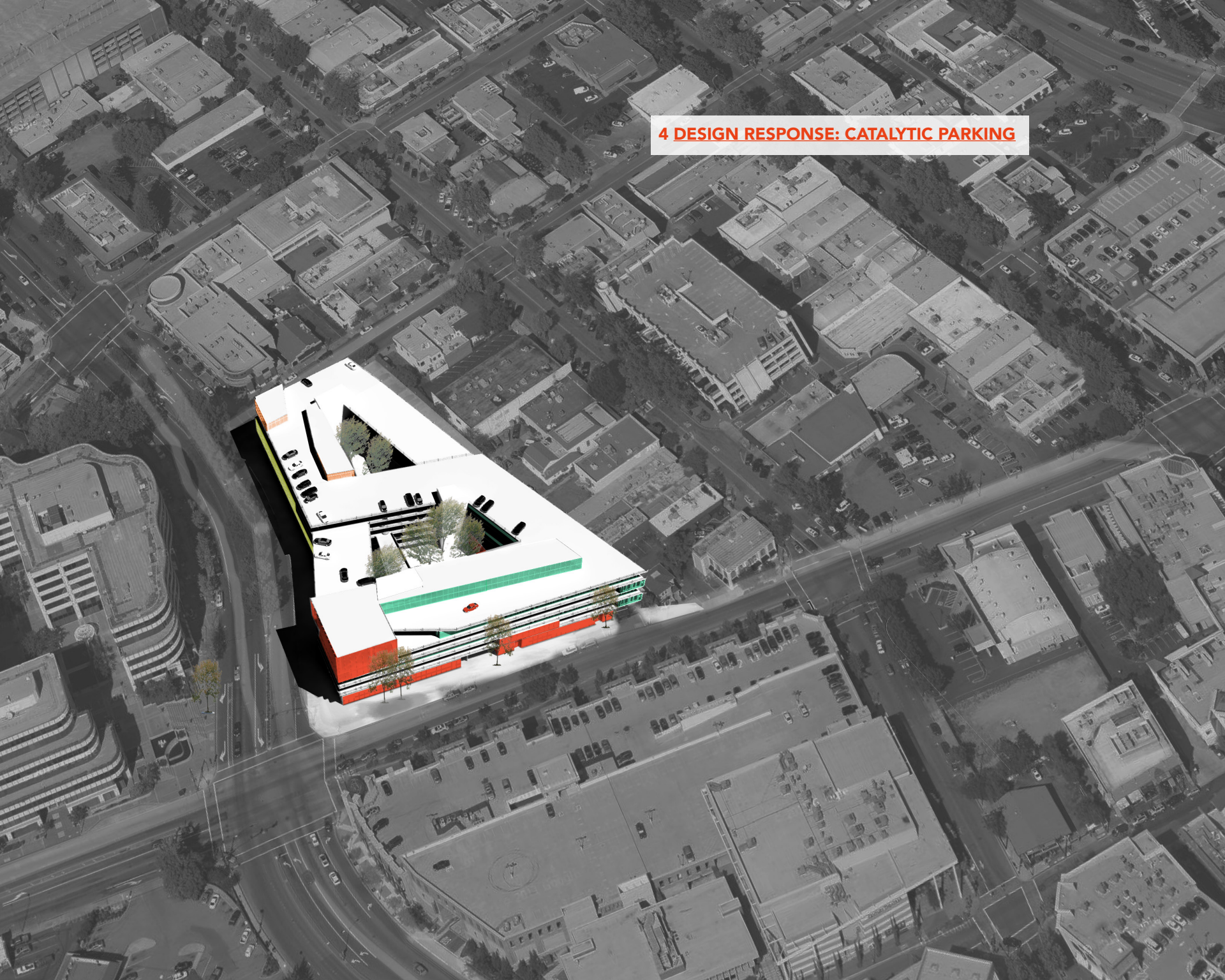
Current building codes and city urban design guidelines all but determine that the standard approach to parking garage is the only acceptable one. Therefore, this thesis does not attempt to follow generally established building codes nor, specifically the

City of Walnut Creek's design guidelines in developing an alternative proposal. In order to challenge an uninspiring status quo, rules can and should be broken.

While the final project proposal adheres roughly to the program counts laid out in the Specific Plan, it contradicts many of the other Plan's guiding principles, such as the separation of parking and program. This thesis values integration as a method to connect parking with the uses it supports, with its surroundings and as a way to create unique and exciting spatial relationships throughout the building. Instead of creating similar and "contextual" architecture that hides parking, this thesis promotes variety and diversity.

In proposing an alternative to the typical suburban development model that ignores the vital role of the parking garage, this thesis aims to provoke a more creative conceptual approach to the parking garage as more than a place of utilitarian efficiency but as a place of spatial drama, of playful juxtapositions and of spectacle.

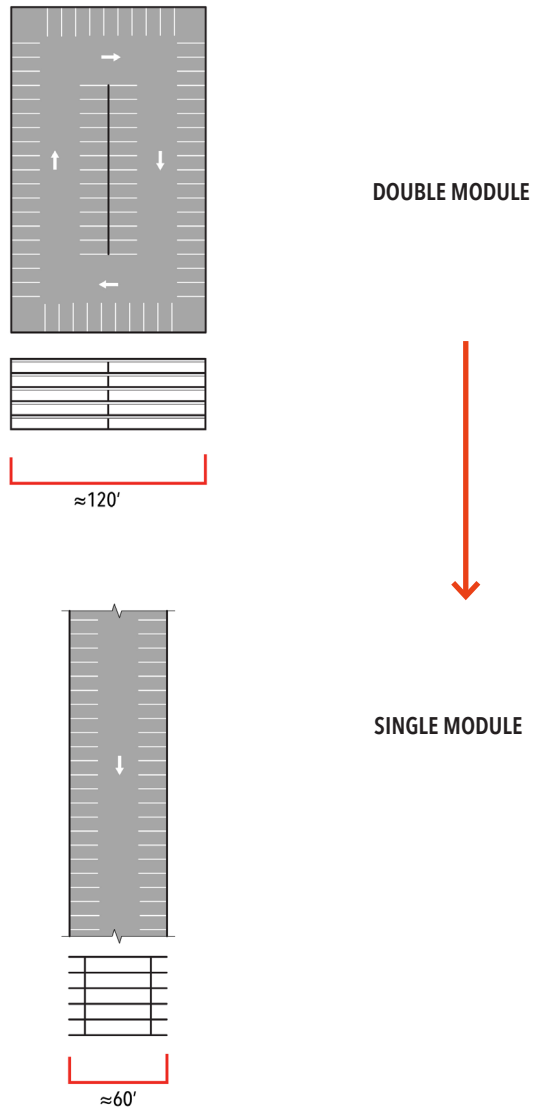
**4 DESIGN RESPONSE: CATALYTIC PARKING**



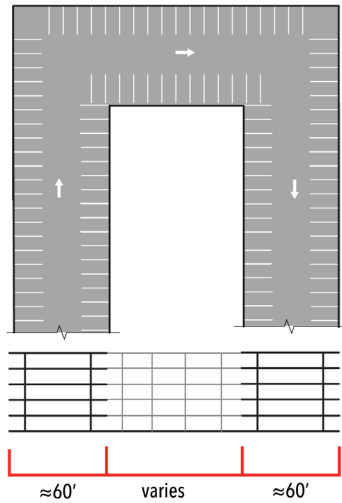
## STRATEGIES

This thesis project attempts to catalyze the constraints of parking to create a new type of suburban development that embraces and celebrates the vital role of the car and of parking in the suburbs. Specifically, this design reacts to the unpleasant experience resulting from typical parking garage layout and circulation system. Taking a more creative approach to these two functional elements, allows for a strategy to integrate parking with other program elements

