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September 1, 2021

David Rheume, Chair  
City of Portsmouth Zoning Board of Adjustment  
1 Junkins Avenue  
Portsmouth, NH 03801

**RE: Application for Variances**  
**Owner/Applicant: Wentworth Corner, LLC**  
**Property: 960 Sagamore Road, Portsmouth, NH**  
**Tax Map 201, Lot 2**  
**Zoning District: MRB**

Dear Mr. Rheume:

Please accept this correspondence as the Applicant's update regarding its discussions with the direct abutters. You may recall that at the July 27th meeting of the Zoning Board of Adjustment, the Applicant requested a continuance of the application in order to revise the development plan based upon further input from the abutters. Copies of the revised site plan and elevations are enclosed herein.

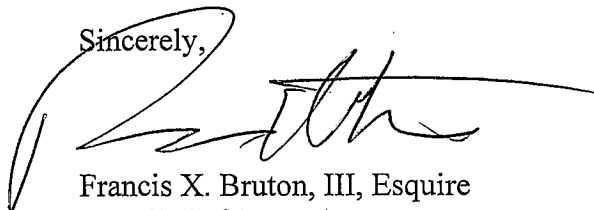
As a result of those discussions, the Applicant and the abutters agreed upon certain design changes related to the proposed structure. Specifically, and most importantly, the number of units has decreased from 8 requested unit to 6. As you and the Board may recall, the density provisions within the MRB zone permit a density of 5.7 units. As such, the requested variance to permit 8 units is hereby revised to request 6, where 5.7 are permitted.

As a result of the changes in unit count, the size of the building coverage has been reduced from a proposed 19.7% lot coverage down to proposed 17.9% (where 40% is permitted) and the height of the building is being reduced from under 40' to under 30' (where under 40' is permitted). In addition, the area of proposed impervious lot coverage within the wetland buffer is reduced from a proposed +/- 710 S.F. to a proposed +/- 438 S.F. (where the existing coverage is +/- 760 S.F.). Also, the number of paved parking spaces has been reduced from a proposed 25 spaces to a proposed 19 spaces. Finally, the location of the side façade of the structure is now located further away from Sagamore Grove.

Please note, the project will still provide for parking underneath the structure, and, as such, the need for a variance to permit two (2) driveways, where only one (1) is permitted is still necessary.

We look forward to discussing these changes and the variance requests at your meeting of September 21, 2021.

Sincerely,

A handwritten signature in black ink, appearing to read 'Francis X. Bruton, III', with a large, sweeping flourish extending to the left.

Francis X. Bruton, III, Esquire  
E-mail: [fx@brutonlaw.com](mailto:fx@brutonlaw.com)

FXB/mas  
Enclosures

cc: Wentworth Corner, LLC  
Katz Development Corporation  
Altus Engineering, Inc.



**NOTES**

- DESIGN INTENT - THIS PLAN IS INTENDED TO DEPICT A CONCEPTUAL MULTI-FAMILY RESIDENTIAL BUILDING TOGETHER WITH ASSOCIATED PARKING AND ACCESSWAYS.
- THE BASE PLAN USED HERE WAS DEVELOPED FROM "EXISTING" CONDITIONS PLAN, SAGAMORE AVENUE, SAGAMORE GROVE & WENTWORTH HOUSE ROAD, PORTSMOUTH, N.H., ASSESSOR'S PARCELS 201-2, 201-9, 201-10 & 209-11" BY JAMES VERRA AND ASSOCIATES, INC., DATED FEBRUARY 20, 2020.
- ZONES: MRB (MIXED RESIDENTIAL BUSINESS)
- PROJECT PARCEL: TAX MAP 201 LOT 2 42,930 S.F. (±0.99 AC.)
- DIMENSIONAL REQUIREMENTS:
 

MIN. LOT AREA:	MRB	PROVIDED
7,500 S.F. (0.17 AC.)	7,500 S.F.	49,930 S.F.
MIN. STREET FRONTAGE:	100'	±7,155 S.F.
MIN. LOT DEPTH:	80'	±194'
FRONT SETBACK:	5' (±17' EXISTING)	±212'
SIDE SETBACK:	15' (±21' EXISTING)	±18' & ±18.8'
REAR SETBACK:	15' (±107' EXISTING)	±121'
MAX. BUILDING HEIGHT:	42' (SLOPED ROOF)	±121'
	42' (EXISTING TWO STORIES)	<50'
MULTI-FAM. BLDG. LENGTH:	160' (MAX)	±110'
MAX. BUILDING COVERAGE:	40% (±11% EXISTING)	±17.9%
MIN. OPEN SPACE:	25% (±45.4% EXISTING)	6
WETLAND BUFFER:	100' (80' EXISTING)	±56.4%
WETLAND LIMITED CUT:	50'	78'
DRIVEWAY/ROD/PARKING/BLDG:	±2.2%	50'
WALKS/OTHER:	±2.4%	±39.7%
		±2.0%
- ZONING SECTION 10.114.31 - VARIANCE REQUIRED TO ALLOW TWO (2) DRIVEWAYS WHERE ONE (1) IS PERMITTED.
- ZONING SECTION 10.521 - VARIANCE REQUIRED TO ALLOW A DENSITY OF 6 DWELLING UNITS WHERE 5.7 ARE PERMITTED.
- AREA OF DISTURBANCE UNDER 43,150 SF. COVERAGE UNDER EPA NPDES PHASE II CONSTRUCTION GENERAL PERMIT NOT REQUIRED.

LOT AREA IN WETLAND: ±400 S.F. (±0.9%)

LOT AREA IN WETLAND & WETLAND BUFFER: ±13,650 S.F. (±31.8%)

EXISTING LOT IMPERVIOUS IN WETLAND BUFFER: ±760 S.F. (±1.8%)

PROPOSED LOT IMPERVIOUS IN WETLAND BUFFER: ±438 S.F. (±1.1%)

**PARKING REQUIREMENTS:**

DWELLING UNITS: 1.3 SPACES PER DWELLING UNIT  
6 UNITS x 1.3 = 7.8 SPACES REQUIRED

TOTAL PARKING PROVIDED: 14 SPACES (INTERIOR)  
3 SPACES (EXTERIOR)  
18 SPACES (TOTAL)

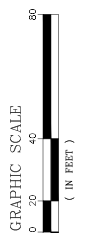
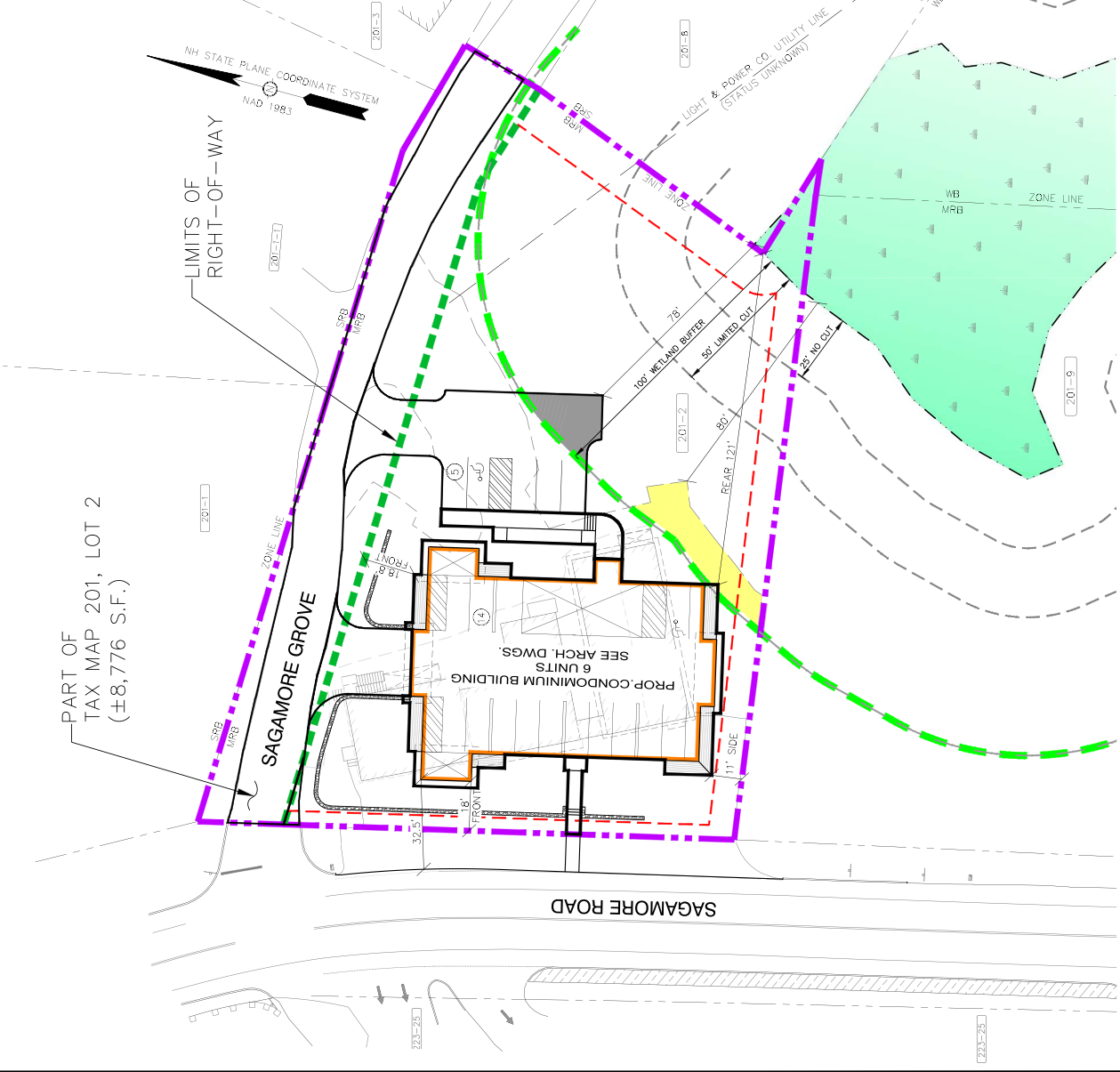
NO MAXIMUM REQUIREMENT  
EXISTING PAVED PARKING SPACES: 15

6. ZONING SECTION 10.114.31 - VARIANCE REQUIRED TO ALLOW TWO (2) DRIVEWAYS WHERE ONE (1) IS PERMITTED.

7. AREA OF DISTURBANCE UNDER 43,150 SF. COVERAGE UNDER EPA NPDES PHASE II CONSTRUCTION GENERAL PERMIT NOT REQUIRED.

8. ZONING SECTION 10.521 - VARIANCE REQUIRED TO ALLOW A DENSITY OF 6 DWELLING UNITS WHERE 5.7 ARE PERMITTED.

9. ZONING SECTION 10.114.31 - VARIANCE REQUIRED TO ALLOW TWO (2) DRIVEWAYS WHERE ONE (1) IS PERMITTED.







North

Sagamore Grove

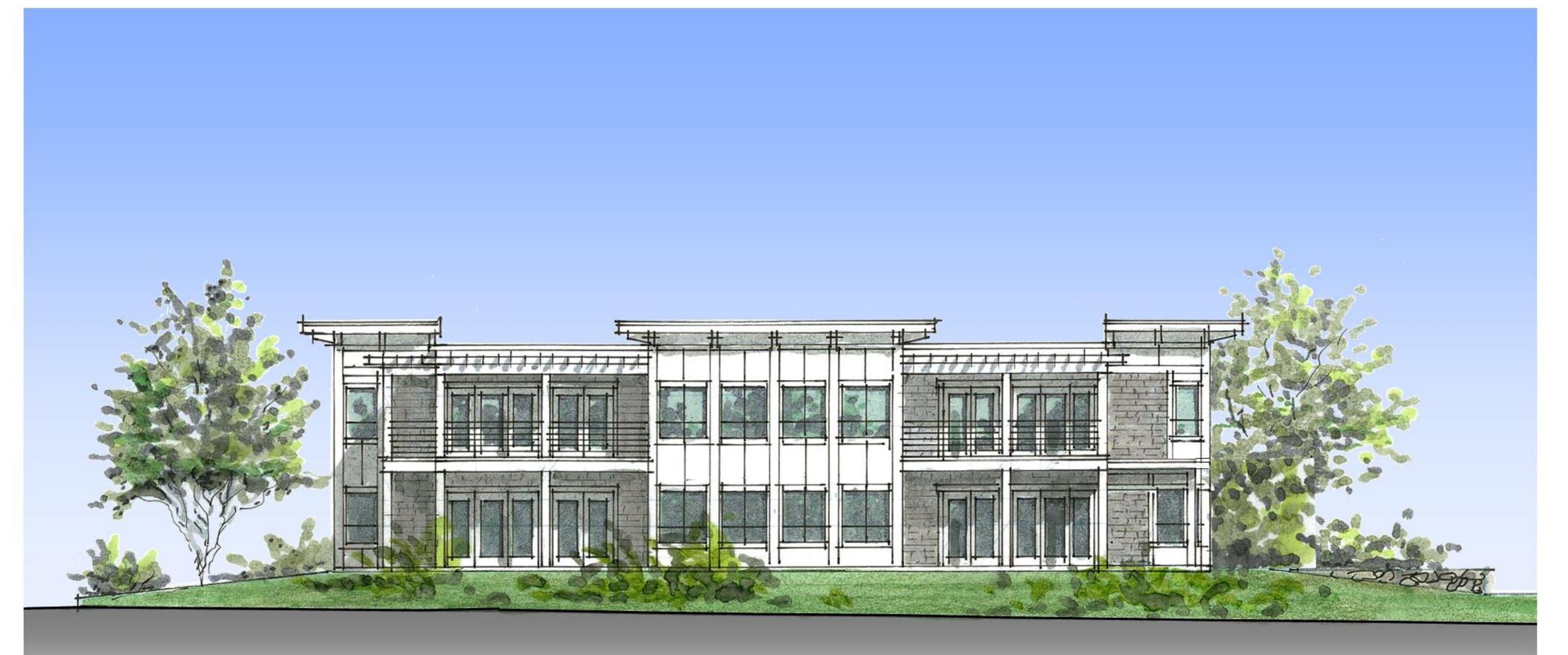


West

Sagamore Road



East

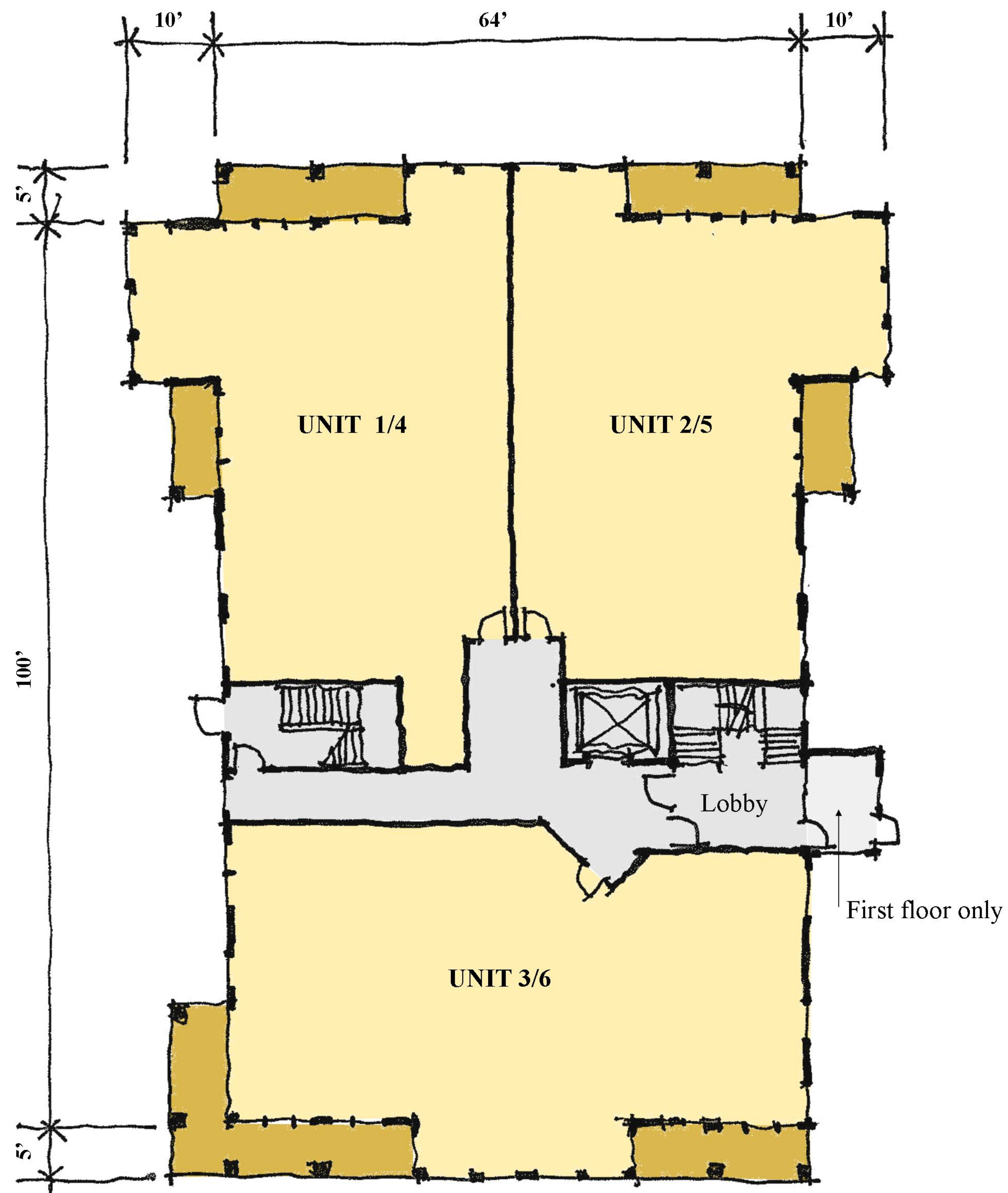


South

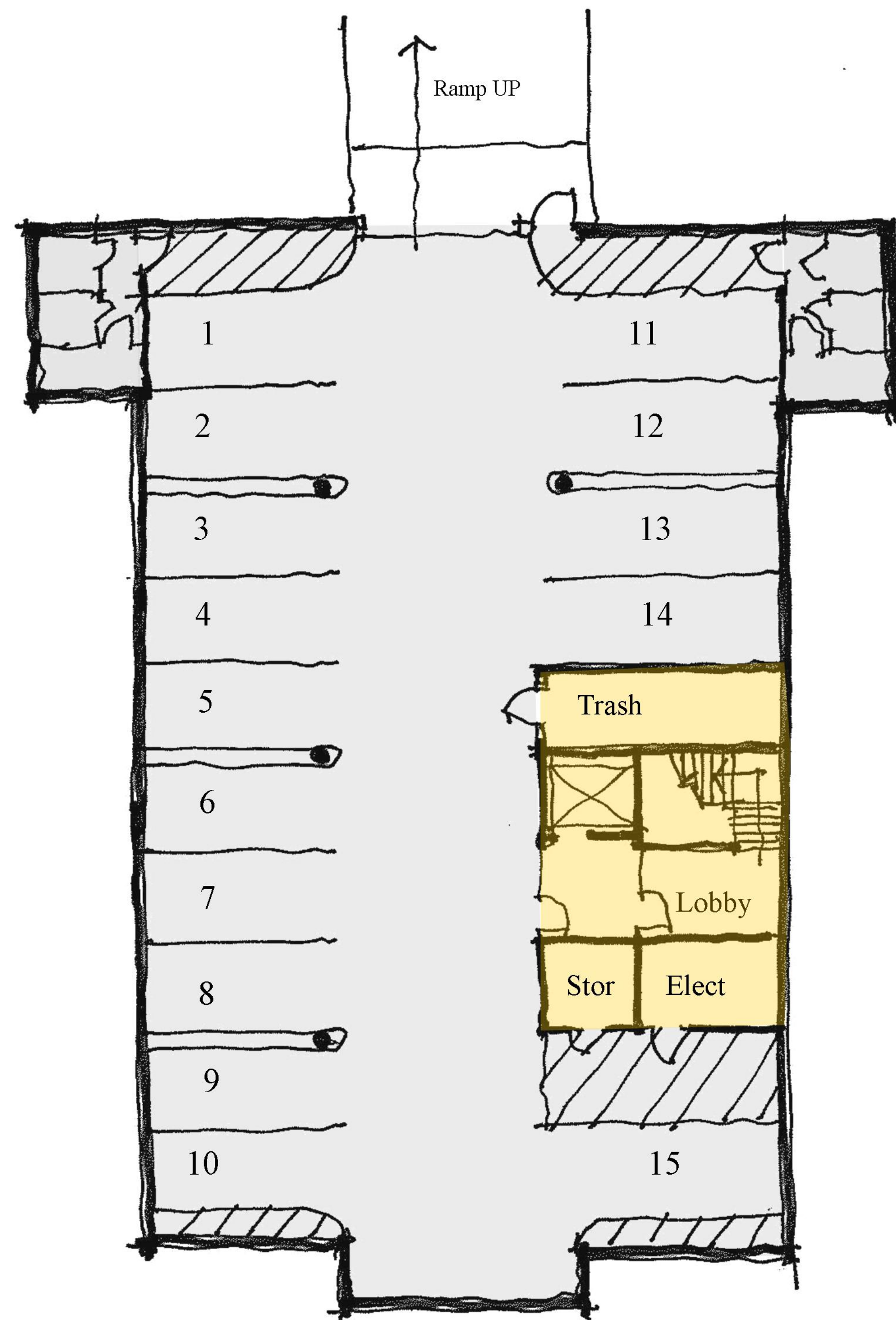
# Sagamore Road

Conceptual Elevations





**First Floor Plan**  
Second Floor is similar



**Parking Level**  
15 Cars



**KATZ DEVELOPMENT CORPORATION**  
**APPLICATION FOR VARIANCES**

**I. INTRODUCTION**

The property subject to this application is located at 960 Sagamore Road in Portsmouth, New Hampshire and is depicted on the Portsmouth City Tax Maps as Map 201, Lot 2 (the “Lot”). The Lot was formerly occupied by the popular Golden Egg restaurant as well as a retail store and a second-floor apartment. The Lot is comprised of almost 1 acre with +/- 42,882 sq. ft. of land and is located in the MRB (Mixed Residential Business) zone (See attached relevant portion of the City of Portsmouth Tax Map). The Lot contains significant impervious surfaces, given the existing building configuration and existing pavement. Currently, much of the parking for customers along the façade of the building is within the City right-of-way, and requires customers to leave the property by backing out into Sagamore Avenue, with overflow parallel parking on the southbound side of Sagamore Avenue and in the rear along Sagamore Grove. The Lot currently lacks any significant drainage mitigation features, and maintains unenclosed dumpsters and debris within the back portion of the parcel. (See attached photos of existing conditions.)

The Lot abuts Sagamore Grove, which is located within the boundary of the Lot, but which is classified by the City as a public way, maintained by the City pursuant to its agreement with certain property owners within the area. The Lot itself is unique as the rear portion of the Lot is encumbered by a 100’ wetland buffer. The current structure and uses encroach upon this buffer. This encroachment will be reduced by the proposed project, as only a small portion of the corner of the proposed structure and parking to the rear of the building will be located within the buffer, to the extent a conditional use permit is granted by the Planning Board during the site plan approval process. Additionally, the Lot is unique as it is a corner lot and it is located between a concentration of existing single-family residential uses on the rear side of the lot, and commercial uses on the front and side portion of the Lot along Sagamore Avenue. The Lot sits across from the Seacoast Mental Health Services facility as well as the Freedom Boat Club.

This proposed project would be comprised of eight (8) units in one (1) building, and would essentially be a smaller version of the award-winning Westerly project located on Lafayette Road. The MRB zone permits one (1) multi-unit per 7,500 sq. ft. The Applicant proposes 8 units, where the zoning would permit 5.7 units [42,930 sq. ft. / 7,500 sq. ft.]. In addition, in order to accommodate covered first level parking with an entrance on the side of the proposed building and parking in the rear of the building, the Applicant will need to locate two (2) driveways, where only one (1) is permitted given that Sagamore Grove is a public way. The project will remove the existing building, parking within the right-of-way, eradicate existing dumpsters and rodents, and provide stormwater treatment where none currently exists. The project will have a trash/recycling room in the garage and no exterior dumpsters.



## **II. THE APPLICANT**

The Applicant, Katz Development Corporation (“Katz Development”), is a Portsmouth-based development company that is currently under contract with the owner of the Lot to purchase the Lot. Eric Katz, principal of Katz Development successfully constructed the award-winning Westerly project located on Lafayette Avenue.<sup>1</sup> In addition, Mr. Katz also developed the successful Middle Hill project located on the Route 1 Bypass.

## **III. THE PROJECT**

Katz Development is proposing to develop one (1) three-story, 8-unit residential building on the Lot (see attached Conceptual Plan, Architectural Renderings and Floor Plans). The first floor will consist of heated and enclosed covered parking. Levels two and three will each contain four single-floor, 2-bedroom units of approximately 1,800 sq. ft. The units will be sold on a condominium basis. They are intended to be designed to attract empty nesters and older purchasers that are looking to down-size and remain within the city of Portsmouth.

Katz Development intends to remove any access to the Lot along Sagamore Avenue, thus reducing the parking encroachment within the roadway. By eliminating the access to the Lot along Sagamore Avenue, the safety of those utilizing the Lot, and those travelling along Sagamore Avenue will be greatly enhanced. Along with first level covered parking and more orderly parking within the lot, the traffic flow into the Lot will be enhanced, as will the aesthetic quality of the Lot appearance. The use proposed will reduce traffic to the Lot and will not result in any increase traffic hazard to the general area. (See traffic analysis report of Vanasse & Associates, Inc. (the "Vanasse Report" attached hereto<sup>2</sup>.) As a result of providing covered parking, the impervious surface of the Lot will decrease, resulting in an increase in open space from approximately 45.4% to 57.5%, or an additional open space of approximately 5,194.53 sq. ft. The project will also reduce impervious surfaces in the wetland buffer from +/- 780 sq. ft. to +/- 710 sq. ft.

As mentioned above, Katz Development believes the design features of The Westerly, which will be utilized within this project, which also includes covered parking, will attract purchasers that are either empty nesters or senior. These units may be especially attractive to the market given the location of the Downtown, as well as the proximity to the Wentworth Country Club.

The relief requested within this application is necessary in order to promote a transition of uses between single-family residential uses and commercial uses, while providing for reasonable

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<sup>1</sup> Eric Katz, principal of the Applicant, was honored as the Gold Winner at the 2020 National PRISM award for best attached home under 1,800 sq. ft. (See article: <https://www.seacoastonline.com/story/business/2021/02/11/portsmouth-builders-win-national-gold-award/6719598002/>).

<sup>2</sup> The entire Vanasse Report is submitted herein for the purposes of completeness. The full Report, and data therein, will be utilized during technical review by the City Department Heads, however, it is respectfully submitted that the salient issues related to this application are summarized within the first two pages of the Report.



additional residential development along Sagamore Avenue, while having little impact upon the existing neighborhood. Additionally, the City's Draft Report on Housing prepared for the 2015 Master Plan Update states that the share of City households with persons over the age of 65 has grown significantly over the past decade. Statewide, there also has been significant growth in residents over age 55.

Katz Development intends to market these units to persons who are looking to downsize, are without children, and who are active in the community. Currently, there are few options for seniors presently living in the City who wish to stay in the City while downsizing from their existing homes. This project will attract a market demographic not serviced by existing or proposed projects. The impact on adjacent properties is less adverse than the impact of the existing use considering the existing traffic, the lack of buffer from Sagamore Avenue, parking within Sagamore Avenue and due to lack of significant drainage treatment.

As indicated in the Stanhope Group Appraisal Report on Property Values (the "Stanhope Report") (see attached) the value of the surrounding properties will not be adversely affected, and the density proposed would create a *positive* influence on surrounding properties if this residential use is permitted. Also, as indicated in the Vanasse Report, the traffic comparison between the existing use and the proposed use shows a significant decrease in trip generation from the Lot (188 *fewer* vehicle trips on an average weekday, with 10 *fewer* vehicle trips expected during the weekday morning peak hour, and 12 *fewer* vehicle trips expected during the weekday evening peak hour). Additionally, the Vanasse Report predicts a "significant reduction in traffic," concluding the project will be less impactful on the transportation infrastructure when compared to existing uses and will result in no material increases in motorist delays or vehicle queuing over existing conditions.

Finally, since a restaurant use is no longer permitted within the MRB district, redeveloping the Lot as proposed will result in the elimination of a non-conforming use.

#### **IV. REQUEST OF THE APPLICANT**

After careful consideration of the zoning ordinance and in consultation with the Planning staff, Katz Development understands that in order to proceed it requires the following relief from the Portsmouth Zoning Ordinance.

##### **Eight (8) Multi-Family Dwellings.**

Katz Development seeks a variance in accordance with Article 5, Section 10.521 of the Portsmouth Zoning Ordinance to allow 8 multi-family dwelling units where 5.7 would be permitted [42,882 sq. ft. / 7,500 sq. ft.].

##### **Two (2) Driveway Entrances.**

Katz Development seeks a variance in accordance with Article 11, Section 10.1114.31 of the Portsmouth Zoning Ordinance to allow 2 driveways where 1 is permitted according to the standards for "General Accessway and Driveway Design" in the Site Plan Review Regulations.

## **V. VARIANCE REQUESTS**

### **A. The granting of the requested variance relief will not result in the diminution in value of surrounding properties.**

As is described above and as is established by the Stanhope Report, the granting of the use variance sought in the alternative will not result in the diminution in value of surrounding properties. Further, the granting of the use variance will not result in diminution in value based on the following:

- 1) Fundamentally, the proposed permitted residential use as opposed to the nonconforming commercial restaurant use is more congruent with the existing residential uses of the adjacent properties along Sagamore Grove; and
- 2) The project will be constructed and configured in a way that eliminates parking along Sagamore Avenue and overflow parking on or in Sagamore Grove and decreases impervious surfaces; and
- 3) As set forth in the Vanasse Report, the project will result in a significantly reduction of traffic flow, with no material increase in traffic; and
- 4) The project will result in greater protection as to ground water runoff by virtue of improved drainage systems; and
- 5) The project will provide covered parking along the side with orderly parking within the rear of the building, as opposed to the front and side.

### **B. Granting the variance will not be contrary to the public interest.**

In Chester Rod & Gun Club, Inc. v. Town of Chester, 152 N.H. 577, 581 (2005), the Supreme Court held that to be contrary to the public interest or injurious to public rights of others, the variance must unduly, and in a marked degree, conflict with the ordinance such that it violates the ordinance's basic zoning objectives. The Court went on to note that to determine whether a variance would violate the basic zoning objectives, it was appropriate to examine whether the granting of the variance would alter the essential character of the locality or threaten the public health, safety or welfare.

The relief requested within this application is necessary in order to promote a transition of uses between single-family residential uses located on Sagamore Grove and the existing commercial uses, while providing for removal of parking associated with the Lot along Sagamore Avenue, resulting in a significant increase in safety not only for those visiting the Lot, but for motorists along Sagamore Avenue, while having no negative impact upon the existing neighborhood.



Additionally, the variances would not alter the essential character of the locality or threaten public health, safety or welfare and would translate to a significantly more aesthetically appealing use than that which currently exists. Given the residential zoning of the property and the residential character of the immediate neighborhood, granting the variances will not alter the essential character of the locality.

**C. The spirit of the ordinance is observed.**

Considered in conjunction with the uniqueness of parcel, and the fact that the proposed use would be substantially increase the safety of the use of the property, while utilizing a reasonable footprint that would include covered first floor parking, the spirit of the ordinance is observed. Additionally, the proposed building creates a visual and audible buffer to Sagamore Avenue.

**D. The granting of the requested relief will do substantial justice.**

In Malachy Glen Associates v. Town of Chester, 155 N.H. 102, 109 (2002), the New Hampshire Supreme Court held that "the only guiding rule [in determining whether the requirement for substantial justice is satisfied] is that any loss to the individual that is not outweighed by a gain to the general public is an injustice." The Court also noted that it would look at whether a proposed development was consistent with the area's present use. The grant of the variances would result in substantial justice as it would allow the Applicant's property to be utilized in a fashion that would match the streetscapes within Sagamore Avenue, but is a residential way. If the requested relief is denied, the loss suffered by Katz Development substantially outweighs any gain to the public by denying the variance, as there is no detriment to the public in granting this variance. See Stanhope Report; Vanasse Report and foregoing.

**E. Literal enforcement of the provisions of the Ordinance would result in an unnecessary hardship.**

Under New Hampshire law and Portsmouth Zoning, an unnecessary hardship exists when, owing to special conditions of the property that distinguish it from other property, no fair and substantial relationship exists between the public purposes of the ordinance provisions and the specific application of those provisions to the property and the proposed use is a reasonable one.

Several special conditions of the property distinguish it from other properties in the area. The property is a corner lot, located within the middle of commercial and residential uses. Additionally, the Lot is significantly encumbered by the 100' wetland setback and contains the public way known as Sagamore Grove. Given these special conditions, variances are required. Had the road not been considered public, but rather private, the variance would not be necessary. Further, a multifamily use at the site proposed is ideally suited for the property since it is large enough to support the number of units proposed which will provide a buffer to the residential uses from the existing commercial uses. As mentioned above, the proposed uses will significantly improve all aspects of traffic to and from the site. Given the size and location of the property with direct access and frontage on Sagamore Avenue which will be removed, and given the placement and scale of the building relative to the abutters and relative to the size of the lot, no fair and substantial relationship exists between the ordinance provision from which relief is sought and the

application of those provisions to the Lot. Due to the forgoing reasons, denial of the variances would result in an unnecessary hardship, as the general public purposes of the ordinance will be preserved, and, as such, there is no fair and substantial relationship between the public purposes of the ordinance and the application of the two restrictions.

