

MEMORANDUM



TO: PLANNING COMMISSION
FROM: MARK SPENCER, AICP, PLANNER
SUBJECT: BICYCLE PARKING ORDINANCE
DATE: FEBRUARY 6, 2013



The City of Novi promotes bicycling as a healthy, environmentally-friendly way of getting around the City of Novi. The City's recently adopted Non-Motorized Master Plan recognizes the importance of providing bicycle parking to encourage the use of bicycles for transportation. The Plan recommends updating the City's ordinances to include bicycle parking requirements and design standards.

The lack of a secure parking space at their destination keeps many people from using bikes for transportation because leaving the bike unattended, even for short periods, can easily result in damage or theft. When bicycle parking is not secure or convenient, it will not be used. Thus, providing bicycle parking at various destinations encourages people to use their bicycles for transportation. In addition, providing a designated area for bicycle parking can provide a more orderly appearance to a building and it will discourage bicyclists from locking their bikes to unacceptable fixtures, such as trees, sign posts, benches, or railings.

The Planning Staff reviewed several bicycle parking ordinances from other communities and reviewed the recommendations made in the City's Non-Motorized Master Plan. Staff also reviewed the bicycle parking recommendations listed in the Association of Pedestrian and Bicycle Professionals' publication, "Bicycle Parking Guidelines," the Institute of Transportation Engineers' publication, "Promoting Sustainable Transportation Through Site Design," and on the Pedestrian and Bicycle Information Center's web page. Staff then prepared a set of proposed bicycle parking requirements and standards to include in the Zoning Ordinance.

The proposed ordinance changes consider many factors to help the City of Novi ensure that new and reworked developments provide adequate, quality bicycle parking facilities that will encourage more people to bicycle to their destination. The factors considered include the following:

- **Short-Term and Long-Term Parking:** Almost all land uses would be required to provide bicycle parking spaces that could be used for short-term and long-term bicycle parking. Since the Non-Motorized Master Plan stated that enclosed secure long term bicycle parking facilities would work best in Novi at hospitals and regional shopping centers only and due to the higher cost for this type of

parking spaces, requiring enclosed secure bicycle parking was not proposed at this time.

- **Weather Protected:** Since covered parking could attract more bicycle users, larger developments would be required to provide 50% of the required bicycle parking spaces as covered bicycle parking. Most likely these spaces would be the preferred parking spaces for long term bicycle parking.
- **Visibility and Security:** Bicycle parking shall be located along the primary entrance route to the site to be easily spotted and in a location visible from the entrance to discourage theft and vandalism.
- **Lighting:** Bicycle parking areas shall be well illuminated to provide theft protection, personal security and accident prevention.
- **Avoid Conflict with Pedestrians:** The location of bicycle parking shall not block the pedestrian routes and the recommended "Inverted U Shape" bike rack would not include protruding bars or be so low as to be a hazards to pedestrians.
- **Avoid Conflict with Automobiles:** Bicycle parking and auto parking shall be separated by a landscape area that prevents motor vehicles from damaging parked bicycles and keeps some thieves at a distance from the bicycle parking.
- **Bicycle Parking Demand:** Published standards, other ordinances and the Non-Motorized Master Plan were consulted to formulate the bicycle parking space requirements. The Non-Motorized Master Plan forecasts 5% of all trips will be by non-motorized means in the future. This number is used as the base. The number of proposed spaces required varies by use, taking into account potential bicyclists, i.e. shoppers, students, employees, recreation facility users, etc. Uses with a higher potential shall provide a greater number of bicycle parking spaces.

On January 14, 2013, the Walkable Novi Committee members present at their meeting, reviewed the proposed ordinance amendment and made positive comments. At this time, the Planning Commission is asked to hold a public hearing on February 13, 2013 and forward a recommendation to the City Council.

If you have any questions or comments on this matter, please feel free to contact Mark Spencer in the Community Development Department at 248-347-0475 or mspencer@cityofnovi.org.

**Draft Strike-Thru Bicycle Parking
Zoning Ordinance Amendment**

STATE OF MICHIGAN
COUNTY OF OAKLAND
CITY OF NOVI

ORDINANCE NO. 13- 18 – 262

AN ORDINANCE TO AMEND ORDINANCE NO. 97-18 AS AMENDED, THE CITY OF NOVI ZONING ORDINANCE, AMENDING ARTICLE 25, GENERAL PROVISIONS, SECTION 2505, TO PROVIDE BICYCLE PARKING REQUIREMENTS AND TO CLARIFY AUTOMOBILE PARKING REQUIREMENTS; AND SECTION 2506, TO PROVIDE BICYCLE PARKING LAYOUT STANDARDS.

THE CITY OF NOVI ORDAINS:

Part I. That Ordinance No. 97-18, the City of Novi Zoning Ordinance, as amended, Article 25, General Provisions, is hereby amended to read as follows:

Sec. 2501 - 2504 [unchanged]

Sec. 2505. - Off-Street Parking Requirements.

There shall be provided in all districts at the time of erection or enlargement of any main building or structure, automobile and bicycle off-street parking spaces with adequate access to all spaces. The number of off-street automobile and bicycle parking spaces, in conjunction with all land or building uses shall be provided, prior to the issuance of a certificate of occupancy, as hereinafter prescribed:

Subsection 1. [unchanged]

2. Off-street automobile parking spaces may be located within a rear yard or within a side yard which is in excess of the side yard setback unless otherwise provided in this Ordinance. Off-street parking shall not be permitted within a front yard nor within a minimum side yard setback unless otherwise provided in this Ordinance. Off-street bicycle parking may be located in any yard subject to meeting the parking setback requirements of Section 2400, the Schedule of Regulations including the pertaining footnotes.

3. Off-street automobile parking for other than residential use shall be either on the same parcel of land or within three hundred (300) feet of the building it is intended to serve, measured along a pedestrian walkway from the nearest point of such building to the nearest point of the off-street parking lot. The pedestrian walkway shall be on the applicant's property or within a dedicated right-of-way, provided that a pedestrian walkway approved by the planning commission may cross intervening parcels of land under separate ownership where the applicant has secured necessary permanent easements from the owners of the intervening

parcels and the walkway provides a reasonably safe method of pedestrian access between the parking area and the building served.

The purpose of the sidewalk is to permit safe and convenient pedestrian access for employees and/or customers who may use the parking lot. If the pedestrian walkway crosses an intervening major arterial, arterial, or minor arterial road, the applicant shall be responsible for improvements required by the planning commission, including the requirement of an overhead crosswalk, necessary to provide a safe pedestrian crossing. No crossing shall be permitted unless approved by the Planning Commission as a safe crossing.

Ownership shall be shown of all lots or parcels intended for use as parking by the applicant. Off-street parking required to meet the minimum standards specified at Section 2505.14. shall be located within the corporate limits of the City of Novi.

Bicycle parking shall be located on the parcel that the bicycle parking serves unless the City approves locating the bicycle parking within the road right-of-way adjacent to the principal building(s) in a location that would be similar to the location of street trees, street furniture or pedestrian amenities, and located so pedestrian and bicycle travel on non-motorized facilities in the road right-of-way would not be compromised.

Bicycle parking shall be located along the principal building entrance approach line and clearly visible and easily accessible from the approach. Bicycle parking shall be no more than 120 feet from the entrance that it serves and preferably no farther than the nearest automobile parking space. Bicycle parking shall be visible from the entrances it serves. The City may require buildings with multiple frequently used entrances to each be served with bicycle parking if the entrance is served by automobile parking.

Notwithstanding Section 2516.1.(c)(1) (permitting administrative site plan review of expansion of existing off-street parking areas), all off-premises parking lots must be approved by the Planning Commission in accordance with requirements of Section 2516.2.(c) for special land uses and subject to the public hearing requirements set forth and regulated in Section 3006 of this Ordinance.

