

Parking Plan

# FAIRHAVEN NEIGHBORHOOD AND URBAN VILLAGE TECHNICAL APPENDIX

Prepared for:  
City of Bellingham

October 2011

Prepared by:



11730 118<sup>th</sup> Avenue NE, Suite 600  
Kirkland, WA 98034-7120  
Phone: 425-821-3665  
Fax: 425-825-8434  
[www.transpogroup.com](http://www.transpogroup.com)

11068.00

© 2011 Transpo Group

## Appendix

- Appendix A: Transportation Goals and Policies
- Appendix B: Parking District
- Appendix C: Parking Utilization by Block and Parking Lot
- Appendix D: Parking Duration and Vehicles per Space
- Appendix E: Parking Demand Model
- Appendix F: Garage Location Feasibility Study



## **Bellingham Comprehensive Plan (2006) Relevant Transportation Vision, Policies, and Goals**

TV-2 Development patterns that encourage walking, biking and transit use are fostered through incentives and zoning regulations, including provisions for developments which allow people to live within walking distance of shopping and employment. These provisions may encourage small scale neighborhood centers as well as cottage industry or home occupations.

TV-3 Both pedestrian and bicycle facilities connect living, working, education, and recreational areas throughout the town. New development is designed to be pedestrian friendly. Walking is made easier by requirements for street trees and separated sidewalks on all new or reconstructed arterials except where existing mature vegetation or terrain suggest otherwise. Bicycling as a form of recreation and bicycling as a form of transportation flourishes, using facilities that are well lit and are built and maintained to allow year-round, all-weather use, and allow safe on and off-street travel.

TV-5 Bellingham reduces noise pollution and increases air quality by reducing its reliance on the automobile and promoting walking, bicycling, and other modes of transportation.

TV-9 Whatcom Transportation Authority's Primary Transit Network and high-frequency route enhancements reflect Bellingham's commitment to adjust to changing transportation needs, utilizing public transportation to improve air quality, to decrease parking demand and to reduce reliance on the use of the automobile. Route enhancements may include enhanced service hours, shuttles from outlying areas to downtown and Bellis Fair, a downtown area bus providing both internal circulation and access to parking, and the use of innovative or historic vehicles in downtown and Fairhaven.

Some of the specific transportation goals and policies related to parking are listed below. As is evident in many of these goals and policies, the City is focused on providing multimodal transportation, which parking is a key component.

TG-7 Focus on improving traffic circulation and reduce demand for constructing costly system improvements designed to accommodate additional single occupancy vehicle trips.

TG-8 Use Intelligent Transportation Systems (ITS) where appropriate to achieve Bellingham's transportation goals and increase the efficiency of the transportation system.

TG-10 Emphasize, accommodate, and provide facilities for multiple transportation modes on Bellingham streets wherever possible.

TG-19 Increase mode share of bicycle and pedestrian trips by providing a safe, well-connected, and convenient bicycle and pedestrian circulation network throughout the city.

TG-20 Prioritize pedestrian and bicycle facility improvements over auto-oriented improvements within Urban Villages and areas targeted for infill development.

TG-28 Set target goals to increase the mode share of pedestrian, bicycle, and transit trips and reduce automobile trips as a percentage of total trips, as listed below.

<b>Mode</b>	<b>2004</b>	<b>2010</b>	<b>2015</b>	<b>2022</b>
<b>Automobile</b>	<b>87%</b>	<b>84%</b>	<b>80%</b>	<b>75%</b>
<b>Transit Bus</b>	<b>2%</b>	<b>3%</b>	<b>4%</b>	<b>6%</b>
<b>Bicycle</b> 3%		<b>4%</b>	<b>5%</b>	<b>6%</b>
<b>Pedestrian</b>	<b>8%</b>	<b>9%</b>	<b>11%</b>	<b>13%</b>

**(Note: 2004 data from FTA/Social Data Study)**



TG-32 Emphasize and commit to the implementation of infill and Urban Village land use strategies to create residential densities that will support safe, viable, and convenient opportunities to use transportation modes other than the private automobile.

TG-33 Review parking requirements for major commercial and industrial uses for the purpose of reducing the supply of parking thereby providing a disincentive to automobile use.

TG-34 Establish reduced parking requirements for transit-oriented development within master-planned Urban Villages and along and within ¼ mile of the WTA Primary Transit Network while ensuring that there will be minimal impacts to surrounding residential neighborhoods.

TG-35 Encourage the “unbundling” (separate pricing) of parking spaces associated with residential development in Urban Villages to promote reduction in ownership of multiple automobiles.

TG-36 Encourage the provision of car-sharing with new residential development within Urban Villages to reduce the residential parking demand.

TG-37 Establish parking reduction allowances for residential units in Urban Villages and within ¼ mile of the WTA Primary Transit Network that require each unit to receive WTA bus passes in perpetuity.

TP-39 Encourage use of non-automotive travel modes by developing parking management plans. Mechanisms to be considered include:

- An emphasis on short-term parking in retail areas;
- Market-based pricing of on-street parking meters to encourage short-term day time parking;
- Incentive-based pricing in garages to encourage long term day time parking;
- Reduction of free or subsidized employee long-term parking availability;
- Re-evaluation of appropriate minimum and maximum parking ratios for development proposals; and
- Elimination of “free” public parking in Urban Villages.

TP-4 Provide development incentives (such as increased density, increased square footage, and parking requirement reductions) for new development located within Urban Villages and along and within ¼ mile of WTA Primary Transit Network corridors when amenities for transit users, bicyclists and pedestrians are included, while minimizing impacts to surrounding residential neighborhoods.

TP-6 Encourage public and private development proposals to enhance the street side environment to maximize comfort of the transit user and pedestrian.

TP-17 Transportation funding for public roads should be directed primarily toward multi-modal improvements that will enhance safety and circulation within and between urban villages, infill areas, schools, and employment centers within City limits.

TP-40 Consider revisions to current zoning code requirements for the area adjacent to the CBD, Urban Villages, and major retail districts, as part of a parking management plan designed to reduce the minimum number of on-site parking spaces required for development and to increase preferential space and lower costs for car pool and van pool parking in private developments.

TP-41 Consider imposing a maximum number of parking spaces allowed within Urban Villages and along the WTA Primary Transit Network where high frequency transit service exists prior to or concurrent with development.

TP-42 Support the location of safe new or expanded park-an-ride and car pool lots and support increased safety measures in existing park-and-ride and car pool lots.

TP-43 Encourage the use of common parking facilities among compatible, adjacent land uses where feasible.

TP-44 Provide preferential space and lower costs for car pool and van pool parking within the public right-of-way, and public facilities, where feasible.

TP-45 Encourage major employers to provide dressing room, showers, and lockers to facilitate walking, jogging, and bicycling to work.

TP-46 The City should develop and promote Transportation Demand Management strategies and programs for the purpose of reducing automobile trips generated rather than increasing roadway capacity.

This Parking Plan takes into consideration these goals and policies as well as those in the Fairhaven Neighborhood and Urban Village Plan in developing an overall strategy for parking.

### **Fairhaven Neighborhood and Urban Village Plan (2011) Relevant Transportation Vision, Goals, and Policies**

Vision: The Fairhaven District will continue to be a thriving urban village that serves all the Southside neighborhoods, the wider community, and visitors, and is a place where people live, work, visit and play in comfort and close proximity with each other and with the natural environment.

In addition to this vision, some general goals for the Fairhaven District include:

FNCG-2: Enhance Fairhaven's economic viability in terms of the quality of life of its residents, the success of its businesses and the generation of tax revenue for the City of Bellingham.

FTP-22: Expand bicycle parking opportunities in the core business area. Options include: a centralized parking area within the Village Green and/or increased rack placement along sidewalks, integrated with sidewalk fixtures when possible. Long curblane racks, S-type racks, and curlicue racks located in grassblock portions of sidewalk encouraged.

FTG-6: Transform the current private vehicular movement and parking scheme in Fairhaven to one that: 1) takes into account the growth pattern of the past five years, 2) accommodates future growth and 3) facilitates pedestrian and bicycle movement.

As discussed previously, this comprehensive parking study has been undertaken to address the current and future parking issues and part of the Fairhaven Neighborhood and Urban Village master planning process. The Draft Fairhaven Neighborhood and Urban Village Plan recommends a Parking Plan be developed and consider the possibility of the following:

- Perimeter parking structures north, east, and south of the business district that encourage parking within easy walking distance of the commercial area, keeping traffic outside the congested area
- Time-limited or metered parking on high-volume streets to facilitate business district traffic
- Pilot program that uses incentives to encourage use of WTA bus ridership for Village workers and residents, and possibly local shoppers

In addition, the draft Plan outlines the following draft policies, which would be updated based on the results and recommendations of this Parking Plan:

FTP-21: Overflow of commercial parking should be discouraged in residential areas. Limit daytime parking on neighborhood streets to local residents by the use of windshield stickers. Explore the establishments of residential parking zones (RPZs) funded by major beneficiaries.

FTP-22: Parking areas at local schools should not be expanded.

FTP-23: Review the purpose and function of the Fairhaven Parking District in light of current and projected parking demand. BMC 20.12.010 – PARKING provides for waiver of parking requirements “when consistent with an area-wide parking plan and/or district which has been instituted together with a mechanism for providing required parking for the area or district. This provision is intended to allow on-street parking and off-site parking to meet parking requirements in those areas.” Data measuring existing parking supply and existing available commercial square footage in District should be compiled to determine compliance of District with BMC parking requirements. Parking District is closed to latecomers.

FTP-24: FTP-24: Explore possibility of establishing zoned areas of limited parking duration in village core with city enforcement.

FTP-25: Explore possibility of establishing satellite lots with frequent WTA service along Harris Avenue.

FTP-26: Explore the development of public parking on sites such as the present surface lots behind Stanello's Restaurant and in front of the Fairhaven Market and on the Port-owned property below the bluff at the foot of Mill Avenue, the latter to be accessed from 9th Street and Harris Avenue. Location of parking sites will influence vehicle circulation.

FTP-27: Explore all possibilities for development of a parking structure close to commercial core. Financing possibilities include installation of a mechanism for paid parking in area or LID on area properties. Shrinking land supply complicates garage placement. Possible peripheral garage locations include the bluff immediately northwest of 10th and Mill, the temporary parking area north of Mill Avenue between 10th Street and 11th Street, property east of 12th Street between Mill and Harris Avenues, and the Haggen property east of 13th, behind the supermarket, and the northeast corner of 13th and Harris. A parking structure placed northwest of Mill Avenue and 10th Street should preserve the view corridor from the Interurban Trail. Consider Performing Arts Center above parking structure if location is suitable.



## **The Fairhaven Parking District**

The City of Bellingham and the Fairhaven Village Association (FVA) created a Parking District in 1994. Resolution # 43-94, attached, governs this District.

### ***How do I find out if a property is in this District?***

- The map on the back of this handout shows the boundary.

### ***What properties do not have to provide parking?***

- A development must:
  - o Be within the Parking District, and
  - o The owner must have paid a parking assessment to the FVA. The FVA keeps a list of these payments. Please verify with Phyllis McKee, 676-5278.

### ***What properties do have to provide parking?***

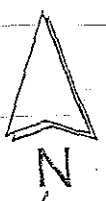
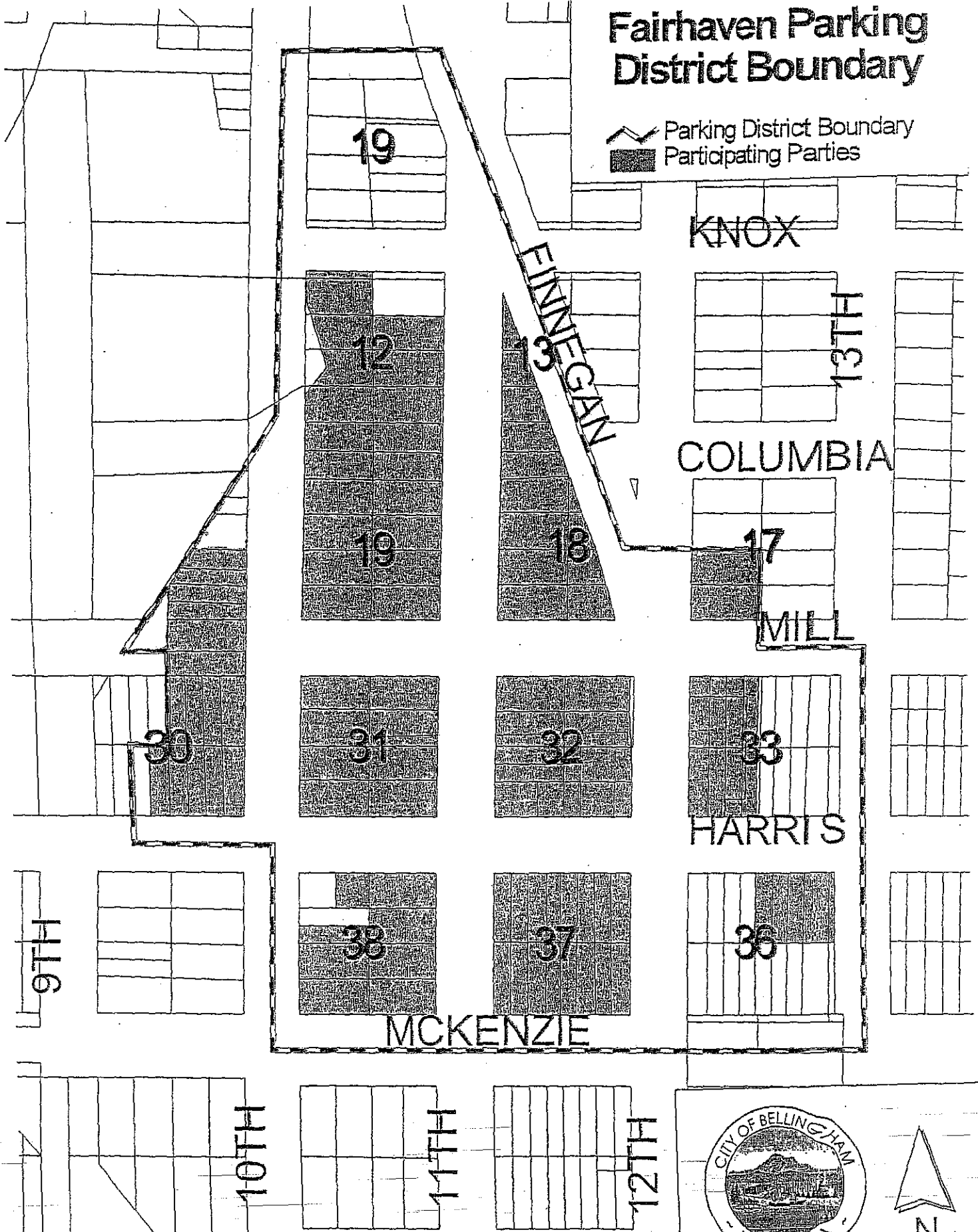
- Residences and lodging on a 2,500 square foot or larger footprint.

### ***Who can answer questions?***

- Call the Planning Division at (360) 778-8300, or
- Send a letter to:  
Planning and Community Development Department (PCDD)  
City Hall, 210 Lottie Street, Bellingham, WA 98225.

# Fairhaven Parking District Boundary

 Parking District Boundary  
 Participating Parties



Disclaimer: This map may be dated. New payments to the Fairhaven Village Association may have added properties. Others may have been removed.

RESOLUTION NO. 43-94

WHEREAS, property owners and merchants in the Fairhaven Neighborhood have formed the Fairhaven Village Association for the purpose of improving parking facilities on the streets in Fairhaven, and

WHEREAS, the Fairhaven Village Association has requested that the City form a parking district for an area of Fairhaven for the improvement of on-street parking facilities and the elimination of certain on-site parking requirements, and

WHEREAS, the Bellingham Planning and Development Commission and the Bellingham City Council held a public hearing on the Association's request on the 21st day of March, 1994 and the Planning Commission has recommended the formation of the district and the phasing out of certain parking requirements in conjunction with the implementation of a parking plan for the area, and

WHEREAS, the Bellingham City Council has considered the recommendations of the Planning Commission and finds that the parking district should be approved and that certain on-site parking requirements may be phased out in accordance with the area-wide parking plan adopted herein and Section 20.12.010A of the Bellingham Municipal Code, and

WHEREAS, a modification to Resolution No. 94-17 has been requested by the Fairhaven Village Association (Fairhaven Village, Inc.) to reduce the allowable footprint for certain buildings exempted from parking requirements from 5000 square feet to 2500 square feet,

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF BELLINGHAM:

An area-wide parking district is established in the Fairhaven Neighborhood with boundaries as shown on the Attached Exhibit A, "Area-wide Parking Plan" and map, provided that only those properties which are participants in the Fairhaven Village Association, as confirmed by the Board of Directors of the Association, shall be included within the parking district. The attached Area-wide Parking Plan is hereby adopted.

The Fairhaven Village Association and the City shall enter into an agreement to implement the plan.

This Resolution shall supersede Resolution No. 94-17.

PASSED BY COUNCIL THIS 22 DAY OF Aug., 1994.

  
Council President

City of Bellingham

APPROVED BY ME THIS 7th DAY OF Sept, 1994.

Jim Dorf  
Mayor

Attest: Lynn Caputo  
Finance Director

APPROVED AS TO FORM:

John Sturges  
Office of the City Attorney



## AREA-WIDE PARKING PLAN - FAIRHAVEN VILLAGE ASSOCIATION

1. This area-wide parking plan covers the properties located within the boundaries shown on the attached map, Exhibit A, with the exception of those properties which are not participants in the Fairhaven Village Association, as confirmed by the Board of Directors of the Association.

2. Parking improvements shall be constructed in the rights-of-way listed below:

McKenzie Avenue between 12th Street and 10th Street.

Mill Avenue between 11th Street and 10th Street.

Optional: 10th Street from Mill Avenue to Harris Avenue.

Optional: 10th Street south of Harris Avenue to McKenzie Avenue if consistent with final plans for location and design of the Fairhaven Parkway extension.

Optional: Diagonal parking on Harris Avenue west of 12th Street if the arterial status of the street is removed.

3. On-site parking requirements for properties included in this parking plan shall be phased out in accordance with the following schedule:

A. Parking requirements for renovation of existing buildings within the district shall be waived upon City Council approval of this plan, except as provided in C. below for code-required parking lots, and except for residential and lodging accommodations on a footprint greater than 2500 square feet.

B. Parking requirements for new buildings within the district, except residential and lodging accommodations on a footprint greater than 2500 square feet, shall be waived upon execution of an agreement between the City and the Fairhaven Village Association. Applications for buildings meeting this criteria which have completed design review contracts shall be forwarded for building permit review upon City Council approval of this plan.

C. Upon completion of improvements to McKenzie Avenue between 12th Street and 10th Street, to the satisfaction of the City, parcels which provide parking based on previous code requirements for uses within the district shall be allowed to redevelop for other uses.

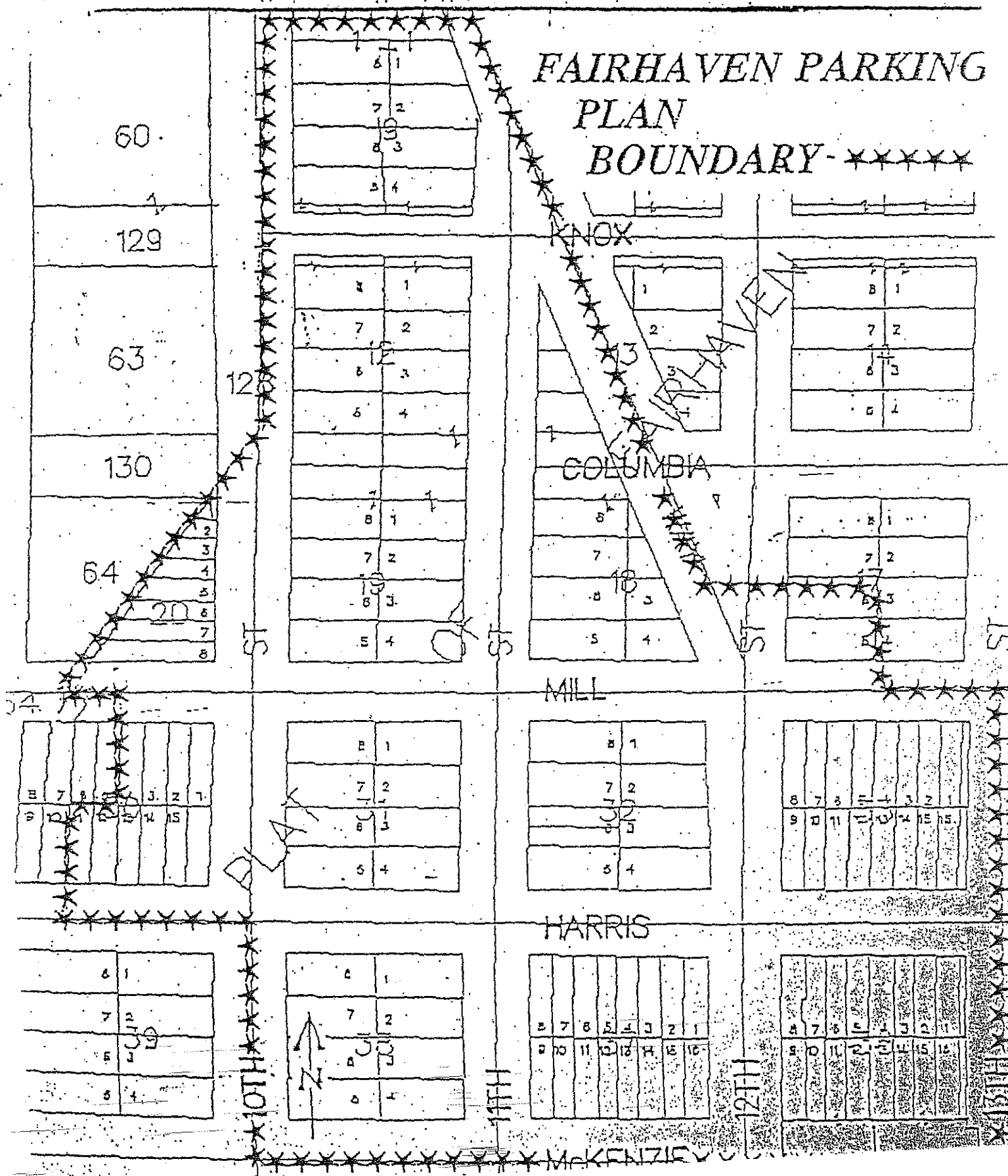
4. This plan, including but not limited to required improvements, district boundaries and waivers of parking requirements, may be modified by the City Council in accordance with the procedures established for creation of an area-wide parking district, or by legislative action of the City Council.

Exhibit A

City of Bellingham  
CITY ATTORNEY  
210 Lotus Street

Bellingham, Washington 98225  
Telephone: (360) 676-4211

FAIRHAVEN PARKING  
PLAN  
BOUNDARY-\*\*\*\*\*



RESOLUTION NO. 2003-38

A RESOLUTION OF THE CITY COUNCIL OF BELLINGHAM, CREATING THE TENTH STREET PARKING DISTRICT.

WHEREAS, property owners and the Fairhaven Village Association have petitioned the City Council to create a Parking District on the block bound by Harris, 10<sup>th</sup>, McKenzie, and 9<sup>th</sup> Streets; and

WHEREAS, the Planning Commission on October 9<sup>th</sup> reviewed this proposal and recommend approval; and,

WHEREAS, this new Parking District would improve on-street parking facilities; and

WHEREAS, this new Parking District would allow certain on-site parking requirements to be eliminated; and,

WHEREAS, the City Council has considered the recommendations of the Planning Commission and find that this new Parking District should be approved and that certain on-site parking requirements may be waived in conjunction with on-street parking construction;

NOW, THEREFORE, BE IT RESOLVED that the City of Bellingham hereby creates the Tenth Street Parking District, more particularly described as the block bound by Harris, 10<sup>th</sup>, McKenzie, and 9<sup>th</sup> Streets, as shown on Attachment A, with conditions as follows:

Section 1: Provide 36 new on-street parking spaces adjacent to this proposal, or a lesser number if required by the Public Works Department. This parking shall be built before any of the buildings in the proposal (Attachment B) are occupied.

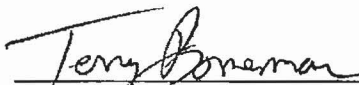
Section 2: The transit stop on Harris shall be maintained.

Section 3: New parking shall be supplied onsite for all amendments or additions to the applicant's proposal, Attachment B, that create additional parking requirements under the City of Bellingham Parking Code. These additional parking requirements may be due to expansion of residential, commercial, or any other use.


Section 4: Commercial parking requirements for the development as proposed in Attachment B are waived for this site. All residential parking shall be supplied onsite.

Section 5: Nothing in this Resolution shall prohibit the Council from expanding the geographical boundary of this Parking District.