All of the new features referenced hereinabove will also result in more sophisticated drainage and water runoff, and a dramatic increase in safety for the Lot by eliminating the parking and access point along Sagamore Avenue, which all serve to promote the health, welfare and safety of the general public, all consistent with the general intent and provisions of the zoning ordinance.

Given all of the above, and given the surrounding circumstances and special conditions of the lot, it is respectfully submitted that the proposed number of units and number of driveways is reasonable, particularly in light of the many upgrades to the lot as identified herein.

## **VI. CONCLUSION.**

For all of the reasons set forth above and based upon the professional opinions and findings contained within the White Report and the Vanasse Report, Katz Development respectfully requests that the relief request herein be granted.





**Property Information**

**Property ID** 0201-0002-0000  
**Location** 960 SAGAMORE AVE  
**Owner** WENTWORTH CORNER LLC



**MAP FOR REFERENCE ONLY  
NOT A LEGAL DOCUMENT**

City of Portsmouth, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 4/1/2019  
Data updated 7/17/2019

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

VIEW FROM SAGAMORE AVENUE - WESTSIDE



VIEW FROM SAGAMORE GROVE - NORTHSIDE





VIEW OF BACKYARD - NORTHSIDE



VIEW OF EAST BACKYARD - EASTSIDE





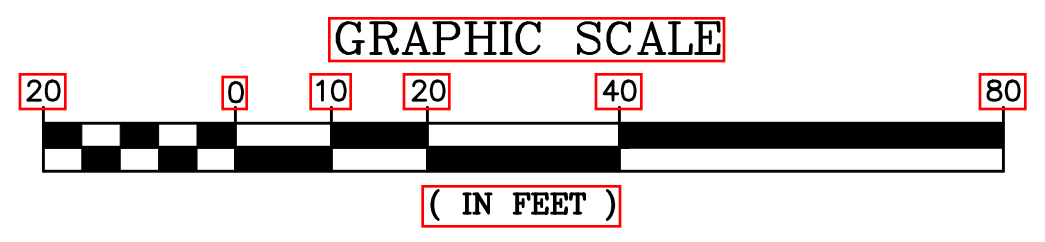
VIEW OF REAR OF EXISTING BUILDING - NORTHSIDE



VIEW OF SIDE YARD - SOUTHSIDE







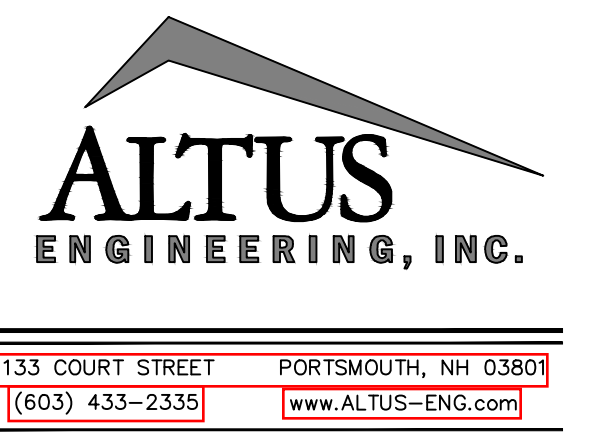
**NOTES**

- DESIGN INTENT - THIS PLAN IS INTENDED TO DEPICT A CONCEPTUAL MULTI-FAMILY RESIDENTIAL BUILDING TOGETHER WITH ASSOCIATED PARKING AND ACCESSWAYS.
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- PROJECT PARCEL: TAX MAP 201 LOT 2 42,930 S.F. (±0.99 AC.)
- DIMENSIONAL REQUIREMENTS:**

	MRB	PROVIDED
MIN. LOT AREA:	7,500 S.F. (0.17 AC.)	42,930 S.F.
LOT AREA PER DWELLING:	7,500 S.F.	±5,366 S.F.
MIN. STREET FRONTAGE:	100'	±194'
MIN. LOT DEPTH:	80'	±212'
FRONT SETBACK:	5' (±17' EXISTING)	±18'
SIDE SETBACK:	10' (±21' EXISTING)	±11'
REAR SETBACK:	15' (±107' EXISTING)	±105'
MAX. BUILDING HEIGHT:	40' (SLOPED ROOF)	<40'
	(±22' - EXISTING TWO STORIES)	
MULTI-FAM. BLDG. LENGTH:	160' (MAX)	±120'
MAX. BUILDING COVERAGE:	40% (±11% EXISTING)	±19.7%
DWELLING UNITS PER BLDG:	8 (MAX)	8
MIN. OPEN SPACE:	25% (EXISTING: 45.4%)	±57.5%
WETLAND BUFFER:	100' (80' EXISTING)	82'
WETLAND LIMITED CUT:	50'	50'
WETLAND NO-CUT:	25'	25'
DRIVEWAYS/RD/PARKING/BLDG:	±52.2% (EXISTING)	±40.5%
WALKS/OTHER:	±2.4% (EXISTING)	±2.0%
- ZONING SECTION 10.1114.31 - VARIANCE REQUIRED TO ALLOW TWO (2) DRIVEWAYS WHERE ONE (1) IS PERMITTED.  
  
ZONING SECTION 10.521 - VARIANCE REQUIRED TO ALLOW A DENSITY OF 8 DWELLING UNITS WHERE 5.7 ARE PERMITTED.
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 EXISTING LOT IMPERVIOUS IN WETLAND BUFFER: ±760 S.F. (±1.8%)  
 PROPOSED LOT IMPERVIOUS IN WETLAND BUFFER: ±710 S.F. (±1.7%)

**PARKING REQUIREMENTS:**  
 DWELLING UNITS: 1.3 SPACES PER DWELLING UNIT  
 8 UNITS x 1.3 = 10.4 SPACES REQUIRED  
 TOTAL PARKING PROVIDED: 25 SPACES  
 NO MAXIMUM REQUIREMENT  
 EXISTING PAVED PARKING SPACES: 15



NOT FOR CONSTRUCTION  
 ISSUED FOR: BOARD OF ADJUSTMENT  
 ISSUE DATE: MAY 26, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	CONCEPTUAL	EDW	05/26/21

DRAWN BY: EBS  
 APPROVED BY: EDW  
 DRAWING FILE: 5079-C016.dwg

SCALE: 22"x34" 1" = 20'  
 11"x17" 1" = 40'

OWNER:  
 WENTWORTH CORNER, LLC  
 1150 SAGAMORE AVENUE  
 PORTSMOUTH, NH 03801

APPLICANT:  
 KATZ DEVELOPMENT CORPORATION  
 273 CORPORATE DRIVE  
 PORTSMOUTH, NH 03801

PROJECT:  
 PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT  
 TAX MAP 201 LOT 2  
 SAGAMORE ROAD  
 PORTSMOUTH, NH 03801

TITLE:  
 BOARD OF ADJUSTMENT SITE PLAN

SHEET NUMBER:  
 1 of 1

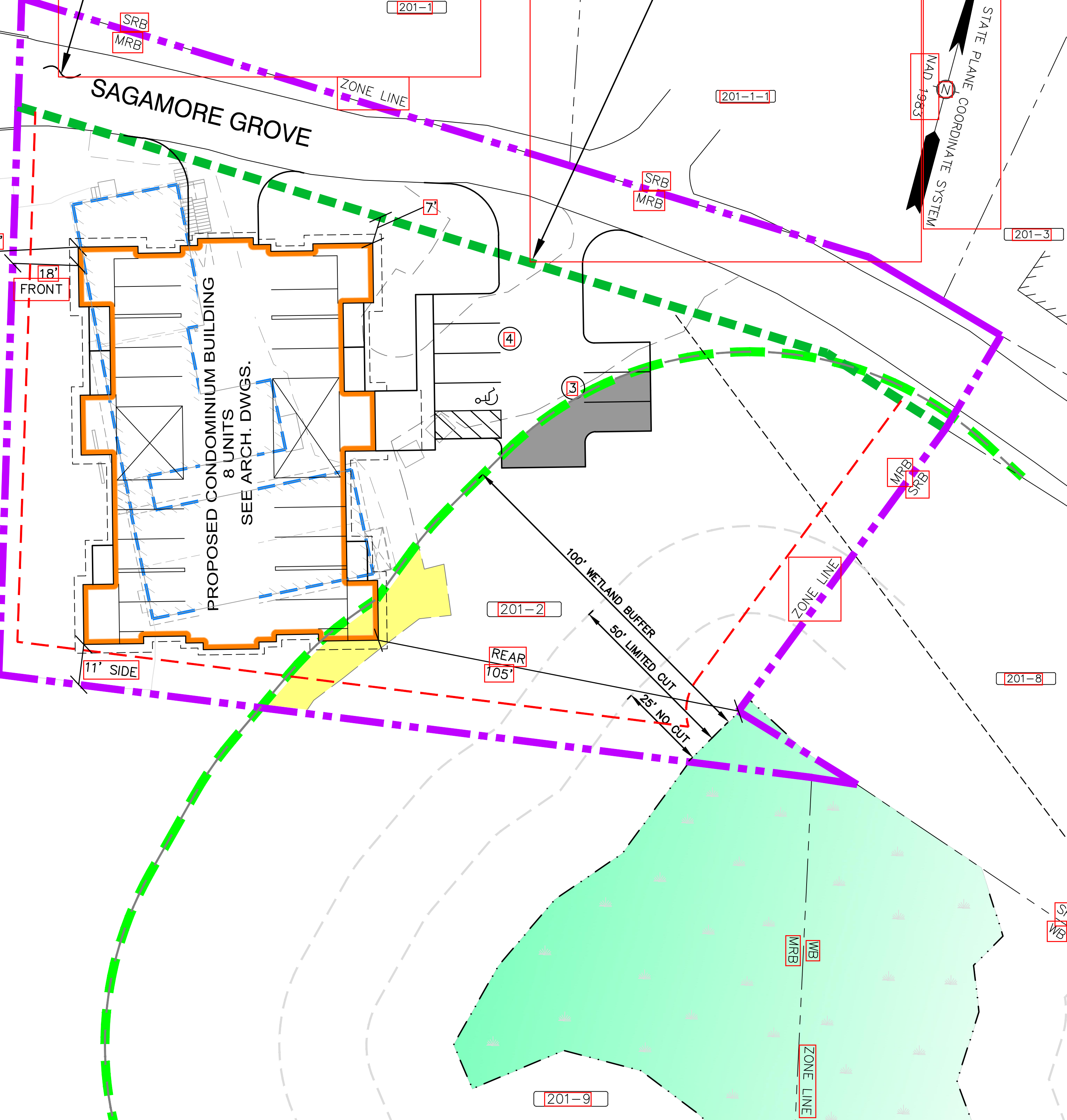
SAGAMORE ROAD

PART OF TAX MAP 201, LOT 2 (±8,776 S.F.)

LIMITS OF RIGHT-OF-WAY

SAGAMORE GROVE

PROPOSED CONDOMINIUM BUILDING  
 8 UNITS  
 SEE ARCH. DWGS.



223-25

223-25

P5079



**Front of Proposed Building**  
(approximate height = 34.5', 40' permitted)



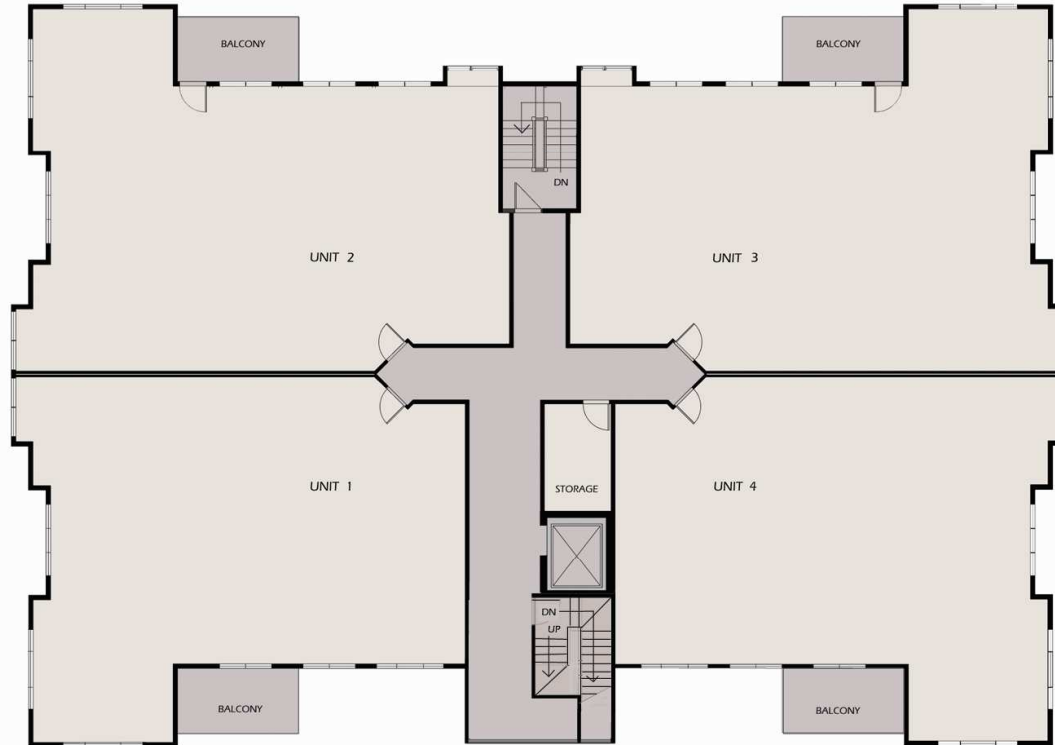
## Rear of Proposed Building



Proposed Garage Entrance







FIRST FLOOR PLAN

THESE PLANS AND SPECIFICATIONS ARE PROTECTED UNDER FEDERAL COPYRIGHT LAWS. © LOWE ASSOCIATES - ARCHITECTS, INC. MAINTAINING OWNERSHIP OF SUCH PLANS AND SPECIFICATIONS AND ALL RIGHTS AND PRIVILEGES. THESE PLANS AND SPECIFICATIONS ARE NOT TO BE DUPLICATED, REPRODUCED OR USED IN ANY PART OR IN WHOLE FOR ANY OTHER PURPOSE. PROJECT OWNER OR LOCATION WITHOUT PRIOR WRITTEN CONSENT OF THE ARCHITECT.

PROJECT NUMBER	REVISION NO.	DATE

**LOWE ASSOCIATES - Architects, Inc.**

643 VFW Parkway, Suite 200  
 Chestnut Hill, Massachusetts 02167  
 Tel: (617) 323-0078 Fax: (617) 323-8670

PORTSMOUTH, NH



SECOND FLOOR PLAN

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PROJECT NUMBER	REVISION NO.	DATE

**LOWE ASSOCIATES - Architects, Inc.**

643 VFW Parkway, Suite 200  
 Chestnut Hill, Massachusetts 02167  
 Tel: (617) 323-0078 Fax: (617) 323-8670

PORTSMOUTH, NH



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PORTSMOUTH, NH



## MEMORANDUM

**TO:** Katz Development Corporation  
c/o Mr. Eric S. Katz  
273 Corporate Drive, Suite 150  
Portsmouth, NH 03801

**FROM:** Mr. Jeffrey S. Dirk, P.E., PTOE, FITE   
Managing Partner  
Vanasse & Associates, Inc.  
35 New England Business Center Drive  
Suite 140  
Andover, MA 01810-1066  
(978) 269-6830  
[jdirk@rdva.com](mailto:jdirk@rdva.com)

*Professional Engineer in CT, MA, ME, NH, RI and VA*

**DATE:** May 25, 2021

**RE:** 8992

**SUBJECT:** Traffic Impact Study  
Proposed Multifamily Residential Development – 960 Sagamore Avenue (NH Route 1A)  
Portsmouth, New Hampshire

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Vanasse & Associates, Inc. (VAI) has conducted a Traffic Impact Study (TIS) in order to determine the potential impacts on the transportation infrastructure associated with the proposed age-targeted multifamily residential development to be located at 960 Sagamore Avenue (NH Route 1A) in Portsmouth, New Hampshire (hereafter referred to as the “Project”). This study evaluates the following specific areas as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; and identifies and analyzes existing traffic conditions and future traffic conditions, both with and without the Project along Sagamore Grove and at the following specific intersections: NH Route 1A at Sagamore Grove; Sagamore Grove at the west Project site driveway; and Sagamore Grove at the east Project site driveway.

Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the Institute of Transportation Engineers (ITE),<sup>1</sup> the Project is expected to generate approximately 20 vehicle trips on an average weekday (two-way volume over the operational day of the Project), with 4 vehicle trips expected during the weekday morning peak hour and 6 vehicle trips expected during the weekday evening peak hour;
2. In comparison to the existing uses that occupy the site, the Project is expected to generate approximately 188 *fewer* vehicle trips on an average weekday, with 10 *fewer* vehicle trips expected during the weekday morning peak hour, and 12 *fewer* vehicle trips expected during the weekday evening peak hour;
3. Given the significant reduction in traffic that is predicted as a result of the Project, the Project will be less impactful on the transportation infrastructure when compared to the existing uses that occupy the Project site;

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<sup>1</sup>*Trip Generation*, 10<sup>th</sup> Edition; Institute of Transportation Engineers; Washington, DC; 2017.



4. A review of motorist delays and vehicle queuing at the NH Route 1A/Sagamore Grove intersection indicates that the Project will not result in a significant increase in motorist delays or vehicle queuing, with Project-related impacts defined as an increase in average motorist delay of less than 1.0 seconds with no predicted increase in vehicle queuing; and
5. Lines of sight at the Project site driveway intersections were found to meet, exceed or could be made to meet or exceed the recommended minimum distances for safe operation.

In consideration of the above, we have concluded that the Project can be accommodated within the confines of the existing transportation infrastructure in a safe and efficient manner with the implementation of the recommendations defined herein.

The following details our assessment of the Project.

### **PROJECT DESCRIPTION**

The Project will entail the construction of an 8-unit multifamily residential development to be located at 960 Sagamore Avenue (NH Route 1A) in Portsmouth, New Hampshire. The Project site encompasses approximately 0.98± acres of land that is bounded by Sagamore Grove to the north; areas of open and wooded space to the south and east; and NH Route 1A to the west. The Project site currently contains a mixed-use building that includes a residential unit, 1,420± square feet (sf) of retail space and 1,230 sf of restaurant space. The existing building and associated appurtenances will be removed to accommodate the Project. Access to the Project site will be provided by way of two new driveways that will intersect the south side of Sagamore Grove approximately 75 feet and 175 feet east of NH Route 1A, respectively. The existing driveway that currently serves the Project site along NH Route 1A will be closed in conjunction with the Project resulting in an overall improvement in safety through the elimination of a conflict point for vehicles, pedestrians and bicyclists along NH Route 1A.



Imagery ©2021 Google



On-site parking will be provided for up to 25 vehicles, or a parking ratio of 3.12 spaces per unit, consisting of 7 exterior parking spaces and 18 parking spaces to be located in a garage beneath the residential building. This parking ratio (3.12 parking spaces per unit) exceeds the requirements of Section 10.1112.30, *Off-Street Parking Requirements*, of the City of Portsmouth Zoning Ordinance.<sup>2</sup>

## **EXISTING CONDITIONS**

A comprehensive field inventory of existing conditions within the study area was conducted in May 2021. This inventory included the collection of traffic volume data and vehicle travel speed measurements, as well as a review of existing pedestrian and bicycle accommodations, public transportation services, and motor vehicle crash data. The following summarizes existing conditions within the study area.

### **Roadways**

#### **NH Route 1A**

NH Route 1A is a two-lane minor arterial roadway (Tier 5, Class IV) under the jurisdiction of the City of Portsmouth that traverses the study area in a general north-south alignment. In the vicinity of the Project site, NH Route 1A provides two 11± foot wide travel lanes separated by a double-yellow centerline with 6± foot wide marked shoulders provided. The posted speed limit along NH Route 1A within the study area is 30 miles per hour (mph); prevailing travel speeds measured in May 2021 were found to be 35 mph.<sup>3</sup> Illumination is provided by way of streetlights mounted on wood poles. Land use along NH Route 1A within the study area consists of the Project site, commercial properties, areas of open and wooded space, and the Sagamore Creek.

#### **Sagamore Grove**

Sagamore Grove is a two-lane local road (Tier 5, Class V) under the jurisdiction of the City of Portsmouth that traverses the study area in a general east-west direction for a distance of approximately 475 feet east of NH Route 1A. In the vicinity of the Project site, Sagamore Grove provides a 21± foot wide traveled-way with no marked centerline or shoulders provided. A posted speed limit is not provided along Sagamore Grove and, as such, the statutory speed limit is 30 mph.<sup>4</sup> Illumination is provided by way of streetlights mounted on wood poles. Land use along Sagamore Grove within the study area consists of the Project site, residential properties and areas of open and wooded space.

### **Intersection**

#### **NH Route 1A at Sagamore Grove**

Sagamore Grove intersects NH Route 1A from the east to form a three-way intersection under STOP-sign control. The NH Route 1A approaches consist of a single 11± foot wide general-purpose travel lane with 6± foot wide marked shoulders. The Sagamore Grove approach provides a single general-purpose lane that

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<sup>2</sup>The Zoning Ordinance requires a minimum of 0.5 spaces per dwelling units of less than 500 sf; 1.0 spaces per dwelling units between 500 to 750 sf; and 1.3 spaces for dwelling units greater than 750 sf.

<sup>3</sup>The prevailing travel speed is also known as the 85<sup>th</sup> percentile vehicle travel speed, or the speed at which 85 percent of the observed vehicles traveled at or below during the observation period.

<sup>4</sup>The statutory speed limit for any business or urban residence district is 30 mph as defined in the 2019 New Hampshire Revised Statutes Section 265:60 *Basic Rule and Maximum Limits*.





is under STOP-sign control with a marked STOP-line provided. A sidewalk is provided along the west side of NH Route 1A and illumination is provided by way of streetlights mounted on wood poles. Land use in the vicinity of the intersection consists of residential properties, Seacoast Mental Health Center, Freedom Boat Club and areas of open and wooded space.

### **Existing Traffic Volumes**

In order to determine existing traffic-volume demands and flow patterns within the study area, automatic traffic recorder (ATR) counts, manual turning movement counts (TMCs) and vehicle classification counts were completed in May 2021. The ATR counts were conducted on NH Route 1A in the vicinity of the Project site on May 12<sup>th</sup> through May 13<sup>th</sup>, 2021 (Wednesday through Thursday, inclusive) in order to record weekday traffic conditions over an extended period, with weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak period manual TMCs performed at the intersection of NH Route 1A at Sagamore Grove on May 12, 2021 (Wednesday). These time periods were selected for analysis purposes as they are representative of the peak traffic-volume hours for both the Project and the adjacent roadway network.

In order to evaluate the potential for seasonal fluctuation of traffic volumes within the study area, 2019 peak-hour and average daily traffic count data were reviewed for NHDOT count station No. 02345001, which is located on Route 1, north of North Road in North Hampton. Based on a review of this data, it was determined that traffic volumes for the month of May are approximately 7.2 percent below peak-month conditions and, therefore, the raw traffic count data that forms the basis of this assessment was adjusted upward accordingly (by 7.2 percent) to represent peak-month conditions in accordance with NHDOT standards.

In order to account for the impact on traffic volumes and trip patterns resulting from the COVID-19 pandemic, traffic-volume data collected at NH DOT Continuous Count Station No. 02345001 in May 2021 was compared to May 2019 traffic volumes that were collected at the same location. The 2019 traffic volumes were expanded to 2021 by applying a background traffic growth rate of 1.0 percent per year in order to allow for a comparison of the data. Based on this comparison, the May 2021 traffic volumes that were collected as a part of this assessment were adjusted upward by an additional 15.1 percent.

Based on a review of the adjusted (as defined above) traffic count data, NH Route 1A in the vicinity of the Project site accommodates approximately 9,790 vehicles per day on an average weekday under peak-month conditions (two-way, 24-hour volume), with approximately 689 vehicles per hour (vph) during the weekday morning peak hour (8:00 to 9:00 AM) and 852 vph during the weekday evening peak hour (4:30 to 5:30 PM).

### **Pedestrian and Bicycle Facilities**

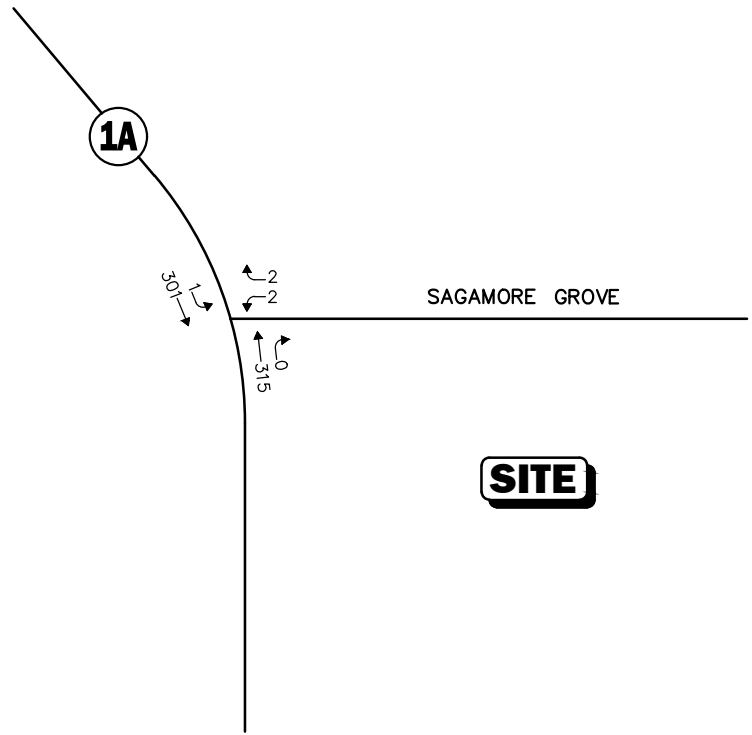
Sidewalks are currently provided along the west side of NH Route 1A. Formal bicycle facilities were not identified within the immediate study area; however, both NH Route 1A and Sagamore Grove provide sufficient width to accommodate bicycle travel in a shared traveled-way configuration (i.e., bicyclists and motor vehicles sharing the traveled-way).<sup>5</sup> Signs indicating that bicycles may use the full travel lane are provided along Route 1A.

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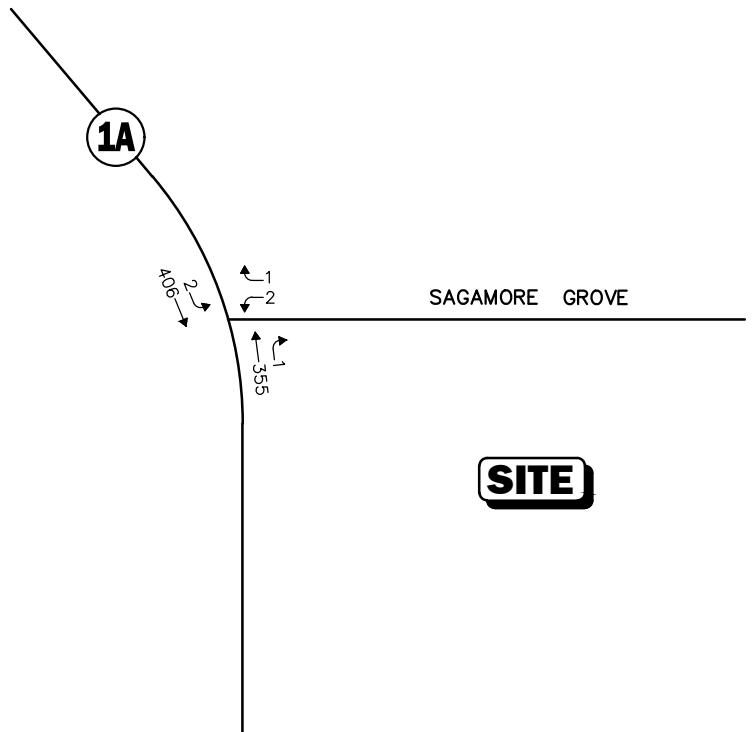
<sup>5</sup>A minimum combined travel lane and paved shoulder width of 14-feet is recommended to support bicycle travel in a shared traveled-way condition.



WEEKDAY EVENING PEAK HOUR (8:00 - 9:00 AM)



WEEKDAY EVENING PEAK HOUR (4:30 - 5:30 PM)



 Not To Scale



Figure 1

2021 Existing Peak-Month Peak-Hour Traffic Volumes

## **Public Transportation Services**

Regularly scheduled fixed-route bus service is provided within the City of Portsmouth by way of the Cooperative Alliance for Seacoast Transportation (COAST); however, these services are not directly accessible at the Project site. In addition to fixed-route bus services, COAST operates paratransit services for eligible persons who cannot use fixed-route transit all or some of the time due to a physical, cognitive, or mental disability in compliance with the Americans with Disabilities Act (ADA). COAST and the City of Portsmouth also provide transportation services for eligible seniors, including free transportation to the Seacoast Mental Health Center.

## **Motor Vehicle Crash Data**

Motor vehicle crash information for the intersection of NH Route 1A at Sagamore Grove has been requested from the Portsmouth Police Department in order to examine motor vehicle crash trends occurring at this location. This data will be summarized in a supplemental memorandum as soon as it is received.

## **FUTURE CONDITIONS**

Traffic volumes in the study area were projected to the years 2022 and 2032, which reflect the anticipated opening-year of the Project and a ten-year planning horizon from opening-year, respectively, consistent with NHDOT TIS guidelines. The future condition traffic-volume projections incorporate identified specific development projects by others, as well as general background traffic growth as a result of development external to the study area and presently unforeseen projects. Anticipated Project-generated traffic volumes superimposed upon the 2022 and 2032 No-Build traffic volumes reflect the Build conditions with the Project.

## **Future Traffic Growth**

Future traffic growth is a function of the expected land development in the immediate area and the surrounding region. Several methods can be used to estimate this growth. A procedure frequently employed estimates an annual percentage increase in traffic growth and applies that percentage to all traffic volumes under study. The drawback to such a procedure is that some turning volumes may actually grow at either a higher or a lower rate at particular intersections.

An alternative procedure identifies the location and type of planned development, estimates the traffic to be generated, and assigns it to the area roadway network. This procedure produces a more realistic estimate of growth for local traffic; however, potential population growth and development external to the study area would not be accounted for in the resulting traffic projections.

To provide a conservative analysis framework, both procedures were used, the salient components of which are described below.

## **Specific Development by Others**

The City of Portsmouth has been contacted in order to determine if there were any projects planned within the study area that would have an impact on future traffic volumes at the study intersections. Based on these discussions, no projects were identified at this time that are expected to result in an increase in traffic that would exceed the general background traffic growth rate (discussion follows). A small (11-unit) multifamily residential development to be located at 1169 Sagamore Avenue is in the initial planning stages; however, formal plans have not been submitted to the City at this time.





## **General Background Traffic Growth**

A review of historic traffic growth information compiled by NHDOT for the City of Portsmouth, and the Towns of New Castle and Rye was undertaken in order to determine general traffic growth trends. This data indicates that traffic volumes have fluctuated over the 10-year period between 2009 and 2019, with an average traffic growth rate of 0.54 percent. In order to provide a prudent planning condition for the Project, a slightly higher 1.0 percent per year compounded annual background traffic growth rate was used in order to account for future traffic growth and presently unforeseen development within the study area.

## **Roadway Improvement Projects**

The City of Portsmouth and NHDOT were contacted in order to determine if there were any planned roadway improvement projects expected to be completed within the study area. Based on these discussions, no roadway improvement projects aside from routine maintenance activities were identified to be planned within the study area at this time.

## **No-Build Traffic Volumes**

The 2022 and 2032 No-Build peak-month peak-hour traffic volumes were developed by applying the 1.0 percent per year compounded annual background traffic growth rate to the 2021 Existing peak-month peak-hour traffic volumes. The resulting 2022 No-Build weekday morning and evening peak-month peak-hour traffic volumes are shown on Figure 2, with the corresponding 2032 No-Build peak-month peak-hour traffic volumes shown on Figure 3.

## **PROJECT-GENERATED TRAFFIC**

Design year (2022 and 2032) Build traffic volumes for the study area roadways were determined by estimating Project-generated traffic volumes and assigning those volumes on the study roadways. The following sections describe the methodology used to develop the anticipated traffic characteristics of the Project.

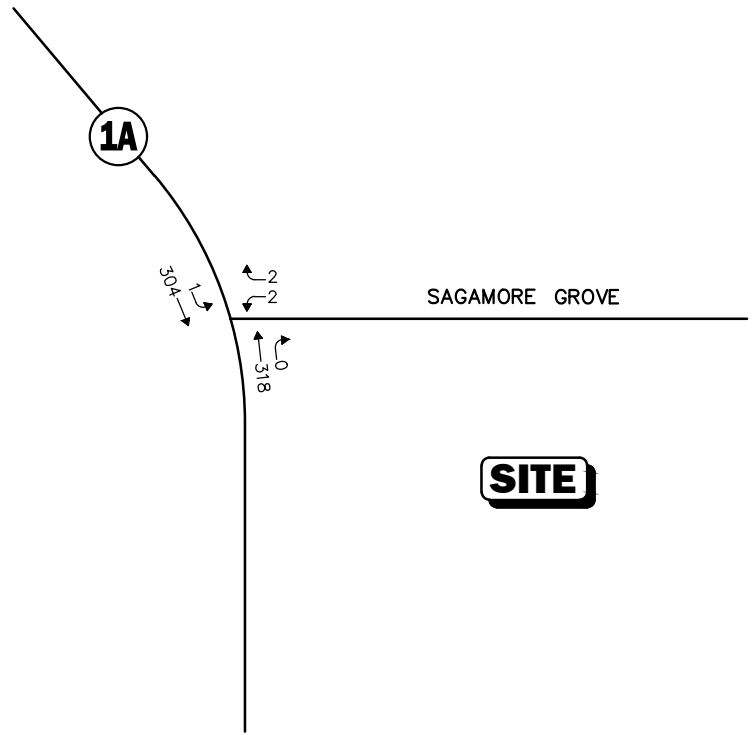
As proposed, the Project will entail the construction of an 8-unit multifamily residential community. In order to develop the traffic characteristics of the Project, trip-generation statistics published by the ITE<sup>6</sup> for a similar land use as that proposed were used. ITE Land Use Code (LUC) 220, *Multifamily Housing (Low-Rise)*, was used to develop the traffic characteristics of the Project, the results of which are summarized in Table 1.