Required parking for an exposition facility permitted pursuant to Subsection 1001.1 may be located up to three thousand (3,000) feet from the facility provided:

- (a) There is an agreement between the operator of the exposition facility and the owner of the off-premises parking lot(s) permitting use of said lot(s) for exposition facility parking for not less than five (5) years,

which lease agreement shall be recorded by the operator with the Oakland County Register of Deeds prior to final occupancy permit, and a certified copy of the recorded document provided to the City Clerk, and, provided further, should said parking agreement be rescinded the operator shall immediately notify the City Clerk and provide alternative parking complying with terms of this section;

(b) There is provided a shuttle service to transport persons from the parking lot to the facility; and

(c) No more than twenty-five (25) percent of the required parking is provided by such off-premises lots.

Upon the expiration or termination of any off-premises parking lot lease required by this section, a substitute off-premises parking lot lease shall be executed, recorded and provided to the City Clerk. The failure to comply with this requirement shall constitute a violation of this section of the Ordinance.

Subsections 4.-13. [unchanged]

14. The minimum number of off-street automobile and bicycle parking spaces by type of use shall be determined in accordance with the following schedule.

Unless a specific number is specified, the minimum number of bicycle parking spaces shall be greater of two (2) spaces, the minimum listed in the following table or 5% of the required automobile parking spaces.

Use		Number of Minimum Automobile Parking Spaces Per Unit of Measure	Number of Minimum Bicycle Parking Spaces Per Unit of Measure
a.	Residential		
(1)	Residential, One-Family and Two-Family	Two (2) for each dwelling unit.	<u>None.</u>
(2)	Residential, Multiple-Family	Two (2) for each dwelling unit having two (2) or less bedrooms and two and one-half (2 ½) for each dwelling unit having three (3) or more bedrooms.	<u>One (1) covered bicycle parking space for each five (5) dwelling units- four spaces minimum.</u>
(3)	Housing for Elderly:	Two (2) for each dwelling unit.	<u>One (1) covered bicycle parking space for each five (5) dwelling units.</u>

Use		Number of Minimum Automobile Parking Spaces Per Unit of Measure	Number of Minimum Bicycle Parking Spaces Per Unit of Measure
	Shared Elderly Living	Two (2) for each dwelling unit.	<u>One (1) covered bicycle parking space for each five (5) dwelling units.</u>
	Independent Elderly	One (1) for each dwelling unit and one (1) for each employee.	<u>One (1) covered bicycle parking space for each five (5) dwelling units.</u>
	Congregate Elderly	Three (3) for each four (4) units and one (1) for each employee.	<u>One (1) space for each twenty (20) employees, minimum two (2) spaces.</u>
(4)	Mobile Home Park	Two (2) for each mobile home site.	<u>None.</u>
b. Institutional			
(1)	Churches or temples	One (1) for each three (3) seats or persons permitted to capacity as regulated by local, county or state fire or building codes or six (6) feet of pews in the main unit of worship, whichever is the greater, plus parking for accessory uses, if determined necessary by the City.	<u>Four (4) spaces minimum.</u>
(2)	Hospitals	Two and seven tenths (2.7) for each one (1) bed plus parking for related uses.	<u>Four (4) spaces minimum.</u>
(3)	Assisted Living Convalescent Care, Homes for the Aged, and Nursing Homes	One (1) for each four (4) beds and one (1) for each employee.	<u>One (1) space for each twenty (20) employees, minimum two (2) spaces.</u>
(4)	Elementary and Junior High School	One (1) for each one (1) teacher, administrator and other day employee or the requirements of the auditorium, whichever is the greater.	<u>Three (3) spaces per classroom – ten (10) spaces minimum.</u>
(5)	Senior High Schools	One (1) for each one (1) teacher, administrator, and other day employee, and one (1) for each four (4) students over the driving age, or the requirements of the auditorium, whichever is	<u>Three (3) spaces per classroom – ten (10) spaces minimum.</u>

Use		Number of Minimum Automobile Parking Spaces Per Unit of Measure	Number of Minimum Bicycle Parking Spaces Per Unit of Measure
		the greater.	
(6)	Private clubs or lodge halls	One (1) for each three (3) persons allowed within the maximum occupancy load as established by local, county or state fire, building or health codes.	
(7)	Private golf clubs, swimming pool clubs or other similar uses	One (1) for each two (2) member families or individuals plus spaces required for each accessory use such as a restaurant or bar.	<u>One (1) space for each twenty (20) employees, minimum two (2) spaces.</u>
(8)	Private tennis club or other similar uses	Six (6) for each one (1) tennis court plus spaces required for each accessory use.	
(9)	Golf courses open to the general public, except miniature or "par-3" courses	Six (6) for each one (1) golf hole and one (1) for each one (1) employee, plus spaces required for each accessory use, such as a restaurant or bar.	<u>One (1) space for each twenty (20) employees, minimum two (2) spaces.</u>
(10)	Fraternity or sorority	One (1) for each five (5) permitted active members, or one (1) for each two (2) beds, whichever is greater.	<u>One (1) covered bicycle parking space for each five (5) beds - four (4) covered bicycle parking spaces minimum.</u>
(11)	Stadium, sports arena, or similar place of outdoor assembly	One (1) for each three (3) seats or five (5) feet of benches.	
(12)	Theaters and auditoriums	One (1) for each three and four tenths (3.4) seats plus one (1) for each two (2) employees.	<u>Four (4) spaces minimum.</u>
(13)	Nursery school, day nurseries or child care centers	One (1) for each three hundred fifty (350) square feet of usable floor area plus one (1) space for each employee.	<u>One (1) space for each twenty (20) employees, minimum two (2) spaces.</u>
(14)	Library, museum, post office	One (1) for each three hundred fifty (350) square feet of gross floor area.	<u>Ten percent (10%) of required automobile parking spaces - Four (4)</u>

Use		Number of Minimum Automobile Parking Spaces Per Unit of Measure	Number of Minimum Bicycle Parking Spaces Per Unit of Measure
			spaces minimum.
(15)	Health clubs and facilities		
	30,000 square feet or less	One (1) for each 5.5 memberships (family or individual)	Four (4) spaces minimum.
	Greater than 30,000 square feet	One (1) for each 9 memberships (family or individual)	
(16)	Swimming Clubs (private)	One (1) for each four (4) member families (under maximum membership).	Four (4) spaces minimum.
(17)	Swimming Pools (public)	One (1) for each four (4) persons permitted under maximum capacity of the facility.	Ten percent (10%) of required automobile parking spaces – Four (4) spaces minimum.
(18)	<u>Colleges and Business Schools</u>	<u>Each structure shall meet the requirements of the most similar principal use in this table (i.e. administrative office, dormitory). Classroom buildings shall provide 1 space per 5 seats of seating capacity. Parking requirements for other facilities not in this table shall be determined by the Planning Commission</u>	Ten percent (10%) of required automobile parking spaces – Four (4) spaces minimum.
(19)	<u>Private recreation facilities accessory to a residential development</u>	<u>As required in Section 402.5.c</u>	Ten percent (10%) of required automobile parking spaces – Four (4) spaces minimum.
c. Business and commercial			
(1)	Planned Commercial or Shopping Center	One (1) for each 250 square feet gross leasable area (GLA) for developments under 400,000 square feet (4.0 spaces per 1,000 square feet GLA); For developments between 400,000 and 600,000 square feet, a sliding scale where	Four (4) spaces minimum.

