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PARKING STUDY

LA HABRA SHOPPING CENTER
La Habra, California

April 2025

Prepared For:

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301-339 N. Harbor Blvd
La Habra, CA 90631

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EXECUTIVE SUMMARY

The parking study for the La Habra Shopping Center, located at 301-339 Harbor Boulevard, evaluates the feasibility of parking demand management for the proposed mixed-use development. The project involves remodeling two buildings with a total gross area of 21,086 square feet to accommodate tenants such as restaurants, retail shops, an auto shop, and a healthcare facility. Diamond Harbor LLC seeks to address compliance with the 2025 City of La Habra Municipal Code (LHMC) while utilizing shared parking methodologies to optimize available resources. Below are the key findings from this study:

- **Demand vs. Supply**: The projected peak parking demand is 115 spaces per LHMC. The proposed configuration provides 76 spaces, showing a shortfall under traditional analysis.
- **Parking Management Strategies**: The study proposes enhancements to mitigate demand, including promoting public transit, installing bike and scooter racks, providing sidewalks and crosswalks for visitors, and implementing time-limited parking for high-turnover tenants. A conservative overall reduction of 5% has been applied to account for the parking demand management strategies, with consent from the City of La Habra representatives.
- **Shared Parking Dynamics**: Using Urban Land Institute (ULI) shared parking methodologies, which consider staggered peak periods for mixed uses, the peak demand is reduced to 75 spaces during the busiest weekday hour from 12:00 PM to 1:00 PM and from 6:00 PM to 7:00 PM. This results in a surplus of 1 space. It is expected that there will be more available parking spaces throughout the day.

Hence, the parking study supports the feasibility of the proposed development and proves that current parking spaces comply with regulatory frameworks and meet the LHMC parking requirements efficiently.

REGISTERED CIVIL ENGINEER

REGISTERED TRAFFIC ENGINEER

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1.0 INTRODUCTION

The purpose of this study is to analyze the feasibility of various land uses within the proposed business complexes and mixed-use/multiple tenants, with shared parking arrangements. In addition, this study ensures that the overall demand for parking at the site is sufficient for the proposed and future conditions. The proposed site is located on the northwest quadrant of the Harbor Boulevard and E. Stearns Avenue intersection in the City of La Habra. The site is established as a "Regional Commercial, Mixed Use" per the City of La Habra land-use zoning code. The following tenants will occupy the proposed land uses:

- Winchell Donuts
- PHO Restaurant
- Nail Eyelash Salon
- Chicken Box to-go
- Juice Bar
- Foot Massage
- Wig Retail Shop
- Martial Arts Studio
- Coffee Shop
- Auto Shop
- Retail Shops

1.1 STUDY BACKGROUND AND PURPOSE

Our client, Diamond Harbor LLC, is planning to convert multiple vacant units, in La Habra Shopping Center (unit address 301-339 Harbor Blvd) into restaurants, offices, and other retail businesses. Presently, the proposed design has been submitted to the City of La Habra Planning Commission for a review per the requirements of Title 18 Zoning, Chapter 18.14 OFF-STREET PARKING REQUIREMENTS under the La Habra Municipal Code (LHMC) Ordinances. Due to the conversion of vacant units into retail sales and services, the required parking spaces per the updated 2025 City of La Habra Municipal Code (LHMC) should be verified.

The purpose of this study is to analyze and determine whether the shared parking methodology is based on the proposed parking demand and traffic flow in this mixed-use/multiple-tenant shopping center.

Shared parking can be defined as parking areas or spaces that are used to serve two or more individual land uses without conflict or encroachment. This is when individual land-uses, either on the same site or nearby sites, form an agreement to share the available parking space and/or the land developable for parking. Shared parking may be applied when land uses have different parking demand patterns and can use the same parking spaces/areas throughout the day. Shared parking is the most effective when these land uses have significantly different peak parking

characteristics that vary by time of day, day of week, and/or season of year. In these situations, shared parking strategies will result in fewer total parking spaces needed when compared to the total number of spaces needed for each land use or business separately.

Land uses are often involved in specific shared parking arrangements, including offices, restaurants, retailers, colleges, churches, cinemas, etc. Shared parking is often inherent in mixed-use developments and houses one or more businesses that are complementary, ancillary, or support other activities, such as a small convenience store located in the lobby of an office building. General parking lots and/or on-street parking that are available for patrons of nearby businesses/commercial districts are other forms of shared parking. When applied at a multi-business shopping center on a large scale, it can produce appreciable results.
The criteria that create strong shared parking potential are:

- Mix of land uses with various peak parking periods.
- Relationships among the land uses that result in visiting multiple land uses on the same trip.

The key goal of shared parking analysis is to find the balance between providing adequate parking to support development from a commercial viewpoint and minimizing the negative aspects of excessive land area or resources devoted to parking.

To accurately assess the parking demand of the proposed business, the parking demand estimates were projected from the City of La Habra Municipal Code (LHMC) and Urban Land Institute (ULI) Shared Parking, 3rd Edition.

Figure 1. Study Area Photo

2.0 SITE DESCRIPTION AND INFORMATION

The proposed site, La Habra Shopping Center, is located at the northwest corner of the intersection of Harbor Boulevard and E. Stearns Avenue. The proposed unit addresses range from 301-339 Harbor Blvd., La Habra. Harbor Boulevard consists of a 2-lane per each direction of travel with a painted two-way left turn median for northbound and southbound directions. E. Stearns Avenue consists of one (1) lane per each direction of travel. The intersection is signalized with a permissive left turn signal and the left turn pocket from Harbor Boulevard to E. Stearns Avenue.

The La Habra Shopping Center consists of two separate buildings and occupies a land area of 72,189 square feet, along with a total gross building area of 21,086 square feet. Proposed tenants at the La Habra Shopping Center include Winchell Donuts, PHO restaurant, nail eyelash salon, chicken box to-go, juice bar, foot massage, wig retail shop, martial arts studio, coffee shop, auto shop, and other retail shops.

The current two (2) existing 26-foot wide driveways to southbound Harbor Blvd. will remain for ingress/egress to/from the shopping center. However, one of the current two (2) existing driveways to E. Sterns Avenue will be closed for landscape purposes. Only one 26-foot wide driveway to E. Stearns Avenue will remain for ingress/egress to/from the shopping center.

The detailed list of the proposed business tenants is shown in Tables 1 and 2; they have been provided by the owner representative. Also, during the field survey, the vacant units are verified in the La Habra Shopping Center with the units #303, #309, #311, #313, #315, #319, #321, #323, #325, #327, #329, #331a, #331b, and #339

The proposed project will remodel the exterior of the building and the interior of all the vacant units mentioned in the above paragraph. The only remaining unit #301 (Winchell Donuts), will remain open for business during the renovations.

Existing Transit Services
The site is served by several bus routes which have bus stops on the corner of the property and within 1/4 mile from the site. These bus routes include:

- **OCTA 37**: Bus stop located on the corner of Harbor Blvd. and Sterns Avenue (southeast of the site). This bus route connects the City of La Habra and the City of Fountain Valley.
- **OCTA 129**: Bus stop located on the corner of Harbor Blvd. and La Habra Blvd. (less than ¼ mile south of the site). This bus route connects the City of La Habra and the City of Anaheim.
- **OCTA 143**: Bus stop located on the corner of Harbor Blvd. and Sterns Avenue (southeast of the site). This bus route connects the City of La Habra, Downtown Fullerton, and the Brea Mall.

Bicycle and Pedestrian Facilities and Connectivity

Multiple bike rack facilities will be provided and maintained on-site to promote bicycle use. The roadways in the vicinity of the site provide pedestrian facilities and connectivity throughout the area. Crosswalks and sidewalks currently exist on all approaches at the signalized intersections in the vicinity of the site. A review of the pedestrian facilities surrounding the site shows that existing facilities provide a quality walking environment, including access to the site and nearby bus stops.

2.1 TERMINOLOGY

The terminologies used in traffic studies are often confusing and misinterpreted. Therefore, the following definitions are provided for the terms used in this study:

Gross Floor Area (GFA)
It is the sum of the area (in square feet) of each floor level in the building including cellars, basements, mezzanines, penthouses, corridors, lobbies, stores, and offices that are within the principal outside faces of exterior walls. It doesn't include architectural setbacks or projection. Besides buildings containing enclosed malls or atriums, the gross floor area is equal to the gross leasable area.

Observation Hours
Observation hours are the hours when the parking demand observations were made. For example, a study site at which the parking demand was observed at 10:00 am, 1:00 pm, 3:00 pm, 5:00 pm, and 7:00 pm, would represent five (5) observation hours.

Parking Demand
It refers to the amount of parking that would be used at a particular time, place, and/or price. It is a critical factor in evaluating parking problems and solutions; it is also affected by vehicle ownership, trip rates, mode split, duration (how long motorists park), geographic locations, etc.

Parking Survey or Parking Count
It is actual parked vehicle or vacant parking space counts on the study site at given specific times, during the assigned hours.

Parking Supply (or Parking Spaces)
The parking supply is the total number of parking spaces that are built or available at the study site, regardless of whether or not they are utilized. The parking supply should include only marked spaces, but not areas designated for standing vehicles. The parking supply is also different from the parking demand.

Peak Parking Period
It is the hour (or hours) of a day, during which the highest parking demand ratio occurs. If a single hour is shown, the available parking demand data suggests that it is the hour, during which the peak parking demand typically occurs.

Study Site
A study site represents a single site with data available on parking demand for one or more hours.

3.0 PROPOSED PARKING REQUIREMENT

The proposed site contains the following breakdown of the land uses. Table 1 shows the proposed parking generation under the City of La Habra's "Off-Street Parking Requirements" (LHMC).

Unlike traditional martial arts studios that offer group classes for children and adults, this facility will primarily focus on private training sessions. As the studio is not classified as a commercial school under LHMC regulations, the City of La Habra recommends allocating one parking space per student or coach. Based on this guidance, the proposed parking requirement for the studio is 21 spaces. For a conservative estimate of peak parking demand, this analysis includes the presence of up to five coaches and a maximum of 16 students per session.

The estimated peak parking demand of the proposed La Habra Shopping Center per the 2025 City of LHMC requires a total of 115 parking spaces. The current total number of parking spaces provided by the La Habra Shopping Center is 76 parking spaces. As a result, based on the City of LHMC, without accounting for any shared parking on the site and the accumulation of total parking demand resulting from the interaction between the uses, the project would be deficient by 39 parking spaces.

Table 1. Proposed Project Parking Generation per La Habra City Municipal Codes

Unit Address	Tenant Name	GFA (sqft)	Land Use Description	LHMC (Space per KSF GFA)	Parking Spaces per LHMC
#301	Winchell Donut	1,396	Restaurant - food to go	3.3	5
#303	PHO Restaurant	2,950	Restaurant - no bar	10	30
#309	Nail Eyelash Salon	1,000	Retail and general commercial (5 storefronts)	3.3	4
#311	Chicken Box to-go	1,010	Restaurant - food to go	3.3	4
#313	Juice Bar	600	Restaurant - food to go	3.3	2
#315	Foot Massage	1,020	Retail and general commercial (5 storefronts)	3.3	4
#319	Wig Retail Store	1,020	Retail and general commercial (5 storefronts)	3.3	4
#321	Retail Store	1,020	Retail and general commercial (5 storefronts)	3.3	4
#323	Martial Arts Studio	4,000	Athletic Club (Maximum number of 16 students per session and 5 coaches)	1 Space per student or coach	21*
#325					
#327					
#329	Retail Store	900	Retail and general commercial (5 storefronts)	3.3	3
#331a	Coffee Shop	1,966	Restaurant - no bar	10	20
#331b	Retail Shop	1,200	General Business Office	3.3	4
#339	Auto Shop	3,004	Auto Service/Repair 4 bay x 2 + 696 sqft x 2.7		10
					115

**Required parking spaces are per the maximum number of students & coaches*

Calculating parking space demand for the proposed project results in 115 parking spaces per LHMC.

However, for sites that contain several different land uses, such as the proposed project, the Municipal Parking Code allows for the use of shared parking methodology to account for the total parking accumulation on the site based on the interaction between the uses to determine overall parking demand for the site. Hence, a ULI Shared Parking Analysis has been prepared to determine the shared parking demand dynamics of the proposed project and the resulting overall required parking demand for the site.

4.0 ANALYSIS

Based on the information from the land uses, floor areas, and LHMC, the La Habra Shopping Center is estimated to require 115 parking spaces, compared to the 76 proposed project parking spaces. The parking demand per LHMC exceeds the available proposed parking spaces of La Habra Shopping Center. However, this calculation is based on the individual land use assumption during the peak parking period of the proposed La Habra Shopping Center. A summary of the LHMC parking requirements of the site and the proposed parking spaces is summarized below in Table 3.

Table 3. LHMC Parking Requirements and Proposed Parking Spaces

Land Use	Unit Address	Required Spaces	Proposed Spaces
Martial Arts Studio	#323, #325, #327	21	
Retail/Service	#309, #315, #319, #321, #329, #331b, #339	33	
Restaurant, Fast Casual	#303, #311, #313	36	
Coffee/Donut Shop	#301, # 331a	25	
Site Total		**115**	**76**

The peak parking demand for the martial arts studio assumes a conservative scenario of a maximum of 16 students per session and 5 coaches occurring at the same time, which is most likely not anticipated. The Applicant is planning to reconfigure the existing parking area to a total of 76 parking spaces, including newly proposed landscape areas and more accessible handicap parking areas.

4.1 SHARED PARKING ANALYSIS

Shared parking has been incorporated into the site plan to address the proposed parking shortfall. Shared parking is the use of a parking space to serve two or more individual land uses without conflict or encroachment. The ability to share parking spaces is the result of two conditions:

- Mix of land uses with various peak parking periods
- Relationships among the land uses that result in visiting multiple land uses on the same trip.

The key goal of shared parking analysis is to find the balance between providing adequate parking to support development from a commercial viewpoint and minimizing the negative aspects of excessive land area or resources devoted to parking.

In actual practice, each land use has a different peak parking demand period than other land uses. For example, the business hours for Winchell Donuts peak during the morning hours. The restaurants have peak parking hours from 12:00 PM to 2:00 PM and 7:00 PM to 9:00 PM. The martial arts studio has peak parking hours from 9:00 AM to 10:00 AM and from 5:00 PM to 7:00 PM.

The process below outlines the shared parking methodology:

1. *Determine* the applicable parking ratios – The base parking ratio of 115 parking spaces represents the minimum required parking demand per LHMC. While the ULI Shared Parking Model typically applies ULI-established parking rates for each land use, this analysis aligns with more stringent requirements set forth by the City of La Habra. This methodology provides a more conservative estimate of parking demand compared to the standard ULI-recommended model.

Only weekday was evaluated as this is the peak parking demand period for the project site. The reduction factors for shared parking during weekdays are derived from the Urban Land Institute's (ULI) *Shared Parking*, 3rd Edition (2020). As per ULI guidelines, weekday martial arts studio rates were reduced by 10 percent, weekday retail rates were reduced by 10 percent, weekday restaurant rates by 12.7 percent, and weekend office rates by 90 percent. These adjustments reflect typical patterns in shared parking utilization.

PARKING DEMAND MANAGEMENT

- **Public Transportation, Carpool, and Rideshare:** The Orange County Transit Agency currently provides local route transit bus #37 and community route transit bus #143 at the stop station Harbor Blvd/Stearns Avenue on southbound Harbor Blvd. It is recommended that future tenants promote and offer incentives to the employees and customers who use transit buses. Promote carpool or rideshare. Each typically substitutes for 5 personal vehicles, reducing 4 parking spaces.

- **Install New Bike and Scooter Parking:** Install multiple bike racks or shared docking stations for bicyclists and scooters to support the Greenhouse Gas emissions reduction program of the State. Install 8 bike racks on site to further reduce 2 vehicle parking spaces.

- **Pedestrian-friendly access:** The roadways in the vicinity of the site provide pedestrian facilities and connectivity throughout the area. The project's safe sidewalks and crosswalks provide safe walkable environments to visitors.

- **Time-Limited Parking**: Enforce time-limited parking to improve turnover rates and maximize space usage. Winchell Donut, Coffee Shop, Chicken Box to-go, and Juice Bar are considered high-turnover restaurants among the existing and proposed tenants. Most

customers from the above-referenced restaurants will expect to park their vehicles to pick up to-go orders. Therefore, it will be effective to enforce TO-GO PICK-UP ONLY PARKING on the existing 4 parking spaces to reduce parking demands during the peak period.

A well-designed comprehensive parking management program employing a mix of cost-effective strategies can typically reduce overall parking needs by 20 to 40% while also delivering social and economic benefits. These strategies contribute to reductions in vehicle traffic, congestion, accidents, and pollution.

For example, the City of Los Angeles allows up to 20% to be replaced by bicycle parking at a ratio of one automobile parking space for every four bicycle parking spaces provided.

For this analysis, a conservative overall reduction of only 5.0% has been applied to account for all parking demand management strategies. See attached Exhibit E as a reference.

The base parking ratios for weekdays are shown in Table 4.

Table 4. Base Parking Ratios -Weekday

Land Use	Base Parking Ratio	Shared Parking ULI Reduction Rate	Parking Demand Management Reduction	Base Parking Demand
Martial Arts Studio	21	10%	5%	18
Retail/Service	33	10%	5%	29
Restaurant, Fast Casual	36	12.7%	5%	30
Coffee/Donut Shop	25	12.7%	5%	21
Site Total	105			**98**

2. *Determine* the number of reserved parking spaces – For this analysis, it is assumed that no spaces are reserved for specific tenants or uses such as auto shop (Unit #339).

3. *Determine* the peak parking scenario – This is shown in the following table. The hourly factors are based on the Urban Land Institute (ULI) *Shared Parking*, 3rd Edition (2020). The hourly factors are applied to the base parking ratios shown in Table 5 to determine the peak parking scenario.

4. *Determine* the peak parking demand – This is shown in the following tables.

The shared parking analysis includes all the proposed uses. This analysis looks at the shared characteristics of these uses in the on-site parking which is planned to contain 76 parking spaces.

Table 5. Weekday Shared Parking Hourly Characteristics

ULI - 3rd Edition Time of Day	Retail/Service – Visitors[1]		Restaurant, Fast Casual- Visitors[3]		Coffee/Donut Shop - Visitors[4]		Martial Arts Studio - Visitors[5]		Total	Surplus
	Time of Day Adjusted	Demand	Time of Day Adjusted	Demand	Time of Day Adjusted	Demand	Time of Day Adjusted	Demand	Demand	
6:00 AM	1%	1	0%	0	0%	0	50%	9	10	66
7:00 AM	5%	2	0%	0	75%	16	50%	9	27	49
8:00 AM	15%	5	0%	0	100%	21	55%	10	36	40
9:00 AM	35%	11	0%	0	65%	14	100%	18	43	33
10:00 AM	60%	18	85%	26	60%	13	40%	8	65	11
11:00 AM	75%	22	90%	27	45%	10	40%	8	67	9
12:00 PM	**100%**	**29**	**100%**	**30**	**40%**	**9**	**35%**	**7**	**75**	**1**
1:00 PM	100%	29	90%	27	30%	7	35%	7	70	6
2:00 PM	95%	28	50%	15	25%	6	60%	11	60	16
3:00 PM	85%	25	45%	14	25%	6	90%	17	62	14
4:00 PM	85%	25	45%	14	20%	5	90%	17	61	15
5:00 PM	85%	25	75%	23	20%	5	100%	18	71	5
6:00 PM	**90%**	**27**	**80%**	**24**	**25%**	**6**	**100%**	**18**	**75**	**1**
7:00 PM	80%	24	80%	24	5%	1	100%	18	67	9
8:00 PM	65%	19	80%	24	0%	0	0%	0	43	33
9:00 PM	45%	13	60%	18	0%	0	0%	0	31	45
10:00 PM	15%	5	55%	17	0%	0	0%	0	22	54
11:00 PM	5%	2	75%	23	0%	0	0%	0	25	51
12:00 AM	0%	0	25%	8	0%	0	0%	0	8	68

Time of Day Sources:

1. Retail/Service Visitors - ULI Shared Parking, 3rd Edition (Included Nail Salon and Foot Massage to simplify)

2. Restaurant, Fast Casual Visitors - ULI Shared Parking, 3rd Edition

3. Restaurant, Family Visitors - ULI Shared Parking, 3rd Edition

4. Coffee/Donut Shop Visitors - Parking Generation Manual, 6th Edition (Use LU Code 936)

5. Martial Arts Studio Visitors - Parking Generation Manual, 6th Edition (Use LU Code 493-Athletic Club)

The weekday parking accumulation calculations are shown in Table 5. The peak weekday parking demand is anticipated to occur at 12:00 PM and 6:00 PM on the day. Based on the ULI time-of-day factors, the peak weekday demand for both peak hours are 75 parking spaces, which means a surplus of 1 parking space during peak hours.

Table 6. Proposed Project Parking Demands

	Weekday Peak Parking Demand	Proposed Parking Supply	Total Parking Space Surplus
Maximum Parking Demand	75 Spaces	76 Spaces	1 Space

It should be noted that the parking spaces presented above represent the anticipated average demand for each land use, which is based on LHMC parking demands. As parking demand varies by hour and by different land use types, parking is likely to be more available at any given time

throughout the day. Therefore, the current total of 76 parking spaces fulfills the parking requirements in compliance with the LHMC.

5.0 CONCLUSION AND RECOMMENDATION

The parking study conducted for the business complex located at 301-339 Harbor Blvd. in La Habra, CA, provides a thorough analysis of the projected parking needs for a range of commercial tenants. The study supports the following conclusions.

The following findings have been determined by this Shared Parking Analysis:

- The proposed 301-339 Harbor Blvd. project will remodel two existing buildings, creating a mixed-use shopping center totaling 21,086 square feet. The proposed uses are compatible from a shared parking standpoint, and forecast peak parking demand for mixed-use sites might not occur simultaneously from all the various uses.

- The proposed project is planned to provide a total of 76 parking spaces on-site.

- Based on the LHMC for individual uses, without accounting for shared parking on the project site, a total of 115 parking spaces are required to accommodate all land uses at the site.

- Utilizing the Urban Land Institute (ULI) shared parking methodology and adjustment factors, during the weekday conditions, the project is forecast to have a maximum parking demand of 75 parking spaces occurring both from 12:00 PM to 1:00 PM and from 6:00 PM to 7:00 PM, which means a surplus of 1 parking space during peak hours. Hence, the current total of 76 parking spaces complies with the LHMC. This is a conservative assessment because the peak parking demand for the martial arts studio is one space per student or coach, and a low reduction of five (5) percent was implemented for the parking demand management.

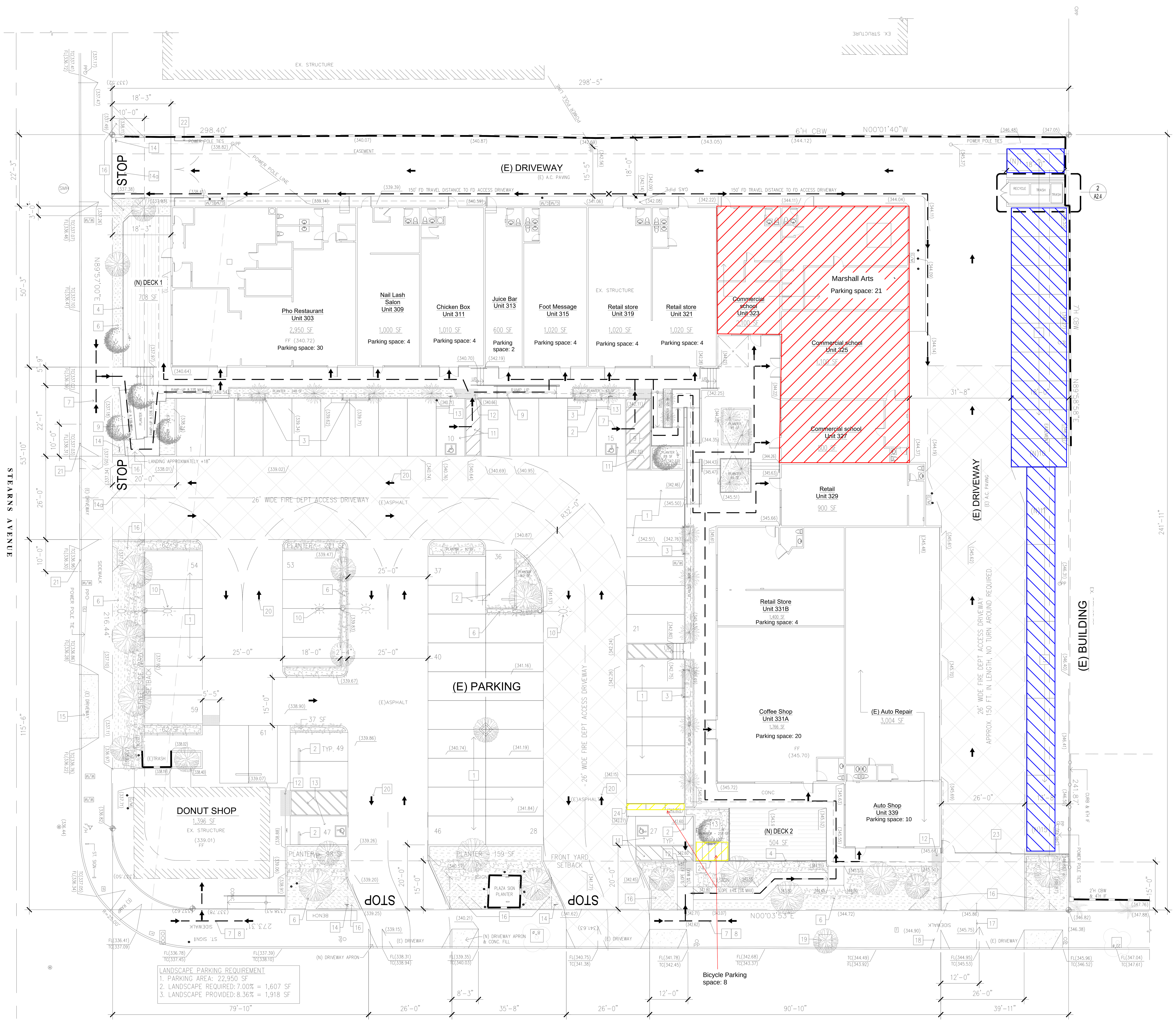
- The following measures are advised to enhance accessibility:

  a. Promote public transit use by offering incentives to customers.
  b. Install bike racks or scooter docking stations to encourage alternative transportation.
  c. Provide pedestrian sidewalks and crosswalks to visitors to promote connectivity throughout the area.
  d. Time-Limited Parking: Enforce one-hour parking restrictions for high-turnover tenants (e.g., restaurants) to increase space turnover.