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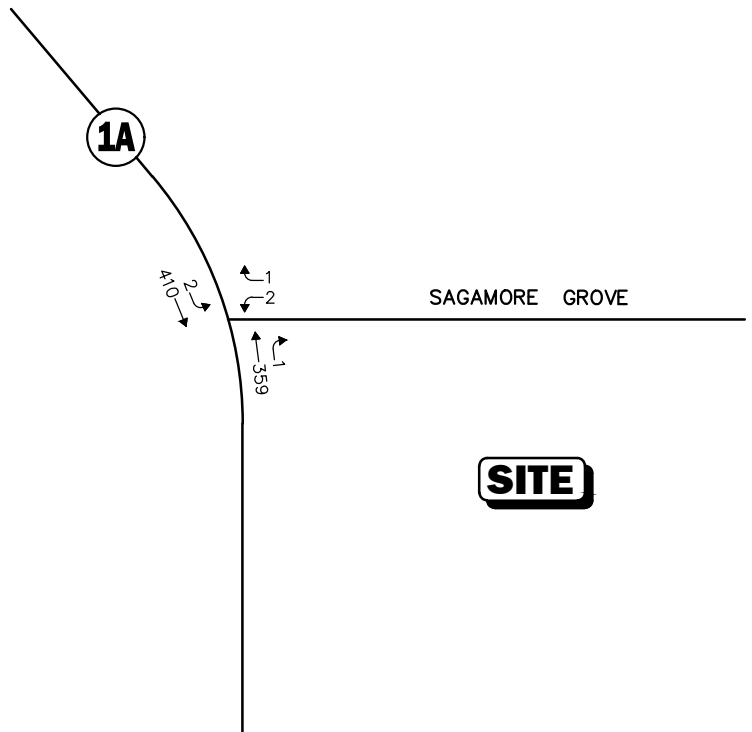
<sup>6</sup>Ibid 1.



WEEKDAY EVENING PEAK HOUR (8:00 - 9:00 AM)



WEEKDAY EVENING PEAK HOUR (4:30 - 5:30 PM)



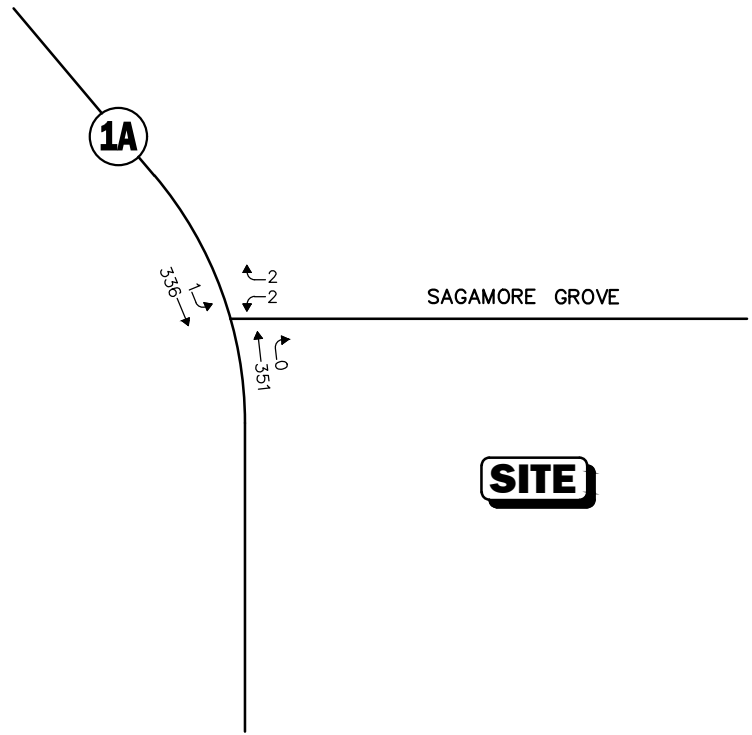
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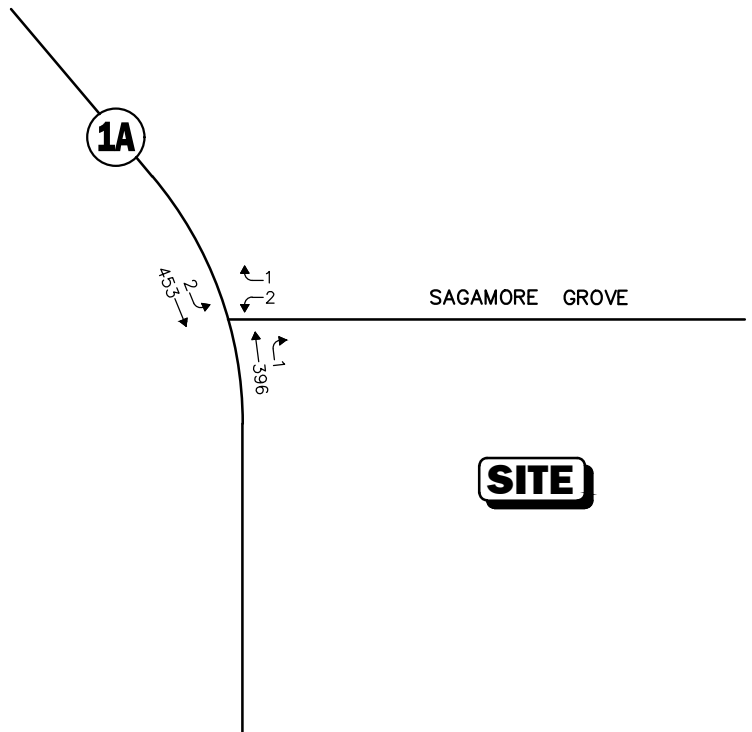
Figure 2

2022 No-Build  
Peak-Month  
Peak-Hour Traffic Volumes

WEEKDAY EVENING PEAK HOUR (8:00 - 9:00 AM)



WEEKDAY EVENING PEAK HOUR (4:30 - 5:30 PM)



Not To Scale



Figure 3

2032 No-Build  
Peak-Month  
Peak-Hour Traffic Volumes



**Table 1**  
**TRIP-GENERATION SUMMARY**

Time Period	Vehicle Trips		
	Entering	Exiting	Total
<i>Average Weekday:</i>	10	10	20
<i>Weekday Morning Peak Hour:</i>	1	3	4
<i>Weekday Evening Peak Hour:</i>	4	2	6

<sup>a</sup>Based on ITE LUC 220, *Multifamily Housing (Low-Rise)*, 8 dwelling units.

### Project-Generated Traffic Volume Summary

As can be seen in Table 1, the Project is expected to generate approximately 20 vehicle trips on an average weekday (two-way, 24-hour volume, or 10 vehicles entering and 10 exiting), with 4 vehicle trips (1 vehicle entering and 3 exiting) expected during the weekday morning peak hour and 6 vehicle trips (4 vehicles entering and 2 exiting) expected during the weekday evening peak hour.

Table 2 compares the traffic volumes associated with the Project to those of the existing uses that currently occupy the Project site and that will be removed.

**Table 2**  
**TRAFFIC VOLUME COMPARISON**

Time Period/Direction	Vehicle Trips		
	(A) Proposed Residential Development <sup>a</sup>	(B) Existing Uses <sup>b</sup>	(C= A - B) Difference
<i>Average Weekday Daily:</i>	20	208	-188
<i>Weekday Morning Peak Hour:</i>	4	14	-10
<i>Weekday Evening Peak Hour:</i>	6	18	-12

<sup>a</sup>Based on ITE LUC 220, *Multifamily Housing (Low-Rise)*, 8 dwelling units.

<sup>b</sup>Based on ITE LUC 210, *Single-Family Detached Housing*, 1 dwelling unit; LUC 820, *Shopping Center*, 1,420 sf, and using the average trip rate given the small size of the demised area; and LUC 932, *High-Turnover (Sit-Down) Restaurant*, 1,230 sf



## Traffic-Volume Comparison

As can be seen in Table 2, in comparison to the existing uses that occupy the Project site and that will be removed to accommodate the Project, the Project is expected to generate approximately 188 *fewer* vehicle trips on an average weekday (a 90 percent reduction), with 10 *fewer* vehicle trips expected during the weekday morning peak hour (a 71 percent reduction), and 12 *fewer* vehicle trips expected during the weekday evening peak-hour (a 67 percent reduction).

***Based on this comparative analysis, it is clear that the Project will be significantly less impactful on the transportation infrastructure when compared to the existing uses that occupy the Project site.***

## Trip Distribution and Assignment

The directional distribution of generated trips to and from the Project site was determined based on a review of existing traffic patterns within the study area during the peak periods. The general trip distribution for the Project is shown on Figure 4. The additional traffic expected to be generated by the Project was assigned on the study area roadway network as shown on Figure 5.

## Build Traffic Volumes

The 2022 Opening-Year and 2032 Build condition traffic-volumes were developed by adding Project-generated traffic to the corresponding 2022 and 2032 No-Build peak-month peak-hour traffic-volumes. The resulting 2022 Opening-Year Build condition weekday morning and evening peak-month peak-hour traffic volumes are graphically depicted on Figure 6, with the corresponding 2032 Build condition peak-month peak-hour traffic volumes depicted on Figure 7.

## TRAFFIC OPERATIONS ANALYSIS

In order to assess the potential impact of the Project on the roadway network, a detailed traffic operations analysis (motorist delays, vehicle queuing and level-of-service) was performed at the study area intersections. Capacity analyses provide an indication of how well transportation facilities serve the traffic demands placed upon them, with vehicle queue analyses providing a secondary measure of the operational characteristics of an intersection or section of roadway under study.

In brief, six levels of service are defined for each type of facility. They are given letter designations ranging from A to F, with level-of-service (LOS) “A” representing the best operating conditions and LOS “F” representing congested or constrained operations. An LOS of “E” is representative of a transportation facility that is operating at its design capacity with an LOS of “D” generally defined as the limit of “acceptable” traffic operations. Since the level-of-service of a traffic facility is a function of the flows placed upon it, such a facility may operate at a wide range of levels of service depending on the time of day, day of week, or period of the year. The Synchro® intersection capacity analysis software, which is based on the analysis methodologies and procedures presented in the 2010 *Highway Capacity Manual* (HCM)<sup>7</sup> for unsignalized intersections, was used to complete the level-of-service and vehicle queue analyses.

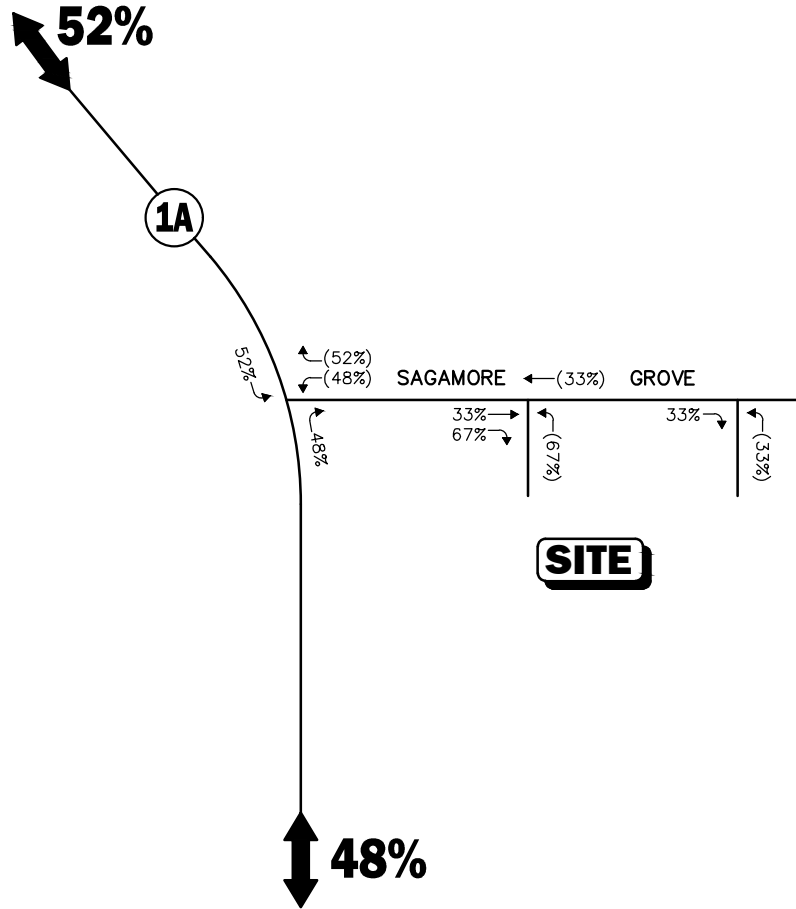
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<sup>7</sup>*Highway Capacity Manual*, Transportation Research Board; Washington, DC; 2010.



**Legend:**

- XX Entering Trips
- (XX) Exiting Trips



Not To Scale

Figure 4

Trip Distribution Map

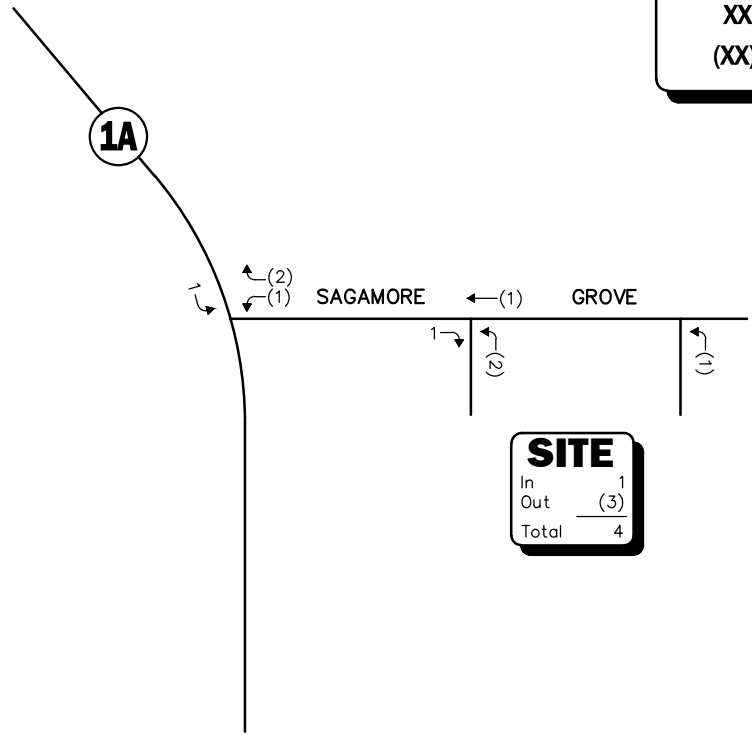




WEEKDAY EVENING PEAK HOUR (8:00 - 9:00 AM)

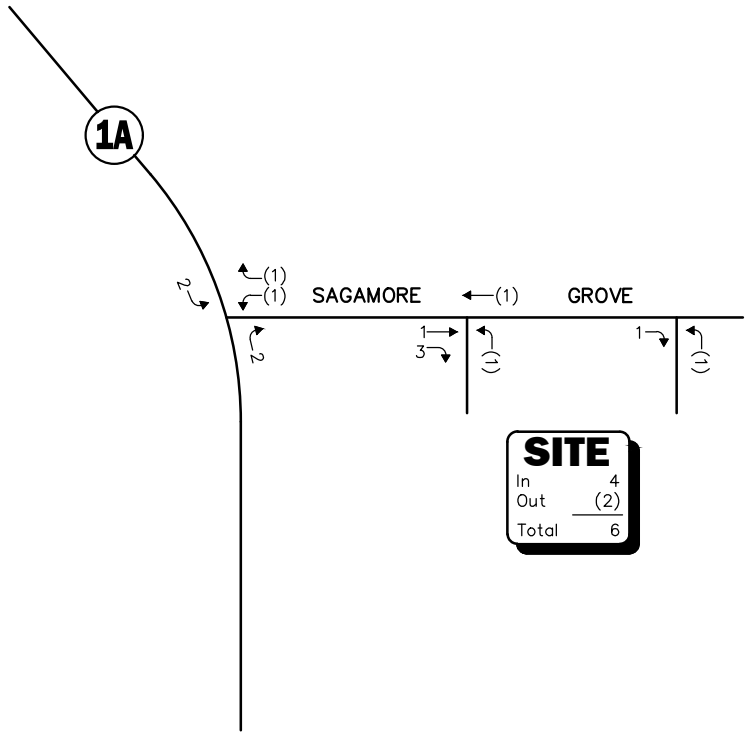
**Legend:**

- XX Entering Trips
- (XX) Exiting Trips



<b>SITE</b>	
In	1
Out	(3)
Total	4

WEEKDAY EVENING PEAK HOUR (4:30 - 5:30 PM)



<b>SITE</b>	
In	4
Out	(2)
Total	6

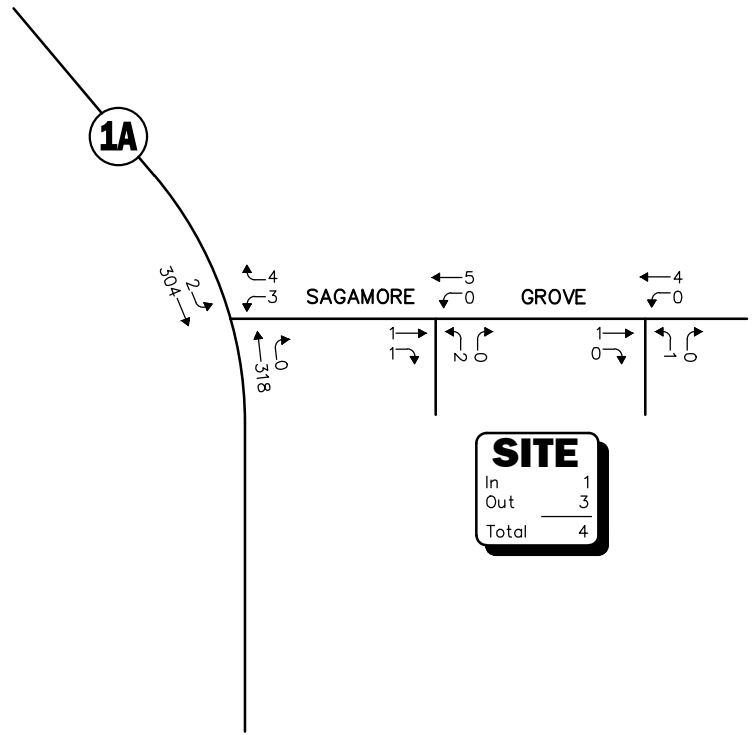
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**Figure 5**

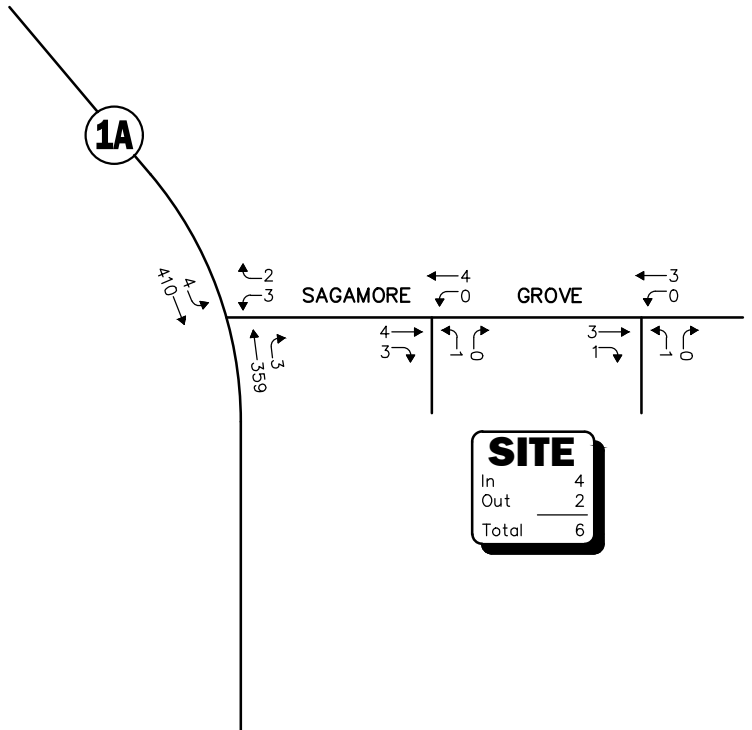


**Project-Generated Peak-Hour Traffic Volumes**

WEEKDAY EVENING PEAK HOUR (8:00 - 9:00 AM)



WEEKDAY EVENING PEAK HOUR (4:30 - 5:30 PM)



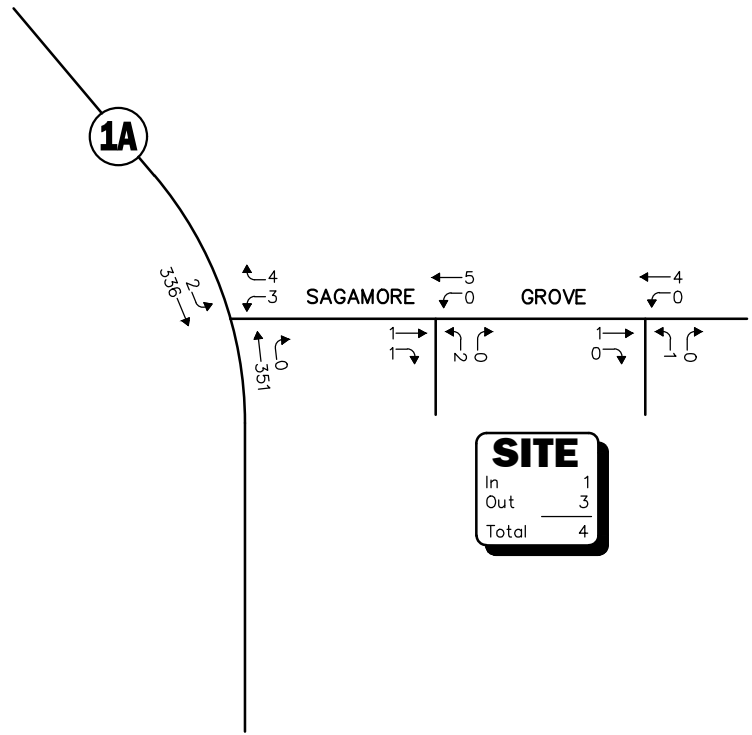
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Figure 6

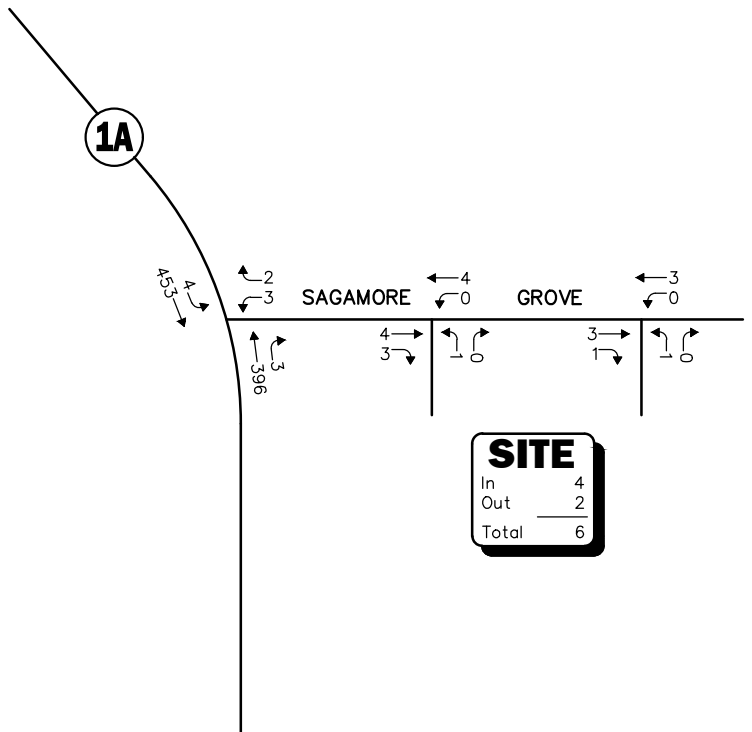


2022 Build  
Peak-Month  
Peak-Hour Traffic Volumes

WEEKDAY EVENING PEAK HOUR (8:00 - 9:00 AM)



WEEKDAY EVENING PEAK HOUR (4:30 - 5:30 PM)



Not To Scale



Figure 7

2032 Build  
Peak-Month  
Peak-Hour Traffic Volumes



## **Analysis Results**

The results of the intersection capacity and vehicle queue analyses for the study intersections are summarized in Table 3, with the detailed analysis results presented in the Appendix.

### **NH Route 1A at Sagamore Grove**

Under 2021 Existing, 2022 No-Build and 2022 Opening Year Build peak-month conditions, the critical movements at this unsignalized intersection (all movements from Sagamore Grove) were shown to operate at LOS B during both the weekday morning and evening peak hours. Project-related impacts over 2022 No-Build conditions were defined as an increase in average motorist delay of less than 1.0 seconds with vehicle queuing continuing to be negligible.

Under 2032 No-Build and 2032 Build peak-month conditions, the critical movements were shown to operate at LOS B during the weekday morning peak-hour and at LOS C during the weekday evening peak-hour. Project-related impacts over 2032 No-Build conditions were defined as an increase in average motorist delay of less than 1.0 seconds with vehicle queuing shown to be negligible.

### **Sagamore Grove at the Project site driveways**

All movements at the Project site driveway intersections with Sagamore Grove were shown to operate at LOS A with negligible vehicle queuing under all analysis conditions.



**Table 3**  
**UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY**

Unsignalized Intersection/ Peak Hour/Movement	2021 Existing				2022 No-Build				2022 Opening Year				2032 No-Build				2032 Build			
	Demand <sup>a</sup>	Delay <sup>b</sup>	LOS <sup>c</sup>	Queue <sup>d</sup> 95 <sup>th</sup>	Demand	Delay	LOS	Queue 95 <sup>th</sup>	Demand	Delay	LOS	Queue 95 <sup>th</sup>	Demand	Delay	LOS	Queue 95 <sup>th</sup>	Demand	Delay	LOS	Queue 95 <sup>th</sup>
<b>NH Route 1A at Sagamore Grove</b>																				
<i>Weekday Morning:</i>																				
Sagamore Grove WB LT/RT	4	12.0	B	0	4	12.0	B	0	7	12.0	B	0	4	12.6	B	0	7	12.6	B	0
NH Route 1A NB TH/RT	315	0.0	A	0	318	0.0	A	0	318	0.0	A	0	351	0.0	A	0	351	0.0	A	0
NH Route 1A SB LT/TH	302	0.0	A	0	305	0.0	A	0	306	0.0	A	0	337	0.0	A	0	338	0.0	A	0
<i>Weekday Evening:</i>																				
Sagamore Grove WB LT/RT	3	13.9	B	0	3	14.0	B	0	5	14.0	B	0	3	15.0	C	0	5	15.0	C	0
NH Route 1A NB TH/RT	356	0.0	A	0	360	0.0	A	0	362	0.0	A	0	397	0.0	A	0	399	0.0	A	0
NH Route 1A SB LT/TH	408	0.0	A	0	412	0.0	A	0	414	0.1	A	0	455	0.0	A	0	457	0.1	A	0
<b>Sagamore Grove at the West Project Site Driveway</b>																				
<i>Weekday Morning:</i>																				
Sagamore Grove EB TH/RT	--	--	--	--	--	--	--	--	2	0.0	A	0	--	--	--	--	2	0.0	A	0
Sagamore Grove WB LT/TH	--	--	--	--	--	--	--	--	5	0.0	A	0	--	--	--	--	5	0.0	A	0
Site Driveway NB LT/RT	--	--	--	--	--	--	--	--	2	8.6	A	0	--	--	--	--	2	8.6	A	0
<i>Weekday Evening:</i>																				
Sagamore Grove EB TH/RT	--	--	--	--	--	--	--	--	7	0.0	A	0	--	--	--	--	7	0.0	A	0
Sagamore Grove WB LT/TH	--	--	--	--	--	--	--	--	4	0.0	A	0	--	--	--	--	4	0.0	A	0
Site Driveway NB LT/RT	--	--	--	--	--	--	--	--	1	8.6	A	0	--	--	--	--	1	8.6	A	0
<b>Sagamore Grove at the East Project Site Driveway</b>																				
<i>Weekday Morning:</i>																				
Sagamore Grove EB TH/RT	--	--	--	--	--	--	--	--	1	0.0	A	0	--	--	--	--	1	0.0	A	0
Sagamore Grove WB LT/TH	--	--	--	--	--	--	--	--	4	0.0	A	0	--	--	--	--	4	0.0	A	0
Site Driveway NB LT/RT	--	--	--	--	--	--	--	--	1	8.5	A	0	--	--	--	--	1	8.5	A	0
<i>Weekday Evening:</i>																				
Sagamore Grove EB TH/RT	--	--	--	--	--	--	--	--	4	0.0	A	0	--	--	--	--	4	0.0	A	0
Sagamore Grove WB LT/TH	--	--	--	--	--	--	--	--	3	0.0	A	0	--	--	--	--	3	0.0	A	0
Site Driveway NB LT/RT	--	--	--	--	--	--	--	--	1	8.6	A	0	--	--	--	--	1	8.6	A	0

<sup>a</sup>Demand in vehicles per hour.

<sup>b</sup>Average control delay per vehicle (in seconds).

<sup>c</sup>Level-of-Service.

<sup>d</sup>Queue length in vehicles.

SB = southbound; EB = eastbound; WB = westbound; LT = left-turning movements; TH = through movements; RT = right-turning movements.



## SIGHT DISTANCE ASSESSMENT

Sight distance measurements were performed at the Project site driveway intersections with Sagamore Grove in accordance with American Association of State Highway and Transportation Officials (AASHTO)<sup>8</sup> requirements. Both stopping sight distance (SSD) and intersection sight distance (ISD) measurements were performed. In brief, SSD is the distance required by a vehicle traveling at the design speed of a roadway, on wet pavement, to stop prior to striking an object in its travel path. ISD or corner sight distance (CSD) is the sight distance required by a driver entering or crossing an intersecting roadway to perceive an on-coming vehicle and safely complete a turning or crossing maneuver with oncoming traffic. In accordance with AASHTO standards, if the measured ISD is at least equal to the required SSD value for the appropriate design speed, the intersection can operate in a safe manner. Table 4 presents the measured SSD and ISD at the subject intersections.

**Table 4**  
**SIGHT DISTANCE MEASUREMENTS<sup>a</sup>**

Intersection/Sight Distance Measurement	Feet		
	Required Minimum (SSD)	Desirable (ISD) <sup>b</sup>	Measured
<b><i>Sagamore Grove at the West Project Site Driveway</i></b>			
<i>Stopping Sight Distance:</i>			
Sagamore Grove approaching from the east	155	--	177
Sagamore Grove approaching from the west	80	--	80 <sup>c</sup>
<i>Intersection Sight Distance:</i>			
Looking to the east from the Project Site Driveway	155	280	111/201 <sup>d</sup>
Looking to the west from the Project Site Driveway	80	145	80 <sup>c</sup>
<b><i>Sagamore Grove at the East Project Site Driveway</i></b>			
<i>Stopping Sight Distance:</i>			
Sagamore Grove approaching from the east	155	--	315
Sagamore Grove approaching from the west	155	--	176 <sup>c</sup>
<i>Intersection Sight Distance:</i>			
Looking to the east from the Project Site Driveway	155	280	111/189 <sup>d</sup>
Looking to the west from the Project Site Driveway	155	240	176 <sup>c</sup>

<sup>a</sup>Recommended minimum values obtained from *A Policy on Geometric Design of Highways and Streets*, 7<sup>th</sup> Edition; American Association of State Highway and Transportation Officials (AASHTO); 2018; and based on a 15 mph speed approaching the west Project site driveway from the east and a 25 mph approach speed for all other approaches.

<sup>b</sup>Values shown are the intersection sight distance for a vehicle turning right or left exiting a roadway under STOP control such that motorists approaching the intersection on the major street should not need to adjust their travel speed to less than 70 percent of their initial approach speed.

<sup>c</sup>Clear line of sight is provided to/from NH Route 1A.

<sup>d</sup>With the selective trimming/removal of vegetation.

As can be seen in Table 3, with the selective trimming or removal of vegetation located within the site triangle areas of the Project site driveways, the available lines of sight to and from the Project site driveways meet or exceed the recommended minimum sight distances to function in a safe (SSD) manner based on a 25 mph approach speed and with consideration to the reduced speed of vehicles transitioning to/from NH Route 1A.

<sup>8</sup>*A Policy on Geometric Design of Highway and Streets*, 7<sup>th</sup> Edition; AASHTO; Washington D.C.; 2018.





## **SUMMARY**

VAI has completed a detailed assessment of the potential impacts on the transportation infrastructure associated with the proposed multifamily residential development to be located at 960 Sagamore Grove in Portsmouth, New Hampshire (hereafter referred to as the “Project”). The following specific areas have been evaluated as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; under existing and future conditions, both with and without the Project. Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the ITE,<sup>9</sup> the Project is expected to generate approximately 20 vehicle trips on an average weekday (two-way volume over the operational day of the Project), with 4 vehicle trips expected during the weekday morning peak hour and 6 vehicle trips expected during the weekday evening peak hour;
2. In comparison to the existing uses that occupy the site, the Project is expected to generate approximately 188 *fewer* vehicle trips on an average weekday, with 10 *fewer* vehicle trips expected during the weekday morning peak hour, and 12 *fewer* vehicle trips expected during the weekday evening peak hour;
3. Given the significant reduction in traffic that is predicted as a result of the Project, the Project will be less impactful on the transportation infrastructure when compared to the existing uses that occupy the Project site;
4. A review of motorist delays and vehicle queuing at the NH Route 1A/Sagamore Grove intersection indicates that the Project will not result in a significant increase in motorist delays or vehicle queuing, with Project-related impacts defined as an increase in average motorist delay of less than 1.0 seconds with no predicted increase in vehicle queuing; and
5. Lines of sight at the Project site driveway intersections were found to meet, exceed or could be made to meet or exceed the recommended minimum distances for safe operation.

