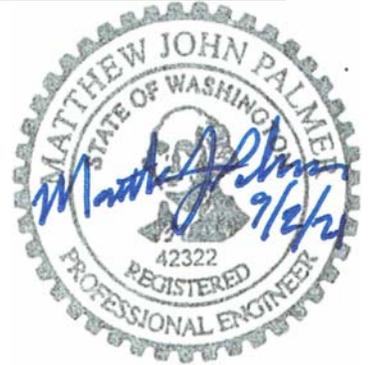




## PARKING REDUCTION MEMORANDUM

To: Scott Wammack  
Grandview, Inc.  
From: Matthew Palmer, PE  
Project: 102 Division Street, GTC #21-280  
City of Arlington Parking Demand/Supply  
Date: September 2, 2021



This memorandum summarizes the parking supply and demand for the 102 Division Street mixed-use development in the City of Arlington. The site is on the south side of Division Street west of N Olympic Avenue and will consist of 46-unit multifamily mid-rise apartments (46 studios). There will also be a total of 4,000 SF of commercial retail services. The proposal is for 57 parking spaces on-site (46 for residents and 11 for commercial in a surface lot and along the frontage). The parking site plan is attached.

The parking demand for the site was determined based on information provided in *Parking Generation, 5<sup>th</sup> Edition* by the Institute of Transportation Engineers (ITE). The shared parking demand has been calculated based on the apartment units per bedroom and the Square Footage (SF) of the commercial development. Combined within the buildings are the following uses and square footage:

- Multifamily (Mid-rise) Apartments – 46 Units/Bedrooms
- Shopping Center – 4,000 SF

The square footages per use were derived from information provided by the client, the specific retail uses are not defined but will be retail in nature.

### CODE PARKING SUPPLY

Parking required per Arlington Municipal Code (AMC) 20.72.010 for use Multi-family residences (Use 1.300) requires 2 spaces per unit plus 1 additional space for every four units. The 46 units would require 104 parking spaces. For the retail (Use 2.210) the parking requirement is 1 space per 400 square feet which will require 10 parking spaces. The total parking for the site per AMC is 114 spaces.

Per AMC 20.72.070, Joint use of require parking space, allows development to use the same parking space for both uses. The following sections will show what the anticipated parking demand for the site will be and the joint use parking allocation per hour.

## ITE PARKING DEMAND

Parking generation calculations for the combined residential and commercial uses are based on the information provided in *Parking Generation, 5<sup>th</sup> Edition* by the Institute of Transportation Engineers (ITE). Based on the average parking demand rates identified for the individual ITE Land Use Codes (LUC) there would be a parking demand of 42 parked vehicles prior to the shared parking reduction for mixed use developments. Note: the average parking demand in ITE is the average of all the maximum data points within the study period and should be viewed as the average of maximums. The parking calculations are shown in Table 1.

**Table 1: ITE Parking Demand**

Uses	ITE Parking Generation, 5 <sup>th</sup> Edition			
	Variable	LUC	RATE Per Variable	TOTAL
Multifamily (Mid-rise) Apartments	46 Bedrooms	221	0.75	34.50
Shopping Center	4,000 KSF	820	1.95	7.80
Total	---	---	---	42.30

Data provided in ITE *Parking Generation* shows the percent of peak parking demand for different uses for various hours of the day. Summarized in Table 2 is the shared peak parking demand for the site using the same square footage and building uses summarized in Table 1. It considers the number of parking spaces being utilized throughout the day with shared parking for each use as the residential/shopping peak demands don't overlap.

