
TRAFFIC IMPACT AND ACCESS STUDY

27 East River Street

Residential Development

Providence, Rhode Island

PREPARED FOR

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Introduction

VHB has performed a traffic impact and access study to evaluate impacts associated with the proposed multi-family residential development located at 27 East River Street in Providence, Rhode Island. The project is located on the northeast corner of the East River Street/Waterman Street intersection. The proposed development is known as 27 East River Street. The development program consists of constructing up to 500 residential units.

Access to the site will be provided by one full-access driveway leading to the new parking garage on the east side of East River Street. This report describes the proposed development program and analyzes the project-related traffic impacts on roadways adjacent to the site and the proposed site driveway.

Project Description

The proposed redevelopment plan includes the construction of up to 500 residential units. The proposal includes one full-access driveway on the east side of East River Street. The driveway is proposed to be a full access "T" intersection. The development is not projected to have a major impact on traffic operations.

Study Methodology

This traffic assessment was conducted in three phases. The first phase involved an assessment of existing traffic conditions in and around the proposed development

area. This included an inventory of existing roadway geometrics and observations of traffic flow including daily and peak period traffic counts.

The second phase utilized information assembled in the first phase and established the framework for evaluating the transportation impacts of future traffic conditions. In this phase, future traffic demands were forecasted for the study area roadways based on historical growth trends and other nearby proposed developments. The year 2030, which reflects a five (5) year horizon, was selected as the design year for analysis of this traffic impact and access study. The traffic analysis conducted in this phase identified existing and expected future roadway operations without the development of the site.

The third and final phase utilized information assembled in the second phase and established the framework for evaluating the transportation impacts of the proposed development project. In this phase the future traffic demands of the year 2030, from the second phase, were used as well as the trip generation for the proposed development of the site. The traffic analysis conducted in this phase identified future roadway operations which include necessary measures to mitigate traffic-related impacts associated with the proposed site developments.



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Existing Conditions

Existing roadway and traffic conditions in the study area were determined based on field visits and traffic counts. The existing transportation conditions in the study area, including roadway geometrics, traffic controls, and daily and peak hour traffic flows are described in the following sections.

Study Area

To effectively evaluate the transportation impacts associated with the proposed redevelopment, it was necessary to review the existing roadway system in the vicinity of the site. The area delineated for this study includes East River Street including the East River Street intersections with Pitman Street/Waterman Street/Waterman Grille Driveway and with the proposed site driveway.

Network Geometry

Roadways

East River Street

East River Street is under City of Providence jurisdiction and extends from Waterman Street to Irving Avenue. East River Street consists of two lanes (one lane in each direction). The posted speed limit is 25 miles per hour (mph) within the project limits. Land use along East River Street consists of a surface parking lot across from

the site and the Narragansett Boat Club located on the east side of the road to the north of the site and undeveloped land.

Pitman Street

Pitman Street is under City of Providence jurisdiction and extends from Governor Street to Waterman Street. Pitman Street consists of two lanes (one lane in each direction). The speed limit is not posted; therefore, it is assumed that the speed limit is 25 miles per hour (mph) within the project limits. Land use along Pitman Street in the immediate vicinity of the site consists of commercial and office space.

Waterman Street

Waterman Street is under City of Providence jurisdiction and extends from North Main Street to East River Street/Pitman Street. Waterman Street consists of two lanes (one lane in each direction) from the Henderson Bridge approach to East River Street/Pitman Street. Prior to the Henderson Bridge approach, Waterman Street is one-way eastbound. The posted speed limit is 25 miles per hour (mph) within the project limits. Land use along Waterman Street in the immediate vicinity of the site consists of commercial and office space and surface parking.

Intersections

East River Street/Pitman Street at Waterman Street/Waterman Grille Driveway

East River Street and Pitman Street intersect from the north and south, respectively, and Waterman Street and the Waterman Grille Driveway intersect from the west and east, respectively, to form a four-way intersection. There is a raised island in the middle of the intersection; however, the intersection operates more like an unsignalized four-way intersection. There is a stop sign on the Waterman Street eastbound approach and it is assumed that the Waterman Grille driveway is also under stop control (although there is no stop sign). There is no traffic control on the northbound or southbound approaches. All approaches consist of one all-purpose lane. Pedestrian crosswalks are provided on all approaches to the intersection; however, the Waterman Grille Driveway is not striped and acts more like a sidewalk across a driveway.