- The current total of 76 parking spaces fulfills the parking requirements in compliance with the LHMC.

Attachments:
Appendix A. La Habra Shopping Center Layout & Photos
Appendix B. La Habra Municipal Code (LHMC)
Appendix C. ITE's Parking Generation Manual (Land Use)
Appendix D. Urban Land Institute (ULI) Shared Parking
Appendix E. Parking Demand Study References

Appendix A



LANDSCAPE PARKING REQUIREMENT

1. PARKING AREA: 22,950 SF
2. LANDSCAPE REQUIRED: 7.00% = 1,607 SF
3. LANDSCAPE PROVIDED: 8.36% = 1,918 SF

LA HABRA CITY PLANNING REQUIREMENTS:

1. SECURITY CAMERAS AND MONITORING SYSTEMS SHALL BE INSTALL IN ALL PARKING LOTS WITH MORE THAN 10 PARKING SPACES. ALL CAMERA AND MONITORING SYSTEMS SHALL BE REVIEWED AND APPROVED BY THE CHIEF OF POLICE OR DESIGNEE.
2. REMOVE AND REPLACE DAMAGED DRIVEWAY, SIDEWALKS, CURBS AND GUTTER ALONG THE PROJECT FRONTAGES ALONG HARBOR BLVD AND STEARNS AVE.
3. REMOVE AND REPLACE BROKEN SIDEWALK SURROUNDING WATER METER.
4. PROVIDE ADA IMPROVEMENT WITHIN THE PUBLIC RIGHT OF WAY LOCATED ALONG THE THE PROJECT FRONTAGES ON HARBOR BLVD AND STEARNS AVE.
5. INSTALL A BREAKWAY FLANGE ON TEH EXISTING FIRE HYDRANT LOCATED ALONG STEARNS AVE.

NEW SITE PLAN

SCALE 1/16" = 1'-0" 1

FIRE DEPARTMENT NOTES

1. FIRE DEPARTMENT VEHICULAR ACCESS ROADS MUST BE INSTALLED AND MAINTAINED IN A SERVICEABLE MANNER PRIOR TO AND DURING THE TIME OF CONSTRUCTION. FIRE CODE 501.4
2. APPROVED BUILDING ADDRESS NUMBERS, BUILDING NUMBERS OR APPROVED BUILDING IDENTIFICATION SHALL BE PROVIDED AND MAINTAINED SO AS TO BE PLAINLY VISIBLE AND LEGIBLE FROM THE STREET FRONTING THE PROPERTY. THE NUMBERS SHALL CONTRAST WITH THEIR BACKGROUND, BE ARABIC NUMERALS OR ALPHABET LETTERS, AND BE A MINIMUM OF 4 INCHES HIGH WITH A MINIMUM STROKE WIDTH OF 0.5 INCH. FIRE CODE 505.1
3. ALL FIRE HYDRANTS SHALL MEASURE 6" X 4" X 2-1/2", BRASS OR BRONZE, CONFORMING TO AMERICAN WATER WORKS ASSOCIATION STANDARD C503, OR APPROVED EQUAL, AND SHALL BE INSTALLED IN COMPLIANCE WITH THE COUNTY OF LOS ANGELES FIRE DEPARTMENT REGULATION 8. FIRE CODE 507.5 AND REGULATION 8
4. AN APPROVED KEY BOX, LISTED IN ACCORDANCE WITH UL 1037 SHALL BE PROVIDED AS REQUIRED BY FIRE CODE 506. THE LOCATION OF EACH KEY BOX SHALL BE DETERMINED BY THE FIRE INSPECTOR.

These 15 parking spaces are designated for employees and customers of Unit 339, as well as employees of all other units. Employees may access the unit through their back door.

REFERENCE NOTES

1. NEW PARKING SPACES RE-STRIPPING, 9'X 18' TYP. ALL PARKING SPACES SHALL BE STRIPED IN ACCORDANCE WITH THE CITY STANDARDS AND SHALL BE CLEARLY AND VISIBLY STRIPED AND SHALL BE MAINTAINED IN THIS CONDITION AT ALL TIMES.
2. (N) CONCRETE WHEEL STOP
3. (N) VERTICAL METAL LOUVER W/ SIGNAGE
4. (N) 42" METAL GUARDRAIL
5. NEW PARALLEL PARKING SPACES RESTRIPPING, 9'X 24' TYP.
6. (N) LANDSCAPE AREA
7. ACCESSIBLITY PATH OF TRAVEL.
8. NO ABRUPT CHANGES IN ELEVATION ALONG THE PATH OF TRAVEL SHOWN. THE SLOPE AND CROSS-SLOPE ALONG THE PATH OF TRAVEL SHALL NOT EXCEED 5% AND 2% RESPECTIVELY. INSPECTOR TO VERIFY.
9. NEW RAMP WITH 8.33% MAX SLOPE AND 2% MAX CROSS SLOPE.
10. (E) PARKING LOT LIGHT FIXTURE TO REMAIN
11. THE SLOPE AND CROSS-SLOPE SHALL NOT EXCEED 2%.
12. (E) DETECTABLE WARNING DOMES.
13. ADA PARKING SIGN.
    A. WARNING SIGN AT THE ENTRANCE TO THE PARKING AREA FROM THE STREET REGARDING UNAUTHORIZED VEHICLES SHALL NOT USE THE DESIGNATED ACCESSIBLE PARKING SPACES.
    B. ON THE POLE/WALL SIGN, ADD A SIGN STATING: "$250 MINIMUM FINE".
    C. THE BORDER OF THE ACCESS AISLE SHALL BE PAINTED BLUE.
14. "STOP SIGNS" PER LHMC 18.14.070.
14a. PAVEMENT "STOP SIGNS" PER CIT STANDARD.
15. CLOSE-OFF EXISTING DRIVEWAY. PUBLIC WORKS PERMIT FROM ENGINEERING FOR ANY WORK WITHIN THE PUBLIC RIGHT-OF-WAY
16. 10' X 10' DIAGONAL CUT, NO FREE STANDING SIGNS OR VISUAL OBSTRUCTIONS HIGHER THAN 2.5' ARE ALLOWED WITHIN THIS AREA.
17. (E) CURB DRAIN PIPE TO BE REMOVED.
18. NEW CURB DRAIN PIPE CONNECT TO EXISTING LINE.
19. NEW TREE PER CITY STANDARD.
20. PAVEMENT "DIRECTIONAL CIRCULATION" PER CITY STANDARD.
21. POTENTIAL REDCURB APPROXIMATELY 10' WIDE NEXT TO THE DRIVEWAY INGRESS & EGRESS
22. PAIR OF 9 FT WROUGHT GATE. GATE TO REMAIN OPEN DURING BUSINESS HOURS
23. 4 FT. MAN GATE WITH 16' WIDE WROUGHT IRON SLIDING GATE. GATE TO REMAIN OPEN DURING BUSINESS HOURS
24. 6'X2' BICYCLE PARKING SPACE WITH RACK

LEGEND:

(0.00)	EXISTING ELEVATION GRADE
0.00	NEW ELEVATION GRADE
	EXISTING WALLS
	EXISTING CMU FENCE WALL
	EXISTING TO BE REMOVED/ DEMOLISHED

GENERAL NOTES:

1. CONTRACTOR TO PATCH AND REPAIR ALL AREAS EFFECTED BY THE CONSTRUCTION.
2. PROVIDE ALL THE NECESSARY SHORING DURING CONSTRUCTION.

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PASSION ARCHITECTS
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ENGINEER:

PROJECT:

EXTERIOR REMODEL

303 HARBOR BLVD
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OWNER

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1235 MAHOGANY CT,
WALNUT, CA
91789-3834

KEVIN LEE
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REVISIONS/ISSUE FOR:

	Date	Issue
△	05/28/24	PLANNING DRB
△	08/05/24	DRB CORRECTION #1
△	09/30/24	DRB CORRECTION #2
△	12/13/24	DRB CORRECTION #3
△		
△		
△		
△		
△		
△		
△		

STAMP:

LICENSED ARCHITECT DAVID HUANG C-38132 08/31/2025 RENEWAL DATE STATE OF CALIFORNIA

SHEET TITLE:

NEW SITE PLAN

DATE: 05-22-24

PROJECT NO.: 2403

SHEET NUMBER:

A2.3

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FOR LEASE
339
TIGER AUTOMOTIVE


FOR
LEASE

Appendix B

§ 18.14.010. Purpose.

These regulations are intended to achieve the following:

A. To provide accessible, attractive, secure, properly lighted, well-maintained and screened parking facilities.

B. To reduce traffic congestion and hazards.

C. To assure maneuverability of emergency vehicles.

D. To provide appropriately designed parking facilities in proportion to the needs generated by varying types of land uses.

(Ord. 1719 § 1, 2010)

§ 18.14.020. Applicability.

For each dwelling, multiple dwelling, business or industrial establishment or other structure erected after the adoption of the ordinance codified in this title, there shall be provided and maintained off-street parking facilities to accommodate the motor vehicles used by the occupants, customers, clientele and employees of such dwelling, multiple dwelling, business or industrial establishment or other structure. The aggregate amount of parking space for each type of use shall be not less than that stated in this chapter.

(Ord. 1719 § 1, 2010)

§ 18.14.030. Definitions.

See Chapter 18.04, Definitions.

(Ord. 1719 § 1, 2010; Ord. 1853, 12/18/2023)

§ 18.14.040. General requirements.

A. A required landscape setback abutting a street shall not be used for off-street parking.

B. The required usable yard area shall not be used for parking, driveways, or automobile turning areas. Any yard area in excess of the minimum usable yard area requirement may be used for parking, access to parking or loading.

C. Each required parking space shall be located on the same lot or within five hundred feet of the subject use. When the required off-street parking space is provided on a separate lot from the main building(s) the parties involved with shall provide an agreement for such joint use by a legal instrument approved by the city attorney as to form and content.

D. The area of the required front yard setback in all zones, except for required driveways and walks, shall be landscaped with evergreen or similar plant and lawn materials and maintained to provide a consistent greenbelt along all residential neighborhoods. At no time shall any portion of the required landscaped front yard setback be used for the parking or storage of any vehicle of any kind or for any vehicle parts.

E. In any case where a parking calculation as required by this code results in a partial space, one complete parking space shall be provided.

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F. Parking studies required by this chapter shall be prepared by a California licensed civil or traffic engineer and as approved by the city engineer.

(Ord. 1719 § 1, 2010)

§ 18.14.050. Limitations on use.

A. Each parking space required by this chapter shall be unobstructed and available for vehicle parking at all times.

B. The parking of motor vehicles shall be without monetary charge when such parking is required in conjunction with uses permitted by this title except as approved by the planning commission through a conditional use permit.

C. The parking facilities required by this chapter shall be used only for the temporary parking of vehicles used in conjunction with the uses they serve. Such parking facilities shall not be used for any other purpose.

D. Required parking spaces in all multi-unit zones shall be utilized solely for parking of operational motor vehicles belonging to the tenants of the development and their guests.

(Ord. 1719 § 1, 2010; Ord. 1803 § 3, 2019; Ord. 1853, 12/18/2023)

§ 18.14.060. Number of spaces required.

A. Residential.

1. Single-Unit Dwellings and Two-Unit Dwellings. For every single-unit dwelling and two-unit dwelling there shall be provided and maintained on the same lot or parcel of land at least two parking spaces. Each such parking space shall be located in a private garage. Each garage shall have a minimum inside dimension of not less than twenty feet wide and twenty feet long.

    a. For each mobilehome/modular housing unit within a mobilehome park there shall be two parking spaces located within the park. If said spaces are located on the mobilehome space area, tandem parking may be utilized.

    b. The requirements of this section do not apply to accessory dwelling units.

2. Multi-Unit Dwellings. For each multi-unit dwelling unit there shall be provided the following minimum parking spaces for each unit:

Table 18.14.060.A.3

Type of Unit	Minimum Parking Spaces Required
Studio	1 space
One-bedroom unit	2 spaces
Two-bedroom unit	2 1/2 spaces
Three-bedroom unit	3 spaces
Each additional bedroom	1 space

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Table 18.14.060.A.3	
Type of Unit	**Minimum Parking Spaces Required**
Senior housing unit (condominiums/ apartments)	1 space

a. Covered garages are not required for parking spaces for studios in multi-unit dwellings. However, all other units shall have two parking spaces within a garage. The additional required parking spaces per unit need not be located in a garage, but must be located on an approved, paved area on the same lot or parcel and must be equally convenient to all dwelling units.

b. In no case may a garage be constructed within twenty feet of any public street right-of-way when the garage door faces the street.

c. A carport, as defined in this title, may not face or open onto a public street and shall be located to the rear of all main buildings. On a corner lot, the side of the carport facing the side street shall be enclosed. The side of a carport facing an alley need not be enclosed.

d. Any multi-unit dwelling developments shall include additional parking equal to one-half space per dwelling unit for guest parking. Such parking can be uncovered and shall be conveniently located for vehicular access from the street and pedestrian access to the units. Where the accumulated parking totals includes one-half of a space, one complete space shall be provided.

3. Special Needs Housing. For each dwelling unit of the following categories of special needs housing there shall be provided the following minimum parking spaces:

Table 18.14.060.A.4	
Type of Unit	**Minimum Parking Spaces Required**
Group homes	Same as the residential use allowed in the zone.
Transitional and supportive housing	Same as the residential use allowed in the zone.
Emergency shelter	Required parking, as determined by the director, shall be based on the minimum spaces needed to provide sufficient parking to accommodate all staff working in the emergency shelter during one shift but in no event shall the required parking be more than the parking required for other commercial uses within the same zone.
Single-room occupancy housing (SROs)	0.5 space per unit

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a. Notwithstanding the foregoing, if supportive housing development is located within one-half mile of a public transit stop, no parking spaces are required for the units occupied by supportive housing residents pursuant to California Government Code Section 65654.

4. Commercial Lodging. For each facility there shall be provided the following minimum parking spaces:

Table 18.14.060.A.5

Type of Unit	Minimum Parking Spaces Required
Motels and hotels	1.25 spaces per guest room, plus 10 per ksf restaurant/lounge, plus 30 per ksf meeting/ banquet room
Rooming houses, lodging houses, clubs, fraternity and sorority houses and dormitories	Parking study required

B. Commercial.

1. Recreational. For each facility there shall be provided the following minimum parking spaces:

Table 18.14.060.B.1

Use	Minimum Parking Spaces Required
Adult cabaret	Parking study required
Batting cages	4 per batting station
Bowling alleys	4 spaces per lane
Billiard/pool halls	4 per table
Cinemas	Single Screen: 0.5 per seat; 2 to 5 screens: 0.33 per seat; 5 to 10 screens: 0.3 per seat; over 10 screens: 0.27 per seat
Health clubs/spa	10 ksf GFA
Golf courses	Parking study required
Golf driving range	1 per driving tee
Tennis courts	3.6 per court
Theaters (live performance)	0.4 per seat
General auditorium (public assembly)	0.25 per person permitted capacity

2. Institutional. For each facility there shall be provided the following minimum parking spaces:

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Table 18.14.060.B.2	
Use	**Minimum Parking Spaces Required**
High schools, college and universities	Parking study required
Commercial schools	0.35 per student, per session
Day care center	0.20 per person (licensed capacity)
Elementary and middle schools	0.20 per student
General auditorium (public assembly)	0.25 per person permitted capacity
Lodge/fraternal organization	Parking study required
Library	4.5 per ksf GFA
Museum	Parking study required
Religious institutions	0.45 per seat in worship area

a. For religious institutions the parking rate is a blended rate for all of the uses on the site based on the number of seats within the area of worship. Any deviation from this requirement may be considered and approved by the planning commission as part of the conditional use permit upon the completion and approval of a parking study.

3. Medical. For each facility there shall be provided the following minimum parking spaces:

Table 18.14.060.B.3	
Use	**Minimum Parking Spaces Required**
Animal hospital/veterinary clinic	4 per ksf GFA
Clinic/urgent care facility (medical offices with outpatient treatment; no overnight stays)	5.5 per ksf GFA
Convalescent hospital and nursing homes	1 per guest room
Hospital/medical center	Parking study required
Doctor/dentist office	4 per ksf <15,000 s.f. GFA; parking study required for offices >15,000 s.f.

4. Office. For each facility there shall be provided the following minimum parking spaces:

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Table 18.14.060.B.4	
Use	**Minimum Parking Spaces Required**
General business office	3.3 per ksf GFA

5. Retail. For each facility there shall be provided the following minimum parking spaces:

Table 18.14.060.B.5	
Use	**Minimum Parking Spaces Required**
Coin operated laundries	1 per 2 machines
Grocery (freestanding)	4 per ksf GFA
Integrated retail commercial center (at least five storefronts)	3.3 per ksf GFA
Motor vehicle sales and services	2.7 per ksf GFA interior sales and office area, plus 1.5 ksf GFA storage/display area, plus 2 per service bay
Nursery (garden center)	4 per ksf GFA plus 1/2 per ksf outdoor sales area
Retail and general commercial (4 storefronts or less)	4 per ksf GFA
Temporary commercial enterprises and seasonal commercial sales lots (as defined in Section 5.04.610(a) and (b))	Minimum of 4 spaces plus 4 per ksf GFA of display area

6. Services. For each facility there shall be provided the following minimum parking spaces:

Table 18.14.060.B.6	
Use	**Minimum Parking Spaces Required**
Auto service/repair	2 per bay plus 2.7 per ksf office
Car wash (self serve)	1 space per bay
Car wash (automated)	2 spaces per facility
Car wash (full service)	Parking study required
Gasoline/service station	2 spaces
gasoline/service station with convenience market	2 spaces plus 4 per ksf GFA
Restaurant—with bar	12 per ksf GFA
Restaurant—no bar	10 per ksf GFA

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Table 18.14.060.B.6	
Use	**Minimum Parking Spaces Required**
Restaurant—with drive thru	8 per ksf GFA
Restaurant—food to go	Same as retail and general commercial/ integrated retail commercial center (see Table 18.14.060(B)(5))

C. Industrial Uses. For each facility there shall be provided the following minimum parking spaces:

Table 18.14.060.C	
Use	**Minimum Parking Spaces Required**
Industrial park (multiple or mix of services and warehousing)	2 per ksf GFA
Manufacturing/light industrial	1.5 per ksf GFA
Warehouse	1 per ksf GFA
Mini-warehouse/self storage	0.1 per ksf GFA

D. Shared Parking.

1. Mixed Occupancies. In the case of mixed occupancies, the total requirement for off-street parking shall be the sum of the requirements for the various uses computed separately. However, the total number of parking spaces may be reduced upon:

   a. Approval of a conditional use permit by the Planning Commission.

   b. A reduction of up to ten percent may be approved by the director of community development.

      In all cases, a parking study shall be prepared by a California licensed civil or traffic engineer and approved by the city engineer.

2. Joint Uses. The planning commission may, upon application by the owner or lessee of any property of a conditional use permit, authorize the joint use of parking facilities by the following uses or activities:

   a. The parking facilities required by this chapter for a use which is nonresidential and is primarily a daytime use may be provided by the parking facilities of a use which is primarily a nighttime and/or Sunday use and vice versa, provided such reciprocal parking shall be subject to conditions set forth in subsection (D)(2)(b) of this section.

   b. Conditions Required for Joint Use.

      i. The outer boundaries of the properties upon which the uses are proposed, to which the application relates, shall be located within five hundred feet of each

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other unless shuttle service is provided between the sites.

ii. The applicants shall show that there is no substantial conflict in the principal operating hours of the uses for which the joint use of off-street parking facilities is proposed.

iii. The parties involved shall provide an agreement for such joint use by a legal instrument approved by the city attorney as to form and content.

E. Nonconforming Uses and Sites.

1. All sites that are nonconforming with regards to the number of parking spaces, upon adoption of this code, shall be upgraded to current code standards upon any increase in the area of the structure(s) or upon any change in use which is more intensive than the current use.

2. All parking areas that are nonconforming with regard to space sizes, upon adoption of this code, shall be upgraded to current code standards upon any increase in the floor area of the structure(s) or upon any change in use which is more intensive than the current use.

F. Exceptions.

1. Commercially Zoned Lots. Where the depth of a lot measures one hundred fifty feet or less, measured from the front lot line to the rear lot line, and has a width of sixty feet or less, and where the lot existed prior to passage of the provisions codified in this section, at least three parking spaces shall be provided per one thousand square feet of floor space or fraction thereof.

2. Upgrades for Accessibility Requirements. Any site that is required to upgrade to the most current accessibility requirements shall not be penalized for any reduction in parking caused by the new regulations. Said site shall become legal nonconforming. No additional parking will be required until such time as the building is enlarged or the land use changes to a more intensive use.

(Ord. 1719 § 1, 2010; Ord. 1839 § 3, 2022; Ord. 1853, 12/18/2023)

§ 18.14.070. Design standards.

A. General Requirements.

1. Compact spaces are not permitted.

2. Each entrance and exit to a parking lot shall be constructed and maintained so that any vehicle entering or leaving the parking lot shall be clearly visible at a distance of not less than ten feet to a person approaching such entrance or exit on any pedestrian walk or foot path.

3. Exits (except to alleys) from parking lots shall be clearly posted with "Stop" signs. Appropriate bumper guards, wheel stops, entrance and exit signs and directional signs shall be maintained where needed as determined by the city engineer.

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4. When gates are provided at the entrances and exits to any approved parking area or driveway they shall be placed a minimum of twenty feet from the property line. The gates shall not open onto or encroach into this required twenty-foot setback area.

5. Any two car garage legally constructed prior to January 1, 2008, shall be exempt from the minimum size standards established in subsection B of this section and shall not be required to be upgraded as part of any addition to, or remodeling of, any single-unit dwelling on the same lot or parcel when said addition is less than fifty percent of the floor area of the existing dwelling.

6. Minor deviations from parking space design standards may be approved by the director of community development when a physical constraint or hardship exists through an administrative adjustment.

B. Carport and Garage Design.

1. All garages and carports shall have Portland cement concrete floors.

2. Residential garages shall have a minimum interior dimension of twenty feet by twenty feet. Any single-car garage shall have a minimum interior dimension shall be ten feet by twenty feet. No obstruction to the parking of vehicles shall be allowed within the required area.

3. Garage/carports shall be designed to reflect the architecture style of the dwellings by using similar materials and roof pitches. Garages and carports within multiple family developments shall be distributed evenly throughout the project site.

C. Parking and Maneuvering for Single-family and Two-family Residential Developments. Parking and maneuvering areas in single-unit residential and two-unit zones for all vehicles shall be limited to the space within a carport or garage plus a paved driveway between such garage or carport and the street from which it is served, not exceeding the width of the garage.

1. Driveway width shall have a minimum dimension of ten feet when the garage is located less than one hundred fifty feet from the street.

2. Driveway Extensions. Driveways may extend into the required side setback within the front yard upon approval of an administrative adjustment by the director of community development. The following findings must be made before an adjustment can be made:

a. That there are exceptional or extraordinary circumstances or conditions applicable to the property involved that do not apply generally to the property or class of use in the same zone.

b. That the granting of such administrative adjustment will not be materially detrimental to the public welfare or injurious to the property or improvements in such zone or vicinity in which the property is located.

c. That such administrative adjustment is necessary for the preservation and enjoyment of a substantial property right of the applicant possessed by other property in the same zone and vicinity.

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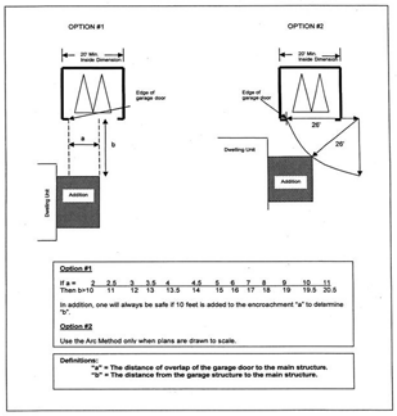
3. No extensions are allowed in the street side setback area.

4. Required back-out space. See Table 18.14.070.C.4:

18.14.070.C.4



5. Circular Drives. A house with a lot width of at least one hundred feet of width along the front property line. No circular drive will be approved without the approval of the city engineer for two driveway approaches.

6. All front yard areas other than those permitted to be paved by this section, shall be landscaped.

7. Parking on any portion of a front yard, other than the permitted paved parking areas is prohibited.

8. The paved area of the front yard of any single-unit development shall not exceed forty percent.

D. Parking Lot Design.

1. Design and Location.

a. There shall be adequate vehicular access to off-street parking facilities from a dedicated and improved street, service road or alley. The design of the access shall be approved by the city engineer.

b. An unobstructed twenty-foot drive throat shall be provided at all entrances and exits from approved parking areas to any public street or alley. This area may not be used as backing area for any parking space.

c. Each parking space required by this chapter shall not be less than nine feet in width or eighteen feet in length of unobstructed pavement area.

d. The maximum grade of any parking surface and its adjacent back up area shall be no more than five percent in any direction.

e. The maximum grade of any driveway within a parking lot shall not exceed twelve

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percent.

f. All parking areas, except for single-unit residences, shall be designed so that no parking space requires the backing of a vehicle into a public street or across a public sidewalk.

g. All two-way drive aisles, except required fire lanes, shall have a minimum width of twenty-five feet with a thirty-two-foot centerline radius turn at the end of the aisles. Larger widths may be required by the fire code depending on the actual building design. Fire lane widths shall comply with the requirements of the Los Angeles County fire department.

h. Dead end drive aisles longer than forty-five feet shall provide a hammerhead at the end of the aisle. Said hammerhead shall not encroach into any required landscape setback area.

i. Parallel parking spaces shall have a dimension of nine feet by twenty-four feet.

j. All angled parking spaces shall be designed in such a manner as to maintain a nine-foot by eighteen-foot rectangular parking area without encroaching into the drive aisle.

k. Adequate shopping cart collection and storage areas shall be provided for all retail users that provide cart service to their customers. Said cart collection area shall be architecturally compatible with the main building and screened with landscaping material as approved by the director of community development.