Use	Number of Minimum Automobile Parking Spaces Per Unit of Measure	Number of Minimum Bicycle Parking Spaces Per Unit of Measure	
		<p>the parking ratio increases/decreases proportionally with the centers square footage, from one (1) for each 250 square feet of GLA (4 spaces per 1,000 sq. ft. GLA) at 400,000 square feet to (1) for each 222 square feet of GLA (4.5 spaces per 1,000 sq. ft. GLA) at 600,000 square feet; For developments 600,000 square feet GLA and larger, one (1) for each 222 square feet GLA (4.5 spaces per 1,000 sq. ft. GLA). If the combined GLA of restaurant, cinema, and entertainment uses exceeds 20% of the total GLA for the shopping center, a shared parking study shall be undertaken to determine the appropriate parking ratio for the shopping center.</p> <p>Any single use over 30,000 square feet and within a shopping center shall have its portion of the parking requirement calculated from the appropriate standards for the use, if one exists.</p>	
(2)	Auto wash (automatic)	Two (2) plus one (1) for each employee plus one (1) for each vacuum station or similar area.	
(3)	Auto wash (self-service or coin-operated)	Two (2) plus one (1) for each employee plus one (1) for each vacuum station or similar area.	<u>None.</u>

Use		Number of Minimum Automobile Parking Spaces Per Unit of Measure	Number of Minimum Bicycle Parking Spaces Per Unit of Measure
	(4) Beauty parlor or barbershop	Three (3) spaces for each of the first two (2) beauty or barber chairs, and one and one-half (1 ½) spaces for each additional chair.	
	(5) Bowling alleys	Five (5) for each one (1) bowling lane plus parking for accessory uses.	
	(6) Dance halls, pool or billiard parlors, roller skating rinks, exhibition halls, and assembly halls without fixed seats	One (1) for each two (2) persons allowed within the maximum occupancy load as established by local, county or state fire, building or health codes.	
	(7) Restaurants and other establishments for sale and consumption on the premises of beverages, food or refreshments		
	(a) Sit down	One (1) for each seventy (70) square feet gross floor area (14.3 spaces per one thousand (1,000) square feet), or one (1) for each two (2) employees, plus one (1) for each two (2) customers allowed under maximum capacity (including waiting areas), whichever is greater.	<u>Four (4) spaces minimum.</u>
	(b) Fast Food	One (1) for every two (2) employees, plus (1) for every two (2) customers allowed under maximum capacity (including waiting areas) plus compliance with the requirements for stacking spaces outlined in Section 2506.12.	

Use		Number of Minimum Automobile Parking Spaces Per Unit of Measure	Number of Minimum Bicycle Parking Spaces Per Unit of Measure
	(8) Drive-in restaurants	One (1) for each thirty (30) square feet of usable floor area.	
	(8A) Drive-through restaurants	One (1) for each employee plus one (1) for every two (2) persons allowed in seating areas.	
	(9) Furniture and appliance, household equipment, repair shops, showroom of a plumber, decorator, electrician, or similar trade, shoe repair and other similar uses.	(i) One (1) space for each two hundred (200) square feet of gross leasable floor area. (ii) Upon approval by the Planning Commission, granted pursuant to subsection 2505.16, the paved area for off-street parking may be reduced to an area comprising one (1) space for each eight hundred (800) square feet of usable floor area, and one (1) additional space for each two (2) employees working in processing areas, provided that a surplus area is provided on the site to accommodate the construction of additional off-street parking to fulfill the requirements of preceding paragraph if needed.	
	(10) Gasoline fueling stations with accessory service garage	Two (2) for each service bay; and one (1) for each fuel dispensing stand; and one (1) for each vehicle used as part of the equipment of the service station; and spaces for accessory uses.	
	(11) Gasoline filling stations without accessory service garage	One (1) fueling space for each fuel dispensing stand. In addition, one (1) space per 200 square feet usable floor area (not to include	

Use			Number of Minimum Automobile Parking Spaces Per Unit of Measure	Number of Minimum Bicycle Parking Spaces Per Unit of Measure
			vehicle fueling spaces located at the pump) plus parking for accessory uses. In no instance shall such a facility provide less than three (3) parking spaces. In no instance shall a required parking space or its maneuvering area conflict with vehicles being fueled or awaiting fuel.	
	(12)	Laundromats and coin-operated dry cleaners	One (1) for each two (2) machines (washing and dry cleaning).	
	(13)	Miniature or "par-3" golf courses	Three (3) for each one (1) hole plus one (1) for each one (1) employee.	<u>Ten percent (10%) of required automobile parking spaces.</u>
	(14)	Mortuary establishments	One (1) for each fifty (50) square feet of usable floor area.	
	(15)	Motel, hotel or other commercial lodging establishments	One (1) for each one (1) occupancy unit plus one (1) for each one (1) employee, plus parking for accessory uses.	<u>One (1) space for each twenty (20) employees, minimum two (2) spaces.</u>
	(16)	Motor vehicle sales and service establishments	One (1) for each two hundred (200) square feet of usable floor area of sales room and one (1) for each one (1) auto service stall in the service room.	<u>One (1) space for each twenty (20) employees, minimum two (2) spaces.</u>
	(17)	Retail stores except as otherwise specified herein	One (1) for each two hundred (200) square feet of gross leasable floor area.	
	(18)	Conference facility	One (1) for every three (3) persons allowed within the maximum occupancy load as established by local, county or state fire, building or health codes. Requirements for hotel, motel, restaurants, lounges,	<u>Four (4) spaces minimum.</u>

Use	Number of Minimum Automobile Parking Spaces Per Unit of Measure	Number of Minimum Bicycle Parking Spaces Per Unit of Measure
		offices and other uses associated with a conference facility shall also be met as established for such uses in Section 2505
(19)	Exposition facility	<p>One (1) for every one hundred twenty (120) square feet of gross floor area in exhibition hall space and ancillary conference room space available for use, plus parking for general office space, restaurants, museum area, warehousing and other permitted uses per requirements at Section 2505.14. In addition, a minimum of ten (10) tractor-trailer truck parking spaces shall be provided for an exhibition facility. Truck spaces shall be a minimum of fourteen (14) feet wide and fifty-five (55) feet long, with adequate maneuvering area located adjacent to said truck spaces.</p> <p>The parking requirements for an exposition facility may be satisfied by construction of seventy-five (75) percent of the minimum required spaces, provided that an area sufficient to construct the remaining twenty-five (25) percent of required spaces is reserved on the site, or on a site owned by the applicant which is within three hundred (300) feet of the site pursuant to Subsection 2505.3. Thereafter, the applicant</p>
		<u>Four (4) spaces minimum.</u>

Use	Number of Minimum Automobile Parking Spaces Per Unit of Measure	Number of Minimum Bicycle Parking Spaces Per Unit of Measure	
		<p>shall on an annual basis submit a report to the Building Department listing each event held at the facility, the number of attendees, the total number of vehicles parked on site each day for the event, and the peak number of vehicles parked on site at a given time during the event. The Building Department shall also have provided to it by City consultants and departments, any additional information pertinent to the reasonable adequacy of the usable parking at the facility. The Building Department shall make a determination on an annual basis as to whether additional parking shall be constructed on the land reserved or a portion of the land reserved.</p>	
(20)	Nursery or Greenhouse	<p>One (1) for each three hundred (300) square feet of interior gross floor area plus one (1) for each five hundred (500) square feet of greenhouse sales area (including outdoor sales area of flats and similar smaller landscape materials) plus one (1) for each five thousand (5,000) square feet of exterior nursery sales area dedicated to larger stock items such as trees, shrubs and bulk items (non-living). For greenhouse and exterior nursery areas not open to</p>	<p><u>One (1) space for each twenty (20) employees, minimum two (2) spaces maximum four (4) spaces required.</u></p>

Use			Number of Minimum Automobile Parking Spaces Per Unit of Measure	Number of Minimum Bicycle Parking Spaces Per Unit of Measure
			the public, one (1) space for each employee during peak season.	
	(21)	Oil Change Facility	Two and one-half (2.5) for each service bay.	<u>Two (2) spaces total.</u>
	(22)	Hardware/Building Supply Store (free-standing)	One (1) per two hundred forty (240) square feet of gross floor area (interior and exterior).	
	(23)	Banquet Halls	One (1) for each three (3) persons permitted under maximum capacity.	
	(24)	Microbreweries; brewpubs	One (1) for each seventy (70) square feet of gross floor area (14.3 spaces per one thousand (1,000) square feet), or one (1) for each two (2) customers allowed under maximum capacity (including waiting areas) in the taproom/restaurant, whichever is greater, plus one (1) for each one and one-half (1½) employees in largest working shift in the taproom/restaurant and in the microbrewery or brewpub. Above requirements apply for either a freestanding facility or for a facility attached to other retail uses in a planned commercial center.	
	(25)	Pet Boarding Facility	One (1) for each seven hundred (700) square feet of usable floor area	<u>Two (2) spaces total.</u>
	(26)	Warehouse stores, characterized by the collocation of sales and storage functions, where	One (1) for each seven hundred (700) square feet of gross leasable floor area.	<u>One (1) space for each twenty (20) employees, minimum two (2) spaces.</u>