Observed Traffic Volumes

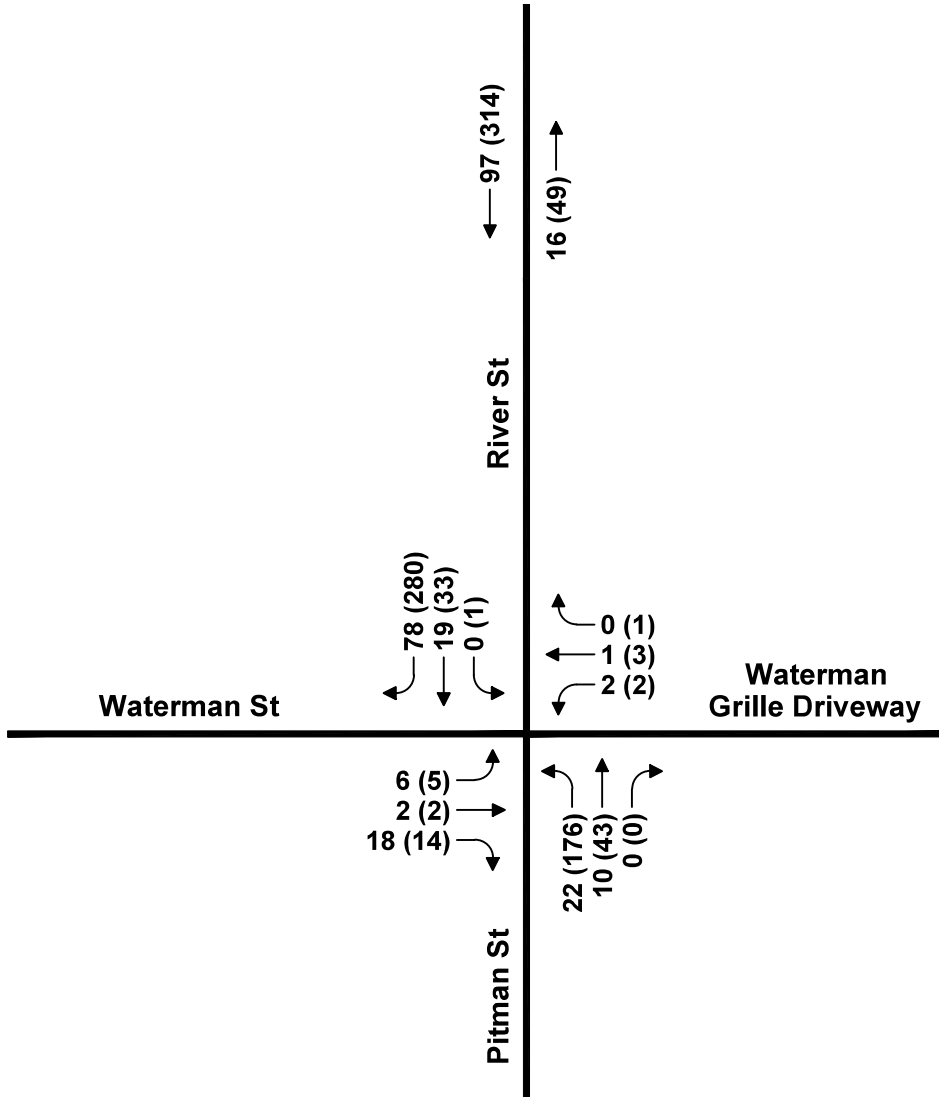
To assess traffic conditions in the vicinity of the site, peak hour turning movement counts (TMCs) were conducted at the study area intersections on Wednesday, June 11, 2025, from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. Automatic Traffic Recorder (ATR) counts were performed on East River Street, north of Waterman Street from Tuesday, June 10, 2025 thru Wednesday, June 11, 2025.

It was determined from the TMCs that the weekday morning peak hour is between 7:45 AM and 8:45 AM. The weekday afternoon peak hour period is between 4:15 PM and 5:15 PM.

The existing weekday morning and weekday afternoon peak hour traffic volume networks are summarized in **Figures 1**.