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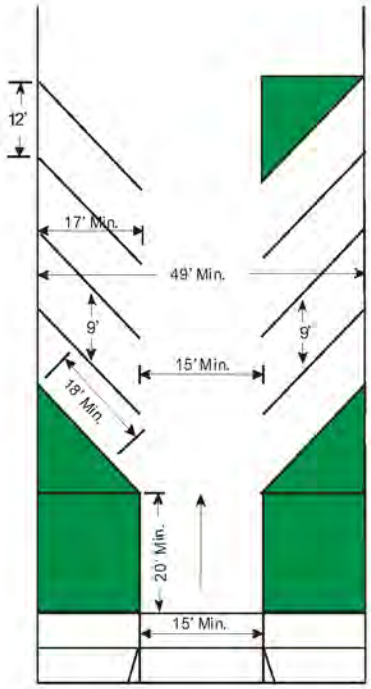
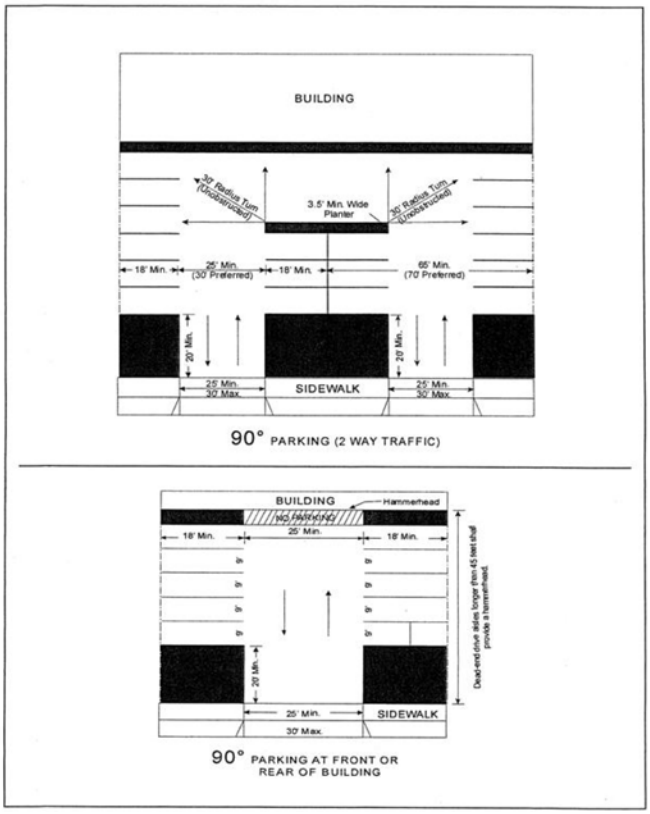
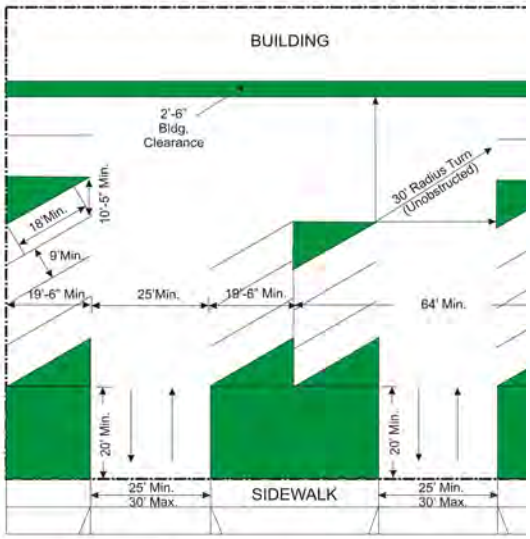
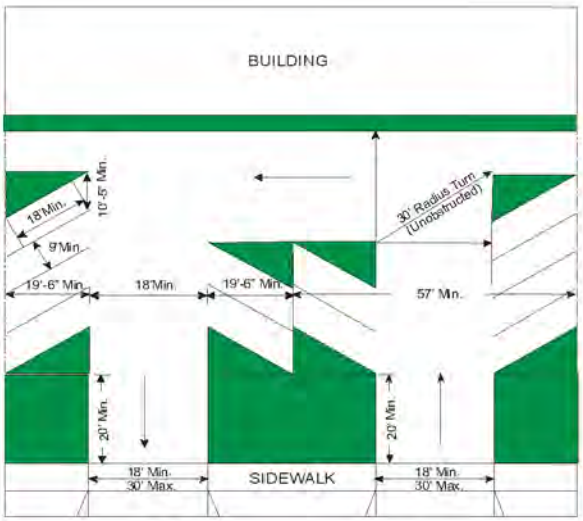


45° ANGLED PARKING
(1 WAY TRAFFIC)





60° PARKING (2 WAY TRAFFIC)



60° PARKING (1 WAY TRAFFIC)

2. Drainage. Parking lots shall be graded so as to drain surface water runoff to a public right-of-way, in conformance with the requirement of the National Pollutant Discharge Elimination System (NPDES) and as approved by the city engineer.

3. Landscaping. Each parking lot shall be landscaped in accordance with the following

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standards:

a. The landscape area shall be equal to the sum of seven percent of the area of the parking lot in addition to the required front and side street landscape setback areas of the parcel.

i. A landscaped area having a minimum width of fifteen feet shall be provided along the total length of the street frontage and ten feet in width on the side street of corner lots, exclusive of the drive approaches and driveways shall separate parking areas from the public right-of-way. The landscaping in this area shall include earthen berms as approved by the director of community development.

ii. No landscaping located within the required front setback or the required side yard setback abutting a street shall exceed three feet in height except for trees required by this chapter or other plantings approved by the director of community development.

iii. Trees shall be provided within the required parking lot landscaped area a quantity equal to one for every ten parking spaces. The trees to be provided shall be a minimum size of twenty-four inch box and shall be of a type approved by the director of community development.

iv. Within the landscaped area along the street frontage shall be one tree for every twenty feet of the total street frontage, excluding drive approaches and driveways. The trees to be provided shall be a minimum size of twenty-four-inch box and shall be of a type approved by the director of community development.

v. Tree wells within parking lots, also referred to as diamond planters or half-diamond planters, may be permitted in parking lots at the head of parking stalls and may encroach into the parking stall space. The tree well dimension shall be three feet by three feet.

Table 18.14.070.D.3.a.v

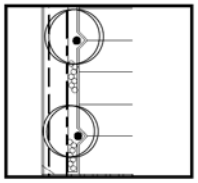

Figure 1 – Diamond planter.

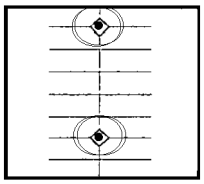

Figure 2 – Half-diamond planter

vi. Parking areas adjacent to a public sidewalk or public right-of-way shall be screened with a thirty-six-inch high solid hedge of live plant material to be placed at the rear of the required landscape setback.

b. Landscaping Area Protection. All areas established for landscaping shall be

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protected on those sides adjacent to vehicular parking with a solid Portland cement concrete curb, six inches in height and a minimum of six inches in depth, or other suitable protection as approved by the director of community development, for the length of the landscaped area adjacent to subject parking. Individual wheel stops shall not be used as a substitute for subject curb.

c. Irrigation. An underground sprinkler system shall be installed to provide adequate water supply to all landscaping. Subject sprinkler system shall be installed so as to direct spray away from public sidewalks. Drainage from landscaping irrigation shall not be directed across any adjacent private property.

4. Lighting. Parking areas shall have lighting capable of providing adequate illumination for security and safety. The minimum requirement is one foot-candle, maintained across the surface of the parking area. Lighting standards shall be energy-efficient and in scale with the height and use of the structure. Any illumination, including security lighting, shall not spill over on to any adjacent properties. In general, lamps should not be visible from any adjoining property. Light standards may not be placed in any required landscape setback area.

5. Screening. In the development of any parking lot on a parcel adjacent to any residential zone a solid masonry wall six feet in height shall be provided; however, the wall from the front property line to a depth equal to the required front yard shall be three feet in height. Such wall shall be maintained in good condition at all times.

6. Striping. All parking spaces shall be striped in accordance with city standards and shall be clearly and visibly striped and shall be maintained in this condition at all times.

7. Signage. Signage within parking lots shall not interfere with proper visibility for traffic and pedestrian safety. All parking lot directional signage shall be subject to review and approval by the city engineer.

8. Security. Security cameras and monitoring systems shall be installed in all parking lots with more than ten parking spaces. All cameras and monitoring systems shall be reviewed and approved by the chief of police or designee.

9. Surfacing Standards. All off-street automobile parking areas, including automobile sales lots, service stations and other drive-in establishments, shall be fully hard-surfaced with approved-type asphaltic concrete, or any other recognized street surfacing material. Exception: carports, garages and parking areas on electrical substation property.

   a. The design of all parking areas shall use a minimum structural section of three inches of asphalt concrete on six inches of Class A aggregate base course. Alternatively, a design may be prepared by a licensed professional engineer using a minimum Traffic Index (TI) of 4.5 for parking spaces, 5.0 for drive aisles between parking spaces, 5.5 for driveways and truck service areas, and submitted for review and approval by the city engineer.

   b. All parking areas shall be maintained in good condition at all times.

10. Wheel Stops. A Portland cement concrete wheel stop shall be placed at the head of any

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parking space which is adjacent to a sidewalk or pedestrian walkway to prevent overhang of any part of the vehicle on the walkway.

(Ord. 1719 § 1, 2010; Ord. 1748 § 3, 2013; Ord. 1803 § 3, 2019; Ord. 1853, 12/18/2023)

§ 18.14.080. Accessible parking requirements.

Accessible parking requirements are established by the state of California. The parking standards contained in this section are identical to those established by the state at the time of the adoption of this code. Changes in the state's accessible parking requirements may preempt the affected requirements in this section.

A. Accessible parking for residential uses shall be provided at the rate of one space for each dwelling unit that is designed for occupancy for the disabled.

B. Accessible parking spaces shall be provided for all uses other than residential at the following rate:

Table 18.14.080.B

Total Number of Spaces Provided	Number of Accessible Spaces Required
1-25	1
26-50	2
51-75	3
76-100	4
101-150	5
151-200	6
201-300	7
301-400	8
401-500	9
501-1,000	*
1,001 and over	**

* Two percent of total

** Twenty plus one for each 100, or fraction over 1,001

C. Accessible parking spaces shall be designed in a manner consistent with the standard as illustrated below:

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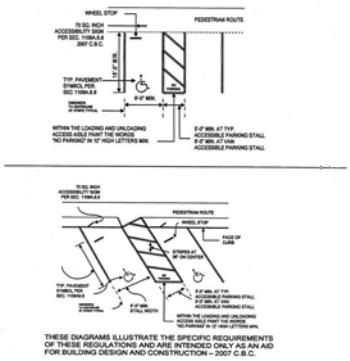
Table 18.14.080.C



D. When less than five spaces are provided, at structures and uses subject to these regulations, one space shall be seventeen feet wide and striped to provide a nine-foot parking area and an eight-foot loading and unloading area. However, there shall be no requirement that the space be reserved exclusively or identified for accessible use only.

E. Accessible parking spaces required by this section shall count towards fulfilling off-street parking requirements.

(Ord. 1719 § 1, 2010)

Downloaded from https://ecode360.com/LA4951 on 2024-08-15

Appendix C

Health/Fitness Club
(492)

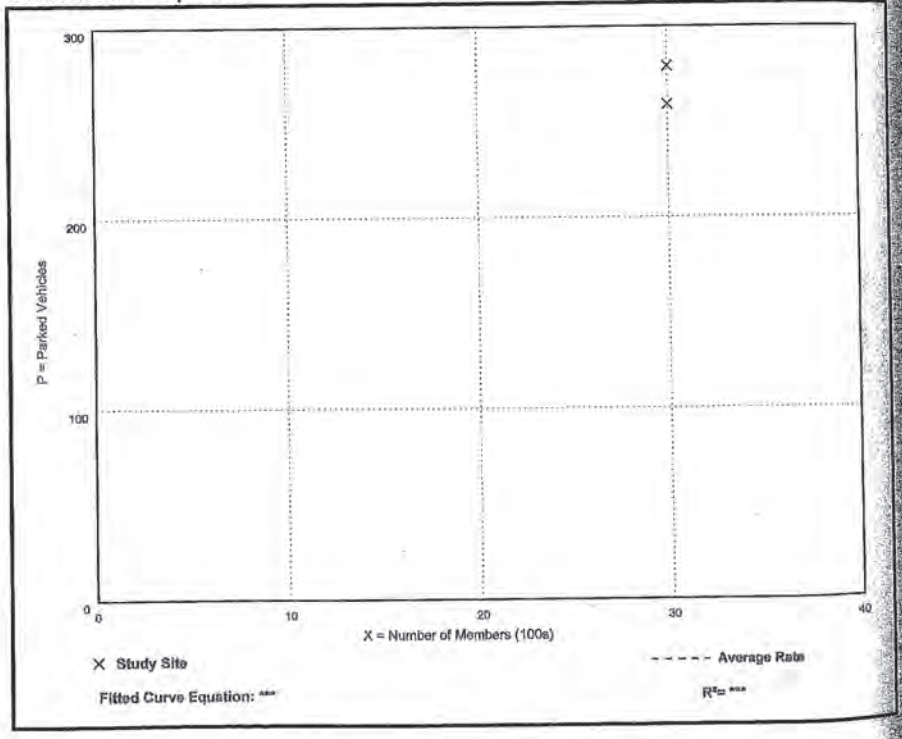
Peak Period Parking Demand vs: Members (100s)
On a: Weekday (Monday - Friday)
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Members (100s): 30

Peak Period Parking Demand per 100 Members

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
8.97	8.63 - 9.30	*** / ***	***	*** (***)

Data Plot and Equation

Caution – Small Sample Size



Land Use: 493 Athletic Club

Description

An athletic club is a privately-owned facility that offers comprehensive athletic facilities. An athletic club typically has courts for racquet sports (e.g., tennis, racquetball, pickleball, squash, handball); a basketball court; a sauna or spa; and fitness, exercise, and weightlifting rooms. Athletic clubs typically provide a swimming pool or whirlpool. They often offer diverse, competitive team sport activities and social facilities. These facilities are membership clubs that may allow access to the general public for a fee.

Time-of-Day Distribution for Parking Demand

The following table presents a time-of-day distribution of parking demand on a weekday at one study site in a general urban/suburban setting.

Hour Beginning	Percent of Weekday Peak Parking Demand
12:00–4:00 a.m.	—
5:00 a.m.	—
6:00 a.m.	50
7:00 a.m.	51
8:00 a.m.	53
9:00 a.m.	46
10:00 a.m.	40
11:00 a.m.	40
12:00 p.m.	37
1:00 p.m.	36
2:00 p.m.	57
3:00 p.m.	91
4:00 p.m.	100
5:00 p.m.	89
6:00 p.m.	74
7:00 p.m.	—
8:00 p.m.	—
9:00 p.m.	—
10:00 p.m.	—
11:00 p.m.	—

Additional Data

The average parking supply ratios for the study sites with parking supply information are 5.0 spaces per 1,000 square feet GFA (three sites) in a general urban/suburban setting and 0.3 spaces per 1,000 square feet GFA (one site) in a center city core setting. The average peak parking occupancy at the three general urban/suburban sites is 65 percent; at the center city core site, peak parking occupancy is 93 percent.

The sites were surveyed in the 1990s and the 2020s in Arizona, California, and Oregon.

Source Numbers

275, 276, 435, 632

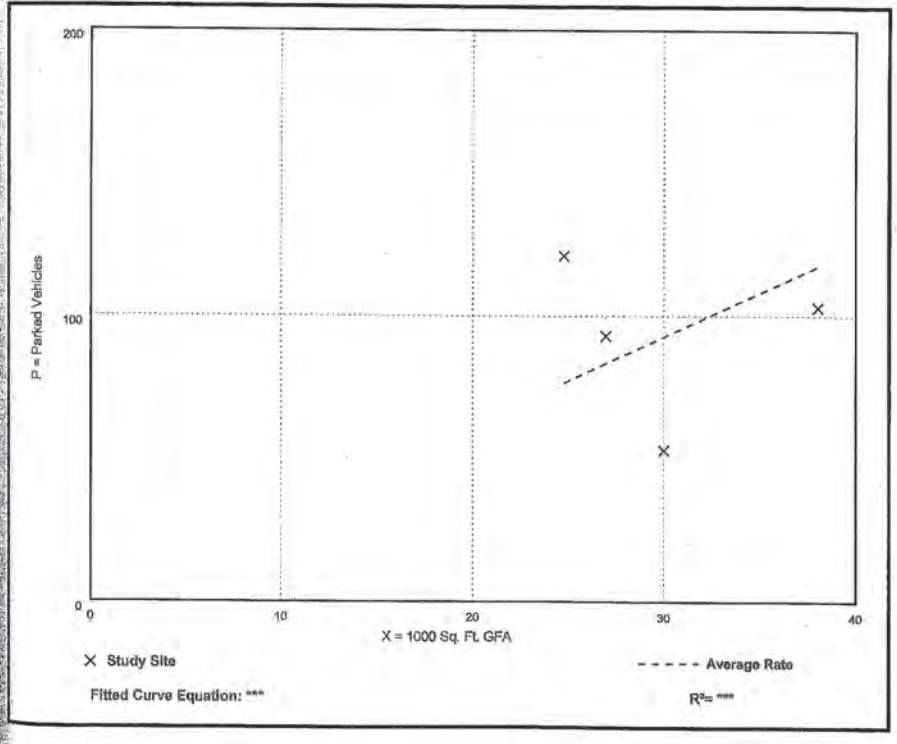
Athletic Club
(493)

Peak Period Parking Demand vs: 1000 Sq. Ft. GFA
On a: Weekday (Monday - Friday)
Setting/Location: General Urban/Suburban
Number of Studies: 4
Avg. 1000 Sq. Ft. GFA: 30

Peak Period Parking Demand per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
3.09	1.77 - 4.88	2.38 / 4.88	***	1.25 (40%)

Data Plot and Equation



Athletic Club
(493)

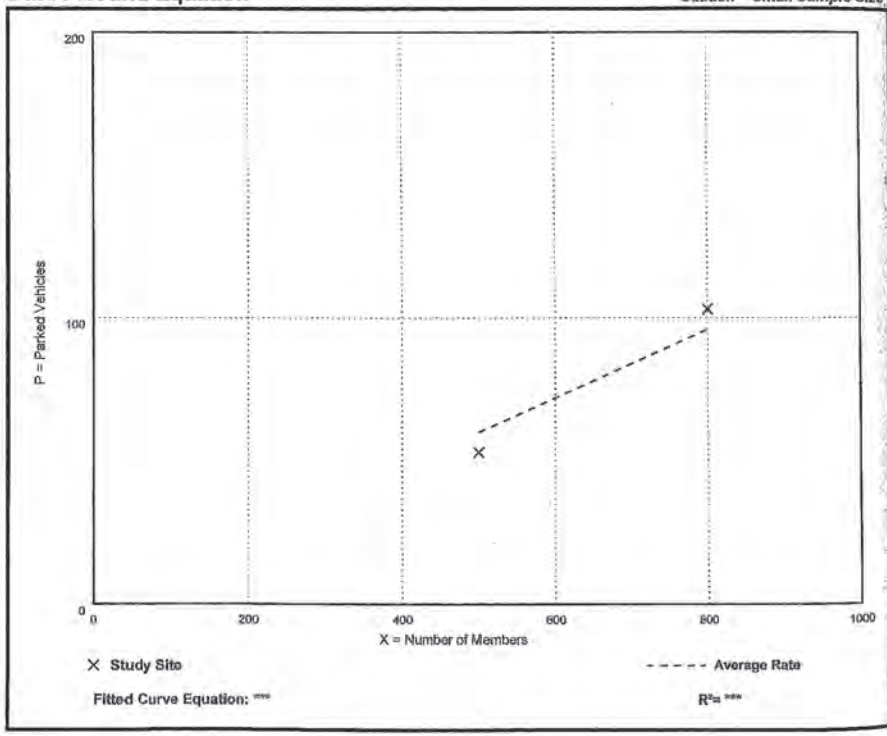
Peak Period Parking Demand vs: Members
On a: Weekday (Monday - Friday)
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Members: 650

Peak Period Parking Demand per Member

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
0.12	0.11 - 0.13	*** / ***	***	*** (***)

Data Plot and Equation

Caution – Small Sample Size



Athletic Club
(493)

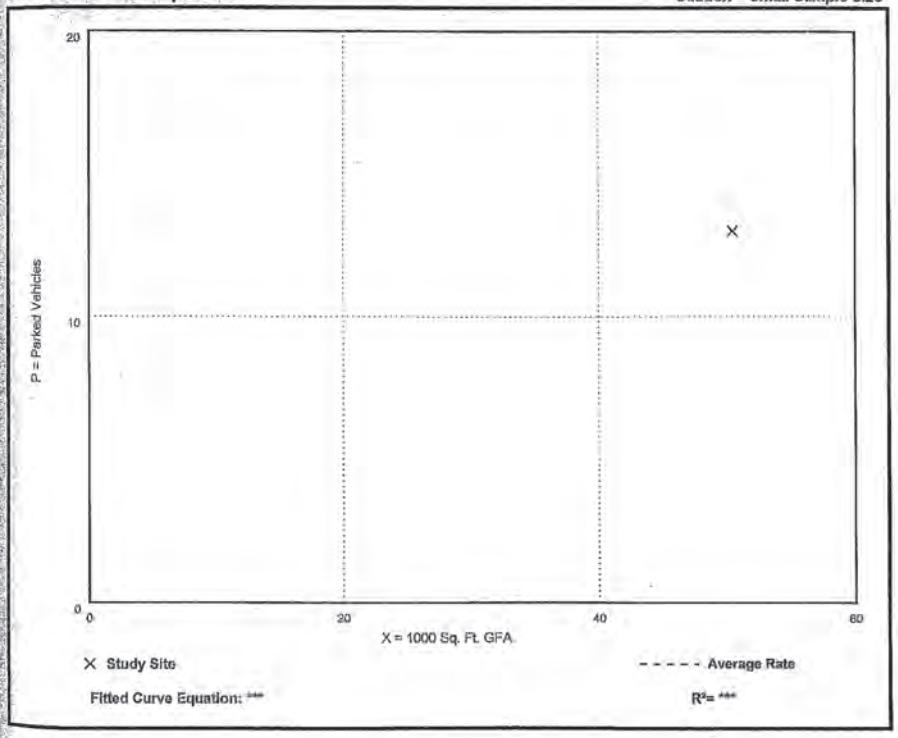
Peak Period Parking Demand vs: 1000 Sq. Ft. GFA
On a: Weekday (Monday - Friday)
Setting/Location: Center City Core
Number of Studies: 1
Avg. 1000 Sq. Ft. GFA: 50

Peak Period Parking Demand per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
0.26	0.26 - 0.26	*** / ***	***	*** (***)

Data Plot and Equation

Caution – Small Sample Size



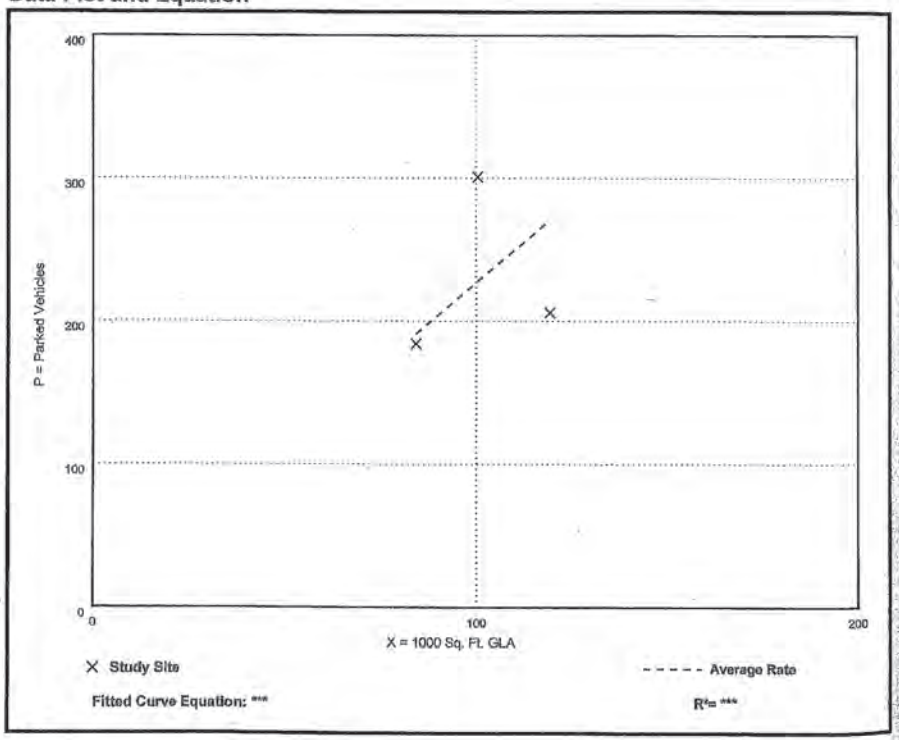
Shopping Plaza (40 -150k) - With Supermarket (821)

Peak Period Parking Demand vs: 1000 Sq. Ft. GLA
On a: Saturday
Setting/Location: Dense Multi-Use Urban
Number of Studies: 3
Avg. 1000 Sq. Ft. GLA: 101

Peak Period Parking Demand per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
2.27	1.73 - 3.00	1.87 / 3.00	***	0.66 (29%)

Data Plot and Equation



Land Use: 822 Strip Retail Plaza (<40k)

Description

A strip retail plaza is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. Each study site in this land use has less than 40,000 square feet of gross leasable area (GLA). Because a strip retail plaza is open-air, the GLA is the same as the gross floor area (GFA) of the building.

The 40,000 square feet GLA threshold between shopping plaza and strip retail plaza (Land Use 822) is based on an examination of the parking demand database. All shopping plazas with a supermarket as their anchor in the database are larger than 40,000 square feet GLA.

Time-of-Day Distribution for Parking Demand

The following table presents a time-of-day distribution of parking demand on a Monday–Thursday (five study sites), a Friday (two study sites), and a Saturday (four study sites).