Use		Number of Minimum Automobile Parking Spaces Per Unit of Measure	Number of Minimum Bicycle Parking Spaces Per Unit of Measure
	aisles are designed to frequently accommodate both customers and powered material handling equipment simultaneously.		
(27)	Lumber and Building Material Stores over 75,000 square feet	One (1) for each seven hundred (700) square feet of gross leasable floor area.	<u>One (1) space for each twenty (20) employees, minimum two (2) spaces.</u>
d. Offices			
(1)	<u>Banks and Financial Institutions</u>	One (1) for each one hundred fifty (150) square feet of gross floor area (6.7 spaces per 1,000 sq. ft. GFA).	
(2)	Business offices or professional offices except as indicated in the following item 3	One (1) for each two hundred twenty-two (222) square feet GLA (4.5 spaces per 1,000 sq. ft. GLA) for buildings up to 100,000 square feet. For buildings greater than 100,000 square feet, one (1) per two hundred eighty six (286) square feet GLA (3.5 spaces per 1,000 sq. ft. GLA).	
(3)	Professional offices of doctors, dentists, veterinarian or similar professions; outpatient clinics	One (1) for each one hundred sixty seven (167) square feet GLA (6 spaces per 1,000 sq. ft. GLA) for buildings up to 5,000 square feet. For buildings greater than 5,000 square feet, one (1) per one hundred seventy-five (175) square feet GLA (5.7 spaces per 1,000 sq. ft. GLA).	

Use		Number of Minimum Automobile Parking Spaces Per Unit of Measure	Number of Minimum Bicycle Parking Spaces Per Unit of Measure
e.	Industrial		
	(1) Industrial or research establishments and related accessory offices	One (1) space for each seven hundred (700) square feet of usable floor area or five (5) plus one (1) for each one and one-half (1 ½) employees in the largest working shift, whichever is greater. Space on site shall also be provided for all construction workers during periods of plant construction.	
	(2) Warehouses and wholesale establishments and related accessory offices	(i) One (1) space for each seven hundred (700) square feet of usable floor area. (ii) Upon approval by the Planning Commission, granted pursuant to subsection 2505.16, the paved area for off-street parking may be reduced to an area comprising five (5) spaces plus one (1) for every one (1) employee in the largest working shift, or five (5) spaces plus one (1) for every seventeen hundred (1700) square feet of usable floor area, whichever is greater, provided that a surplus area is provided on the site to accommodate the construction of additional off-street parking to fulfill the requirements of the preceding paragraph if needed.	
	(3) Automotive service establishment, public garage	Two (2) spaces for, each service bay, plus one (1) space for every employee. No wrecked or partially	<u>One (1) space for each twenty (20) employees, minimum two (2) spaces.</u>

Use	Number of Minimum Automobile Parking Spaces Per Unit of Measure	Number of Minimum Bicycle Parking Spaces Per Unit of Measure
	dismantled vehicles or vehicles without current license plates shall be stored outside.	
(4)	Mini Warehouse	Five (5) spaces at the office. Access to individual storage units shall provide for loading/unloading of vehicles adjacent to units without impeding thru traffic flow.
		Two (2) spaces total.

..

Paragraphs 15 and 16 [unchanged]

17. When the required number of automobile parking spaces exceeds twenty (20), the number of required automobile parking spaces may be reduced by one (1) space for every ten (10) uncovered bicycle parking spaces provided and by one (1) space for every five (5) covered bicycle parking spaces provided, up to a maximum of ten percent (10%) of the required automobile parking spaces subject to meeting the landbanking requirements of paragraph 16 above.

18. When the required number of bicycle parking spaces exceeds ten (ten) parking spaces, fifty percent (50%) of the bicycle parking spaces shall be covered bicycle parking spaces.

Sec. 2506. - Off-Street Stacking Space, Layout Standards, Construction and Maintenance.

Whenever the off-street parking requirements in Section 2505 requires the building of an off-street automobile or bicycle parking facility, or where P-1 Vehicular Parking Districts are provided, such off-street parking lots shall be laid out, constructed and maintained in accordance with the following standards and regulations:

Paragraph 1. [unchanged]1.

2. Plans for the layout of off-street automobile parking facilities shall be in accord with the following minimum requirements:

<u>Automobile Parking Pattern</u>	<u>Maneuvering Lane Width</u>	<u>Parking Space Width</u>	<u>Parking Space Length</u>	<u>Total Width Of One Tier Of Spaces Plus Maneuvering Lane</u>	<u>Total Width Of Two Tiers Of Spaces Plus Maneuvering Lane</u>
0° (parallel)	13 ft.	8 ft.	23 ft.	21 ft.	42 ft.
30° to 53°	15 ft.	9 ft.	18 ft.	34 ft.	53 ft.
54° to 74°	18 ft.	9 ft.	18 ft.	38 ft.	58 ft.
75° to 90°	24 ft.*	9 ft.	19 ft.	43 ft.	62 ft.

* When no parking spaces are present adjacent to a maneuvering lane, the lane width may be reduced to 22 feet, plus curb and gutter (if curbed) unless the Planning Commission finds that the 24 foot width is warranted for the proposed use.

Plans for the layout of bicycle parking facilities shall be in accord with the following minimum requirements:

<u>Bicycle Parking</u>	<u>Maneuvering Lane Width</u>	<u>Parking Space Width</u>	<u>Parking Space Length</u>	<u>Total Width Of One Tier Of Spaces Plus Maneuvering Lane</u>	<u>Total Width Of Two Tiers Of Spaces Plus Maneuvering Lane</u>
0° (parallel) to 90°	Four (4) feet	Two (2) feet single 2.5 feet double	Six (6) feet	Ten (10) feet	Sixteen (16) feet

All bicycle parking spaces shall be paved and adjacent to a bicycle rack of the inverted "U" design that is solid, cannot be easily removed with common tools, provides at least two contact points for a bicycle and permits locking of a bicycle through the frame and one wheel with a standard U-Lock or cable. The rack shall be anchored in concrete. Alternative designs may be considered if the proposed rack design functions similar to the inverted "U" design.

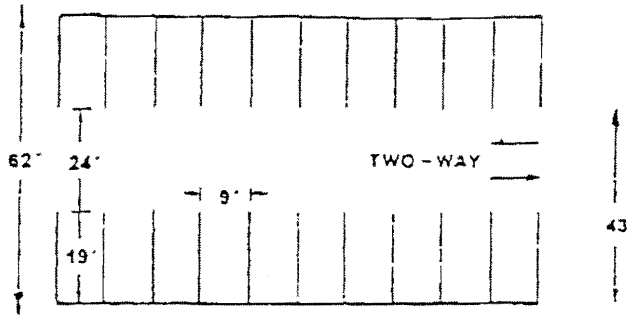
3. All automobile parking spaces shall be provided access by means of maneuvering lanes. Backing directly onto a street shall be prohibited. All bicycle parking spaces shall be accessible from adjacent street(s) and pathway(s) via a paved route that has a minimum width of six (6) feet.

Subsections 4 [unchanged]

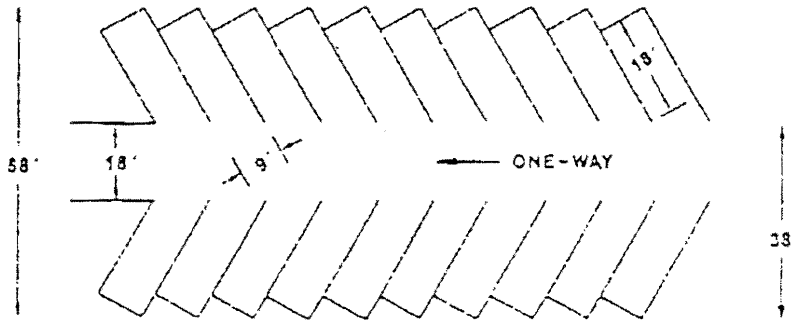
Subsection 5 [text unchanged – illustrations changed]

