

# **Bicycle Rack Utilization Study & Bicycle Facilities Improvement Report**

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## **Table of Contents**

I.	INTRODUCTION.....	1
II.	SURVEY METHODOLOGY.....	1
III.	<a href="#">COMPARISON TO PAST SURVEYS</a> .....	1
IV.	<a href="#">EVALUATING ADEQUACY OF BICYCLE RACKS</a> .....	2
	A. <a href="#">Covered vs. Uncovered Bicycle Rack Usage</a> .....	3
	B. <a href="#">Bicycle Lockers</a> .....	3
	C. <a href="#">Bike Rooms</a> .....	4
	D. <a href="#">Illegally Parked Bicycles</a> .....	4
V.	<a href="#">IMPROVEMENT AREAS</a> .....	4
	A. <a href="#">High-Use Locations</a> .....	5
	B. <a href="#">High-Use Improvement Areas</a> .....	6
	C. <a href="#">Low-Use Locations</a> .....	6
	D. <a href="#">Bicycle Rack Maintenance</a> .....	6
	E. <a href="#">Additional Bicycle Facilities Improvements</a> .....	7
VI.	<a href="#">CONCLUSION</a> .....	7

## **Tables:**

Table 1: Campus Bicycle Rack Utilization 1995 - 2003.....	2
Table 2: 2003 Covered/Uncovered Bicycle Rack Utilization.....	3
Table 3: May 2003 Bicycle Lockers by Area.....	3
Table 4: 2003 Bicycle Rack Locations with Over 80 percent Utilization.....	5
Table 5: 2003 Low-Use Rack Sources.....	6

## **I. INTRODUCTION**

This report documents the University of Washington 2003 bicycle rack utilization study and the bicycle facility improvements that were made in response to the study's findings.

## **II. SURVEY METHODOLOGY**

The survey was completed by Transportation Office staff on Thursday, May 8<sup>th</sup> 2003 between the hours of 11 a.m. and 2 p.m. Historically the survey has been conducted on a sunny Wednesday in May with temperatures in the 70s. In 2002 the weather for the survey was overcast and in the upper 50s/low 60s. In 2003 it was cool and overcast at the beginning of the survey—with temperatures in the low to mid 50s. Cool weather likely had an impact on the number of bicycles counted.

Surveyors used CAD maps of campus bicycle facilities to locate and count the number of bicycles parked at each location. Surveyors also noted any bicycles parked illegally on rails, posts, trees, or other non-rack locations. The survey did not include the counting of bicycles parked in lockers or those inside buildings (in offices or hallways).

A major effort was made in 2003 to update the bicycle rack inventory. Where surveyors identified inaccuracies on the bicycle facilities maps and database, follow-up field work was done to verify rack locations and capacities. A consistent method for calculating rack capacity was agreed upon and the database was updated. In addition, each set of racks was given an ID code to consistently link the racks on the bicycle facilities map with the racks in the bicycle facilities database.

## **III. COMPARISON TO PAST SURVEYS**

As shown in Table 1, the survey indicated that bicycle racks in May 2003 were 32 percent utilized. This is in line with the 2002 utilization of 32 percent. However, the actual number of bicycles counted in 2003 was nearly 175 fewer than in 2002. Utilization remained at 32 percent because the total number of bicycle parking spaces available (capacity) was revised downward this year to reflect changes in how rack capacity was calculated. 2003 had the lowest bicycle count in the eight years under comparison.

Utilization is calculated by dividing the number of bicycles parked at legal bike racks by the total number of bicycle parking spaces available. Capacity is not adjusted to exclude bicycle racks that are temporarily unavailable due to

construction. The total count of the number of bicycles parked includes bicycles that are tagged as abandoned by surveyors. The method used for calculating utilization in 2003 was consistent with the method used in past years.

**Table 1: Campus Bicycle Rack Utilization 1995 – 2003**

<b>Year</b>	<b>Capacity</b>	<b>Bicycles</b>	<b>Percent</b>
1995	5632	2198	39%
1997	5560	2250	40%
1998	5544	2091	38%
1999	5811	1916	33%
2000	6178	2030	33%
2001	6161	2204	36%
2002	6184	2009	32%
<b>2003</b>	<b>5660</b>	<b>1835</b>	<b>32%</b>

*Source: University of Washington Transportation Office*

Due to construction projects on campus, including the Intramural Activity Building (IMA) addition, the new University of Washington Medical Surgery Pavilion, and the new Electrical Engineering Building, 178 of the 5,660 bicycle parking spaces on campus were not available for use. These were included in the total capacity.

Of the 1,835 bicycles counted in May 2003, 125 were tagged as abandoned by the Transportation Office, Housing and Food Services, or the University of Washington Police Department and impounded in July 2003. These were included in the total count of bicycles parked.