In consideration of the above, we have concluded that the Project can be accommodated within the confines of the existing transportation infrastructure in a safe and efficient manner with the implementation of the recommendations that follow.

## **RECOMMENDATIONS**

### **Project Access**

Access to the Project site will be provided by way of two new driveways that will intersect the south side of Sagamore Grove approximately 75 feet and 175 feet east of NH Route 1A, respectively. The existing driveway that currently serves the Project site along NH Route 1A will be closed in conjunction with the Project resulting in an overall improvement in safety through the elimination of a conflict point for vehicles, pedestrians and bicyclists along NH Route 1A. The following recommendations are offered with respect to the design and operation of the Project site access and internal circulation:

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<sup>9</sup>Ibid 1.



- The Project site driveways should be a minimum of 22 feet in width and designed to accommodate the turning and maneuvering requirements of the largest anticipated responding emergency vehicle as defined by the Portsmouth Fire Department.
- Vehicles exiting the Project site should be under stop control.
- Drive aisles behind perpendicular parking should be 23-feet wide in order to accommodate parking maneuvers.
- All signs and pavement markings to be installed within the Project site should conform to the applicable standards of the *Manual on Uniform Traffic Control Devices (MUTCD)*.<sup>10</sup>
- Signs and landscaping to be installed as a part of the Project within the intersection sight triangle areas of the Project site driveways should be designed and maintained so as not to restrict lines of sight.
- Existing vegetation located along the south side of Sagamore Grove within the sight triangle areas of the Project site driveways should be selectively trimmed or removed and maintained.
- Snow windrows within sight triangle areas of the Project site driveways should be promptly removed where such accumulations would impede sight lines.
- Bicycle parking should be provided at an appropriate location within the Project site.

With the implementation of the above recommendations, safe and efficient access can be provided to the Project site and the Project can be accommodated within the confines of the existing transportation infrastructure.

cc: File

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<sup>10</sup>*Manual on Uniform Traffic Control Devices (MUTCD)*; Federal Highway Administration; Washington, D.C.; 2009.



## ATTACHMENTS

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PROJECT SITE PLAN  
AUTOMATIC TRAFFIC RECORDER COUNT DATA  
MANUAL TURNING MOVEMENT COUNT DATA  
SEASONAL ADJUSTMENT DATA  
COVID-19 ADJUSTMENT DATA  
VEHICLE TRAVEL SPEED DATA  
GENERAL BACKGROUND TRAFFIC GROWTH  
TRIP-GENERATION CALCULATIONS  
CAPACITY ANALYSIS WORKSHEETS



**PROJECT SITE PLAN**

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AUTOMATIC TRAFFIC RECORDER COUNT DATA



Accurate Counts  
978-664-2565

Location : Route 1A  
Location : South of Sagamore Grove  
City/State: Portsmouth, NH

89920001

5/12/2021 Time	NB,		Hour Totals		SB,		Hour Totals		Combined Totals	
	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	1	62			0	77				
12:15	3	70			1	83				
12:30	1	58			3	67				
12:45	2	91	7	281	1	73	5	300	12	581
1:00	1	81			4	83				
1:15	0	58			0	85				
1:30	0	68			0	73				
1:45	3	77	4	284	2	67	6	308	10	592
2:00	0	65			0	72				
2:15	1	75			2	72				
2:30	0	74			0	67				
2:45	0	73	1	287	0	93	2	304	3	591
3:00	0	74			1	92				
3:15	0	65			0	109				
3:30	0	79			2	101				
3:45	0	79	0	297	1	90	4	392	4	689
4:00	3	80			0	68				
4:15	2	68			0	91				
4:30	2	69			1	98				
4:45	5	63	12	280	3	111	4	368	16	648
5:00	5	64			4	98				
5:15	5	73			3	102				
5:30	9	68			5	86				
5:45	10	60	29	265	3	69	15	355	44	620
6:00	11	53			7	73				
6:15	8	64			17	57				
6:30	18	37			23	66				
6:45	23	45	60	199	35	55	82	251	142	450
7:00	20	36			33	63				
7:15	34	38			51	54				
7:30	42	36			50	32				
7:45	60	36	156	146	59	25	193	174	349	320
8:00	73	21			79	46				
8:15	67	28			73	50				
8:30	51	15			64	36				
8:45	62	17	253	81	89	32	305	164	558	245
9:00	49	16			64	28				
9:15	57	13			58	19				
9:30	61	8			45	11				
9:45	61	6	228	43	58	11	225	69	453	112
10:00	56	7			61	13				
10:15	60	4			79	8				
10:30	53	5			57	2				
10:45	55	7	224	23	79	5	276	28	500	51
11:00	50	7			66	6				
11:15	64	4			100	3				
11:30	64	2			71	0				
11:45	71	2	249	15	98	4	335	13	584	28
Total	1223	2201			1452	2726			2675	4927
Percent	35.7%	64.3%			34.8%	65.2%			35.2%	64.8%

Accurate Counts  
978-664-2565

Location : Route 1A  
Location : South of Sagamore Grove  
City/State: Portsmouth, NH

89920001

5/13/2021 Time	NB,		Hour Totals		SB,		Hour Totals		Combined Totals	
	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	1	62			1	70				
12:15	0	43			1	93				
12:30	1	72			6	97				
12:45	1	74	3	251	1	92	9	352	12	603
1:00	1	73			1	103				
1:15	1	56			0	88				
1:30	0	74			1	48				
1:45	0	60	2	263	0	63	2	302	4	565
2:00	0	80			0	85				
2:15	1	104			3	113				
2:30	0	85			0	88				
2:45	1	76	2	345	1	88	4	374	6	719
3:00	0	89			2	70				
3:15	1	65			1	110				
3:30	0	82			0	116				
3:45	2	79	3	315	1	86	4	382	7	697
4:00	2	83			0	97				
4:15	2	83			1	98				
4:30	5	61			4	83				
4:45	4	60	13	287	1	129	6	407	19	694
5:00	3	78			4	105				
5:15	3	89			4	82				
5:30	9	73			3	125				
5:45	7	63	22	303	4	111	15	423	37	726
6:00	7	70			9	100				
6:15	14	57			10	93				
6:30	11	43			24	58				
6:45	26	59	58	229	41	52	84	303	142	532
7:00	34	52			36	70				
7:15	32	47			57	59				
7:30	49	55			63	46				
7:45	75	45	190	199	66	42	222	217	412	416
8:00	92	34			70	52				
8:15	70	38			71	41				
8:30	42	32			82	38				
8:45	51	29	255	133	79	34	302	165	557	298
9:00	52	27			52	23				
9:15	50	20			46	16				
9:30	64	10			57	19				
9:45	51	20	217	77	80	21	235	79	452	156
10:00	40	16			67	11				
10:15	65	8			71	13				
10:30	54	7			72	13				
10:45	54	4	213	35	62	5	272	42	485	77
11:00	74	3			70	2				
11:15	68	3			86	7				
11:30	78	5			85	9				
11:45	62	3	282	14	93	4	334	22	616	36
Total	1260	2451			1489	3068			2749	5519
Percent	34.0%	66.0%			32.7%	67.3%			33.2%	66.8%
Grand Total	2483	4652			2941	5794			5424	10446
Percent	34.8%	65.2%			33.7%	66.3%			34.2%	65.8%

ADT

ADT: 7,935

AADT: 7,935





## MANUAL TURNING MOVEMENT DATA

---



# Accurate Counts

978-664-2565

N/S Street : Route 1A  
 E/W Street : Sagamore Grove  
 City/State : Portsmouth, NH  
 Weather : Cloudy

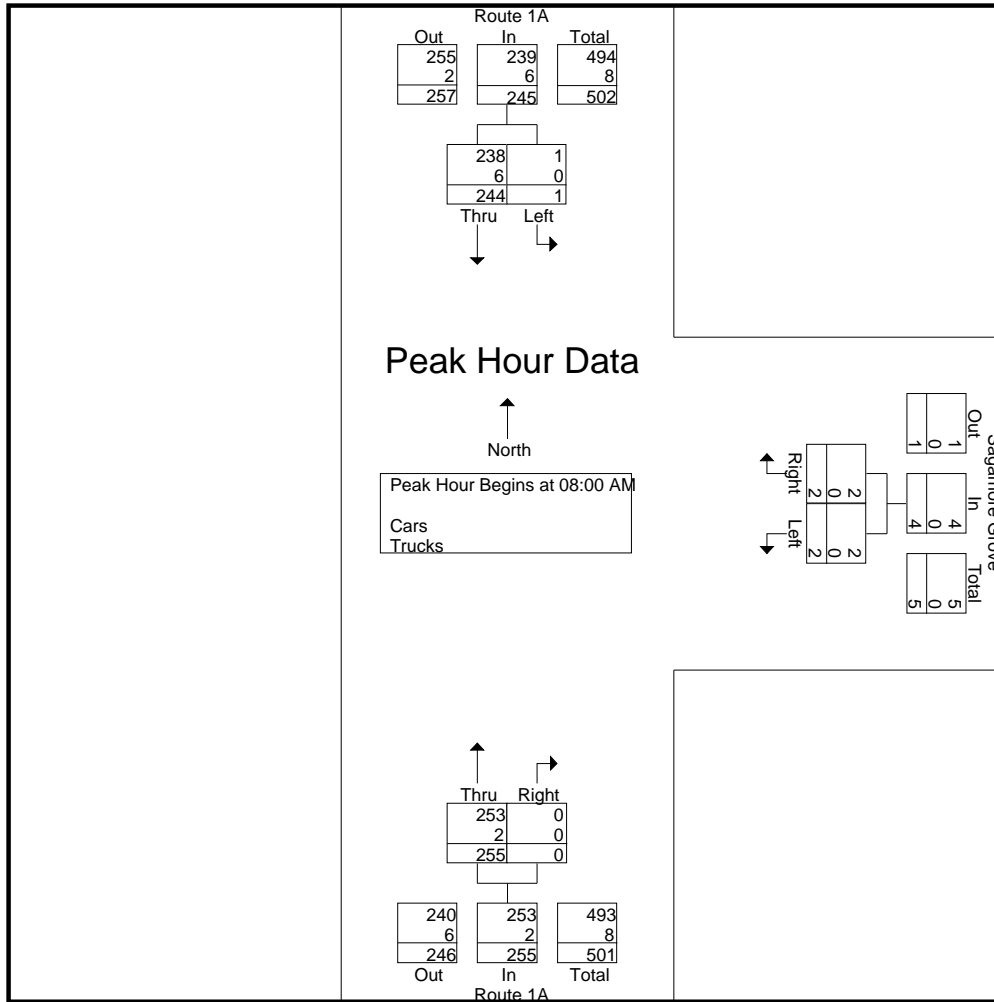
File Name : 89920001  
 Site Code : 89920001  
 Start Date : 5/12/2021  
 Page No : 1

### Groups Printed- Cars - Trucks

Start Time	Route 1A From North		Sagamore Grove From East			Route 1A From South		Int. Total
	Left	Thru	Left	Right	Thru	Right		
07:00 AM	0	31	0	0	24	0	55	
07:15 AM	1	38	0	1	31	0	71	
07:30 AM	1	45	2	0	41	0	89	
07:45 AM	0	57	0	0	57	0	114	
<b>Total</b>	<b>2</b>	<b>171</b>	<b>2</b>	<b>1</b>	<b>153</b>	<b>0</b>	<b>329</b>	
08:00 AM	0	63	0	0	71	0	134	
08:15 AM	1	61	0	1	72	0	135	
08:30 AM	0	55	1	0	49	0	105	
08:45 AM	0	65	1	1	63	0	130	
<b>Total</b>	<b>1</b>	<b>244</b>	<b>2</b>	<b>2</b>	<b>255</b>	<b>0</b>	<b>504</b>	
<b>Grand Total</b>	<b>3</b>	<b>415</b>	<b>4</b>	<b>3</b>	<b>408</b>	<b>0</b>	<b>833</b>	
Apprch %	0.7	99.3	57.1	42.9	100	0		
Total %	0.4	49.8	0.5	0.4	49	0		
Cars	3	406	4	3	404	0	820	
% Cars	100	97.8	100	100	99	0	98.4	
Trucks	0	9	0	0	4	0	13	
% Trucks	0	2.2	0	0	1	0	1.6	

Start Time	Route 1A From North			Sagamore Grove From East			Route 1A From South			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	0	63	63	0	0	0	71	0	71	134
08:15 AM	1	61	62	0	1	1	72	0	72	135
08:30 AM	0	55	55	1	0	1	49	0	49	105
08:45 AM	0	65	65	1	1	2	63	0	63	130
<b>Total Volume</b>	<b>1</b>	<b>244</b>	<b>245</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>255</b>	<b>0</b>	<b>255</b>	<b>504</b>
% App. Total	0.4	99.6		50	50		100	0		
PHF	.250	.938	.942	.500	.500	.500	.885	.000	.885	.933
Cars	1	238	239	2	2	4	253	0	253	496
% Cars	100	97.5	97.6	100	100	100	99.2	0	99.2	98.4
Trucks	0	6	6	0	0	0	2	0	2	8
% Trucks	0	2.5	2.4	0	0	0	0.8	0	0.8	1.6

N/S Street : Route 1A  
E/W Street : Sagamore Grove  
City/State : Portsmouth, NH  
Weather : Cloudy

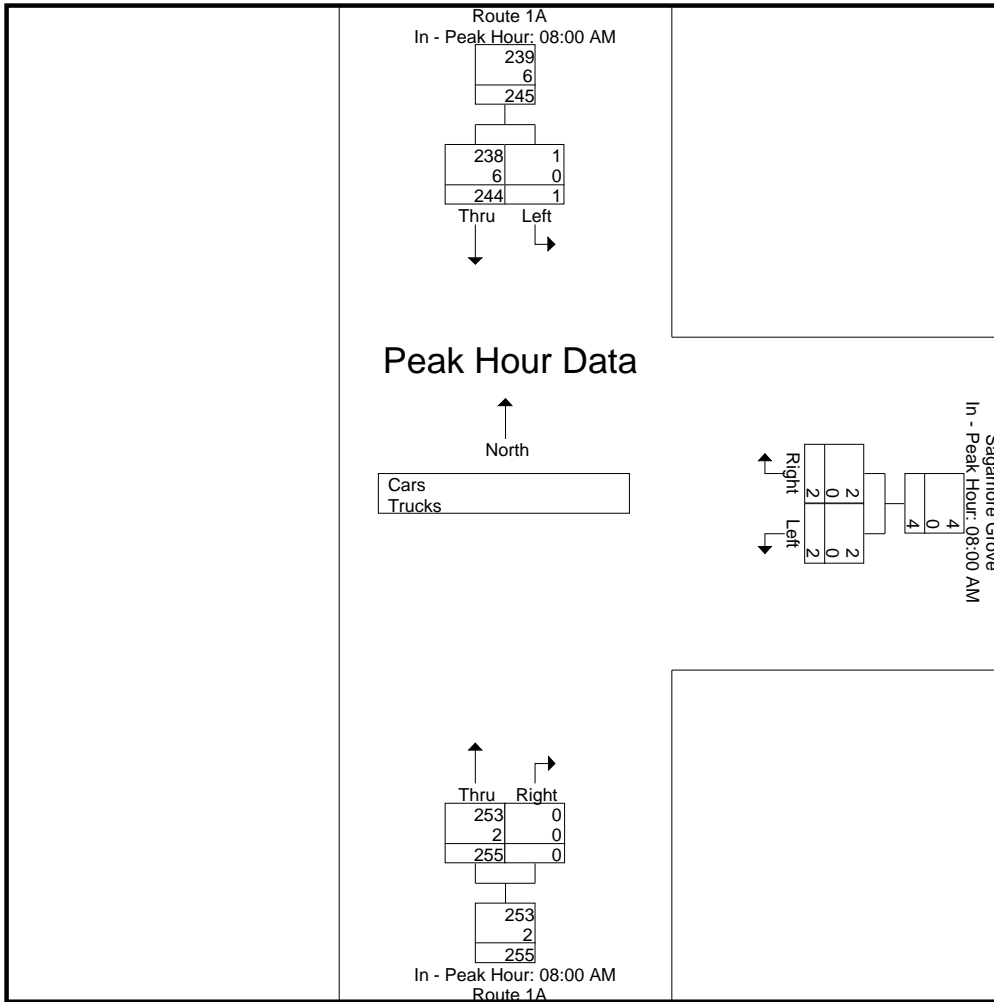


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

	08:00 AM			08:00 AM			08:00 AM		
+0 mins.	0	63	63	0	0	0	71	0	71
+15 mins.	1	61	62	0	1	1	72	0	72
+30 mins.	0	55	55	1	0	1	49	0	49
+45 mins.	0	65	65	1	1	2	63	0	63
Total Volume	1	244	245	2	2	4	255	0	255
% App. Total	0.4	99.6		50	50		100	0	
PHF	.250	.938	.942	.500	.500	.500	.885	.000	.885
Cars	1	238	239	2	2	4	253	0	253
% Cars	100	97.5	97.6	100	100	100	99.2	0	99.2
Trucks	0	6	6	0	0	0	2	0	2
% Trucks	0	2.5	2.4	0	0	0	0.8	0	0.8



N/S Street : Route 1A  
E/W Street : Sagamore Grove  
City/State : Portsmouth, NH  
Weather : Cloudy



**Accurate Counts**  
978-664-2565

File Name : 89920001  
Site Code : 89920001  
Start Date : 5/12/2021  
Page No : 4

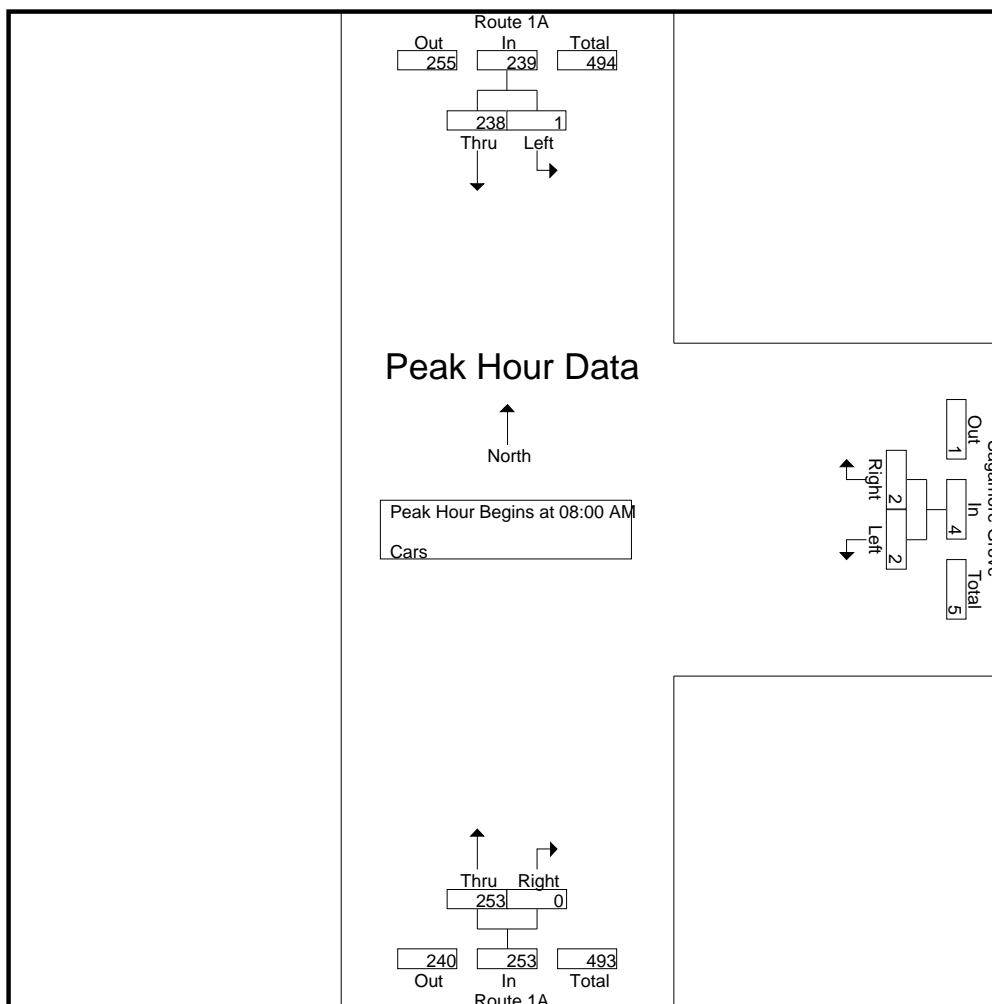
N/S Street : Route 1A  
E/W Street : Sagamore Grove  
City/State : Portsmouth, NH  
Weather : Cloudy

Groups Printed- Cars

Start Time	Route 1A From North		Sagamore Grove From East		Route 1A From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
07:00 AM	0	31	0	0	24	0	55
07:15 AM	1	37	0	1	29	0	68
07:30 AM	1	45	2	0	41	0	89
07:45 AM	0	55	0	0	57	0	112
<b>Total</b>	<b>2</b>	<b>168</b>	<b>2</b>	<b>1</b>	<b>151</b>	<b>0</b>	<b>324</b>
08:00 AM	0	62	0	0	71	0	133
08:15 AM	1	57	0	1	72	0	131
08:30 AM	0	54	1	0	48	0	103
08:45 AM	0	65	1	1	62	0	129
<b>Total</b>	<b>1</b>	<b>238</b>	<b>2</b>	<b>2</b>	<b>253</b>	<b>0</b>	<b>496</b>
<b>Grand Total</b>	<b>3</b>	<b>406</b>	<b>4</b>	<b>3</b>	<b>404</b>	<b>0</b>	<b>820</b>
Apprch %	0.7	99.3	57.1	42.9	100	0	
Total %	0.4	49.5	0.5	0.4	49.3	0	

Start Time	Route 1A From North			Sagamore Grove From East			Route 1A From South			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	0	62	62	0	0	0	71	0	71	<b>133</b>
08:15 AM	1	57	58	0	1	1	72	0	72	131
08:30 AM	0	54	54	1	0	1	48	0	48	103
08:45 AM	0	<b>65</b>	<b>65</b>	1	1	<b>2</b>	62	0	62	129
Total Volume	1	238	239	2	2	4	253	0	253	496
% App. Total	0.4	99.6		50	50		100	0		
PHF	.250	.915	.919	.500	.500	.500	.878	.000	.878	.932

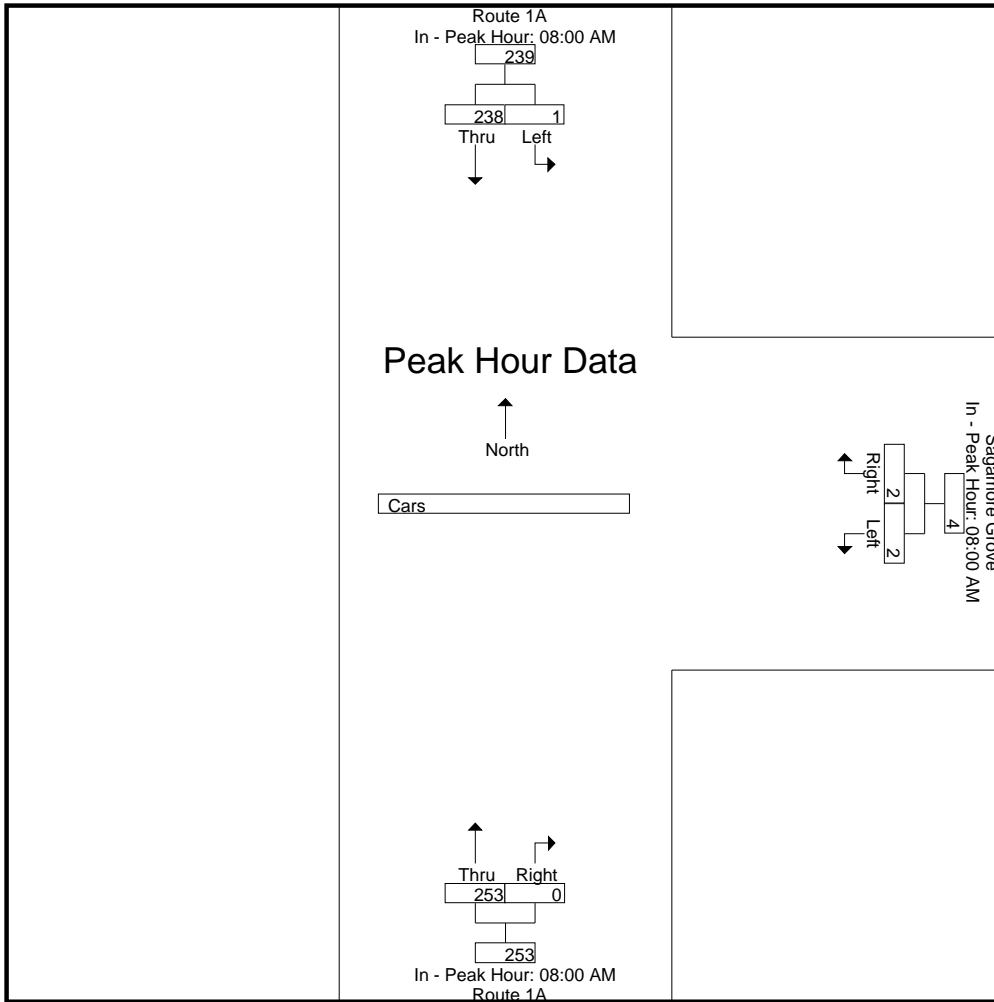
N/S Street : Route 1A  
E/W Street : Sagamore Grove  
City/State : Portsmouth, NH  
Weather : Cloudy



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

	08:00 AM			08:00 AM			08:00 AM		
+0 mins.	0	62	62	0	0	0	71	0	71
+15 mins.	1	57	58	0	1	1	72	0	72
+30 mins.	0	54	54	1	0	1	48	0	48
+45 mins.	0	65	65	1	1	2	62	0	62
Total Volume	1	238	239	2	2	4	253	0	253
% App. Total	0.4	99.6		50	50		100	0	
PHF	.250	.915	.919	.500	.500	.500	.878	.000	.878

N/S Street : Route 1A  
E/W Street : Sagamore Grove  
City/State : Portsmouth, NH  
Weather : Cloudy





**Accurate Counts**  
978-664-2565

File Name : 89920001  
Site Code : 89920001  
Start Date : 5/12/2021  
Page No : 7

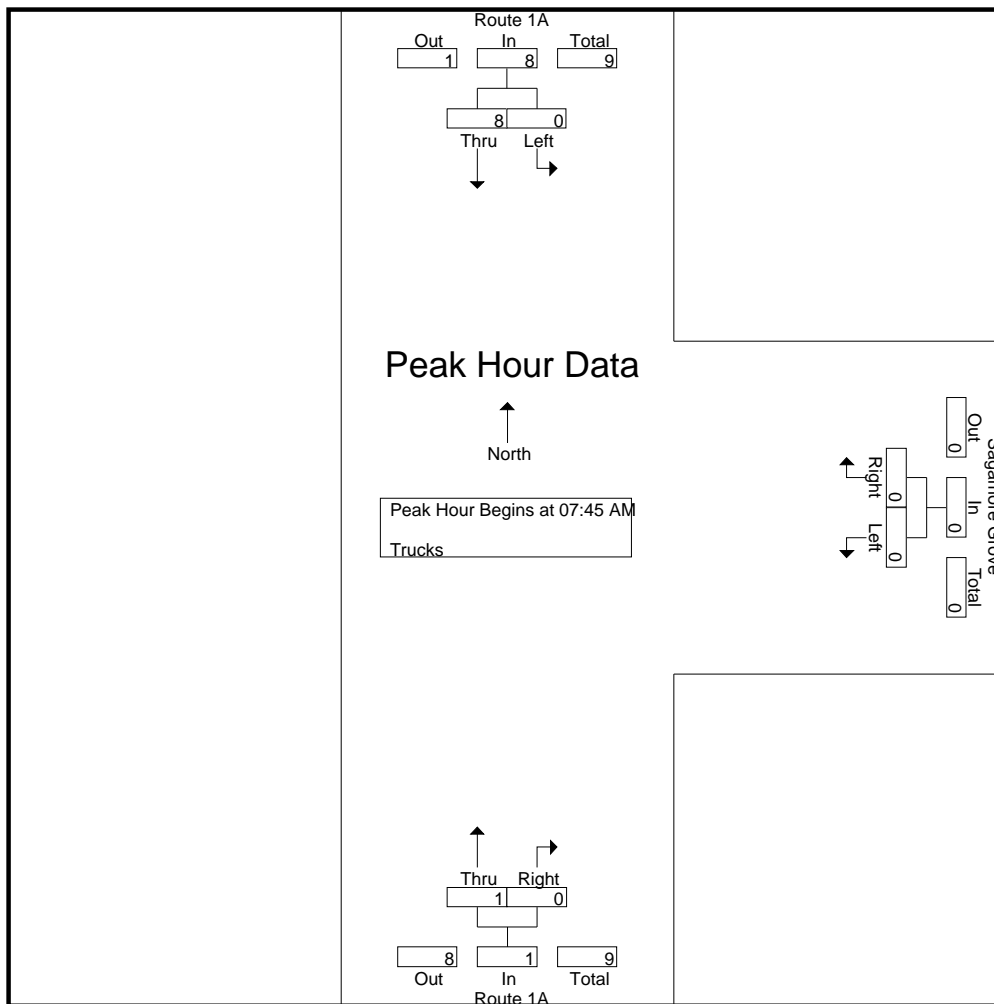
N/S Street : Route 1A  
E/W Street : Sagamore Grove  
City/State : Portsmouth, NH  
Weather : Cloudy

Groups Printed- Trucks

Start Time	Route 1A From North		Sagamore Grove From East		Route 1A From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
07:00 AM	0	0	0	0	0	0	0
07:15 AM	0	1	0	0	2	0	3
07:30 AM	0	0	0	0	0	0	0
07:45 AM	0	2	0	0	0	0	2
<b>Total</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>5</b>
08:00 AM	0	1	0	0	0	0	1
08:15 AM	0	4	0	0	0	0	4
08:30 AM	0	1	0	0	1	0	2
08:45 AM	0	0	0	0	1	0	1
<b>Total</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>8</b>
<b>Grand Total</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>13</b>
Apprch %	0	100	0	0	100	0	
Total %	0	69.2	0	0	30.8	0	

Start Time	Route 1A From North			Sagamore Grove From East			Route 1A From South			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	0	2	2	0	0	0	0	0	0	2
08:00 AM	0	1	1	0	0	0	0	0	0	1
08:15 AM	0	4	4	0	0	0	0	0	0	4
08:30 AM	0	1	1	0	0	0	1	0	1	2
Total Volume	0	8	8	0	0	0	1	0	1	9
% App. Total	0	100		0	0		100	0		
PHF	.000	.500	.500	.000	.000	.000	.250	.000	.250	.563

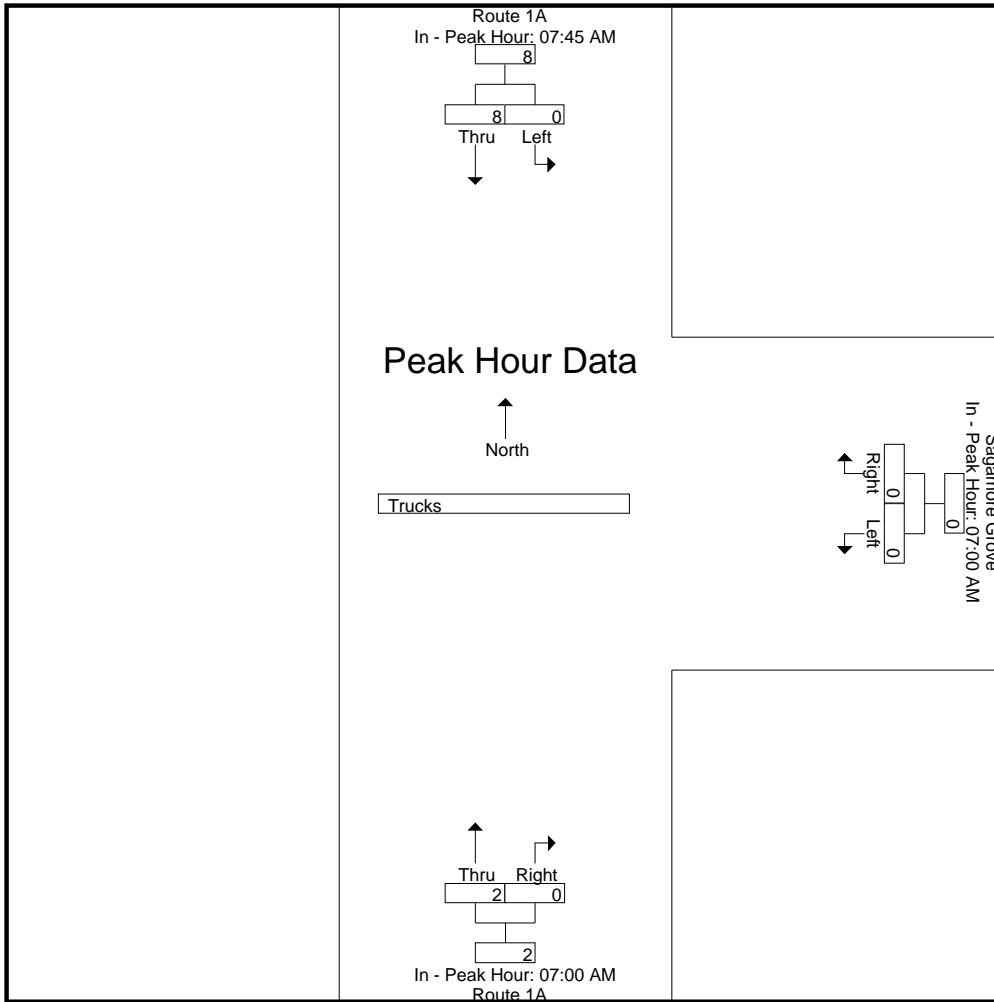
N/S Street : Route 1A  
E/W Street : Sagamore Grove  
City/State : Portsmouth, NH  
Weather : Cloudy