PASSED BY COUNCIL this 8th day of December, 2003\_

  
\_\_\_\_\_  
Council President

APPROVED BY ME this 12th day of December, 2003\_

  
\_\_\_\_\_  
Mayor

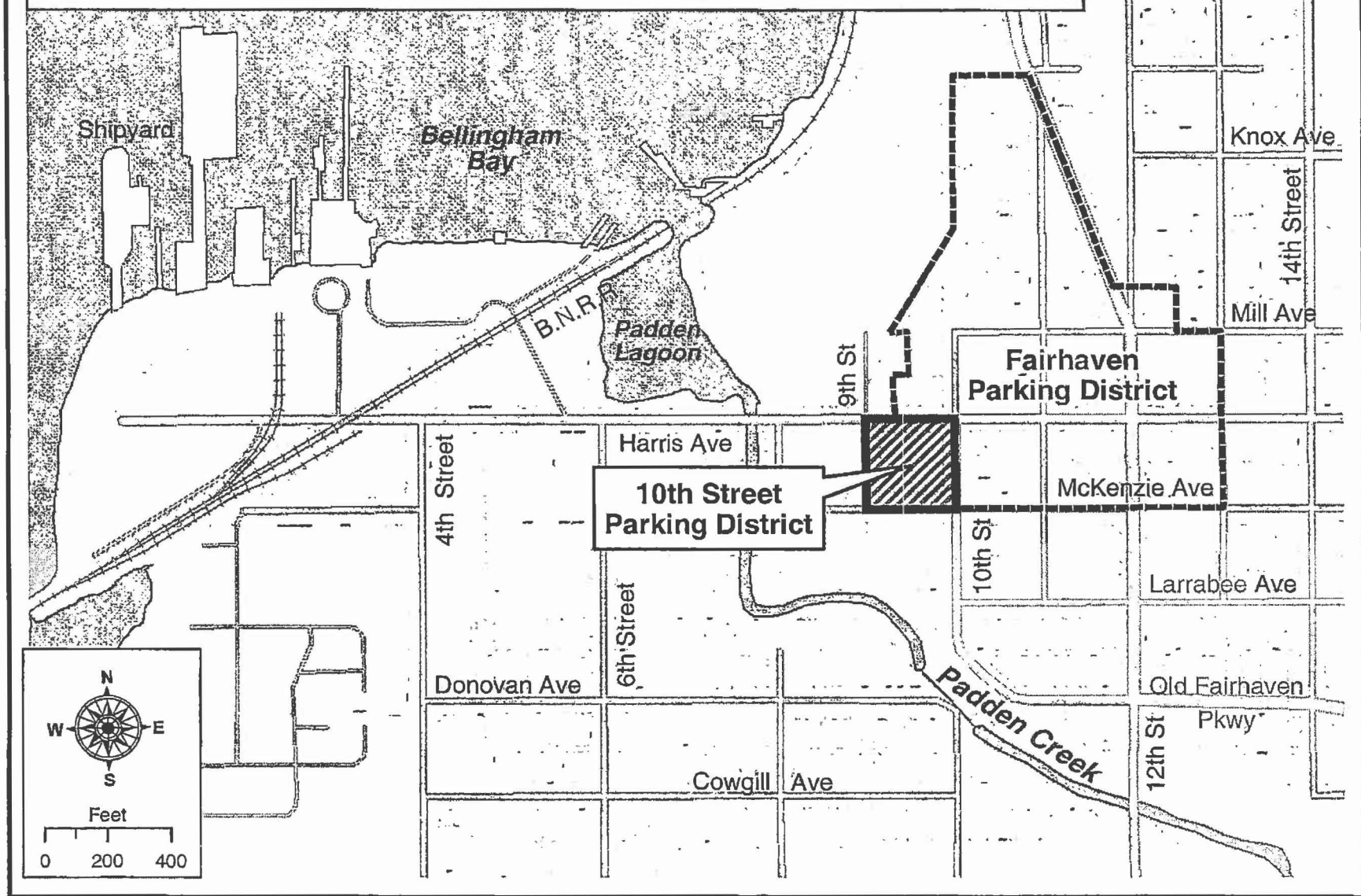
Attest:   
\_\_\_\_\_  
Finance Director

Approved as to Form:

  
\_\_\_\_\_  
Office of the City Attorney

~~Published~~ \_\_\_\_\_

# Attachment A - 10th Street Parking District Boundary



**A MIXED USE DEVELOPMENT  
10TH STREET VILLAGE  
FAIRHAVEN WASHINGTON  
10TH AND HARRIS Block Limited Partnership**

Project Address : 10th and Harris, Fairhaven

Tax Parcel No. : 370201 065073 0000  
370201 076078 0000

Legal Description : Lots 1 - 8, Block 39, Amended Plat of Fairhaven

Project Description: A mixed use development of three buildings  
with basement parking garage, ground floor  
retail and 90 apartment units.

Zoning : Fairhaven Neighborhood Area 5  
Planned Commercial Mixed Use

Setbacks : 0

Site Area : 200.15' x 209.34' irregular : 41,594 s.f.

Height : No Maximum

Building Areas Summary		Occupancy Group
Parking Garage (included Bldg. C)	33,605 s.f.	S3
Retail / Office	18,362 s.f.	M
Apartments (Leaseable area)	62,089 s.f.	R1
Apartments (Including corridors and stairs)	72,194 s.f.	R1
Gross Building Area (heated)	128,588 s.f.	

**Apartment Unit Summary**

Unit Type	No.
Studio	48
1 Bedroom	20
2 Bedroom	22
<b>Total :</b>	<b>90</b>

**Construction Type :**

Parking Garage	S3 Type I	3 hour
Retail	M Type I	3 hour
Apartments	R1 Type V	1 hour
Sprinklered	NFPA 13	

**Parking Analysis**

Parking required by city code: 172 spaces total

**Commercial Parking**

Retail	7,507 sf / 250 =	30 spaces
Office	10,855 sf / 350 =	31 spaces
		<b>61 total</b>

**Residential Parking**

48 Studios x 1	=	48 spaces
20 1 Bdrm + 22 2 Bdrm x 1.5	=	63 spaces
		<b>111 total</b>

Total proposed parking (on & off site): 223 spaces \*

On site parking : 155 spaces

City code compliant	131 spaces
Tandem space (for 2 bdrm units)	24 spaces

* Shared parking on site	30 spaces
On street parking district	38 spaces

\*Note: The parking study by David Evans and Assoc. Inc. of this project indicates that an average of 27% of on site residential parking will be vacant from 9am to 5pm. This would permit sharing up to 30 additional spaces for commercial tenants during these hours. Shared parking could free up approximately 30 street parking spaces during these hours.

**RECEIVED**

SEP 25 2003

PLANNING DEPARTMENT

SEPT. 24, 03

A MIXED USE DEVELOPMENT  
**10TH STREET VILLAGE**  
FAIRHAVEN WASHINGTON  
MOLNAR GROUP

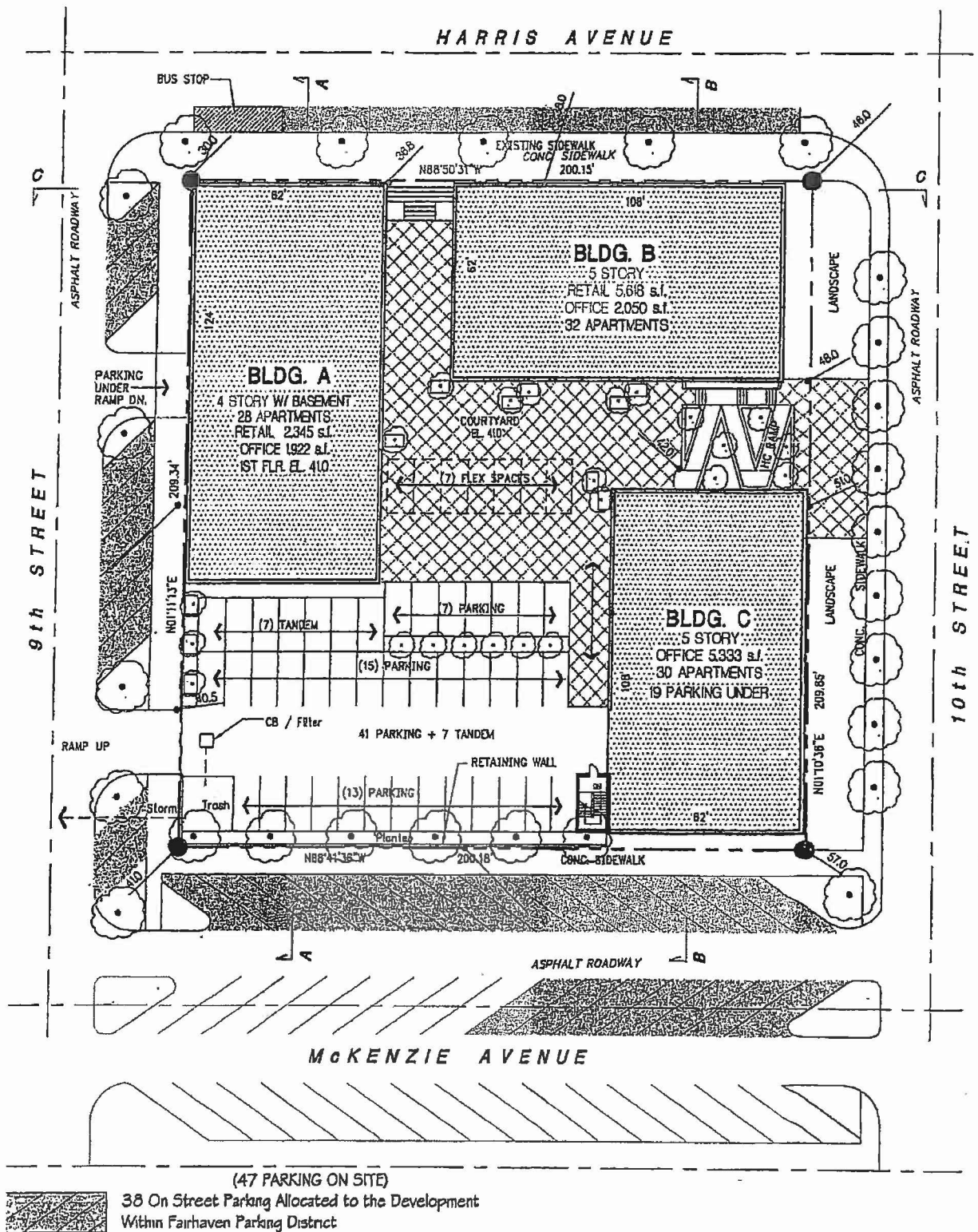
**GRINSTAD & WAGNER**  
ARCHITECTS  
(390) 678-8501

**PROJECT INFO.**

The drawings and plans set forth on this sheet as instruments of service etc. and shall remain the property of GRINSTAD & WAGNER ARCHITECTS INC. Any use or reuse of drawings or plans without the written permission of GRINSTAD & WAGNER ARCHITECTS INC.

**Attachment B**

RECEIVED  
SEP 25 2003  
PLANNING DEPARTMENT



# **SITE PLAN**

Scale : 1" = 30'



GRINSTAD  
&  
WAGNER  
ARCHITECTS

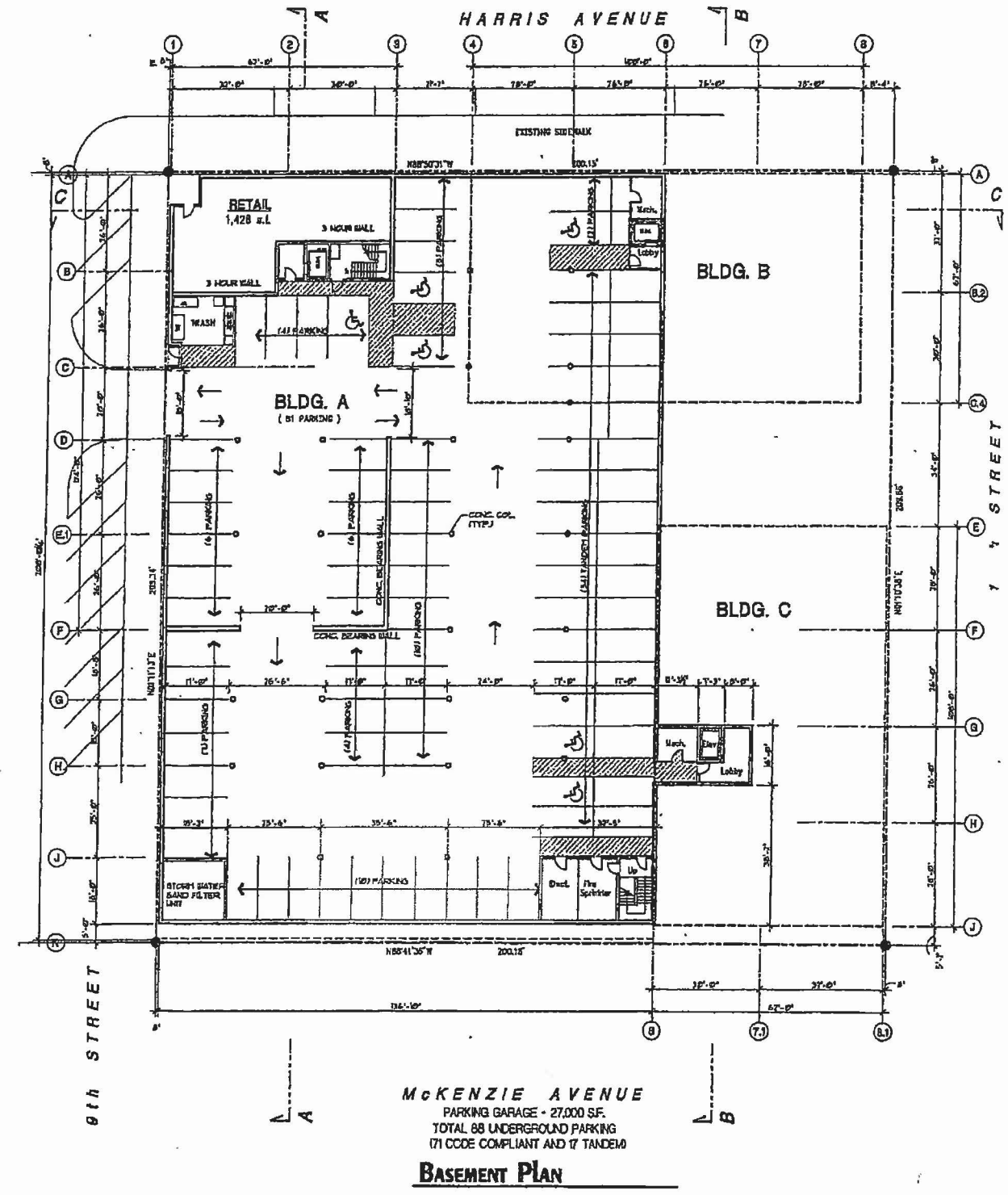
A MIXED USE DEVELOPMENT  
**10th STREET Village**  
FAIRHAVEN WASHINGTON

SEPT. 24, 03

The drawings and plans set forth on this sheet are instruments of service and shall remain the property of GRINSTAD & WAGNER ARCHITECTS INC. Any use or reuse of said drawings is strictly prohibited without the written permission of GRINSTAD & WAGNER ARCHITECTS INC.



RECEIVED  
 SEP 26 2003  
 PLANNING DEPARTMENT



MCKENZIE AVENUE  
 PARKING GARAGE - 27,000 SF.  
 TOTAL 88 UNDERGROUND PARKING  
 (71 CODE COMPLIANT AND 17 TANDEM)

**BASEMENT PLAN**

SEPT. 24, 03

**BASEMENT PLAN**

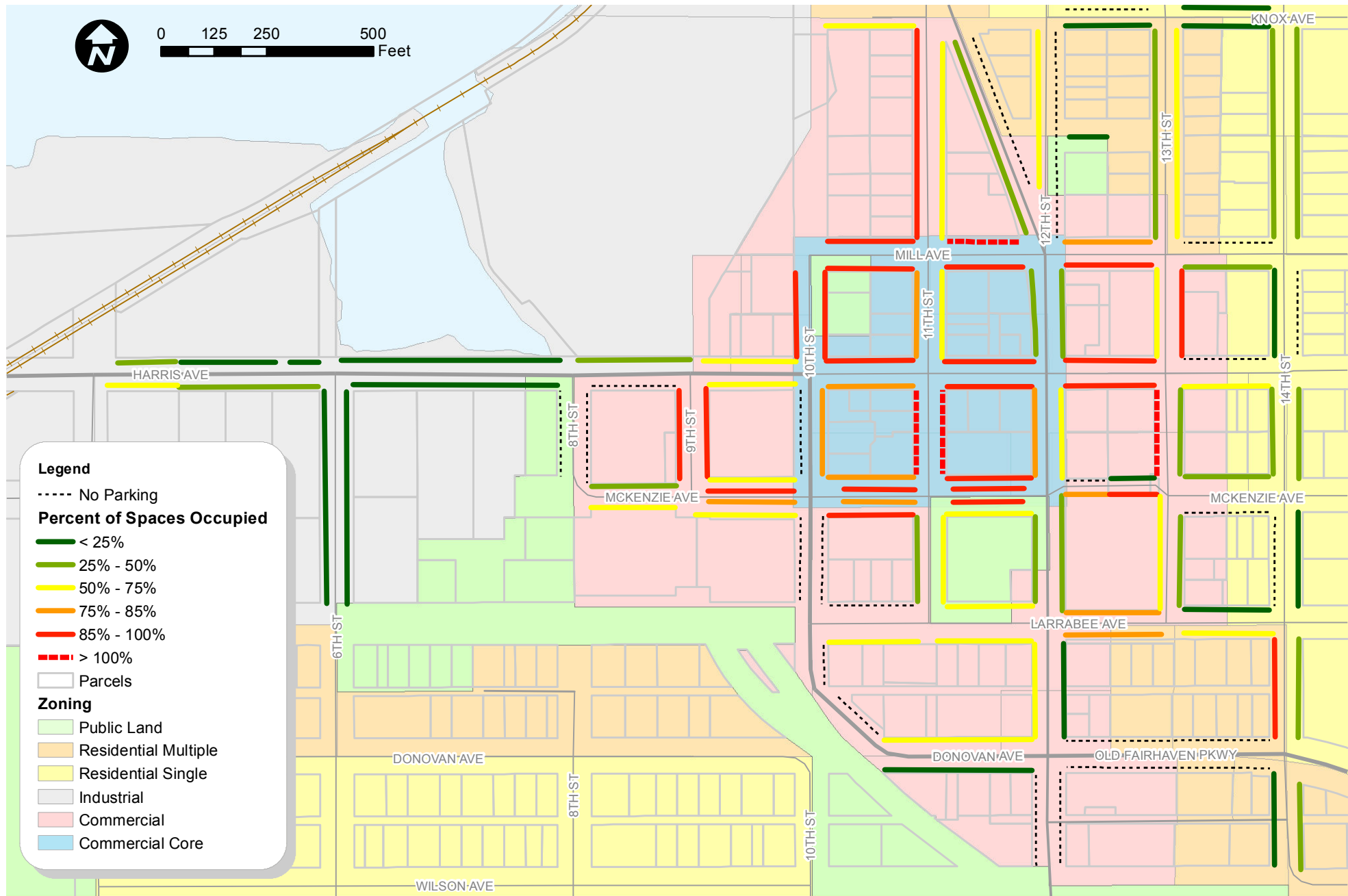
The drawings and plans are for the use of the instruments of service only, and shall remain the property of GRINSTAD & WAGNER ARCHITECTS INC. Any use or reuse of said drawings is strictly prohibited without the written permission of GRINSTAD & WAGNER ARCHITECTS INC.

GRINSTAD  
 &  
 WAGNER  
 ARCHITECTS  
 (360) 678-8501

A MIXED USE DEVELOPMENT  
**10th Street Village**  
 FAIRHAVEN WASHINGTON  
 MOLNAR GROUP



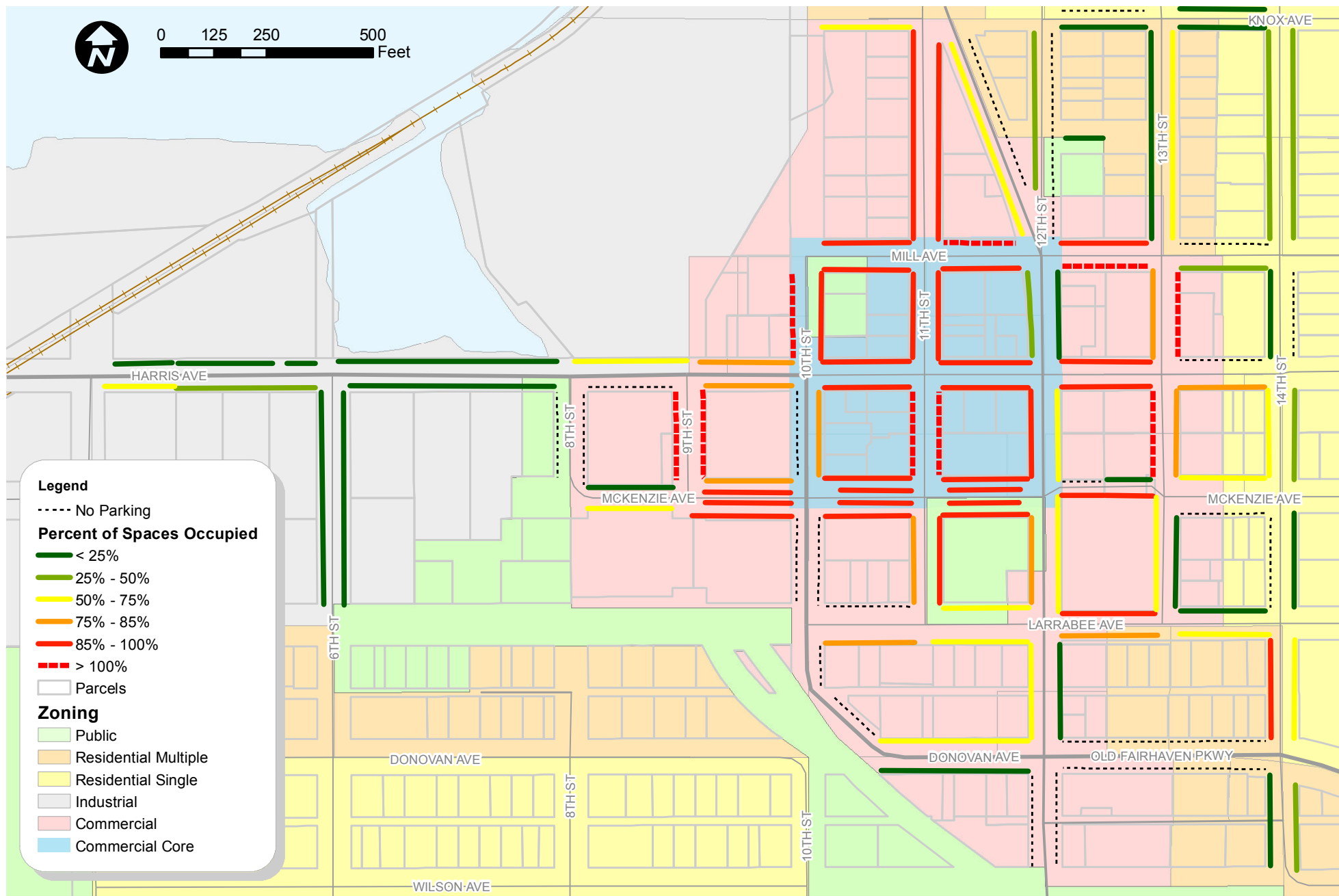




## On-Street Average Daily Parking Utilization - Weekday

Fairhaven Parking Study

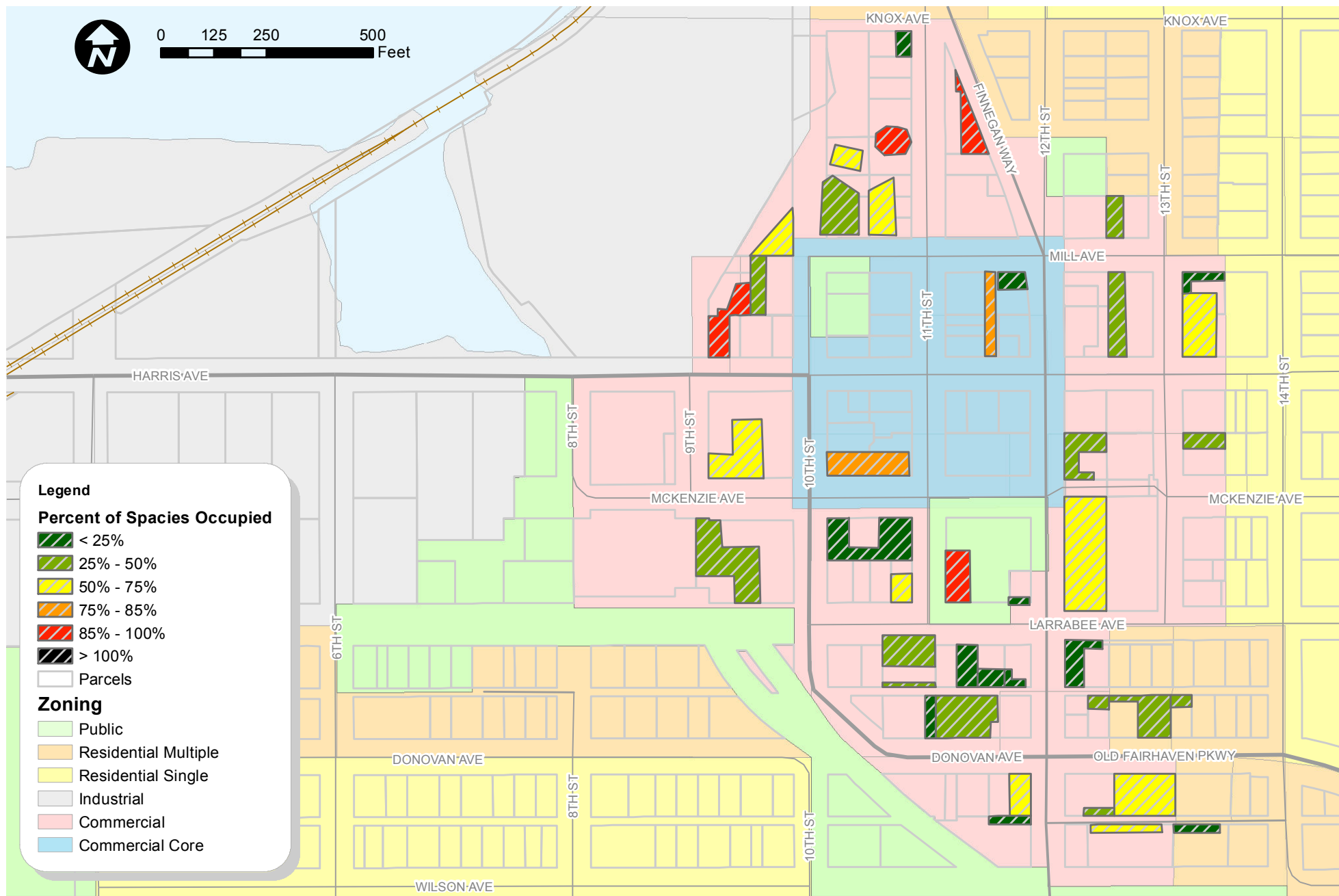
M:\11\11068 Bellingham Parking\Graphics\GIS\MXD\Fairhaven\FIGC1\_Parking Demand - Avg.mxd