Parking Layout Illustration [renamed] Automobile Parking Layout

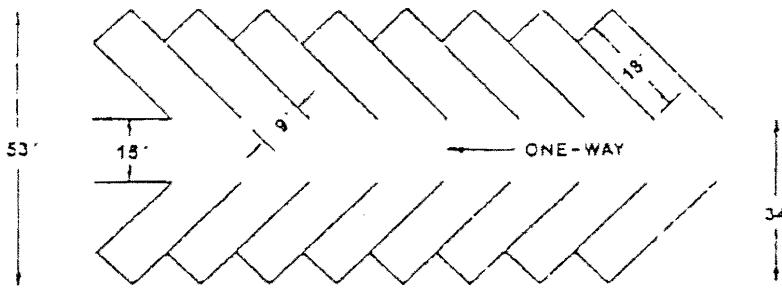
Automobile Parking Layout Illustration



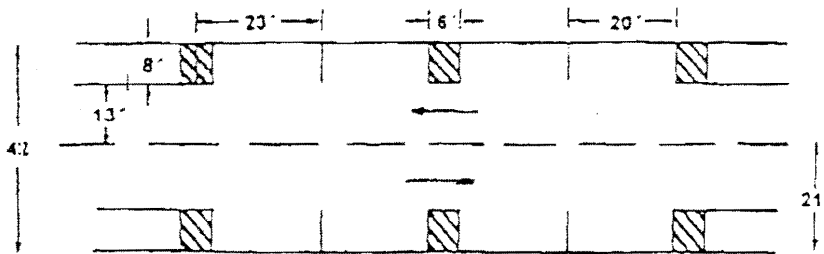
90 DEGREE



60 DEGREE

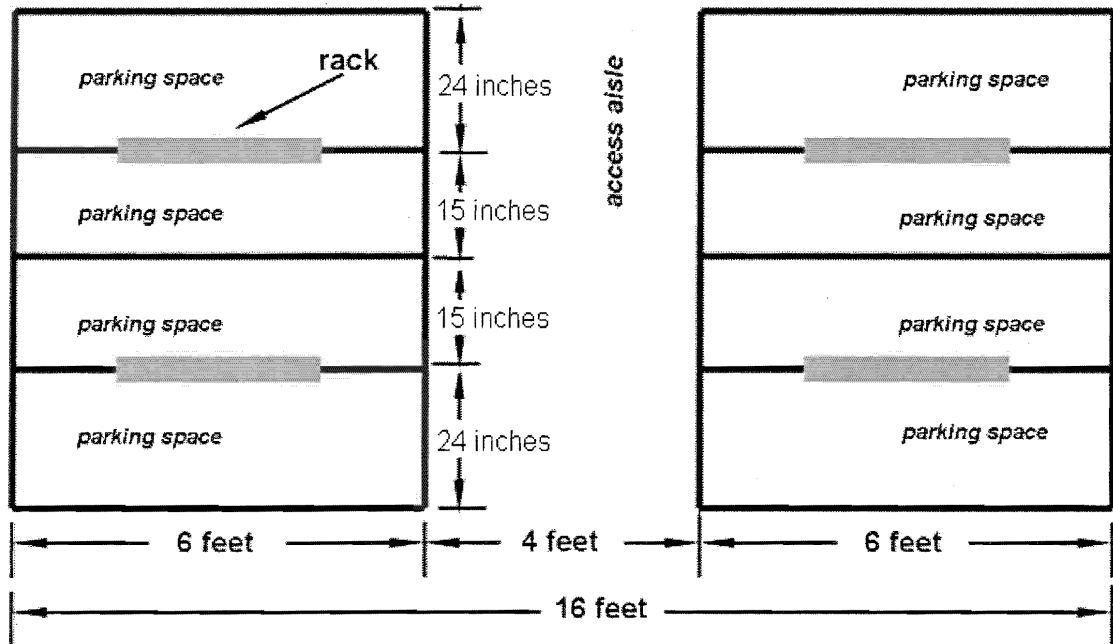


45 DEGREE



0 DEGREE (PARALLEL)

Bicycle Parking Layout Illustration



7. ~~(reserved)~~ Bicycle parking spaces shall be considered covered when located under a roof, overhang or awning adjacent to a wall or when located entirely within a building.

Subsections 8-14 [unchanged]

15. All bicycle parking areas shall be separated from automobile parking spaces and access aisles adjacent to bicycle parking spaces that are located at the end of a bay of parking spaces, by a raised curb landscape area that has a minimum width of eight (8) feet.

Sec. 2507 – 2524 [unchanged]

PART II.

Severability. Should any section, subdivision, clause, or phrase of this Ordinance be declared by the courts to be invalid, the validity of the Ordinance as a whole, or in part, shall not be affected other than the part invalidated.

PART III.

Savings Clause. The amendment of the Novi Code of Ordinances set forth in this Ordinance does not affect or impair any act done, offense committed, or right accruing, accrued, or acquired or liability, penalty, forfeiture or punishment, pending or incurred prior to the amendment of the Novi Code of Ordinances set forth in this Ordinance.

PART IV.

Repealer. All other Ordinance or parts of Ordinance in conflict herewith are hereby repealed only to the extent necessary to give this Ordinance full force and effect.

PART V.

Effective Date: Publication. Public hearing having been held hereon pursuant to the provisions of Section 103 of Act 110 of the Public Acts of 2006, as amended, the provisions of this Ordinance shall be published within fifteen (15) days of its adoption by publication of a brief notice in a newspaper circulated in the City of Novi stating the date of enactment and effective date, a brief statement as to its regulatory effect and that a complete copy of the Ordinance is available for public purchase, use and inspection at the office of the City Clerk during the hours of 8:00 A.M. to 5:00 P.M., Local Time. The provisions of this Ordinance shall become effective seven (7) days after its publication.

MADE, PASSED, AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF NOVI,
OAKLAND COUNTY, MICHIGAN, ON THE ___ DAY OF _____, 2013.

Robert J. GATT, MAYOR

MARYANNE CORNELIUS, CITY CLERK

Ayes:
Nays:
Abstentions:
Absent:

Excerpt 2010 City of Novi Master Plan for Land Use

Goals, Objectives and Implementation

Objective: Identify long-term funding sources for community infrastructure.

Implementation Strategy: Work with area legislators and other communities to generate support for legislation that would allow communities to use tools such as impact fees, recapture agreements, and adequate public facilities ordinances.

GOAL: Make certain that various land uses have no negative impact, physical or fiscal, on community infrastructure

Objective: Encourage developers to upgrade infrastructure impacted by their developments.

Implementation Strategy: Offer incentives such as density bonuses, streamlined review procedures, or setback allowances, in exchange for needed infrastructure improvements.

Objective: Encourage developments that reduce the number of vehicle trips on local thoroughfares.

Implementation Strategy: Adopt regulations and incentives to promote mixed-use developments.

Implementation Strategy: Utilize access management techniques (e.g. marginal access or frontage roads, rear access roads, shared driveways, etc.) to minimize traffic conflicts and maintain road capacity.

GOAL: Promote interconnectivity between neighborhoods to reduce vehicle trips on main roads

Objective: Educate developers and residents on the benefits of interconnections.

Implementation Strategy: Take advantage of opportunities that are available for interconnecting existing and future residential neighborhoods.

Implementation Strategy: Utilize pre-application meetings to inform the developers on the benefits of interconnection.

GOAL: Interconnect the City's pedestrian and bicycle paths

Objective: Expedite completion of path connections in a prioritized and timely manner.

Implementation Strategy: Adopt the Pedestrian & Bicycle Pathway Phasing Plan.

Implementation Strategy: Seek grant money whenever possible to complete pathways.

Implementation Strategy: Continue to enforce the Pathway Master Plan with new developments.

Implementation Strategy: Incorporate pathways into plans for road improvements.

GOAL: Continue to promote active living and healthy lifestyles in the City of Novi and continue to achieve a high level of recognition under the State of Michigan's "Promoting Active Communities Program."

Objective: Continue to strive toward making the City of Novi a more "Bikeable" and a more "Walkable" community.

Implementation Strategy: Work with neighboring communities, other agencies, and organizations to plan and build bicycle and pedestrian facilities that connect residential areas with civic, school, worship, park and retail destinations throughout the City including one or more connections across I-96 and with regional destinations in



Goals, Objectives and Implementation

neighboring communities.

Implementation Strategy: Plan and build recreational trail facilities that can accommodate bicycles and pedestrians.

Implementation Strategy: Provide recreation trails within all new parks and connect all new parks with recreation trails to the City's pathway and sidewalk system.