**Table 2: Shared Peak Parking Demand**

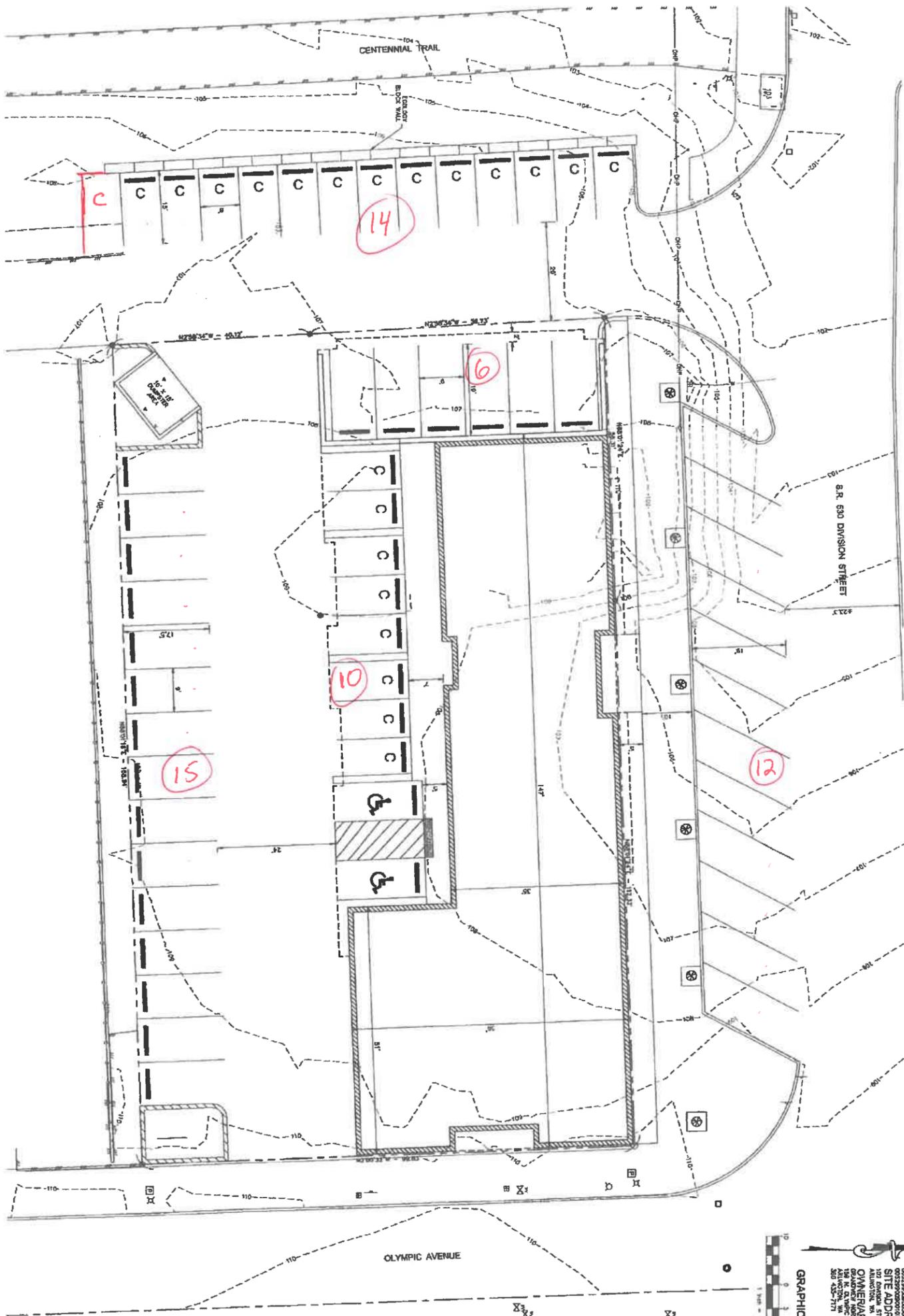
Hour Beginning	Multifamily (MR) Bedroom		Shopping Center		Total
	% Peak Demand	Peak Demand	% Peak Demand	Peak Demand	Total
12:00-4:00 AM	100	35		0	35
5:00 AM	94	32		0	32
6:00 AM	83	29		0	29
7:00 AM	71	24	15	1	26
8:00 AM	61	21	32	2	24
9:00 AM	55	19	54	4	23
10:00 AM	54	19	71	6	24
11:00 AM	53	18	99	8	26
12:00 PM	50	17	100	8	25
1:00 PM	49	17	90	7	24
2:00 PM	49	17	83	6	23
3:00 PM	50	17	81	6	24
4:00 PM	58	20	84	7	27
5:00 PM	64	22	86	7	29
6:00 PM	67	23	80	6	29
7:00 PM	70	24	63	5	29
8:00 PM	76	26	42	3	29
9:00 PM	83	29	15	1	30
10:00 PM	90	31		0	31
11:00 PM	93	32		0	32

**CONCLUSION**

With shared parking for the commercial and residential uses the site would have a peak parking demand from midnight through 4 AM with 35 parking spaces being utilized. With the 46 residential parking spaces combined with the 11 commercial spaces there will be a total of 57 parking spaces available. The maximum demand for the joint use of the parking is 35 parking spaces which represents 61% of the available parking spaces. Under the proposed split of commercial uses, the maximum demand for the commercial uses occurs at 11 AM with a peak demand of 8 vehicles.