## On-Street Peak Hour Parking Utilization - Weekday (1:00 - 2:00p.m.)

Fairhaven Parking Study

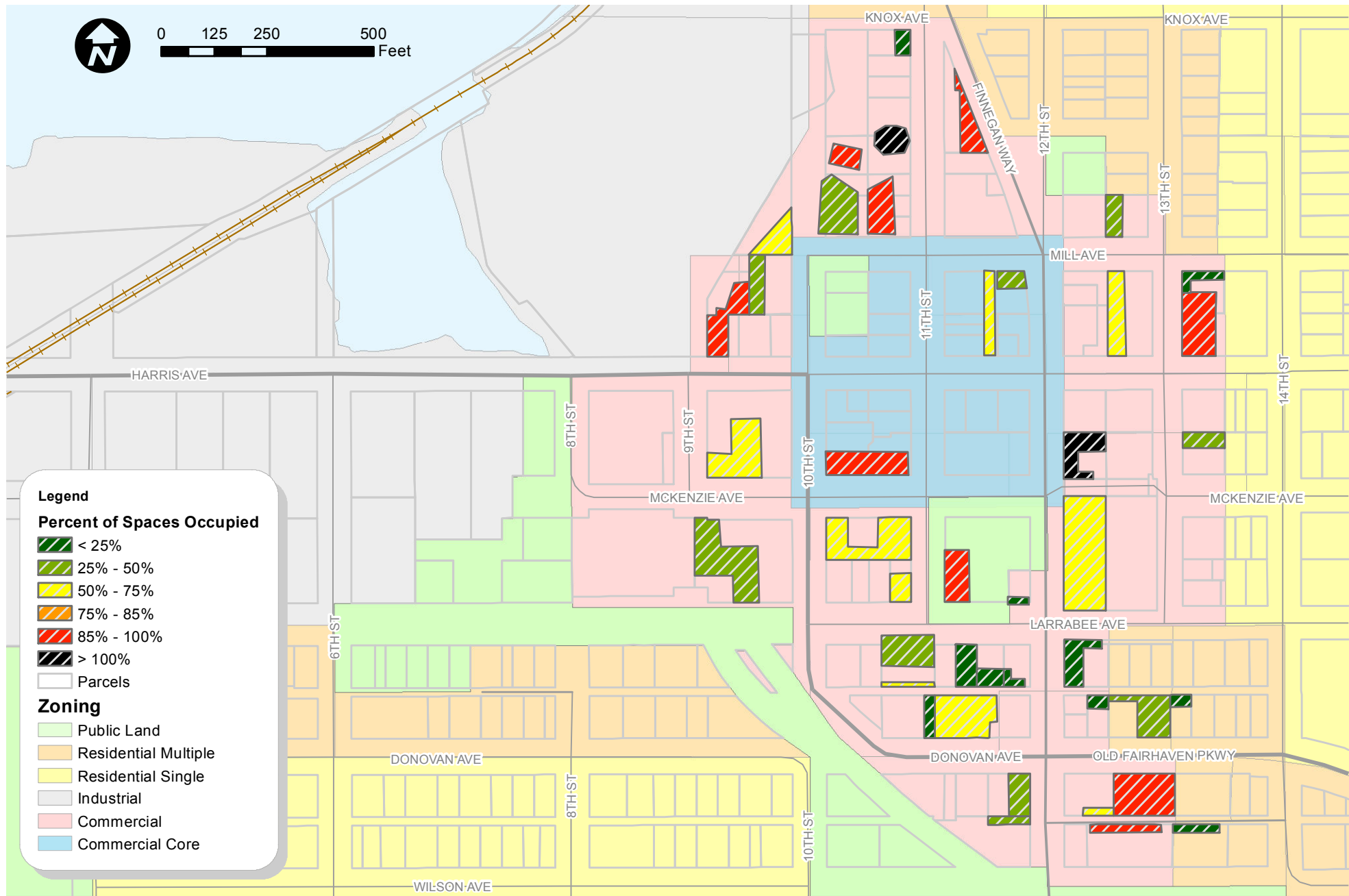
M:\11\11068 Bellingham Parking\Graphics\GIS\MXD\Fairhaven\FIGC2\_Parking Demand - Peak.mxd



## Off-Street Average Daily Parking Utilization - Weekday

Fairhaven Parking Study

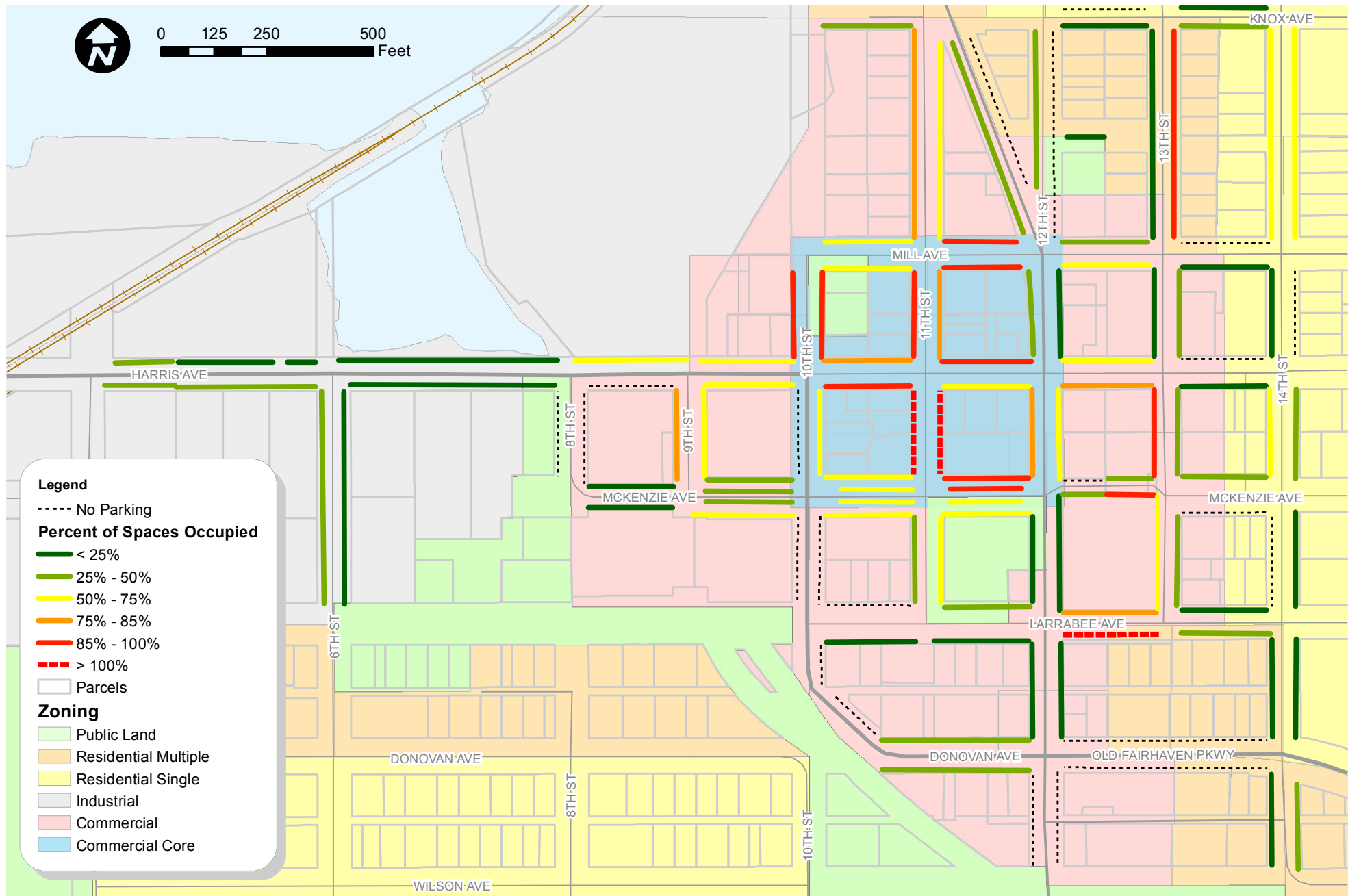
M:\11\11068 Bellingham Parking\Graphics\GIS\MXD\Base\_ParkingMap\_Offstreet.mxd



## Off-Street Peak Hour Parking Utilization - Weekday (1:00 - 2:00p.m.)

Fairhaven Parking Study

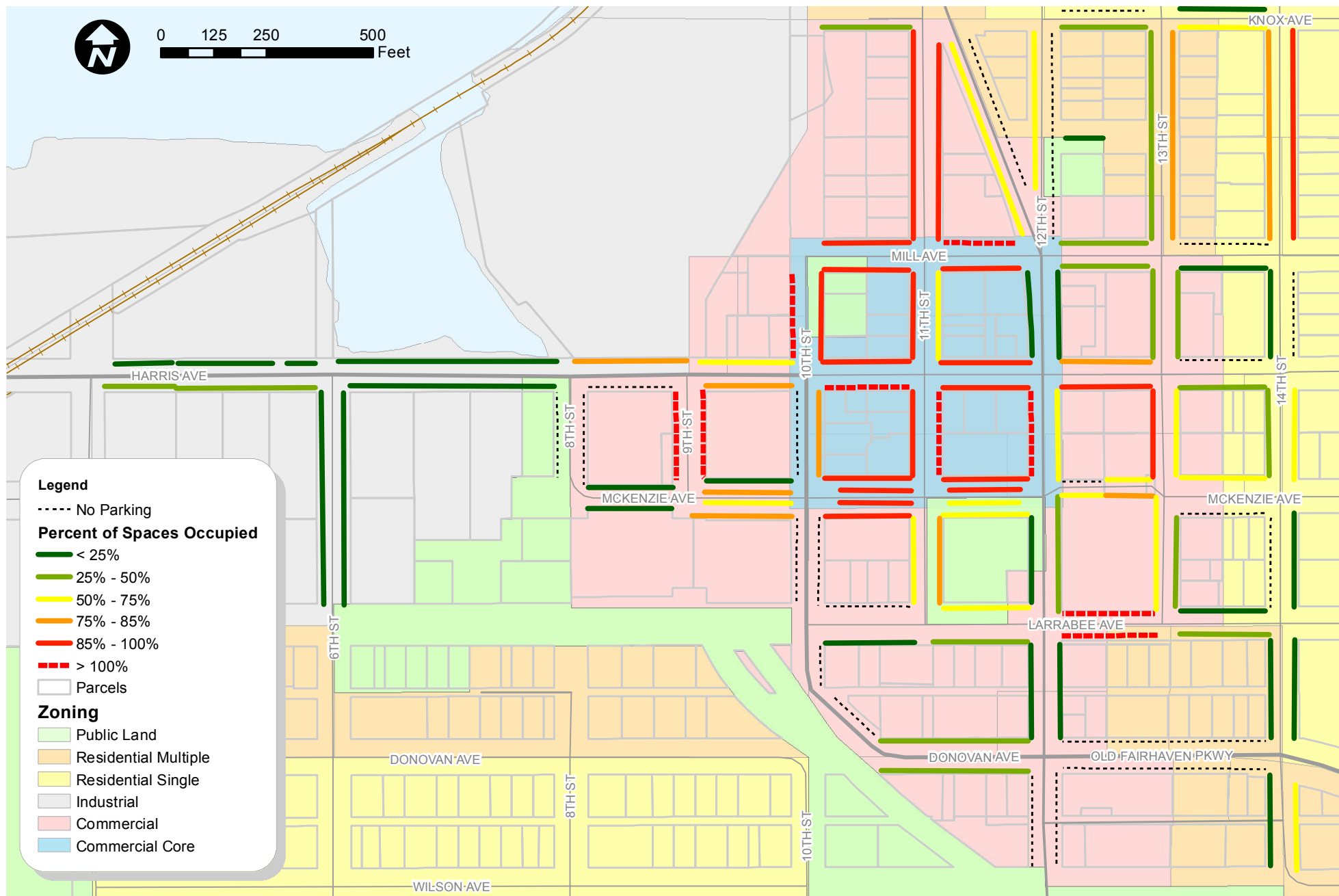
M:\11\11068 Bellingham Parking\Graphics\GIS\MXD\Parking Demand - Peak\_OffStreet.mxd



## On-Street Average Daily Parking Utilization - Weekend

Fairhaven Parking Study

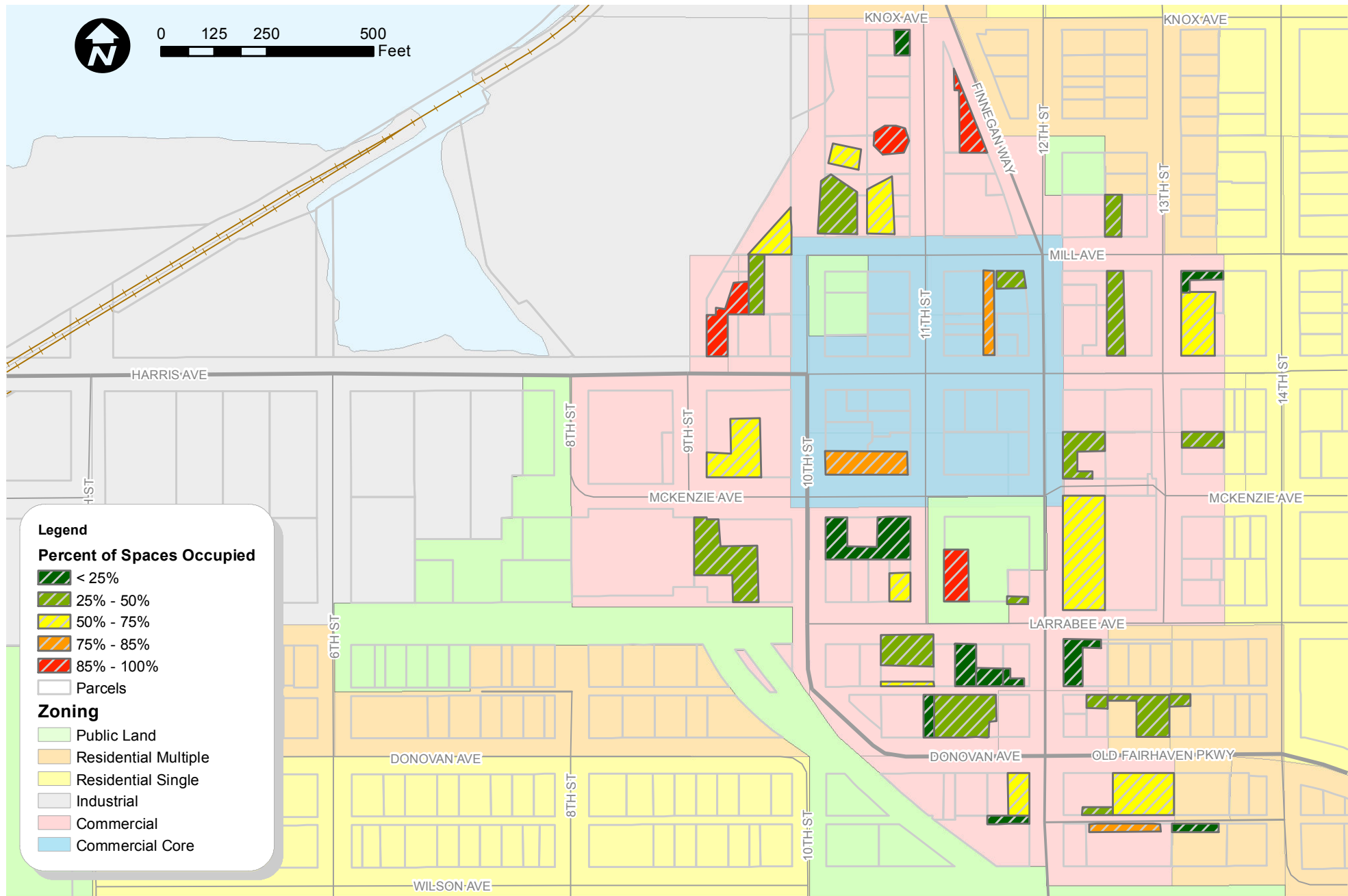
M:\11\11068 Bellingham Parking\Graphics\GIS\MXD\C3\_Parking Demand - Avg.mxd



On-Street Peak Hour Parking Utilization - Weekend (1:00 - 2:00p.m.)

Fairhaven Parking Study

M:\11\11068 Bellingham Parking\Graphics\GIS\MXD\C2\_Parking Demand - Peak.mxd

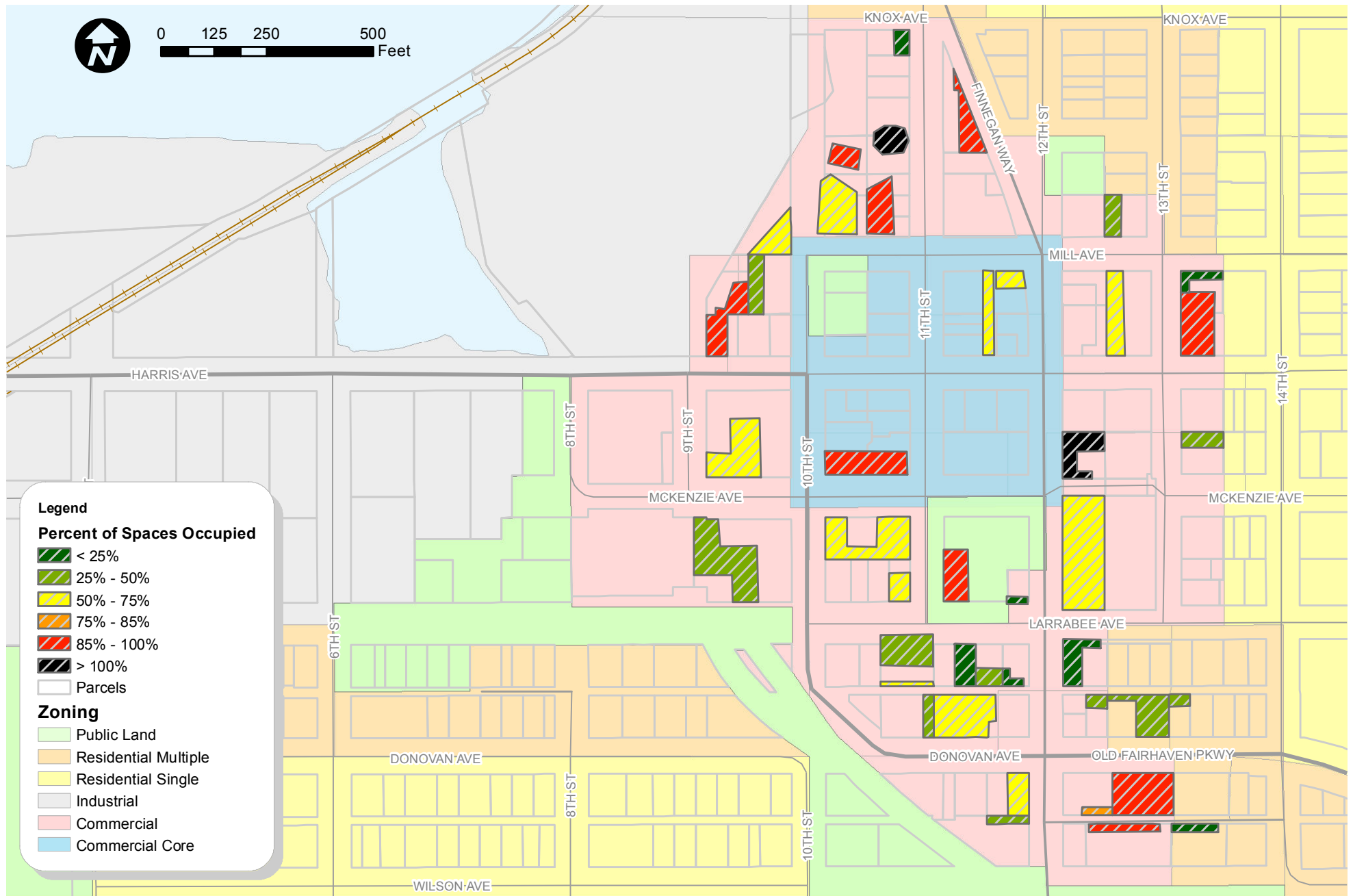


## Off-Street Average Daily Parking Utilization - Weekend

Fairhaven Parking Study

M:\11\11068 Bellingham Parking\Graphics\GIS\MXD\ID4\_Parking Demand - Turnover\_Offstreet.mxd





Off-Street Peak Hour Parking Utilization - Weekend (1:00 - 2:00p.m.)

Fairhaven Parking Study

M:\11\11068 Bellingham Parking\Graphics\GIS\MXD\12\_Parking Demand - Peak\_Offstreet.mxd

[Home](#)

## Fairhaven Weekday

<b>Collection Date</b>	6/30/2011
<b>Number of Block Faces</b>	164
<b>Total Parking Spaces</b>	1723
<b>Total On-Street Parking Spaces</b>	996
<b>Total Off-Street Parking Spaces</b>	727

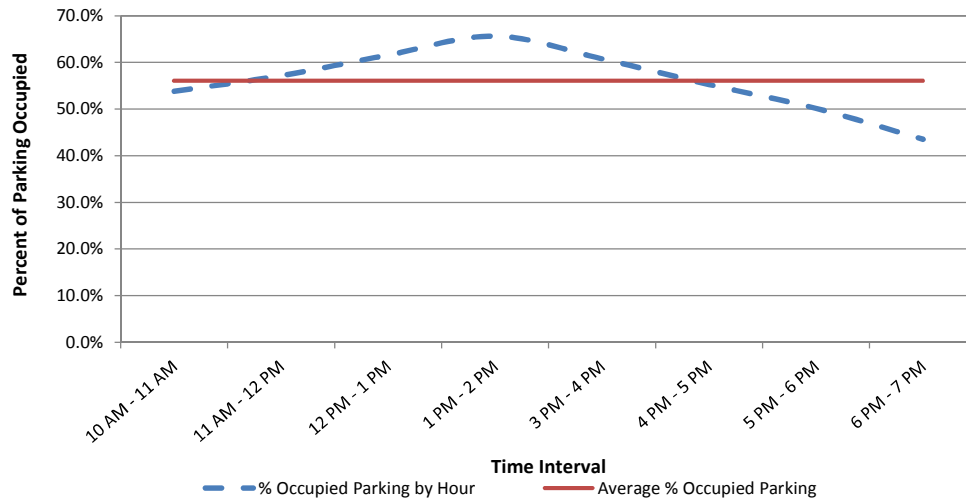
### Utilization by Hour - On-Street and Off-Street Parking

	<b>Total Parked Vehicles</b>	<b>% Occupied Parking</b>	<b>% Available Parking</b>
<b>10 AM - 11 AM</b>	927	53.8%	46.2%
<b>11 AM - 12 PM</b>	985	57.2%	42.8%
<b>12 PM - 1 PM</b>	1061	61.6%	38.4%
<b>1 PM - 2 PM</b>	1131	65.6%	34.4%
<b>3 PM - 4 PM</b>	1047	60.8%	39.2%
<b>4 PM - 5 PM</b>	952	55.3%	44.7%
<b>5 PM - 6 PM</b>	864	50.1%	49.9%
<b>6 PM - 7 PM</b>	750	43.5%	56.5%
<b>Average:</b>	<b>965</b>	<b>56.0%</b>	<b>44.0%</b>

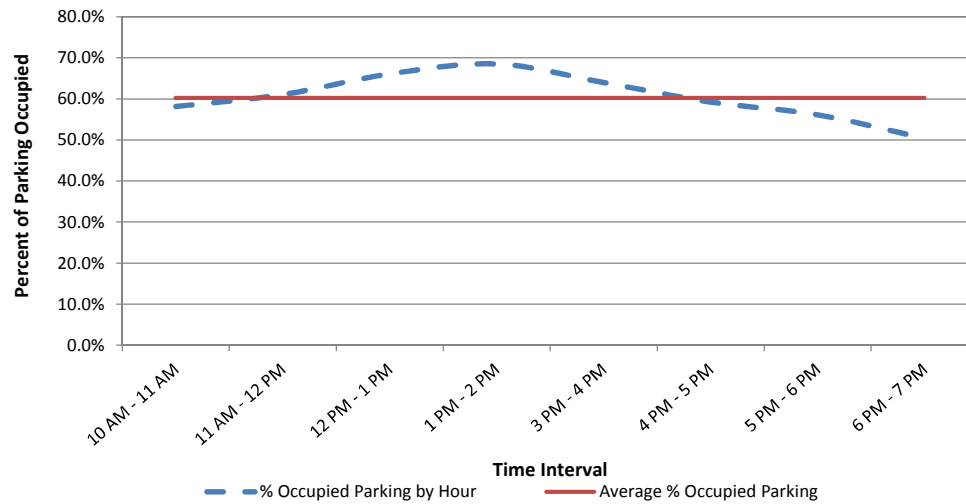
### Utilization by Hour - On-Street Parking