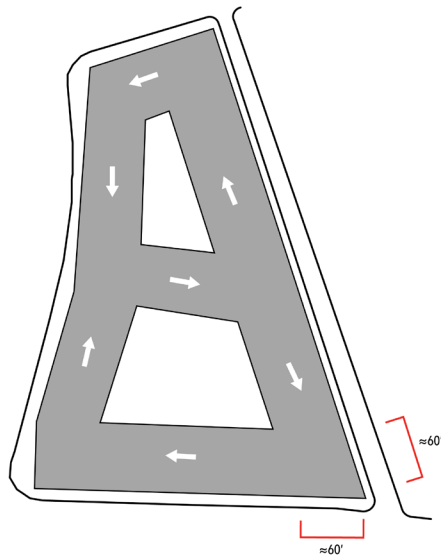
STRATEGY 1  
PARKING MODULE



A standard parking module, 50-60' in width, consists of a one or two-way drive aisle flanked by two sides of parking. The typical parking garage design consists of two parking modules which allow for a space-efficient parking layout and accommodates a car's turning radius.<sup>1</sup> However, this large width, especially in comparison to a very minimal floor-to-floor height leads to poor day-lighting and a dark interior. The width also separate the user within the garage from their outside surroundings. By halving this width and using a single parking module as the base width for a parking garage layout, better day-lighting, a better experience, and a greater ease of program integration can be ensured.



**WIDTH ACCOMODATES  
CAR TURNING RADIUS**

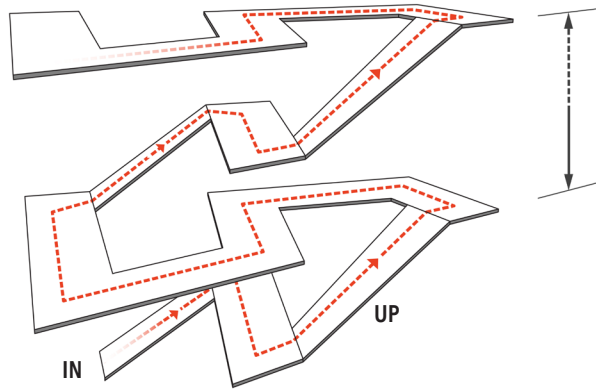


**...ON THE SITE**

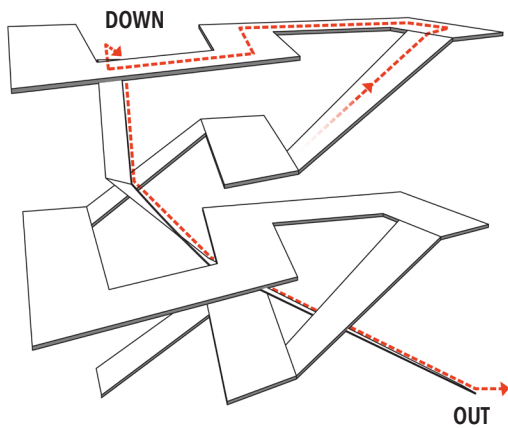
However, the single parking module creates circulation problems because it cannot accommodate a car's turning radius. This is solved by arranging the single parking module around a courtyard.

Arranging this generalized layout on the site with three horizontal east/west bars connected with two vertical north/south bars, maximizes building's footprint while retaining the single parking module width and allowing ample daylight. This scheme also provides for flexible circulation.

STRATEGY 2  
CIRCULATION



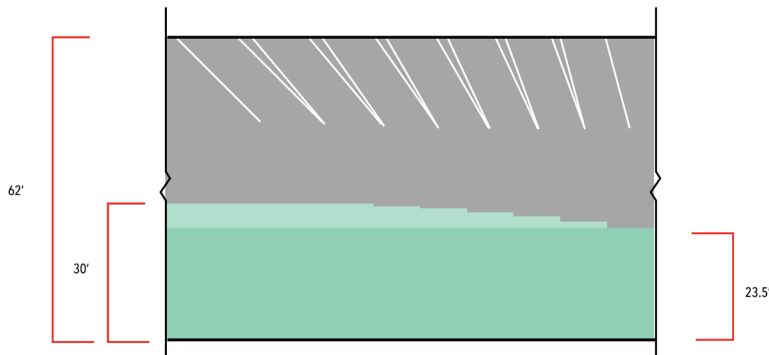
Working with the basic building layout previously established, the circulation uses the space required for vehicular vertical circulation to create different spatial experiences throughout the garage. By alternating the location of the car ramps in a S-shaped circulation pattern inherently creates single height space in the center bar with double height spaces everywhere else.



The circulation pattern further creates a choreographed experience by being one-directional. For the driver, the winding S-shaped driving path continues up the building with a quick exit on a steep speed ramp.

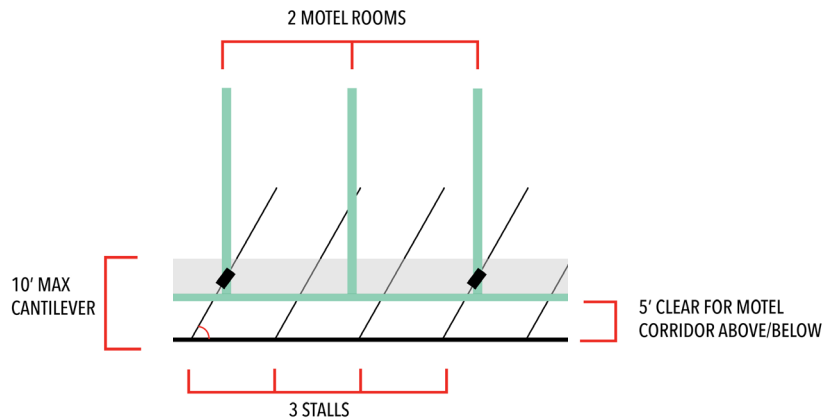
4. Strategy 2, circulation creating single and double height spaces
5. Strategy 2, speed ramp down

STRATEGY 3  
PARKING AND PROGRAM INTEGRATION



One-directional circulation calls for angled parking stalls for easier parking and to ensure drivers move in the correct direction. Angled parking stalls also allowed for closer integration between parking and other program elements. Changing the angle of the parking stall from 45° to 70°, allowed for varying program widths where adjacent to parking while still fitting within the single parking module.<sup>2</sup> In areas where program elements took a precedence over parking, the parking stalls could be changed to 45°, less efficient for parking cars, but allowing for a wider program element. On the other hand, where parking dominates, a 70° angle is used to accommodate more cars per linear foot.

STRATEGY 4  
STRUCTURAL INTEGRATION



All program components were further integrated through structural coordination. The structure consists of cast-in-place concrete columns, located 30-40' on center with PT slab cantilevering 10'. This structural system allowed flexibility to deal with complex conditions created both by the building shapes and by program integration while also provide opportunity for sculptural expression.