Attachments (A-1 to A-8)

PORTION SW1/4, SE1/4, SEC.2, TWP.31N, RGE.5E, W.M.



K:\2023\DIVISION STREET\2023 SITE PLAN.DWG (UNPUBLISHED) 7/21/2021 1:42 PM

TAX PARCEL NUMBER:  
0000000000  
0000000000  
SITE ADDRESS:  
100 DIVISION ST, #2223  
ARLINGTON, VA 22201  
OWNER/APPLICANT:  
GRANDVIEW NORTH, LLC  
ATTN: JIM WILSON  
380 432-7171

GRAPHIC SCALE  
1" = 10' TL

<p># 22923</p>	<p><b>GRANDVIEW NORTH LLC</b> DIVISION STREET <b>PRELIMINARY SITE LAYOUT</b></p> <p>CITY OF ARLINGTON      CITY FILE NO.: PLN#</p>	<p>DESIGNED BY DATE 7/21</p> <p>DRAWN BY DATE 7/21</p> <p>CHECKED DATE</p> <p>FIELD BOOK: APR 137</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">REVISION</th> <th style="width: 50%;">DATE</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table>	REVISION	DATE								 <p><b>CASCADE SURVEYING &amp; ENGINEERING, INC.</b> Engineers Surveyors Planners</p> <p>P.O. BOX 328 ARLINGTON, WASHINGTON 98223 WWW.CASCADESURVEYING.COM</p> <p>FAX: (206) 430-4012 1-800-393-5551 (360) 430-5581</p>
	REVISION	DATE											

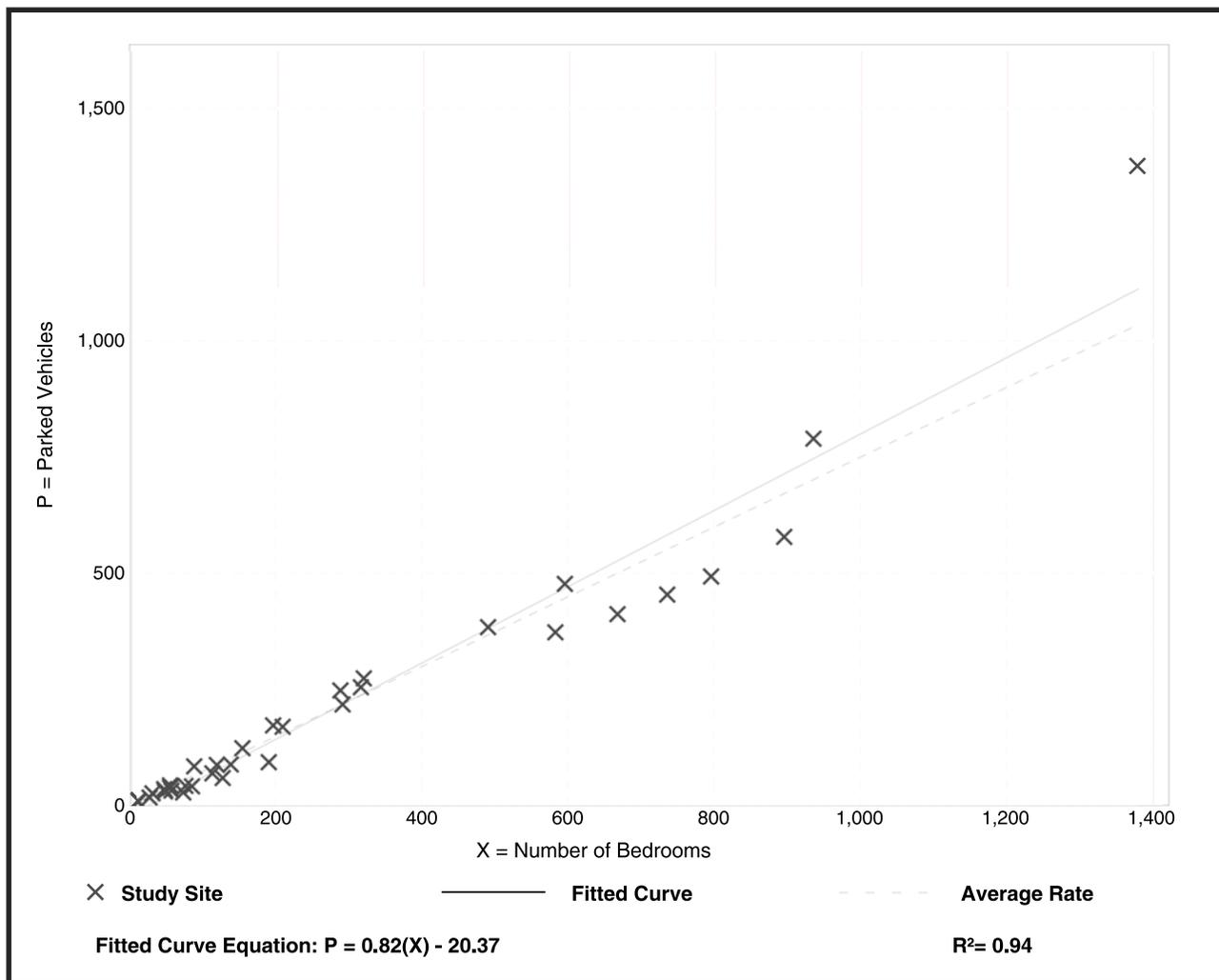
# Multifamily Housing (Mid-Rise) (221)