	<b>Total On- Street Parked Vehicles</b>	<b>% On-Street Occupied Parking</b>	<b>% Available Parking</b>
<b>10 AM - 11 AM</b>	579	58.1%	41.9%
<b>11 AM - 12 PM</b>	605	61.0%	39.0%
<b>12 PM - 1 PM</b>	655	66.1%	33.9%
<b>1 PM - 2 PM</b>	679	68.5%	31.5%
<b>3 PM - 4 PM</b>	634	64.0%	36.0%
<b>4 PM - 5 PM</b>	590	59.2%	40.8%
<b>5 PM - 6 PM</b>	559	56.1%	43.9%
<b>6 PM - 7 PM</b>	502	50.4%	49.6%
<b>Average:</b>	<b>600</b>	<b>60.2%</b>	<b>39.8%</b>

### Parking Utilization (On-Street and Off-Street) Fairhaven Weekday



### On-Street Parking Utilization Fairhaven Weekday



**Utilization by Hour - Off-Street Parking**

	<b>Total Off-Street Parked Vehicles</b>	<b>% Off-Street Occupied Parking</b>	<b>% Available Parking</b>
<b>10 AM - 11 AM</b>	348	47.9%	52.1%
<b>11 AM - 12 PM</b>	380	52.3%	47.7%
<b>12 PM - 1 PM</b>	406	55.8%	44.2%
<b>1 PM - 2 PM</b>	452	62.2%	37.8%
<b>3 PM - 4 PM</b>	413	56.8%	43.2%
<b>4 PM - 5 PM</b>	362	49.8%	50.2%
<b>5 PM - 6 PM</b>	305	42.0%	58.0%
<b>6 PM - 7 PM</b>	248	34.1%	65.9%
<b>Average:</b>	<b>364</b>	<b>50.1%</b>	<b>49.9%</b>

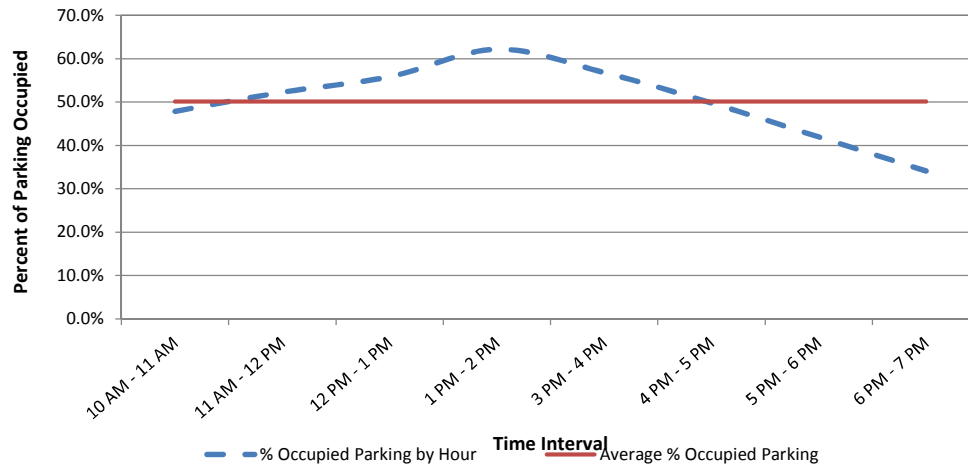
**Utilization by Hour - Commercial Area**

	<b>Total Parked Vehicles</b>	<b>% Occupied Parking</b>	<b>% Available Parking</b>
<b>10 AM - 11 AM</b>	784	57.9%	42.1%
<b>11 AM - 12 PM</b>	845	62.4%	37.6%
<b>12 PM - 1 PM</b>	927	68.4%	31.6%
<b>1 PM - 2 PM</b>	999	73.7%	26.3%
<b>3 PM - 4 PM</b>	912	67.3%	32.7%
<b>4 PM - 5 PM</b>	825	60.9%	39.1%
<b>5 PM - 6 PM</b>	755	55.7%	44.3%
<b>6 PM - 7 PM</b>	653	48.2%	51.8%
<b>Average:</b>	<b>838</b>	<b>61.8%</b>	<b>38.2%</b>

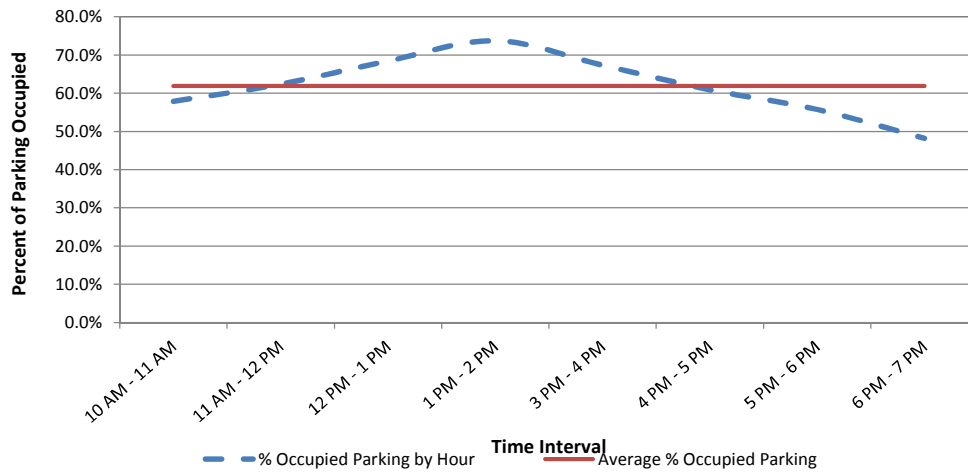
**Utilization by Hour - Industrial Area**

	<b>Total Parked Vehicles</b>	<b>% Occupied Parking</b>	<b>% Available Parking</b>
<b>10 AM - 11 AM</b>	18	15.4%	84.6%
<b>11 AM - 12 PM</b>	20	17.1%	82.9%
<b>12 PM - 1 PM</b>	18	15.4%	84.6%
<b>1 PM - 2 PM</b>	19	16.2%	83.8%
<b>3 PM - 4 PM</b>	20	17.1%	82.9%
<b>4 PM - 5 PM</b>	19	16.2%	83.8%
<b>5 PM - 6 PM</b>	19	16.2%	83.8%
<b>6 PM - 7 PM</b>	13	11.1%	88.9%
<b>Average:</b>	<b>18</b>	<b>15.4%</b>	<b>84.6%</b>

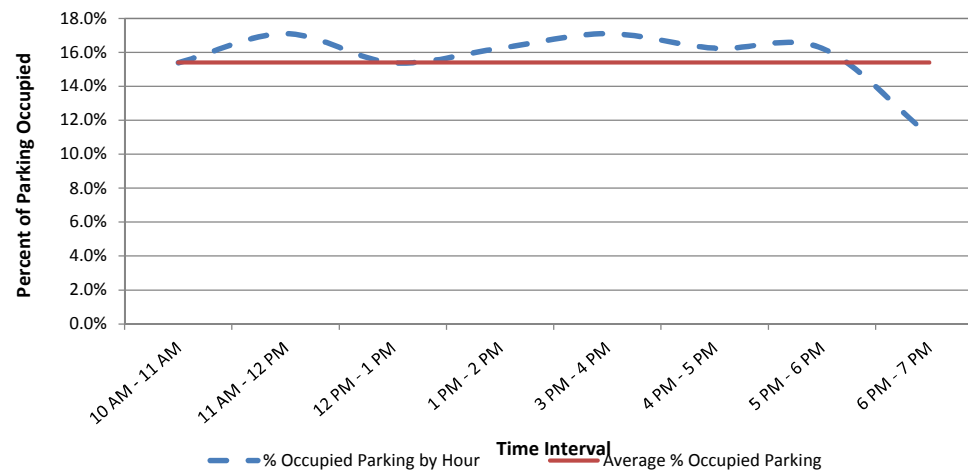
### Off-Street Parking Utilization



### Commercial Area Parking Utilization



### Industrial Area Parking Utilization



**Utilization by Hour - Residential Area**

	<b>Total Parked Vehicles</b>	<b>% Occupied Parking</b>	<b>% Available Parking</b>
10 AM - 11 AM	85	45.7%	54.3%
11 AM - 12 PM	79	42.5%	57.5%
12 PM - 1 PM	77	41.4%	58.6%
1 PM - 2 PM	67	36.0%	64.0%
3 PM - 4 PM	68	36.6%	63.4%
4 PM - 5 PM	65	34.9%	65.1%
5 PM - 6 PM	49	26.3%	73.7%
6 PM - 7 PM	42	22.6%	77.4%
<b>Average:</b>	<b>67</b>	<b>36.0%</b>	<b>64.0%</b>

**Utilization by Hour - Government/Public Area**

	<b>Total Parked Vehicles</b>	<b>% Occupied Parking</b>	<b>% Available Parking</b>
10 AM - 11 AM	40	61.5%	38.5%
11 AM - 12 PM	41	63.1%	36.9%
12 PM - 1 PM	39	60.0%	40.0%
1 PM - 2 PM	46	70.8%	29.2%
3 PM - 4 PM	47	72.3%	27.7%
4 PM - 5 PM	43	66.2%	33.8%
5 PM - 6 PM	41	63.1%	36.9%
6 PM - 7 PM	42	64.6%	35.4%
<b>Average:</b>	<b>42</b>	<b>64.6%</b>	<b>35.4%</b>

	<b>Number of Spaces</b>	<b>Average Length of Stay (minutes)</b>	<b>Average Turnover per Space</b>	<b>Average % Occupied</b>
<b>Total</b>	1723	108	2.1	56%
<b>On-Street</b>	996	103	2.3	60%
<b>Off-Street</b>	727	117	1.8	50%

**Summary by Land Use**

	<b>Number of Spaces</b>		<b>Average Length of Stay (minutes)</b>		<b>Average Turnover per Space</b>		<b>Average % Occupied</b>	
	<b>On-Street</b>	<b>Off-Street</b>	<b>On-Street</b>	<b>Off-Street</b>	<b>On-Street</b>	<b>Off-Street</b>	<b>On-Street</b>	<b>Off-Street</b>
<b>Commercial Area</b>	691	664	98	112	3.0	1.9	73%	50%
<b>Industrial Area</b>	117	NA	127	NA	0.5	NA	16%	NA
<b>Residential Area</b>	144	42	152	118	1.1	1.3	36%	35%
<b>Government/Public Area</b>	44	21	141	281	1.6	1.6	52%	93%

**Notes:** **Total Parking Vehicles** denotes the total number of vehicles parked in the study area during the one-hour time interval.

**% Occupied Parking** denotes the percent of total spaces that were occupied.

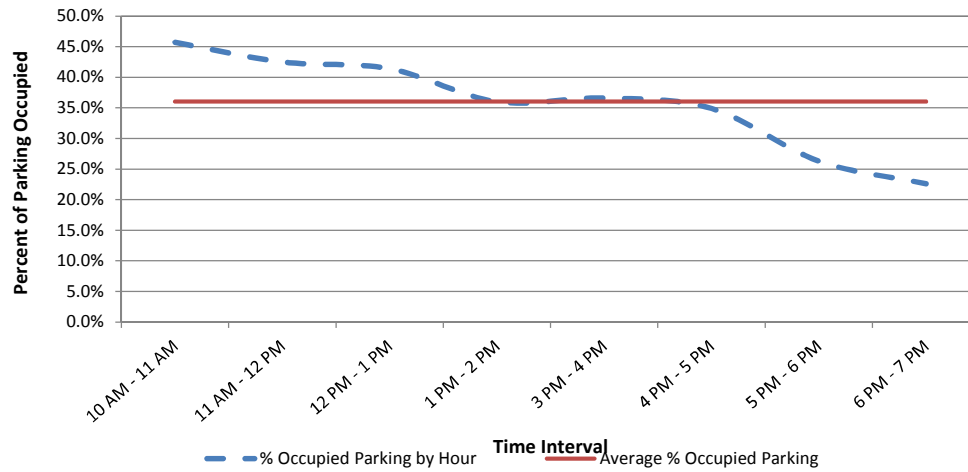
**% Available Parking** denotes the percent of total spaces that were vacant.

**Average Length of Stay for Parked Vehicles** is the average time that remained parked in one parking space.

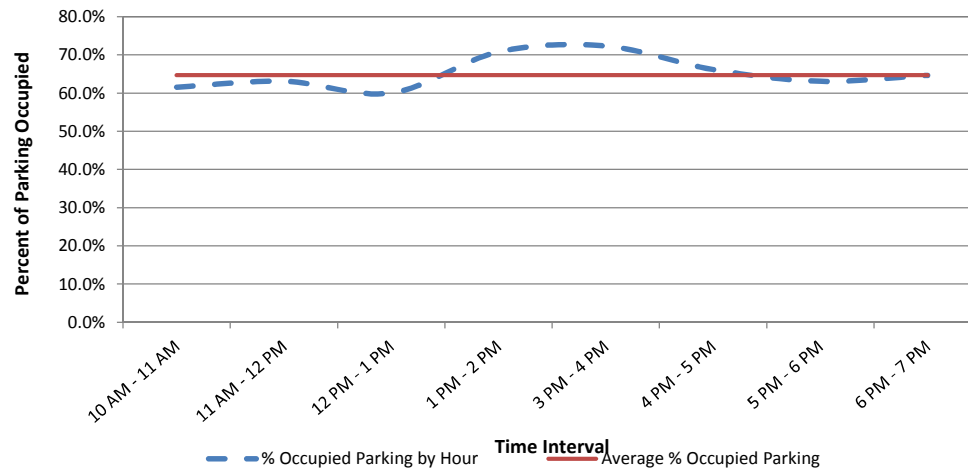
**Average Turnover per Parking Space** is the average number of times that each parking space was used during the 8 hour count period.

NA = Not applicable, no off-street parking was counted in the industrial area.

### Residential Area Parking Utilization

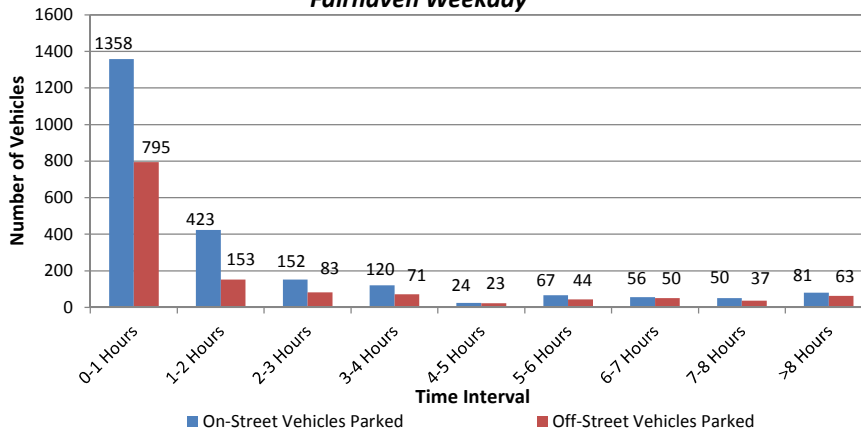


### Government/Public Area Parking Utilization

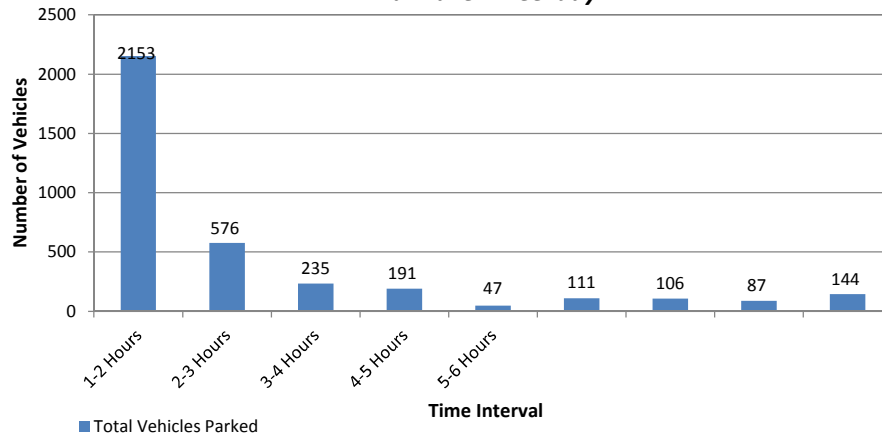


### Length of Stay for Parked Vehicles

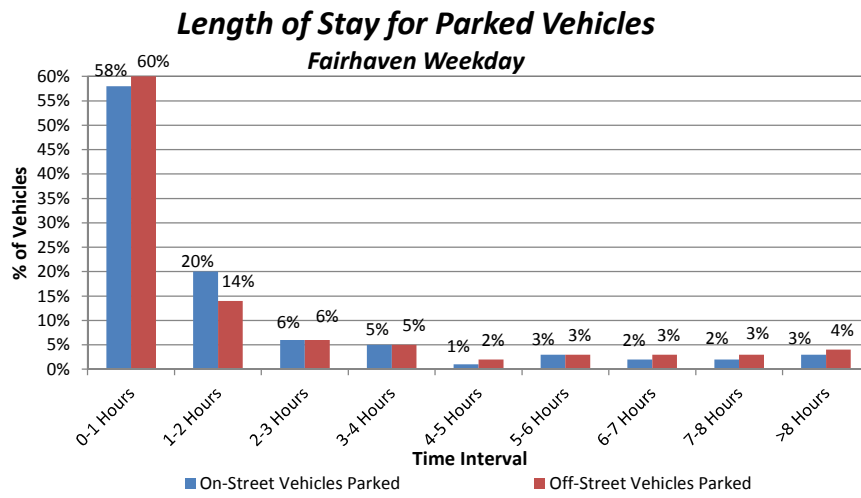
Fairhaven Weekday



***Length of Stay for Parked Vehicles***  
***Fairhaven Weekday***







[Home](#)

## Fairhaven Weekend

<b>Collection Date</b>	7/9/2011
<b>Number of Block Faces</b>	164
<b>Total Parking Spaces</b>	1723
<b>Total On-Street Parking Spaces</b>	996
<b>Total Off-Street Parking Spaces</b>	727

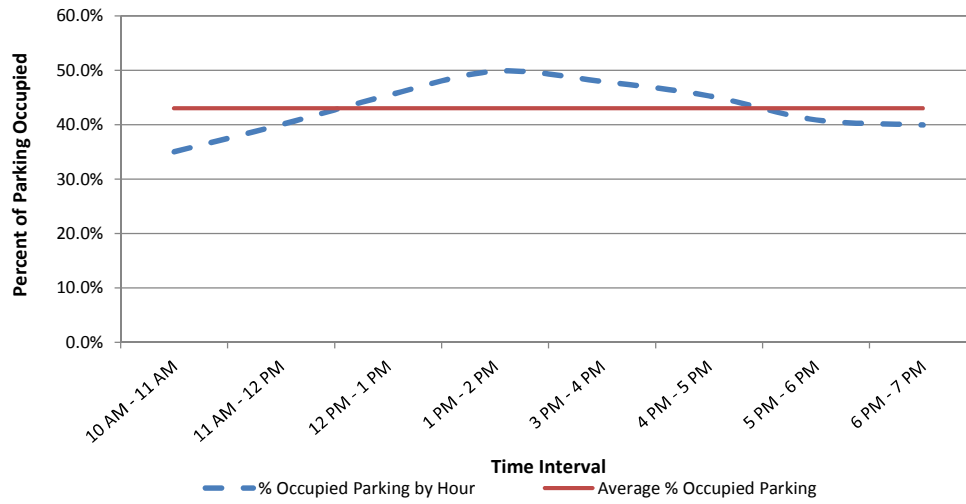
### Utilization by Hour - On-Street and Off-Street Parking

	<b>Total Parked Vehicles</b>	<b>% Occupied Parking</b>	<b>% Available Parking</b>
10 AM - 11 AM	603	35.0%	65.0%
11 AM - 12 PM	689	40.0%	60.0%
12 PM - 1 PM	782	45.4%	54.6%
1 PM - 2 PM	858	49.8%	50.2%
3 PM - 4 PM	826	47.9%	52.1%
4 PM - 5 PM	780	45.3%	54.7%
5 PM - 6 PM	704	40.9%	59.1%
6 PM - 7 PM	688	39.9%	60.1%
<b>Average:</b>	<b>741</b>	<b>43.0%</b>	<b>57.0%</b>

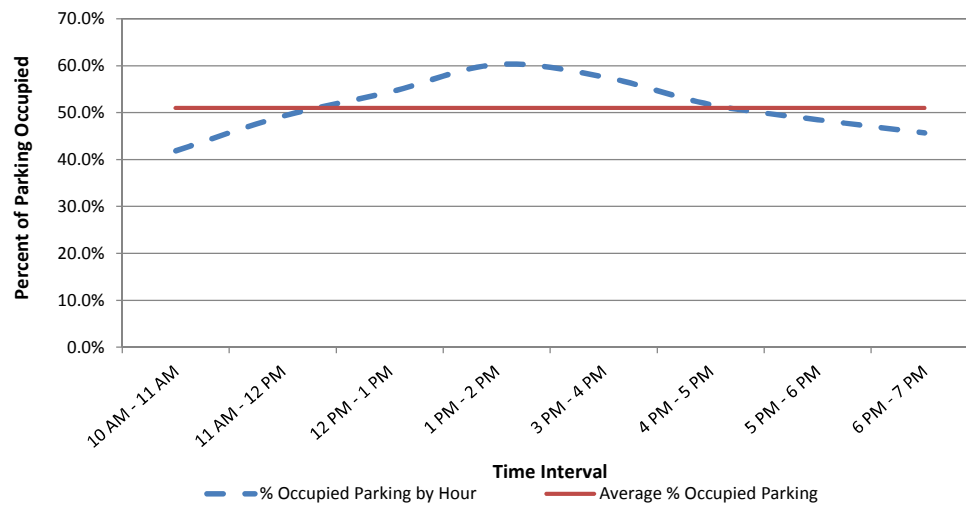
### Utilization by Hour - On-Street Parking

	<b>Total On- Street Parked Vehicles</b>	<b>% On-Street Occupied Parking</b>	<b>% Available Parking</b>
10 AM - 11 AM	417	41.9%	58.1%
11 AM - 12 PM	488	49.2%	50.8%
12 PM - 1 PM	539	54.4%	45.6%
1 PM - 2 PM	597	60.2%	39.8%
3 PM - 4 PM	571	57.6%	42.4%
4 PM - 5 PM	515	51.7%	48.3%
5 PM - 6 PM	483	48.5%	51.5%
6 PM - 7 PM	455	45.7%	54.3%
<b>Average:</b>	<b>508</b>	<b>51.0%</b>	<b>49.0%</b>

### Parking Utilization (On-Street and Off-Street) Fairhaven Weekend



### On-Street Parking Utilization Fairhaven Weekend



**Utilization by Hour - Off-Street Parking**

	<b>Total Off-Street Parked Vehicles</b>	<b>% Off-Street Occupied Parking</b>	<b>% Available Parking</b>
<b>10 AM - 11 AM</b>	186	25.6%	74.4%
<b>11 AM - 12 PM</b>	201	27.6%	72.4%
<b>12 PM - 1 PM</b>	243	33.4%	66.6%
<b>1 PM - 2 PM</b>	261	35.9%	64.1%
<b>3 PM - 4 PM</b>	255	35.1%	64.9%
<b>4 PM - 5 PM</b>	265	36.5%	63.5%
<b>5 PM - 6 PM</b>	221	30.4%	69.6%
<b>6 PM - 7 PM</b>	233	32.0%	68.0%
<b>Average:</b>	<b>233</b>	<b>32.0%</b>	<b>68.0%</b>

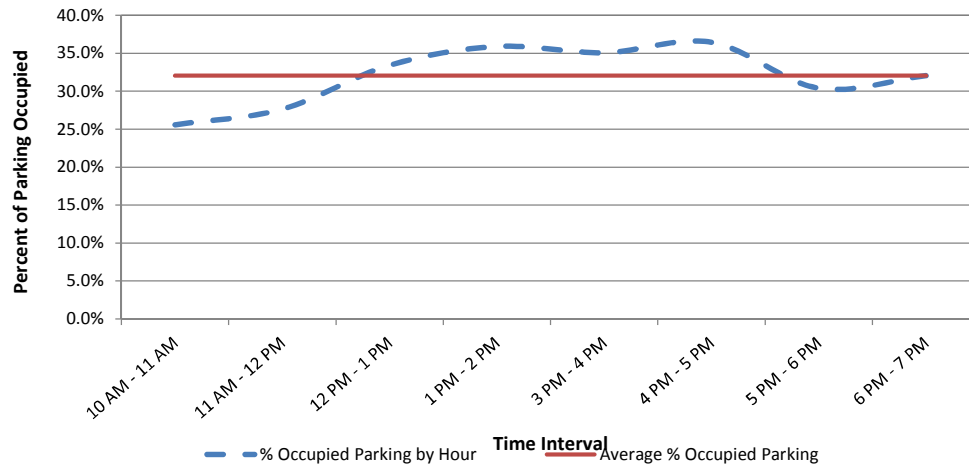
**Utilization by Hour - Commercial Area**

	<b>Total Parked Vehicles</b>	<b>% Occupied Parking</b>	<b>% Available Parking</b>
<b>10 AM - 11 AM</b>	457	33.7%	66.3%
<b>11 AM - 12 PM</b>	558	41.2%	58.8%
<b>12 PM - 1 PM</b>	659	48.6%	51.4%
<b>1 PM - 2 PM</b>	724	53.4%	46.6%
<b>3 PM - 4 PM</b>	695	51.3%	48.7%
<b>4 PM - 5 PM</b>	663	48.9%	51.1%
<b>5 PM - 6 PM</b>	578	42.7%	57.3%
<b>6 PM - 7 PM</b>	582	43.0%	57.0%
<b>Average:</b>	<b>615</b>	<b>45.4%</b>	<b>54.6%</b>