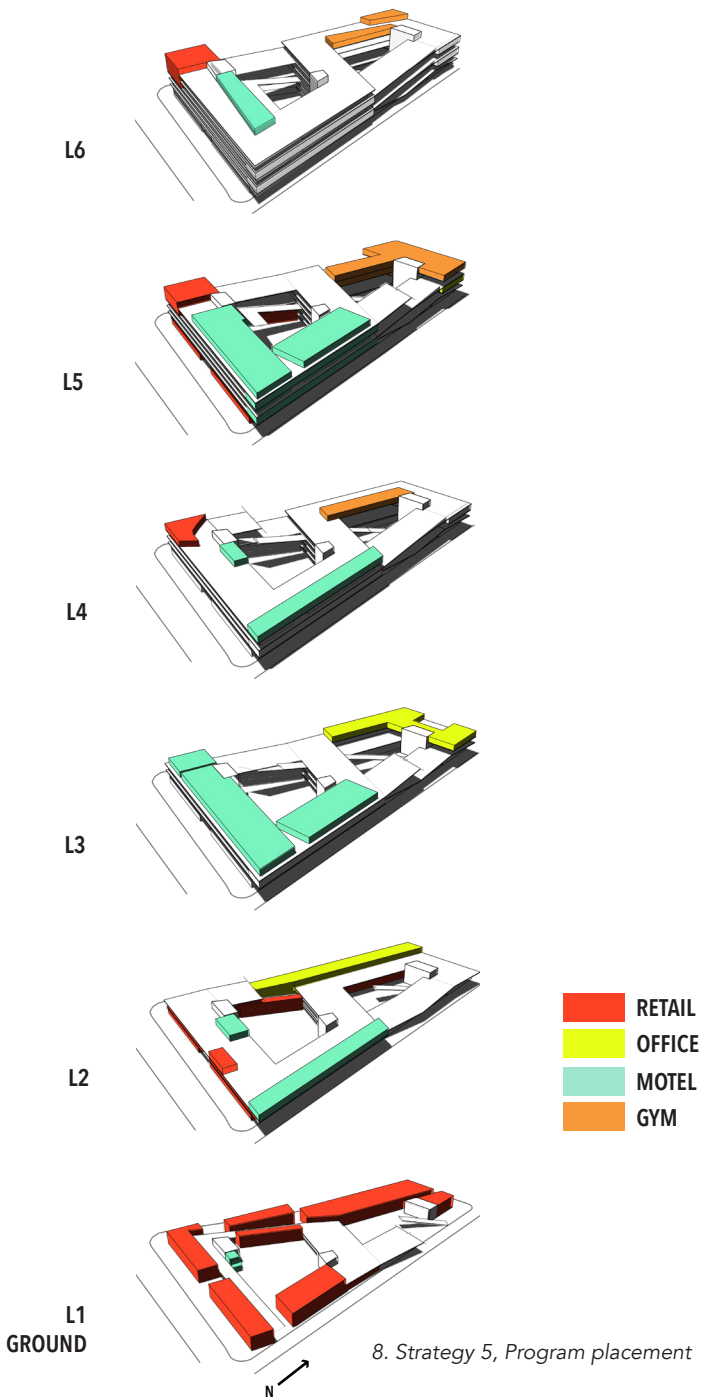
Pulling the columns into the floor plates made it important to coordinate their location with the parking stall layout and the other programs above and below. For example, in locations with motel and parking above and below each other, the parking stall angle was optimized to fit three stall widths within two motel units. The columns could be angled at the parking levels to fit more efficiently with the parking stalls and could be rotated to fit orthogonally with the motel unit walls above and below.

STRATEGY 5  
PROGRAM PLACEMENT

Program was strategically placed within the double-height spaces created by the circulation pattern to meet the overall program square footage goals while maintaining some double height space in parking areas where it would be impactful. Areas within each program could also be expanded to fill the double-height space.

Program placement was also determined by connectivity to the downtown and site considerations such as visibility and views out. For example, while retail is located along the ground floor perimeter, it is also in the upper levels, bringing people up and creating a new gateway into downtown.

The motel is located at the south side of the site, where guests can better enjoy southern sun exposure and views of Mt. Diablo. The office space is located on the lower garage levels, alongside busy California Street. The gym, which can be used by motel guests, office workers and the general public, is located higher up in the building. Additionally, with its courtyard-orientation on the north side of the site the gym is protected from solar heat gain.



8. Strategy 5, Program placement

## DESIGN

### GROUND FLOOR

The ground floor (see next page) seeks to engage the pedestrian and create an activated ground level. Retail is located alongside main pedestrian paths with large cut-throughs to encourage passersby to enter the courtyard. The courtyard is a shaded, oasis, a large plaza unlike anything else in Walnut Creek and is further activated by an adjacent restaurant space. The alley on the eastern edge of the site allows for easy service access, drop-off and valet services. The alley also acts as the parking garage access, with entry on the south end of the alley and exit at the north.



CYPRESS ST

CALIFORNIA BLVD

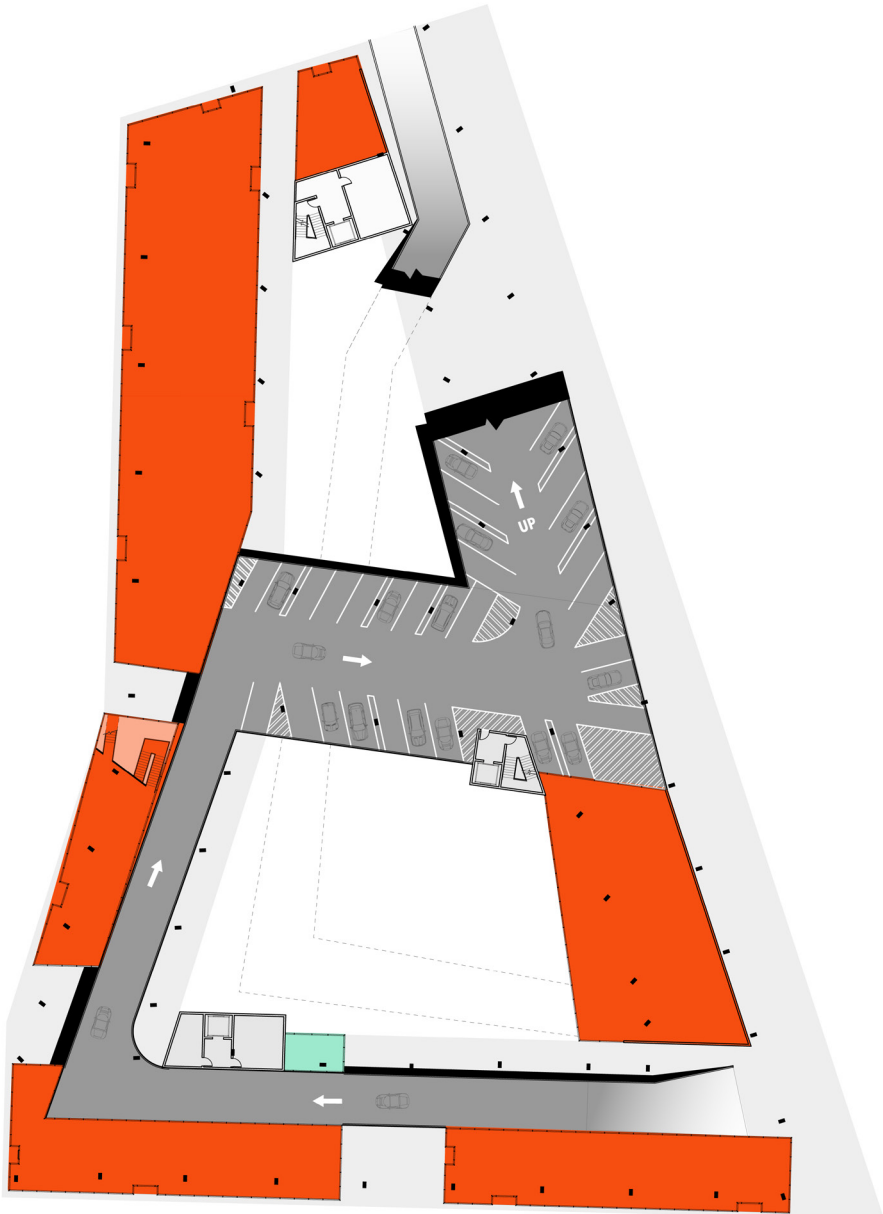
MT. DIABLO BLVD

N

EXIT  
DN

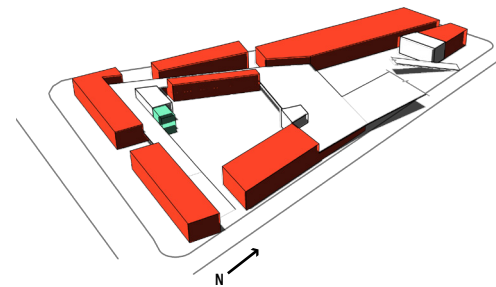
ENTERS  
UP

ENTERS



LEVEL 1 (+10')