Hour Beginning	Percent of Peak Parking Demand		
	Monday–Thursday	Friday	Saturday
12:00–4:00 a.m.	–	–	–
5:00 a.m.	–	–	–
6:00 a.m.	–	–	–
7:00 a.m.	–	–	–
8:00 a.m.	19	19	–
9:00 a.m.	33	40	38
10:00 a.m.	47	44	55
11:00 a.m.	55	52	66
12:00 p.m.	89	96	85
1:00 p.m.	100	96	100
2:00 p.m.	73	84	96
3:00 p.m.	73	52	79
4:00 p.m.	66	50	66
5:00 p.m.	70	63	64
6:00 p.m.	75	49	67
7:00 p.m.	70	100	70
8:00 p.m.	54	94	70
9:00 p.m.	48	73	51
10:00 p.m.	–	–	–
11:00 p.m.	–	–	–

Additional Data

The average parking supply ratios for the study sites with parking supply information are the following:

- 5.7 spaces per 1,000 square feet GLA (24 sites) in a general urban/suburban setting
- 3.3 spaces per 1,000 square feet GLA (3 sites) in a dense multi-use urban setting

The average peak parking occupancy is 50 percent at the general urban/suburban sites and 76 percent at the dense multi-use urban sites.

The sites were surveyed in the 1990s, the 2010s, and the 2020s in Alberta (CAN), British Columbia (CAN), California, Colorado, Kansas, Maine, Manitoba (CAN), Maryland, Michigan, Minnesota, Missouri, New York, Texas, Virginia, and Washington.

Future data submissions should attempt to provide information on the composition of each study site (types and number of stores, restaurants, or other tenants within the shopping center).

Source Numbers

89, 209, 219, 297, 511, 601, 605, 606, 618, 619, 621, 635

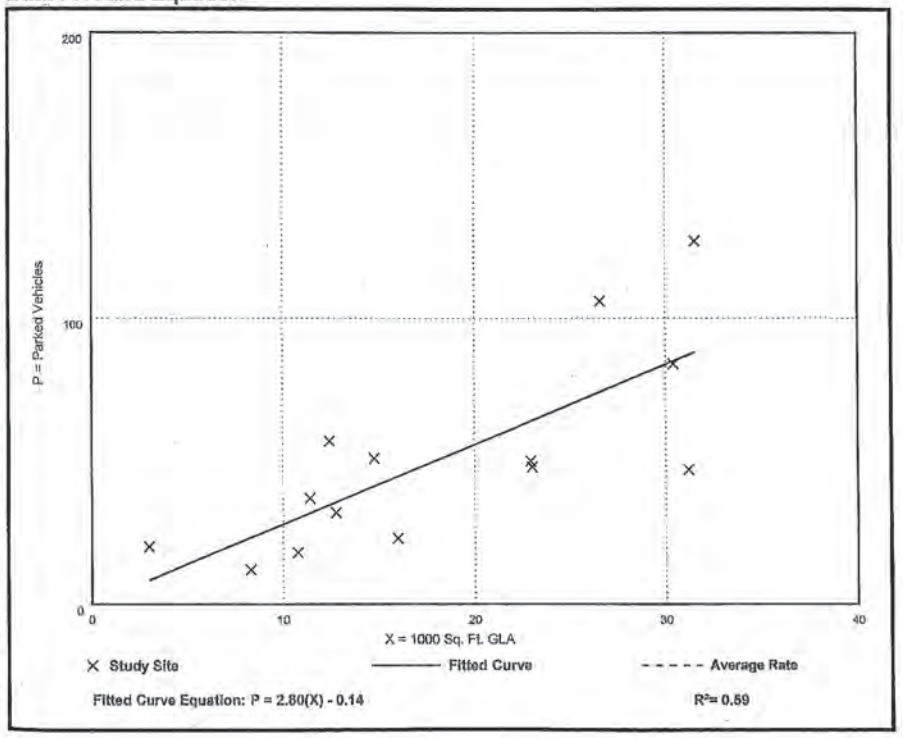
Strip Retail Plaza (< 40k) (822)

Peak Period Parking Demand vs: 1000 Sq. Ft. GLA
On a: Weekday (Monday - Thursday)
Setting/Location: General Urban/Suburban
Number of Studies: 14
Avg. 1000 Sq. Ft. GLA: 18

Peak Period Parking Demand per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
2.79	1.44 - 6.67	2.07 / 4.44	***	1.14 (41%)

Data Plot and Equation



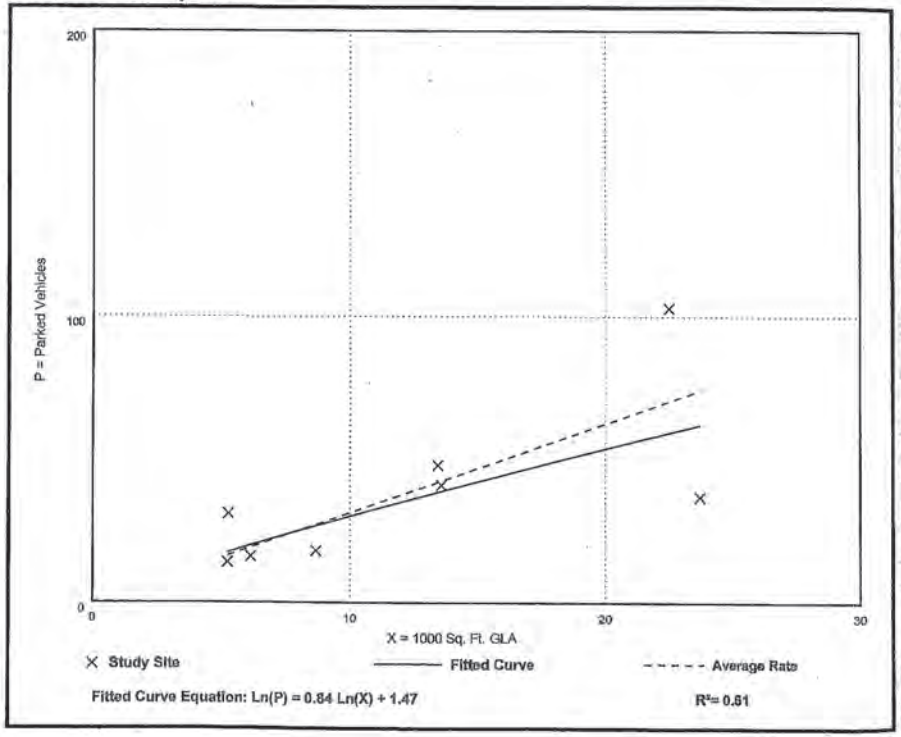
Strip Retail Plaza (< 40k)
(822)

Peak Period Parking Demand vs: 1000 Sq. Ft. GLA
On a: Friday
Setting/Location: General Urban/Suburban
Number of Studies: 8
Avg. 1000 Sq. Ft. GLA: 12

Peak Period Parking Demand per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
3.13	1.56 - 5.93	2.60 / 5.45	***	1.37 (44%)

Data Plot and Equation



Fitted Curve Equation: Ln(P) = 0.84 Ln(X) + 1.47

R^2= 0.61

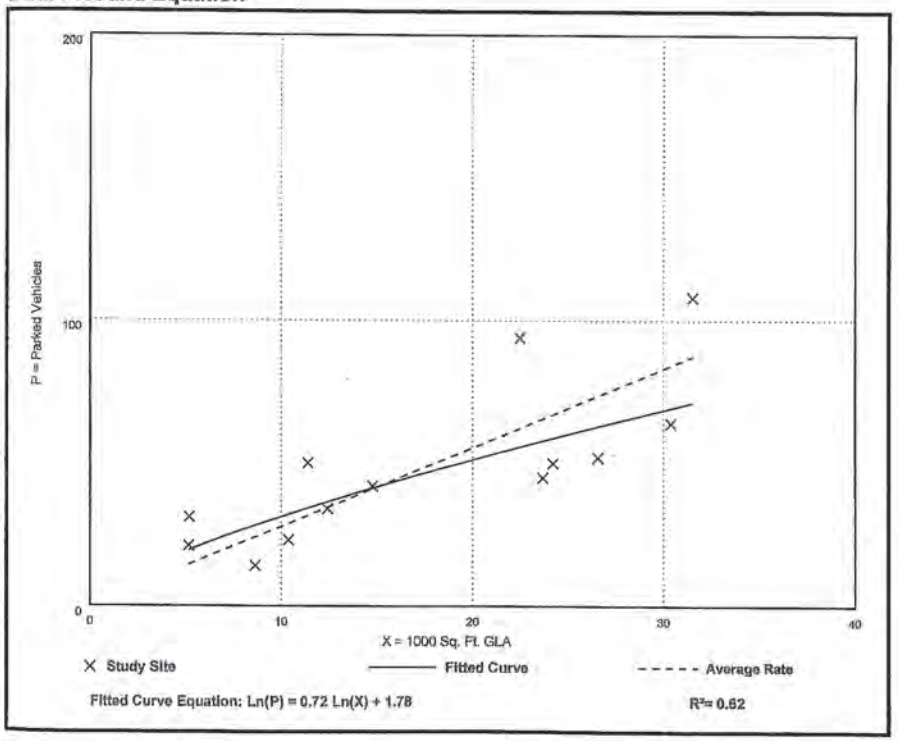
Strip Retail Plaza (< 40k)
(822)

Peak Period Parking Demand vs: 1000 Sq. Ft. GLA
On a: Saturday
Setting/Location: General Urban/Suburban
Number of Studies: 13
Avg. 1000 Sq. Ft. GLA: 17

Peak Period Parking Demand per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
2.77	1.61 - 5.93	2.09 / 4.36	***	1.03 (37%)

Data Plot and Equation



Fitted Curve Equation: Ln(P) = 0.72 Ln(X) + 1.78

R^2= 0.62

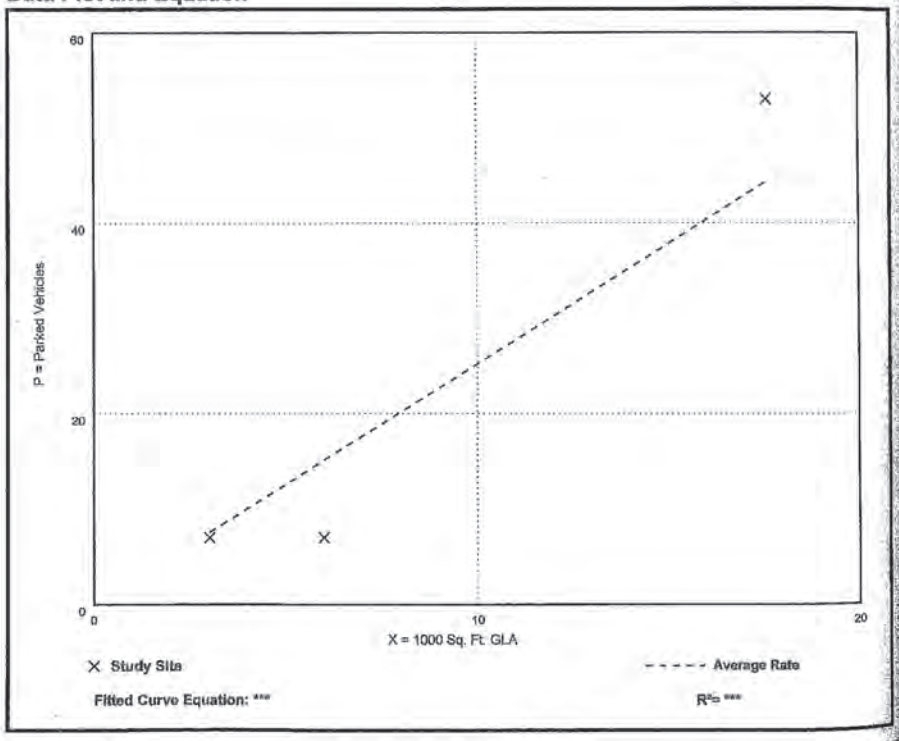
Strip Retail Plaza (< 40k)
(822)

Peak Period Parking Demand vs: 1000 Sq. Ft. GLA
On a: Weekday (Monday - Thursday)
Setting/Location: Dense Multi-Use Urban
Number of Studies: 3
Avg. 1000 Sq. Ft. GLA: 8.9

Peak Period Parking Demand per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
2.52	1.17 - 3.01	1.54 / 3.01	***	0.93 (37%)

Data Plot and Equation



Strip Retail Plaza (< 40k)
(822)

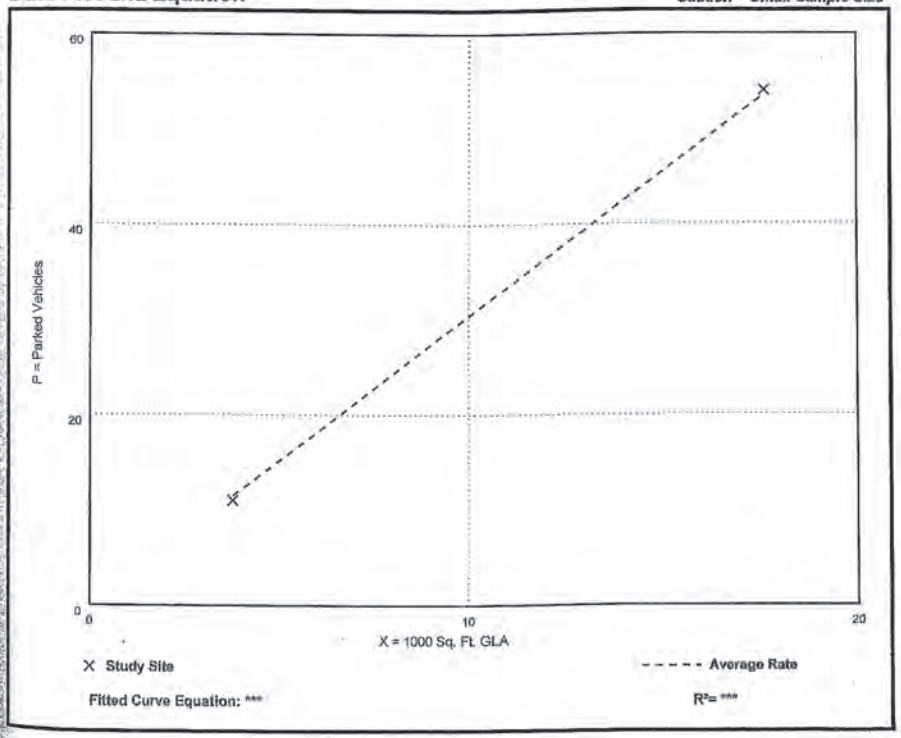
Peak Period Parking Demand vs: 1000 Sq. Ft. GLA
On a: Saturday
Setting/Location: Dense Multi-Use Urban
Number of Studies: 2
Avg. 1000 Sq. Ft. GLA: 11

Peak Period Parking Demand per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
3.04	2.91 - 3.07	*** / ***	***	*** (***)

Data Plot and Equation

Caution – Small Sample Size



Carpet Store
(892)

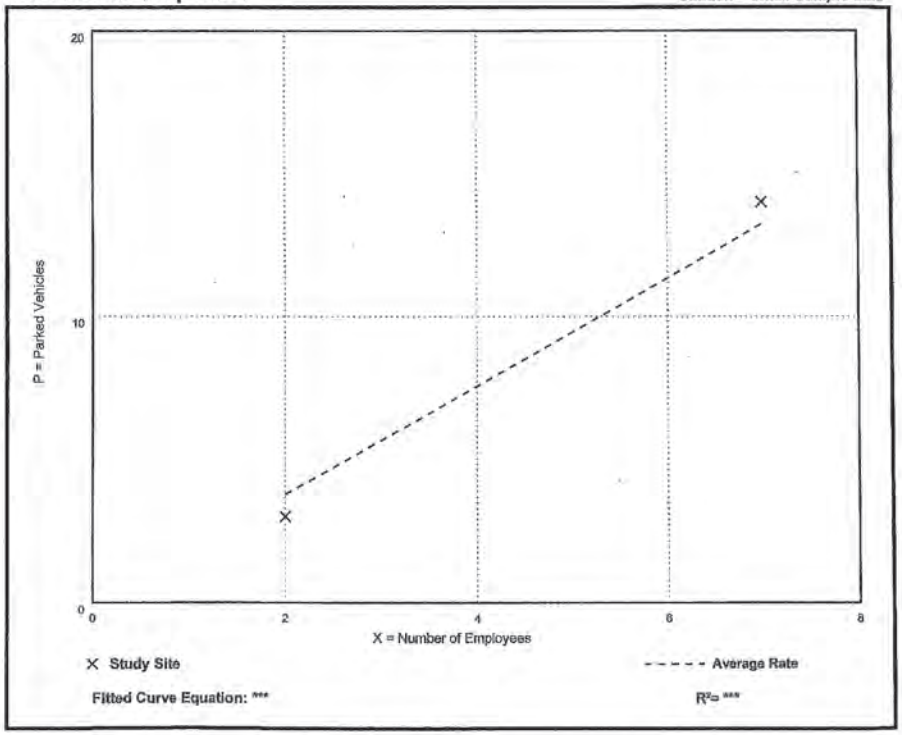
Peak Period Parking Demand vs: Employees
On a: Saturday
Setting/Location: Dense Multi-Use Urban
Number of Studies: 2
Avg. Num. of Employees: 4.5

Peak Period Parking Demand per Employee

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
1.89	1.50 - 2.00	*** / ***	***	*** (***)

Data Plot and Equation

Caution – Small Sample Size



Land Use: 899 Liquor Store

Description

A liquor store is a retail business that specializes in the sale of prepackaged alcoholic beverages including wine, beer, and spirits intended to be consumed off the store's premises. Liquor stores may also include limited sales of soft drinks, snack foods, or alcohol-related merchandise.

Time-of-Day Distribution for Parking Demand

The following table presents a time-of-day distribution of parking demand at three study sites on a weekday (Monday–Thursday) and one study site on a Saturday. All four sites are in a general urban/suburban setting.

Hour Beginning	Percent of Peak Parking Demand	
	Monday–Thursday	Saturday
12:00–4:00 a.m.	–	–
5:00 a.m.	–	–
6:00 a.m.	–	–
7:00 a.m.	–	–
8:00 a.m.	–	–
9:00 a.m.	19	–
10:00 a.m.	50	–
11:00 a.m.	72	50
12:00 p.m.	50	71
1:00 p.m.	97	93
2:00 p.m.	75	100
3:00 p.m.	72	86
4:00 p.m.	78	93
5:00 p.m.	88	79
6:00 p.m.	100	79
7:00 p.m.	59	–
8:00 p.m.	53	–
9:00 p.m.	47	–
10:00 p.m.	–	–
11:00 p.m.	–	–

Fast Food Restaurant with Drive-Through Window (934)

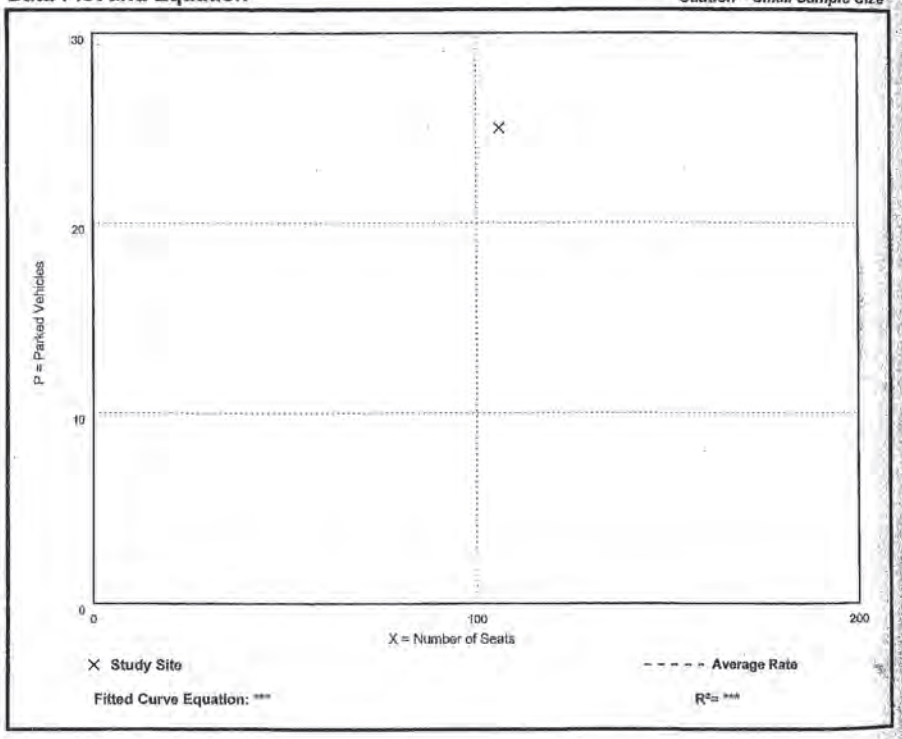
Peak Period Parking Demand vs: Seats
On a: Sunday
Setting/Location: Dense Multi-Use Urban
Number of Studies: 1
Avg. Num. of Seats: 106

Peak Period Parking Demand per Seat

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
0.24	0.24 - 0.24	*** / ***	***	*** (***)

Data Plot and Equation

Caution – Small Sample Size



Land Use: 936 Coffee/Donut Shop without Drive-Through Window

Description

This land use includes any coffee and donut restaurant that does not have a drive-through window. The restaurant sells freshly brewed coffee (along with coffee-related accessories) and a variety of food/drink products such as donuts, bagels, breads, muffins, cakes, sandwiches, wraps, salads, and other hot and cold beverages. The restaurant marketing and sales may emphasize coffee beverages over food (or vice versa). A coffee/donut shop typically holds long store hours (more than 15 hours) with an early morning opening. Limited indoor seating is generally provided for patrons and table service is not provided.

Time-of-Day Distribution for Parking Demand

The following table presents a time-of-day distribution of parking demand at three study sites on a weekday (Monday–Thursday) and three study sites on a Saturday in a general urban/suburban setting.

Hour Beginning	Percent of Peak Parking Demand	
	Monday–Thursday	Saturday
12:00–4:00 a.m.	–	–
5:00 a.m.	–	–
6:00 a.m.	–	–
7:00 a.m.	73	100
8:00 a.m.	100	90
9:00 a.m.	63	80
10:00 a.m.	57	65
11:00 a.m.	42	62
12:00 p.m.	39	40
1:00 p.m.	27	32
2:00 p.m.	–	–
3:00 p.m.	–	–
4:00 p.m.	–	–
5:00 p.m.	–	–
6:00 p.m.	–	–
7:00 p.m.	–	–
8:00 p.m.	–	–
9:00 p.m.	–	–
10:00 p.m.	–	–
11:00 p.m.	–	–

Additional Data

The average parking supply ratio for the six study sites with parking supply information is 16 spaces per 1,000 square feet GFA. The average peak parking occupancy at these six sites is 46 percent.

The sites were surveyed in the 1990s, the 2000s, the 2010s, and the 2020s in California, New Jersey, Oregon, Pennsylvania, Virginia, and Washington.

Source Numbers

298, 399, 428, 431, 433, 531, 626, 637

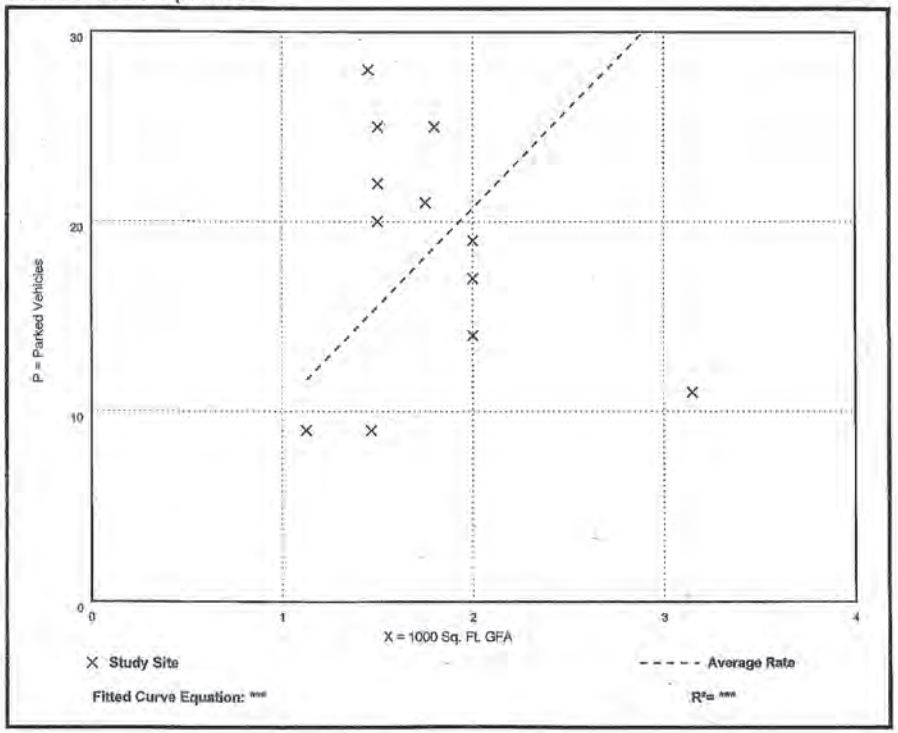
Coffee/Donut Shop without Drive-Through Window (936)

Peak Period Parking Demand vs: 1000 Sq. Ft. GFA
On a: Weekday (Monday - Friday)
Setting/Location: General Urban/Suburban
Number of Studies: 12
Avg. 1000 Sq. Ft. GFA: 1.8

Peak Period Parking Demand per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
10.36	3.49 - 19.31	8.15 / 16.80	***	4.84 (47%)

Data Plot and Equation



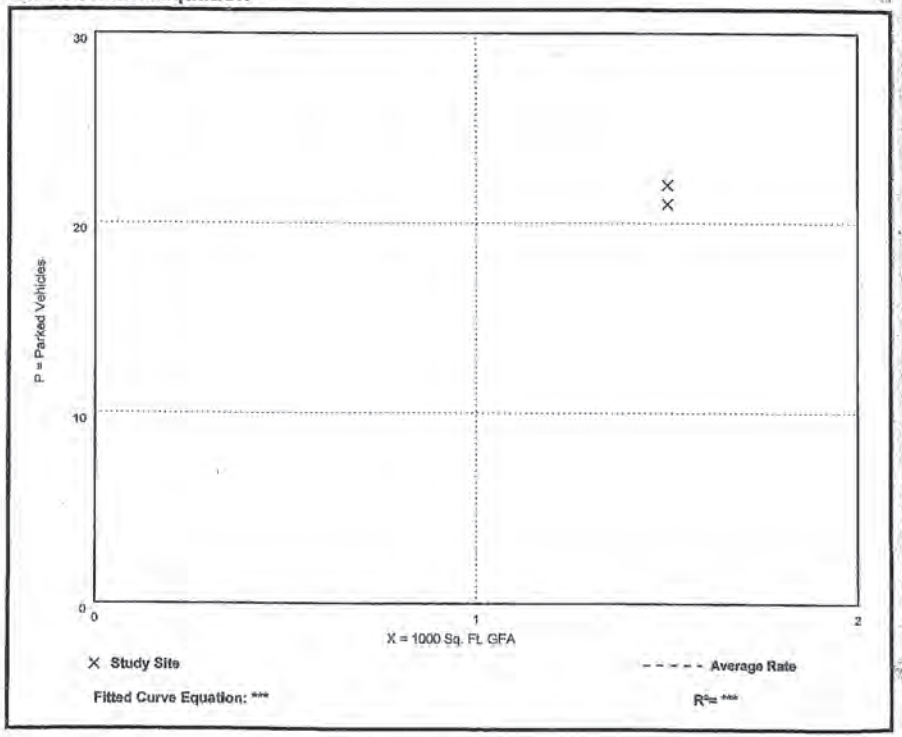
Coffee/Donut Shop without Drive-Through Window (936)