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

	07:45 AM			07:00 AM			07:00 AM		
+0 mins.	0	2	2	0	0	0	0	0	0
+15 mins.	0	1	1	0	0	0	2	0	2
+30 mins.	0	4	4	0	0	0	0	0	0
+45 mins.	0	1	1	0	0	0	0	0	0
Total Volume	0	8	8	0	0	0	2	0	2
% App. Total	0	100		0	0		100	0	
PHF	.000	.500	.500	.000	.000	.000	.250	.000	.250

N/S Street : Route 1A  
E/W Street : Sagamore Grove  
City/State : Portsmouth, NH  
Weather : Cloudy



**Accurate Counts**  
978-664-2565

File Name : 89920001  
Site Code : 89920001  
Start Date : 5/12/2021  
Page No : 10

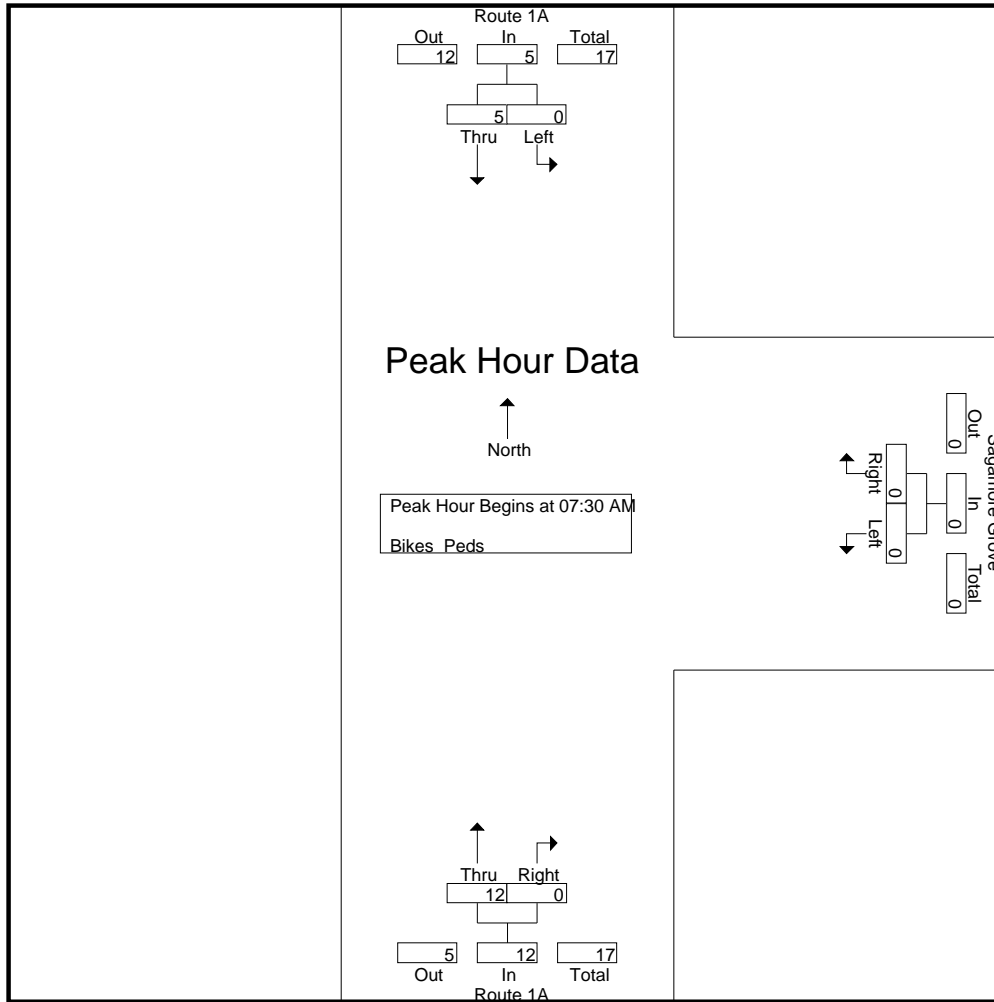
N/S Street : Route 1A  
E/W Street : Sagamore Grove  
City/State : Portsmouth, NH  
Weather : Cloudy

Groups Printed- Bikes Peds

Start Time	Route 1A From North			Sagamore Grove From East			Route 1A From South			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	2	0	0	0	0	0	0	0	0	2	2
07:30 AM	0	1	0	0	0	0	5	0	0	0	6	6
07:45 AM	0	2	0	0	0	0	2	0	0	0	4	4
<b>Total</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>12</b>
08:00 AM	0	1	0	0	0	1	2	0	0	1	3	4
08:15 AM	0	1	0	0	0	0	3	0	0	0	4	4
08:30 AM	0	1	0	0	0	0	1	0	0	0	2	2
08:45 AM	0	0	0	0	0	0	1	0	0	0	1	1
<b>Total</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>10</b>	<b>11</b>
<b>Grand Total</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>22</b>	<b>23</b>
Apprch %	0	100		0	0		100	0				
Total %	0	36.4		0	0		63.6	0		4.3	95.7	

Start Time	Route 1A From North			Sagamore Grove From East			Route 1A From South			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	0	1	1	0	0	0	5	0	5	6
07:45 AM	0	2	2	0	0	0	2	0	2	4
08:00 AM	0	1	1	0	0	0	2	0	2	3
08:15 AM	0	1	1	0	0	0	3	0	3	4
<b>Total Volume</b>	<b>0</b>	<b>5</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>12</b>	<b>17</b>
<b>% App. Total</b>	<b>0</b>	<b>100</b>		<b>0</b>	<b>0</b>		<b>100</b>	<b>0</b>		
PHF	.000	.625	.625	.000	.000	.000	.600	.000	.600	.708

N/S Street : Route 1A  
E/W Street : Sagamore Grove  
City/State : Portsmouth, NH  
Weather : Cloudy



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

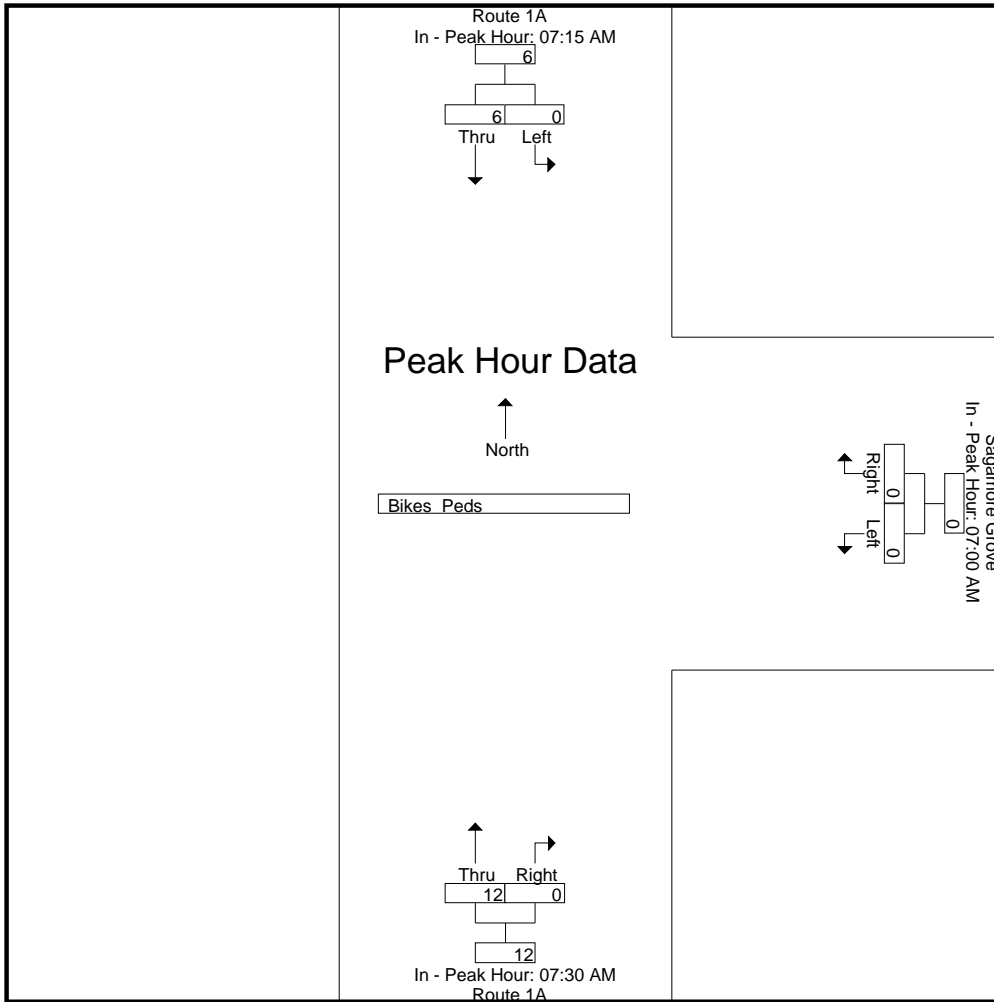
	07:15 AM			07:00 AM			07:30 AM		
+0 mins.	0	2	2	0	0	0	5	0	5
+15 mins.	0	1	1	0	0	0	2	0	2
+30 mins.	0	2	2	0	0	0	2	0	2
+45 mins.	0	1	1	0	0	0	3	0	3
Total Volume	0	6	6	0	0	0	12	0	12
% App. Total	0	100		0	0		100	0	
PHF	.000	.750	.750	.000	.000	.000	.600	.000	.600



Accurate Counts  
978-664-2565

File Name : 89920001  
Site Code : 89920001  
Start Date : 5/12/2021  
Page No : 12

N/S Street : Route 1A  
E/W Street : Sagamore Grove  
City/State : Portsmouth, NH  
Weather : Cloudy



# Accurate Counts

978-664-2565

N/S Street : Route 1A  
 E/W Street : Sagamore Grove  
 City/State : Portsmouth, NH  
 Weather : Cloudy

File Name : 89920001  
 Site Code : 89920001  
 Start Date : 5/12/2021  
 Page No : 1

### Groups Printed- Cars - Trucks

Start Time	Route 1A From North		Sagamore Grove From East			Route 1A From South		Int. Total
	Left	Thru	Left	Right	Thru	Right		
04:00 PM	0	63	0	0	82	0	145	
04:15 PM	0	76	0	0	61	0	137	
04:30 PM	0	77	0	0	73	0	150	
04:45 PM	0	90	0	0	70	0	160	
<b>Total</b>	<b>0</b>	<b>306</b>	<b>0</b>	<b>0</b>	<b>286</b>	<b>0</b>	<b>592</b>	
05:00 PM	2	81	1	1	69	0	154	
05:15 PM	0	81	1	0	76	1	159	
05:30 PM	1	81	0	1	66	0	149	
05:45 PM	0	61	1	0	73	0	135	
<b>Total</b>	<b>3</b>	<b>304</b>	<b>3</b>	<b>2</b>	<b>284</b>	<b>1</b>	<b>597</b>	
<b>Grand Total</b>	<b>3</b>	<b>610</b>	<b>3</b>	<b>2</b>	<b>570</b>	<b>1</b>	<b>1189</b>	
Apprch %	0.5	99.5	60	40	99.8	0.2		
Total %	0.3	51.3	0.3	0.2	47.9	0.1		
Cars	3	606	3	2	568	1	1183	
% Cars	100	99.3	100	100	99.6	100	99.5	
Trucks	0	4	0	0	2	0	6	
% Trucks	0	0.7	0	0	0.4	0	0.5	

Start Time	Route 1A From North			Sagamore Grove From East			Route 1A From South			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	77	77	0	0	0	73	0	73	150
04:45 PM	0	<b>90</b>	<b>90</b>	0	0	0	70	0	70	<b>160</b>
05:00 PM	<b>2</b>	81	83	<b>1</b>	<b>1</b>	<b>2</b>	69	0	69	154
05:15 PM	0	81	81	1	0	1	<b>76</b>	<b>1</b>	<b>77</b>	159
<b>Total Volume</b>	<b>2</b>	<b>329</b>	<b>331</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>288</b>	<b>1</b>	<b>289</b>	<b>623</b>
% App. Total	0.6	99.4		66.7	33.3		99.7	0.3		
PHF	.250	.914	.919	.500	.250	.375	.947	.250	.938	.973
Cars	2	326	328	2	1	3	287	1	288	619
% Cars	100	99.1	99.1	100	100	100	99.7	100	99.7	99.4
Trucks	0	3	3	0	0	0	1	0	1	4
% Trucks	0	0.9	0.9	0	0	0	0.3	0	0.3	0.6

# Accurate Counts

978-664-2565

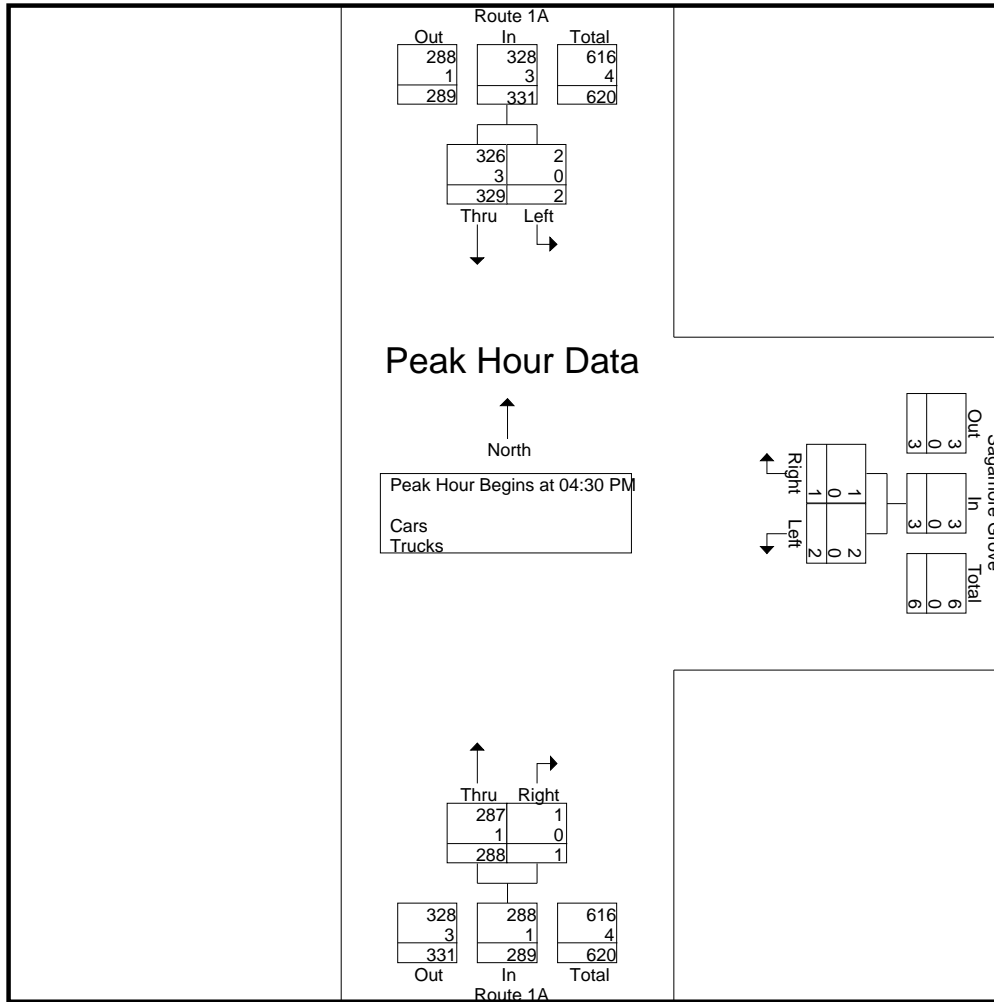
File Name : 89920001

Site Code : 89920001

Start Date : 5/12/2021

Page No : 2

N/S Street : Route 1A  
 E/W Street : Sagamore Grove  
 City/State : Portsmouth, NH  
 Weather : Cloudy



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	04:45 PM			05:00 PM			04:30 PM		
+0 mins.	0	<b>90</b>	<b>90</b>	<b>1</b>	<b>1</b>	<b>2</b>	73	0	73
+15 mins.	<b>2</b>	81	83	1	0	1	70	0	70
+30 mins.	0	81	81	0	1	1	69	0	69
+45 mins.	1	81	82	1	0	1	<b>76</b>	<b>1</b>	<b>77</b>
Total Volume	3	333	336	3	2	5	288	1	289
% App. Total	0.9	99.1		60	40		99.7	0.3	
PHF	.375	.925	.933	.750	.500	.625	.947	.250	.938
Cars	3	330	333	3	2	5	287	1	288
% Cars	100	99.1	99.1	100	100	100	99.7	100	99.7
Trucks	0	3	3	0	0	0	1	0	1
% Trucks	0	0.9	0.9	0	0	0	0.3	0	0.3

# Accurate Counts

978-664-2565

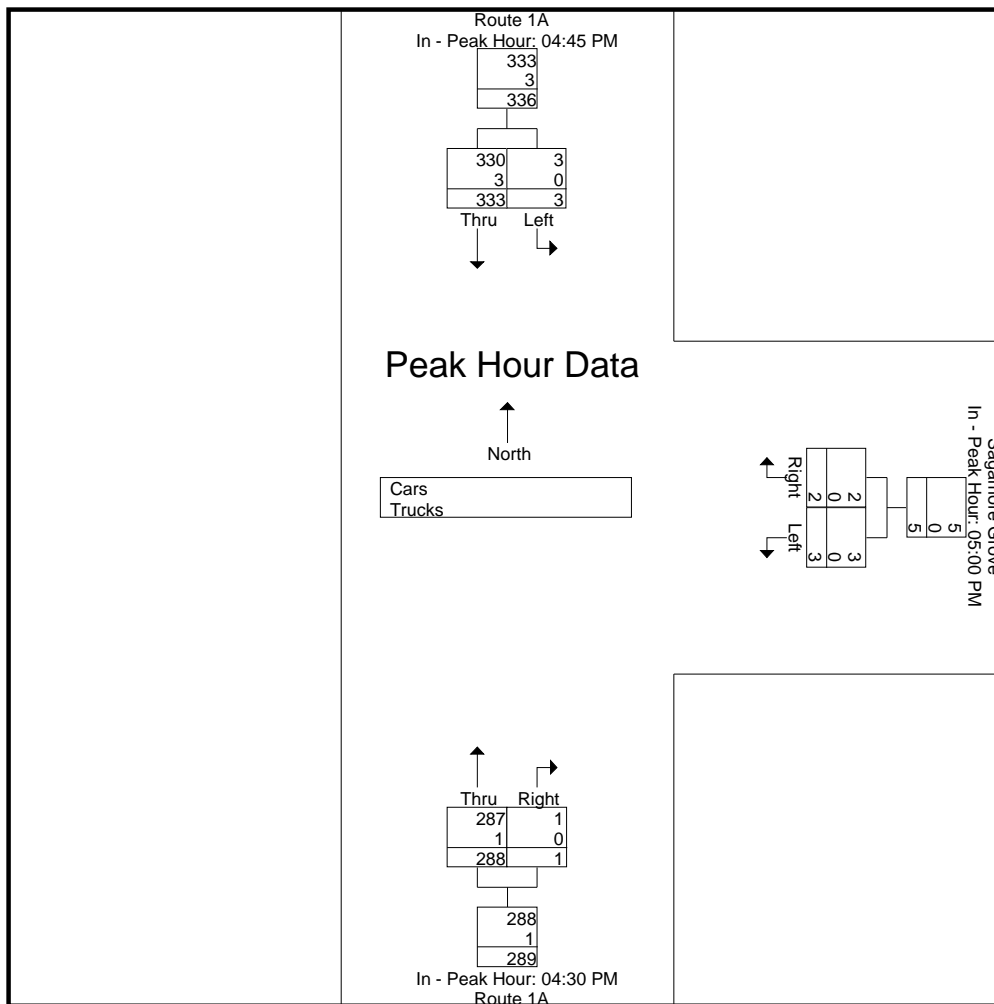
File Name : 89920001

Site Code : 89920001

Start Date : 5/12/2021

Page No : 3

N/S Street : Route 1A  
 E/W Street : Sagamore Grove  
 City/State : Portsmouth, NH  
 Weather : Cloudy



**Accurate Counts**  
978-664-2565

N/S Street : Route 1A  
E/W Street : Sagamore Grove  
City/State : Portsmouth, NH  
Weather : Cloudy

File Name : 89920001  
Site Code : 89920001  
Start Date : 5/12/2021  
Page No : 4

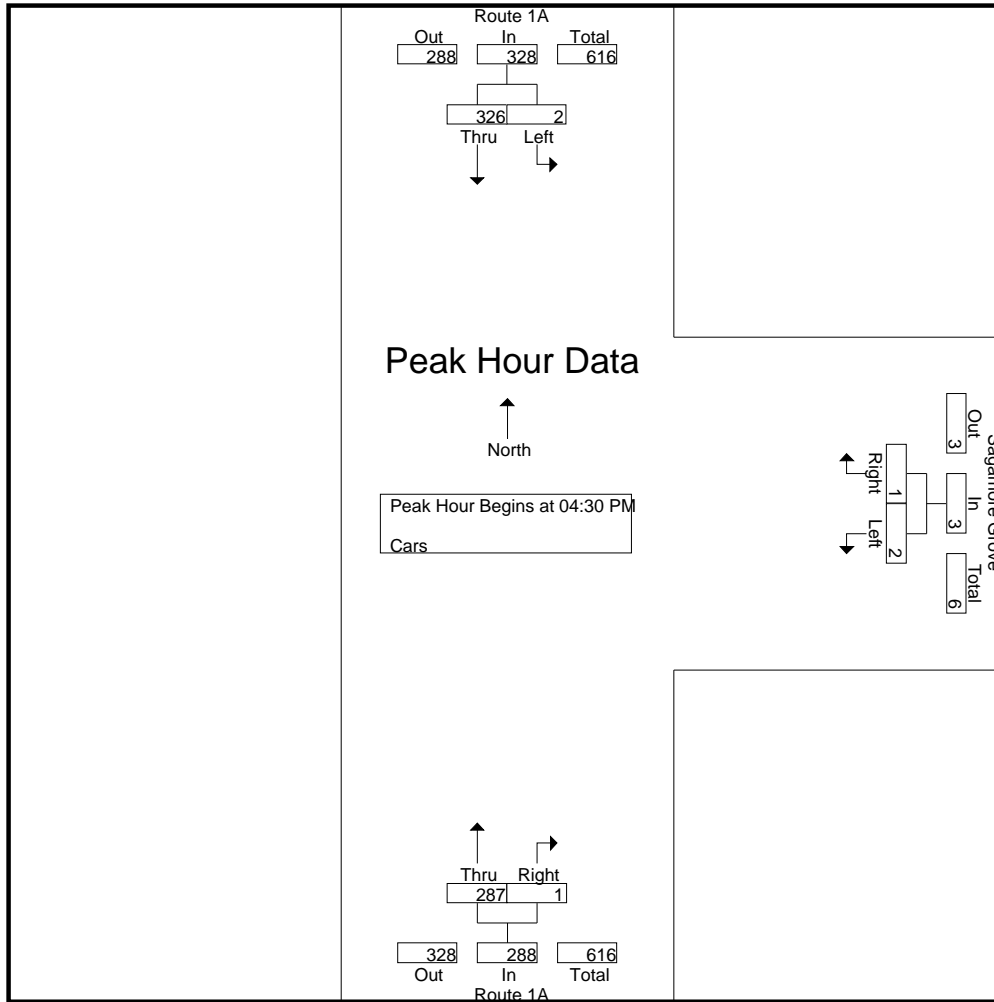
Groups Printed- Cars

Start Time	Route 1A From North		Sagamore Grove From East		Route 1A From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
04:00 PM	0	63	0	0	81	0	144
04:15 PM	0	75	0	0	61	0	136
04:30 PM	0	77	0	0	73	0	150
04:45 PM	0	87	0	0	70	0	157
<b>Total</b>	<b>0</b>	<b>302</b>	<b>0</b>	<b>0</b>	<b>285</b>	<b>0</b>	<b>587</b>
05:00 PM	2	81	1	1	69	0	154
05:15 PM	0	81	1	0	75	1	158
05:30 PM	1	81	0	1	66	0	149
05:45 PM	0	61	1	0	73	0	135
<b>Total</b>	<b>3</b>	<b>304</b>	<b>3</b>	<b>2</b>	<b>283</b>	<b>1</b>	<b>596</b>
<b>Grand Total</b>	<b>3</b>	<b>606</b>	<b>3</b>	<b>2</b>	<b>568</b>	<b>1</b>	<b>1183</b>
Apprch %	0.5	99.5	60	40	99.8	0.2	
Total %	0.3	51.2	0.3	0.2	48	0.1	

Start Time	Route 1A From North			Sagamore Grove From East			Route 1A From South			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	77	77	0	0	0	73	0	73	150
04:45 PM	0	87	87	0	0	0	70	0	70	157
05:00 PM	2	81	83	1	1	2	69	0	69	154
05:15 PM	0	81	81	1	0	1	75	1	76	158
<b>Total Volume</b>	<b>2</b>	<b>326</b>	<b>328</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>287</b>	<b>1</b>	<b>288</b>	<b>619</b>
% App. Total	0.6	99.4		66.7	33.3		99.7	0.3		
PHF	.250	.937	.943	.500	.250	.375	.957	.250	.947	.979



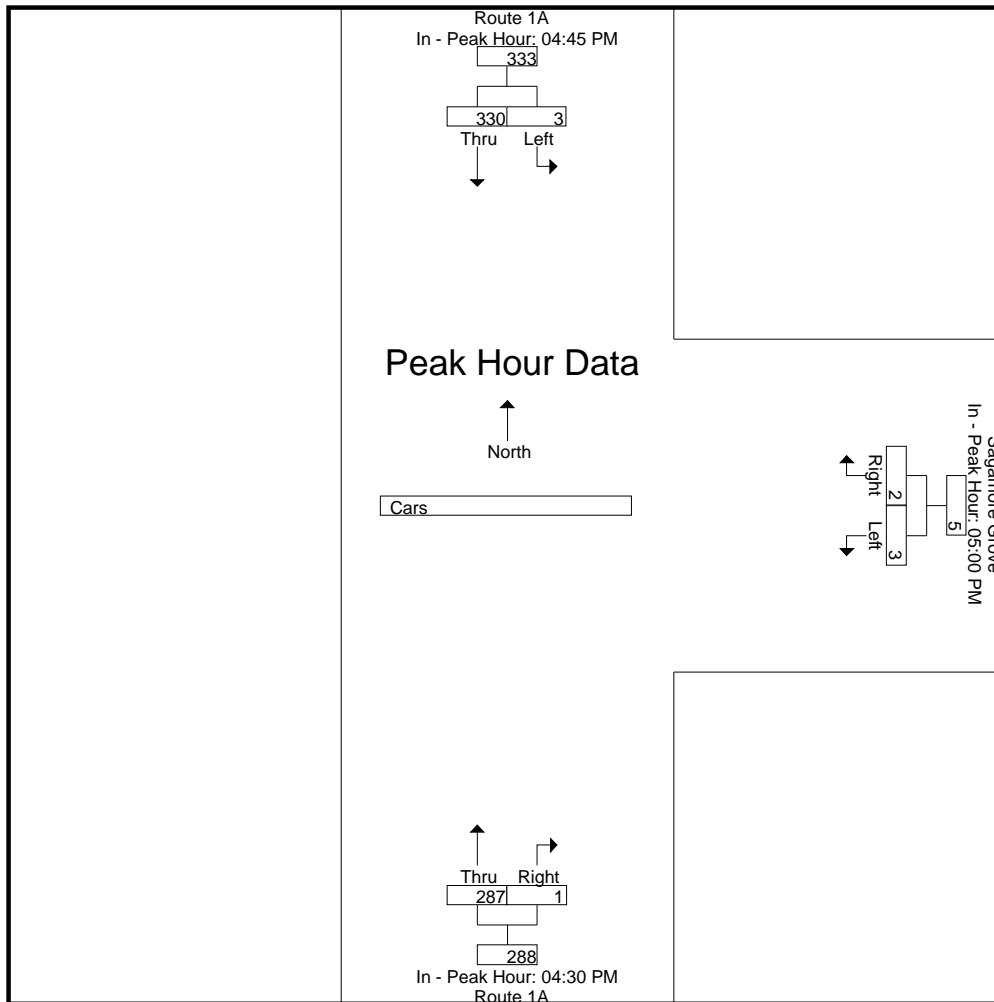
N/S Street : Route 1A  
E/W Street : Sagamore Grove  
City/State : Portsmouth, NH  
Weather : Cloudy



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

	04:45 PM			05:00 PM			04:30 PM		
+0 mins.	0	<b>87</b>	<b>87</b>	<b>1</b>	<b>1</b>	<b>2</b>	73	0	73
+15 mins.	<b>2</b>	81	83	1	0	1	70	0	70
+30 mins.	0	81	81	0	1	1	69	0	69
+45 mins.	1	81	82	1	0	1	<b>75</b>	<b>1</b>	<b>76</b>
Total Volume	3	330	333	3	2	5	287	1	288
% App. Total	0.9	99.1		60	40		99.7	0.3	
PHF	.375	.948	.957	.750	.500	.625	.957	.250	.947

N/S Street : Route 1A  
E/W Street : Sagamore Grove  
City/State : Portsmouth, NH  
Weather : Cloudy



**Accurate Counts**  
978-664-2565

File Name : 89920001  
Site Code : 89920001  
Start Date : 5/12/2021  
Page No : 7

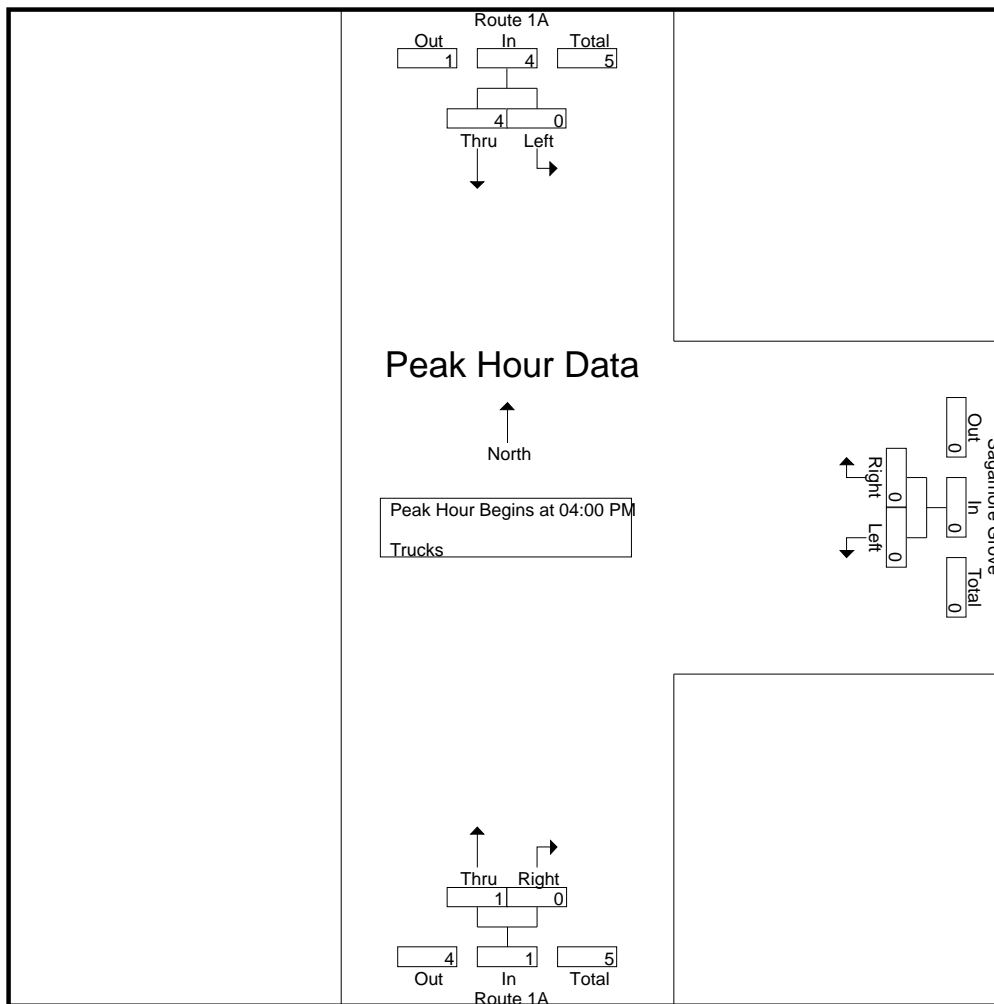
N/S Street : Route 1A  
E/W Street : Sagamore Grove  
City/State : Portsmouth, NH  
Weather : Cloudy

Groups Printed- Trucks

Start Time	Route 1A From North		Sagamore Grove From East		Route 1A From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
04:00 PM	0	0	0	0	1	0	1
04:15 PM	0	1	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	0
04:45 PM	0	3	0	0	0	0	3
<b>Total</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>5</b>
05:00 PM	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	1	0	1
05:30 PM	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>
<b>Grand Total</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>6</b>
Apprch %	0	100	0	0	100	0	
Total %	0	66.7	0	0	33.3	0	