Implementation Strategy: Plan and build way-finding signage for bicycle and pedestrian routes.

Implementation Strategy: Establish ordinance requirements to require bicycle and pedestrian connectivity and bicycle parking facilities for new developments.

Implementation Strategy: Establish design standards for bicycle lanes for various road designs and recreation bicycle trails that meet national safety standards.

Implementation Strategy: Review and update if necessary, City design standards for pedestrian facilities to meet national safety and Americans with Disabilities Act (ADA) accessibility standards.

Implementation Strategy: Retrofit existing bicycle and pedestrian facilities to current national safety standards when feasible.

Implementation Strategy: Encourage the retrofitting of existing developments and destinations to provide bicycle and pedestrian access and bicycle parking.

Implementation Strategy: Review, update and develop maintenance requirements for public and private bicycle and pedestrian facilities through the use of maintenance standards and ordinances.

Implementation Strategy: Implement an adopt a trail type program to help maintain City bicycle and pedestrian facilities.

Implementation Strategy: Actively pursue public and private grants to plan, build and/or rebuild bicycle and pedestrian facilities.

Implementation Strategy: Where practical, encourage the Road Commission of Oakland County and the Michigan Department of Transportation to incorporate bicycle and pedestrian facilities with all major road projects.

Implementation Strategy: Implement a trail or route naming program to help obtain funds for the construction and maintenance of bicycle and pedestrian facilities.

Implementation Strategy: Continue to complete sidewalk and pathway gaps throughout the City and accelerate the rate of completion if funding permits.

Objective: Continue to develop public awareness of the City's existing and planned bicycle and pedestrian facilities and their benefits to the citizens of Novi.

Implementation Strategy: Produce maps of pedestrian and bicycle facilities for public distribution.

Implementation Strategy: Promote and organize various types of bicycle and pedestrian events.

Implementation Strategy: Produce a Bicycle and Pedestrian Master Plan with non-motorized transportation and recreation components.

Implementation Strategy: Develop a program to educate residents and businesses of their responsibilities for sidewalk and pathway maintenance and snow and ice removal.

Excerpt City of Novi Non-Motorized Transportation Plan

4.4 Bike Parking

The lack of a secure parking space discourages many people from using their bikes for basic transportation. When sufficient bike parking is not provided, theft becomes a concern and it leads to bikes being locked up to sign post, benches and other street furniture. When bicycles are parked in these spaces, they often disrupt pedestrian flow because the bikes impede the walkway. Bicycles also get impounded by local enforcement when parked in these areas causing an even greater deterrent to bicycle use. Bicycle parking needs to be visible, accessible, plentiful and convenient. If any of these criteria are not met, there is a good chance cyclist will not use the facilities and will park their bike wherever they feel it will be safest.

Definition of a Bicycle Parking Space- A bicycle parking space is an area two feet by six feet or the area occupied by a bicycle when using a bicycle parking device as designed.

Short-Term Bicycle Parking - Short-term bicycle parking is defined as a rack to which the frame and at least one wheel can be secured with a user-provided U-lock or padlock and cable. This type of parking is appropriate for short term parking at locations such as shopping areas, libraries, restaurants and other places where typical parking duration is less than two hours.

Long-Term Bicycle Parking- A long-term bicycle parking space is defined as protecting the entire bicycle and its components from inclement weather and theft or vandalism. It is to be located where it will serve the needs of cyclist who need to leave their bicycles unattended for extended periods of time, such as employees, tenants or residents.

Uncovered Bicycle Racks

Uncovered Bicycle Racks are the primary bike parking approach for areas where people are expected to park their bikes for only a few hours.

Design-Generally, bicycle racks of the inverted “U” design are considered the best models. Alternative designs may be considered for special situations, although they should function similar to the inverted “U” design, providing at least two contact points for a bicycle and be a shape and size that would permit locking of a bicycle through the frame and one wheel with a standard U-Lock or cable.



Location- Bicycle racks should be located on every city block where there is retail within a commercial district. The hoops should be placed on a hard surface with ample lighting and high visibility (e.g. in front of a store window) to discourage theft and vandalism. Racks should be placed to avoid conflicts with pedestrians, usually installed near the curb and away from building entrances and crosswalks. When racks are installed in public spaces there needs to be at least 5 feet of clear sidewalk space in order to allow for pedestrian flow.

Covered Bicycle Parking

Covered Bike Parking is desirable for both long-term and short-term bicycle storage. Basic bicycle racks should be placed under an overhang whenever possible, and specific covered bicycle parking should be created when needed. Covered Bicycle Parking should be available in areas where bikes are kept for an extended period of time, such as apartment buildings or at large commercial centers where employees and customers will utilize the covered spaces.

Design- The covering for bicycle parking will vary depending on the location. In addition to a roof, complete or partial side enclosures should be provided to minimize exposure to windblown rain and snow. The design of the racks is the same as for the basic uncovered bicycle hoops. When creating covered parking, there is also the opportunity to incorporate a green roof or solar panels into the rooftop to add to the functionality of the structure.



Location- Covered Bike Parking should be incorporated whenever there is opportunity to do so. Long-term covered bike parking should be located within 400 feet of the building it is intended to serve. Centralized locations further than 400 feet are also acceptable.

Enclosed and Secured Bicycle Parking

Enclosed and Secured Bicycle Parking is best for areas where bikes are kept for extended periods of time, such as apartment buildings and near places of employment. These types of facilities are usually placed within existing parking structures and come with extra bicycle parking amenities.

Design- Enclosed and Secured Bicycle Parking generally consists of an enclosed room or fenced off-area where access is controlled through a doorway. The configuration of the bike racks will vary based on the space, but in general they are designed to maximize the number of bicycles that may be fit in the space. Double tier bike racks and hanging bike racks are used to provide the majority of the bike storage. A few standard inverted “U” hoops should be provided and reserved for atypical bicycle designs that may not be accommodated by the other racks.

When bike racks are located within a parking decks there should be a safe means of egress to the parking area. If bicycles must access the space via a gate controlled access point, care should be taken to minimize conflicts with the gate arm. The gate arm should be shortened to allow a 4’ wide pathway for bicycles. The end of the gate arm should be rounded and covered with foam. The pathway for bicycles should be clearly marked on the pavement. This pathway should be 3’ wide and be located at least one foot from the end of the gate. Users of enclosed secured bike parking that is accessed via gate control should be provided instruction on how to safely navigate around the gate.

Access Control- Is by identification badge reader and for a specific location only.

Location- Generally within parking decks, but individual facilities may be established.

Amenities- Will vary by site. Ideally these include compressed air, lockers, a bench and a vending machine that dispenses basic bicycle supplies such as tubes and repair kits.

User Costs- Generally \$60 to \$80 per year rental plus \$20 account set-up fee.

In Novi, Enclosed and Secured Bicycle Parking would work best at areas with high concentrations of people, such as at Hospitals or Regional Shopping Centers where the facilities are targeted toward employees.

Bike Station

Bike Stations are premium secured bike parking and maintenance facilities intended for transit stations located in high density areas. They are intended primarily to serve transit riders who will disembark and then retrieve their bike and continue onto their final destination. They will also serve as a centralized bike parking solution for bicyclists who are not using the transit station but whose final destination is near the bike station. The bike station has an attendant that assist with the bicycle storage and the day-to-day operations of the facility.

Amount of Parking- Based on the expected number of transit users and a survey of potential users.

Design- The bike parking and maintenance areas are restricted to bike station employees only.

Access Control- The bike station is opened and attended while the transit station is open.

Location- Generally within parking decks.

Amenities- Compressed air, lockers, benches, changing room, showers and bicycle repair shop. The changing room and showers may be omitted if most of the users are expected to arrive via transit.

User Costs- Generally \$60 to \$80 per year rental plus \$20 account set-up fee or an hourly charge for parking. Repair cost at market rate.

At this point the City of Novi does not have the density to support a Bike Station in the City.

Bike Lockers

Bike Lockers are individual premium bike parking solution intended for remote and lower density areas where enclosed and secured bike parking is not available or feasible. Given the cost, appearance and space requirements of bike lockers they are only appropriate for limited locations.