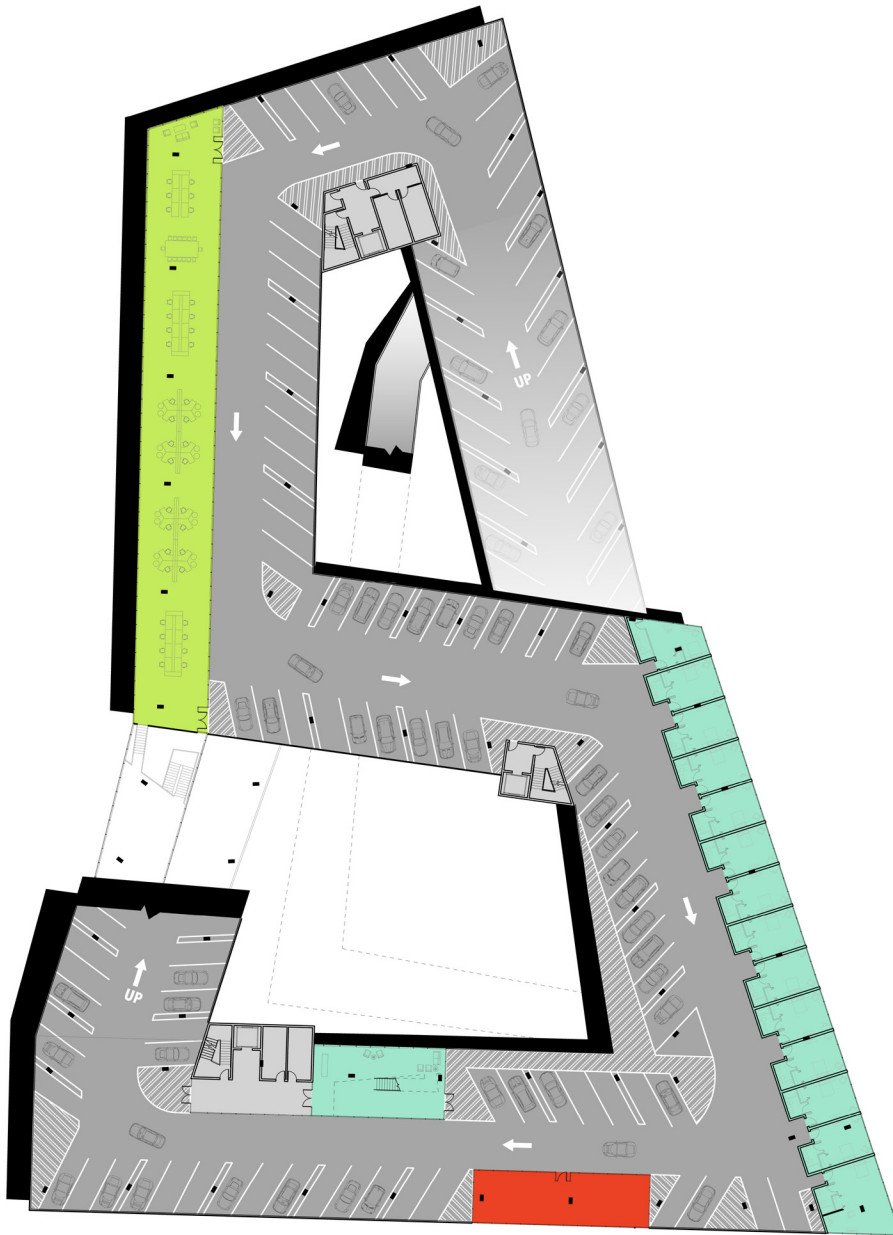
A ramp brings motorists from the alley ground level up to Level 1. Here, drivers pass on top of and next to double height retail space and over the pedestrian entry. With only glass and guardrails separating these three spaces from each other, drivers and pedestrians can enjoy the spectacle of the other entering and using the building. After continuing around two sides of the courtyard, drivers can begin to look for a parking spot while enjoying the changing spatial experiences on their search.



10. Level 1 Plan  
11. Level 1 axonometric

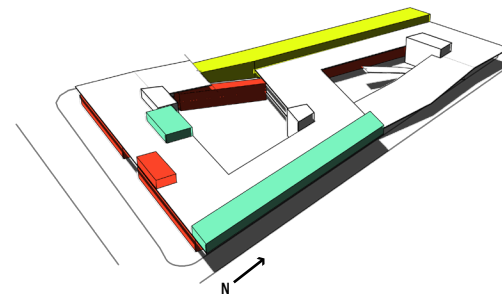


12. Mt. Diablo Blvd ground floor, entrance to courtyard.



LEVEL 2 (+20')