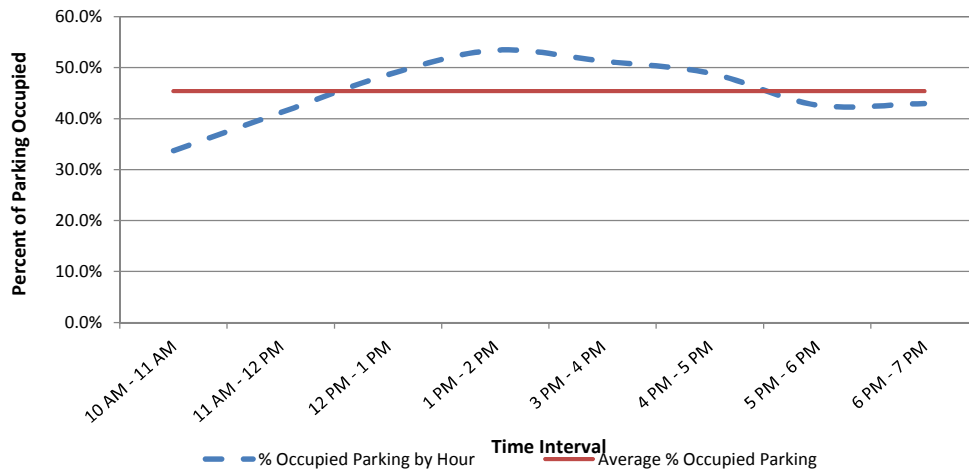
**Utilization by Hour - Industrial Area**

	<b>Total Parked Vehicles</b>	<b>% Occupied Parking</b>	<b>% Available Parking</b>
<b>10 AM - 11 AM</b>	51	43.6%	56.4%
<b>11 AM - 12 PM</b>	37	31.6%	68.4%
<b>12 PM - 1 PM</b>	25	21.4%	78.6%
<b>1 PM - 2 PM</b>	22	18.8%	81.2%
<b>3 PM - 4 PM</b>	18	15.4%	84.6%
<b>4 PM - 5 PM</b>	14	12.0%	88.0%
<b>5 PM - 6 PM</b>	12	10.3%	89.7%
<b>6 PM - 7 PM</b>	11	9.4%	90.6%
<b>Average:</b>	<b>24</b>	<b>20.5%</b>	<b>79.5%</b>

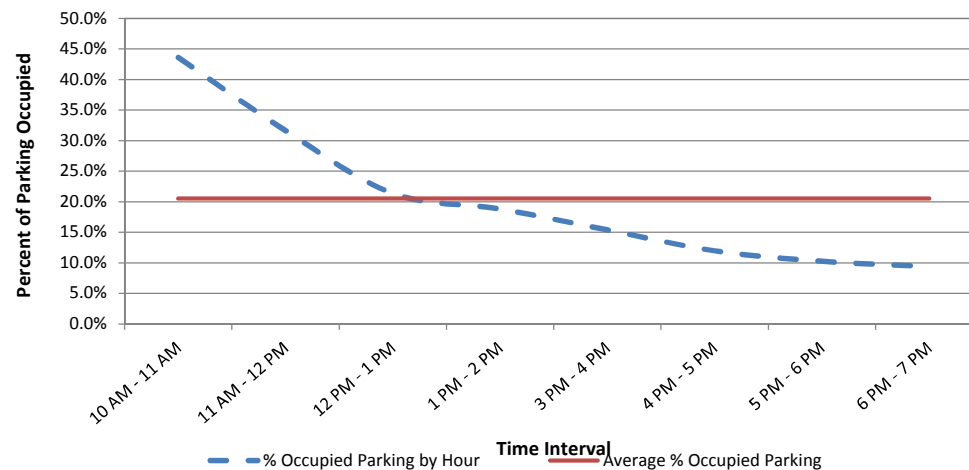
### Off-Street Parking Utilization



### Commercial Area Parking Utilization



### Industrial Area Parking Utilization



**Utilization by Hour - Residential Area**

	<b>Total Parked Vehicles</b>	<b>% Occupied Parking</b>	<b>% Available Parking</b>
10 AM - 11 AM	59	31.7%	68.3%
11 AM - 12 PM	60	32.3%	67.7%
12 PM - 1 PM	61	32.8%	67.2%
1 PM - 2 PM	78	41.9%	58.1%
3 PM - 4 PM	73	39.2%	60.8%
4 PM - 5 PM	67	36.0%	64.0%
5 PM - 6 PM	81	43.5%	56.5%
6 PM - 7 PM	56	30.1%	69.9%
<b>Average:</b>	<b>67</b>	<b>36.0%</b>	<b>64.0%</b>

**Utilization by Hour - Government/Public Area**

	<b>Total Parked Vehicles</b>	<b>% Occupied Parking</b>	<b>% Available Parking</b>
10 AM - 11 AM	36	55.4%	44.6%
11 AM - 12 PM	34	52.3%	47.7%
12 PM - 1 PM	37	56.9%	43.1%
1 PM - 2 PM	34	52.3%	47.7%
3 PM - 4 PM	40	61.5%	38.5%
4 PM - 5 PM	36	55.4%	44.6%
5 PM - 6 PM	33	50.8%	49.2%
6 PM - 7 PM	39	60.0%	40.0%
<b>Average:</b>	<b>36</b>	<b>55.4%</b>	<b>44.6%</b>

	<b>Number of Spaces</b>	<b>Average Length of Stay (minutes)</b>	<b>Average Turnover per Space</b>	<b>Average % Occupied</b>
<b>Total</b>	1723	94	1.8	43.0%
<b>On-Street</b>	996	88	2.2	51.0%
<b>Off-Street</b>	727	108	1.2	32.0%

**Summary by Land Use**

	<b>Number of Spaces</b>		<b>Average Length of Stay (minutes)</b>		<b>Average Turnover per Space</b>		<b>Average % Occupied</b>	
	<b>On-Street</b>	<b>Off-Street</b>	<b>On-Street</b>	<b>Off-Street</b>	<b>On-Street</b>	<b>Off-Street</b>	<b>On-Street</b>	<b>Off-Street</b>
<b>Commercial Area</b>	691	664	79	100	2.7	1.2	59%	31%
<b>Industrial Area</b>	117	NA	98	NA	0.8	NA	20%	NA
<b>Residential Area</b>	144	42	180	165	1.1	0.4	42%	14%
<b>Government/Public Area</b>	44	21	135	316	1.3	1.4	40%	89%

**Notes:** **Total Parking Vehicles** denotes the total number of vehicles parked in the study area during the one-hour time interval.

**% Occupied Parking** denotes the percent of total spaces that were occupied.

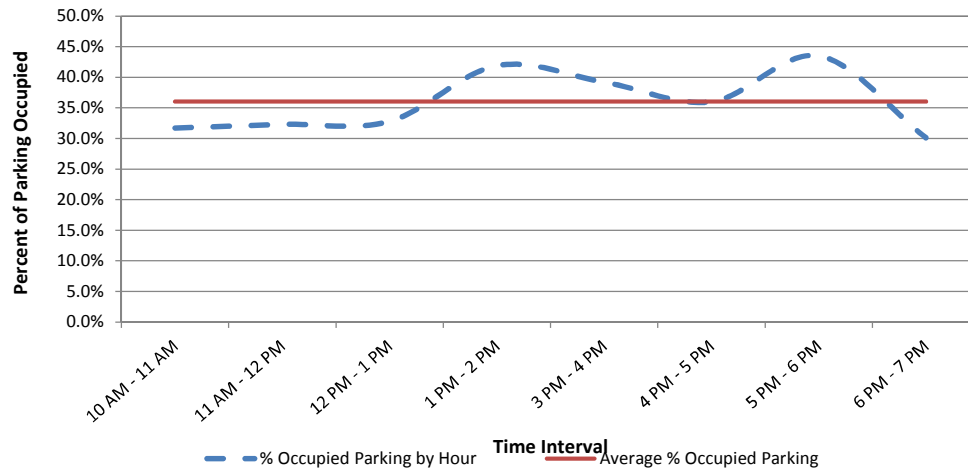
**% Available Parking** denotes the percent of total spaces that were vacant.

**Average Length of Stay for Parked Vehicles** is the average time that remained parked in one parking space.

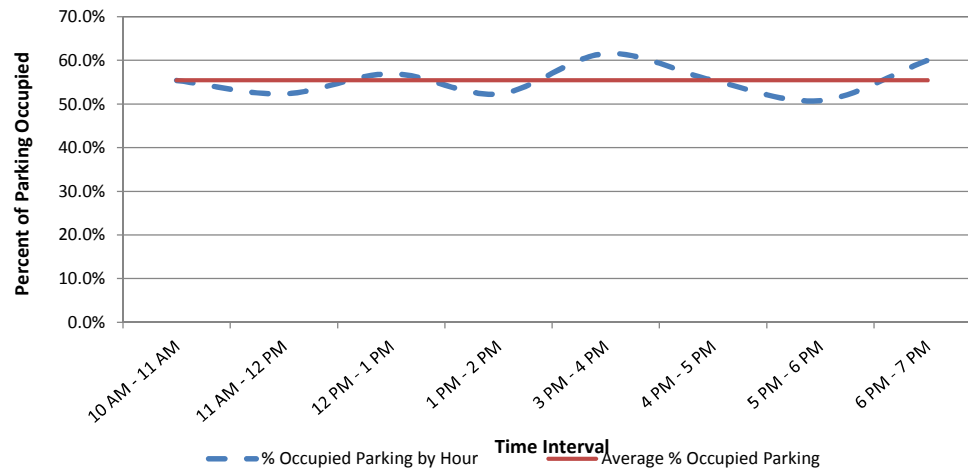
**Average Turnover per Parking Space** is the average number of times that each parking space was used during the 8 hour count period.

NA = Not applicable, no off-street parking was counted in the industrial area.

### Residential Area Parking Utilization

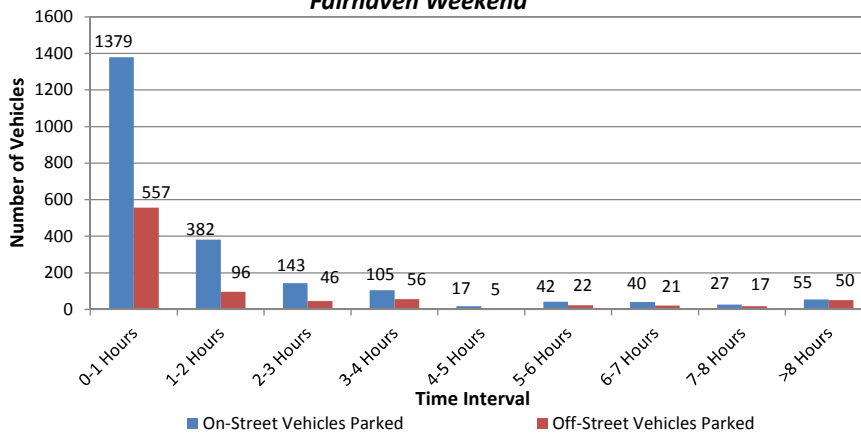


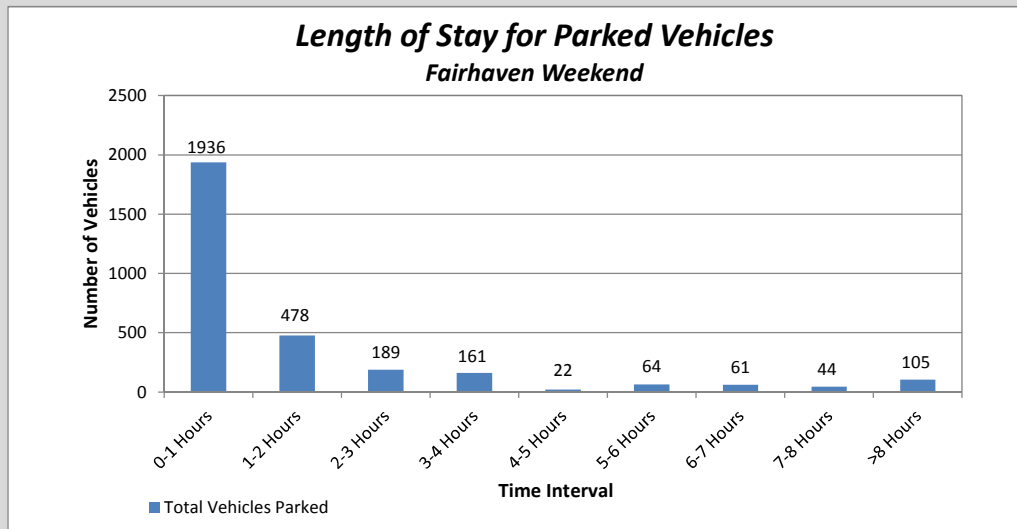
### Government/Public Area Parking Utilization



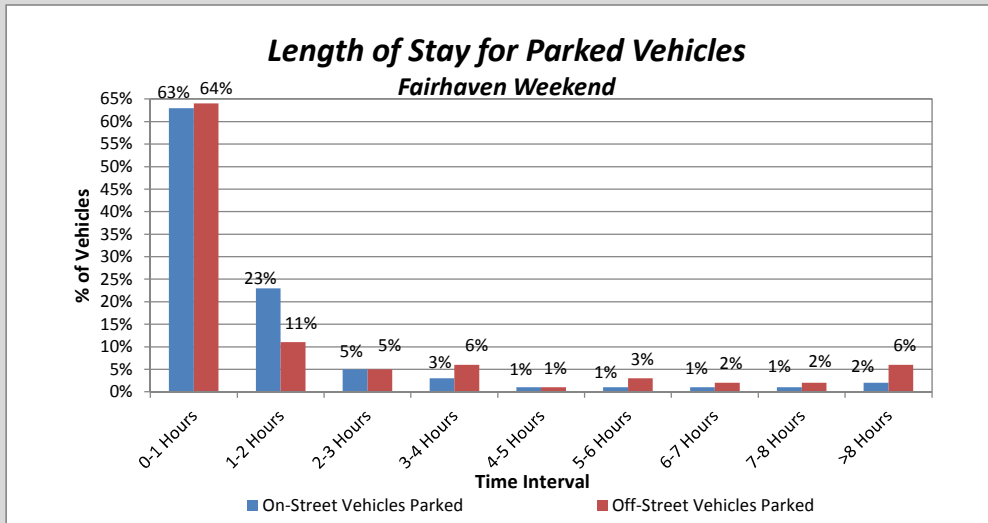
### Length of Stay for Parked Vehicles

#### Fairhaven Weekend

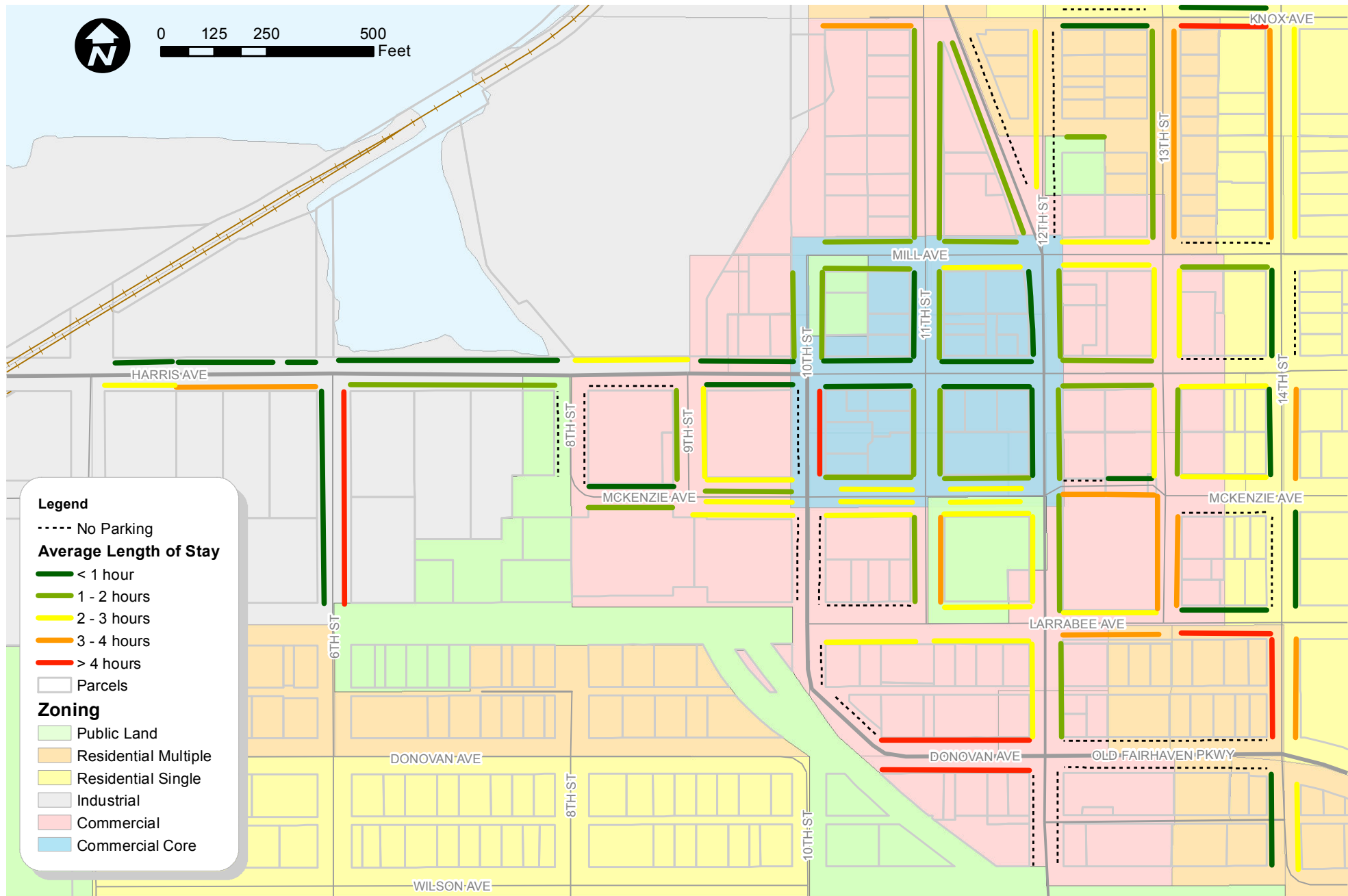








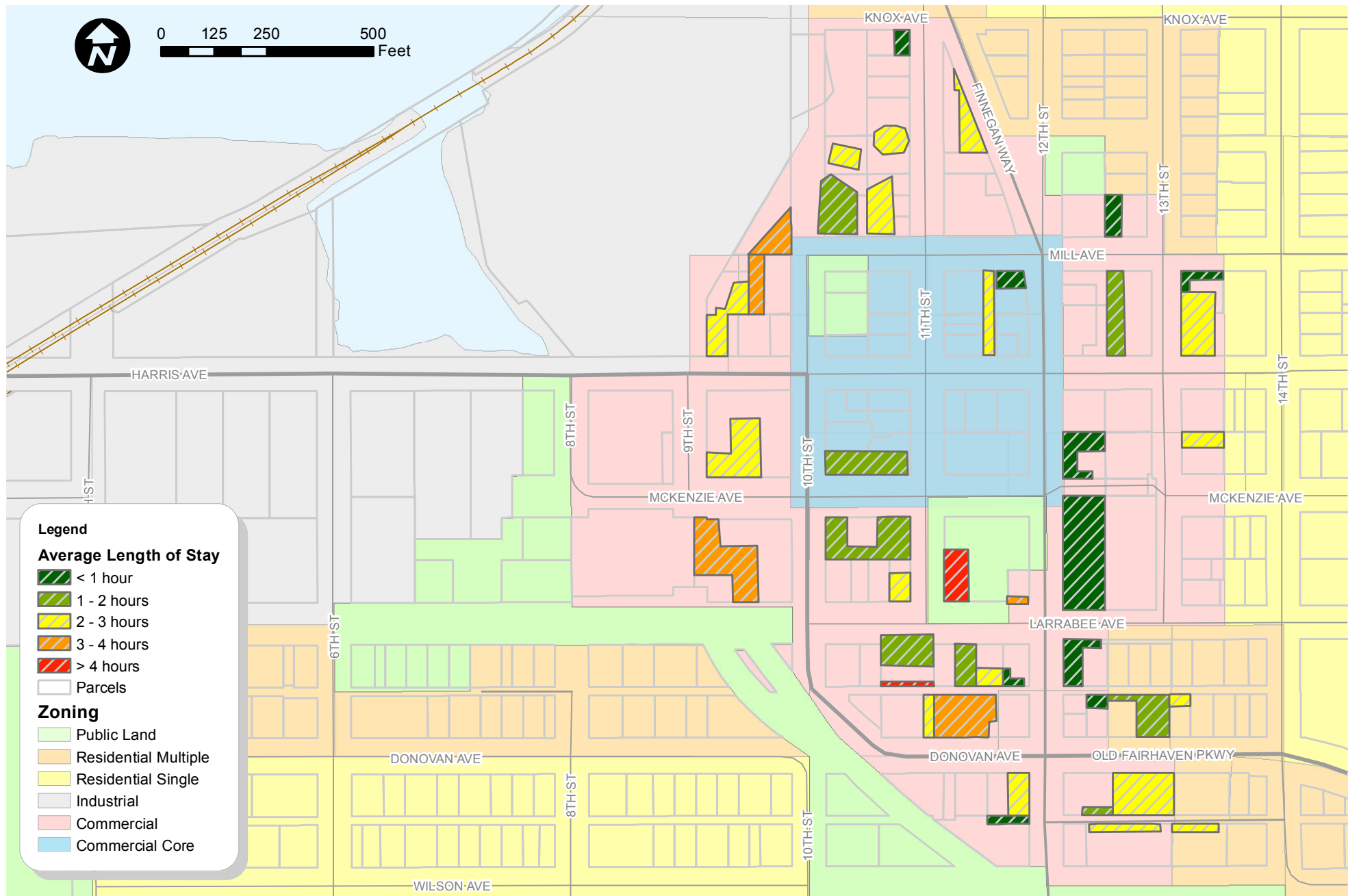




## On-Street Average Daily Parking Turnover Duration - Weekday

Fairhaven Parking Study

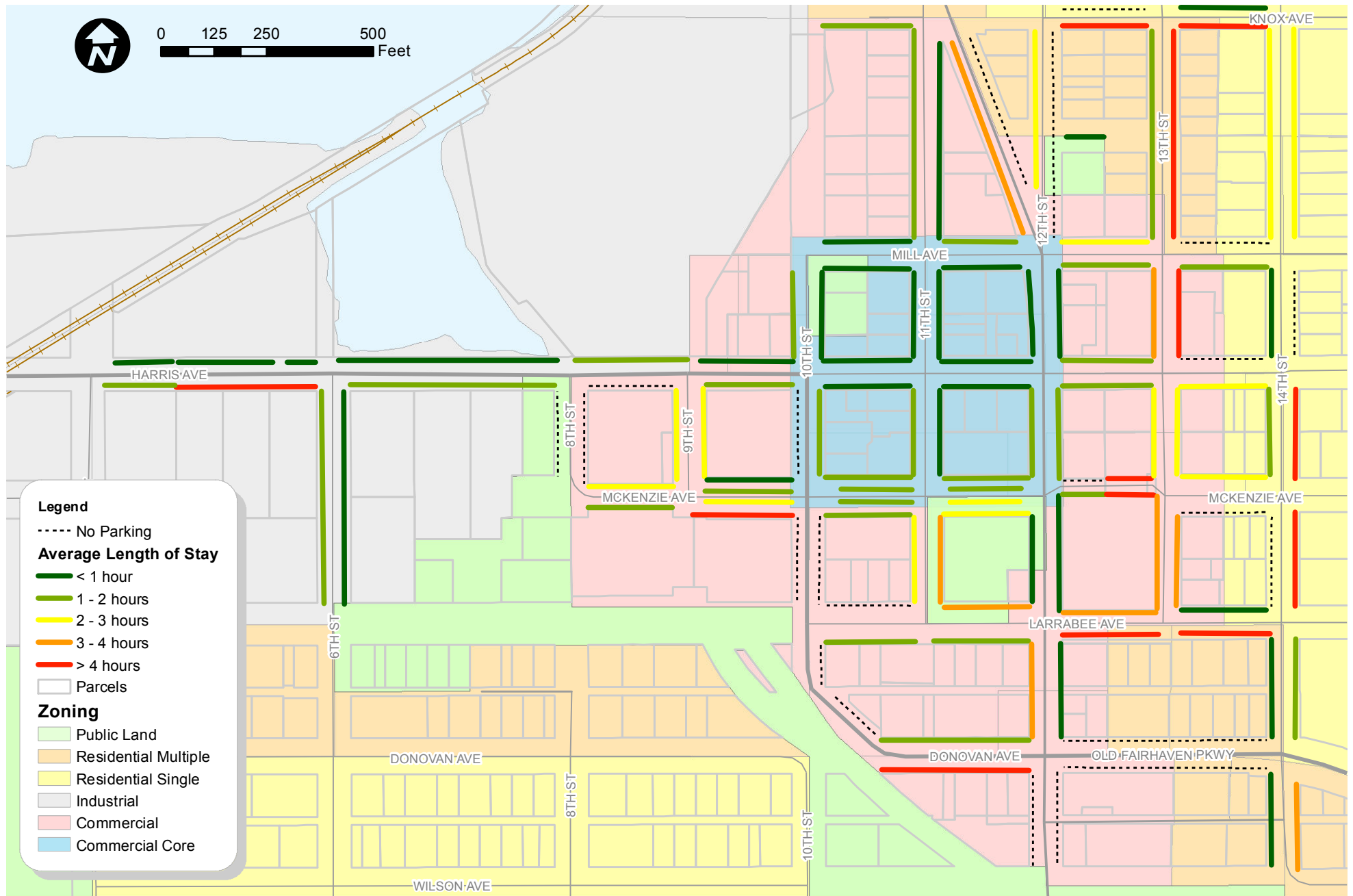
M:\11\11068 Bellingham Parking\Graphics\GIS\MXD\Parking Demand - Turnover.mxd