Design- There is substantial variability in the designs of the bike lockers. Typically, individual bike lockers have an interior diagonal divider and doors on either end such that they may accommodate two bicycles. Bike Lockers may be arranged in row, in a circular pattern and stacked.



Access Control- Typically via a key.

User Costs- Generally around \$60 per year rental plus a \$20 key deposit.



On-Street Bicycle Parking

On-Street Bicycle Parking consists of movable bike racks that take the place of on-street motor vehicle parking. These racks are temporary and can be experimented with and moved as needed. They can also be used on a seasonal basis and can be removed during the winter.

Design- On-Street Bicycle Parking Racks are the size of a standard vehicle parking space and hold about 12 bicycles. These Racks are bolted into the pavement and can be removed when needed.

Location- These racks should be placed in active areas where it is difficult to accommodate sidewalk bicycle parking due to the competing demand for café tables and pedestrian walking space within the sidewalk area. Urban public spaces where there is on-street parking, such as Main Street would be a good location to test these facilities once non-motorized facilities are provided to this area.

Bicycle Parking Requirements

Currently the City of Novi does not have any bicycle parking requirements in the City Code. The code should be revised and updated as necessary to address the following issues:

- Require a minimum of 4 bicycle parking spaces at each commercial development or multi-family dwelling.
- For each multi-family dwelling require half of the bicycle parking spaces to be covered if the site is required to have 16 or more spaces based on the existing code description.
- Incentives should be provided to commercial and multi-family dwellings for providing covered and secured bicycle parking (e.g. reduction of vehicular parking and/or density bonus could be offered).
- Incentives should be provided to commercial and multi-family dwellings for providing covered bicycle parking over uncovered bicycle parking when not required to by code (e.g. reduction of vehicular parking and/or density bonus could be offered).
- Explore the idea of required bicycle parking facilities being credited toward provision of motor vehicle parking. Each ten required bicycle parking spaces, or fraction thereof, may be substituted for one code required motor vehicle parking space.
- Provide or reference graphical design guidelines with information on the specifics of bicycle rack design and placement. The Association of Pedestrian and Bicycle Professionals recently published the 2nd Edition of Bicycle Parking Guidelines; these serve as a good model or may be referenced. The report may be found at http://www.apbp.org/resource/resmgr/publications/bicycle_parking_guidelines.pdf
- Require hoops on every block with retail in a downtown/commercial zone.

Policy Recommendations for Bicycle Parking:

Within One Year:

- Update the City code to include bicycle parking requirements and design standards.

Within Three Years:

- Implement the bicycle parking requirements and design standards.

Bicycle Parking Guidelines
Adopted by the Association of Pedestrian and Bicycle Professionals

BICYCLE PARKING



GUIDELINES

A set of recommendations from the Association of Pedestrian and Bicycle Professionals [apbp]



"I would ride to work if there was a safe place to lock my bike."

INTRODUCTION

The lack of a secure parking space keeps many people from using their bikes for basic transportation. Leaving a bicycle unattended, even for short periods, can easily result in damage or theft. Finding a bike rack that doesn't work or isn't conveniently located makes for a frustrating experience.

The purpose of this document is to assist with the selection and placement of appropriate bicycle racks for short-term parking. Four major components will be discussed.

1. The rack element. This device supports the bicycle.
2. The rack. It is important to understand how bikes interact with each other when rack elements are assembled together.
3. Combining of multiple racks into a bicycle parking lot.
4. Locating the rack, and the relationship of the rack to the building entrance it serves and the cyclists' approach to that entrance.

The discussion will focus on outdoor installations. The racks are intended to accommodate conventional, upright, single-rider bicycles. It is assumed the cyclist will use a solid, U-shaped lock, or a cable lock, or a combination of the two.

The apbp Task Force that developed this guide is also developing recommendations for other important bicycle parking-related issues including:



- a. Assessing the appropriate number of bicycle parking spaces for different buildings and land uses, including the use of bicycle parking ordinances.
- b. Long-term bicycle storage facilities such as lockers and bicycle parking garages.
- c. Indoor bicycle parking and the carriage of bicycles in transit vehicles.



1. THE RACK ELEMENT

Definition: the rack element is the part of the bike rack that supports one bicycle.

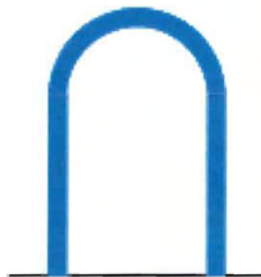
The rack element should:

- Support the bicycle upright by its frame in two places
- Prevent the wheel of the bicycle from tipping over
- Enable the frame and one or both wheels to be secured
- Support bicycles without a diamond-shaped frame with a horizontal top tube (e.g. a mixte frame)
- Allow front-in parking: a U-lock should be able to lock the front wheel and the down tube of an upright bicycle
- Allow back-in parking: a U-lock should be able to lock the rear wheel and seat tube of the bicycle



Comb, toast, school-yard, and other wheel-bending racks that provide no support for the bicycle frame are NOT recommended.

The rack element should resist being cut or detached using common hand tools, especially those that can be concealed in a backpack. Such tools include bolt cutters, pipe cutters, wrenches, and pry bars.



INVERTED "U"

One rack element supports two bikes.



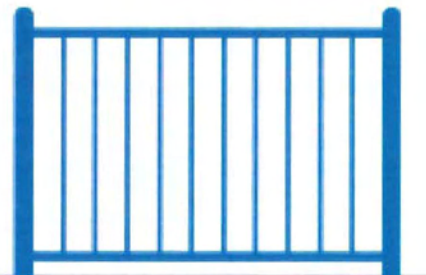
"A"

One rack element supports two bikes.



POST AND LOOP

One rack element supports two bikes.



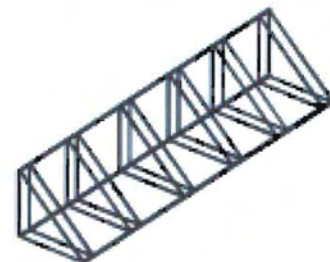
COMB

One rack element is a vertical segment of the rack.



WAVE

One rack element is a vertical segment of the rack.



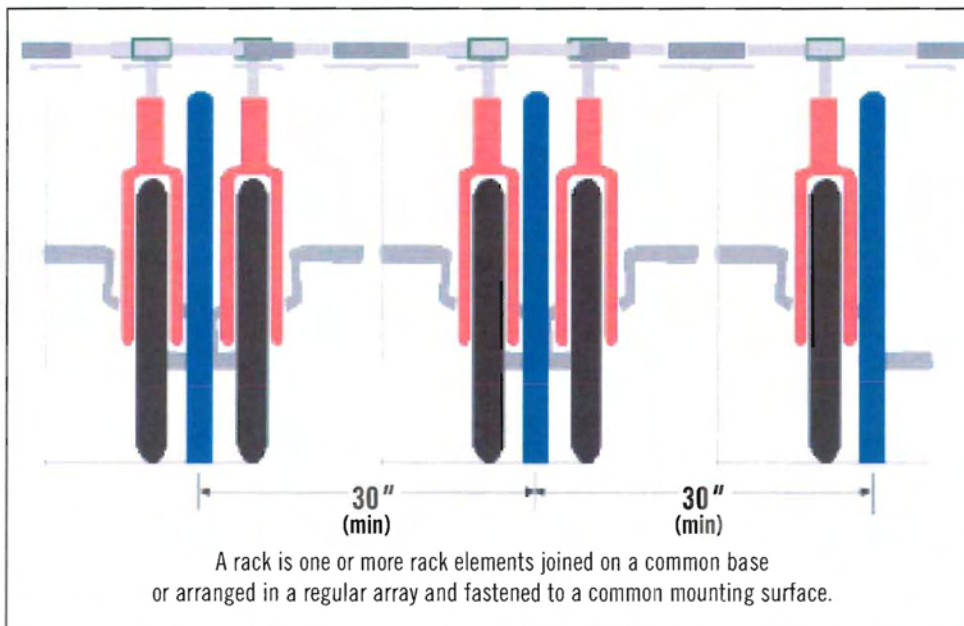
TOAST

One rack element holds one wheel of a bike.