Legend

XX (XX) AM (PM) Traffic Volumes



Not to Scale



2025 Existing Conditions
Peak Hour Traffic Volumes
East River Development
Providence, RI

Figure 1



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Future Conditions

Typically, transportation conditions in the study area can be expected to change in the future due to potential developments/growth and planned transportation infrastructure improvements in the area. A five-year planning horizon was used to assess the East River Street, Pitman Street, and Waterman Street corridors with and without the planned development. The traffic volumes were projected to the year 2030 to reflect growth without (“No-Build”) and with (“Build”) the development project and analyzed. The 2030 No-Build projected traffic volumes include growth in traffic volumes associated with generalized regional growth. The anticipated site-generated traffic volumes superimposed upon the 2030 No-Build peak hour traffic volume network reflect the 2030 Build peak hour conditions.

Background Traffic Growth

Traffic growth on area roadways is a function of the expected land development, economic activity, and changes in demographics. Several methods can be used to estimate this growth. A procedure frequently employed is to estimate an annual percentage increase and apply that increase to study area traffic volumes. Another procedure is to identify estimated traffic generated by planned new major developments that would be expected to impact the project study area roadways. Both methods were utilized for this assessment. The following sections describe the procedures used to arrive at the No-Build traffic volume networks.

Background Traffic Growth

Population projections from the Rhode Island Statewide Planning Program suggest minimal growth (0.35% annually) for the City of Providence. Based on standard traffic engineering practice and Rhode Island Statewide Planning, it is conservative (projecting higher than anticipated growth) to assume a growth rate of 0.5 percent per year for five years through 2030.

Planned Developments

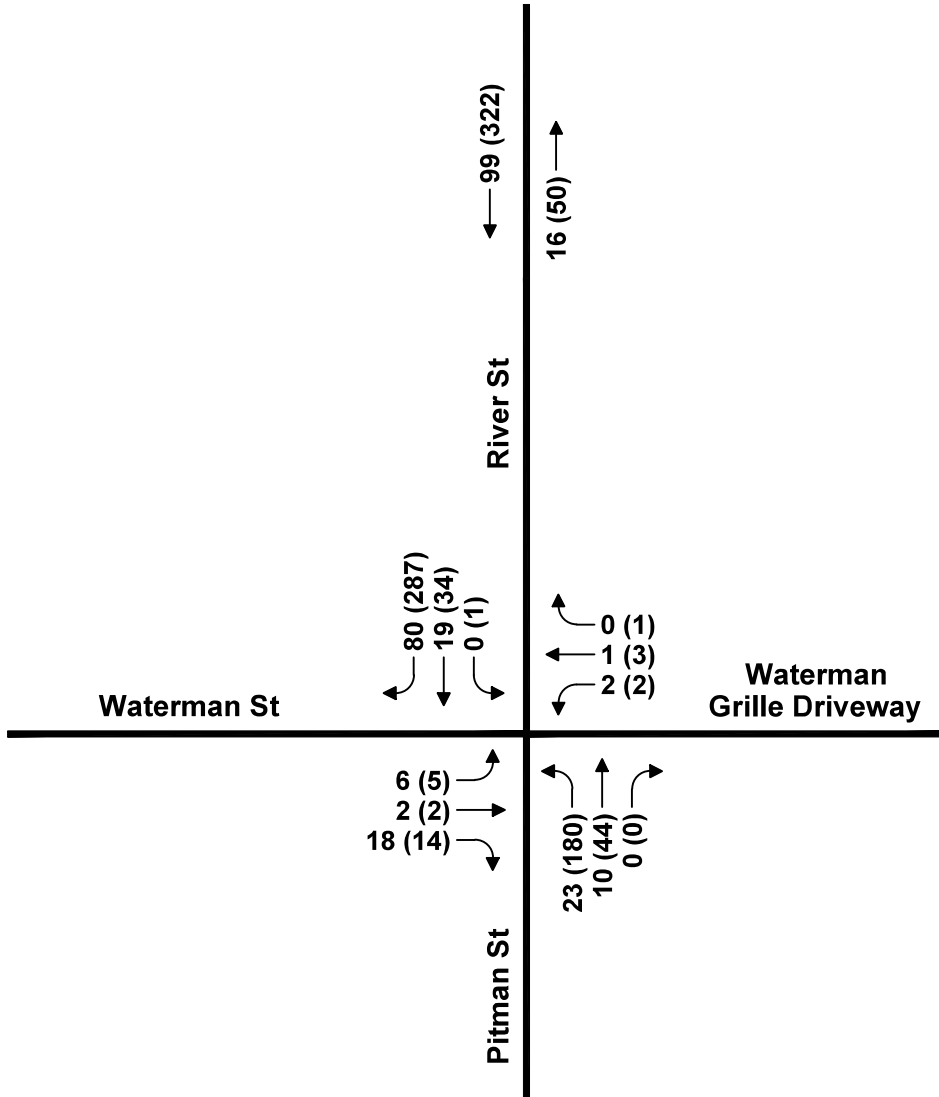
Based on the discussion with the Providence Department of Planning and Development, there are no major projects that would have significant impacts on traffic volumes in the study area.