## Off-Street Average Daily Parking Turnover Duration - Weekday

Fairhaven Parking Study

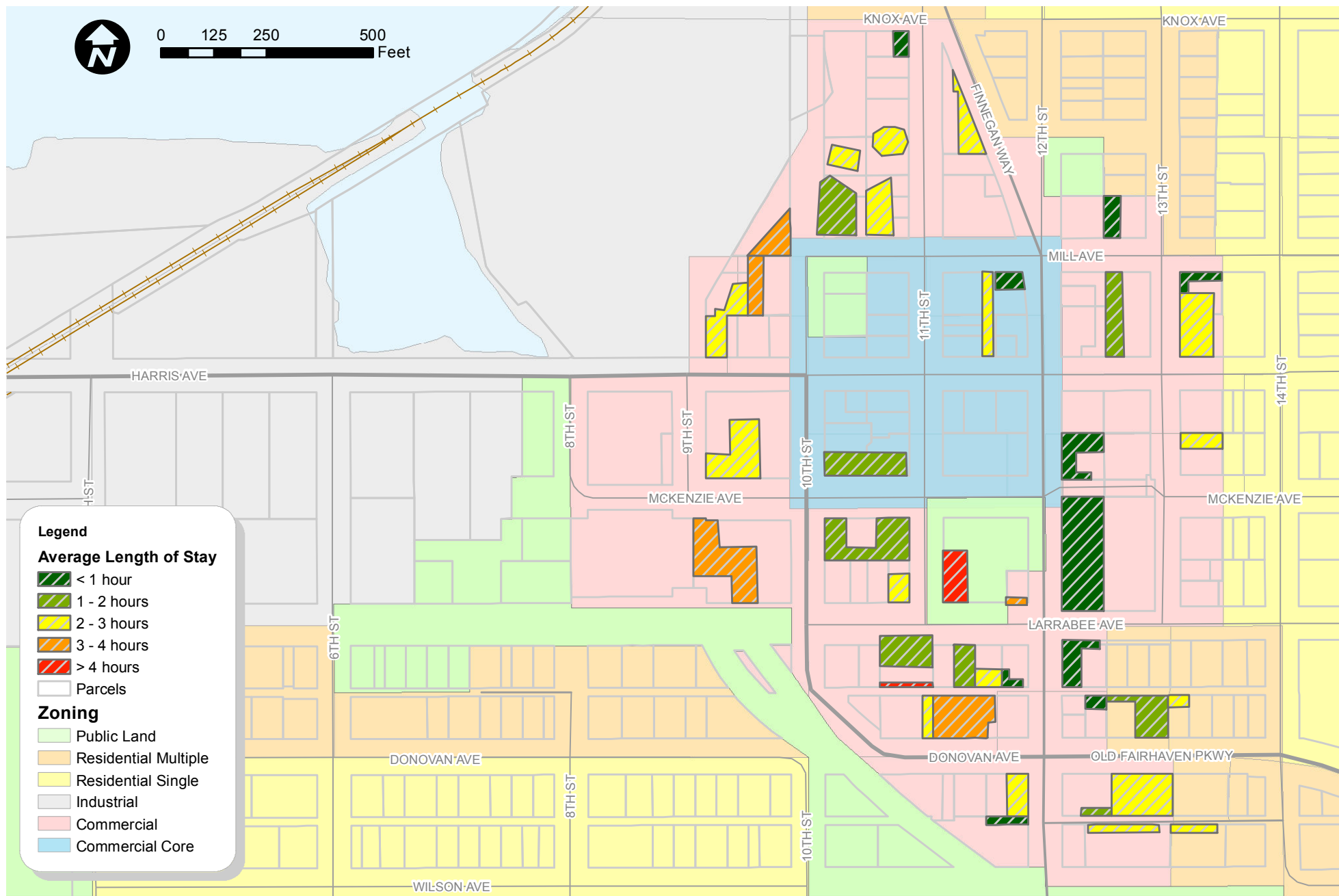
M:\11\11068 Bellingham Parking\Graphics\GIS\MXD\Parking Demand - Turnover\_Offstreet.mxd



## On-Street Average Daily Parking Turnover Duration - Weekend

Fairhaven Parking Study

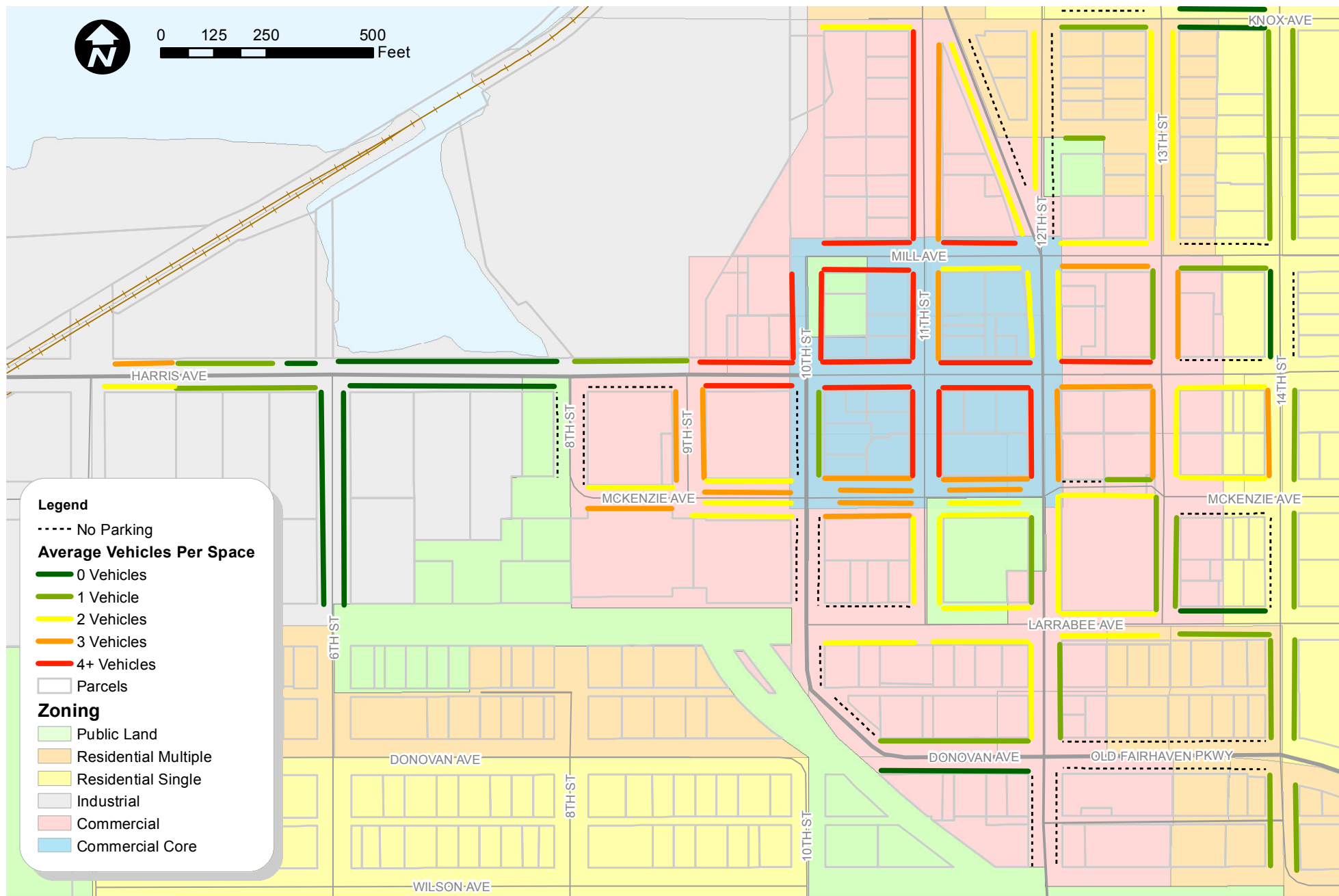
M:\11\11068 Bellingham Parking\Graphics\GIS\MXD\C4\_Parking Demand - Turnover.mxd



## Off-Street Average Daily Parking Turnover Duration - Weekend

Fairhaven Parking Study

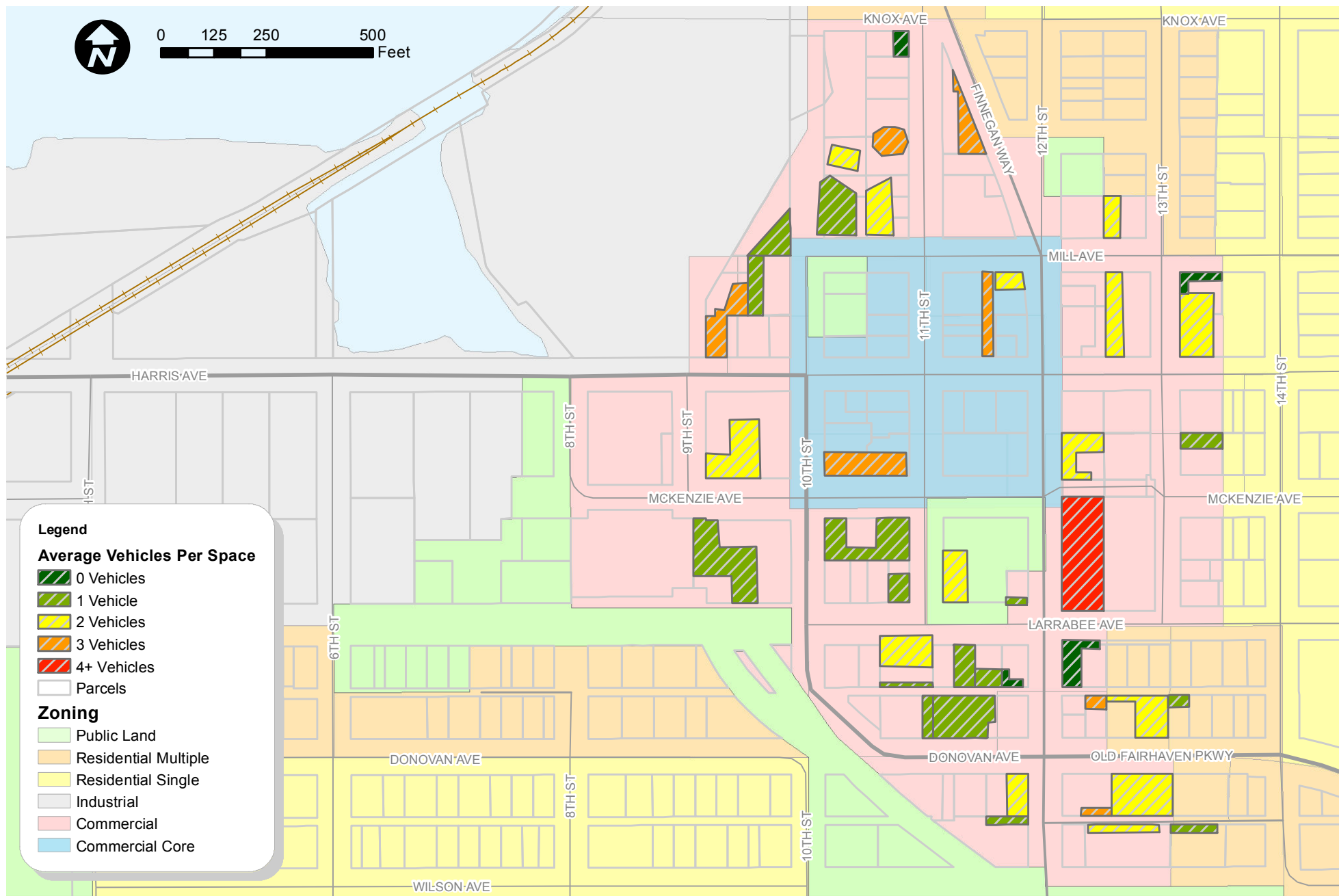
M:\11\11068 Bellingham Parking\Graphics\GIS\MXD\ID4\_Parking Demand - Turnover\_Offstreet.mxd



## On-Street Average Daily Vehicles Per Space - Weekday

Fairhaven Parking Study

M:\11\11068 Bellingham Parking\Graphics\GIS\MXD\Parking Demand - Turnover.mxd

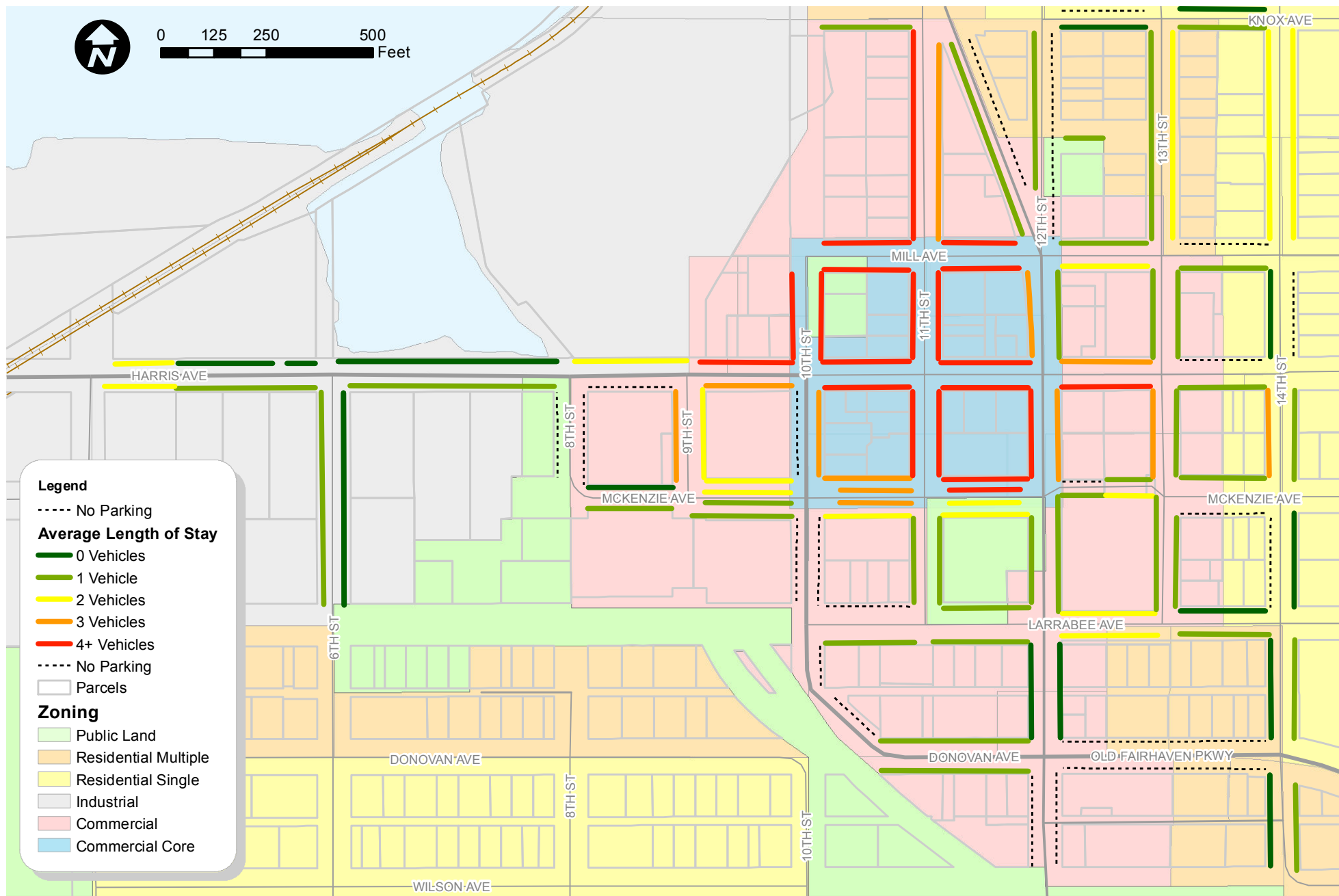


## Off-Street Average Daily Vehicles Per Space - Weekday

Fairhaven Parking Study

M:\11\11068 Bellingham Parking\Graphics\GIS\MXD\B5\_Parking Demand - VehPerSpace\_Offstreet.mxd

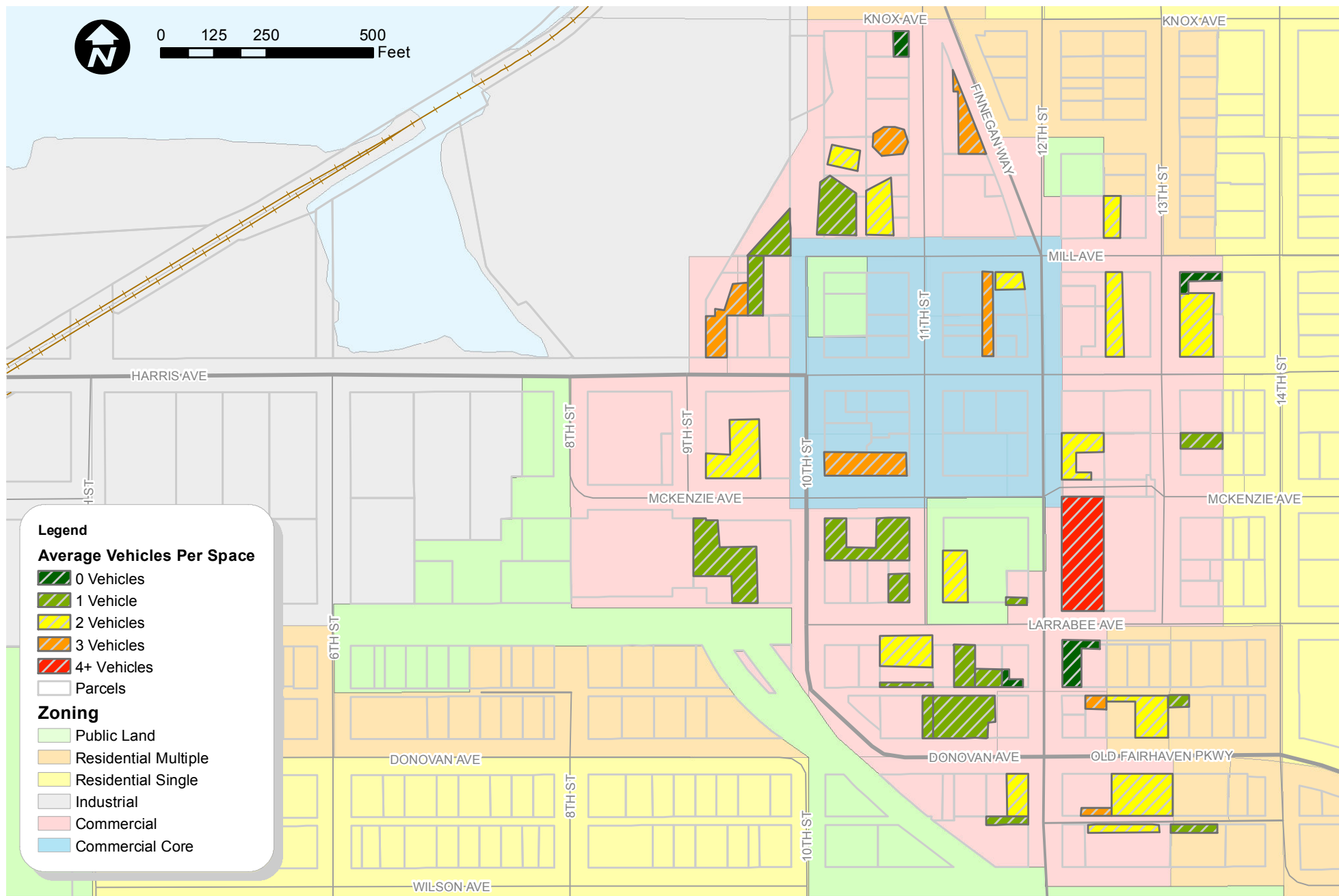




## On-Street Average Daily Vehicles Per Space - Weekend

Fairhaven Parking Study

M:\11\11068 Bellingham Parking\Graphics\GIS\MXD\C5\_Parking Demand - VehPerSpace.mxd



## Off-Street Average Daily Vehicles Per Space - Weekend

Fairhaven Parking Study

M:\11\11068 Bellingham Parking\Graphics\GIS\MXD\B5\_Parking Demand - VehPerSpace\_Offstreet.mxd



## Existing Weekday Parking Demand Model - Calibrated Model

Land Use Proposed Land Use Size Units Rate <sup>1</sup>	Retail (#820) 277.170 KSF 2.55	Residential (Visitor) 219 DU 0.15	Light Industrial (#110/130) 27.74 KSF 0.75	Office (#701) 60.110 KSF 2.47	Restaurant (#932) 63.830 KSF 5.55	Gov't Office 0.710 KSF 4.15					
	hourly parking stall demand (%) <sup>2</sup>	hourly supply utilized (# of stalls)	hourly parking stall demand (%) <sup>2</sup>	hourly supply utilized (# of stalls)	hourly parking stall demand (%) <sup>2</sup>	hourly supply utilized (# of stalls)	hourly parking stall demand (%) <sup>2</sup>	hourly supply utilized (# of stalls)	Shared Parking by Hour	Observed Parking by Hour	Difference
12:00-4:00AM	-	0	98%	32	-	0	-	0	32	NA	
5:00AM	-	0	100%	33	-	0	-	0	65	NA	
6:00 AM	-	0	84%	28	-	0	26%	92	120	NA	
7:00 AM	5%	35	62%	20	55%	11	44%	156	311	NA	
8:00 AM	18%	127	41%	13	69%	14	79%	117	474	NA	
9:00 AM	38%	269	34%	11	74%	15	95%	141	708	NA	
10:00 AM	68%	481	32%	11	75%	16	100%	148	959	927	32
11:00 AM	91%	643	31%	10	75%	16	98%	146	1,143	985	158
12:00 PM	100%	707	30%	10	73%	15	90%	134	1,222	1061	161
1:00 PM	97%	686	31%	10	97%	20	77%	114	1,151	1131	20
2:00 PM	95%	671	33%	11	100%	21	84%	125	1,018	NA	
3:00 PM	88%	622	37%	12	95%	20	81%	120	925	1047	-122
4:00 PM	78%	551	45%	15	77%	16	72%	107	838	952	-114
5:00 PM	62%	438	61%	20	62%	13	46%	68	809	864	-55
6:00 PM	64%	452	69%	23	-	0	25%	37	806	750	56
7:00 PM	77%	544	72%	24	-	0	-	0	791	NA	
8:00 PM	70%	495	80%	26	-	0	-	0	755	NA	
9:00 PM	42%	297	89%	29	-	0	-	0	549	NA	
10:00 PM	-	0	92%	30	-	0	-	0	200	NA	
11:00 PM	-	0	94%	31	-	0	-	0	187	NA	
Maximum		707		33		21		148		3	
Average(10:00 AM to 7:00 PM)									1,222 986	1,131 965	91 21

### Percent Difference

Maximum: 7%  
Average: 2%

### Notes:

1. Parking rates based on ITE *Parking Generation*, 4th Edition except residential uses which uses ULI *Shared Parking*.
2. Hourly time of day parking demand percent based on ITE *Parking Generation*, 4th Edition. Rental townhouse (224) used for residential since residential condo (230) does not have hourly data and industrial park (130) used for light industrial.

## Future Weekday Projected Parking Demand - Using Calibrated Model

Land Use Proposed Land Use Size Units Rate <sup>1</sup>	Retail (#820) 395.314 KSF 2.55	Residential (Visitor) 865 DU 0.15	Light Industrial (#110/130) 59.49 KSF 0.75	Office (#701) 86.396 KSF 2.47	Restaurant (#932) 93.072 KSF 5.55	Gov't Office 1.886 KSF 4.15		Residential 865 DU 1.05		Residential 865 DU 1.05						
	hourly parking stall demand (%) <sup>2</sup>	hourly supply utilized (# of stalls)	hourly parking stall demand (%) <sup>2</sup>	hourly supply utilized (# of stalls)	hourly parking stall demand (%) <sup>2</sup>	hourly supply utilized (# of stalls)	hourly parking stall demand (%) <sup>2</sup>	hourly supply utilized (# of stalls)	Shared Parking by Hour	hourly parking stall demand (%) <sup>2</sup>	hourly supply utilized (# of stalls)	Hourly Parking with Shared Residential Spaces	hourly parking stall demand (%) <sup>2</sup>	hourly supply utilized (# of stalls)	Hourly Parking with Reserved Residential	
12:00-4:00AM	-	0	98%	127	-	0	-	0	127	98%	890	1,017	100%	908	1,035	
5:00AM	-	0	100%	130	-	0	-	0	176	100%	908	1,084	100%	908	1,084	
6:00 AM	-	0	84%	109	-	0	-	0	243	84%	763	1,006	100%	908	1,151	
7:00 AM	5%	50	62%	80	55%	25	59%	126	44%	227	-	0	509	62%	563	1,417
8:00 AM	18%	181	41%	53	69%	31	79%	169	57%	294	-	0	728	41%	372	1,636
9:00 AM	38%	383	34%	44	74%	33	95%	203	76%	393	83%	6	1,062	34%	309	1,970
10:00 AM	68%	685	32%	42	75%	33	100%	213	85%	439	100%	8	1,421	32%	291	2,329
11:00 AM	91%	917	31%	40	75%	33	98%	209	92%	475	92%	7	1,683	31%	282	2,591
12:00 PM	100%	1008	30%	39	73%	33	90%	192	100%	517	77%	6	1,794	30%	272	2,702
1:00 PM	97%	978	31%	40	97%	43	77%	164	90%	465	59%	5	1,695	31%	282	2,603
2:00 PM	95%	958	33%	43	100%	45	84%	179	53%	274	71%	6	1,504	33%	300	2,412
3:00 PM	88%	887	37%	48	95%	42	81%	173	42%	217	78%	6	1,373	37%	336	2,281
4:00 PM	78%	786	45%	58	77%	34	72%	154	42%	217	-	0	1,250	45%	409	2,158
5:00 PM	62%	625	61%	79	62%	28	46%	98	76%	393	-	0	1,223	61%	554	2,131
6:00 PM	64%	645	69%	90	-	0	25%	53	83%	429	-	0	1,217	69%	627	2,125
7:00 PM	77%	776	72%	93	-	0	-	0	63%	325	-	0	1,195	72%	654	2,103
8:00 PM	70%	706	80%	104	-	0	-	0	66%	341	-	0	1,150	80%	727	2,058
9:00 PM	42%	423	89%	115	-	0	-	0	63%	325	-	0	864	89%	808	1,772
10:00 PM	-	0	92%	119	-	0	-	0	48%	248	-	0	367	92%	836	1,275
11:00 PM	-	0	94%	122	-	0	-	0	44%	227	-	0	349	94%	854	1,257
Maximum		1,008		130		45		213		517		8	1,794		908	2,702
Average										997					1,548	1,905

### Notes

1. Parking rates based on ITE *Parking Generation*, 4th Edition except residential uses which uses ULI *Shared Parking*.
2. Hourly time of day parking demand percent based on ITE *Parking Generation*, 4th Edition. Rental townhouse (224) used for residential since residential condo (230) does not have hourly data and industrial park (130) used for light industrial.