**Peak Period Parking Demand vs: Bedrooms**  
**On a: Weekday (Monday - Friday)**  
**Setting/Location: General Urban/Suburban (no nearby rail transit)**  
**Peak Period of Parking Demand: 10:00 p.m. - 5:00 a.m.**  
 Number of Studies: 35  
 Avg. Num. of Bedrooms: 294

## Peak Period Parking Demand per Bedroom

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
0.75	0.41 - 1.00	0.65 / 0.87	0.70 - 0.80	0.15 (20%)

## Data Plot and Equation



## Land Use: 221 Multifamily Housing (Mid-Rise)

### Description

Mid-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and with between three and 10 levels (floors) of residence. Multifamily housing (low-rise) (Land Use 220), multifamily housing (high-rise) (Land Use 222), and affordable housing (Land Use 223) are related land uses.

### Time of Day Distribution for Parking Demand

The following table presents a time-of-day distribution of parking demand on a weekday (one general urban/suburban study site), a Saturday (two general urban/suburban study sites), and a Sunday (one dense multi-use urban study site).

Hour Beginning	Percent of Peak Parking Demand		
	Weekday	Saturday	Sunday
12:00–4:00 a.m.	100	100	100
5:00 a.m.	94	99	–
6:00 a.m.	83	97	–
7:00 a.m.	71	95	–
8:00 a.m.	61	88	–
9:00 a.m.	55	83	–
10:00 a.m.	54	75	–
11:00 a.m.	53	71	–
12:00 p.m.	50	68	–
1:00 p.m.	49	66	33
2:00 p.m.	49	70	40
3:00 p.m.	50	69	27
4:00 p.m.	58	72	13
5:00 p.m.	64	74	33
6:00 p.m.	67	74	60
7:00 p.m.	70	73	67
8:00 p.m.	76	75	47
9:00 p.m.	83	78	53
10:00 p.m.	90	82	73
11:00 p.m.	93	88	93

## Additional Data

In prior editions of *Parking Generation*, the mid-rise multifamily housing sites were further divided into rental and condominium categories. An investigation of parking demand data found no clear differences in parking demand between the rental and condominium sites within the ITE database. As more data are compiled for future editions, this land use classification can be reinvestigated.

The average parking supply ratios for the study sites with parking supply information are shown in the table below.

Setting	Proximity to Rail Transit	Parking Supply Ratio	
		Per Dwelling Unit	Per Bedroom
Center City Core	Within ½ mile of rail transit	1.1 (15 sites)	1.0 (12 sites)
Dense Multi-Use Urban	Within ½ mile of rail transit	1.2 (39 sites)	0.9 (34 sites)
	Not within ½ mile of rail transit	1.2 (65 sites)	0.8 (56 sites)
General Urban/Suburban	Within ½ mile of rail transit	1.5 (25 sites)	0.8 (12 sites)
	Not within ½ mile of rail transit	1.7 (62 sites)	1.0 (39 sites)

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in California, Colorado, District of Columbia, Maryland, Massachusetts, New Jersey, New York, Oregon, Virginia, Washington, and Wisconsin.