2030 No-Build Traffic Volumes

The 2030 No-Build peak hour traffic volumes were determined by first applying the 0.4 percent annual growth rate for five years to the 2025 Existing peak hour traffic volumes. There were no known projects identified by the Providence Department of Planning and Development that would have a significant impact on traffic volumes in the study area; therefore, no site-specific traffic volumes were added to the future 2030 No-Build conditions. The 2030 No-Build condition weekday morning and weekday afternoon peak hour traffic volume networks are summarized in **Figures 2**.

Legend

XX (XX) AM (PM) Traffic Volumes



Not to Scale



2030 No-Build
Peak Hour Traffic Volumes
East River Development
Providence, RI

Figure 2

Site-Generated Traffic Volumes

Design year 2030 Build traffic volumes were determined by estimating site-generated trips for the proposed multi-family residential development and distributing these trips over the study area roadways. These site-generated trips were added to the 2030 No-Build traffic volumes to develop the 2030 Build weekday morning and weekday afternoon peak hour traffic volumes. The following sections describe the procedures used to arrive at the Build traffic volume networks.

Trip Generation

In order to estimate the traffic impacts of the proposed multi-family residential development, it is necessary to determine the traffic volumes expected to be generated. The following text discusses the procedures used to determine the expected trip generation of the proposed development.

Proposed Trip Generation

For the purpose of this study, traffic projections for the proposed multi-family residential development were derived from trip generation rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation*¹. VHB used "Multifamily Housing (Mid-Rise)" (Land Use Code [LUC] 221) for 500 residential units. **Table 1** summarizes the site-generated trips for the Build conditions. The proposed residential development will generate all new trips; therefore, there will be no reduction in traffic in the form of pass-by traffic applied to the traffic network.

Table 1 Trip Generation Summary

Time Period/ Movement	Multifamily Housing (Mid-Rise)¹
Morning Peak²	
Enter	48
Exit	<u>160</u>
Total	208
Evening Peak²	
Enter	119
Exit	<u>76</u>
Total	195

Source: Trip Generation, 11th Edition; Institute of Transportation Engineers (ITE); Washington, D.C.

1. Based on ITE LUC 221 [Multifamily Housing (Low-Rise)] for 228 units

2. Traffic volumes expressed in trips per hour

¹ Trip Generation, 11th Edition, Institute of Transportation Engineers, Washington, D.C.

As shown in **Table 1**, the proposed development is projected to generate 208 (48 entering/160 exiting) new vehicle trips during the weekday morning and 195 (119 entering/76 exiting) new vehicle trips during the weekday evening peak hours.

Trip Distribution and Assignment

The trip distribution for this project was based on a review of existing travel patterns. The projected new trips, associated with the proposed development, were distributed on the study area roadways based on the following assumptions:

- › 20% to/from the north on East River Street
- › 20% to/from the west on Waterman Street
- › 60% to/from the south on Pitman Street