#### **IV. EVALUATING ADEQUACY OF BICYCLE RACKS**

As part of the program of encouraging and facilitating bicycle usage by students, faculty, and staff, the University of Washington has an interest in ensuring the best possible placement of bicycle racks. Several opportunities are available to identify locations in need of additional (or fewer) bicycle racks. They include:

- overall rack usage by campus location,
- evaluation of specific locations with over 80 percent utilization in the last three years,
- locations where bicycles are found locked to non-rack objects, and
- when comments are given by campus cyclists to the Transportation Office.

##### **A. Covered vs. Uncovered Bicycle Rack Usage**

As shown in Table 2, year 2003 utilization of covered racks was 43 percent, compared with 27 percent utilization of uncovered bicycle racks. In general, bicyclists tend to prefer covered spaces. Table 2 indicates that, similar to 2002,

high rack utilization rates (of both covered and uncovered racks) occurred in North and West campus areas. High rack utilization in these areas is related to student dormitories, where bicycle racks are used for bicycle storage as well as general parking. The utilization rates in these areas are not strictly a reflection of use by bicycle commuters.

**Table 2: 2003 Covered/Uncovered Bicycle Rack Utilization**

Campus Area	Covered Bicycle Racks			Uncovered Bicycle Racks			Total Bicycles		
	No. of Bicycles Parked	No. of Covered Spaces	Percent Utilization	No. of Bicycles Parked	No. of Uncovered Spaces	Percent Utilization	Total Bicycles Parked	Total Spaces	Percent Utilization
West	299	474	63%	175	507	35%	474	981	48%
North	135	296	46%	272	896	30%	407	1192	34%
South	215	593	36%	116	564	21%	331	1157	29%
Central	204	578	35%	353	1,331	27%	557	1909	29%
East	16	103	16%	50	318	16%	66	421	16%
<b>TOTAL</b>	<b>869</b>	<b>2,044</b>	<b>43%</b>	<b>966</b>	<b>3,616</b>	<b>27%</b>	<b>1,835</b>	<b>5660</b>	<b>32%</b>

Source: University of Washington Transportation Office

## B. Bicycle Lockers

The University currently has 214 bicycle lockers with a capacity of 428 bicycles (two spaces per locker).

The majority of lockers, 149, are located in the south campus with a capacity of 298 bicycles. Table 4 shows the number of rented bicycle lockers by area.

**Table 3: May 2003 Bicycle Lockers by Area**

Campus Area	No. of Lockers	Bicycle Capacity	Number of Lockers Rented	Percent Rented
Central	28	56	56	100%
North	23	46	44	97.8%
South	149	298	297	99.7%
West	12	24	23	83.3%
East	2	4	4	100%
<b>Total</b>	<b>214</b>	<b>428</b>	<b>422</b>	<b>98.6%</b>

Source: University of Washington Transportation Office

The bicycle lockers are considered to be fully utilized, and vacancies reflect the normal turnover in locker leases. All locker locations, with the exception of

Publication Services, have waiting lists. In May 2003 there were 132 people on the bicycle locker waiting list.

### C. Bike Rooms

In 2003 bicycles in bike rooms were not counted. This was an oversight. Last year bicycles were counted in the Chemistry Building bike room. Based on last year's result, had the Chemistry Building bike room been counted in 2003, there would likely have been on the order of 40 more bicycles counted in the 2003 survey.

### D. Illegally Parked Bicycles

Of the 74 bicycles found locked to poles and railings around campus, 61 were locked to the railings at McMahon and Haggett Halls in North campus. Every year these two dormitories have a large number of bicycles parked on the railings near their front entrances. The conclusion of the Transportation Office in 2003 was that for the purposes of monitoring bicycle utilization, these railings are *de facto* bicycle racks. The Haggett Hall railings have an approximate capacity of 50 bicycles, and the McMahon Hall railings have an approximate capacity of 70. In 2003 these capacities were added to the total campus capacity, and the bicycles parked on the McMahon and Haggett railings were included in the total campus bicycle facility utilization figure.

Excluding the bicycles parked at the McMahon and Haggett railings, only 13 illegally parked bicycles were counted in 2003. All other locations with illegally parked bicycles only had four or fewer bicycles each.

It is important to look at the locations of illegally parked bicycles to determine whether new bicycle racks are needed in those locations. Since all the locations with illegally parked bicycles only had a few bicycles each, new rack placement for these locations was not considered.

## V. IMPROVEMENT AREAS

One of the objectives of monitoring the use of bicycle racks on campus is to identify locations where the existing bicycle facilities are not well matched to their demand. High demand locations are identified and evaluated for their potential to accommodate additional bicycle racks. Low-use locations are found and their racks put under consideration for re-location, with care taken to maintain a minimum capacity in all areas. Bicycle racks with maintenance issues are also noted during the bicycle rack utilization survey.

A. High-Use Locations

Table 6 shows the utilization rates over the past three years for the 21 sets of racks that were at least 80 percent utilized in 2003.