Peak Period Parking Demand vs: 1000 Sq. Ft. GFA
On a: Saturday
Setting/Location: General Urban/Suburban
Number of Studies: 3
Avg. 1000 Sq. Ft. GFA: 1.5

Peak Period Parking Demand per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
14.44	14.00 - 14.67	14.21 / 14.67	***	0.38 (3%)

Data Plot and Equation



Coffee/Donut Shop without Drive-Through Window (936)

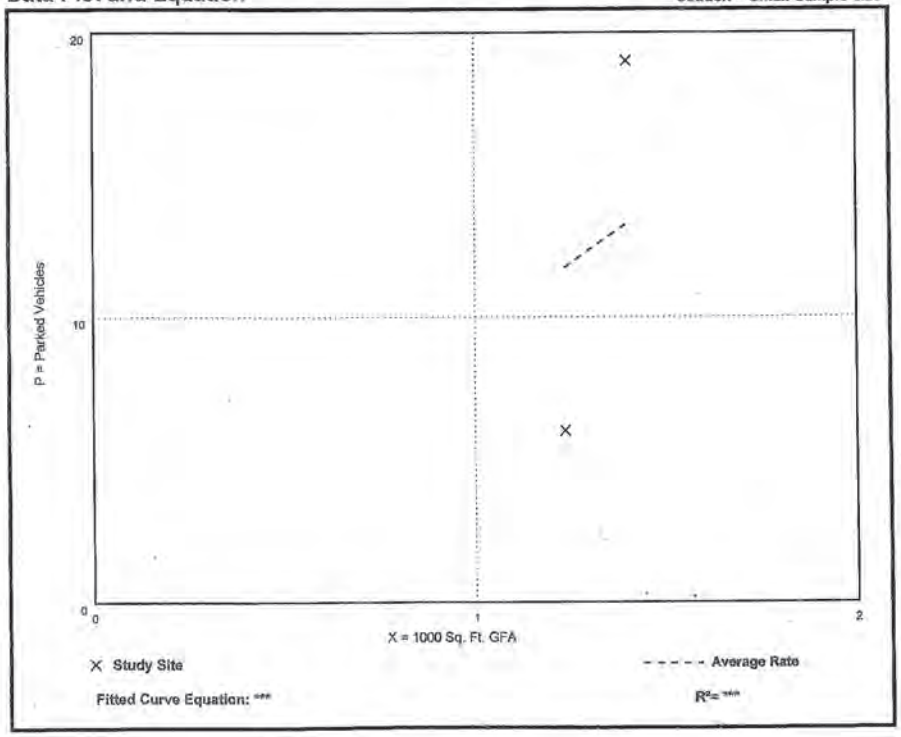
Peak Period Parking Demand vs: 1000 Sq. Ft. GFA
On a: Weekday (Monday - Friday)
Setting/Location: Dense Multi-Use Urban
Number of Studies: 2
Avg. 1000 Sq. Ft. GFA: 1.3

Peak Period Parking Demand per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
9.48	4.85 - 13.57	*** / ***	***	*** (***)

Data Plot and Equation

Caution – Small Sample Size



Land Use: 937 Coffee/Donut Shop with Drive-Through Window

Description

This land use includes any coffee and donut restaurant that has a drive-through window as well as a walk-in entrance area at which a patron can purchase and consume items. The restaurant sells freshly brewed coffee (along with coffee-related accessories) and a variety of food/drink products such as donuts, bagels, breads, muffins, cakes, sandwiches, wraps, salads, and other hot and cold beverages. The restaurant marketing and sales may emphasize coffee beverages over food (or vice versa). A coffee/donut shop typically holds long store hours (more than 15 hours) with an early morning opening. Limited indoor seating is generally provided for patrons and table service is not provided.

Time-of-Day Distribution for Parking Demand

The following table presents a time-of-day distribution of parking demand on a weekday at four study sites in a general urban/suburban setting.

Hour Beginning	Percent of Monday–Thursday Peak Parking Demand
12:00–4:00 a.m.	–
5:00 a.m.	–
6:00 a.m.	–
7:00 a.m.	91
8:00 a.m.	100
9:00 a.m.	97
10:00 a.m.	97
11:00 a.m.	71
12:00 p.m.	77
1:00 p.m.	66
2:00 p.m.	54
3:00 p.m.	57
4:00 p.m.	63
5:00 p.m.	–
6:00 p.m.	–
7:00 p.m.	–
8:00 p.m.	–
9:00 p.m.	–
10:00 p.m.	–
11:00 p.m.	–

Additional Data

The average parking supply ratio for the 12 study sites in a general urban/suburban setting and with parking supply information is 10.3 spaces per 1,000 square feet GFA. The average peak parking occupancy at these sites is 50 percent.

The sites were surveyed in the 2000s, the 2010s, and the 2020s in Maine, Nevada, New Jersey, Ontario (CAN), Tennessee, and Washington.

Source Numbers

405, 407, 412, 433, 442, 509, 523, 540, 620

Additional Data

The sites were surveyed in the 2010s in Texas.

Source Numbers

568, 569, 570

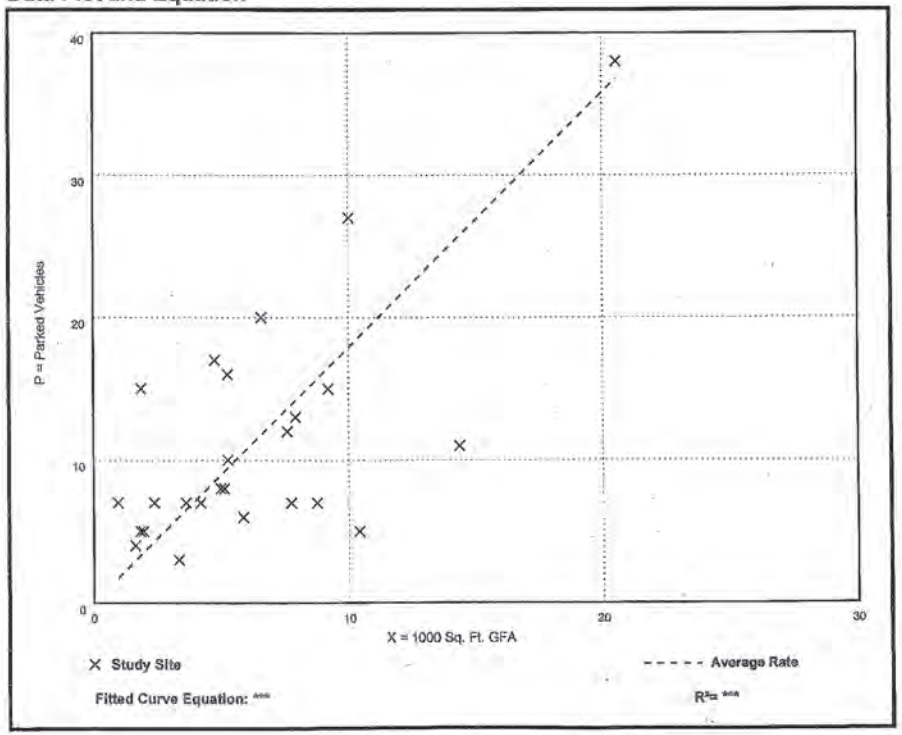
Automobile Parts and Service Center (943)

Peak Period Parking Demand vs: 1000 Sq. Ft. GFA
On a: Weekday (Monday - Friday)
Setting/Location: General Urban/Suburban
Number of Studies: 25
Avg. 1000 Sq. Ft. GFA: 6.3

Peak Period Parking Demand per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
1.79	0.48 - 7.89	1.59 / 3.08	1.34 - 2.24	1.16 (65%)

Data Plot and Equation



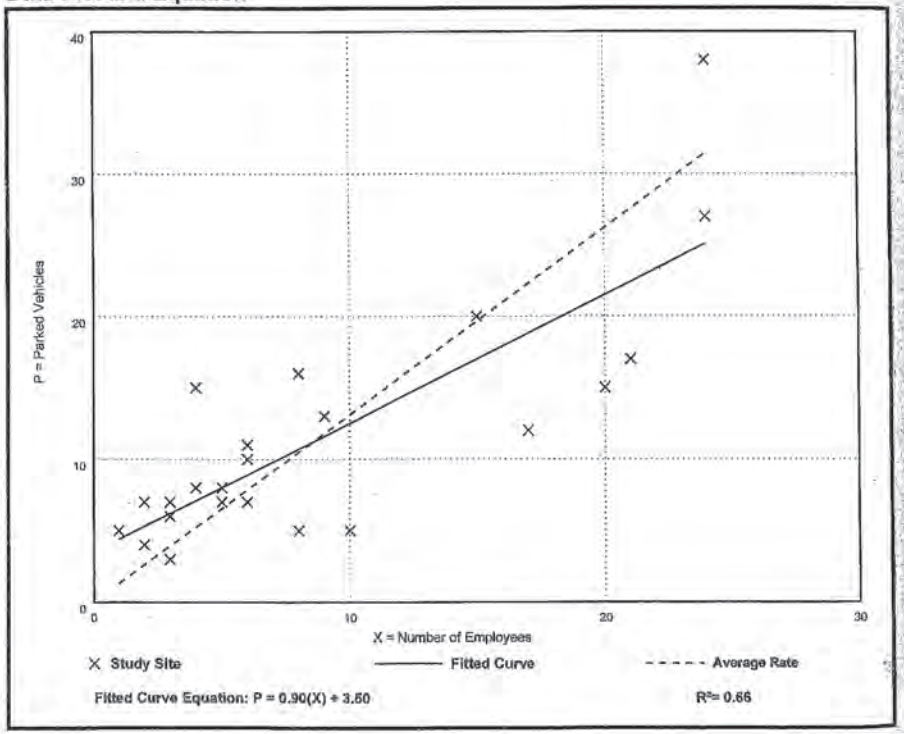
Automobile Parts and Service Center (943)

Peak Period Parking Demand vs: Employees
On a: Weekday (Monday - Friday)
Setting/Location: General Urban/Suburban
Number of Studies: 25
Avg. Num. of Employees: 8.6

Peak Period Parking Demand per Employee

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
1.31	0.50 - 5.00	1.17 / 3.50	1.04 - 1.58	0.70 (53%)

Data Plot and Equation



Land Use: 945 Convenience Store/Gas Station

Description

A convenience store/gas station is a facility with a co-located convenience store and gas station. The convenience store sells grocery and other everyday items that a person may need or want as a matter of convenience. The gas station sells automotive fuels such as gasoline and diesel. The sites in this land use include both self-pump and attendant-pumped fueling positions and both pre-pay and post-pay operations.

A convenience store/gas station is typically located along a major thoroughfare to optimize motorist convenience. Extended hours of operation (with many open 24 hours, 7 days a week) are common at these facilities.

The convenience store product mix typically includes pre-packaged grocery items, beverages, dairy products, snack foods, confectionary, tobacco products, over-the-counter drugs, and toiletries. A convenience store may sell alcohol, often limited to beer and wine. Coffee and premade sandwiches are also commonly sold. Made-to-order food orders are sometimes offered. Some stores offer limited seating.

Convenience Store (Land Use 851) is a related use.

Appendix D

FIGURE 2-2 **Base Parking Ratios**

Land use	Weekday (parking spaces/unit land use)		Weekend (parking spaces/unit land use)		Peak ratio	Units	Source
	Visitors	Employees	Visitors	Employees			
Retail <400,000 sq ft	2.90	0.70	3.20	0.80	4.00	ksf GLA	1
Retail 400,000–600,000 sq ft	sliding scale between <400,000 and 600,000				scaled 4.00 to 4.50	ksf GLA	1
Retail 600,000–1 million sq ft	3.20	0.80	3.60	0.90	4.50	ksf GLA	1
Retail 1 million–2 million sq ft	sliding scale between 1 million and 2 million sq ft				scaled 4.00 to 4.50	ksf GLA	2
Retail >2 million sq ft	2.90	0.70	3.20	0.80	4.00	ksf GLA	2
Supermarket/grocery	4.00	0.75	4.00	0.75	4.75	ksf GLA	2,3
Pharmacy	3.00	0.40	3.00	0.40	3.40	ksf GLA	3
Discount stores/ superstores	3.40	0.85	3.80	0.95	4.75	ksf GLA	3
Home improvement stores/garden	3.10	0.80	3.45	0.90	4.35	ksf GLA	2
Fine/casual dining	13.25	2.25	15.25	2.50	17.75	ksf GLA	2,3
Family restaurant	15.25	2.15	15.00	2.10	17.10	ksf GLA	2,3
Fast casual/fast food	12.40	2.00	12.70	2.00	14.70	ksf GLA	3
Bar/lounge/nightclub	15.25	1.25	17.50	1.50	19.00	ksf GLA	2
Family entertainment	1.80	0.20	2.50	0.25	2.75	ksf GLA	2
Active entertainment	1.50	0.15	1.80	0.20	2.00	ksf GLA	2
Amusement park/ water park	3.00	0.30	3.70	0.37	4.07	ksf GLA	2
Adult active entertainment	9.00	1.00	10.00	1.20	11.20	ksf GLA	2
Cineplex	0.15	0.01	0.24	0.01	0.25	seat	2,3
Specialty movie theater	0.18	0.02	0.29	0.01	0.30	seat	2,3
Live theater	0.30	0.07	0.33	0.07	0.40	seat	2,3
Outdoor amphitheater	0.30	0.07	0.33	0.07	0.40	seat	2
Public park/ destination open space	4.00	0.40	5.00	0.50	5.50	acre	2
Museum/aquarium	4.00	0.40	4.50	0.50	5.00	ksf GLA	2
Public library	2.00	0.25	1.90	2.00	3.90	ksf GLA	2
Health club	6.60	0.40	5.50	0.25	7.00	ksf GLA	2,3
Daycare center	1.50	2.00			3.50	ksf GFA	2,3
Convention center	5.50	0.50	5.50	0.50	6.00	ksf GFA	2

(continued on next page)

FIGURE 2-2 (continued)

	Weekday (parking spaces/unit land use)		Weekend (parking spaces/unit land use)		Peak ratio	Units	Source
Land use	Visitors	Employees	Visitors	Employees			
Hotel–business	1.00	0.15	1.00	0.15	1.15	key	2,3
Hotel–leisure	1.00	0.15	1.00	0.15	1.15	key	2,3
Restaurant/lounge	6.67	1.20	7.67	1.33	9.00	ksf GLA	2,3
Meeting/banquet (0–20 sq ft/key)	scaled from 0 to 30	scaled from 0 to 2.0	scaled from 0 to 20	scaled from 0 to 2.0	scaled from 0 to 32	ksf GLA	2,3
Meeting/banquet (20–50 sq ft/key)	scaled from 30 to 20	scaled from 2 to 1.5	scaled from 20 to 10	scaled from 2 to 1.5	scaled from 32 to 21.5	ksf GLA	2,3
Meeting/banquet (50–100 sq ft/key)	scaled from 20 to 10	scaled from 1.5 to 1.0	scaled from 10 to 5.5	scaled from 1.5 to 1.0	scaled from 21.5 to 11.1	ksf GLA	2,3
Convention (100–200 sq ft/key)	scaled from 10 to 5.5	scaled from 1 to 0.5	5.50	scaled from 1 to 0.5	scaled from 11.1 to 6	ksf GLA	2,3
Convention (>200 sq ft/key)	use convention center but adjust for captive on site						2,3
Residential							
Studio efficiency	0.10	0.85	0.15	0.85	1.00	unit	2,3
1 bedroom	0.10	0.90	0.15	0.90	1.05	unit	2,3
2 bedrooms	0.10	1.65	0.15	1.65	1.80	unit	2,3
3+ bedrooms	0.10	2.50	0.15	2.50	2.65	unit	2,3
Senior housing	0.55	0.30	0.42	0.30	0.85	unit	2,3
Office <25,000 sq ft	0.30	3.50	0.03	0.35	3.80	ksf GFA	3
Office 25,000–100,000 sq ft	sliding scale between <25,000 and 100,000				scaled from 3.8 to 3.4	ksf GFA	3
Office = 100,000 sq ft	0.25	3.15	0.03	0.32	3.40	ksf GFA	3
Office 100,000–500,000 sq ft	sliding scale between 100,000 and 200,000				scaled from 3.4 to 2.8	ksf GFA	3
Office >500,000 sq ft	0.20	2.60	0.02	0.26	2.80	ksf GFA	3
Open plan/ high-density office	0.25	5.75	0.03	0.58	6.00	ksf GFA	2
Medical/dental office	3.00	1.60	0.00	0.00	4.60	ksf GFA	2,3
Bank (drive-in branch)	3.50	2.50	3.00	1.75	6.00	ksft GFA	2,3
Arena	0.27	0.03	0.30	0.03	0.33	seat	2
Pro football stadium	0.30	0.01	0.30	0.01	0.31	seat	2
Pro baseball stadium	0.31	0.01	0.34	0.01	0.35	seat	2

Sources:

1. *Parking Requirements for Shopping Centers*, 2nd ed. (Washington, DC: ULI, 1999).
2. Developed by Team Members from a combination of sources.
3. *Parking Generation*, 5th ed. (Washington, DC: Institute of Transportation Engineers, 2019).

Note: New land uses and changes to second edition titles shown in **bold.** Changes or new ratios are highlighted in blue.

FIGURE 2-4 **Weekday Time-of-Day Adjustments**

Land use		6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	12 p.m.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	12 a.m.
Retail typical	Visitors	1%	5%	15%	35%	60%	75%	100%	100%	95%	85%	85%	85%	90%	80%	65%	45%	15%	5%	0%
December	Visitors	1%	5%	15%	30%	55%	75%	90%	100%	100%	95%	80%	85%	90%	90%	85%	50%	30%	10%	0%
Late December	Visitors	1%	5%	10%	20%	40%	65%	90%	100%	100%	100%	95%	85%	70%	55%	40%	25%	15%	5%	0%
All	Employees	10%	15%	25%	45%	75%	95%	100%	100%	100%	100%	100%	100%	100%	100%	90%	60%	40%	20%	0%
Supermarket/ grocery	Visitors	5%	20%	30%	50%	60%	67%	85%	90%	95%	97%	100%	100%	100%	85%	55%	35%	20%	5%	5%
	Employees	20%	30%	40%	80%	90%	100%	100%	100%	100%	100%	100%	100%	80%	50%	35%	20%	20%	20%	20%
Pharmacy	Visitors	5%	20%	30%	60%	60%	67%	85%	90%	95%	97%	100%	100%	100%	85%	55%	35%	20%	5%	5%
	Employees	20%	30%	40%	80%	90%	100%	100%	100%	100%	100%	100%	100%	80%	50%	35%	20%	20%	20%	20%
Discount stores/ superstores	Visitors	15%	35%	45%	65%	75%	85%	100%	100%	100%	100%	95%	85%	75%	60%	45%	30%	10%	5%	1%
	Employees	25%	45%	55%	75%	85%	100%	100%	100%	100%	100%	100%	95%	85%	70%	55%	40%	20%	20%	20%
Home improvement stores/garden	Visitors	15%	20%	35%	55%	85%	99%	100%	99%	98%	90%	85%	80%	75%	60%	50%	30%	10%	0%	0%
	Employees	25%	30%	45%	65%	95%	100%	100%	100%	100%	100%	95%	90%	85%	70%	60%	40%	20%	0%	0%
Food and beverage																				
Fine/casual dining	Visitors	0%	0%	0%	0%	15%	40%	75%	75%	65%	40%	50%	75%	95%	100%	100%	100%	95%	75%	25%
	Employees	0%	20%	50%	75%	90%	90%	90%	90%	90%	75%	75%	100%	100%	100%	100%	100%	100%	85%	35%
Family restaurant	Visitors	25%	50%	60%	75%	85%	90%	100%	90%	50%	45%	45%	75%	80%	80%	80%	60%	55%	75%	25%
	Employees	50%	75%	90%	90%	100%	100%	100%	100%	100%	75%	75%	95%	95%	95%	95%	80%	65%	65%	35%
Fast casual/ fast food/food court/food halls	Visitors	5%	10%	20%	30%	55%	85%	100%	100%	90%	60%	55%	60%	85%	80%	50%	30%	20%	10%	5%
	Employees	20%	20%	30%	40%	75%	100%	100%	100%	95%	70%	60%	70%	90%	90%	60%	40%	30%	20%	20%
Bar/lounge/ nightclub	Visitors	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	50%	75%	100%	100%	75%	50%
	Employees	0%	0%	0%	5%	5%	5%	5%	10%	10%	10%	20%	45%	70%	100%	100%	100%	100%	90%	60%
Entertainment																				
Family entertainment	Visitors	0%	0%	0%	0%	45%	65%	85%	95%	100%	95%	90%	70%	60%	45%	0%	0%	0%	0%	0%
	Employees	0%	0%	5%	25%	75%	100%	100%	100%	100%	100%	100%	80%	70%	55%	10%	5%	5%	5%	5%
Active entertainment	Visitors	0%	0%	0%	0%	25%	65%	85%	90%	95%	95%	90%	95%	100%	95%	90%	65%	10%	0%	0%
	Employees	5%	5%	5%	25%	75%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	75%	10%	5%	5%
Adult active entertainment	Visitors	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	50%	75%	100%	100%	100%	100%
	Employees	0%	0%	0%	5%	5%	5%	5%	10%	10%	10%	20%	45%	70%	100%	100%	100%	100%	100%	100%
All movies typical	Visitors	0%	0%	0%	0%	0%	0%	20%	45%	55%	55%	55%	60%	60%	80%	100%	100%	80%	65%	40%
Late December	Visitors	0%	0%	0%	0%	0%	0%	35%	60%	75%	80%	80%	80%	70%	80%	100%	100%	85%	70%	55%
All	Employees	0%	0%	0%	0%	0%	10%	50%	60%	60%	75%	75%	100%	100%	100%	100%	100%	100%	70%	50%
Live theater	Visitors	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	25%	100%	100%	0%	0%	0%
	Employees	0%	10%	10%	20%	20%	20%	30%	30%	30%	30%	30%	30%	100%	100%	100%	100%	30%	10%	5%
Outdoor amphitheater	Visitors	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	25%	100%	100%	0%	0%	0%
	Employees	0%	10%	10%	20%	20%	20%	30%	30%	30%	30%	30%	30%	100%	100%	100%	100%	30%	10%	5%
Public park/ destination open space	Visitors	1%	5%	10%	25%	50%	65%	85%	95%	100%	95%	90%	70%	90%	100%	100%	100%	80%	50%	10%
	Employees	5%	10%	25%	50%	75%	100%	100%	100%	100%	100%	100%	80%	100%	100%	100%	100%	100%	60%	20%
Museum/ aquarium	Visitors	0%	0%	0%	0%	45%	65%	85%	95%	100%	95%	90%	85%	60%	30%	10%	0%	0%	0%	0%
	Employees	5%	5%	5%	25%	75%	100%	100%	100%	100%	100%	100%	80%	75%	10%	5%	0%	0%	5%	5%
Arena	Visitors	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	10%	25%	100%	100%	85%	0%	0%
No matinee	Employees	0%	10%	10%	20%	20%	20%	30%	30%	30%	30%	30%	30%	100%	100%	100%	100%	30%	10%	5%

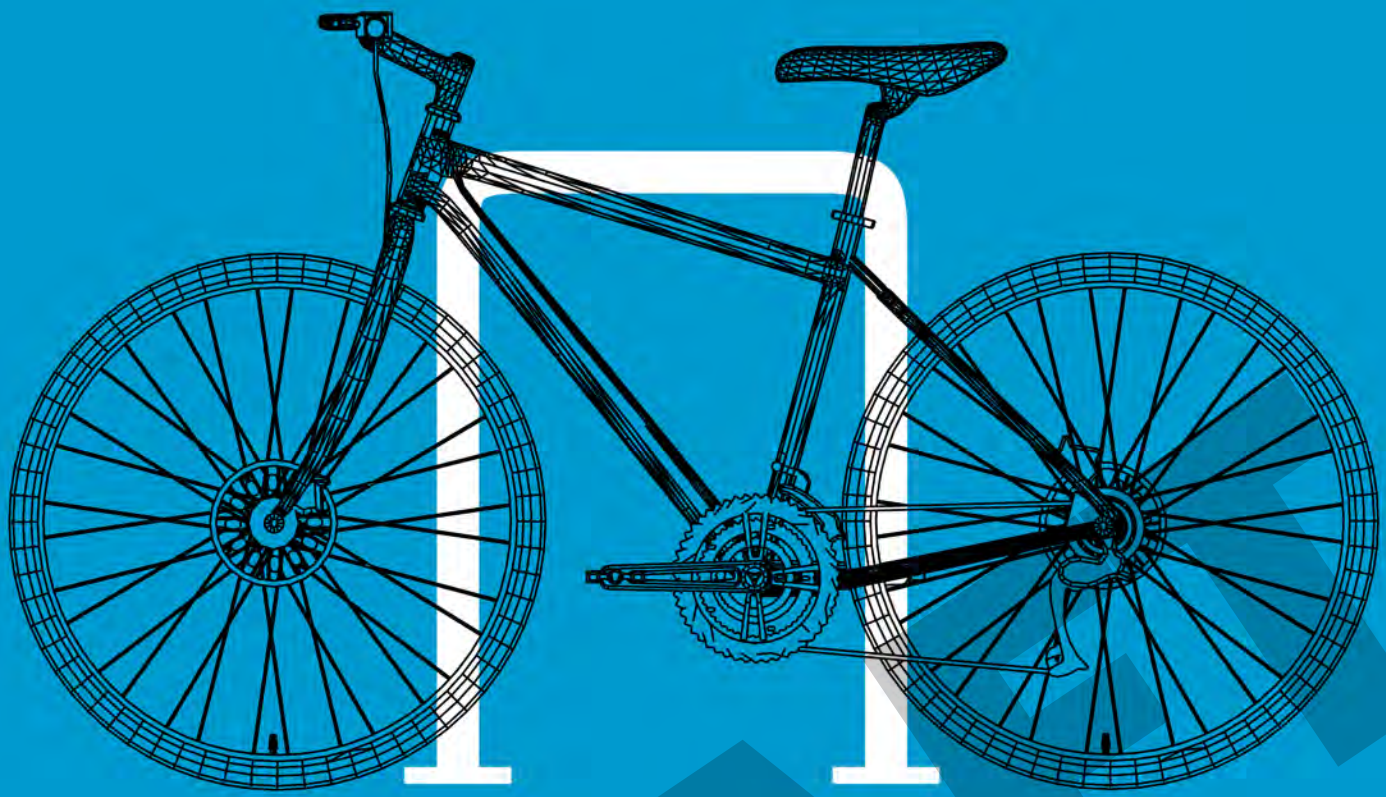
(continued on next page)