*It is expected that the number of bedrooms and number of residents are likely correlated to the parking demand generated by a residential site. Parking studies of multifamily housing should attempt to obtain information on occupancy rate and on the mix of residential unit sizes (i.e., number of units by number of bedrooms at the site complex). Future parking studies should also indicate the number of levels contained in the residential building.*

## Source Numbers

21, 209, 247, 255, 277, 401, 402, 419, 505, 512, 522, 533, 535, 536, 537, 538, 545, 546, 547, 575, 576, 577, 579, 580, 581, 583, 584, 585, 587

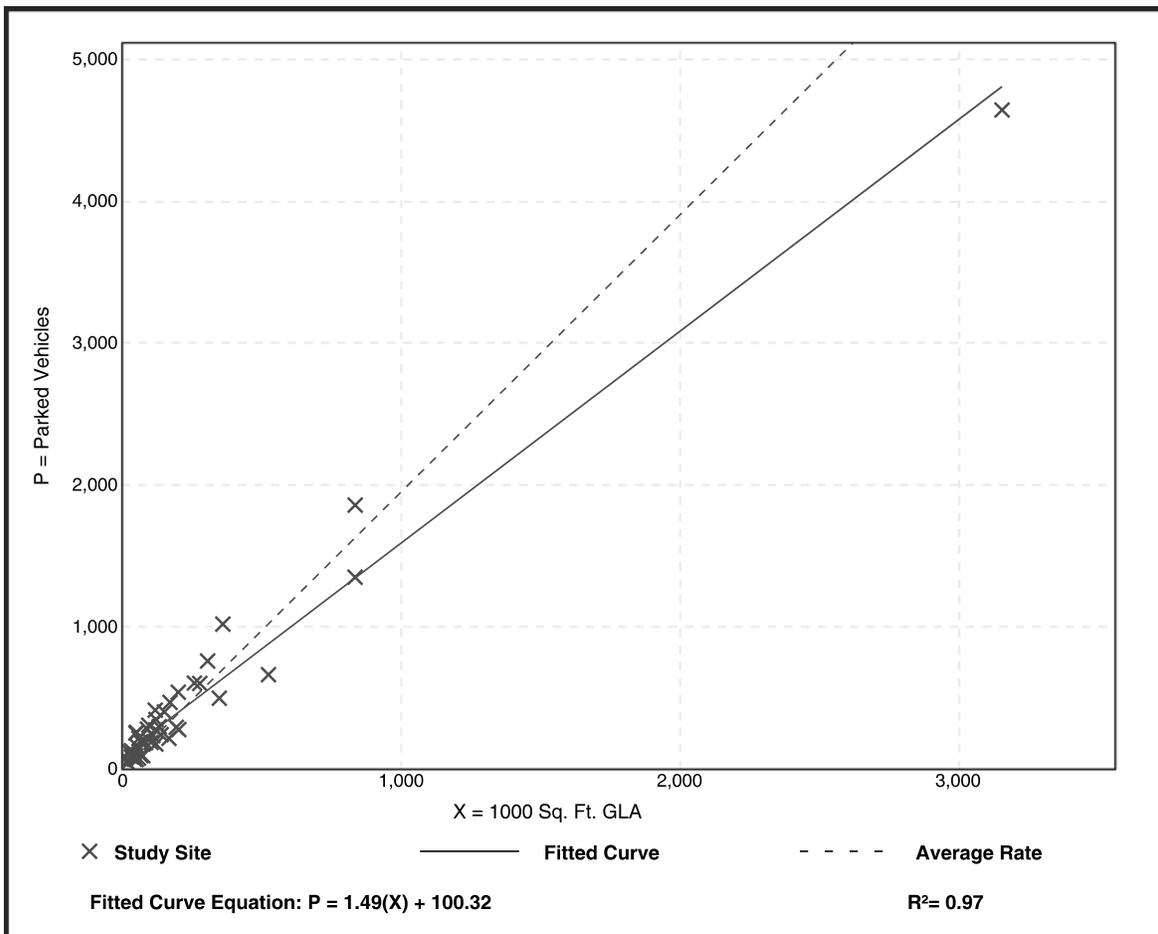
# Shopping Center - Non-December (820)