2. THE RACK

Definition: a rack is one or more rack elements joined on any common base or arranged in a regular array and fastened to a common mounting surface.

The rack should consist of a grouping of rack element. The rack elements may be attached to a single frame or remain single elements mounted within close proximity to each other. The rack elements should not be easily detachable from the rack frame or easily removed from the mounting surface. The rack should be anchored so that it cannot be stolen with the bikes attached—vandal-resistant fasteners can be used to anchor a rack in the ground. An exception is a rack that is so large and heavy that it cannot be easily moved or lifted with the bicycles attached.



The rack should provide easy, independent bike access. Inverted “U” rack elements mounted in a row should be placed on 30” centers. This allows enough room for two bicycles to be secured to each rack element. Normally, the handlebar and seat heights will allow two bicycles to line up side-by-side if one of them is reversed. When there is a conflict, the bikes can be placed slightly offset from one another as shown. If the elements are placed too close together, it becomes difficult to attach two bikes to the same element.



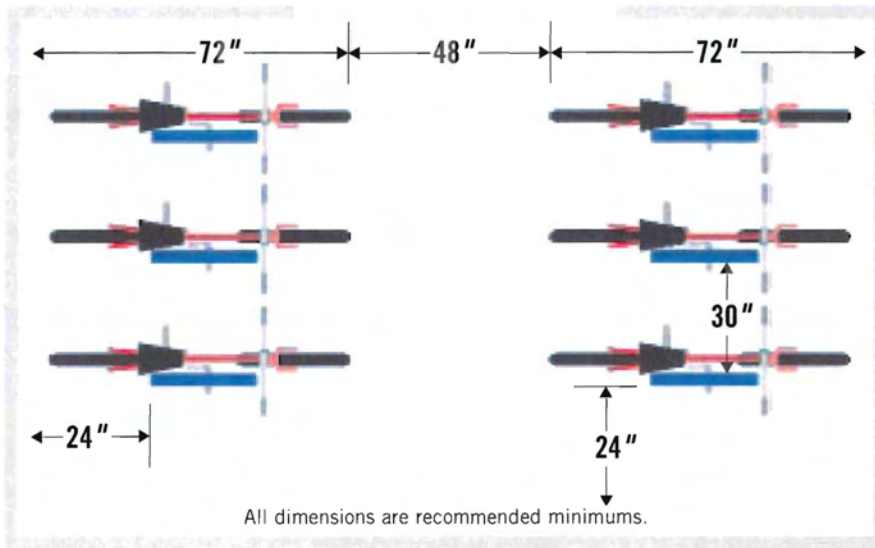
If it is too inconvenient and time consuming to squeeze the bikes into the space and attach a lock, cyclists will look for an alternative place to park or use one rack element per bike and reduce the projected parking capacity by 50 percent.

Wave style racks are not recommended. Bicyclists commonly use a “wave” rack as if it were a single inverted “U.” This limits the actual capacity of the rack to two bikes regardless of the potential or stated capacity. Bicycles parked perpendicular to a wave rack (as intended by the manufacturer) are not supported in two places and are more likely to fall over in the rack. The advertised capacity of a wave rack is usually much higher than the practical capacity.

An empty rack should not create a tripping hazard for visually impaired individuals.

3. THE RACK AREA

Definition: the rack area is a bicycle parking lot where racks are separated by aisles.



The rack area is a bicycle parking lot where racks are separated by aisles.

A rack area or “bicycle parking lot” is an area where more than one rack is installed. Aisles separate the racks. The aisle is measured from tip to tip of bike tires across the space between racks. The minimum separation between aisles should be 48 inches. This provides enough space for one person to walk one bike. In high traffic areas where many users park or retrieve bikes at the same time, such as a college classroom, the recommended minimum aisle width is 72 inches.

72 inches (six feet) of depth should be allowed for each row of parked bicycles. Conventional upright bicycles are just less than 72 inches long and can easily be accommodated in that space. Some rack types will allow the racks to be mounted closer to the wall. This will not change the space required by the bicycles or the aisles.

Large rack areas with a high turnover rate should have more than one entrance. This will help facilitate the arriving and departing of cyclists and pedestrians.

If possible, the rack area should be protected from the elements. Racks along building walls can be sheltered by an awning. Even though cyclists are exposed to sun, rain, and snow while en route, covering the rack area keeps the cyclist more comfortable while parking, locking the bike, and loading or unloading cargo. An awning will also help keep the bicycle dry, especially the saddle.

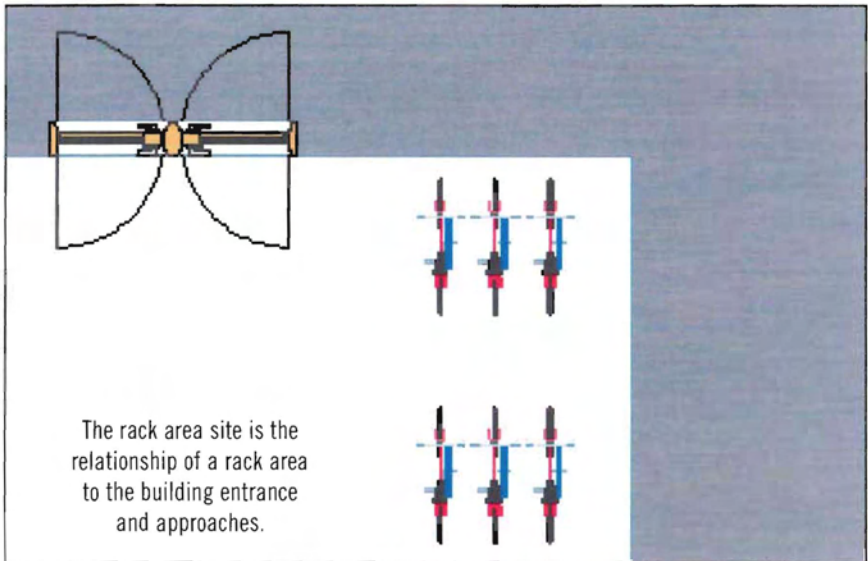


4. THE RACK AREA SITE

Definition: the rack area site is the relationship of the rack area to a building entrance and approach.

The location of a rack area in relationship to the building it serves is very important. The best location for a rack area is immediately adjacent to the entrance it serves. Racks should not be placed so that they block the entrance or inhibit pedestrian flow in or out of the building. Racks that are far from the entrance, hard to find, or perceived to be vulnerable to vandalism will not be used by most cyclists.

It is important to understand the transition a cyclist makes from vehicle to pedestrian. The cyclist approaches the building mounted on the bicycle. At some point, the cyclist stops, dismounts, and walks the bike to a rack.



The bicycle is attached to the rack and any cargo is removed. The cyclist now walks into the building carrying the cargo. Adequate space must be provided to allow for this transition.

The rack area should be located along a major building approach line and clearly visible from the approach. The rack area should be no more than a 30-second walk (120 feet) from the entrance it serves and should preferably be within 50 feet.

A rack area should be as close or closer than the nearest car parking space. A rack area should be clearly visible from the entrance it serves. A rack area should be provided near each actively used entrance. In general, multiple buildings should not be served with a combined, distant rack area. It is preferred to place smaller rack areas in locations that are more convenient.



5. CREATIVE DESIGNS



The recommended practices above are not intended to stifle creativity. There are many creative, three-dimensional bicycle parking racks that work very well. Whether the rack is a type of “hanger”, “helix” or another configuration, the critical issue is that the rack element supports the bike in two places and allows the bicycle to be securely locked.

Creative designs should carefully balance form with function. For example, the distinctive “croquet

set” rack shown here likely has a smaller effective capacity than might be immediately apparent because one or more of the rack elements is not accessible. Similarly, the “hanger” racks shown below must be carefully manufactured and maintained to prevent weaknesses at the joints of the hanger and rack—such weakness might compromise the security of bicycles locked to the rack. In addition, the “coat hanger” elements should be spaced at least 30” apart.

CONCLUSION

More information about bicycle parking is available from a wide variety of sources. Visit www.bicyclinginfo.org to access many of those sources, and to find a list of bicycle parking manufacturers.

More information about the Association of Pedestrian and Bicycle Professionals is available at www.apbp.org.