**Table 4: 2003 Bicycle Rack Locations with Over 80 percent Utilization**

Campus Area	Building Name	Rack Type	No. of Racks	2003 Utilization Rate	2002 Utilization Rate	2001 Utilization Rate
Central	Rv George Entry – East	Toast	1	82%	40%	80%
Central	Kane – Southeast	Toast	1	80%	40%	60%
Central	Benson – West	Toast	1	87%	73%	67%
Central	Johnson Annex – East	Ribbon	3	122%	122%	94%
Central	Guggenheim	Toast	2	86%	71%	29%
Central	Bloedel – Northwest	Rack 3	4	88%	100%	50%
East	ICA Facilities/Graves Annex	Ribbon	1	83%	55%	55%
North	Hutchinson – West Lower	Toast	1	100%	80%	60%
North	McCarty	Ribbon	1	80%	50%	50%
North	Lewis	Toast	1	86%	43%	43%
North	Haggett – West	Custom	39	110%	116%	43%
North	Padelford – Entry	Toast	2	114%	107%	40%
South	Fisheries Center – North	Toast	1	100%	71%	29%
South	I-Court	Rack 3	6	100%	42%	92%
South	K-Wing	Ribbon	5	83%	97%	86%
South	Clinic – East	Rack 3	2	100%	75%	100%
South	Clinic – North	Rack 3	3	83%	83%	100%
South	Clinic – West	Rack 3	2	100%	100%	75%
West	Terry Lander – East	Toast	3	109%	83%	87%
West	Fisheries Teaching – North	BikeLid	1	100%	n/a	0%
West	Mercer – Covered	Ribbon	2	87%	75%	83%

Source: University of Washington Transportation Office

Of these 21 locations, ten were not considered for additional racks for one of the following reasons: the rack was located at a student dormitory, the rack was a low capacity rack at a location with sufficient capacity at other near-by racks, or the rack was not highly used in 2002 and 2001. Student dormitories were not considered for new racks because they are often used to store bicycles, and the focus of the Transportation Office is to provide adequate parking for bicycle commuters.

## B. High-Use Improvement Areas

New racks were placed at or near the high-use locations that had room for additional racks. In 2003 these locations were:

- Johnson Annex
- Hutchinson
- K-Wing
- CHDD Clinic

## C. Low-Use Locations

In 2003, 118 locations had a utilization of 25 percent or less. Forty-three locations had no bicycles at all. These numbers represent a huge increase in under-utilized racks over the last three years. In 2002 there were 63 locations with racks utilized 25 percent or less. In 2001 there were only 20 such locations.

Table 7 lists the low-use racks that were relocated to high-use areas on campus, and their utilization over the past three years. One rack was removed from each of the four locations.

**Table 5: 2003 Low-Use Rack Sources**

<b>Campus Area</b>	<b>Building Name</b>	<b>Rack Type</b>	<b>No. of Racks (2003)</b>	<b>2003 Utilization Rate</b>	<b>2002 Utilization Rate</b>	<b>2001 Utilization Rate</b>
East	Conibear Shell House	Toast	3	5%	29%	57%
West	Social Work Building	Toast	1	0%	0%	29%
Central	Guthrie Hall	Toast	1	0%	0%	0%
Central	Kirsten Wind Tunnel	Rack 3	14	18%	18%	25%

*Source: University of Washington Transportation Office*

## D. Bicycle Rack Maintenance

One of the functions of the survey is to investigate and document any bicycle racks that need maintenance, including vegetation removal, abandoned bicycle removal, or issues regarding the best placement of the racks. The following maintenance tasks were performed based on the findings of the 2003 survey. The readjustment of racks was done at the same time as the moving of racks from low-use locations to high-use locations.

Vegetation was trimmed at the following location:

- Hutchinson, in the gravel area on the northwest side to make space for a second toast rack.

Readjustment of existing racks occurred at the following locations:

- Communications toast racks
- Gowen/Greig Garden toast rack
- Flag Pole half toast racks

No additional maintenance needs were noted during the survey.

#### E. Additional Bicycle Facilities Improvements

The Transportation Office is adding several new bicycle lockers in 2003. Bicycle racks had to be moved to make way for the new lockers in the following locations:

- Smith Hall, one toast rack
- Pavilion Pool, two toast racks
- Hitchcock Hall, one toast rack and two rack 3s (moved to the CHDD Clinic)

Bicycle racks were added or relocated at the request of building coordinators in 2003 at two locations:

- Plant Annex 6, a rack that had been removed during construction was replaced
- Bloedel Hall and Winkenwerder Hall, a rack that had been moved to Bloedel during construction at Winkenwerder was returned to Winkenwerder

## VI. CONCLUSION

Bicycle rack usage on campus appeared to be down in 2003. However, only time will tell whether the low use recorded in 2003 was an indication of a downward trend, an anomaly, or a response to the survey day's cool weather.