**Peak Period Parking Demand vs: 1000 Sq. Ft. GLA**  
**On a: Weekday (Monday - Thursday)**  
**Setting/Location: General Urban/Suburban**  
**Peak Period of Parking Demand: 12:00 - 6:00 p.m.**  
 Number of Studies: 46  
 Avg. 1000 Sq. Ft. GLA: 218

## Peak Period Parking Demand per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
1.95	1.27 - 7.98	1.99 / 3.68	1.73 - 2.17	0.75 (38%)

## Data Plot and Equation



*Parking Generation Manual, 5th Edition* • Institute of Transportation Engineers

## Land Use: 820 Shopping Center

### Description

A shopping center is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. A shopping center's composition is related to its market area in terms of size, location, and type of store. A shopping center also provides on-site parking facilities sufficient to serve its own parking demands.

### Time of Day Distribution for Parking Demand

The following table presents a time-of-day distribution of parking demand **during the month of December** on a weekday (seven study sites), a Friday (eight study sites), and a Saturday (19 study sites).

Hour Beginning	Percent of Peak Parking Demand during December		
	Weekday	Friday	Saturday
12:00–4:00 a.m.	–	–	–
5:00 a.m.	–	–	–
6:00 a.m.	–	–	–
7:00 a.m.	–	–	–
8:00 a.m.	–	–	–
9:00 a.m.	–	–	–
10:00 a.m.	–	74	–
11:00 a.m.	–	87	85
12:00 p.m.	77	97	97
1:00 p.m.	100	100	98
2:00 p.m.	98	92	100
3:00 p.m.	90	85	97
4:00 p.m.	76	84	88
5:00 p.m.	82	78	77
6:00 p.m.	89	75	64
7:00 p.m.	90	63	–
8:00 p.m.	84	–	–
9:00 p.m.	–	–	–
10:00 p.m.	–	–	–
11:00 p.m.	–	–	–

The following table presents a time-of-day distribution of parking demand **during a non-December month** on a weekday (18 study sites), a Friday (seven study sites), and a Saturday (13 study sites).

Hour Beginning	Percent of Non-December Peak Parking Demand		
	Weekday	Friday	Saturday
12:00–4:00 a.m.	–	–	–
5:00 a.m.	–	–	–
6:00 a.m.	–	–	–
7:00 a.m.	–	–	–
8:00 a.m.	15	32	27
9:00 a.m.	32	50	46
10:00 a.m.	54	67	67
11:00 a.m.	71	80	85
12:00 p.m.	99	100	95
1:00 p.m.	100	98	100
2:00 p.m.	90	90	98
3:00 p.m.	83	78	92
4:00 p.m.	81	81	86
5:00 p.m.	84	86	79
6:00 p.m.	86	84	71
7:00 p.m.	80	79	69
8:00 p.m.	63	70	60
9:00 p.m.	42	–	51
10:00 p.m.	15	–	38
11:00 p.m.	–	–	–

### Additional Data

The parking demand database includes data from strip, neighborhood, community, town center, and regional shopping centers. Some of the centers contain non-merchandising facilities, such as office buildings, movie theaters, restaurants, post offices, banks, health clubs, and recreational facilities.

Many shopping centers, in addition to the integrated unit of shops in one building or enclosed around a mall, include outparcels (peripheral buildings or pads located on the perimeter of the center adjacent to the streets and major access points). These buildings are typically drive-in banks, retail stores, restaurants, or small offices. Although the data herein do not indicate which of the centers studied included peripheral buildings, it can be assumed that some of the data show their effect.

The parking demand data plots and analysis are based on the total gross leasable area (GLA) of the center. In cases of smaller centers without an enclosed mall or peripheral buildings, the GLA could be the same as the gross floor area (GFA) of the center.

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

- 5.1 spaces per 1,000 square feet GFA (137 sites) in a general urban/suburban setting
- 4.7 spaces per 1,000 square feet GFA (five sites) in a dense multi-use urban setting

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alabama, Alberta (CAN), Arizona, California, Colorado, Delaware, District of Columbia, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, North Carolina, New Jersey, New York, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Virginia, and Washington.

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

### **Source Numbers**

3, 18, 21, 32, 39, 47, 87, 88, 89, 103, 142, 145, 152, 153, 154, 174, 175, 176, 179, 202, 203, 204, 205, 209, 215, 219, 224, 241, 265, 274, 313, 314, 315, 431, 432, 433, 436, 438, 441, 511, 525, 527, 531, 533, 542, 556, 558, 565