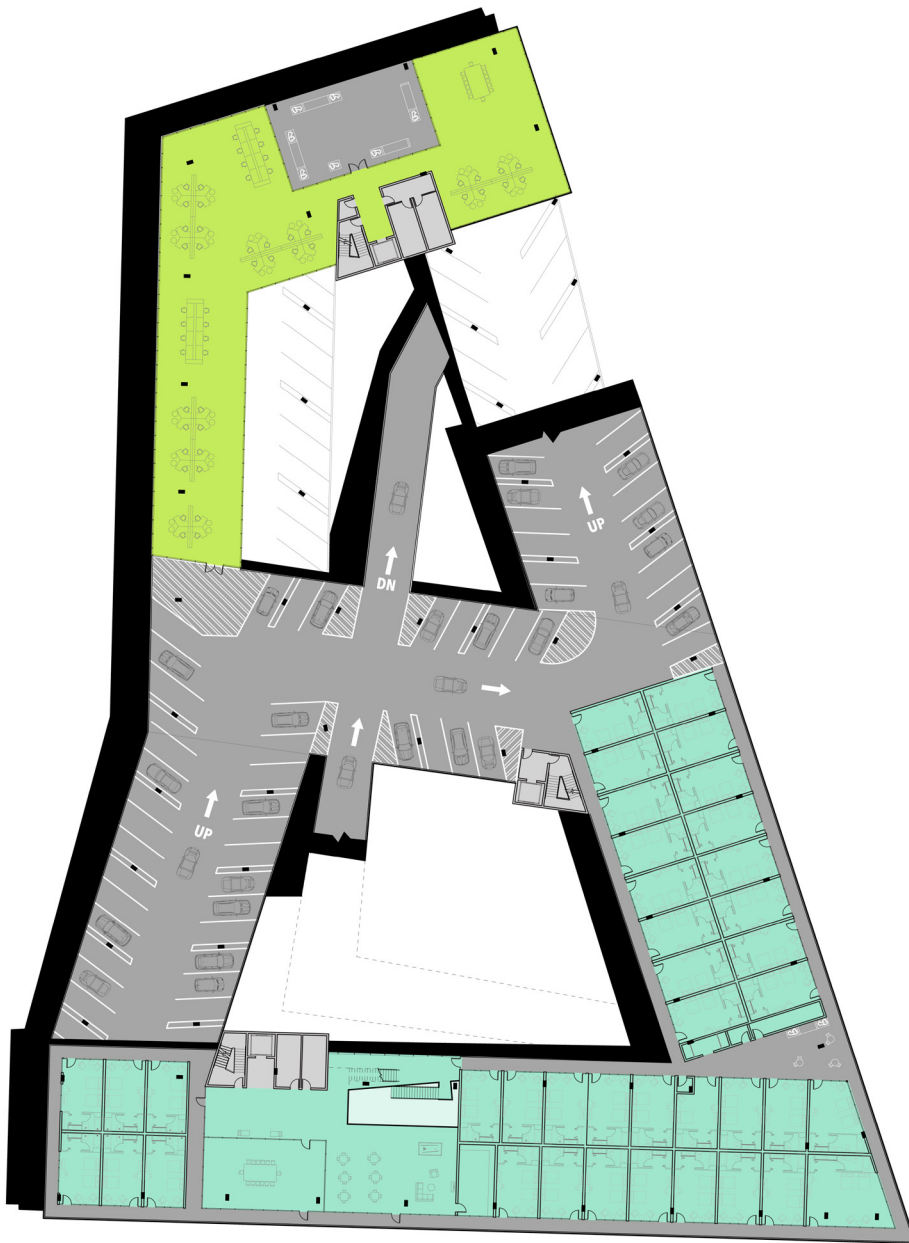
Continuing up the ramp to Level 2, the driver encounters a thin bar of co-working space adjacent to double height parking space. Next, is a bar of motel rooms, with entrances recessed from the single-height drive aisle. Continuing around, is a small retail space opposite from the main floor of the motel lobby. The three stair cores act as service cores facilitating pedestrian vertical movement through the building while also providing vertically stacked service elements such as restrooms. Throughout the building, the entrances to the cores are expanded and contracted depending on the adjacent program.



13. Level 2 Plan  
14. Level 1 axonometric

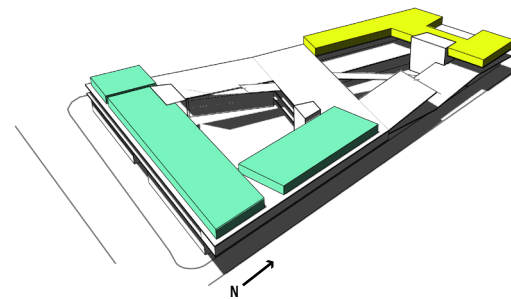


15. Level 2, office and parking with view of sped ramp down



LEVEL 3 (+30')

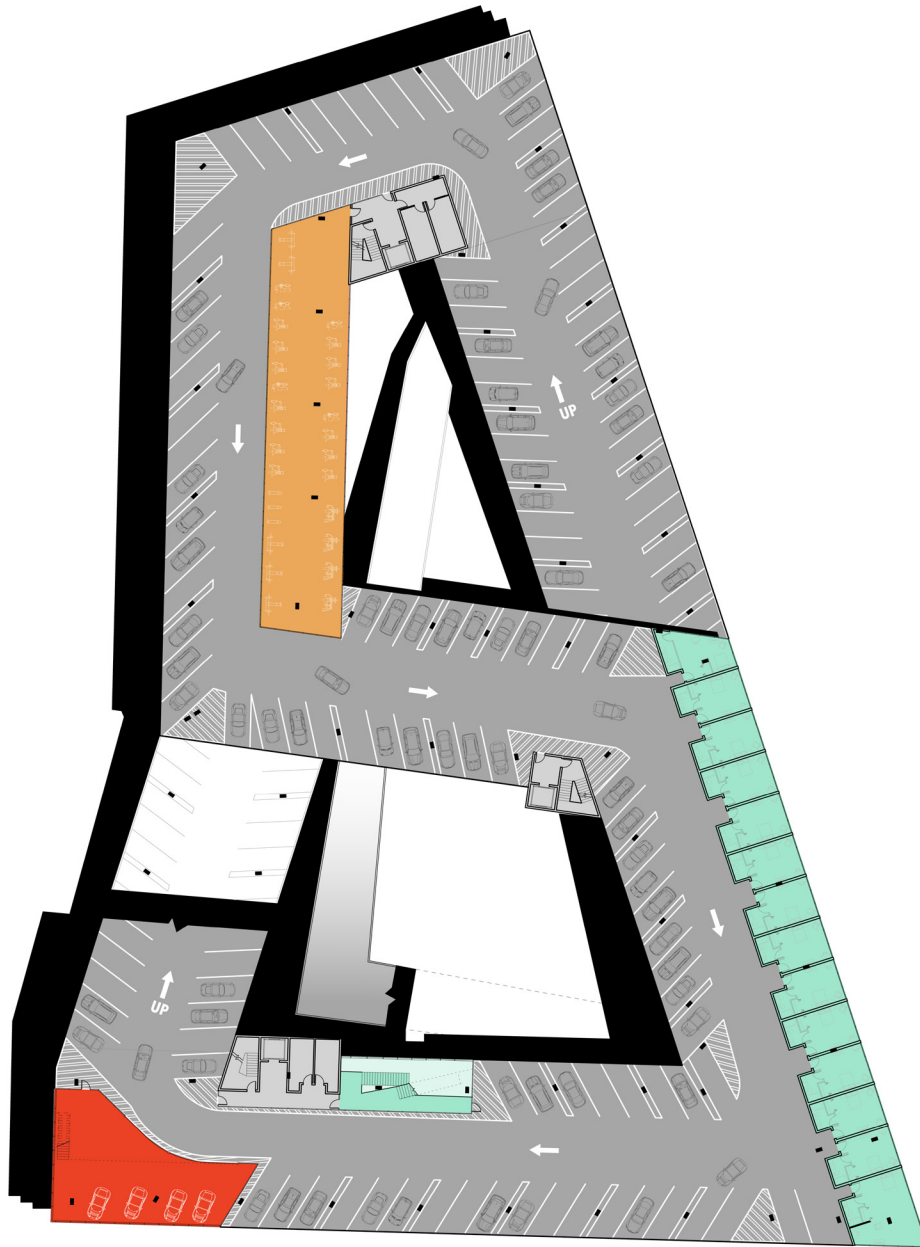
Passing under motel rooms, the driver continues up the ramp to Level 3. There is more office space has been with a portion pulled back to create a double height space open to Level 2. The office space is flexibly arranged with an ample outdoor space for working or relaxing. Past the offices, the driver can exit the building down the lower half of the speed ramp or can continue searching for a parking spot. Next are the motel units, accessed by exterior corridors, following the typical motel pattern. The units facing east get spectacular views of Mt. Diablo. On the south side, the motel lobby expands out to almost the full width of the floor slab and includes a meeting room and lounge space.