## Existing Weekend Parking Demand Model - Calibrated Model

Land Use Proposed Land Use Size Units Rate <sup>1</sup>	Retail (#820) 277.170 KSF 2.87	Residential (Visitor) 219 DU 0.15	Light Industrial (#110/130) 27.74 KSF 0.00	Office (#701) 60.110 KSF 0.00	Restaurant (#932) 63.830 KSF 7.07	Gov't Office 0.710 KSF 0.00					
	hourly parking stall demand (%) <sup>2</sup>	hourly supply utilized (# of stalls)	hourly parking stall demand (%) <sup>2</sup>	hourly supply utilized (# of stalls)	hourly parking stall demand (%) <sup>2</sup>	hourly supply utilized (# of stalls)	hourly parking stall demand (%) <sup>2</sup>	hourly supply utilized (# of stalls)	Shared Parking by Hour	Observed Parking by Hour	Difference
12:00-4:00AM	-	0	95%	31	-	0	-	0	31	NA	
5:00AM	-	0	100%	33	-	0	-	0	33	NA	
6:00 AM	-	0	98%	32	-	0	20%	90	122	NA	
7:00 AM	13%	103	94%	31	-	0	30%	135	270	NA	
8:00 AM	27%	215	89%	29	-	0	51%	230	474	NA	
9:00 AM	60%	477	59%	19	-	0	73%	329	826	NA	
10:00 AM	75%	597	71%	23	-	0	94%	424	1,044	603	441
11:00 AM	90%	716	67%	22	-	0	100%	451	1,189	689	500
12:00 PM	100%	795	66%	22	-	0	93%	420	1,237	782	455
1:00 PM	100%	795	64%	21	-	0	84%	379	1,195	858	337
2:00 PM	98%	780	64%	21	-	0	63%	284	1,085	NA	
3:00 PM	91%	724	69%	23	-	0	39%	176	923	826	97
4:00 PM	76%	605	73%	24	-	0	48%	217	845	780	65
5:00 PM	67%	533	78%	26	-	0	55%	248	807	704	103
6:00 PM	72%	573	80%	26	-	0	63%	284	883	688	195
7:00 PM	51%	406	83%	27	-	0	74%	334	767	NA	
8:00 PM	52%	414	84%	28	-	0	55%	248	689	NA	
9:00 PM	44%	350	87%	29	-	0	39%	176	555	NA	
10:00 PM	29%	231	89%	29	-	0	40%	180	440	NA	
11:00 PM	-	0	95%	31	-	0	53%	239	270	NA	
Maximum	795	33	0	0	451	0	1,237	858	379		
Average(10:00 AM to 7:00 PM)							1,023	741	282		

### Percent Difference

Maximum: 31%  
Average: 28%

Notes:

1. Parking rates based on ITE *Parking Generation*, 4th Edition.

2. Hourly time of day parking demand percent based on ITE *Parking Generation*, 4th Edition. Rental townhouse (224) used for residential since residential condo (230) does not have hourly data and industrial park (130) used for light industrial.

## Future Weekend Projected Parking Demand - Using Calibrated Model

Land Use Proposed Land Use Size Units Rate <sup>1</sup>	Retail (#820) 395,314 KSF 2.87	Residential (Visitor) 865 DU 0.15	Light Industrial (#110/130) 59.49 KSF 0.00	Office (#701) 86.396 KSF 0.00	Restaurant (#932) 93.072 KSF 7.07	Gov't Office 1.886 KSF 0.00		Residential 865 DU 0.88	Residential 865 DU 0.88		
	hourly parking stall demand (%) <sup>2</sup> hourly supply utilized (# of stalls)	hourly parking stall demand (%) <sup>2</sup> hourly supply utilized (# of stalls)	hourly parking stall demand (%) <sup>2</sup> hourly supply utilized (# of stalls)	hourly parking stall demand (%) <sup>2</sup> hourly supply utilized (# of stalls)	hourly parking stall demand (%) <sup>2</sup> hourly supply utilized (# of stalls)	hourly parking stall demand (%) <sup>2</sup> hourly supply utilized (# of stalls)	Shared Parking by Hour	hourly parking stall demand (%) <sup>2</sup> hourly supply utilized (# of stalls)	Shared Parking by Hour w/ All Residential	hourly parking stall demand (%) <sup>2</sup> hourly supply utilized (# of stalls)	Hourly Parking with Reserved Residential
12:00-4:00AM	- 0	95% 123	- 0	- 0	- 0	- 0	123	95% 723	846	100% 761	884
5:00AM	- 0	100% 130	- 0	- 0	- 0	- 0	130	100% 761	891	100% 761	891
6:00 AM	- 0	98% 127	- 0	- 0	20% 132	- 0	259	98% 746	1,005	100% 761	1,020
7:00 AM	13% 147	94% 122	- 0	- 0	30% 197	- 0	467	94% 716	1,183	100% 761	1,228
8:00 AM	27% 306	89% 115	- 0	- 0	51% 336	- 0	757	89% 677	1,434	100% 761	1,518
9:00 AM	60% 681	59% 77	- 0	- 0	73% 480	- 0	1,238	59% 449	1,687	100% 761	1,999
10:00 AM	75% 851	71% 92	- 0	- 0	94% 618	- 0	1,561	71% 540	2,101	100% 761	2,322
11:00 AM	90% 1021	67% 87	- 0	- 0	100% 658	- 0	1,766	67% 510	2,276	100% 761	2,527
12:00 PM	100% 1135	66% 86	- 0	- 0	93% 612	- 0	1,832	66% 502	2,334	100% 761	2,593
1:00 PM	100% 1135	64% 83	- 0	- 0	84% 553	- 0	1,770	64% 487	2,257	100% 761	2,531
2:00 PM	98% 1112	64% 83	- 0	- 0	63% 414	- 0	1,609	64% 487	2,096	100% 761	2,370
3:00 PM	91% 1032	69% 90	- 0	- 0	39% 257	- 0	1,379	69% 525	1,904	100% 761	2,140
4:00 PM	76% 862	73% 95	- 0	- 0	48% 316	- 0	1,273	73% 556	1,829	100% 761	2,034
5:00 PM	67% 760	78% 101	- 0	- 0	55% 362	- 0	1,223	78% 594	1,817	100% 761	1,984
6:00 PM	72% 817	80% 104	- 0	- 0	63% 414	- 0	1,335	80% 609	1,944	100% 761	2,096
7:00 PM	51% 579	83% 108	- 0	- 0	74% 487	- 0	1,173	83% 632	1,805	100% 761	1,934
8:00 PM	52% 590	84% 109	- 0	- 0	55% 362	- 0	1,061	84% 639	1,700	100% 761	1,822
9:00 PM	44% 499	87% 113	- 0	- 0	39% 257	- 0	869	87% 662	1,531	100% 761	1,630
10:00 PM	29% 329	89% 115	- 0	- 0	40% 263	- 0	708	89% 677	1,385	100% 761	1,469
11:00 PM	- 0	95% 123	- 0	- 0	53% 349	- 0	472	95% 723	1,195	100% 761	1,233
Maximum Average	1,135	130	0	0	658	0	1,832 1,050	761	2,334 1,661	761	2,593 1,811

### Notes:

- Parking rates based on ITE *Parking Generation*, 4th Edition.
- Hourly time of day parking demand percent based on ITE *Parking Generation*, 4th Edition. Rental townhouse (224) used for residential since residential condo (230) does not have hourly data and industrial park (130) used for light industrial.

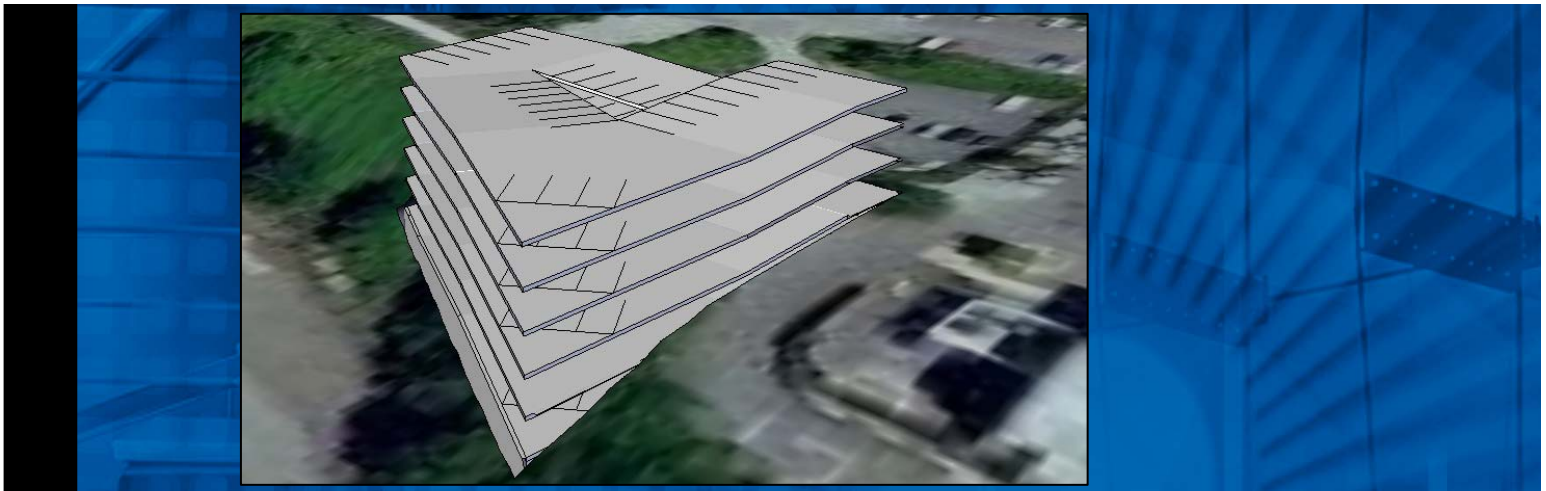




# Fairhaven Parking Study

Proposed Parking Garage

Feasibility Study



**August 2011 | Report**







# Feasibility Study

**August 2011**

**Prepared for:**

The Transpo Group, Inc.  
11730 – 118th Avenue Northeast, Suite 600  
Kirkland, WA 98034-7120

**Prepared by:**

KPFF Consulting Engineers  
1601 Fifth Avenue, Suite 1600  
Seattle, WA 98101  
(206) 622-5822  
KPFF Job No. 111311.10

This Page Intentionally Left Blank



# Table of Contents

**ES**   **Executive Summary** ..... 1

    Purpose..... 1

    Options..... 1

    Design Elements ..... 1

    Next Steps ..... 1

    Conclusion ..... 1

**1.**   **Introduction**.....2

    Background ..... 2

    Existing Site ..... 2

    Project Summary ..... 3

**2.**   **Options** .....4

    Identified Parcel Option ..... 5

    Expanded Footprint Option ..... 5

    rectangular Footprint Option ..... 6

    Alternative Locations ..... 6

**3.**   **Design Elements** .....7

    Programming..... 7

    Public Connection ..... 8

    Conceptual Engineering..... 10

**4.**   **Next Steps**..... 12

    Determining Desired Footprint and Location of the Parking Structure ..... 12

    Determine Type of Structural System. .... 12

    Locating Existing Utilities ..... 13

    Developing a Permitting Matrix ..... 13

    Developing a Project Budget ..... 13

## 5. Conclusion..... 13

### List of Figures

1	Existing Site and Property Lines .....	2
2	Existing Lot Looking North .....	3
3	Existing Lot Looking South towards Hotel.....	3
4	Existing Adjacent Rectangular Gravel Parking Lots Looking South .....	7
5	Architectural Context of Neighborhood by 10th Street and Mill Avenue .....	9
6	Architectural Context of Neighborhood along 11th Street .....	9

### Appendices

Appendix A	A1: Three-Dimensional Massing Model of Triangular Garage
	A2: Plan View of Triangular Garage Options
	A3: Plan View and Massing Model of Rectangular Garage



# ES. Executive Summary

## PURPOSE

The City of Bellingham (City) is interested in the feasibility of building a public parking garage on the triangular site at the northwest corner of Mill Avenue and 10th Street, in the Fairhaven neighborhood of Bellingham, Washington. The site is currently used as a gravel parking lot; it is surrounded by a public trail and open gravel parking lot on the east and a hotel on the south, with access drives in a vacated right-of-way (ROW).

## OPTIONS

KPFF has presented three options for the potential project. While other similar options were investigated, these three provided the best layout using different property constraints. The Identified Parcel Option utilizes only the site within the property lines and outside of the vacated ROW. The Expanded Footprint Option incorporates some of the adjacent land by assuming that the parking use could continue to extend over the east property line as it currently does. Both of these options are very inefficient and will likely require coordination with the Port of Bellingham (Port) for garage access points. The Rectangular Footprint Option assumes the City could use some of the land currently owned by the Port and extends the footprint to the west for a more efficient rectangular layout.

## DESIGN ELEMENTS

Design elements summarized in this study include zoning, parking dimensions, circulation, queuing, access points, architectural context, constructability, building systems, and construction cost.

## NEXT STEPS

This preliminary study was developed to a planning level of completion in order to provide information to the City to determine the feasibility of building a public parking garage in this location. If a parking garage is pursued in the future, the next steps will include: determining the location of the facility, the desired capacity, allowable footprint, and associated land acquisition/ROW process; determining the type of structural system to use; locating existing utilities and any potential relocations; developing a matrix of anticipated permitting; and developing a project budget.

## CONCLUSION

The triangular site initially identified by the City is too small and constrained to allow an optionally functional garage. Small triangular sites, such as this, do not typically provide for a cost effective parking structure. It is usually more economical to build on a larger rectangular site. As such, KPFF recommends evaluating the site adjacent to the proposed project site, as it would likely allow for a more cost effective structure and better functional design. In addition, it has a better location in the City's street network. However, should the City decide to expand the available size of the Identified Parcel by negotiating with the Port, there is a feasible option as shown in this report. With the information known at this time, however, KPFF recommends considering the adjacent site.

# 1. Introduction

## BACKGROUND

The purpose of this report is to present the findings of KPFF's study for a potential public parking garage, as requested by the City, and to document the assumptions and code analysis used in the study. The proposed site is in the Fairhaven neighborhood of Bellingham, Washington, on a triangular piece of property at the northwestern corner of Mill Avenue and 10th Street.

## EXISTING SITE

The project site is currently being used as a parking lot on a gravel surface. Parking striping is not included, but it appears that 12 to 13 cars could fit comfortably on the current lot. The existing lot extends over the eastern property line, directly adjacent to the public trail.

The southern portion of the property contains a ROW/easement for two driveways, leading to parking behind the adjacent hotel as shown in Figure 1. The southernmost drive is approximately at grade while the northern drive decreases in grade sharply by about 10 to 20 feet. A large manhole was found near the northern end of the existing parking lot and a small area at the southwest corner of the lot is being used for trash collection in a fenced area. Photographs of the existing site are shown in Figures 2 and 3.

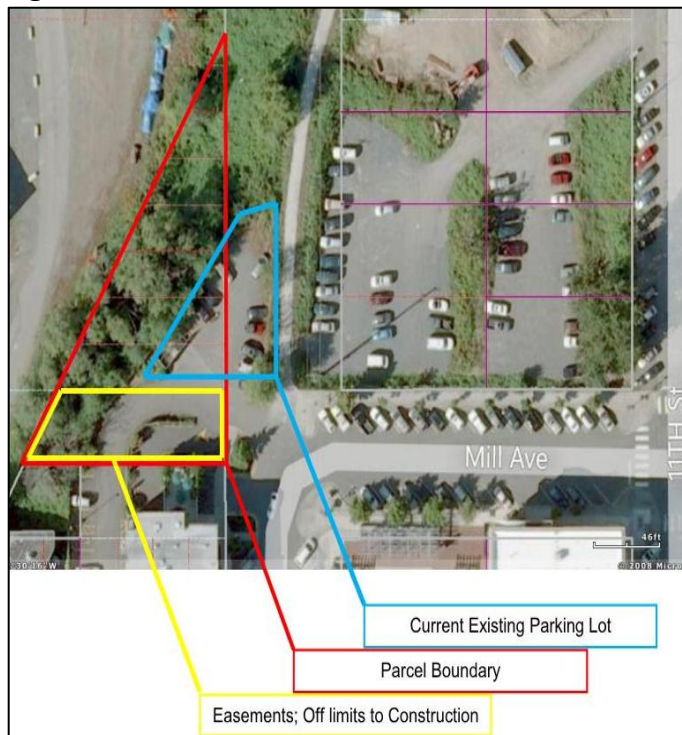


Figure 1: Existing Site and Property Lines





Figure 2: Existing Lot Looking North



Figure 3: Existing Lot Looking South towards Hotel

## PROJECT SUMMARY

The following is a summary of an investigation of the site including the zoning, height restrictions, and view corridor requirements, specified by the City of Bellingham Municipal Code. Use, occupancy, and construction type assumptions are based on the 2009 International Building Code, as adopted by the Bellingham Municipal Code. These are the assumptions used for this study.

**Project Site**

- Parcel Address: 1140 – 10th Street
- Parcel Area:
  - Total Site Area: Approximately 16,250 square feet
  - Road Vacation and Sanitary Sewer Easements: Approximately 5,090 square feet
  - Usable Parcel Area (Total Site Less Vacated ROW): Approximately 11,430 square feet
- Site Dimensions: 230 feet north to south, 140 feet east to west
- Zoning Designation: Commercial Subarea: 2A, Commercial Neighborhood (NC)
- Height Limit: 35 feet (54 feet is conditionally allowed with certain restrictions)
- Proposed Use: Open garage with openings on two or more sides
- Occupancy Group: S2 – Low Hazard Storage (Open)
- Type of Construction: Type IIB with vehicle barrier system

## 2. Options

KPFF started the investigation of the feasibility study by looking at only the small site (bounded in red on the east and west sides and yellow on the south side as seen in Figure 1). This left the existing hotel driveways, in the vacated ROW, un-encroached by the potential parking facility. KPFF then looked at a second option, using the same site with additional area to the east, which is currently used as parking. A third option has also been included, using additional area to the north and west, that is currently owned by the Port and is partially a wooded hillside. In all options presented in this report, the stall counts shown are approximate and are based on a conceptual study of the floor plates. Adding program space such as; ADA stall requirements, mechanical rooms, elevators, and stairs may slightly decrease the overall stall count in each option.

A three-dimensional massing model of the expanded parcel option is shown in Appendix A, Figure A1. The first option will look similar to this model, with less footprint area and no levels above the top grade. A three-dimensional massing model of the rectangular footprint option is shown in Appendix A, Figure A3. These massing models show the floor plates only to provide a sense of scale of the garage in the surrounding topography. Beams, columns, and cladding would all be a part of the built structure.

A summary of the information for the options is included below:

- Number of Options Studied: three
- Number of Stalls:
  - Option 1 – Identified Parcel: Approximately 50 stalls
  - Option 2 – Expanded Footprint: Approximately 165 stalls
  - Option 3 – Rectangular Footprint: Approximately 295 stalls



## IDENTIFIED PARCEL OPTION

A typical level floor plan for the Identified Parcel Option is shown in Appendix A, Figure A2. This option utilizes only the portion in Figure 1 that is outlined in red, without the yellow portion of the property. The basic features of this option are: one entrance from the corner of 10th Street and Mill Avenue, one exit onto the Port of Bellingham roadway below the hillside, one-way traffic throughout the facility, angled parking, and three levels all at or below the grade of 10th Street. Since the garage footprint is severely constrained in this option, the most feasible use of the space is to provide one-directional flow from top to bottom and angled parking. In this scenario, the entrance would be at the corner 10th street and Mill Avenue. Vehicles would then spiral downward, taking advantage of the existing steep topography, and upon leaving would exit onto the Port roadway.

There are many disadvantages associated with this scheme, including but not limited to:

- Entrance and exit in separate locations.
- Permanent and temporary easements and/or ROW may be required from the Port.
- Curb cut or roadway tie in may be required to Port roadway.
- Inefficient structural system.
- Inefficient functionality.
- Triangular opening in center of structure has limited use.
- One way traffic does not allow good circulation; patrons must exit the facility and circle back around through City streets to go to a previous level.
- Partially below grade location means site lines in and out of the garage are not open – presents safety concerns to users.
- Partially into hillside; requires excavation and permanent shoring, potential tiebacks and easements may be required.
- Partially below grade; may require enhanced lighting, ventilation, and sprinklers.
- Utilities buried in the hillside would likely need to be relocated.
- Small facility only provides 50 parking stalls.

## EXPANDED FOOTPRINT OPTION

This option includes the area east of the identified parcel that is currently used for parking. A typical level floor plan for the Expanded Footprint Option is shown in Appendix A, Figure A2. This wider footprint offers a marginally better layout with some increased efficiency. The basic features of this option are: one entrance and exit from the corner of 10th Street and Mill Avenue, one optional entrance and exit onto the Port roadway below the hillside, two-way traffic throughout, perpendicular parking, and six total levels, three at or below grade and three above grade. Additionally, upper levels may be extended over the hotel driveway ROW/easement to obtain more stalls.

There are also many disadvantages associated with this scheme, including but not limited to:

- Permanent and temporary easements and/or ROW required from the Port.
- Curb cut or roadway tie in may be required to Port roadway.
- Inefficient structural system.

- Inefficient functionality.
- Triangular opening in center of structure has limited use.
- Partially below grade location means site lines in and out of the garage are not open; presents safety concerns to users.
- Partially into hillside; requires excavation and permanent shoring, potential tiebacks and easements may be required.
- Partially below grade; may require enhanced lighting, ventilation, and sprinklers.
- Utilities buried in the hillside would likely need to be relocated.
- Slightly larger facility but still only provides 165 parking stalls

## RECTANGULAR FOOTPRINT OPTION

This option includes area north and west of the identified parcel that is currently wooded hillside or cleared land and not developed. This is land currently owned by the Port. A typical level floor plan and overall massing model for the rectangular footprint option is shown in Appendix A, Figure A3. Since more stalls are easily obtained in this option compared with the triangular site, only levels at or below grade are included in this study. However, additional levels above the elevation of 10th Street up to 35 feet could be included if desired. An additional height up to 54 feet above grade is allowed in this area with certain restrictions. The basic features of this option are; one entrance and exit from the corner of 10th Street and Mill Avenue, one entrance and exit onto the Port roadway below the hillside, two-way traffic through-out, perpendicular parking, and four levels. The rectangular footprint could also be expanded further north to increase the number of stalls and to decrease the ramp slopes. However, that would require additional property from the Port.

There are also many disadvantages associated with this scheme, including but not limited to:

- Property acquisition or permanent and temporary easements required from the Port.
- Curb cut or roadway tie in may be required to Port roadway.
- Partially below grade location means site lines in and out of the garage are not open; presents safety concerns to users.
- Partially into hillside; requires excavation and permanent shoring, potential tiebacks and easements may be required.
- Partially below grade; may require enhanced lighting, ventilation, and sprinklers.
- Utilities buried in the hillside would likely need to be relocated.

## ALTERNATIVE LOCATIONS

The identified triangular site does not allow an optimally functional and cost-effective parking garage structure. Typically, parking garages are better suited for sites that are rectangular or possibly square, since they provide the most efficiency in terms of number of stalls per overall built square footage. The rectangular footprint option helps to increase efficiency and is a viable option. However, permanent shoring with tiebacks, use of Port property, and location outside the main traffic access points to the area may still not warrant this as the best site for the intended use. While the site may be feasible, KPFF recommends studying alternative sites that would be better suited for this use. Directly next to the proposed triangular project site, which is discussed in this



report, there is a site that is currently being utilized as a gravel parking lot, as shown in Figure 4. This site is large, contains several separate parking lots, and appears to be much better suited for a parking garage structure; however, it is not currently owned by the City and is in a historic overlay district, so it may need to follow some special requirements.



Figure 4: Existing Adjacent Rectangular Gravel Parking Lots Looking South

Advantages of this site include, but are not limited to:

- Entrance and exit locations (access points) to surrounding streets.
- Partial excavation already exists, could be built all at and above grade with limited excavation and shoring.
- Larger rectangular site allows a much more efficient and cost effective structure.
- Upland location is more likely to allow use of shallow foundations.
- Better preserves view corridor.
- Located closer to main streets; intercepts intended traffic earlier.