FIGURE 2-4 (continued)

Land use		6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	12 p.m.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	12 a.m.
Entertainment (continued)																				
Pro football stadium	Visitors	0%	0%	0%	1%	1%	1%	5%	5%	5%	5%	5%	5%	10%	50%	100%	100%	85%	25%	0%
8 p.m. start	Employees	0%	10%	10%	20%	20%	20%	30%	30%	30%	30%	30%	30%	100%	100%	100%	100%	100%	25%	10%
Pro baseball stadium	Visitors	0%	0%	0%	1%	1%	1%	5%	5%	5%	5%	5%	5%	10%	50%	100%	100%	85%	25%	0%
	Employees	0%	10%	10%	20%	20%	20%	30%	30%	30%	30%	30%	30%	100%	100%	100%	100%	100%	25%	10%
Health club	Visitors	70%	40%	40%	70%	70%	80%	60%	70%	70%	70%	80%	90%	100%	90%	80%	70%	35%	10%	0%
	Employees	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	100%	100%	75%	50%	20%	20%	20%	0%
Public library	Visitors	0%	0%	0%	100%	100%	98%	98%	78%	72%	65%	70%	79%	60%	50%	40%	0%	0%	0%	0%
	Employees	0%	10%	50%	100%	100%	100%	100%	100%	100%	100%	100%	90%	75%	50%	20%	10%	0%	0%	0%
Daycare center	Visitors	0%	2%	25%	75%	20%	20%	20%	20%	20%	20%	100%	50%	20%	5%	0%	0%	0%	0%	0%
	Employees	0%	50%	75%	90%	90%	90%	90%	90%	90%	100%	100%	100%	60%	40%	10%	0%	0%	0%	0%
Convention center	Visitors	0%	0%	50%	100%	100%	100%	100%	100%	100%	100%	100%	100%	50%	30%	30%	10%	0%	0%	0%
	Employees	5%	30%	33%	33%	100%	100%	100%	100%	100%	100%	90%	70%	40%	25%	20%	20%	5%	0%	0%
Hotel and residential																				
Hotel–business	Visitors	95%	90%	80%	70%	60%	60%	55%	55%	60%	60%	65%	70%	75%	75%	80%	85%	95%	100%	100%
Hotel–leisure	Visitors	95%	95%	90%	80%	70%	70%	65%	65%	70%	70%	75%	80%	85%	85%	90%	95%	95%	100%	100%
Employee	Employees	10%	30%	100%	100%	100%	100%	100%	100%	100%	100%	70%	70%	40%	20%	20%	20%	20%	10%	5%
Restaurant/ lounge	Visitors	0%	10%	30%	10%	10%	5%	100%	100%	33%	10%	10%	30%	55%	60%	70%	67%	60%	40%	30%
Meeting/banquet (<100 sq ft/key)	Visitors	0%	0%	30%	60%	60%	60%	65%	65%	65%	65%	65%	100%	100%	100%	100%	100%	50%	0%	0%
Convention (>100 sq ft/key)	Visitors	0%	0%	50%	100%	100%	100%	100%	100%	100%	100%	100%	100%	50%	30%	30%	10%	0%	0%	0%
Employee	Employees	10%	10%	60%	100%	100%	100%	100%	100%	100%	100%	100%	100%	60%	40%	40%	20%	0%	0%	0%
Residential guest	Visitors	0%	10%	20%	20%	20%	20%	20%	20%	20%	20%	20%	40%	60%	100%	100%	100%	100%	80%	50%
Resident reserved	Residents	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Residential suburban	Residents	95%	80%	67%	55%	50%	45%	40%	40%	40%	40%	45%	50%	60%	70%	80%	85%	95%	97%	100%
Residential urban	Residents	95%	85%	75%	65%	60%	55%	50%	50%	50%	55%	60%	65%	70%	75%	80%	85%	95%	97%	100%
Active senior housing	Visitors & employees	95%	97%	100%	100%	99%	98%	98%	99%	98%	100%	99%	94%	96%	98%	97%	97%	97%	98%	98%
	Residents	95%	97%	100%	100%	99%	98%	98%	99%	98%	100%	99%	94%	96%	98%	97%	97%	97%	98%	98%
Office																				
Office	Visitors	0%	1%	20%	60%	100%	45%	15%	45%	95%	45%	15%	10%	5%	2%	1%	0%	0%	0%	0%
	Employees unreserved	3%	15%	50%	90%	100%	100%	85%	85%	95%	95%	85%	60%	25%	15%	5%	3%	1%	0%	0%
	Employees reserved	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Medical/ dental office	Visitors	0%	0%	90%	90%	100%	100%	30%	90%	100%	100%	90%	80%	67%	30%	15%	0%	0%	0%	0%
	Employees	0%	20%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	67%	30%	15%	0%	0%	0%	0%
Bank (drive-in branch)	Visitors	0%	0%	50%	90%	100%	50%	50%	50%	70%	50%	80%	100%	0%	0%	0%	0%	0%	0%	0%
	Employees	0%	0%	60%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%

Source: See chapter 4 discussions for each land use.

Appendix E



GUIDE TO THE

CITY OF LOS ANGELES BICYCLE PARKING ORDINANCE

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TABLE OF CONTENTS

Types of Bicycle Parking

SHORT-TERM BICYCLE PARKING

Short-term bicycle parking consists of bicycle racks located outside buildings or on public sidewalks or public streets that are free to the user. Short-term bicycle parking is necessary for short stays where the key goal is visible and convenient parking that is in close-proximity to a building's main entrance.

Racks

Racks can take a variety of shapes and forms but most commonly consist of an inverted-U design. Bicycle racks are primarily used for short-term bicycle parking in publicly accessible places.

Bicycle Corrals

Bicycle Corrals provide on-street bicycle parking, typically by replacing a single curbside parking space. Bicycle Corrals can typically accommodate 12 parked bicycles by replacing a single vehicle parking space.

LONG-TERM BICYCLE PARKING

Long-term bicycle parking facilities are needed to provide a high level of security and protection from theft and weather. Long-term parking should be installed in locations that are well-lit where people may safely leave their bicycles unattended for long periods of time.

Lockers

Lockers can be rented to individuals or made available to the public through the installation of code locks or locking mechanisms such as a U-lock. Lockers can typically be rented for set periods of time such as 3 months, 6 months, or a year.

Bike Room & Bike Cages

Bike rooms and bike cages provide long-term bicycle parking for apartment buildings and large employment centers. A bike room is often a room of its own that is easily accessible and where bicycles can be parked safely. Bike cages are similar to bike rooms but may be a sectioned off area of a larger room or garage.

Bicycle Transit Centers/ Bike Stations

These amenities are indoor facilities that are accessible to members of the general public. They are usually staffed by employees that offer bike repairs, rentals, information, and other commercial activities.

Photo Credit: https://www.flickr.com/search/?text=bike%20rack

OFF-STREET AUTOMOBILE PARKING REQUIREMENTS. (LAMC Section 12.21.A.4)

New or existing automobile parking spaces required by the Code for all uses may be replaced by bicycle parking at a ratio of one automobile parking space for every four bicycle parking spaces provided. Notwithstanding the foregoing, no more than 20% of the required automobile parking spaces for nonresidential uses shall be replaced at a site (Figure 1).

Figure 1

Residential buildings may replace 10% of the required automobile parking with bicycle parking. Automobile parking spaces for residential projects or buildings located within 1,500 feet of a portal of a fixed rail transit station, bus station, or other similar transit facility as defined by Section 12.24 Y may replace up to 15% of the required automobile parking spaces with bicycle parking. If a residential building has applied for and received a density bonus under Section 12.22A.25, 30% of the required automobile parking may be replaced. In such cases, the replacement of automobile parking with bicycle parking shall be implemented in lieu of the parking options in Section 12.22A.25(d) (Figure 2).

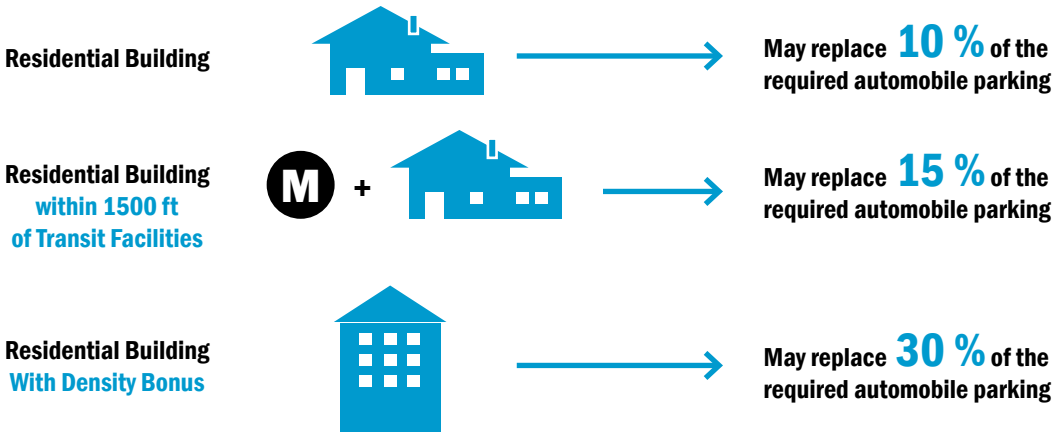


Figure 2

Bicycle parking installed pursuant to this Section may be installed in existing automobile parking spaces and shall not be considered to violate the maintenance of existing parking as defined by Section 12.21A.4(m). The ratio of short- to long-term bicycle parking provided for pursuant to this Section shall be provided in accordance with the requirements set forth for each use as defined by Section 12.21.A.16(a).

BICYCLE PARKING AND SHOWER FACILITIES. (LAMC Section 12.21.A.16)

Bicycle Parking Requirements (LAMC Section 12.21.A.16.d)

Short-Term Bicycle Parking. (LAMC Section 12.21.A.16.d.1)
Short-term bicycle parking shall consist of bicycle racks that support the bicycle frame at two points. Racks that support only the wheel of the bicycle are not permissible (Figure 3).

- Racks shall allow for the bicycle frame and at least one wheel to be locked to the racks (LAMC Section 12.21.A.16.d.1.i).
- The bicycle rack shall allow for the use of a cable as well as a U-shaped lock (LAMC Section 12.21.A.16.d.1.ii).
- If bicycles can be locked to each side of the rack, each side shall be counted toward a required space (LAMC Section 12.21.A.16.d.1.iii).
- Racks shall be securely anchored to a permanent surface (LAMC Section 12.21.A.16.d.1.iv).
- If more than 20-short term bicycle parking spaces are provided, at least 50% shall be covered by a roof or overhang (LAMC Section 12.21.A.16.d.1.v).

Figure 3

Design Standards (LAMC Section 12.21.A.16.e)

Dimensions. (LAMC Section 12.21.A.16.e.1)

- Each bicycle parking space shall be a minimum six feet (72 inches) in length (LAMC Section 12.21.A.16.e.1.i) (Figure 4).
- Short-term bicycle parking spaces shall be a minimum of two feet (24 inches) wide (LAMC Section 12.21.A.16.e.1.ii) (Figure 4).
- If two bicycles are to be locked on a rack, the space shall be minimum four feet (48 inches) wide and six feet (72 inches) length (Figure 5).

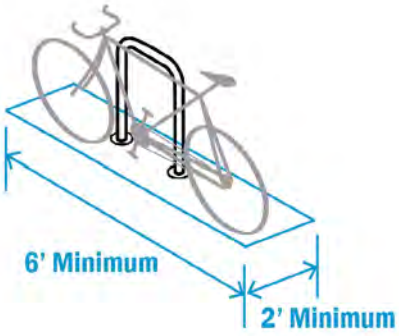


Figure 4

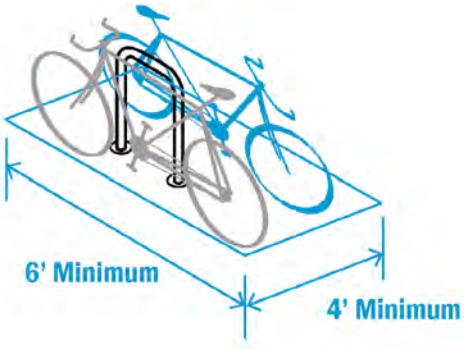


Figure 5

- Individual racks installed side by side to one another that allow bicycles to be locked to either side of the rack shall be spaced a minimum of 30 inches on center; (The bike racks shall be placed minimum 48 inches apart if bicycles are to be locked on both sides of each rack) (LAMC Section 12.21.A.16.e.1.ii.1) (Figure 6).
- Racks installed parallel to walls shall be a minimum of 30 inches from the wall (LAMC Section 12.21.A.16.e.1.ii.2) (Figure 7).

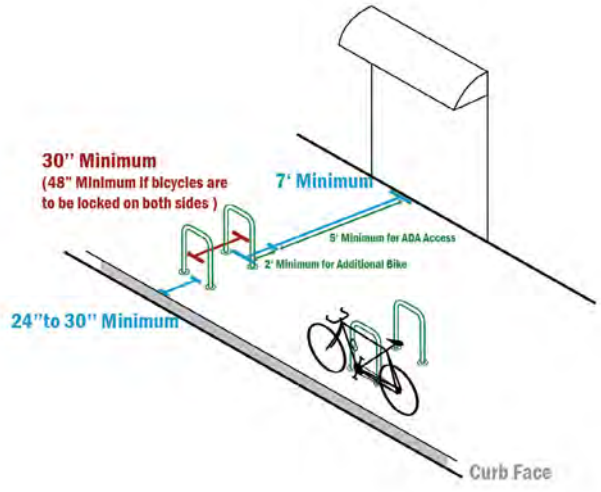


Figure 6

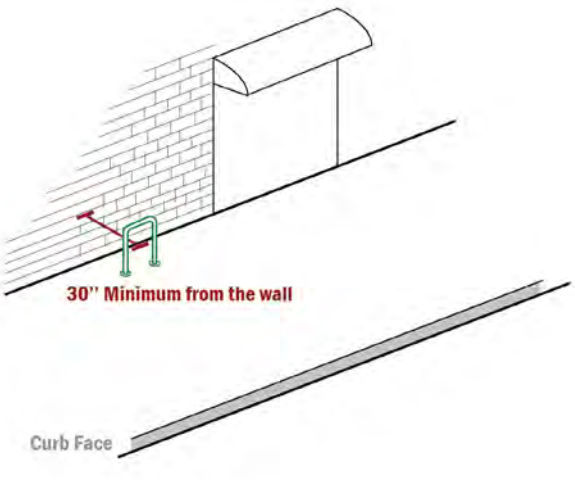


Figure 7

Siting Requirements. (LAMC Section 12.21.A.16.e.2)

- **Short-Term Bicycle Parking. (LAMC Section 12.21.A.16.e.2.ii)**
  For new construction, short-term bicycle parking shall be located outside buildings. For existing buildings where exterior space is inadequate, short-term bicycle parking may be located inside the building or on the level of the parking garage closest to the ground floor with a direct access to a public street.

    - For new developments, short-term bicycle parking shall be located to maximize visibility from the main entrance. For existing buildings, where short-term bicycle parking is located within buildings or parking garages, signage is required at each building entrance as per Section 12.21A 16(d)(4) (LAMC Section 12.21.A.16.e.2.ii.a).
    - Short-term bicycle parking spaces shall be located no farther than 50 feet of walking distance from a main pedestrian entrance or the walking distance from a main pedestrian entrance to the nearest off-street automobile parking space, whichever is closer (LAMC Section 12.21.A.16.e.2.ii.b) (Figure 8).

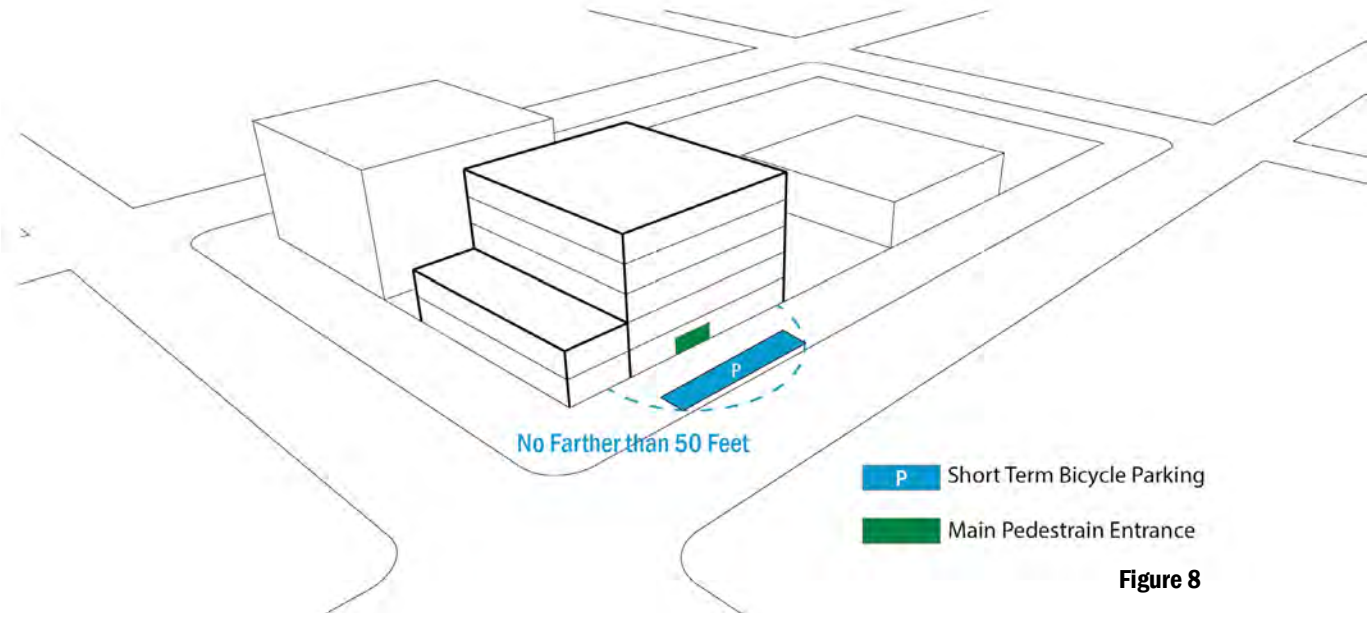


Figure 8

- For buildings with more than one main pedestrian entrance, short term bicycle parking shall be split evenly among all main pedestrian entrances (LAMC Section 12.21.A.16.e.2.ii.c) (Figure 9).

- **Multiple Buildings. (LAMC Section 12.21.A.16.e.2.v)**
  For a development site with multiple buildings, required bicycle parking shall be sited in smaller bicycle parking facilities located near the pedestrian entries for each building, rather than in one centralized facility in accordance with the rules for locating bicycle parking provided in this Paragraph (Figure 10).

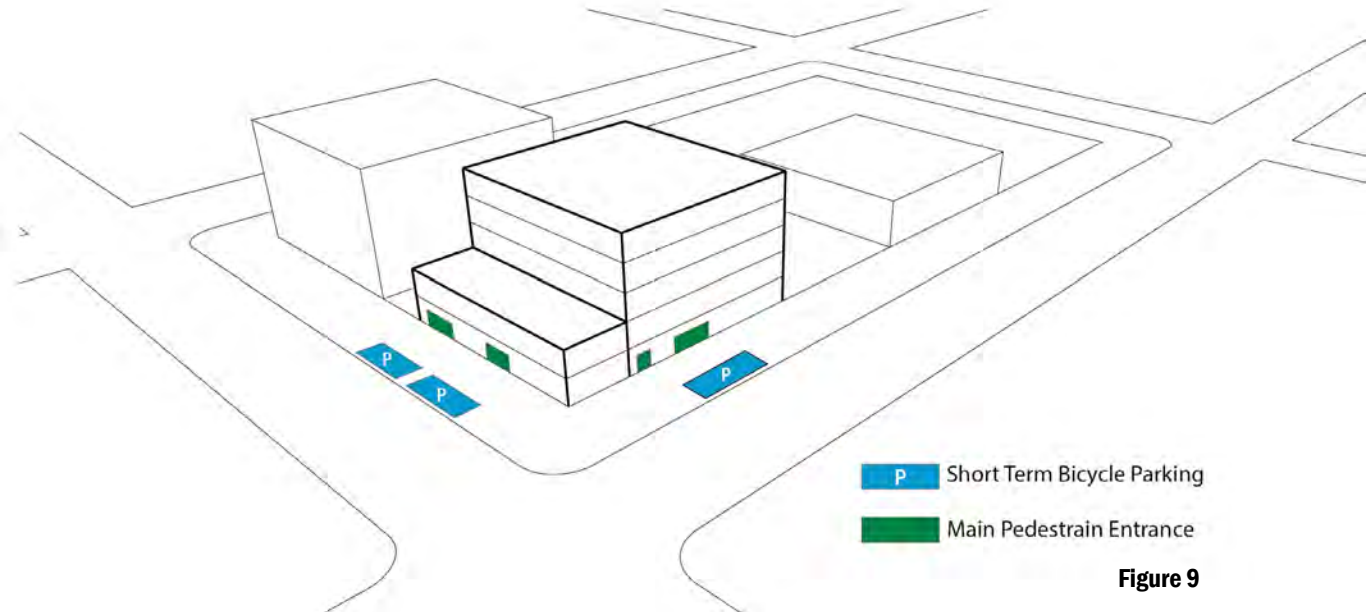


Figure 9

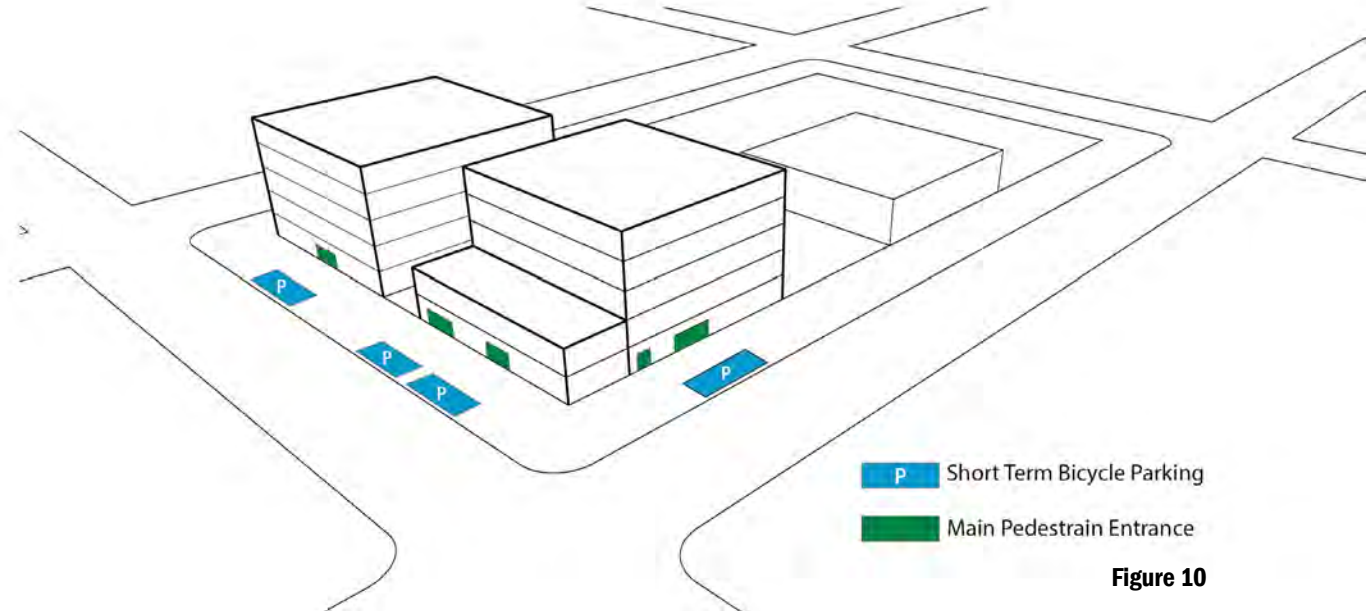


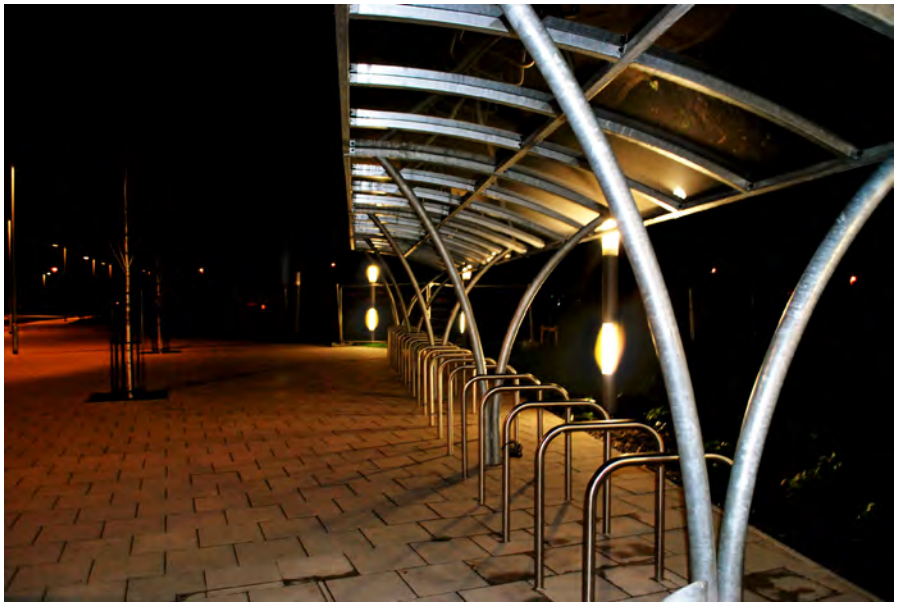
Figure 10

Lighting (LAMC Section 12.21.A.16.e.3)

- Adequate lighting shall be provided to ensure safe access to bicycle parking facilities in accordance with Section 12.21A.5(k).