16. Level 3 Plan  
17. Level 3 axonometric

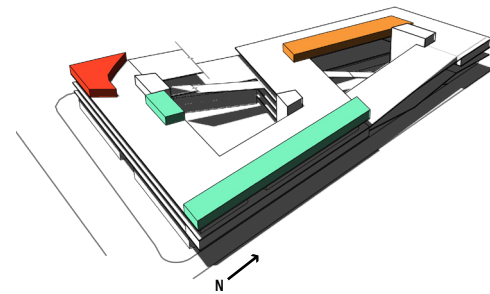


18. Level 3 Motel Lobby, view of courtyard and speed ramp



## LEVEL 4 (+40')

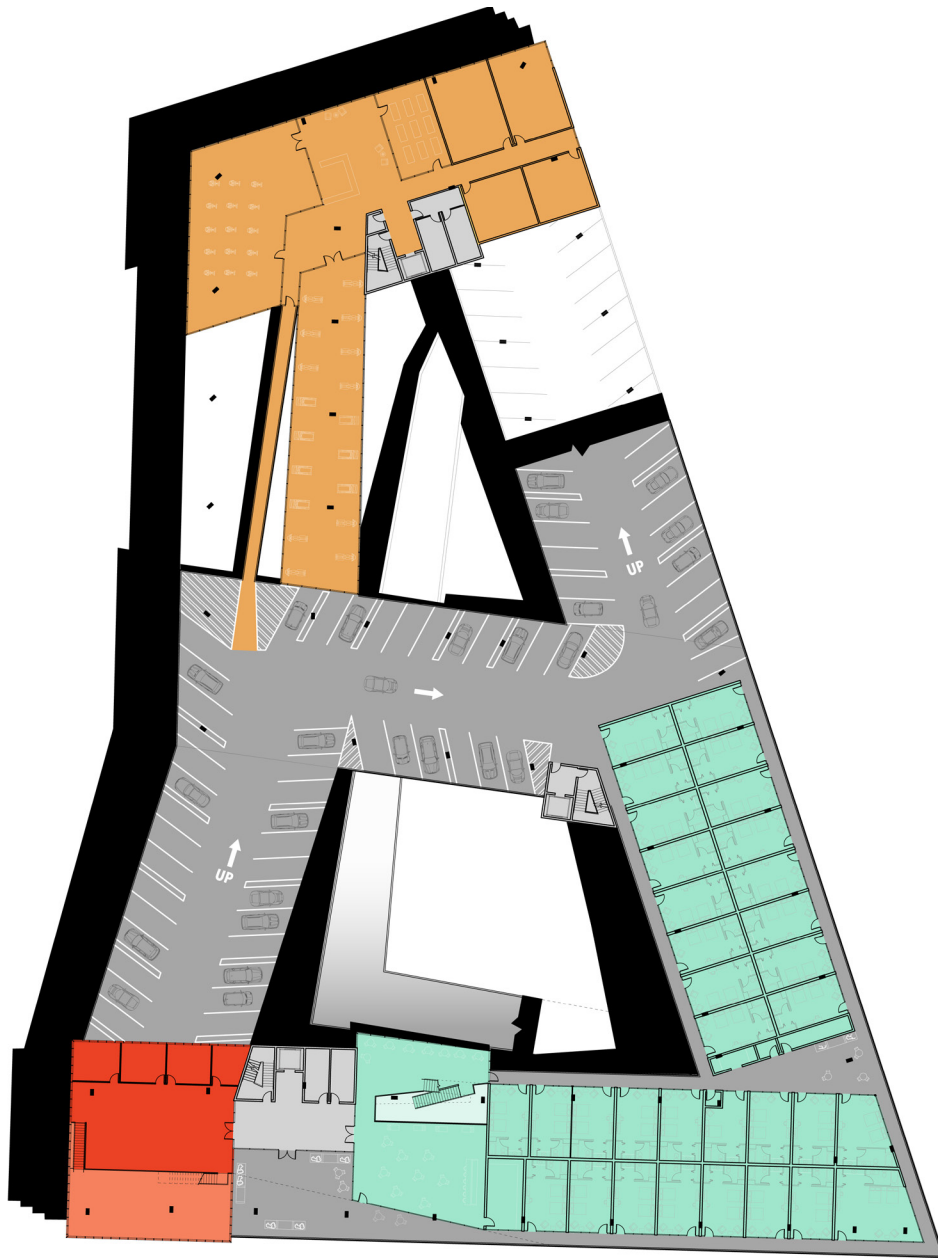
Continuing up to Level 4, the motorist passes by the first of the gym space, the weight lifting room. Here, drivers and exercisers can view each other in motion. Next, is another strip of motel rooms and a minimal hotel lobby entrance. Occupying the southwest corner is the first level of a triple-height car-dealership. On this level, display and test cars are stored right in the dealership, adjacent to and continuing the pattern of parking in the garage outside.