Start Time	Route 1A From North			Sagamore Grove From East			Route 1A From South			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	0	0	0	1	0	1	1
04:15 PM	0	1	1	0	0	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	3	3	0	0	0	0	0	0	3
<b>Total Volume</b>	<b>0</b>	<b>4</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>5</b>
<b>% App. Total</b>	<b>0</b>	<b>100</b>	<b></b>	<b>0</b>	<b>0</b>	<b></b>	<b>100</b>	<b>0</b>	<b></b>	<b></b>
PHF	.000	.333	.333	.000	.000	.000	.250	.000	.250	.417

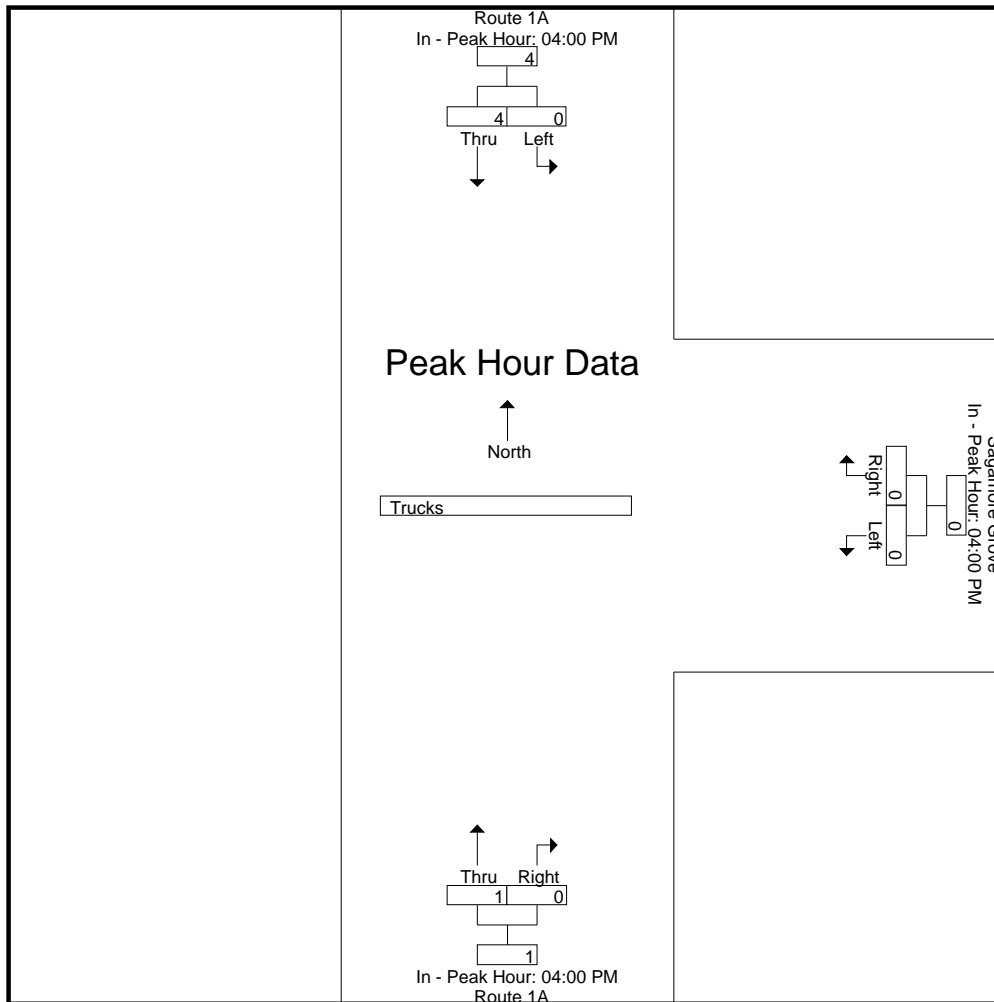
N/S Street : Route 1A  
E/W Street : Sagamore Grove  
City/State : Portsmouth, NH  
Weather : Cloudy



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	0	0	0	0	0	0	1	0	1
+15 mins.	0	1	1	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	3	3	0	0	0	0	0	0
Total Volume	0	4	4	0	0	0	1	0	1
% App. Total	0	100		0	0		100	0	
PHF	.000	.333	.333	.000	.000	.000	.250	.000	.250

N/S Street : Route 1A  
E/W Street : Sagamore Grove  
City/State : Portsmouth, NH  
Weather : Cloudy



**Accurate Counts**  
978-664-2565

File Name : 89920001  
Site Code : 89920001  
Start Date : 5/12/2021  
Page No : 10

N/S Street : Route 1A  
E/W Street : Sagamore Grove  
City/State : Portsmouth, NH  
Weather : Cloudy

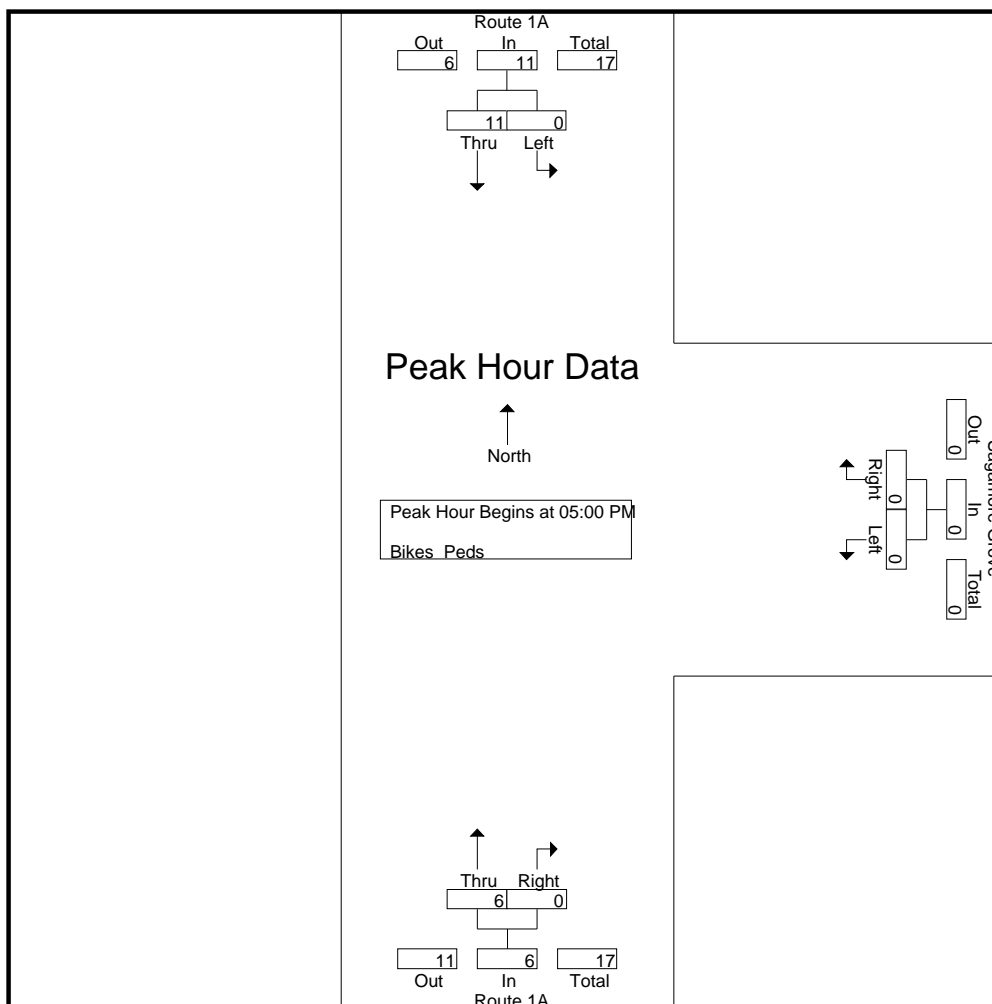
Groups Printed- Bikes Peds

Start Time	Route 1A From North			Sagamore Grove From East			Route 1A From South			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
04:00 PM	0	4	0	0	0	0	1	0	0	0	5	5
04:15 PM	0	1	0	0	0	0	4	0	0	0	5	5
04:30 PM	0	2	0	0	0	0	0	0	0	0	2	2
04:45 PM	0	2	0	0	0	0	0	0	0	0	2	2
<b>Total</b>	0	9	0	0	0	0	5	0	0	0	14	14
05:00 PM	0	2	0	0	0	0	1	0	0	0	3	3
05:15 PM	0	3	0	0	0	0	2	0	4	4	5	9
05:30 PM	0	3	0	0	0	0	1	0	0	0	4	4
05:45 PM	0	3	0	0	0	0	2	0	0	0	5	5
<b>Total</b>	0	11	0	0	0	0	6	0	4	4	17	21
<b>Grand Total</b>	0	20	0	0	0	0	11	0	4	4	31	35
Apprch %	0	100		0	0		100	0				
Total %	0	64.5		0	0		35.5	0		11.4	88.6	

Start Time	Route 1A From North			Sagamore Grove From East			Route 1A From South			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	2	2	0	0	0	1	0	1	3
05:15 PM	0	3	3	0	0	0	2	0	2	5
05:30 PM	0	3	3	0	0	0	1	0	1	4
05:45 PM	0	3	3	0	0	0	2	0	2	5
<b>Total Volume</b>	0	11	11	0	0	0	6	0	6	17
<b>% App. Total</b>	0	100		0	0		100	0		
<b>PHF</b>	.000	.917	.917	.000	.000	.000	.750	.000	.750	.850



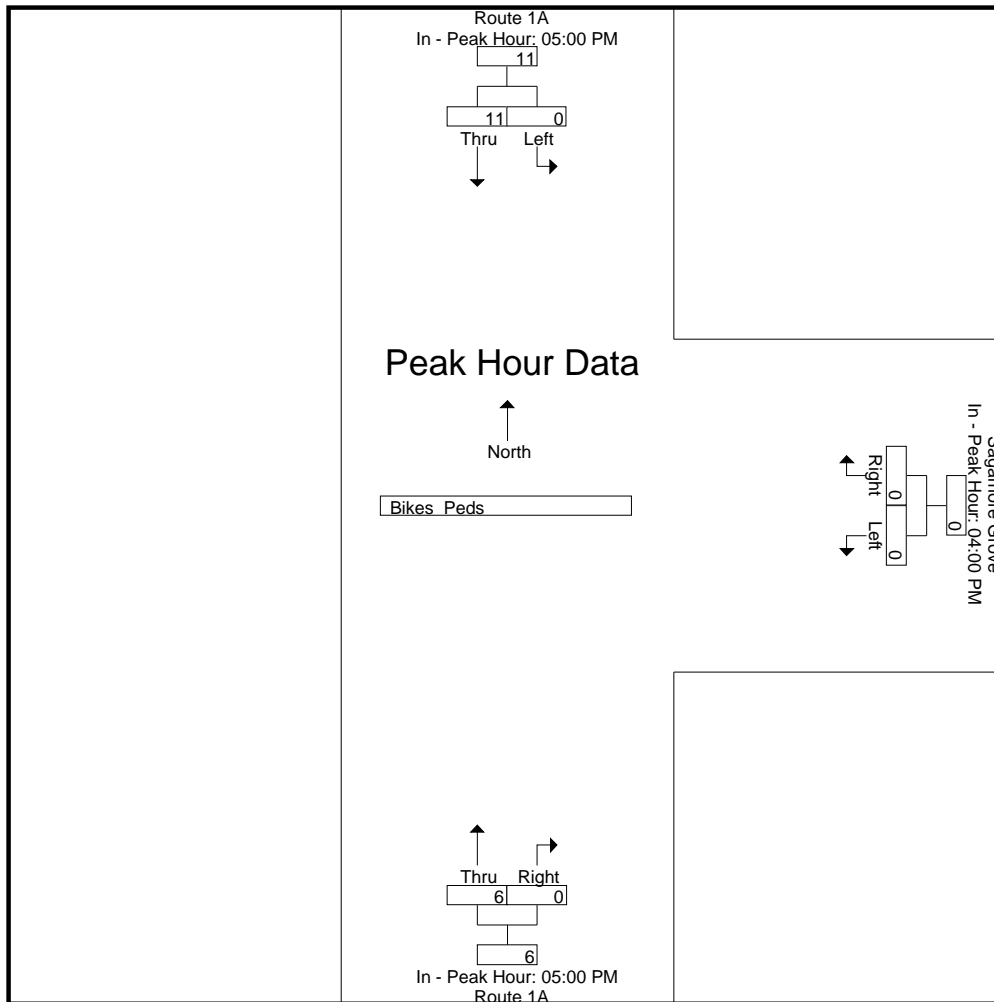
N/S Street : Route 1A  
E/W Street : Sagamore Grove  
City/State : Portsmouth, NH  
Weather : Cloudy



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

	05:00 PM			04:00 PM			05:00 PM		
+0 mins.	0	2	2	0	0	0	1	0	1
+15 mins.	0	3	3	0	0	0	2	0	2
+30 mins.	0	3	3	0	0	0	1	0	1
+45 mins.	0	3	3	0	0	0	2	0	2
Total Volume	0	11	11	0	0	0	6	0	6
% App. Total	0	100		0	0		100	0	
PHF	.000	.917	.917	.000	.000	.000	.750	.000	.750

N/S Street : Route 1A  
E/W Street : Sagamore Grove  
City/State : Portsmouth, NH  
Weather : Cloudy



SEASONAL ADJUSTMENT DATA

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# New Hampshire DOT

## 02345001: Monthly Hourly Volume for May 2019

Location ID: 02345001  
 County: ROCKINGHAM  
 Functional Class: 3  
 Location: Lafayette Rd

Seasonal Factor Group: 04  
 Daily Factor Group:  
 Axle Factor Group:  
 Growth Factor Group:

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL	QCStatus	
1	37	25	12	48	73	246	604	1162	1282	1033	1097	1216	1261	1153	1215	1336	1360	1383	993	632	428	263	150	90	17099	Accepted	
2	40	24	14	36	76	244	607	1115	1279	991	1070	1172	1168	1173	1217	1394	1405	1361	932	611	467	244	166	95	16901	Accepted	
3	52	29	17	39	73	266	601	1178	1290	1157	1189	1258	1409	1317	1428	1435	1327	1423	936	659	465	359	222	139	18268	Accepted	
4	82	41	27	29	37	124	257	565	767	939	1160	1340	1342	1371	1332	1237	1190	1048	817	654	474	342	248	178	15601	Accepted	
5	86	51	32	24	28	82	160	362	614	684	1020	1161	1187	1117	1131	1000	926	799	655	445	317	154	148	69	12252	Accepted	
6	36	23	19	21	62	267	611	1088	1263	981	984	1140	1216	1168	1229	1410	1474	1434	931	585	414	234	116	67	16773	Accepted	
7	42	30	23	36	73	276	610	1164	1339	1040	1016	1129	1240	1177	1282	1383	1458	1398	925	522	357	240	116	59	16935	Accepted	
8	39	20	29	39	75	266	632	1289	1354	1100	1095	1258	1320	1290	1331	1402	1412	1463	1066	640	501	312	141	85	18159	Accepted	
9	42	22	19	36	74	278	632	1179	1333	1078	1138	1253	1266	1285	1277	1502	1422	1449	964	636	469	264	137	101	17856	Accepted	
10	61	32	18	34	72	251	585	1079	1327	1155	1182	1305	1447	1331	1355	1478	1454	1386	934	626	564	356	245	135	18412	Accepted	
11	74	43	23	31	44	127	285	600	842	1072	1230	1365	1331	1385	1384	1339	1255	1119	916	746	582	337	230	166	16526	Accepted	
12	102	58	27	17	19	68	185	366	651	784	1025	1036	1198	1178	1141	1084	951	757	658	493	343	190	124	88	12543	Accepted	
13	30	16	17	33	84	258	653	1122	1275	1036	1116	1276	1242	1151	1282	1366	1451	1418	938	573	345	225	112	60	17079	Accepted	
14	34	19	22	45	80	260	582	1143	1362	1014	1065	1248	1269	1221	1276	1405	1372	1415	968	539	364	263	130	78	17174	Accepted	
15	55	27	20	43	73	254	635	1176	1314	1092	1183	1206	1336	1269	1262	1491	1499	1376	967	580	491	286	131	100	17866	Accepted	
16	42	27	15	42	89	267	615	1178	1365	1091	1097	1309	1379	1231	1379	1468	1557	1528	951	663	535	301	174	123	18426	Accepted	
17	69	65	80	67	123	255	607	1134	1221	1088	1117	1364	1397	1277	1396	1476	1481	1403	1034	747	634	420	250	138	18843	Accepted	
18	84	43	24	34	47	124	265	591	835	1136	1277	1386	1464	1363	1304	1283	1132	1046	902	690	539	339	266	154	16328	Accepted	
19	84	49	26	20	33	97	305	443	665	783	1153	1265	1259	1135	1163	1122	1056	797	730	613	321	196	121	75	13511	Accepted	
20	64	26	27	39	86	247	625	1228	1306	1056	1100	1211	1261	1202	1273	1477	1457	1388	890	646	394	271	134	105	17513	Accepted	
21	71	57	44	51	88	285	653	1177	1450	1115	1149	1254	1326	1371	1313	1478	1503	1495	940	654	457	272	143	86	18432	Accepted	
22	67	49	54	89	119	282	628	1163	1326	1108	1079	1195	1347	1355	1282	1439	1531	1474	1015	660	430	272	126	105	18195	Accepted	
23	49	67	49	86	95	247	654	1132	1306	1118	1087	1224	1350	1274	1314	1493	1472	1373	972	695	451	367	220	206	18301	Accepted	
24																											
25																											
26																											
27																											
28																											
29																											
30																											
31																											

May Average 16913  
 Peak Month (Aug) 18127  
 Seasonal Adjustment 1.072

COVID-19 ADJUSTMENT DATA

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## **2019 Average Count Data – Sta. 02345001**

May ADT: 16,913

Growth Rate: 1.0%/Year

$$16,913 \times (1.010^2) = 17,253$$

## **2021 Average Count Data – Sta. 02345001**

May ADT: 14,995

### **COVID Adjustment**

$$\frac{17,253}{14,995} = 1.151$$



# New Hampshire DOT

## 02345001: Monthly Hourly Volume for May 2021

**Location ID:** 02345001  
**County:** ROCKINGHAM  
**Functional Class:** 3  
**Location:** Lafayette Rd

**Seasonal Factor Group:** 04  
**Daily Factor Group:**  
**Axle Factor Group:**  
**Growth Factor Group:**

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL	QC Status	
1	51	29	28	20	46	96	232	467	620	964	1175	1310	1404	1351	1312	1205	1169	957	756	622	451	310	170	116	14861	Accepted	
2	60	40	24	14	15	80	148	306	520	702	887	1095	1221	1242	1298	1112	939	828	670	510	371	205	109	80	12476	Accepted	
3	32	10	23	14	69	245	560	1029	1109	906	940	1146	1161	1184	1236	1373	1297	1219	784	533	321	211	149	98	15649	Accepted	
4	41	28	27	30	74	258	593	995	1130	974	1028	1143	1244	1171	1268	1386	1381	1218	858	520	371	225	173	123	16259	Accepted	
5	64	22	24	24	73	228	557	973	1115	956	1001	1113	1231	1178	1240	1357	1304	1275	784	474	298	215	143	82	15731	Accepted	
6																											
7																											
8																											
9																											
10																											
11																											
12																											
13																											
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26																											
27																											
28																											
29																											
30																											
31																											

May Average 14995

VEHICLE TRAVEL SPEED DATA

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Accurate Counts  
978-664-2565

89920001

Location : Route 1A  
Location : South of Sagamore Grove  
City/State: Portsmouth, NH  
Direction: NB,

5/12/2021	0 - 3	> 3 - 6	> 6 - 9	> 9 - 12	> 12 - 15	> 15 - 18	> 18 - 21	> 21 - 24	> 24 - 27	> 27 - 30	> 30 - 33	> 33 - 36	> 36 - 39	> 39	
Time	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	
12:00 AM	0	0	0	0	0	0	0	0	1	0	5	0	1	0	7
1:00	0	0	0	0	0	0	0	1	1	2	0	0	0	0	4
2:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	0	0	0	0	0	4	2	3	3	0	12
5:00	0	0	0	0	0	0	0	2	4	5	9	7	2	0	29
6:00	0	0	0	1	0	0	1	0	8	11	17	10	8	4	60
7:00	0	0	0	0	0	0	3	4	15	37	47	35	14	1	156
8:00	0	0	0	0	0	0	2	3	15	58	86	56	27	6	253
9:00	0	0	0	0	0	1	2	3	26	56	60	53	23	4	228
10:00	0	0	0	0	1	0	6	11	24	55	72	31	23	1	224
11:00	0	0	0	0	0	2	4	9	33	52	83	46	17	3	249
12:00 PM	0	0	0	0	1	0	4	9	28	67	93	50	24	5	281
1:00	0	0	0	1	0	0	5	10	41	74	88	40	19	6	284
2:00	0	0	0	0	0	0	2	9	46	72	86	54	15	3	287
3:00	0	0	0	0	1	1	2	16	44	81	99	36	12	5	297
4:00	0	0	0	0	0	0	1	9	29	76	82	58	23	2	280
5:00	0	0	0	0	0	0	2	10	33	66	88	53	12	1	265
6:00	0	0	0	0	0	0	0	9	25	39	62	35	22	7	199
7:00	0	0	0	0	1	0	1	4	17	41	46	22	12	2	146
8:00	0	0	0	0	0	0	0	2	8	20	23	23	5	0	81
9:00	0	0	0	0	0	0	0	0	8	8	13	7	7	0	43
10:00	0	0	0	0	0	0	0	2	3	3	7	3	4	1	23
11:00	0	0	0	0	0	0	1	0	2	4	3	2	2	1	15
Total	0	0	0	2	4	4	36	113	411	831	1071	625	275	52	3424

Percentile	15th	50th	85th	95th
Speed	26.6	31	34.7	36.6
Mean Speed (Average)	32.4			
10 MPH Pace Speed	26-35			
Number in Pace	2657			
Percent in Pace	77.6%			
Number > 30 MPH	2023			
Percent > 30 MPH	59.1%			



Accurate Counts  
978-664-2565

89920001

Location : Route 1A  
Location : South of Sagamore Grove  
City/State: Portsmouth, NH  
Direction: SB,

5/12/2021	0 - 3	> 3 - 6	> 6 - 9	> 9 - 12	> 12 - 15	> 15 - 18	> 18 - 21	> 21 - 24	> 24 - 27	> 27 - 30	> 30 - 33	> 33 - 36	> 36 - 39	> 39	
Time	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	
12:00 AM	0	0	0	0	0	0	0	0	0	1	4	0	0	0	5
1:00	0	0	0	0	0	0	0	0	1	0	0	3	2	0	6
2:00	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2
3:00	0	0	0	0	0	0	0	0	0	2	1	0	0	1	4
4:00	0	0	0	0	0	0	0	0	1	1	1	1	0	0	4
5:00	0	0	0	0	0	0	1	0	0	2	3	4	4	1	15
6:00	0	0	0	0	0	0	0	3	8	21	28	7	10	5	82
7:00	0	0	0	0	0	0	0	10	30	47	56	29	18	3	193
8:00	0	0	0	0	0	1	8	21	57	68	80	44	22	4	305
9:00	0	0	0	0	0	2	4	9	46	59	57	28	15	5	225
10:00	0	0	0	0	0	2	1	16	51	61	71	43	25	6	276
11:00	0	0	0	0	1	2	9	37	58	68	88	44	23	5	335
12:00 PM	0	0	0	0	0	2	2	15	36	81	76	52	30	6	300
1:00	0	0	1	1	9	11	12	22	43	73	68	39	26	3	308
2:00	0	0	0	0	2	3	14	13	63	58	73	46	23	9	304
3:00	0	0	1	4	6	6	15	17	65	103	104	39	28	4	392
4:00	0	0	2	1	1	1	9	20	72	80	116	42	22	2	368
5:00	0	0	0	0	2	0	6	19	44	100	105	41	27	11	355
6:00	0	0	0	0	0	0	15	14	40	53	55	44	21	9	251
7:00	0	0	0	0	0	0	3	8	22	32	51	29	22	7	174
8:00	0	0	0	0	0	0	2	12	35	37	48	19	6	5	164
9:00	0	0	0	0	0	0	0	2	8	7	28	14	9	1	69
10:00	0	0	0	0	0	0	0	0	1	4	4	7	10	2	28
11:00	0	0	0	0	0	0	0	0	1	4	5	1	2	0	13
Total	0	0	4	6	21	30	101	238	682	963	1123	576	345	89	4178

Percentile	15th	50th	85th	95th
Speed	24.8	30.3	34.7	36.6
Mean Speed (Average)	32.2			
10 MPH Pace Speed	24-33			
Number in Pace	2949			
Percent in Pace	70.6%			
Number > 30 MPH	2133			
Percent > 30 MPH	51.1%			



Accurate Counts  
978-664-2565

Location : Route 1A  
Location : South of Sagamore Grove  
City/State: Portsmouth, NH  
Direction: Combined

89920001

5/12/2021	0 - 3	> 3 - 6	> 6 - 9	> 9 - 12	> 12 - 15	> 15 - 18	> 18 - 21	> 21 - 24	> 24 - 27	> 27 - 30	> 30 - 33	> 33 - 36	> 36 - 39	> 39	
Time	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH
12:00 AM	0	0	0	0	0	0	0	0	1	1	9	0	1	0	12
1:00	0	0	0	0	0	0	0	1	2	2	0	3	2	0	10
2:00	0	0	0	0	0	0	0	0	0	1	1	1	0	0	3
3:00	0	0	0	0	0	0	0	0	2	2	1	0	0	1	4
4:00	0	0	0	0	0	0	0	0	1	5	3	4	3	0	16
5:00	0	0	0	0	0	0	1	2	4	7	12	11	6	1	44
6:00	0	0	0	1	0	0	1	3	16	32	45	17	18	9	142
7:00	0	0	0	0	0	0	3	14	45	84	103	64	32	4	349
8:00	0	0	0	0	0	1	10	24	72	126	166	100	49	10	558
9:00	0	0	0	0	0	3	6	12	72	115	117	81	38	9	453
10:00	0	0	0	0	1	2	7	27	75	116	143	74	48	7	500
11:00	0	0	0	0	1	4	13	46	91	120	171	90	40	8	584
12:00 PM	0	0	0	0	1	2	6	24	64	148	169	102	54	11	581
1:00	0	0	1	2	9	11	17	32	84	147	156	79	45	9	592
2:00	0	0	0	0	2	3	16	22	109	130	159	100	38	12	591
3:00	0	0	1	4	7	7	17	33	109	184	203	75	40	9	689
4:00	0	0	2	1	1	1	10	29	101	156	198	100	45	4	648
5:00	0	0	0	0	2	0	8	29	77	166	193	94	39	12	620
6:00	0	0	0	0	0	0	15	23	65	92	117	79	43	16	450
7:00	0	0	0	0	1	0	4	12	39	73	97	51	34	9	320
8:00	0	0	0	0	0	0	2	14	43	57	71	42	11	5	245
9:00	0	0	0	0	0	0	0	2	16	15	41	21	16	1	112
10:00	0	0	0	0	0	0	0	2	4	7	11	10	14	3	51
11:00	0	0	0	0	0	0	1	0	3	8	8	3	4	1	28
Total	0	0	4	8	25	34	137	351	1093	1794	2194	1201	620	141	7602

Percentile	15th
Speed	26
	30.3
	34.7
	36.6
Mean Speed (Average)	32.3
10 MPH Pace Speed	26-35
Number in Pace	5550
Percent in Pace	73.0%
Number > 30 MPH	4156
Percent > 30 MPH	54.7%





## GENERAL BACKGROUND TRAFFIC GROWTH



## General Background Traffic Growth - Daily Traffic Volumes

CITY/TOWN	ROUTE/STREET	LOCATION	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Annual Growth Rate
Portsmouth	Lafayette Road	South of South Street	12,000			13,000			12,000	12,240	12,485	11,179	11,313	-1.25%
New Castle	Wentworth Road	At Rye Town Line		4,200			4,000	4,088	4,211	3,551	3,803	3,879	3,167	-2.68%
Portsmouth	South Street	East of US Route 1	5,800			8,800			7,600	7,752	7,907	7,366	7,454	0.46%
Portsmouth	Middle Street	South of Mendum Avenue		10,000			7,900	8,074	8,316	9,628	9,821	10,017	8,793	1.75%
Portsmouth	Middle Street	East of US Route 1	6,200			6,800			7,200	7,344	7,491	6,686	6,766	-0.10%
Portsmouth	Newcastle Avenue	At New Castle Town Line	3,400			2,900			2,900	2,958	3,017	3,163	3,201	0.86%
Portsmouth	Richards Avenue	South of US Route 1	1,800			1,300			1,400	1,428	1,457	1,700	1,720	2.60%
Portsmouth	Newcastle Avenue	East of South Street	1,400			1,400			1,400	1,428	1,457	1,486	1,374	0.15%
Portsmouth	Marcy Street	At Mill Pond Bridge				2,900		6,000	6,180	6,304	5,291	5,397	5,462	4.18%
Portsmouth	Sagamore Avenue	At Sagamore Creek		8,100			6,500	6,643	6,842	7,520	7,670	7,823	7,086	1.14%
Portsmouth	Cass Street	West of US Route 1		2,700			2,400	2,453	2,527	2,953	3,012	3,072	2,557	2.02%
Portsmouth	Junkins Avenue	North of Lincoln Avenue		3,900			3,300	3,373	3,474	2,962	3,021	3,081	2,766	-3.07%
Portsmouth	South Street	West of Monroe Street	4,700		4,700			4,600	4,738	4,833	4,066	4,147	4,197	-1.73%
Portsmouth	Elwyn Road	At Rye Town Line		7,800				7,400	7,790	10,317	10,523	10,733	8,408	4.28%
Rye	Wentworth Road	At Portsmouth City Line		5,200			4,900	5,008	5,158	5,767	5,882	6,000	4,937	1.38%
Rye	Brackett Road	South of NH Route 1A		2,100			1,400	1,431	1,474	1,804	1,840	1,877	1,469	1.08%
Rye	Sagamore Road	South of Berry Brook Lane		4,400			4,700	4,803	4,947	4,394	4,482	4,572	3,840	-1.87%
														0.54%

## TRIP-GENERATION CALCULATIONS

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# Multifamily Housing (Low-Rise) (220)

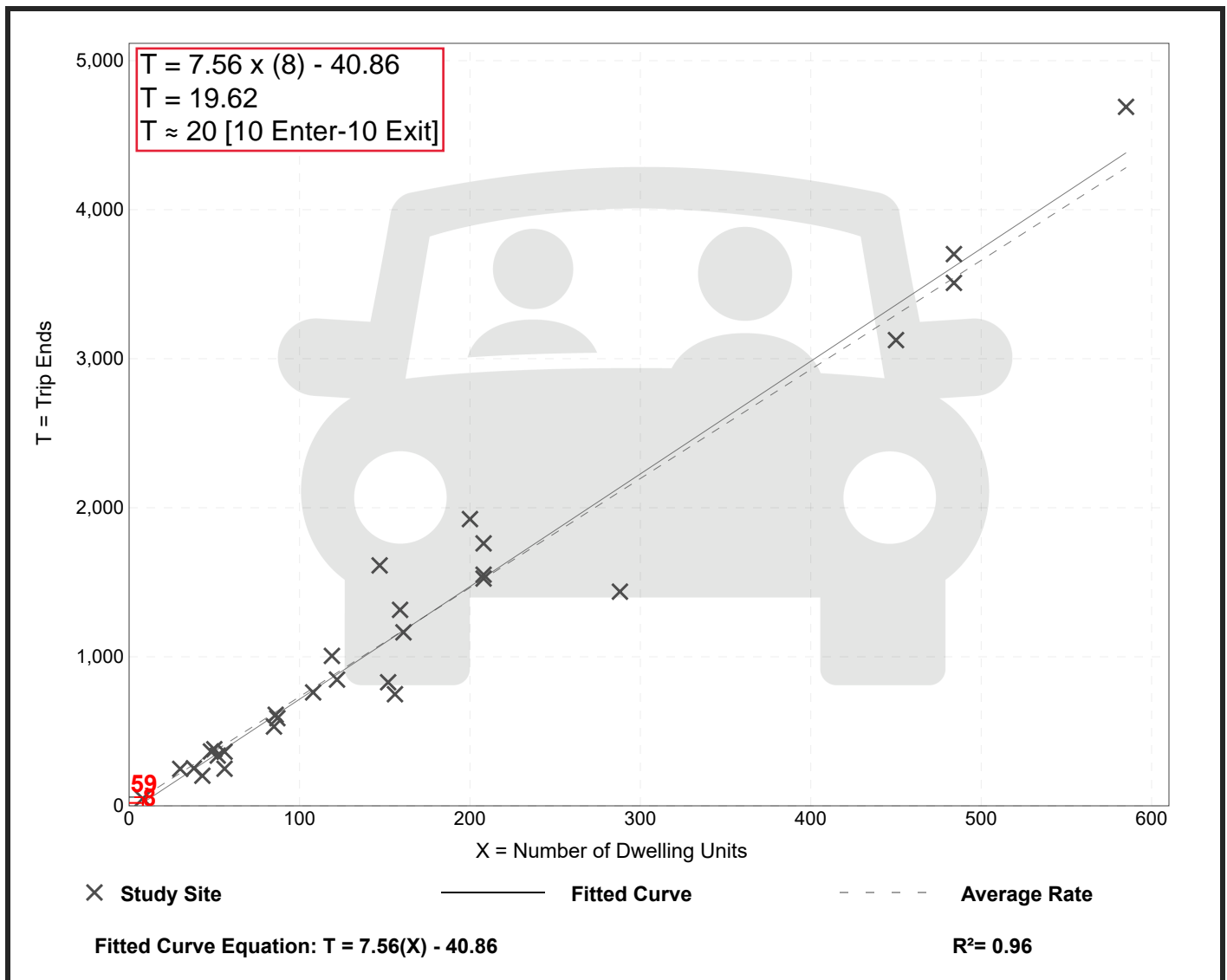
Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday

Setting/Location: General Urban/Suburban  
Number of Studies: 29  
Avg. Num. of Dwelling Units: 168  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
7.32	4.45 - 10.97	1.31

## Data Plot and Equation



# Multifamily Housing (Low-Rise) (220)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,  
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 42

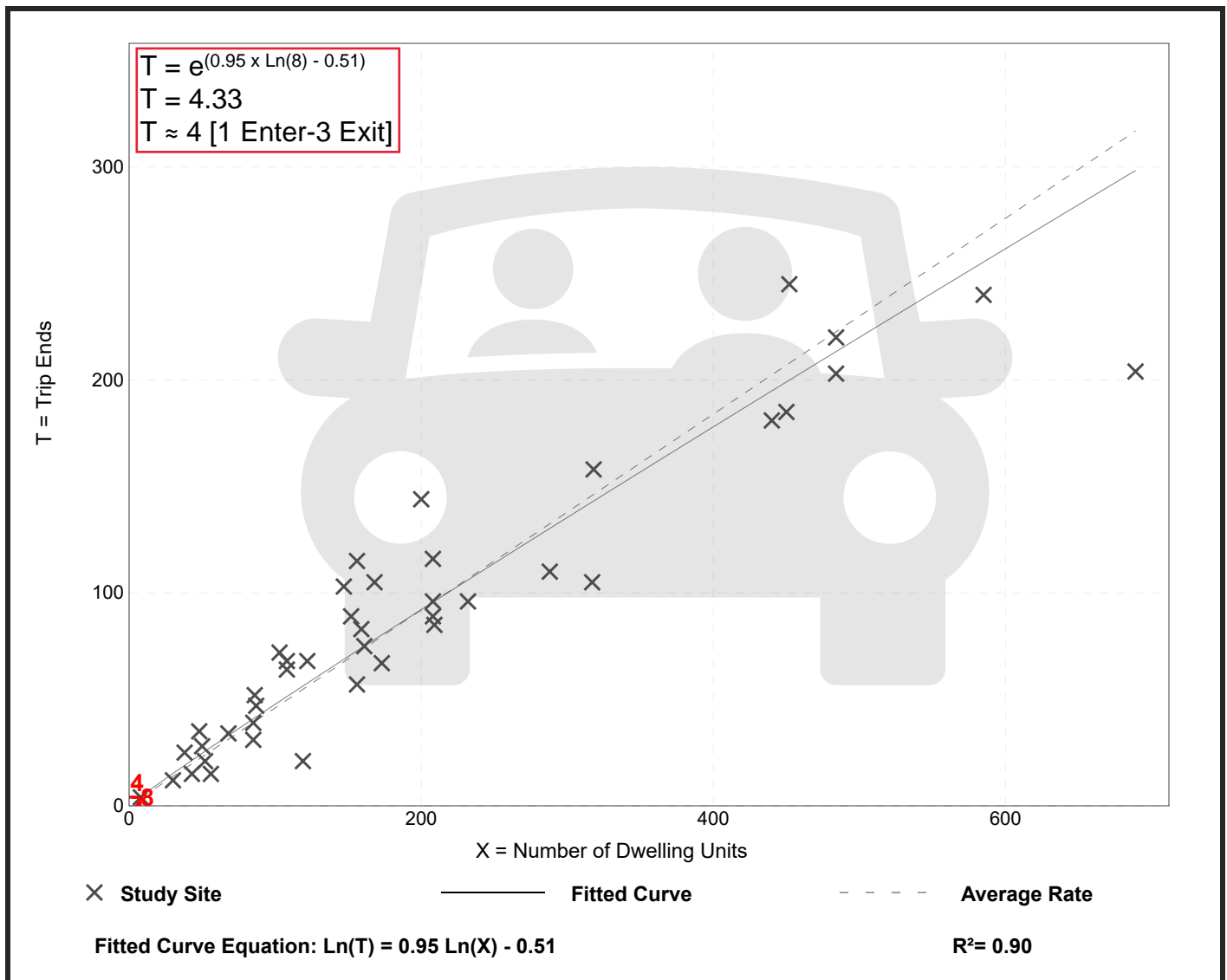
Avg. Num. of Dwelling Units: 199

Directional Distribution: 23% entering, 77% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.46	0.18 - 0.74	0.12

## Data Plot and Equation



# Multifamily Housing (Low-Rise) (220)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,  
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 50

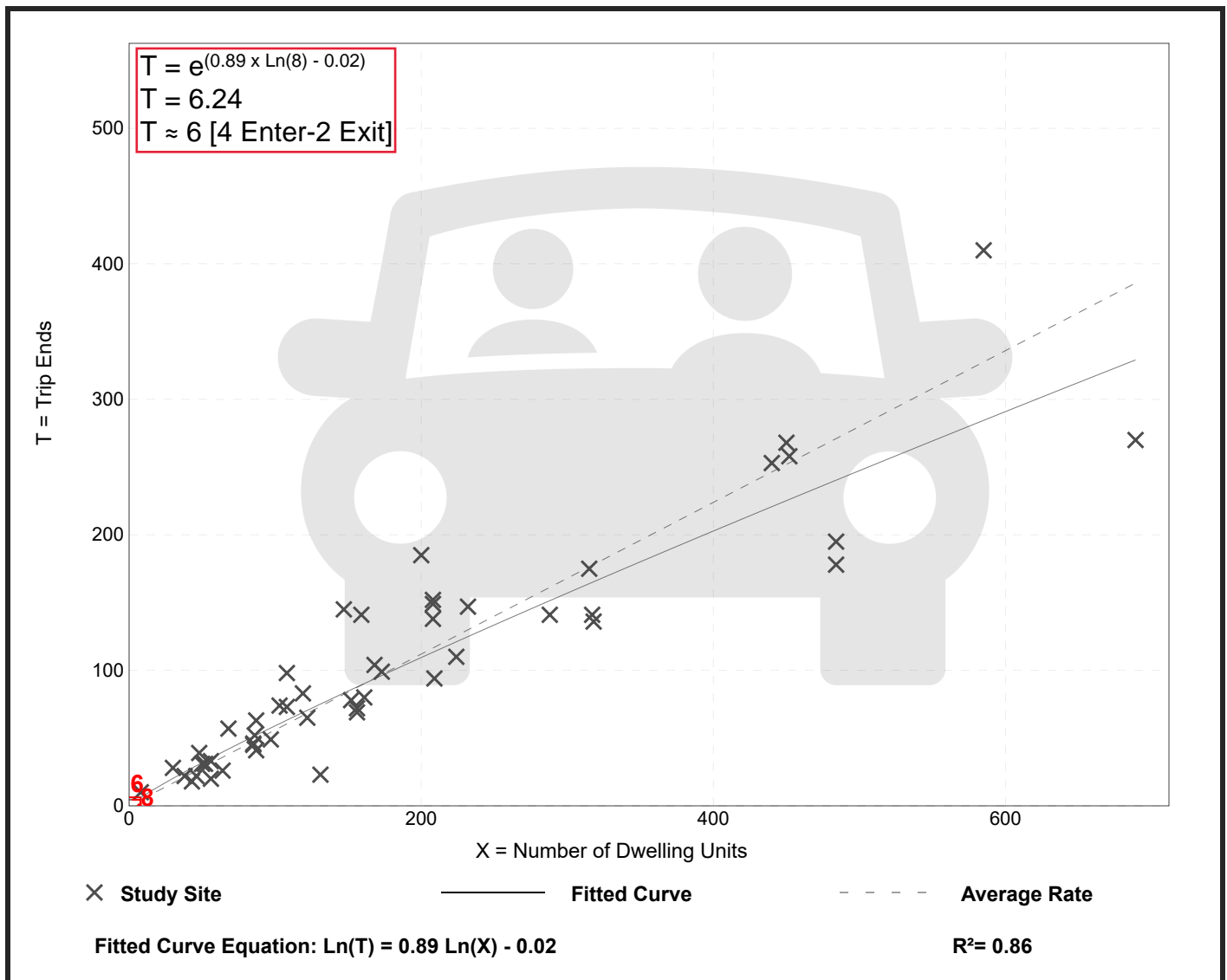
Avg. Num. of Dwelling Units: 187

Directional Distribution: 63% entering, 37% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.56	0.18 - 1.25	0.16

## Data Plot and Equation





# Single-Family Detached Housing (210)

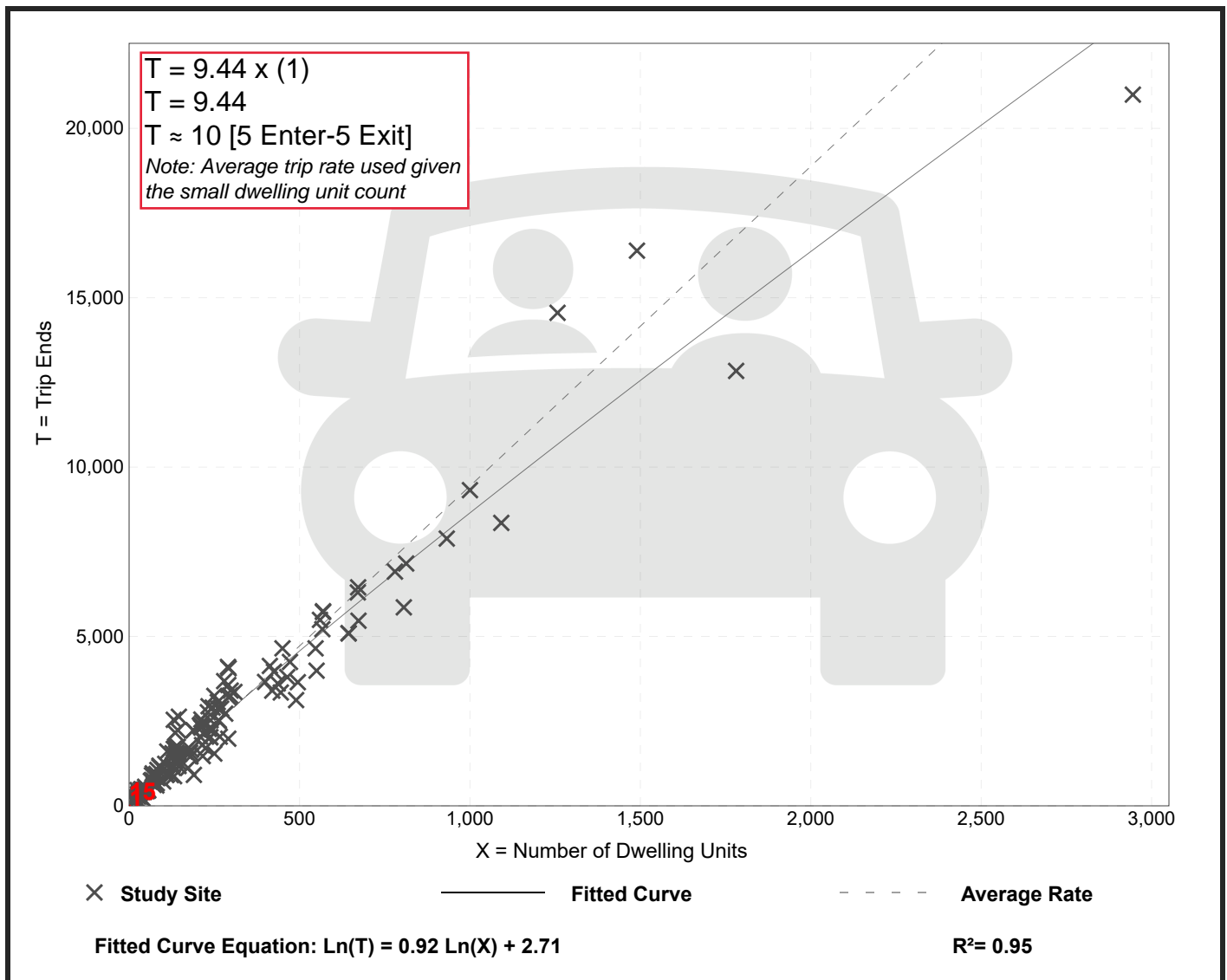
Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday

Setting/Location: General Urban/Suburban  
Number of Studies: 159  
Avg. Num. of Dwelling Units: 264  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.44	4.81 - 19.39	2.10

## Data Plot and Equation



# Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,  
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 173

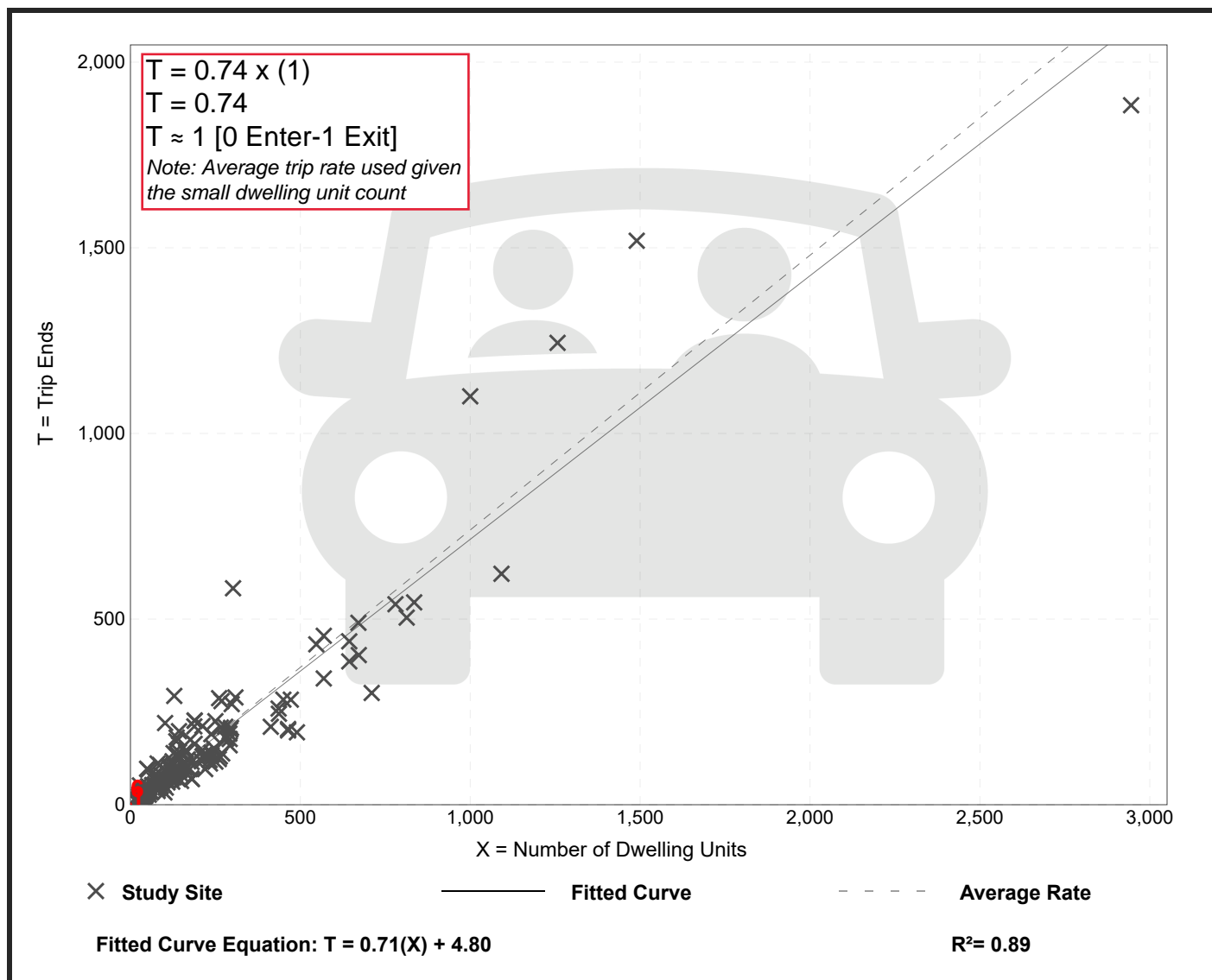
Avg. Num. of Dwelling Units: 219

Directional Distribution: 25% entering, 75% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.74	0.33 - 2.27	0.27

## Data Plot and Equation



# Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,  
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 190

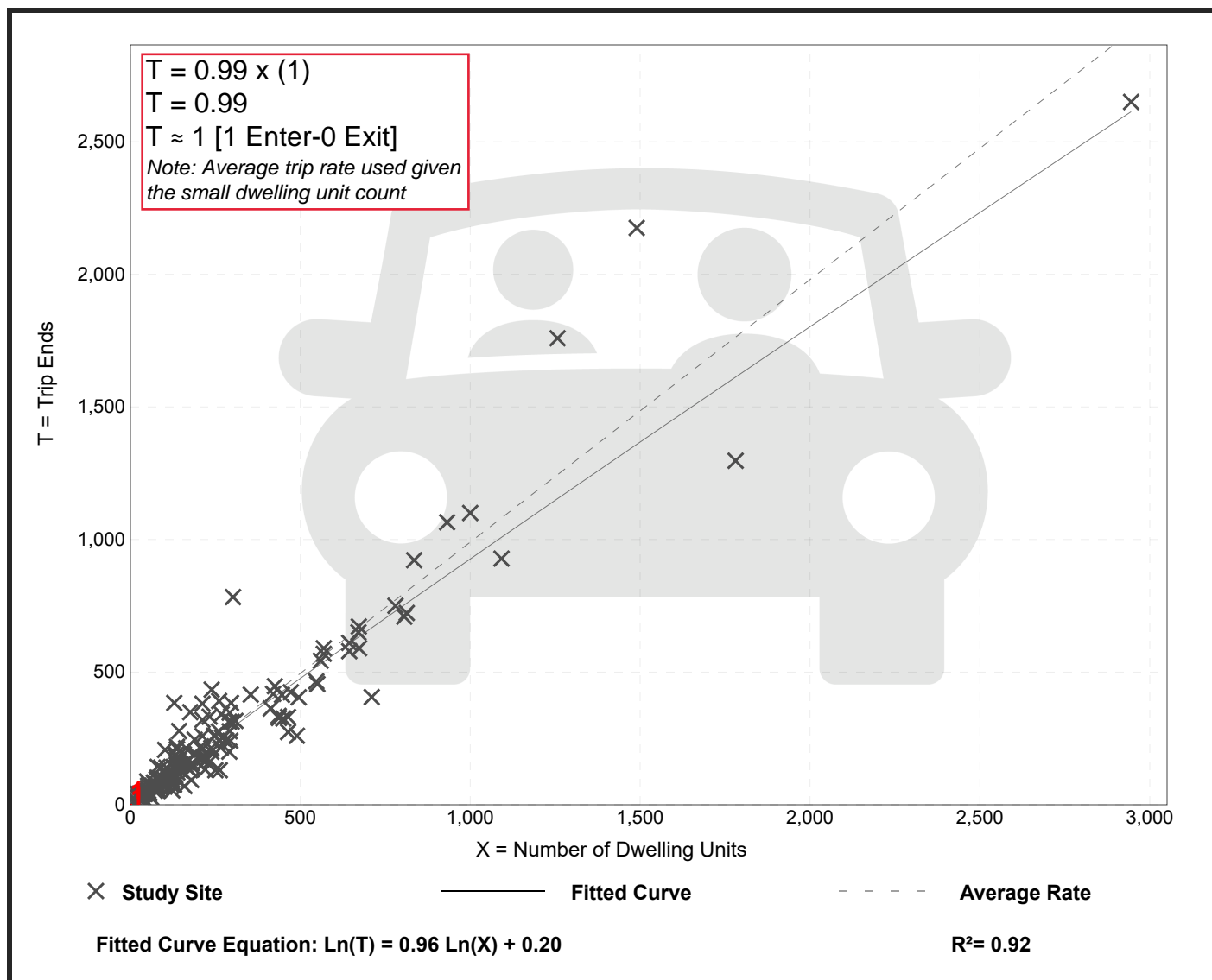
Avg. Num. of Dwelling Units: 242

Directional Distribution: 63% entering, 37% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.99	0.44 - 2.98	0.31

## Data Plot and Equation



# Shopping Center (820)

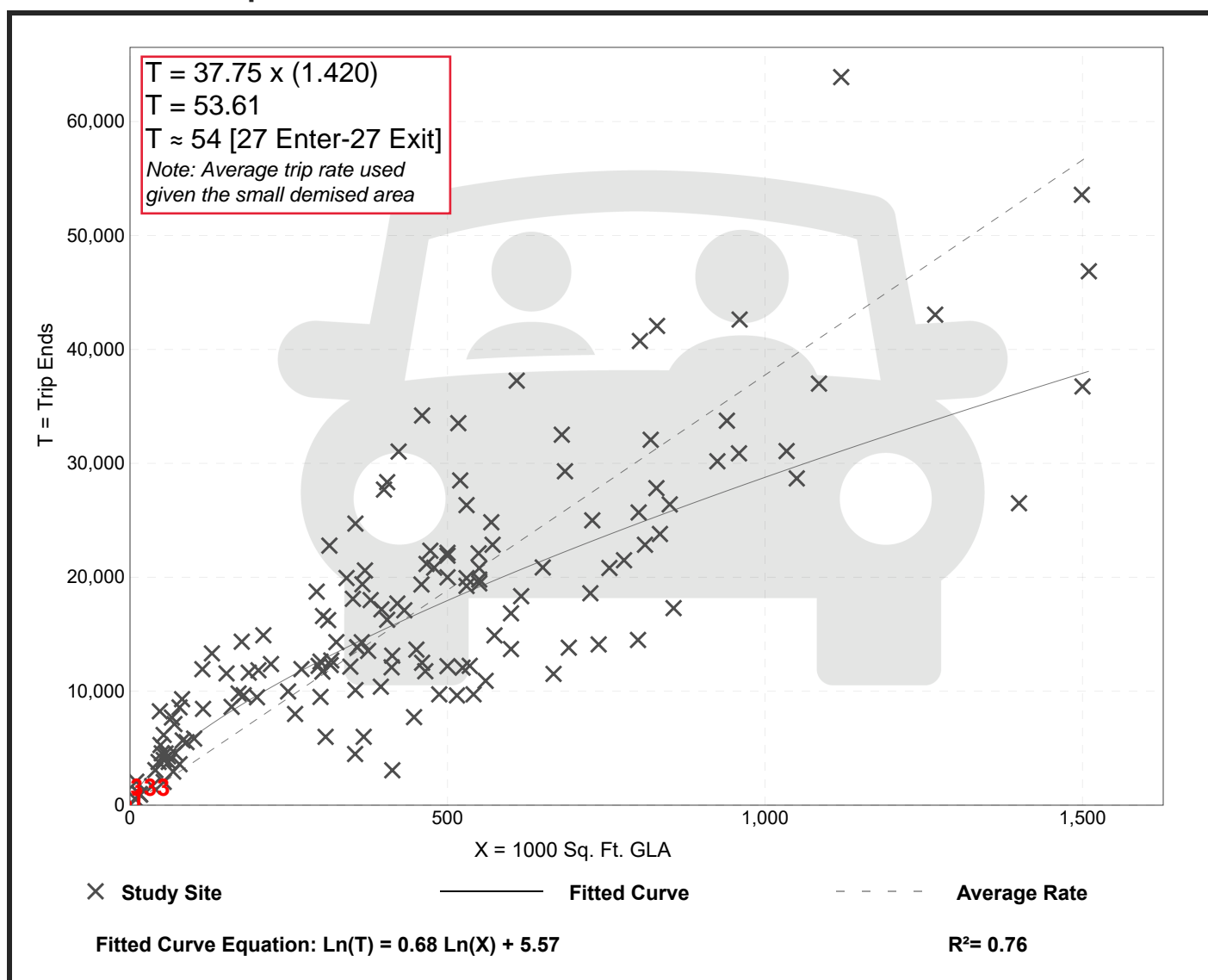
**Vehicle Trip Ends vs: 1000 Sq. Ft. GLA**  
**On a: Weekday**

**Setting/Location: General Urban/Suburban**  
 Number of Studies: 147  
 Avg. 1000 Sq. Ft. GLA: 453  
 Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
37.75	7.42 - 207.98	16.41

## Data Plot and Equation



# Shopping Center (820)

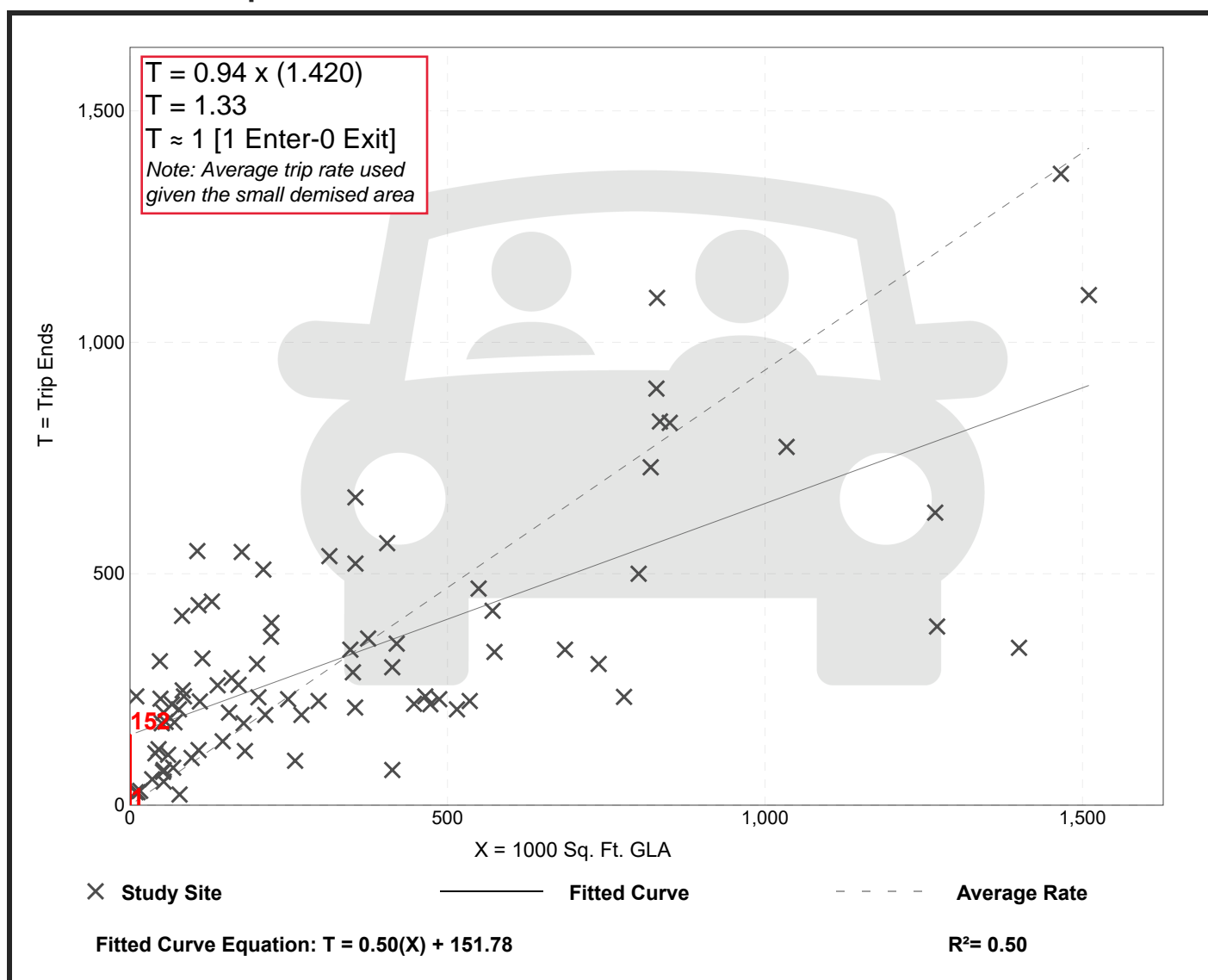
**Vehicle Trip Ends vs: 1000 Sq. Ft. GLA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 7 and 9 a.m.**

**Setting/Location: General Urban/Suburban**  
 Number of Studies: 84  
 Avg. 1000 Sq. Ft. GLA: 351  
 Directional Distribution: 62% entering, 38% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
0.94	0.18 - 23.74	0.87

## Data Plot and Equation



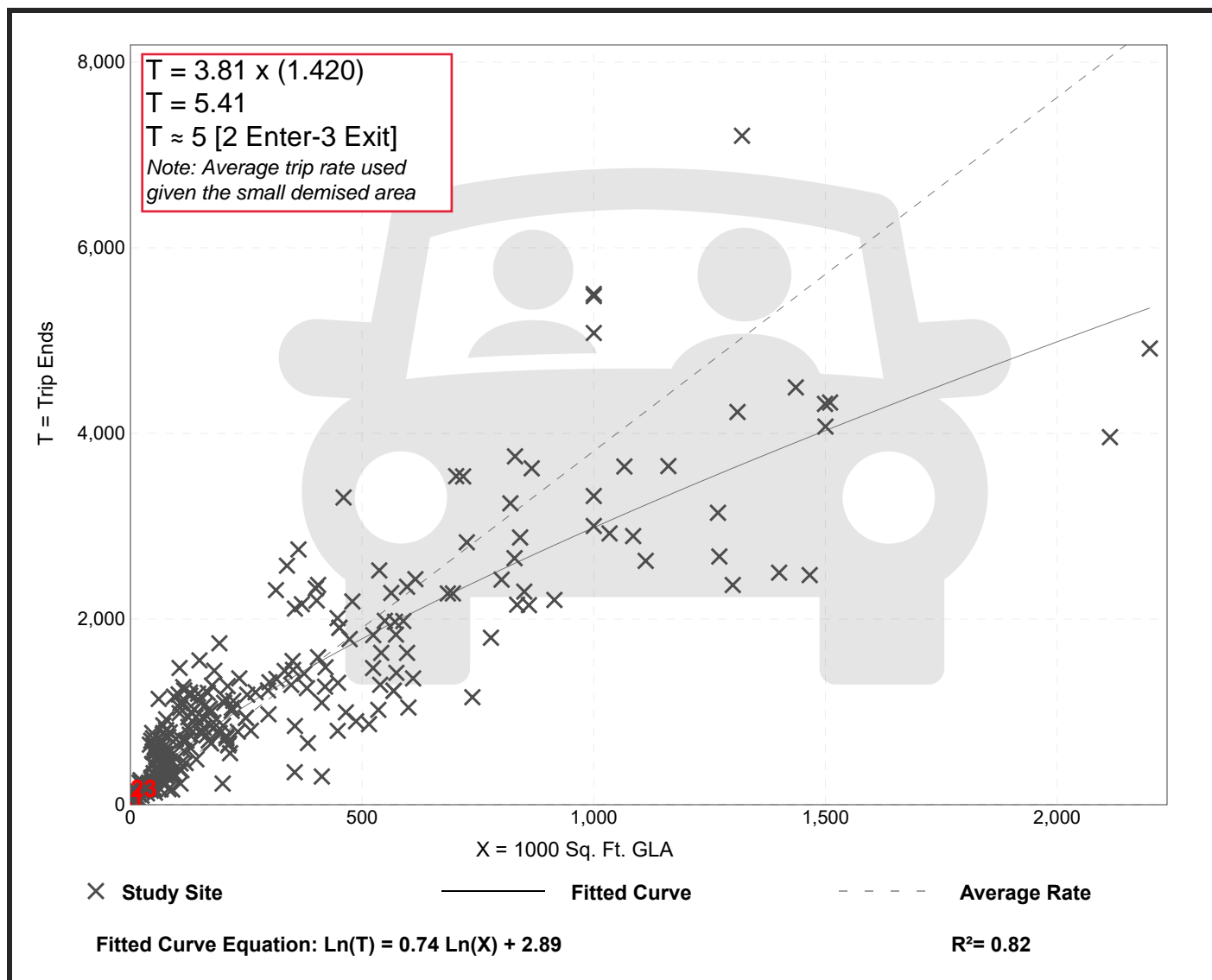
# Shopping Center (820)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GLA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 261  
 Avg. 1000 Sq. Ft. GLA: 327  
 Directional Distribution: 48% entering, 52% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
3.81	0.74 - 18.69	2.04