Signage (LAMC Section 12.21.A.16.e.4)

- Where bicycle parking is not clearly visible from the street, legible reflectorized signs shall be permanently posted at the street entrances to each site indicating the availability and location of bicycle parking within the site. All signs must comply with Section 14.4.7.



Lighting for Bike Parking Facilities

Bike Parking Signage

Photo Credit: https://www.flickr.com/search/?text=bike%20rack%20lighting

Additional Requirements and Allowances. (LAMC Section 12.21.A.16.f.)

Bicycle Parking in the Public Right-of-Way (LAMC Section 12.21.A.16.f.1)

- Short-term bicycle parking spaces located immediately in front of a site within the public right-of-way (ROW) may be counted towards the short-term bicycle parking requirements of said site (LAMC Section 12.21.A.16.f.1.i).
- Business operators or property owners may install and maintain their own racks within the public ROW unless a City owned rack already exists (LAMC Section 12.21.A.16.f.1.ii) (Figure 11).
    - Business operators or property owners are responsible for applying for a permit with the Bureau of Engineering (BOE) to install short-term bicycle parking within the public ROW. A BOE permit may be issued only after the business operator or property owner receives issuance of plan approval or a permit by the Department of Transportation (LADOT) pursuant to LAMC Section 85.04 (LAMC Section 12.21.A.16.f.1.ii.a).
    - All bicycle parking installed in this manner shall meet the rules and regulations set out by the BOE Standard Plan S-671-1 (LAMC Section 12.21.A.16.f.1.ii.b).
    - Business operators or property owners who choose to install bicycle parking in the public ROW are responsible for maintaining the racks according to the standards set forth in a Covenant Maintenance Agreement with LADOT (LAMC Section 12.21.A.16.f.1.ii.c).

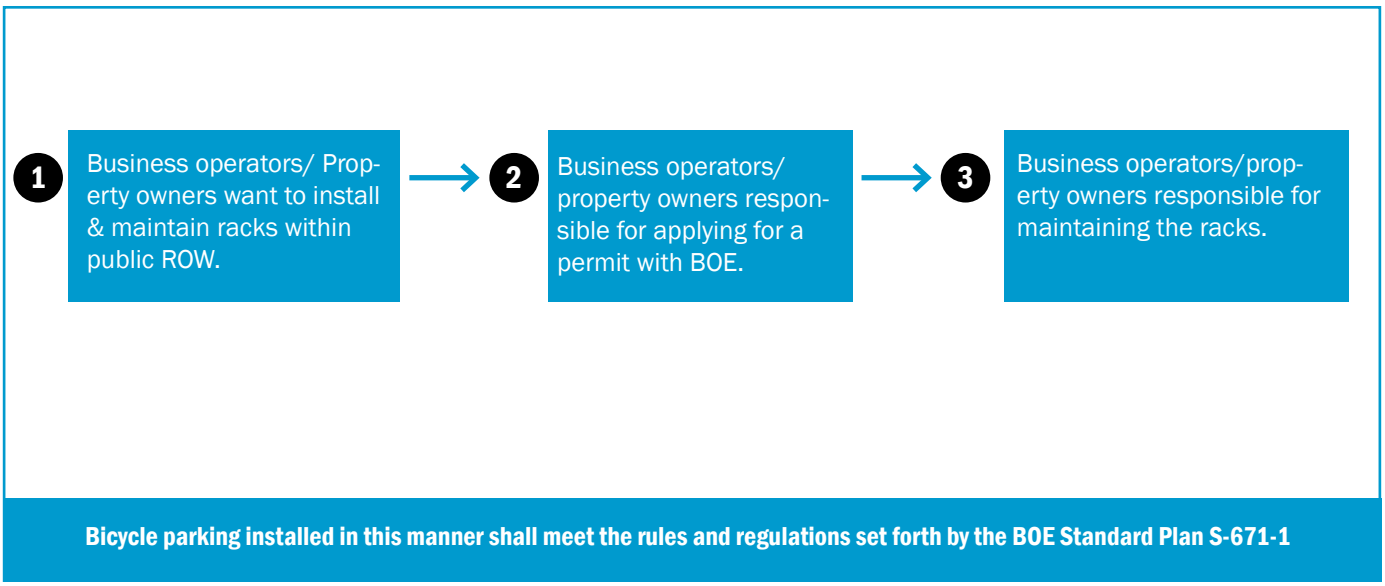
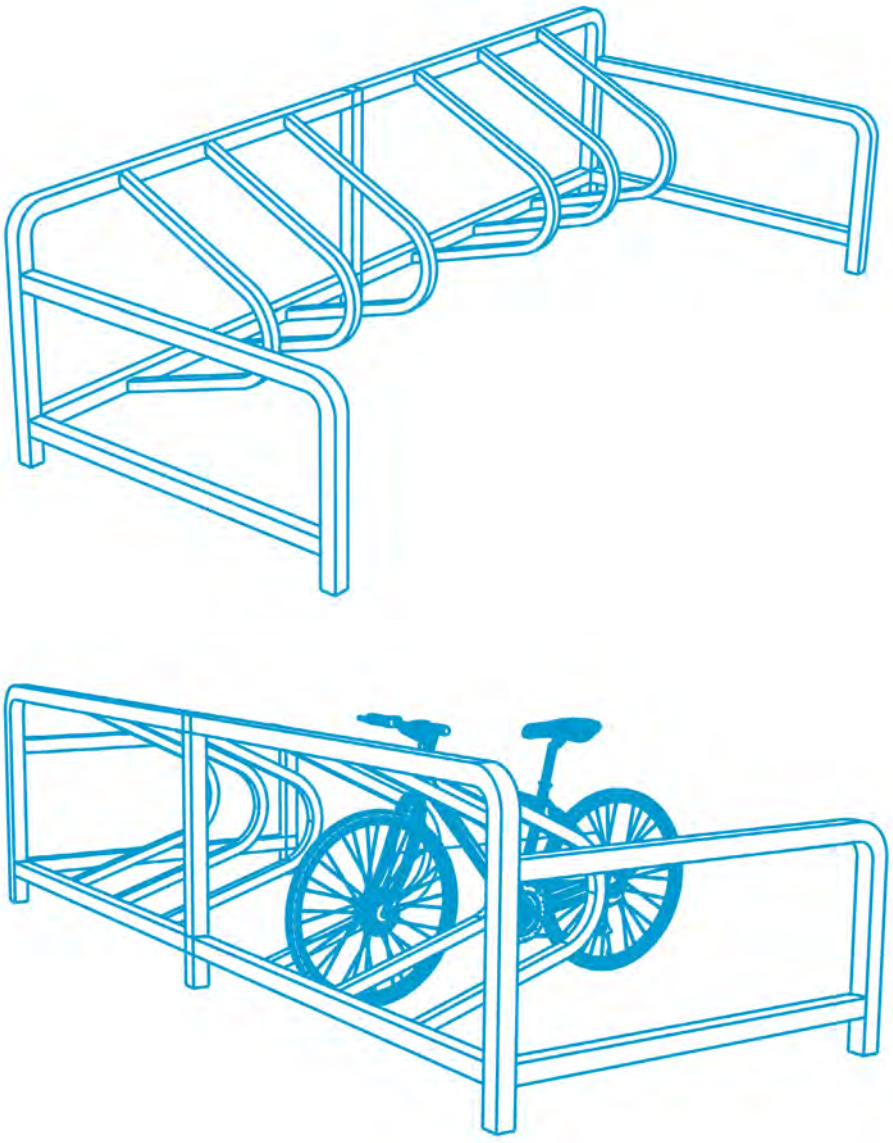


Figure 11

Bicycle Corrals (LAMC Section 12.21.A.16.f.2)



Diagrams of Bicycle Corral

Figure 12

Bicycle Corrals provide on-street bicycle parking, typically by replacing a single curbside vehicle parking space. Bicycle Corrals can accommodate 12 parked bicycles. On-street bicycle parking can be beneficial in locations where there is high demand for bicycle parking, sidewalk space is limited, or sidewalks are busy (Figure 12).

Bicycle Corrals (LAMC Section 12.21.A.16.f.2)

- Any site located within 500 feet of a City funded Bicycle Corral may count up to 4 bicycle parking spaces towards their required short-term bicycle parking spaces (LAMC Section 12.21.A.16.f.2.i) (Figure 13).

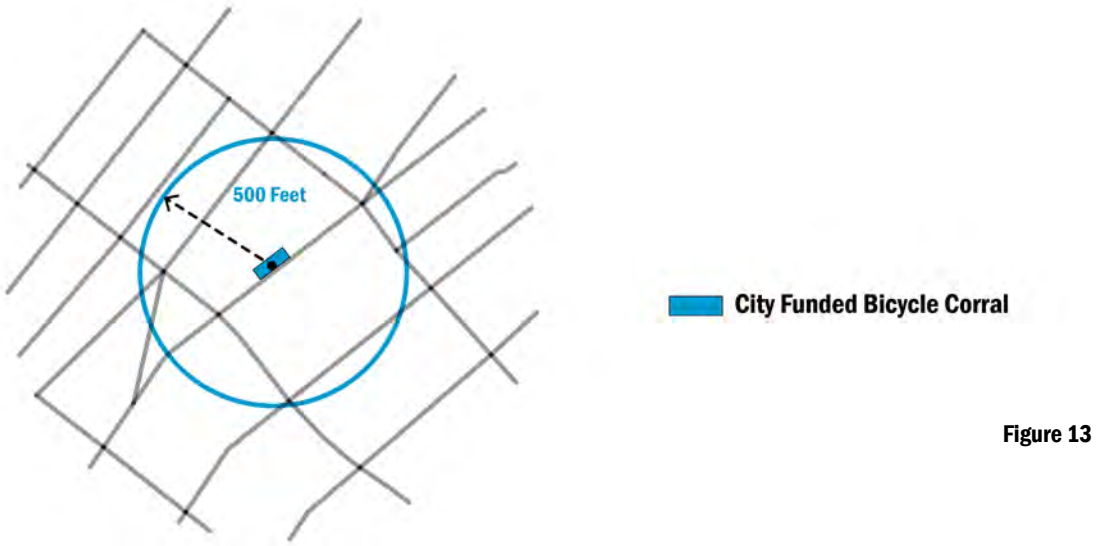


Figure 13

- Business operators or property owners may submit an application to the LADOT to install and maintain their own Bicycle Corrals immediately in front of their property in the public ROW (LAMC Section 12.21.A.16.f.2.ii).
    - Businesses or property owners who do so may count all the bicycle parking within the Bicycle Corral towards their required number of short-term bicycle parking spaces. In such cases, short-term bicycle parking installed in such a manner shall not be counted towards the bicycle parking requirements of surrounding businesses (LAMC Section 12.21A.16.f.2.ii.a).
    - Business operators or property owners shall pay the construction and maintenance costs of building said Bicycle Corrals (LAMC Section 12.21A.16.f.2.ii.b).
    - Multiple businesses or property owners may submit an application to the Department of Transportation's Bicycle Program as a group and split the costs to construct and maintain the corral (LAMC Section 12.21A.16.f.2.ii.c).
        - In such cases, a single business shall be responsible for assuming the maintenance responsibilities detailed in a Covenant Maintenance Agreement as outlined below (LAMC Section 12.21.A.16.f.2.ii.c.1).
        - The business responsibility for maintaining the Bicycle Corral may count the full amount of bicycle parking in the corral towards its short-term bicycle parking requirements (LAMC Section 12.21.A.16.f.2.ii.c.2).
        - All other businesses may count up to half of the bicycle parking spaces in the corral towards their required short-term bicycle parking spaces so long as they provide a financial contribution (LAMC Section 12.21.A.16.f.2.ii.c.3).

- Business operators or property owners shall be responsible for applying for a permit with the BOE to install Bicycle Corrals within the public ROW (LAMC Section 12.21.A.16.f.2.ii.d).
- Business operators or property owners who choose to install Bicycle Corrals within the public ROW shall be responsible for maintaining the racks according to the standards set forth in a Covenant Maintenance Agreement with the LADOT (LAMC Section 12.21A.16.f.2.ii.e).
- If, for any reason, the responsibility for maintaining a Bicycle Corral is returned to the City of Los Angeles, it shall be considered a City funded Bicycle Corral (LAMC Section 12.21A.16.f.2.ii.f).

  - If, for any reason, the City determines that a Bicycle Corral must be removed, business owners shall no longer be able to count the spaces removed toward their required bicycle parking. In such cases, said businesses shall be required to provide any bicycle spaces lost in the removal of the corral. Failure to comply may result in the revocation of a business's Certificate of Occupancy and a fine for Code Violation (LAMC Section 12.21A.16.f.2.iii).

Bike Corral Installation at 5th St and Main St

BICYCLE PARKING AND SHOWER FACILITIES. (LAMC Section 12.21.A.16)

Parking spaces for bicycles and facilities for employee showers and lockers shall be provided for new development and additions that increase the floor area of a building as follows (LAMC Section 12.21.A.16) :

Land Uses (LAMC Section 12.21.A.16.a)

Residential (LAMC Section 12.21.A.16.a.1)

- For all residential buildings containing more than three dwelling units or more than five guest rooms, long- and short-term bicycle parking shall be provided. Long-term bicycle parking shall be provided at a rate of one per dwelling unit or guest room. In addition, short-term bicycle parking shall be provided at a rate of one per ten dwelling units or guest rooms. In such cases, a minimum of two short-term bicycle parking spaces shall be provided (Figure 14).
    - In instances where a building may contain both dwelling units and guest rooms, the sum of dwelling units and guest rooms shall be used to determine the amount of long- and short-term parking. Any combination that results in more than five combined dwelling units and guest rooms will require bicycle parking (LAMC Section 12.21.A.16.a.1.i).
    - Developments such as townhouses that include individually accessed private garages for each unit shall not be required to provide long-term bicycle parking (LAMC Section 12.21.A.16.a.1.ii).

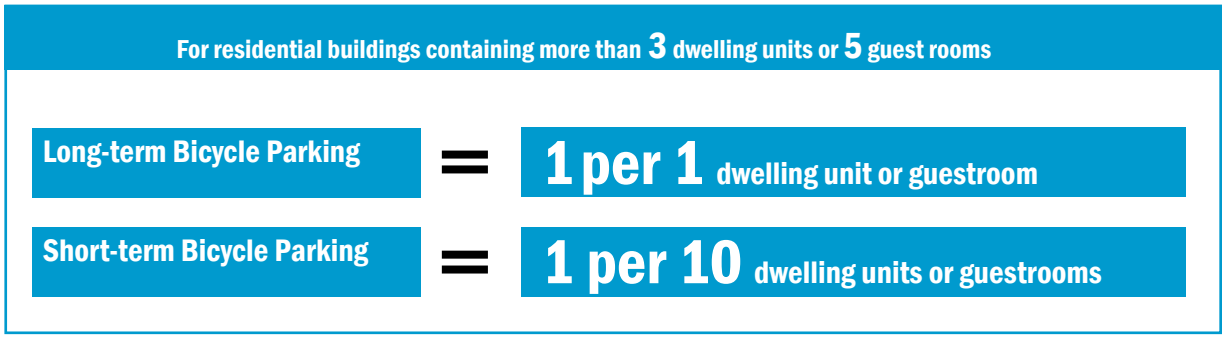


Figure 14

Commercial, Institutional, and Industrial Uses (LAMC Section 12.21.A.16.a.2)

- For all commercial, institutional, and industrial uses that require automobile parking under Subsection 12.21.A.4 (c), (d), (e), and (f), short- and long-term bicycle parking shall be provided as per Table 12.21.A.16(a)(2).
    - For uses listed in Table 12.21.A.16(a)(2) a minimum of two short-term and two long-term bicycle parking spaces shall be provided (LAMC Section 12.21.A.16.a.2.i).
    - After the first 100 bicycle parking spaces are provided for uses listed in Table 12.21.A.16(a)(2), additional spaces may be provided at the minimum required by the Los Angeles Green Building Code Article 99.05.106.4 (LAMC Section 12.21.A.16.a.2.ii).

Table 12.21 A.16(a)(2)

Required Bicycle Parking Spaces per building floor area as defined under LAMC Section 12.03

LAND USE	SHORT-TERM BICYCLE PARKING	LONG-TERM BICYCLE PARKING
COMMERCIAL USES		
Office	1 per 10,000 sq.ft. (minimum 2)	1 per 5,000 sq.ft. (minimum 2)
Warehouse	1 per 10,000 sq.ft. (minimum 2)	1 per 10,000 sq.ft. (minimum 2)
Health Clubs	1 per 2,000 sq.ft. (minimum 2)	1 per 2,000 sq.ft. (minimum 2)
Restaurants and Bars, General	1 per 2,000 sq.ft. (minimum 2)	1 per 2,000 sq.ft. (minimum 2)
Restaurant, small (floor area less than 1000 sq. ft.	2 per restaurant	2 per restaurant
Retail Stores, General	1 per 2,000 sq.ft. (minimum 2)	1 per 2,000 sq.ft. (minimum 2)
Retail, Furniture Stores	1 per 10,000 sq.ft. (minimum 2)	1 per 10,000 sq.ft. (minimum 2)
Trade Schools, Private Universities, and Private Colleges	1 per 500 sq.ft. or 1 per 50 fixed seats whichever is greater (minimum 2)	1 per 1000 sq.ft. or 1 per 100 fixed seats whichever is greater (minimum 2)
Hotels and Hostels	1 per 20 guest rooms (minimum 2)	1 per 20 guest rooms (minimum 2)
All other Commercial Uses	1 per 10,000 sq.ft. (minimum 2)	1 per 10,000 sq.ft. (minimum 2)
INSTITUTIONAL USES		
All Institutional Uses	1 per 10,000 sq.ft. (minimum 2)	1 per 5,000 sq.ft. (minimum 2)
INDUSTRIAL USES		
All Industrial Uses	1 per 10,000 sq.ft. (minimum 2)	1 per 10,000 sq.ft. (minimum 2)
OTHER USES		
Auditoriums	1 per 350 sq.ft. or 1 per 50 fixed seats whichever is greater (minimum 2)	1 per 700 sq.ft. or 1 per 100 fixed seats whichever is greater (minimum 2)
Private Elementary Schools, Private High Schools, and Charter Schools	4 per classroom (minimum 2)	1 per 10 classrooms (minimum 2)

Combination of Uses (LAMC Section 12.21.A.16.a.3)

- Where there is a combination of uses on a lot, the number of bicycle parking spaces required shall be the sum of the requirements of the various uses. The exceptions provided in Section 12.21.4(j) for automobile parking shall also apply to bicycle parking.

Fractions (LAMC Section 12.21.A.16.b)

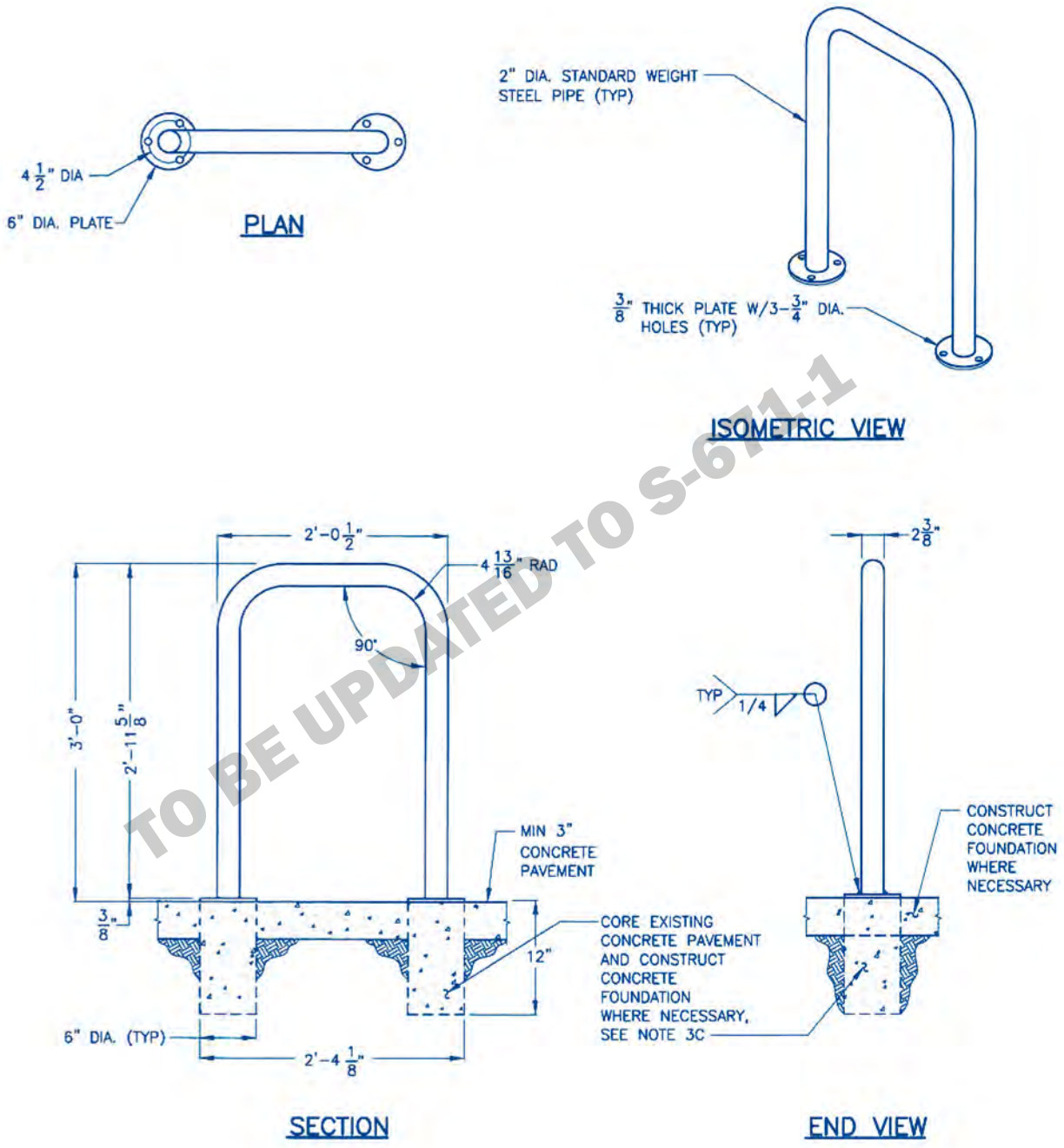
- When the application of these regulations results in the requirement of a fractional bicycle space, any fraction up to and including one-half may be disregarded, and any fraction over one-half shall be construed as requiring one bicycle parking space.

Change of Use (LAMC Section 12.21.A.16.c)

- Buildings undergoing a change of use shall not be required to provide bicycle parking. This includes adaptive reuse projects pursuant to Section 12.22.A.26.

ATTACHMENT 1

Bike Rack Standard Plan S-671-1 (Sheet 1)



TO BE UPDATED TO S-671-1

BUREAU OF ENGINEERING	DEPARTMENT OF PUBLIC WORKS	CITY OF LOS ANGELES
BICYCLE RACK		STANDARD PLAN S-671-0

PREPARED	SUBMITTED	APPROVED	SUPERSEDES	REFERENCES
CARLOS MORALES, DEPT. OF TRANSPORTATION AMIR SEDADI, P.E., INTERIM GEN. MANAGER RONALD LAU, BUREAU OF ENGINEERING CHECKED PATRICK LEE, P.E., BUREAU OF ENGINEERING	SAMARA ALI-AHMAD, P.E. DATE 3/10/11 ENGINEER OF DESIGN KENNETH REDD, P.E. DATE 3/11/11 DEPUTY CITY ENGINEER	GARY LEE MOORE, P.E. DATE 3-14-11 CITY ENGINEER REGISTERED PROFESSIONAL ENGINEER GARY LEE MOORE No. C-49446 Exp. 9.30.12 CIVIL STATE OF CALIFORNIA		
			SHEET 1 OF 2 SHEETS	

NOTES

1. MATERIALS:

   A. PIPE: ASTM A53 GRADE B STANDARD WEIGHT STEEL PIPE; 2 INCH DIA. CONSTRUCTED OF 90 DEGREE BENDS WITH AN INSIDE RADIUS BEND OF 4 13/16 INCHES.

   B. PLATE: ASTM A36 3/8 INCH THICK PLATE WITH THREE 3/4 INCH DIA. HOLES AT 120 DEGREES SPACING.

   BOLT: DRIVE TYPE ANCHOR BOLT MADE OF ZINC PLATED AISI 1038 HEAT TREATED CARBON STEEL, 1/2 INCH DIA BY 3 INCHES LONG. THE ANCHOR BOLT, SHALL BE MANUFACTURED BY POWERS FASTENERS (WWW.POWERS.COM), ALLIED BOLT INC. (Http://alliedboltinc.com) OR APPROVED EQUIVALENT. NO ANCHOR BOLT SHALL CONTAIN ANY SHARP EDGES.

   C. UNLESS SPECIFIED OTHERWISE OR APPROVED BY THE CITY ENGINEER, THE BICYCLE RACK SHALL BE INVERTED–U DESIGN AND SUPPORT THE BICYCLE FRAME (NOT THE WHEEL) AT TWO POINTS.

   D. THE BICYCLE RACK SHALL ALLOW FOR USE OF A CABLE AS WELL AS U–SHAPED LOCK.

2. MATERIAL FINISH:

   A. ALL METAL COMPONENTS INCLUDING ALL BOLT HOLES SHALL HAVE MINIMUM 4 MIL THICK BLACK COLORED, LONG WEARING, MILDEW AND ULTRAVIOLET RAY RESISTANT ELECTROSTATIC POLYESTER COATING MADE OF TRIGLYCIDYL (TGIC) APPLIED IN THE FACTORY PRIOR TO DELIVERY. OTHER ALTERNATE COATINGS ARE CITY APPROVED POLYVINYL, THERMOPLASTIC OR POWDER COATING.