The disadvantages associated with this site may include:

- Requires property purchase from private owner
- Portions may be in an historic overlay district
- More cladding may be required compared with the triangular site since most of the structure would be above grade.

## 3. Design Elements

### PROGRAMMING

#### Zoning

The project site is located in the Commercial Subarea 2A which is designated as NC General Use area, per the City of Bellingham Municipal Code. The code does not explicitly permit the construction of a parking facility in NC zoning (20.34.030 A – Permitted Uses). However, conditional uses for NC zoning do include park and ride lots (20.34.030 B.14 – Conditional Uses). This report assumes that the City would allow a parking garage on this parcel since it is requested by the City.

The NC designation is intended to accommodate retail and personal service establishments, which will primarily serve the immediate neighborhood populous.



**Height**

The height limit in zone 2A Commercial is 35 feet. The standard 35-foot height restriction may be increased to 54 feet upon specific approval by the City council; however, additional criteria must be met, including a restriction to block only a portion of water views (Ref. 20.00.070 – Fairhaven Neighborhood Table of Zoning Regulations).

**Commercial Development – Parking**

Per the code, the parking facility shall be located totally within property lines except for egress, ingress, and maneuvering areas as specified by the City. Drainage systems for parking facilities shall be designed and approved in accordance with Ordinance No. 8827. Retail parking facilities shall install adequate lighting in accordance with standards approved by the Public Works Director. Additionally, all parking facilities shall be clearly marked as to stalls and traffic flow, as well as for handicapped and compact spaces. The Public Works Department shall approve the location of all curb cuts. No single curb cut shall be wider than 30 feet.

**Dimensions**

The City of Bellingham Municipal Codes requires perpendicular stalls to be a minimum of 8.5 feet by 17 feet in length and drive aisles to be 22 feet, which is consistent with other jurisdictions in the Puget Sound area. Typical perpendicular stall dimensions used in this study include 8.5 feet by 18 feet in length and 24-foot drive aisles, as are often used in parking garages to allow for items such as column encroachment. Angled parking dimensions included in this study, and based on the Bellingham code, are 45 degree stalls for one-way traffic with an 8-1/2-foot width and 16-1/2-foot length and a 12-foot drive aisle.

**Setbacks**

The City of Bellingham Municipal Code requires that no portion of any open parking facility shall be located within 5 feet of any property line, or within any required yard except for a lane for ingress and egress. In the Commercial general use type (except Central), the 5-foot parking space setback may be waived by the Director when certain conditions are met. For this feasibility study, KPFF has assumed a waiver can be granted.

**PUBLIC CONNECTION****Vehicular Connection**

Other important considerations in parking garage planning involve a study of the locations of entrances and exits, as well as potential queuing issues. For the first option, the identified parcel option, there is one entrance at the corner of 10th Street and Mill Avenue, and there is one exit at the bottom of the hill on the Port of Bellingham roadway. For the second option, the expanded parcel option, there is one entrance and exit at the same corner of 10th Street and Mill Avenue, and there is an optional entrance and exit at the lower level on the Port roadway. The third option, the rectangular footprint option would include one entrance/exit at the top level and one at the bottom level.

Nearby City streets, at the top entrance level of all options, are laid out on a grid. Since the entrance is located at the terminus of a City street, and there is little driveway length available, queuing may occur in the city streets on both 10th Street and Mill Avenue. If a second entrance and exit is provided on the Port roadway for the second and third options, some queuing problems may be alleviated on the upper City streets. This second entrance is not available in the first option.

### Architectural Context

The project site is located in the Commercial Subarea 2A which is designated as NC General Use area. The general character of the Neighborhood is residential multi-family housing with commercial supporting residential uses such as shops and restaurants. As mentioned previously, directly south of the proposed site is a three-story hotel building. Diagonal to the proposed site is a public green and seating area. These can both be seen in the contextual picture, Figure 5.



Figure 5: Architectural Context of Neighborhood by 10th Street and Mill Avenue

Parking garages are often considered unattractive to a neighborhood since the ramping system can usually be easily seen. Sloping floors are visually distracting. There are ways that parking garages can be dressed up to better fit in with their neighborhood surroundings such as artwork, specialty lighting, cladding, artistic mesh screens, or specialty concrete finishing. These options would add varying degrees of cost to the construction and possibly the design of the project.

There is existing angled street parking allowed in all of these areas. Mill Avenue from 10th Street to 11th Street has a steep upwards grade. Building uses on 11th Street, next to the open gravel lot currently used for parking and mentioned earlier as a possible alternative, are similar to those in this area. The architectural context of that site along 11th Street is seen in Figure 6.



Figure 6: Architectural Context of Neighborhood along 11th Street

### Public Amenities

As mentioned previously, the City allows an increase in height in some situations. This is true for parking garages over 35 feet tall. The City requires a contribution towards needed public amenities within the commercial core in Areas 2A and 2B for the increased height. Eligible public amenities may include centralized open spaces, public restrooms, street furniture, trails and parks, indoor public spaces, public entry and directional signs, similar amenities, or contribution toward such amenities. The Parks and Recreation Department partakes in determining the type and amount of amenities required, on a case-by-case basis. (Ref. 20.00.070 – Fairhaven Neighborhood Table of Zoning

Regulations). While it is assumed in this report that the parking garage structure will not be over 35 feet in height, some public amenities could still be incorporated, including a direct connection to the public trail adjacent to the project site.

Additionally, The City requires all parking facilities with more than 50 parking spaces to provide a bicycle storage area with the capability to hold at least 10 percent of the number of parking spaces. This can be on sturdy racks, hooks, bars, or lockers. Bike storage, of some type, is often easy to incorporate into parking garages since there is often some dead space left over. Bike storage offers a great public amenity and encourages alternative transportation uses. The unprogrammed space in the garage floor plans of any option will allow for bicycle storage if it is required.

## CONCEPTUAL ENGINEERING

### Constructability

The proposed triangular site proposes many constructability challenges, since it is both on a steep hill and tucked in a corner with little direct street access. The steep hill will need to be excavated out and will likely need to occur from the lower level on the Port property. This would require agreements with the Port and temporary construction easements. The excavation will require a tall shoring system, typically accomplished by using tiebacks under the upland adjacent area, which in this situation is a trail and adjacent property to the east, and a driveway/vacated ROW to the south. An open cut may be used to the north, or shoring and tiebacks. Excavation shoring tiebacks require easements from adjacent property owners, which appear to be the Port on the north and the City on the east. At the upper level, the site does not directly abut street frontage, but rather the public trail on the east and the hotel driveways on the south. Zones of construction would be limited if access to these needs to be maintained. An alternative might include special agreements with other City departments and agencies, or private owners.

### Building Systems

#### Structural

A parking garage that is limited to a triangular shape does provide some constraints during construction; however, a typical parking garage structural system could be used. Typical parking garages are most often constructed of cast-in-place, precast, or post-tensioned concrete systems or steel systems. Even though the project site has many constraints, none of these types of systems would be precluded from being used here. However, the geometry of the triangular options likely means non repetitive framing geometry and thus a less efficient structural system than a rectangular site.

#### Geotechnical

A preliminary view of geotechnical soil maps of the area show that it may be possible to use conventional shallow foundations; however, geotechnical investigations will need to be performed to determine if shallow foundations or deep pile foundations are required. Deep pile foundations would add construction cost to the project. In either foundation system case, the project location on the hillside will require both excavation shoring and long term slope retention structures. These will both add significant cost to the project.





### Architectural

Architectural design would include egress, life safety plans, wayfinding and signage, design of internal functional spaces, and overall architectural aesthetic design. The architectural aesthetic design would include the façade, exterior features, cladding, any shielding/screening of headlights, and vertical connections such as stairs and elevators.

### Mechanical/Electrical/Plumbing

Mechanical, electrical, and plumbing design will be required for this type of project. The parking garage is assumed to be open, meaning that most of the site will utilize natural ventilation. There may be a portion of the garage, at the lower levels, which will require mechanical ventilation, since the structure will be partially built in the hillside. Electrical design would include support for the lighting, ventilation, and fire alarm and suppression systems as required. Plumbing design would include drainage and possibly fire sprinklers, if required.

### Lighting

Parking will be partially below grade; therefore, the facility may need enhanced lighting. Typical lighting would be included for safety, security, and post-daylight use.

### **Cost**

There are three types of costs that are incurred on a development project. These include construction costs, program costs, and land acquisition/ROW costs.

Construction costs are often called hard costs. This is the price usually bid by the contractor.

Construction costs include:

- Construction
- Bonds
- Insurance
- General conditions
- Contractor overhead and profit
- Washington sales tax

Program costs are often called soft costs – they are required to complete the project but are not direct construction costs – and may include:

- Agency project staff
- Permitting and entitlements
- Design team fees
- Construction management
- Testing and inspection fees
- Taxes and program contingencies

Land acquisition/ROW costs include property acquisition if the City does not already own the property or if they choose a different site for a parking garage, permanent ROW, and/or easement acquisition fees for items such as driveways, entrances/exits, utilities, tiebacks, and temporary construction

easements. Permanent easements would additionally include items such as permission to use the private Port roadway for exiting and/or entering the structure.

At this stage of conceptual design, there are many unknown factors about what the proposed parking facility will include. Items such as temporary or permanent excavation shoring, fire sprinklers and suppression systems, vertical transportation systems, and cladding will all impact the construction cost. KPFF recommends a budget for construction costs in 2011 dollars as follows:

- Option 1 - Identified Parcel for (50) stalls: \$4.3 million
- Option 2 - Expanded Footprint for (165) stalls: \$8.3 million
- Option 3 - Rectangular Footprint for (300) stalls: \$8.0 million

Program costs are often budgeted as a percentage of the construction cost. For a facility such as the one identified in this report, it is common for agencies to allocate a program cost of approximately 35 percent of the construction cost.

## 4. Next Steps

This preliminary study was developed to a planning level of completion in order to provide information to the City in determining whether to build a parking garage in this location. If a parking garage is desired in the future, the next steps include: determining the location of the structure, the projected capacity, desired footprint, and associated land acquisition/ROW process; determining the type of structural system to use; locating existing utilities and potential relocation; developing a matrix of anticipated permitting; and developing a project budget. These are discussed further in the subsections below.

### **DETERMINING DESIRED FOOTPRINT AND LOCATION OF THE PARKING STRUCTURE**

As discussed previously, KPFF recommends selecting a larger rectangular site over the identified small triangular site in order to produce an efficient and cost-effective parking structure. The rectangular footprint option on the triangular site is a viable option; however, KPFF recommends studying alternative sites such as the adjacent gravel lot mentioned previously that may be more cost effective for this type of use. If the City desires to move forward with the proposed triangular site, it will need to be determined if additional space to the east of the property line can be used as in the existing condition so that the maximum footprint can be achieved. Additionally, it will need to be determined if the City would like to utilize the air rights above the hotel driveway in the vacated roadway in order to gain extra stalls above.

### **DETERMINE TYPE OF STRUCTURAL SYSTEM.**

Before the specifics of column layouts, structure depth, and beam dimensions can be determined, the type of structural system will need to be selected. Each type of structural system that was discussed earlier in the report has their advantages and disadvantages. Key considerations when choosing a structural system would include cost, serviceability, and construction access or constraints.



## **LOCATING EXISTING UTILITIES**

The City will want to identify any existing utilities on the garage site and determine if they need to be relocated. This may require coordination with other public agencies and/or private utility owners. It is recommended that this process starts early in the design phase since relocating utilities can add significant cost to the project and time to the design and construction schedules. One utility manhole was found during a site visit at the project site on the upper level, suggesting a possible utility relocation may be necessary.

## **DEVELOPING A PERMITTING MATRIX**

New projects that use federal funding are required to go through an Environmental Permit process. This can be lengthy and involved. Several different permits with several different agencies are often required, as well as permits at the federal, state, and city levels. Tribal consultation is usually also necessary. Developing a matrix of all the different permits required for the particular project early in the design process allows a planned out timeframe for submitting all of the permits. Additionally, building and land use permits will be required.

## **DEVELOPING A PROJECT BUDGET**

Developing a project budget would include line items specifying all anticipated program costs, land acquisition fees, and an overall expected construction cost, as described earlier in the costs subsection of this report.

# **5. Conclusion**

The triangular site initially identified by the City is too small and constrained to allow an optionally functional garage. Small triangular sites, such as this, do not typically provide for a cost effective parking structure. It is usually more economical to build on a larger rectangular site. As such, KPFF recommends evaluating the site adjacent to the proposed project site, as it would likely allow for a more cost effective structure and better functional design. In addition, it has a better location in the City's street network. However, should the City decide to expand the available size of the Identified Parcel by negotiating with the Port, there is a feasible option as shown in this report. With the information known at this time, however, KPFF recommends considering the adjacent site.

This Page Intentionally Left Blank



# Appendix A

**A1: Three-Dimensional Massing Model of Triangular Garage**

**A2: Plan View of Triangular Garage Options**

**A3: Plan View and Massing Model of Rectangular Garage**







**EXPANDED FOOTPRINT OPTION**  
Scale: 1" = 30'

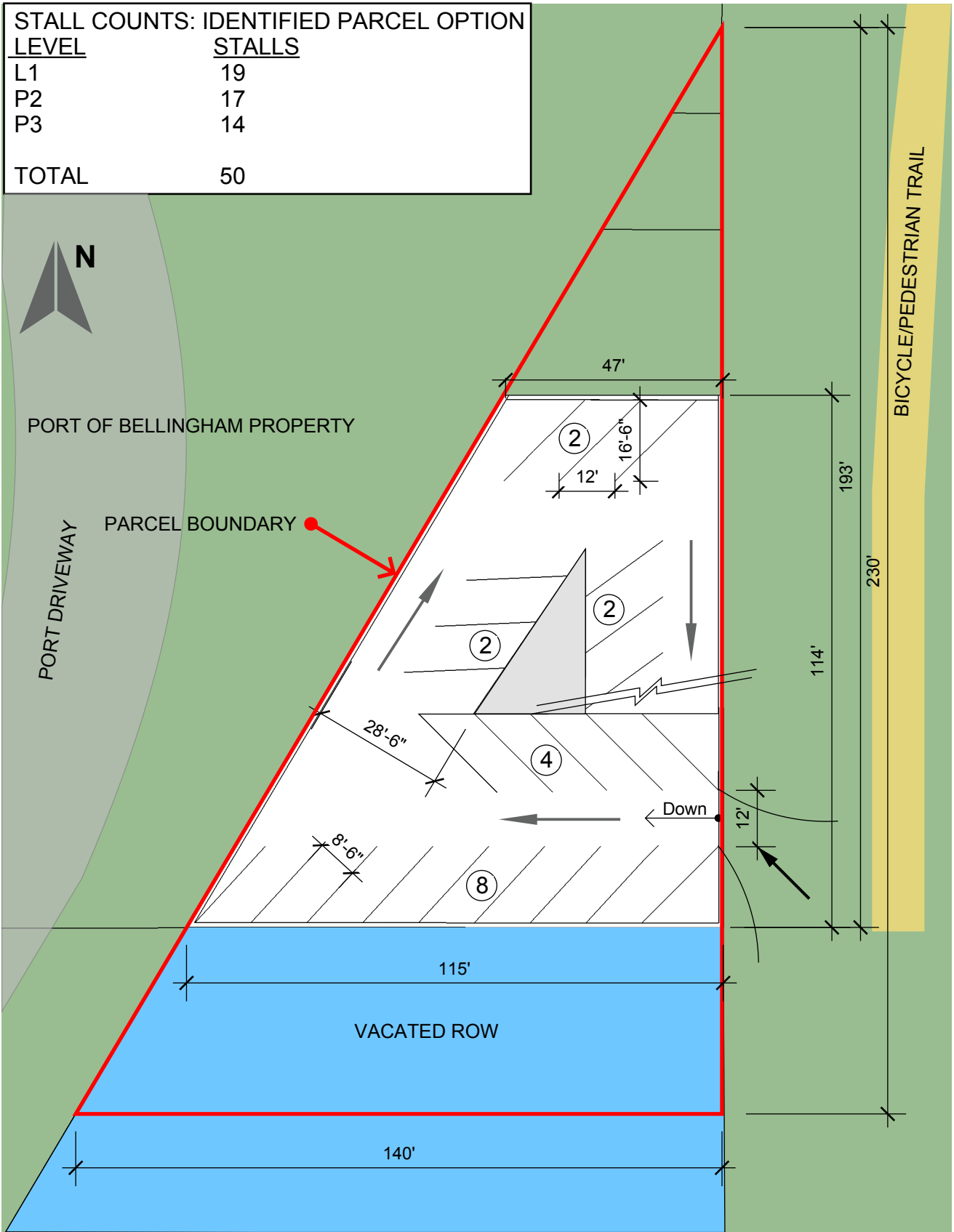


<div>A1</div>	<div>DRAWN BY PZ DESCRIPTION Three-Dimensional Massing Model of Triangular Garage</div>	<div>PROJECT NO. 111311.10 PROJECT Fairhaven Parking Study</div>	<div>ISSUE 8/13/2011 RE-ISSUE 8/23/2011</div>	<div>CLIENT The Transpo Group, Inc 11730 - 118th Avenue Northeast Suite 600 Kirkland, WA 98034-7120</div>	<div><div>kpff</div><div>Consulting Engineers</div><div>1601 Fifth Avenue, Suite 1600 Seattle, WA 98101 (206) 622-5622 fax (206) 622-8130</div></div>
---------------	---	--	---	---	---





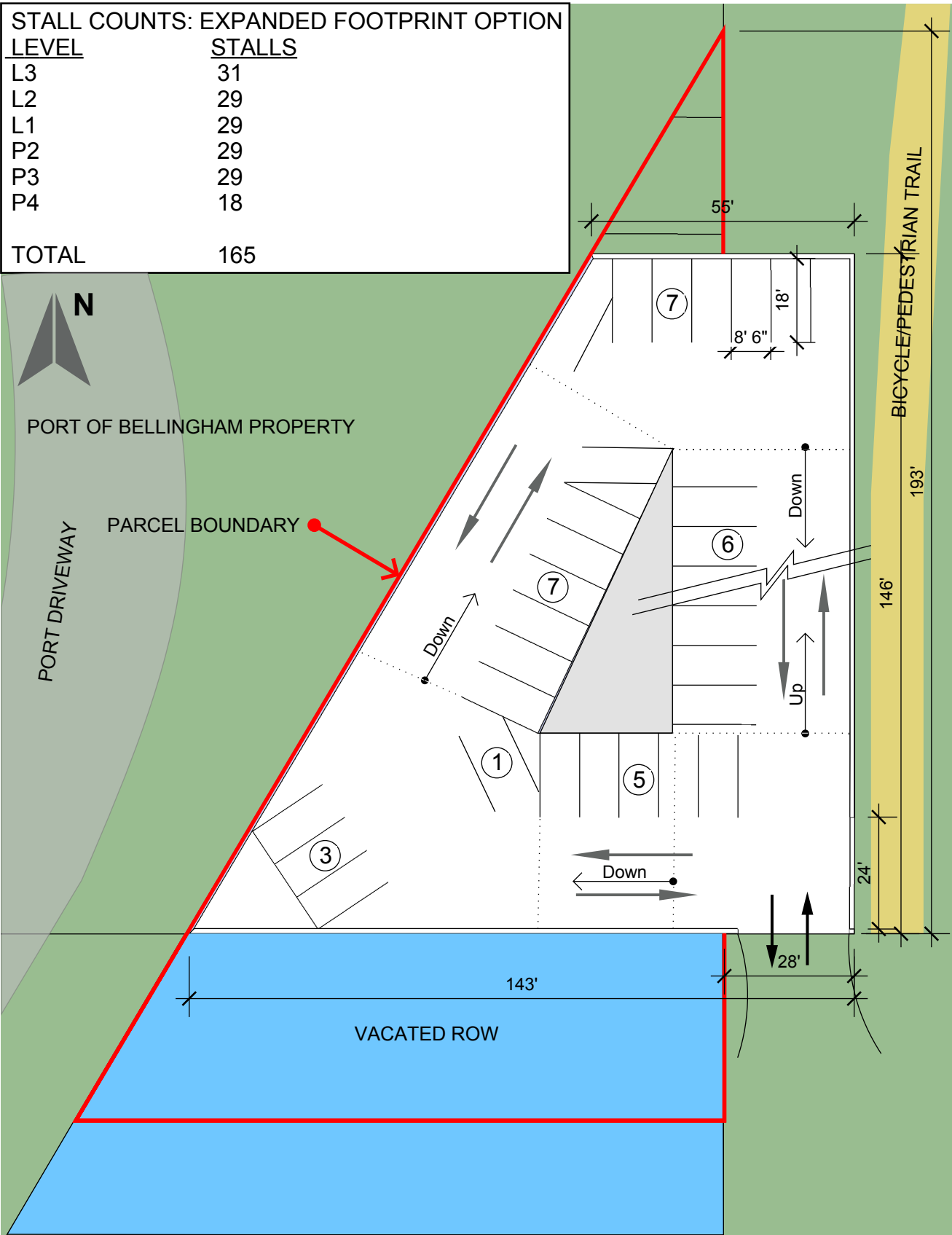
STALL COUNTS: IDENTIFIED PARCEL OPTION	
LEVEL	STALLS
L1	19
P2	17
P3	14
TOTAL	50



**IDENTIFIED PARCEL OPTION**  
Scale: 1" = 30'

NOTE: FLOOR PLANS SHOWN AT ENTRY LEVEL

STALL COUNTS: EXPANDED FOOTPRINT OPTION	
LEVEL	STALLS
L3	31
L2	29
L1	29
P2	29
P3	29
P4	18
TOTAL	165



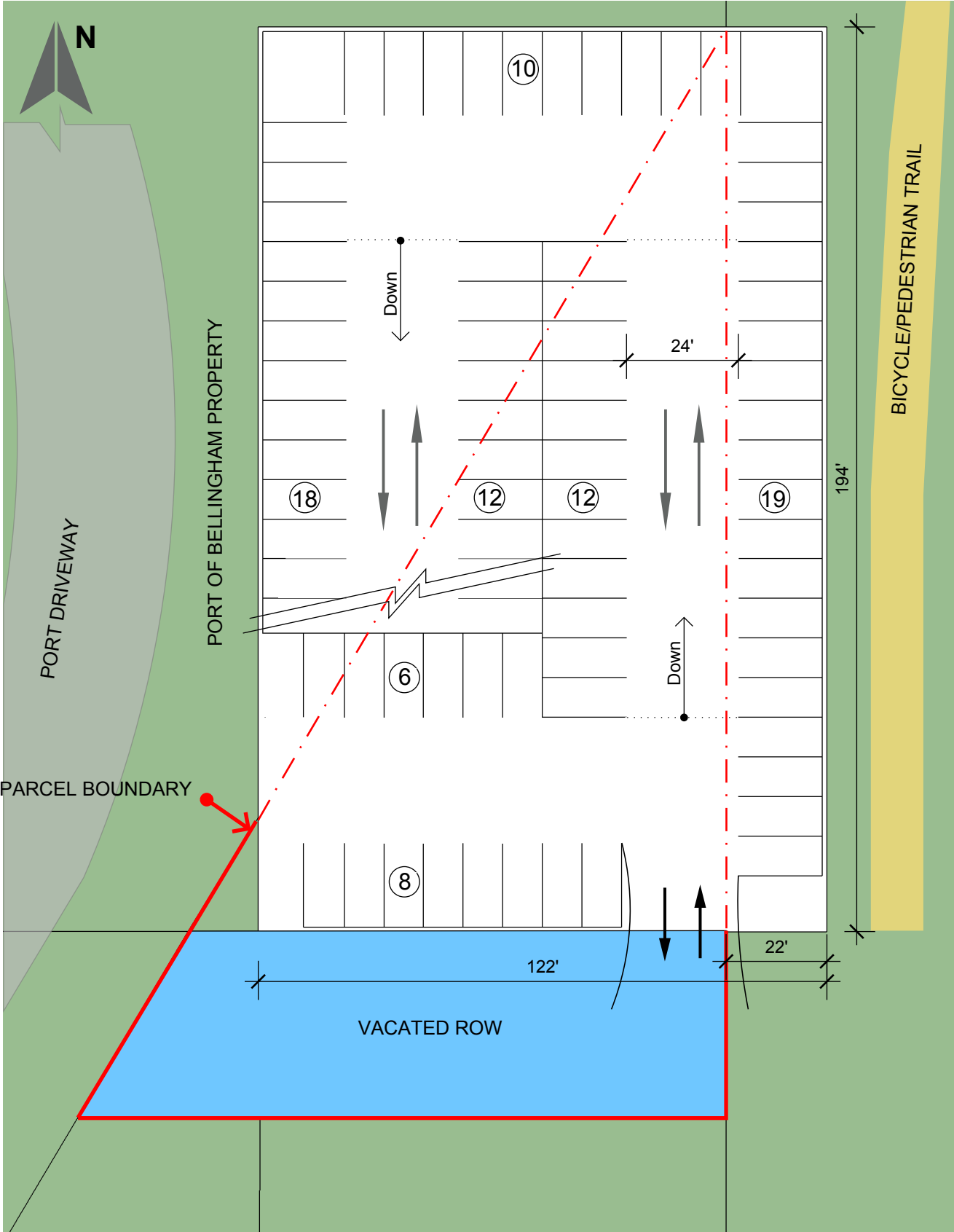
**EXPANDED FOOTPRINT OPTION**  
Scale: 1" = 30'



STALL COUNTS: RECTANGULAR FOOTPRINT OPTION	
LEVEL	STALLS
L1	85
P2	80
P3	80
P4	50
TOTAL	295



RECTANGULAR FOOTPRINT OPTION  
Scale: 1" = 40'



RECTANGULAR FOOTPRINT OPTION  
Scale: 1" = 30'

NOTE: FLOOR PLAN SHOWN AT ENTRY LEVEL