## Data Plot and Equation



# High-Turnover (Sit-Down) Restaurant (932)

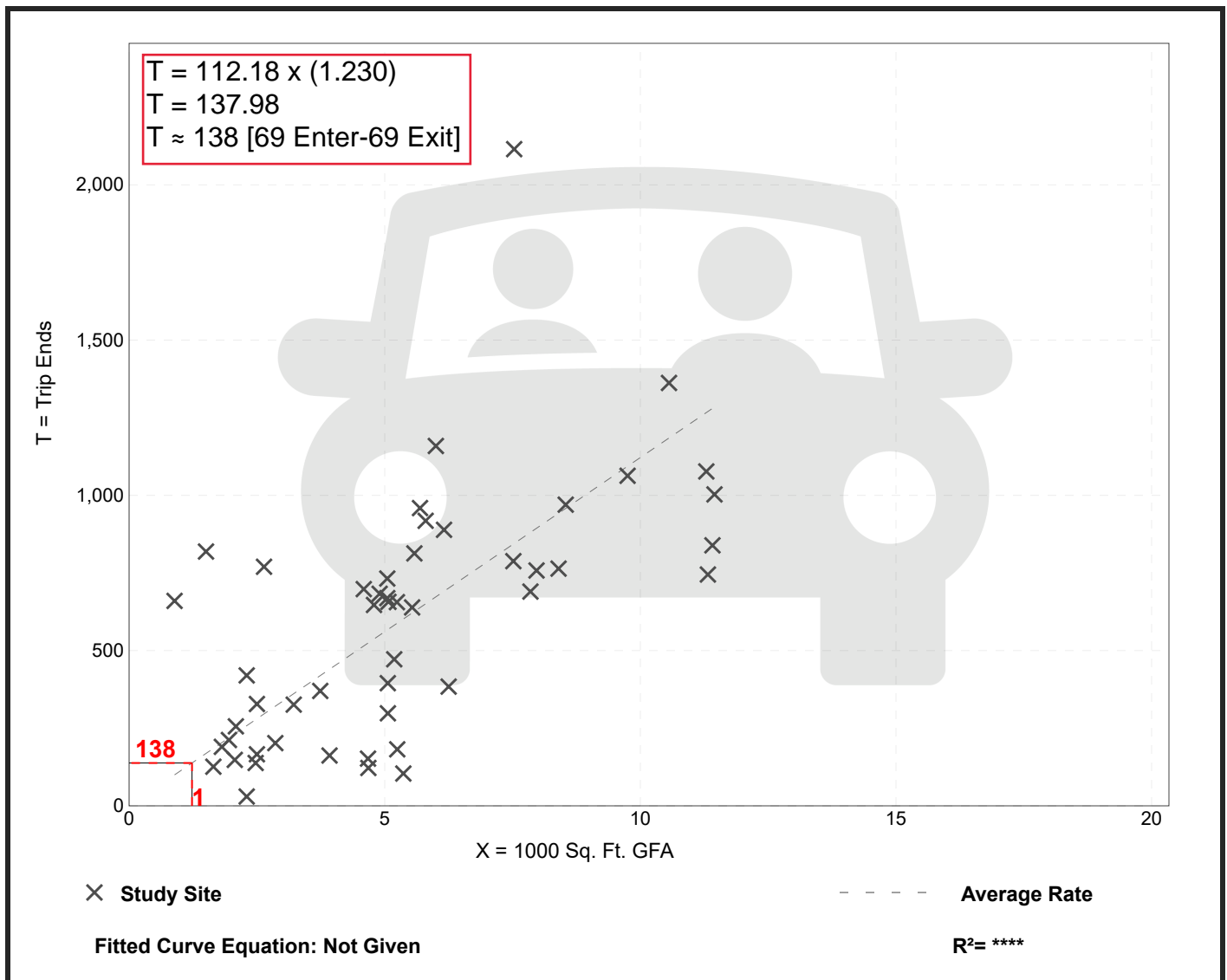
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday

Setting/Location: General Urban/Suburban  
Number of Studies: 50  
Avg. 1000 Sq. Ft. GFA: 5  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
112.18	13.04 - 742.41	72.51

## Data Plot and Equation



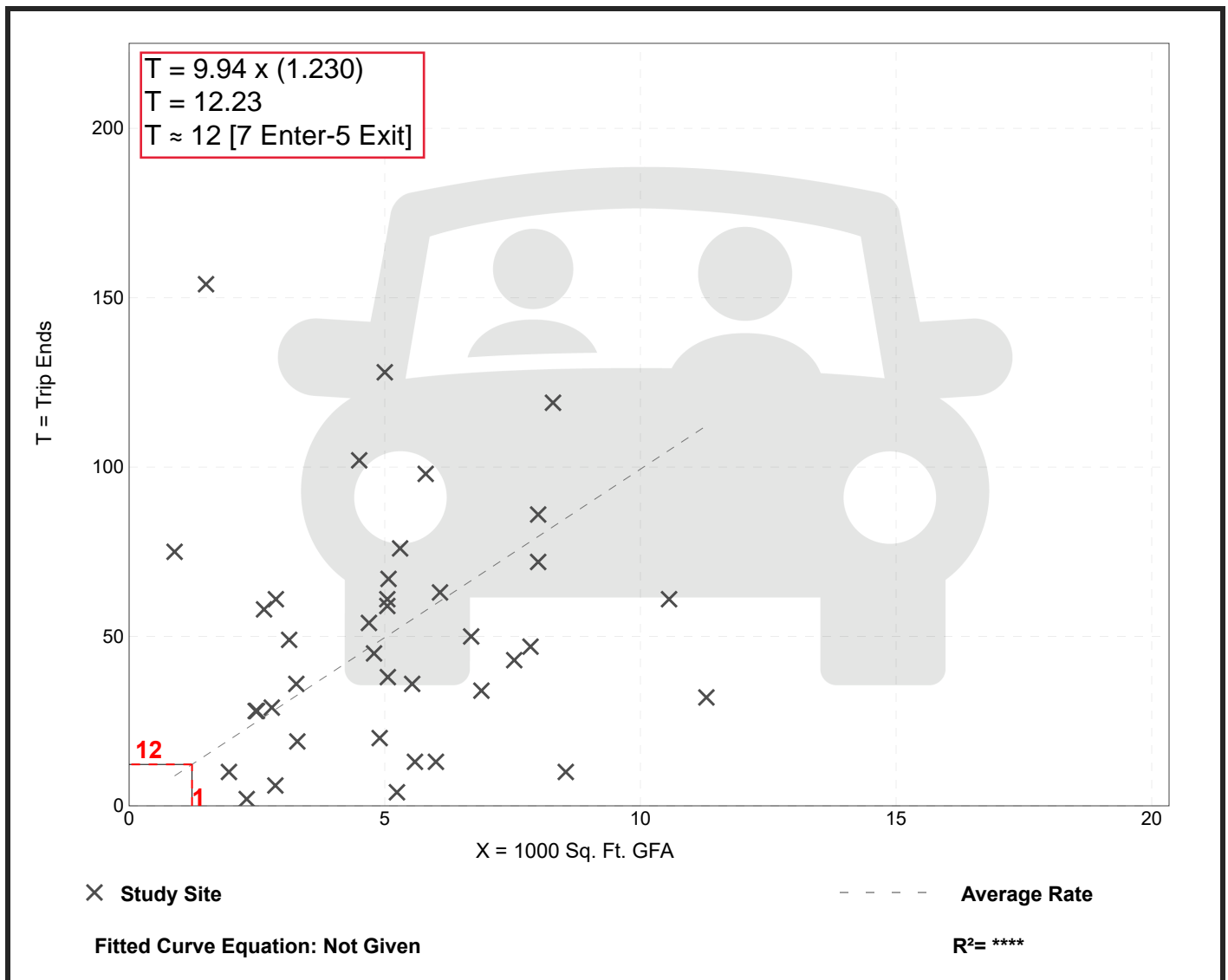
# High-Turnover (Sit-Down) Restaurant (932)

**Vehicle Trip Ends vs:** 1000 Sq. Ft. GFA  
**On a:** Weekday,  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 7 and 9 a.m.**  
**Setting/Location:** General Urban/Suburban  
 Number of Studies: 39  
 Avg. 1000 Sq. Ft. GFA: 5  
 Directional Distribution: 55% entering, 45% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.94	0.76 - 102.39	11.33

## Data Plot and Equation





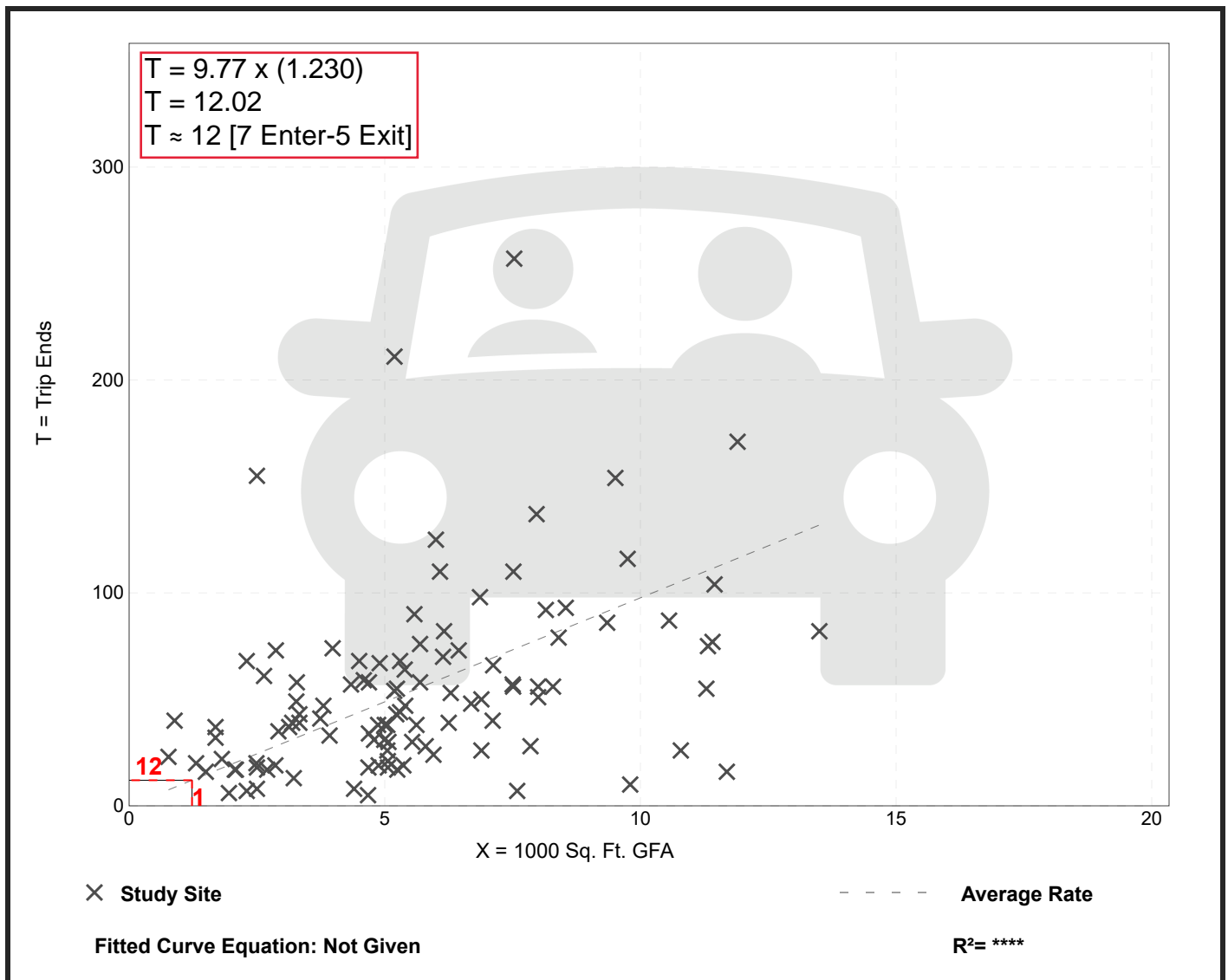
# High-Turnover (Sit-Down) Restaurant (932)

**Vehicle Trip Ends vs:** 1000 Sq. Ft. GFA  
**On a:** Weekday,  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**  
**Setting/Location:** General Urban/Suburban  
 Number of Studies: 107  
 Avg. 1000 Sq. Ft. GFA: 6  
 Directional Distribution: 62% entering, 38% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.77	0.92 - 62.00	7.37

## Data Plot and Equation



## CAPACITY ANALYSIS WORKSHEETS

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NH Route 1A at Sagamore Grove  
Sagamore Grove at the West Project Site Driveway  
Sagamore Grove at the East Project Site Driveway



NH Route 1A at Sagamore Grove

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2021 Existing Weekday Morning Peak Hour  
1: NH Route 1A & Sagamore Grove

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	R	L	T
Traffic Vol, veh/h	2	2	315	0	1	301
Future Vol, veh/h	2	2	315	0	1	301
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	89	89	94	94
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	4	4	354	0	1	320

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	676	354	0	0	354
Stage 1	354	-	-	-	-
Stage 2	322	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	422	694	-	-	1216
Stage 1	715	-	-	-	-
Stage 2	739	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	422	694	-	-	1216
Mov Cap-2 Maneuver	422	-	-	-	-
Stage 1	715	-	-	-	-
Stage 2	738	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	525	1216
HCM Lane V/C Ratio	-	-	0.015	0.001
HCM Control Delay (s)	-	-	12	8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0	0

2021 Existing Weekday Evening Peak Hour  
1: NH Route 1A & Sagamore Grove

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	R	L	T
Traffic Vol, veh/h	2	1	355	1	2	406
Future Vol, veh/h	2	1	355	1	2	406
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	38	94	94	92	92
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	5	3	378	1	2	441

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	824	379	0	0	379	0
Stage 1	379	-	-	-	-	-
Stage 2	445	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	346	672	-	-	1191	-
Stage 1	696	-	-	-	-	-
Stage 2	650	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	345	672	-	-	1191	-
Mov Cap-2 Maneuver	345	-	-	-	-	-
Stage 1	696	-	-	-	-	-
Stage 2	649	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	412	1191
HCM Lane V/C Ratio	-	-	0.019	0.002
HCM Control Delay (s)	-	-	13.9	8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

2022 No Build Weekday Morning Peak Hour  
1: NH Route 1A & Sagamore Grove

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		TT			TT
Traffic Vol, veh/h	2	2	318	0	1	304
Future Vol, veh/h	2	2	318	0	1	304
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	89	89	94	94
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	4	4	357	0	1	323

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	682	357	0	0	357	0
Stage 1	357	-	-	-	-	-
Stage 2	325	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	419	692	-	-	1213	-
Stage 1	713	-	-	-	-	-
Stage 2	737	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	419	692	-	-	1213	-
Mov Cap-2 Maneuver	419	-	-	-	-	-
Stage 1	713	-	-	-	-	-
Stage 2	736	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	522	1213
HCM Lane V/C Ratio	-	-	0.015	0.001
HCM Control Delay (s)	-	-	12	8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0	0

2022 No Build Weekday Evening Peak Hour  
1: NH Route 1A & Sagamore Grove

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		TT		TT	TT
Traffic Vol, veh/h	2	1	359	1	2	410
Future Vol, veh/h	2	1	359	1	2	410
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	38	94	94	92	92
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	5	3	382	1	2	446

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	833	383	0	0	383
Stage 1	383	-	-	-	-
Stage 2	450	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	341	669	-	-	1187
Stage 1	694	-	-	-	-
Stage 2	647	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	340	669	-	-	1187
Mov Cap-2 Maneuver	340	-	-	-	-
Stage 1	694	-	-	-	-
Stage 2	646	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	407	1187
HCM Lane V/C Ratio	-	-	0.019	0.002
HCM Control Delay (s)	-	-	14	8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

2022 Build Weekday Morning Peak Hour  
 1: NH Route 1A & Sagamore Grove

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		TT			TT
Traffic Vol, veh/h	3	4	318	0	2	304
Future Vol, veh/h	3	4	318	0	2	304
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	89	89	94	94
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	6	8	357	0	2	323

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	684	357	0	0	357	0
Stage 1	357	-	-	-	-	-
Stage 2	327	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	417	692	-	-	1213	-
Stage 1	713	-	-	-	-	-
Stage 2	735	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	416	692	-	-	1213	-
Mov Cap-2 Maneuver	416	-	-	-	-	-
Stage 1	713	-	-	-	-	-
Stage 2	734	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	539	1213
HCM Lane V/C Ratio	-	-	0.026	0.002
HCM Control Delay (s)	-	-	11.9	8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0



2022 Build Weekday Evening Peak Hour  
1: NH Route 1A & Sagamore Grove

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	R	L	T
Traffic Vol, veh/h	3	2	359	3	4	410
Future Vol, veh/h	3	2	359	3	4	410
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	38	94	94	92	92
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	8	5	382	3	4	446

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	838	384	0	0	385
Stage 1	384	-	-	-	-
Stage 2	454	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	339	668	-	-	1185
Stage 1	693	-	-	-	-
Stage 2	644	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	338	668	-	-	1185
Mov Cap-2 Maneuver	338	-	-	-	-
Stage 1	693	-	-	-	-
Stage 2	641	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.8	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	421	1185
HCM Lane V/C Ratio	-	-	0.031	0.004
HCM Control Delay (s)	-	-	13.8	8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

2032 No Build Weekday Morning Peak Hour  
1: NH Route 1A & Sagamore Grove

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T			T
Traffic Vol, veh/h	2	2	351	0	1	336
Future Vol, veh/h	2	2	351	0	1	336
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	89	89	94	94
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	4	4	394	0	1	357

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	753	394	0	0	394	0
Stage 1	394	-	-	-	-	-
Stage 2	359	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	380	659	-	-	1176	-
Stage 1	686	-	-	-	-	-
Stage 2	711	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	380	659	-	-	1176	-
Mov Cap-2 Maneuver	380	-	-	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	710	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	482	1176
HCM Lane V/C Ratio	-	-	0.017	0.001
HCM Control Delay (s)	-	-	12.6	8.1
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

2032 No Build Weekday Evening Peak Hour  
1: NH Route 1A & Sagamore Grove

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	R	L	T
Traffic Vol, veh/h	2	1	396	1	2	453
Future Vol, veh/h	2	1	396	1	2	453
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	38	94	94	92	92
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	5	3	421	1	2	492

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	918	422	0	0	422	0
Stage 1	422	-	-	-	-	-
Stage 2	496	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	304	636	-	-	1148	-
Stage 1	666	-	-	-	-	-
Stage 2	616	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	303	636	-	-	1148	-
Mov Cap-2 Maneuver	303	-	-	-	-	-
Stage 1	666	-	-	-	-	-
Stage 2	615	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	367	1148
HCM Lane V/C Ratio	-	-	0.022	0.002
HCM Control Delay (s)	-	-	15	8.1
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.1	0

2032 Build Weekday Morning Peak Hour  
 1: NH Route 1A & Sagamore Grove

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	R	L	T
Traffic Vol, veh/h	3	4	351	0	2	336
Future Vol, veh/h	3	4	351	0	2	336
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	89	89	94	94
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	6	8	394	0	2	357

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	755	394	0	0	394	0
Stage 1	394	-	-	-	-	-
Stage 2	361	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	379	659	-	-	1176	-
Stage 1	686	-	-	-	-	-
Stage 2	710	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	378	659	-	-	1176	-
Mov Cap-2 Maneuver	378	-	-	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	709	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	500	1176
HCM Lane V/C Ratio	-	-	0.028	0.002
HCM Control Delay (s)	-	-	12.4	8.1
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

2032 Build Weekday Evening Peak Hour  
 1: NH Route 1A & Sagamore Grove

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	R	L	T
Traffic Vol, veh/h	3	2	396	3	4	453
Future Vol, veh/h	3	2	396	3	4	453
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	38	94	94	92	92
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	8	5	421	3	4	492

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	923	423	0	0	424
Stage 1	423	-	-	-	-
Stage 2	500	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	302	635	-	-	1146
Stage 1	665	-	-	-	-
Stage 2	613	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	300	635	-	-	1146
Mov Cap-2 Maneuver	300	-	-	-	-
Stage 1	665	-	-	-	-
Stage 2	610	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.8	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	380	1146
HCM Lane V/C Ratio	-	-	0.035	0.004
HCM Control Delay (s)	-	-	14.8	8.2
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Sagamore Grove at the West Project Site Driveway

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2022 Build Weekday Morning Peak Hour  
 2: West Project Site Driveway & Sagamore Grove

Intersection						
Int Delay, s/veh	1.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	1	1	0	5	2	0
Future Vol, veh/h	1	1	0	5	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	2	0	2	2
Mvmt Flow	1	1	0	6	2	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	2	0	8
Stage 1	-	-	-	-	2
Stage 2	-	-	-	-	6
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1620	-	1013
Stage 1	-	-	-	-	1021
Stage 2	-	-	-	-	1017
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1620	-	1013
Mov Cap-2 Maneuver	-	-	-	-	1013
Stage 1	-	-	-	-	1021
Stage 2	-	-	-	-	1017

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1013	-	-	1620	-
HCM Lane V/C Ratio	0.002	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

2022 Build Weekday Evening Peak Hour  
 2: West Project Site Driveway & Sagamore Grove

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	4	3	0	4	1	0
Future Vol, veh/h	4	3	0	4	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	2	0	2	2
Mvmt Flow	4	3	0	4	1	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	7	0	10
Stage 1	-	-	-	-	6
Stage 2	-	-	-	-	4
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1614	-	1010
Stage 1	-	-	-	-	1017
Stage 2	-	-	-	-	1019
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1614	-	1010
Mov Cap-2 Maneuver	-	-	-	-	1010
Stage 1	-	-	-	-	1017
Stage 2	-	-	-	-	1019

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1010	-	-	1614	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-



2032 Build Weekday Morning Peak Hour  
 2: West Project Site Driveway & Sagamore Grove

Intersection						
Int Delay, s/veh	1.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	1	1	0	5	2	0
Future Vol, veh/h	1	1	0	5	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	2	0	2	2
Mvmt Flow	1	1	0	6	2	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	2	0	8
Stage 1	-	-	-	-	2
Stage 2	-	-	-	-	6
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1620	-	1013
Stage 1	-	-	-	-	1021
Stage 2	-	-	-	-	1017
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1620	-	1013
Mov Cap-2 Maneuver	-	-	-	-	1013
Stage 1	-	-	-	-	1021
Stage 2	-	-	-	-	1017

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1013	-	-	1620	-
HCM Lane V/C Ratio	0.002	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

2032 Build Weekday Evening Peak Hour  
 2: West Project Site Driveway & Sagamore Grove

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	4	3	0	4	1	0
Future Vol, veh/h	4	3	0	4	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	2	0	2	2
Mvmt Flow	4	3	0	4	1	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	7	0	10
Stage 1	-	-	-	-	6
Stage 2	-	-	-	-	4
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1614	-	1010
Stage 1	-	-	-	-	1017
Stage 2	-	-	-	-	1019
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1614	-	1010
Mov Cap-2 Maneuver	-	-	-	-	1010
Stage 1	-	-	-	-	1017
Stage 2	-	-	-	-	1019

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1010	-	-	1614	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Sagamore Grove at the East Project Site Driveway

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2022 Build Weekday Morning Peak Hour  
 3: East Project Site Driveway & Sagamore Grove

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1	0	0	4	1	0
Future Vol, veh/h	1	0	0	4	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	2	0	2	2
Mvmt Flow	1	0	0	4	1	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1	0	5
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	4
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1622	-	1017
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1019
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1622	-	1017
Mov Cap-2 Maneuver	-	-	-	-	1017
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1019

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1017	-	-	1622	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s)	8.5	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

2022 Build Weekday Evening Peak Hour  
 3: East Project Site Driveway & Sagamore Grove

Intersection						
Int Delay, s/veh	1.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	3	1	0	3	1	0
Future Vol, veh/h	3	1	0	3	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	2	0	2	2
Mvmt Flow	3	1	0	3	1	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	4	0	7
Stage 1	-	-	-	-	4
Stage 2	-	-	-	-	3
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1618	-	1014
Stage 1	-	-	-	-	1019
Stage 2	-	-	-	-	1020
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1618	-	1014
Mov Cap-2 Maneuver	-	-	-	-	1014
Stage 1	-	-	-	-	1019
Stage 2	-	-	-	-	1020

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1014	-	-	1618	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

2032 Build Weekday Morning Peak Hour  
 3: East Project Site Driveway & Sagamore Grove

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	1	0	0	4	1	0
Future Vol, veh/h	1	0	0	4	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	2	0	2	2
Mvmt Flow	1	0	0	4	1	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1	0	5
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	4
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1622	-	1017
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1019
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1622	-	1017
Mov Cap-2 Maneuver	-	-	-	-	1017
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1019

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1017	-	-	1622	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s)	8.5	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

2032 Build Weekday Evening Peak Hour  
 3: East Project Site Driveway & Sagamore Grove

Intersection						
Int Delay, s/veh	1.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	3	1	0	3	1	0
Future Vol, veh/h	3	1	0	3	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	2	0	2	2
Mvmt Flow	3	1	0	3	1	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	4	0	7
Stage 1	-	-	-	-	4
Stage 2	-	-	-	-	3
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1618	-	1014
Stage 1	-	-	-	-	1019
Stage 2	-	-	-	-	1020
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1618	-	1014
Mov Cap-2 Maneuver	-	-	-	-	1014
Stage 1	-	-	-	-	1019
Stage 2	-	-	-	-	1020

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1014	-	-	1618	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-



THE STANHOPE GROUP LLC  
Appraisers and Consultants

May 11, 2021

Certified General  
Appraisers

Peter E. Stanhope\*  
G. Andrew Clear\*  
John Madden\*\*\*  
Julia Morris

Bruton & Berube, PLLC  
Francis X. Bruton, Esquire  
601 Central Avenue  
Dover, NH 03820

Certified Residential  
Appraisers

Laurie Larocque  
Ann Norman-Sydow  
Jeffrey Wood  
Victoria Stanhope  
David Michaud  
Debora West  
Josane Cumandala

RE: Value influence study based of the redevelopment of Map 201, Lots 2, 9, and 10  
Sagamore Avenue, Portsmouth, NH

Dear Attorney Bruton:

Per your request, I have developed an opinion on the probability of any diminution in value to neighborhood real estate from the redevelopment of the above referenced real estate by your client, Katz Development Corporation. More specifically, will the approval of eight residential units with two driveways where five units with one driveway are allowed diminish exposed property values?

Licensed Appraisers

Peter Bride\*\*

The redevelopment would first result in the removal of an existing frame structure utilized as a restaurant, retail store and, residential use. The demolished structure is proposed to be replaced with a residential structure with up to eight (8) units, underground parking accessed by two driveways, and upgraded landscaping. The zone permits multi-unit residential structures on a 7,500 sq ft to 1 unit ratio. The ratio applied to the subject site supports 5.8 units and a single driveway by right.

Associates

Eric Duca

The neighborhood is populated with a mix of non-residential and residential improvements, including high value condominiums and modest affordable single family dwelling units.

\* NH & ME  
Certified

\*\* NH  
Licensed

\*\*\* NH & MA  
Certified

Diminution in value to real estate results from exposure to an externality. The principle of externalities is defined in Appraisal Institute text as:

1. The principle of externalities states that economies outside a property have a positive effect on its value while diseconomies outside a property have a negative effect on its value.
2. Real estate is affected by externalities more than any other economic good, service, or commodity, because it is physically immobile.
3. Externalities may refer to the use of properties located near the subject property.

Manmade environmental forces influence real estate by what populates the nature and desirability of immediate and surrounding property. The measure is often presented in the effect of the three S's: what can be Seen, what Sounds can be heard, and what permeates the air or can be Smelled.



There is no market evidence that the proposed number of units has been demonstrated in the market to diminish the value of either residential or commercial real estate exposed to similar development in the metro Portsmouth market. Realtor and appraiser interviews confirmed that the density of the proposed redevelopment could be a positive influence on exposed real estate.

It should be noted that the existing improvement has high traffic, noise and odor emission from restaurant use and has driveway access from multiple points off Sagamore (Route 1A) and Sagamore Grove.

The removal of the restaurant use and the reduction in driveway access represents an improvement in exposure to an externality and brings the driveway access into greater conformity with zoning.

A study of real estate transactions throughout Portsmouth core area failed to identify any pattern of adverse influence on the presence of limited number unit condominium properties on single family or retail commercial exposed properties.

Realtor interviews confirmed these findings with one unrelated observation that adequate parking for the higher density condominium developments was essential in the downtown area.

Appraiser interviews also had similar observations supported by ongoing research. Exposed real estate was not penalized by exposure to low density condominium developments.

Few instances were identified where a property had two driveway access points. The one most relevant was a Hanover Street lot with less than a .10 of an acre, 63 feet of frontage, a three (3) unit improvement and two driveway access points. Neighborhood sales data showed no inconsistency in sales prices of nonexposed sales. The data was limited but two driveways failed to identify any potential of negative influences. Two driveway existence was posed to Realtors and appraisers, none could even site an instance when it was a factor.

My research included comparison of the current intensity of use and it's number of access points with market sales exposed to like situations similar to the proposed redevelopment use of the site, as well as Realtor and appraiser interviews. I identified no evidence the proposed redevelopment will have any measurable diminution of value influence on any exposed real estate.

In accordance with the Uniform Standards of Professional Appraisal Practice (USPAP) the conclusion reported herein are not a real estate appraisal (USPAP Standard 1) or a real estate appraisal report (USPAP Standard 2). This work product constituted appraiser consulting. I have complied in its preparation with the USPAP Ethics, Competency and Jurisdictional Exception rules.

You, Francis X. Bruton, Esquire, on behalf of Katz Development Corporation are my client.

The intended users of this work product are you, your client, and the Zoning Board of Adjustment of the City of Portsmouth, NH.

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The intended use of this work product is to present documentation with an application for redevelopment of the subject site to the Portsmouth Zoning Board of Adjustment.

These findings relate to the proposed redevelopment on fair market value of exposed real estate. Fair market value is defined as follows:

According to the Financial Institutions Reform, Recovery and Enforcement Act of 1989 (FIRREA) and the subsequent issuance of the regulatory agencies' final rules, "Market Value" is defined as follows.

The most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently, knowledgeably and assuming the price is not affected by undue stimulus. Implicit in this definition are the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby:

- a. Buyer and seller are typically motivated;
- b. Both parties are well informed or well advised and each acting in what they consider their own best interest;
- c. A reasonable time is allowed for exposure in the open market;
- d. Payment is made in terms of cash in US dollars or in financial arrangements comparable thereto, and;
- e. The price represents the normal consideration for the property sold unaffected by special creative financing or sales concessions granted by anyone associated with the sale.

These findings and conclusions are as of May 11, 2021.

Probability of Value Change: The estimated market value of the property exposed in this report is estimated as of the aforementioned date. Constantly changing economic, social, political, and physical conditions have varying effects upon real property values. Even after the passage of a relatively short period of time, property values may change substantially and require a new study.

It is my concluded opinion that as of May 11, 2021, the proposed redevelopment as outlined in the application to do same will not result in diminution to any exposed real estate.

Respectfully,



Peter E. Stanhope  
Chief Appraiser, NHCG-31

Enclosures: Photos  
Certification  
Curriculum Vitae  
NH Certification

## CERTIFICATION

I certify that, to the best of my knowledge and belief:

- The statements of fact contained in this report are true and correct.
- The reported analyses, opinions, and conclusions are my personal, impartial, and unbiased professional analyses, opinions, and conclusions.
- I have no (or the specified) present or prospective interest in the property that is the subject of this report and no (or the specified) personal interest with respect to the parties involved.
- I have performed no (or the specified) services, as an appraiser or in any other capacity, regarding the property that is the subject of this report within the three-year period immediately preceding the agreement to perform this assignment.
- I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.
- My engagement in this assignment was not contingent upon developing or reporting predetermined results.
- My compensation for completing this assignment is not contingent upon the development or reporting of a predetermined conclusion that favors the cause of the client, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of these conclusions.
- I have made a personal inspection of the property that is the subject of this report.
- No one provided significant assistance to the person signing this certification.



Peter E. Stanhope  
Chief Appraiser, NHCG-31

View of commercial use adjacent to subject



1<sup>st</sup> driveway access to rear of site





Front view of existing improvements



14 parking spaces access directly off Sagamore Ave.





Rear view of existing improvements



Driveway access to rear of site off Sagamore Ave.





Yellow single value residence with view of rear of site



2<sup>nd</sup> driveway access to rear of site opposite yellow residence





View South of Sagamore Ave.



View of commercial building on opposite side of Sagamore Ave.





View North of Sagamore Ave.



**Peter E. Stanhope, Certified General Appraiser**  
(NHCG-31 and MECG-647)

**EDUCATION:**

American Institute of Real Estate Appraisers 1980 - 1984  
University of New Hampshire 1960 - 1964

**EXPERIENCE:**

The Stanhope Group - Chief Appraiser 1967 - Present  
Appraisal of complex residential, industrial and commercial real estate throughout northern New England for corporations, government agencies, financial institutions, law firms, and private individuals.

**RELATED EXPERIENCE:**

Adjunct Faculty, University of New Hampshire 1981 - 1999  
Adjunct Faculty, Real Estate Center, University of Maine 1983 - 1990

**ADDITIONAL EXPERIENCE:**

National Business Institute  
Foreclosure: Appraisal Review, Webinar Speaker  
Appraisals in Estate Planning and Administration, Webinar Speaker  
Maine Public Television  
Format development and moderator of a six hour television special on residential and income property valuation  
New Hampshire Commercial Investment Board of Realtors  
Program presenter for "A Look at the Rate Value Relationship"  
New Hampshire Bar Association  
Program presenter for "The Appraisal In Tax Abatement", "Introduction and Overview of Divorce Litigation", and "Use of Experts in Divorce Litigation"  
New Hampshire Trial Lawyers Association  
Program presenter for the Annual Family Law Forum  
Expert Witness (Testimony Before):  
State of New Hampshire  
Circuit Courts and Superior Courts  
Board of Taxation and Land Appeal  
Various municipal planning and zoning boards  
State of Maine - York and Cumberland Superior Courts  
U.S. Bankruptcy Court - Manchester, NH; Rutland, VT and Portland, ME  
U.S. District Court - Concord, NH; Boston, MA, Worcester, MA

**DESIGNATIONS, CERTIFICATIONS & AFFILIATIONS:**

Appraisal Institute  
Practicing Affiliate Member  
National Association of Realtors, Appraisal Section  
General Accredited Member  
State of New Hampshire  
Certified General Real Estate Appraiser  
Licensed Real Estate Broker  
State of Maine  
Certified General Real Estate Appraiser

**OFFICERSHIPS, COMMITTEES & ACTIVITIES:**

New Hampshire Mortgage Banker's Association  
Former Board of Directors Member  
New Hampshire Commercial and Industrial Realtors  
Former Board of Directors Member  
New Hampshire Housing Finance Authority  
Former Reverse Elderly Equity Loan Study Committee Member  
Former Single Family Committee Member  
State of NH Constitution Convention Elected Delegate  
National Association of Realtors  
National Appraisal Committee Appraisal Section, Former NH Delegate  
City of Portsmouth Economic Development Loan Program  
Former Loan Review Board Member  
Strafford County Regional Planning Commission Former Member  
Town of Goffstown  
School Board former member and chairman  
Municipal Budget Committee former member  
Zoning Board of Adjustments former alternate member  
Town of Durham  
Town Council former member  
Historic District Commission former member and chairman  
Oyster River Advisory Committee  
NH Rivers Management and Protection Program former member