   B. BEFORE COATING APPLICATION, THE BICYCLE RACK SHALL BE SANDBLASTED AND EPOXY PRIMED.

   C. ALL FINISH COATINGS SHALL BE MAINTAINED BY THE INSTALLER. ANY DAMAGED SURFACE AREA INCLUDING THOSE RESULTED FROM THE INSTALLER'S OPERATION SHALL BE REPAIRED TO THE CITY ENGINEER'S SATISFACTION WITH APPROVED MATERIALS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. ALL WASTE SHALL BE HANDLED AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE EPA AND/OR CALIFORNIA STATE REQUIREMENTS.

3. MOUNTING PROCEDURES:

   A. ALL BICYCLE RACKS SHALL BE INSTALLED IN THE SIDEWALK FURNITURE ZONE AT A LOCATION APPROVED BY THE DEPARTMENT OF TRANSPORTATION (http://www.ladot.lacity.org/tf_development_review.htm) AND THE CITY ENGINEER. A MINIMUM 48 INCH WIDE UNOBSTRUCTABLE SIDEWALK MUST BE MAINTAINED. NO INTERFERENCE WITH THE PEDESTRIAN ACCESS AND/OR THE EGRESS TO THE PARKING ZONE SHALL BE PERMITTED.

   B. UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER, ALL INSTALLATIONS SHALL CONFORM WITH THE FOLLOWING CLEARANCES AND APPLICABLE AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS:

   - MINIMUM 45 FEET CLEARANCE FROM ALL STREET CORNERS TO PROVIDE THE REQUIRED VISIBILITY TRIANGLE.
   - MINIMUM 45 FEET CLEARANCE FROM BUS STOP, BUS SHELTER, OR ITS REQUIRED CLEAR APPROACH AREA. FOR ARTICULATED BUS STOP, MINIMUM 55 FEET CLEARANCE SHALL BE PROVIDED.
   - MINIMUM 25 FEET FROM ANY PORTION OF THE BEGINNING OF THE CURB RETURN (BCR), THE END OF THE CURB RETURN (ECR), THE TOP OF THE CURB OF ANY CURB RAMP OR ALLEY INTERSECTION.
   - MINIMUM 48 INCHES CLEARANCE FROM ANY FIRE DEPARTMENT CONNECTION; STAND PIPE; INLET, OUTLET, OR DRAIN PIPE THAT ARE INSTALLED AT THE EXTERIOR OF THE BUILDING. PROVIDE MINIMUM 48 INCHES CLEAR SIDEWALK ACCESS FROM THE STREET CURB TO THE FIRE FACILITIES.
   - MINIMUM 24 INCHES CLEARANCE FROM THE CURB FACE.
   - MINIMUM 63 INCHES (36 INCHES PLUS 27 INCHES WHEEL SPACE) CLEARANCE BETWEEN ANY PART OF THE RACK OR RACK POST, AND ANY SIDEWALK FURNITURE OR IMPROVEMENT INCLUDING BUT NOT LIMITED TO STREET TREE AND TREE WELL, PARKING METER, STREET LIGHTING STANDARD, TRAFFIC SIGN OR POST, HYDRANT, OTHER UTILITY FACILITY AND ITS ACCESS OPENING.
   - IF ADDITIONAL RACK IS INSTALLED SIDE BY SIDE, IT SHALL HAVE MINIMUM 30 INCHES CLEARANCE BETWEEN THE RACKS OR THE RACK POSTS.
   - IF ADDITIONAL RACK IS INSTALLED END TO END, IT SHALL HAVE AT LEAST 90 INCHES (36 INCHES PLUS TWO–27 INCHES WHEEL SPACE) CLEARANCE BETWEEN THE RACKS OR RACK POSTS.
   - MINIMUM 3 INCHES CLEARANCE FROM ANY EXPANSION JOINT OR CONTROL JOINT IN THE CONCRETE PAVEMNT. DO NOT AFFIX BICYCLE RACK OVER OR NEAR ANY UTILITY FACILITY, STORM DRAIN CATCH BASIN OR STRUCTURE.

   C. ALL BOLT HOLES IN THE CONCRETE PAVEMENT OR THE CONCRETE FOUNDATION SHALL BE PREDRILLED HOLES, 1/2 INCH DIA. BY 2 3/4 INCHES DEEP. PRIOR TO INSTALLATION, ALL BOLT HOLES SHALL BE CLEANED OF DUST OR DELETERIOUS MATERIAL. ALL ANCHOR BOLTS SHALL BE DRIVEN VERTICALLY THROUGH THE SUPPORT PLATE INTO THE BOLT HOLES UNTIL THE HEAD IS FIRMLY SEATED AGAINST THE SUPPORT PLATE. NO PROTRUDING OR NON–FLUSH ANCHOR BOLTS SHALL BE USED.

   D. FOR CONCRETE PAVEMENT THAT IS LESS THAN 3 INCHES THICK, CONSTRUCT CONCRETE FOUNDATION IN ACCORDANCE WITH THE SPECIFIED DETAILS. FOR CONCRETE PAVEMENT THAT IS NOT LEVEL, USE HOT DIPPED GALVANIZED STEEL OR STAINLESS STEEL WASHERS TO LEVEL THE RACK AND THE SUPPORT PLATES BEFORE DRIVING THE ANCHOR BOLTS. FILL ALL OPENINGS AND VOIDS WITH NON–SHRINK GROUT AFTER ERECTION OF THE BICYCLE RACK.

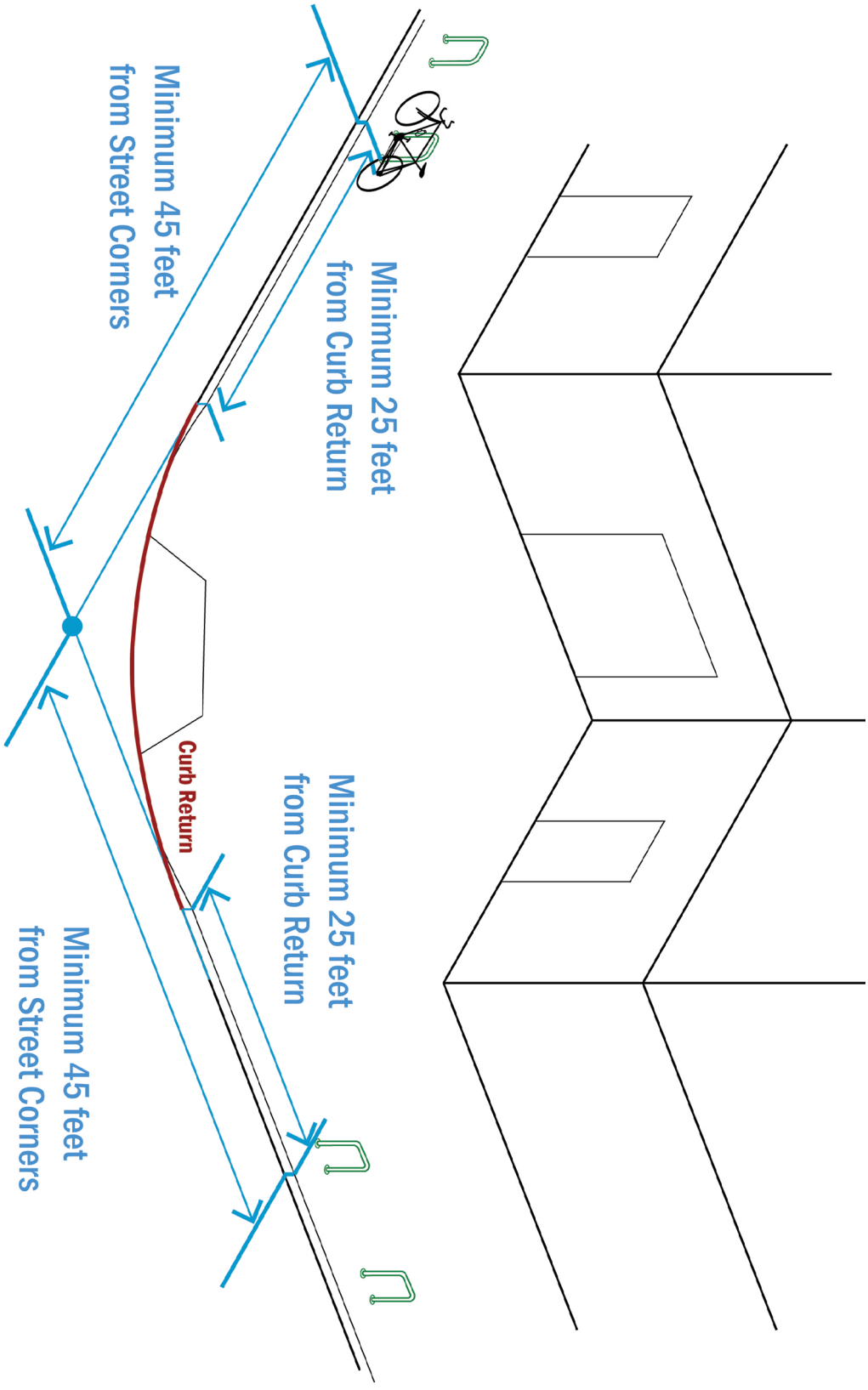
4. COVENANT AND MAINTENANCE AGREEMENT:

   A. ALL BICYCLE RACKS INSTALLED UNDER WORK PERMIT SHALL BE MAINTAINED BY THE PERMITTEE. THE PERMITTEE SHALL COMPLETE THE COVENANT & AGREEMENT (C&A) FORM, AVAILABLE FROM THE DEPARTMENT OF TRANSPORTATION PERMIT OFFICE, EXECUTE IT WITH THE CITY AND RECORD IT WITH THE LOS ANGELES COUNTY REGISTRAR–RECORDER. SUBMIT A COPY OF RECORDED C&A TO THE CITY ENGINEER BEFORE A WORK PERMIT CAN BE ISSUED.

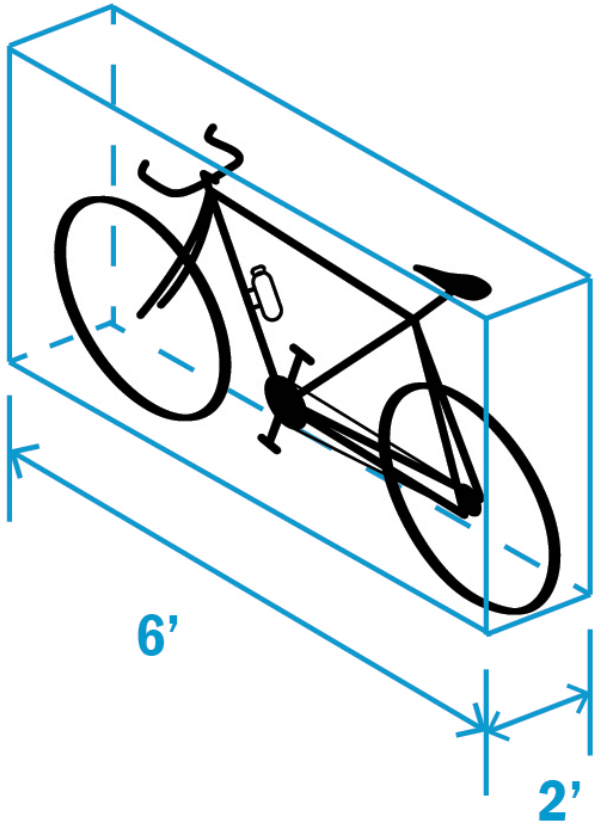
TO BE UPDATED TO S-671-1

ATTACHMENT 1

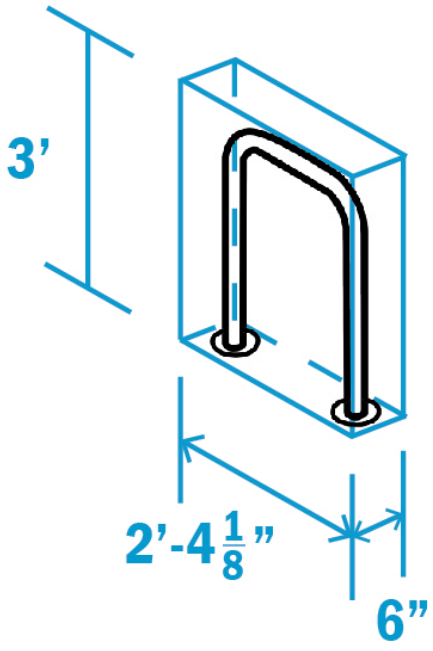
Bike Rack Standard Plan S-671-1 (Clearance Requreiemnts Diagram)



Dimension of a Common Bike



Dimension of a Common Bike Rack



ATTACHMENT 3

Bike Parking Examples

Generally Acceptable Bike Racks

Generally Unacceptable Bike Racks

Photo Credit: https://www.flickr.com/search/?text=bike%20rack
https://www.google.com/search?hl=en&q=fahrradständer+stein&tbm

REFERENCES

APBP. (2010). *Bicycle Parking Guidelines, (2nd Ed.)* Available at https://apbp.site-ym.com/?page=Publications

City of Los Angeles. (2013) *Bicycle Parking Ordinance.* Retrieved from http://clkrep.lacity.org/onlinedocs/2012/12-1297-s1_misc_1-15-13.pdf

City of Vancouver. *COMING TO A STOP: All Ages and Abilities Bicycle Parking in New and Existing Development.* Retrived from https://sustain.ubc.ca/sites/sustain.ubc.ca/files/GCS/2015%20Project%20Reports

LACBC. *Bicycle Parking Ordinances, Examples From The United States.* Retrieved from http://la-bike.org/sites/default/files/Websitefiles/LACBC_Bicyle_Parking_Ordinance_Guide.pdf

SFMTA. *Bicycle Parking: Standards, Guidelines, Recommendations.* Retreived from https://www.sfmta.com/sites/default/files/pdfs/Bicycle_Parking_Guidelines.pdf

For more Information on Bicycle Parking, Visit:

http://bicyclela.org

LADOT BIKE PROGRAM

SUMMARY OF CASE STUDY EXPERIENCE

this section reviews the case studies collected and key lessons learned from the case study explorationMitigating Traffic Congestion provides over 25 in-depth case examples of demand-side programs implemented in a rich and varied range of locations, including the following:

Schools & Universities
• University of Washington - Seattle, WA
• Contra Costa County SchoolPool - CA

Special Events
• Summerfest and Concert Tour - WI
• Seahawks Stadium (Qwest Field) - Seattle, WA
• Pac Bell (SBC) Park - San Francisco, CA

Recreation & Tourism Destinations
• Zion National Park - UT
• City of Aspen - CO
• Lake Tahoe Basin - CA

Transportation Corridor Planning and Construction Mitigation
• I-15 Reconstruction - Salt Lake City, UT
• I-25 & I-225 Reconstruction - Denver, CO
• Springfield Interchange - VA

Employer-Based Commute Programs
• Bal Harbour Village - FL
• CALIBRE - Alexandria, VA
• CH2M HILL - Denver, CO
• Georgia Power Company - Atlanta, GA
• Hennepin County - MN
• Johns Manville - Denver, CO
• Nike - Beaverton, OR
• Overlake Christian Church - Redmond, VA
• Simmons College - Boston, MA
• Swedish Medical Center - Seattle, WA
• Texas Children's Hospital - Houston, TX

Location / Design Strategies
• Metropolitan Seattle Transit-Oriented Development and Flexcar - Seattle, WA
• Orenco Station Mixed-Use Development - Hillsboro, OR

Variable Pricing
• Lee County Variable Bridge Tolls - Lee County, FL

Advanced Traveler Information
• Commuter Link - Salt Lake City, UT

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Demand-side programs have also been applied to major employment centers, new development sites, airports, freight movement, and to entire regions (via road pricing and travel reduction regulations).
This shows the diversity of applications for demand-side strategies, some focused on the traditional commuter market and others applied to school, recreation, and other types of travel. The common theme is the desire to reduce peak period travel by managing demand and removing cars from the most congested places (parking lots, roads, highways) and the most congested times. This is accomplished by facilitating efficient traveler choices of the mode of travel used, the time of departure, the route used, and by reducing the need for some trips altogether.

Another commonality is the use of demand-side strategies to address very specific problems, such as:

- **Inadequate parking or road space for employees, visitors, fans, customers, etc.**
- **Harmful effects from automobile emissions.**

- **Employee tardiness or absence due to travel delays or lack of travel options.**
- **Recruitment and retention of skilled workers with minimal stress from commuting.**

The more targeted the problem and travel market, the better chance that demand-side programs can provide an effective solution or be part of a package of solutions.

All of these problems impose a tangible cost on travelers, on business, on government, and on society as a whole. The benefit-to-cost ratio of many demand-side programs is quite high, as is discussed below.

What Works Best? A Review of International Experience
Several seminal research projects and guidance reports have been produced since the 1993 FHWA report "Implementing Effective TDM Measures" (COMSIS, 1993). This body of knowledge includes studies performed at the regional, state, national and international levels. Considerable research has been performed in U.S. regions that require employer trip reduction programs (e.g., WA and AZ); in states that embrace TDM (e.g., Florida); among research organizations (e.g., TRB and TCRP); and federal agencies (FHWA, FTA, EPA). Among the more important recent references is the TCRP Report 95, the "Traveler Response to Transportation System Changes," which documents the impacts of various demand management strategies in chapters covering: HOV facilities, vanpools, pricing, parking management, and employer TDM (R.H. Pratt Consultant, 2003).

An example of this research comes from another TCRP project, B-4, "Cost Effectiveness of TDM Programs," that evaluated some 50 employer-based demand management programs in the U.S., but provides insight into demand management effectiveness in both commute and non-commute applications. The study estimated that the average reduction in vehicle trips among all these "successful" programs was 15.3% (at a cost of about $0.75 per trip reduced). However, programs that focused on information/promotion alone exhibited no measurable decrease in trips. Programs that provided enhanced alternatives, such as vanpools or shuttle buses, realized a 8.5% reduction in trips. Programs that focused on financial incentives and disincentives realized a 16.4% reduction of trips and programs that combined enhanced alternatives with incentives/disincentives for their use, realized a 24.5% reduction in vehicle trips. (COMSIS, 1994).

Evidence also suggests that the number of strategies implemented, or the size of the budget, does not positively correlate with higher effectiveness. Some of the simplest, albeit politically controversial, measures involve pricing of automobile travel and subsidies for high occupancy modes. So, one researcher concluded: "It's more what you do to influence commute behavior (the strategies/incentive utilized), more than how you market the program or how much you spend" (ESTC, 1998).

Another important study, the Congressionally-mandated review of the Congestion Mitigation Air Quality (CMAQ) federal funding program performed by the Transportation Research Board, revealed that four of the five most cost-effective strategies (measured as the cost per pound of emissions reduced) funded by CMAQ were demand-side strategies, including: regional rideshare programs, charges and fees for drivers, vanpool programs, and "miscellaneous TDM" programs, (TRB 2002).

Many other recent research projects have documented the effectiveness of TDM strategies to reduce automobile travel for school trips, recreation and special event trips. This was accomplished by increasing auto occupancy (which is already higher than work travel) and providing quality shuttle service and traveler information.

The scope of demand-side strategies has evolved over the past 30 years in the U.S. However, these measures (referred to as Mobility Management in Europe and some other regions of the world) are a growing phenomenon in other countries and are even integrated into national policy in places like:

- **Sweden.** Where a region must consider demand management solutions before considered new road capacity.
- **The Netherlands.** Where travel reduction goals have been set and TDM is an integral part of the program to meet these goals.
- **United Kingdom.** Where all regions are required to have "green travel plan" capabilities and integrate TDM into land development approvals (AMOR, 2003).

Many other innovative applications of demand-side strategies have been tested, evaluated, and documented in Europe, Australia, Canada, etc. In Europe especially, demand-side strategies are being applied to non-commute travel markets (tourists, schools, special events) in a conscious effort to address the growth in automobile use that is affecting most countries of the world. The E.U.–funded project MOST (MObility STrategies for the next decades) provides comprehensive findings from over 30 pilot projects (AMOR 2003). A recent study by the Organization of Economic Cooperation and Development (OECD), "Road Travel Demand: Meeting the Challenge," documents world-wide experience with demand management strategies (OECD, 2002). The resource section of this report provides references and links to related websites.

LESSONS LEARNED FROM THE CASE STUDIES

all the research on, and experience with, demand-side programs and strategies cannot possibly be summarized in 10 brief points. However, a few common findings and lessons can be offered here

1. Demand-Side Strategies Are About Choices – As the term implies, demand-side strategies intend to modulate the demand for travel in a way that is based on choices (mode, time, route, etc.), and incentives for using alternatives to driving alone and avoiding the most congested conditions. A good example of this is the I-15 FasTrak program in San Diego, which allows solo drivers to pay to use the HOV lanes and allows those sharing a ride to use the lanes for free, but does not force a fee on any driver or require anyone to use a particular facility (OECD, 2002).

2. Time and Financial Incentives Are Most Effective – Time savings for alternative mode users (such as HOV lanes), financial incentives (such as vanpool subsidies or tax incentives) and financial disincentives (such as parking or road pricing) are consistently cited as the most effective demand-side strategies. These intervening influences help to balance out the perceived convenience and speed of driving alone (ITE, forthcoming).

3. Incentives and Disincentives Require Good Alternatives – Time and financial incentives and disincentives are most effective when they support good travel alternatives, such as transit service, vanpool formation, carpool matching, bicycle facilities, etc. The TCRP B-4 study, cited earlier, provides tangible evidence of this symbiosis by showing that the most effective programs combined financial incentives (such as transit subsidies) with improved alternatives (such as more frequent and convenient bus service (COMSIS, 1994).

4. Managing Demand Can Be a Cost-Effective Tool – Many studies that have compared mobility and air quality strategies have concluded that demand management strategies are among the most cost-effective in that they can reduce a trip, mile of travel or ton of emissions for a relatively modest amount of money. Demand-side strategies may not be the primary solution to these problems, but if they are applied in the right situation, they can help address traffic and air pollution problems in modest, yet very affordable ways (TRB, 2002).

5. Information Technology Enhances Demand-Side Programs – While incentives and disincentives are perhaps the key to effectiveness, much of managing demand relies on good information about travel conditions and alternatives. Advances in information technology make managing demand more effective by providing real-time, accurate information on travel options, traffic conditions, alternative routes, and even dynamic matching of travelers into shared ride arrangements.

6. The Implementing Organization Should Match the Scope of the Strategies – The organizational home for demand-side programs should match the scope of the application. For example, strategies to reduce congestion around employment centers or in corridors might be managed by Transportation Management Associations, whereas regional traveler information and ridematching services might better be implemented by regional agencies with access to appropriate resources and information. Multiple organizations are often involved in a given urban area, calling for coordination and cooperation to maximize impacts.

7. Packaging Demand-Side Strategies Can Create Synergies – Research indicates that the greatest potential for demand management lies in strategic grouping of measures into “programs” of reinforcing actions. For example, limiting parking in a high-density commercial development served by convenient, reliable transit can do more to reduce vehicle trips than can solely limiting parking supply (ITE, forthcoming). One study concluded that “packaged, complementary solutions are usually more effective than a single measure” (OECD, 2002).

8. Expectations Need to Be Realistic – Demand-side programs are not a panacea for all social ills or a cure-all for traffic congestion problems. However, they can have a significant impact on travel. If the correct incentives and disincentives are used to facilitate shifts to alternative modes, demand-side strategies can reduce vehicle trips and VMT 10%-20%. Most decision-makers, however, are reluctant to adopt certain disincentives (such as parking pricing) to change travel behavior in a significant way. In the absence of these strategies, most demand management programs should only be expected to reduce travel by 0% - 5% (COMSIS, 1993). At the same time, it is important to recognize that the goals for demand-side programs often extend beyond reducing VMT to include mobility, accessibility, environmental, and other outcomes.

9. Plans for Managing Demand Should Be Integrated into Overall Transportation Plans – Demand-side strategies should be considered a set of measures to better manage existing infrastructure, but they still need to be well-planned. Demand management actions should be considered simultaneously with related transit, traffic engineering, and land use plans (ITE, forthcoming). Since many metropolitan planning organizations and regional councils now fund and oversee demand management efforts, it is important to integrate demand-side strategies into long-range plans, as well as shorter-term management and operations actions. It is also important to evaluate the impacts of actual demand-side measures, as implemented, to better inform future decision-making.

10. Demand-Side Strategies Are Practical – Demand-side strategies are compatible with sustainability, transportation-land use interaction, and other longer-term goals. Yet, it is most applicable to managing demand for finite travel markets, to solve real problem that provide tangible benefits to users and implementers. Travels are smart consumers and, when faced with tangible changes in out-of-pocket costs and travel time, will change their travel behavior in immediate and significant ways (ESTC, 2003).

CONCLUSIONS & FUTURE DEVELOPMENTS

a summary of concluding thoughts from the publication and highlights of important future developments

This report offers a new, broader perspective on demand-side strategies. These programs can be a critical component of a comprehensive transportation improvement program to improve the efficiency of the current transportation system, and they can also be an integral part of longer-term transportation and land use plans in order to change the fundamental influences on demand for the single occupant vehicle traveling at peak periods on congested roads. Ultimately, demand-side programs can be a critical factor in “decoupling” the link between economic growth and transportation growth. Economic growth creates new demands for travel and not all of this new demand can be accommodated on current or future roads (OECD, 2002).

Demand-side programs, in their traditional form of commute trip reduction, were born from energy crises of the 1970s as a response to fuel shortages. In the new millennium, managing demand extends to all types of travel, be it parents walking a group of kids to school in a “walking bus,” visitors to a National Park leaving their cars off-site and using clean shuttles, new residents opting to live in “transit-oriented developments” to avoid the need for an extra car, or shippers coordinating deliveries to avoid congested roads and clogged city streets.

This is all demand management. Many of the tools used today by transportation planners, traffic engineers, and traffic operations managers are designed to modulate the demand for travel (by mode, route, location or time) rather than provide more capacity in the system to accommodate more trips. This new perspective on demand-side programs can still benefit from some of the findings from the 1993 FHWA report, “Implementing Effective TDM Measures.” That report discussed the “economics of TDM” by estimating that the average cost to society to accommodate a one-way daily solo commute trip was $6.75, whereas the cost to employers to reduce a commute trip was $1.33. Carpooling cost commuters $1.92 per trip, whereas driving alone cost $4.81. (COMSIS 1993) These economics are as compelling today and they were ten years ago. Perhaps as the “demand for TDM” grows and is applied to other travel markets, the economics are even more compelling.

In the future, the role of demand-side programs in solving specific problems and contributing to larger goals will be even greater as our inability to squeeze more cars into a limited road system compels us to look for ways to do things “smarter” and to focus on moving people, goods, and information rather than cars and other vehicles.