19. Level 4 Plan  
20. Level 4 axonometric

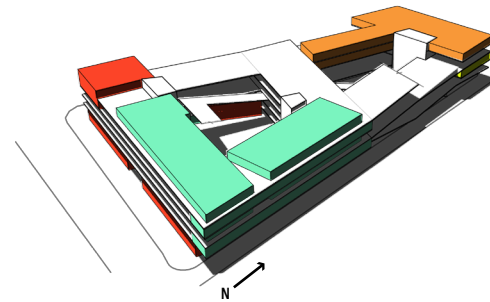


21. Level 4, gym and parking with overhead pedestrian walkway.

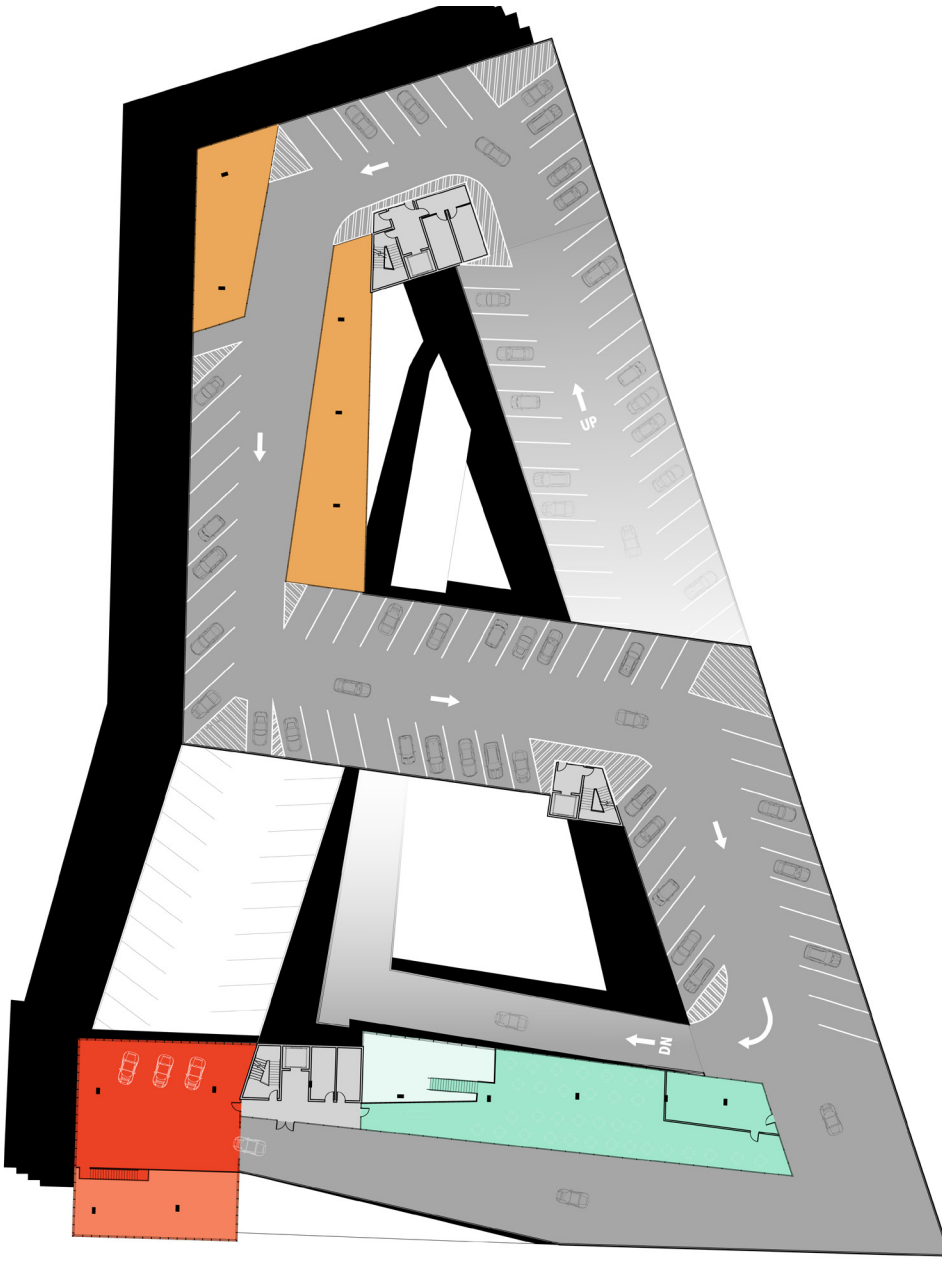


LEVEL 5 (+50')

Continuing up, Level 5 is the main gym floor, accessed via a walkway from the parking platform. Here, the gym has a double height cardio room, studio rooms, lockers and office space. The motel rooms continues with the motel lobby becoming a bar that pushes out to not quite touch the speed ramp. Bar-goers can watch cars hurtling past as they sip their cocktails. Between the lobby and the mid-level of the car-dealership is a generous south-facing outdoor terrace that is open to the public.

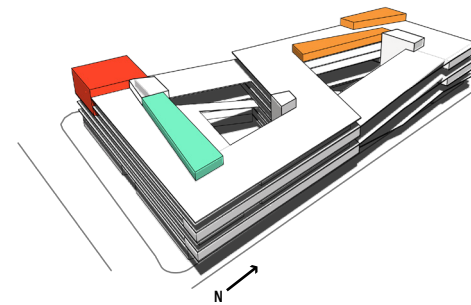


22. Level 5 Plan  
23. Level 5 axonometric



LEVEL 6 (+60')

Finally reaching the top level of the building, motorists can appreciate 360° views of surrounding rolling hills before exiting down the speed ramp. Drivers who have taken a car out for a test drive however, can drive their test car past the penthouse motel restaurant and right back into the car dealership.

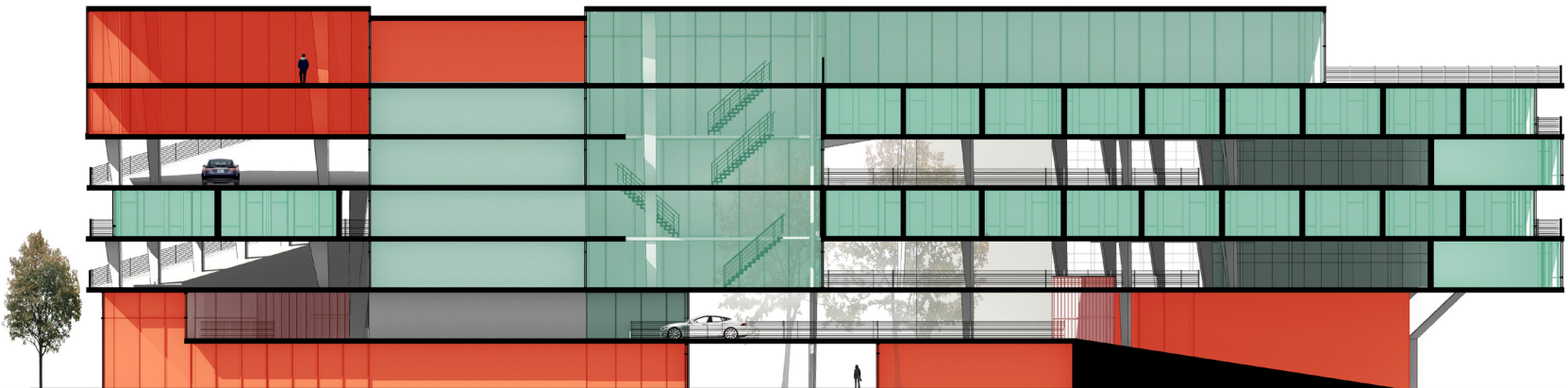


24. Level 6 Plan  
25. Level 6 axonometric

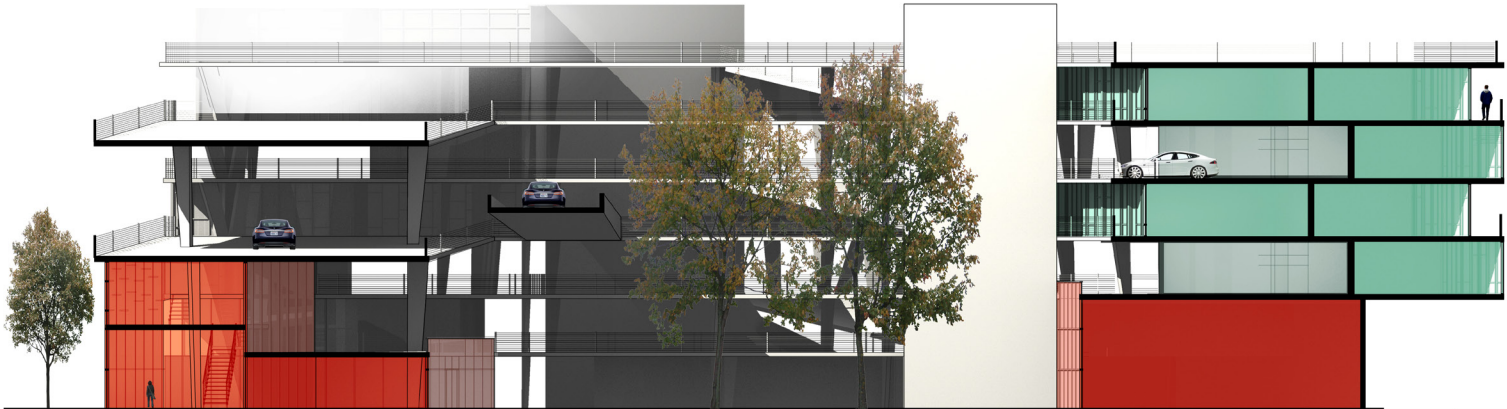


26. Level 6, view from top of speed ramp down

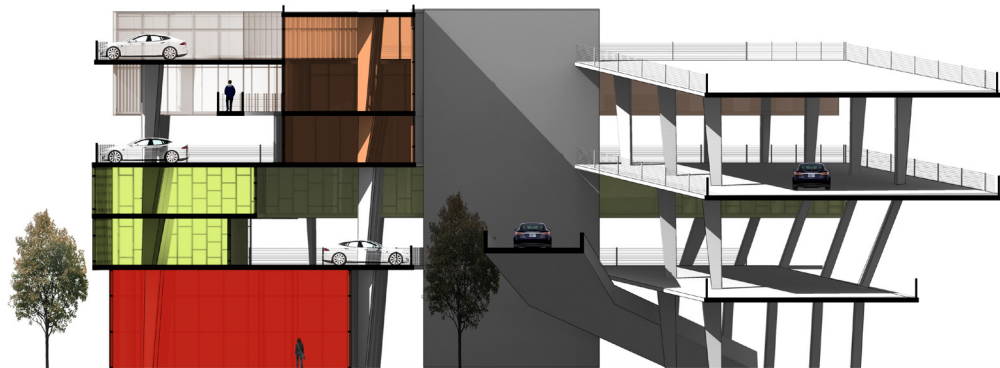
Integration of retail, parking, office, motel and gym space throughout the building creates a variety of spatial relationships. At the ground, the motorist and pedestrian cross-over one another. The pedestrian enters next retail while the car enters on top of and next it. In the upper levels, the car drives beneath retail and parking and motel rooms alternate positions. At the top level, the motorist can drives back into the car dealership.