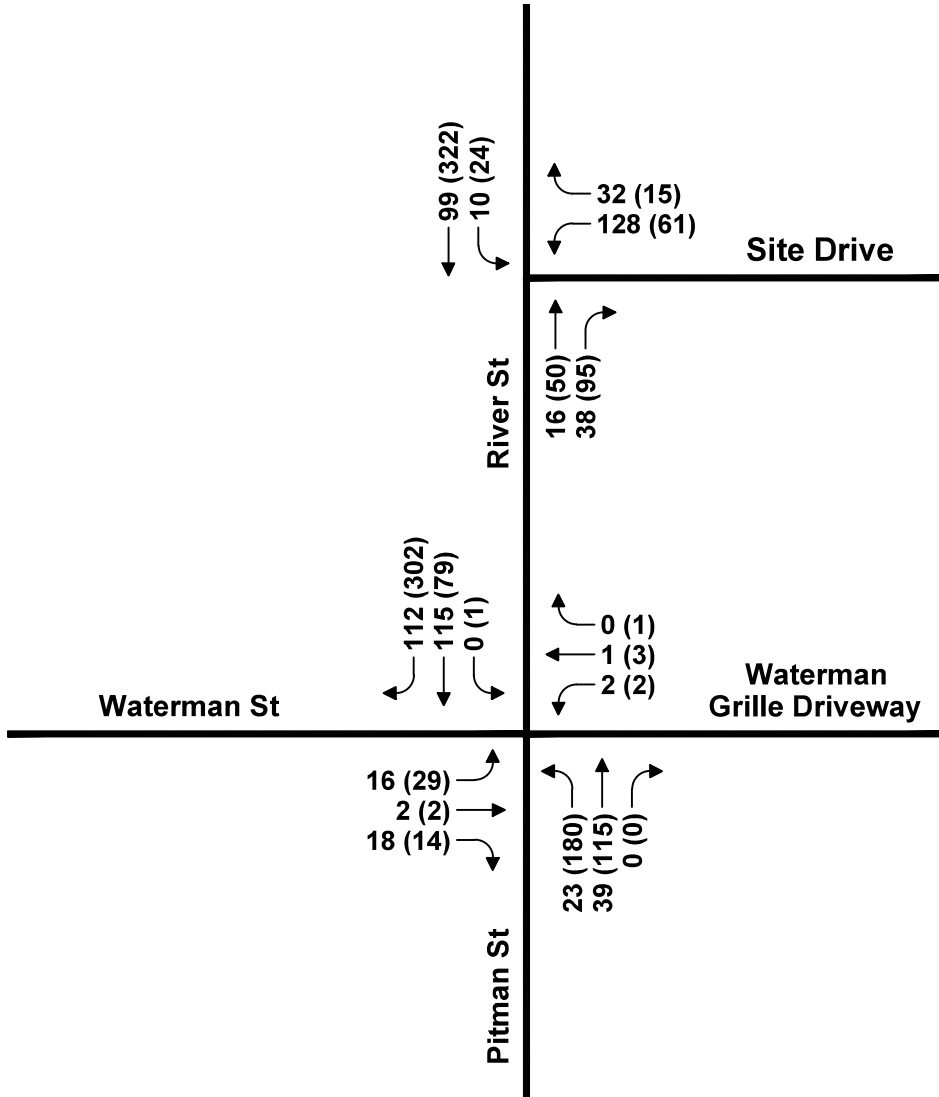
The trips were distributed across the traffic network based on this distribution.

2030 Build Traffic Volumes

In order to evaluate the 2030 Build Condition, these site-generated trips described above were added to the 2030 No-Build traffic volumes. The resulting 2030 Build condition weekday morning and weekday afternoon peak hour traffic volumes are shown in **Figure 3**.

Legend

XX (XX) AM (PM) Traffic Volumes



Not to Scale



2030 Build
Peak Hour Traffic Volumes
East River Development
Providence, RI

Figure 3



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Traffic Operations

Measuring existing traffic volumes and projecting future traffic volumes quantifies traffic flow within the study area. To assess quality of flow, roadway capacity analyses were conducted with respect to Existing and projected No-Build and Build conditions. Capacity analyses provide an indication of how well the roadway facilities serve the traffic demands placed upon them. Roadway operating conditions are classified by calculated levels of service as described in the following sections.

Level of Service Criteria

Level of Service (LOS) is the term used to describe the different operating conditions that occur on a given roadway segment or intersection under various traffic volume loads. It is a qualitative measure of the effect of a number of factors including roadway geometrics, travel delay, and freedom to maneuver. Level of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions.

For signalized intersections, the analysis considers the operation of all traffic entering the intersection, and the LOS designation is for overall conditions at the intersection. For unsignalized intersections, the overall LOS designation is for the most critical movement, which is most often the left turn out of the side street/driveway. All study area intersections are unsignalized.

Unsignalized Intersections Capacity Analysis

Capacity analyses were conducted for the existing and proposed new unsignalized study area intersections. For this study, the capacity analyses were completed using Synchro 11 software, with output based on the *2000 Highway Capacity Manual* (HCM). Summaries of the unsignalized capacity analyses are presented in **Table 2** for the weekday morning and afternoon peak periods.

Table 2 Unsignalized Intersection Capacity Analysis Summary

Location	Peak Hour	Critical Movement	2025 Existing			2030 No-Build			2030 Build		
			Dem ¹	Del ²	LOS ³	Dem ¹	Del ²	LOS ³	Dem ¹	Del ²	LOS ³
E River St/Pitman St at Waterman St/ Waterman Grille Driveway	Weekday AM	EB L/R	31	9	A	31	9	A	44	11	B
	Weekday PM	EB L/R	32	13	B	32	13	B	68	19	C
River St at Site Driveway	Weekday AM	WB L/R	Intersection Doesn't Exist			Intersection Doesn't Exist			174	10	B
	Weekday PM	WB L/R							82	12	B

Source: VHB using Synchro 11 software.

1 Dem- vehicle demand

2 Del. - average delay in seconds per vehicle

3 LOS - level of service

EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; R = right; T = thru; L= left

East River Street/Pitman Street at Waterman Street/Waterman Grille Driveway

The analysis indicates that under 2025 existing conditions, the unsignalized Waterman Street eastbound approach operates at LOS A during the weekday morning and LOS B during the afternoon peak periods. Under 2030 No-Build conditions the intersection is projected to continue to operate at LOS A and B during the weekday morning and afternoon peak periods, respectively. The intersection is projected to experience a minor increase in delays but still is projected to operate at an acceptable LOS B during the weekday morning and LOS C during the afternoon peak periods under 2030 Build conditions.

East River Street at Site Driveway

The East River Street at the Proposed Site Driveway intersection does not exist under existing or No-Build conditions. The new proposed driveway will consist of full access into and out of the site leading to the new parking garage. Under 2030 Build conditions the proposed Site Driveway is projected to operate at LOS B during the weekday morning and afternoon peak periods.

Sight Distance Evaluation

A sight distance evaluation was conducted for the proposed full access driveway on the east side of East River Street. Measurements were taken for Stopping Sight Distance (SSD) in accordance with guidelines provided by the American Association of State Highway and Transportation Officials (AASHTO).

In this respect, SSD can be considered as the minimum visibility criterion for the safe operation of an unsignalized intersection. The available sight distance at the East River Street full access driveway was measured to be greater than 305 feet, which meets a design speed of 40 miles per hour. The posted speed limit on East River Street is 25 miles per hour. The available sight distance is therefore adequate at this location.

A sight distance evaluation was also conducted for the proposed loading/service driveway on the east side of East River Street. The available sight distance at the East River Street loading/service driveway was measured to be greater than 200 feet, which meets a design speed of 30 miles per hour. The posted speed limit on East River Street is 25 miles per hour; therefore, the available sight distance is adequate at this location.

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Conclusions

The proposed development is known as 27 East River Street and is located on the northeast corner of the East River Street/Waterman Street intersection. The development program consists of constructing up to 500 residential units. Access to the site will be provided by one full-access driveway leading to the new parking garage on the east side of East River Street.

The East River Street/Pitman Street at Waterman Street/Waterman Grille Driveway intersection is projected to experience a minor increase in delays due to the proposed development but is still projected to operate at an acceptable LOS B during the weekday morning and LOS C during the afternoon peak periods under 2030 Build conditions. Under 2030 Build conditions the proposed Site Driveway is projected to operate at LOS B during the weekday morning and afternoon peak periods.

The available sight distances at the proposed full-access driveway and loading/service driveway on East River Street are acceptable because they meet a design speed of 40 miles per hour and 30 mph, respectively and the posted speed limit on East River Street is 25 miles per hour.