Cut through the main courtyard, this section shows the different heights of ground floor retail space, from single height space to a triple height space, filling underneath the ramp. In contrast to the more compressed single height parking space adjacent to motel rooms, the western parking area is double heights.



To the north, the building narrows with the site. Double height parking space is compressed by the office and gym before all elements expand vertically and contract horizontally. Here, the location of parking alternates to create a more public office experience and a more secluded gym experience.





30. Section Perspective, cutting through retail, motel lobby, courtyard, office and gym

## URBAN FACE

Each program element is expressed honestly and uniquely throughout the building. Parking is not concealed behind a facade and the urban face is determined by the interior structure and program placement. Parking acts as an important void, creating openings and breaking down the large mass of the building. Retail, office, motel and gym space are all called out with bright colors and signage and signal the arrival into downtown Walnut Creek.



31. View south from corner of California Blvd and Cypress Street



32. View east from corner of Mt. Diablo Blvd and California Blvd

## 5 CONCLUSION

The parking garage is and will continue to be, vital to suburban downtowns.<sup>3</sup> However, their design is typically limited to solving basic functional requirements, resulting in homogenous, banal and unpleasant buildings and spaces.<sup>4</sup> Treating parking garages as necessary, but strictly utilitarian structures promotes concealment behind facades or within the center of blocks. This detaches the parking garage from its surroundings and contributes to an unpleasant user experience. Celebrating the parking garage as a place of arrival and departure, movement and transition, can inspire a rethinking of the building type and can serve as a catalyst for a new type of suburban development.

This project embraces and celebrates the role of the car and of parking by creating a choreographed spatial experience for the motorist, driving through the garage, looking for a parking spot. The integration of retail, office, motel and a gym with parking creates ever-changing conditions and differentiates each level on the drive up.

Unfurling the oppressively wide double parking module layout into a narrower single module allows for better daylighting, a more pleasant space and a closer connection with the surroundings. The resulting circulation pattern that creates spatial drama through varying double and single-height spaces. It also creates a new public outdoor courtyard where pedestrians can sit, enjoy the outdoors... and watch the cars drive by.

By integrating parking with other program elements, this project gives parking respect commensurate to its vital role in the suburban downtown. This close integration also celebrates the role of the car by using parking as a catalyst to create playful and unexpected juxtapositions in response the conformity of typical suburban development. Program elements such as the motel further speak to the close and interdependent nature of cars and development in California.

The integration of parking with other program elements also reduces the scale of the building. Instead of looking to emulating historical models, this project shows how the car, a shaper of the suburban built form, can be catalyzed to create a more honest but finer-grained suburban typology. This approach celebrates rather than hides the role of the car in the suburban downtown.

The design reveals how the integration of parking with other program elements can result in a new approach to suburban development that embraces role of parking garages as a place of arrival, departure, movement and transition. However, the close proximity of the car to other program elements is problematic in several regards. Fumes and pollution are not ideal next to working or exercising space and the conflict between car and pedestrian movement within the garage remains. The vertical intermingling of unconditioned parking space and conditioned program elements would also make proper insulation and climate control difficult, complicated and expensive.

While there are many practical reasons against such a close integration of parking and other programs, this project intentionally chose to push practicality and rationality to its limits. In doing so, it remains confident in the argument that parking garages should be more fully and creatively considered by architects, city planners and developers. The parking garage can be much more than it currently is. It can become an important amenity, a place of function as well as arrival and departure, movement and transition and place that celebrates the forces that shape the suburbs.

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<sup>2</sup> McDonald, Shannon S. *The Parking Garage: Design and Evolution of a Modern Urban Form*. Washington, D.C: Urban Land Institute, 2007, 5

<sup>3</sup> Wells, Christopher W. *Car Country: An Environmental History*

<sup>4</sup> De, Jong J. *New Suburbanisms*. New York, NY: Routledge, Taylor & Francis Group, 2014, 62

<sup>5</sup> Hayden, Dolores. "Building the American Way: Public Subsidy, Private Space." *The Suburb Reader*. Ed. Becky M. Nicolaides and Andrew Weise. New York: Routledge, 2006., 273-80.

<sup>6</sup> Wells, Christopher W. *Car Country: An Environmental History*

<sup>7</sup> Miller, Catherine G. *Carscape: A Parking Handbook*. Columbus, Ind: Published for the Irwin-Sweeney-Miller Foundation by Washington Street Press, 1988. Print. 1

<sup>8</sup> McDonald, Shannon S. *The Parking Garage*, 3

<sup>9</sup> *ibid.*

<sup>10</sup> Chow, L. Y. (1989). A philosophical design approach for an alternative concept for the urban parking garage. The University of British Columbia (Canada). ProQuest Dissertations and Theses. <<http://search.proquest.com/docview/303822358?accountid=14784>. (303822358).>

<sup>11</sup> Miller, Catherine G. *Carscape: A Parking Handbook*, 1

<sup>12</sup> McDonald, Shannon S. *The Parking Garage*, 5

<sup>13</sup> Henley, Simon. *The Architecture of Parking*. New York: Thames & Hudson, 2007, 46.

<sup>14</sup> "General Plan 2025: City of Walnut Creek." [www.ci.walnut-creek.ca.us](http://www.ci.walnut-creek.ca.us). 04 Apr. 2006. Web. 1 May 2014. <[http://www.walnut-creek.org/citygov/depts/cd/planning/documents/general\\_plan\\_2025.as](http://www.walnut-creek.org/citygov/depts/cd/planning/documents/general_plan_2025.as)>

<sup>15</sup> *ibid.*

<sup>16</sup> De Jong, *New Suburbanisms*, 185

<sup>17</sup> "General Plan 2025: City of Walnut Creek"

### Chapter 2

<sup>1</sup> McDonald, Shannon S. *The Parking Garage*, 231

<sup>2</sup> *ibid.*, 3

<sup>3</sup> Jakle, John A, and Keith A. Sculle. *Lots of Parking: Land Use in a Car Culture*. Charlottesville: University of Virginia Press, 2004.

<sup>4</sup> McDonald, Shannon S. *The Parking Garage*

<sup>5</sup> *ibid.*, 215-220

<sup>6</sup> McDonald, Shannon S. *The Parking Garage*

<sup>7</sup> Jakle, John A, and Keith A. Sculle. *Lots of Parking*

## Chapter 2 continued

<sup>8</sup> Henley, Simon. *The Architecture of Parking*, 46

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<sup>17</sup> Chrest, Anthony, *Parking Structures*

<sup>18</sup> Henley, Simon. *The Architecture of Parking*, 100

<sup>19</sup> Gregory. *The Parking Garage Studio: Challenging the Language of Everyday Car Culture*. Proc. of 2009 ACSA Southwest Fall Conference Chang[e]ing Identities; Design, Culture + Technology October 15-17, 2009, Albuquerque, New Mexico Host School: University of New Mexico & University of Texas Arlington.  
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