

Traffic Impact Study

199 NW 5 Avenue

Fort Lauderdale, Florida

May, 2022

Prepared for:

Station Village Development, LLC

Updated July 2022

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NW SAvenue

Fort Lauderdale, Florida

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Prepared for:

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Prepared by:

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INTRODUCTION

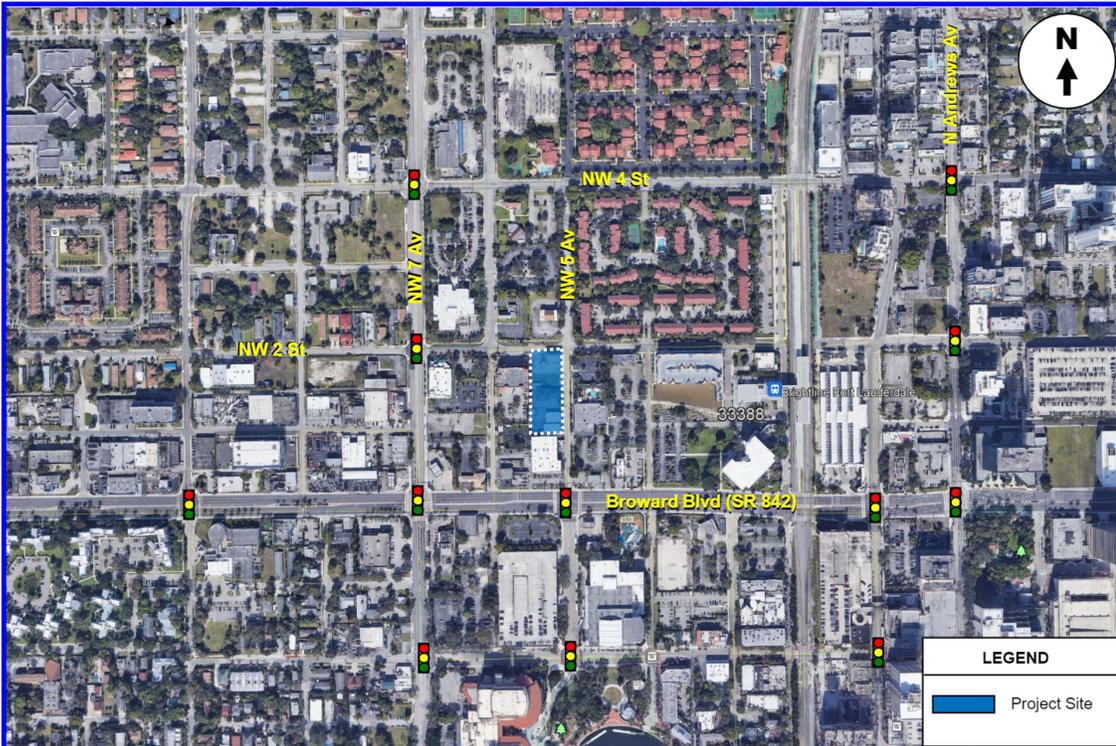
Station Village Development, LLC proposes to construct 400 multifamily dwelling units and 5,499 square feet of retail space along the west side of NW 5 Avenue south of NW 2 Street within municipal limits of the City of Fort Lauderdale, Florida. Figure 1 on the following page shows the location of the project site as well as the transportation network in the immediate vicinity.

Danielsen Consulting Engineers, Inc. has been retained by Station Village Development, LLC to conduct a traffic study in connection with the proposed development¹. This study addresses trip generation, site access, expected impacts to the adjacent roadway network, and potential improvements intended to mitigate new trips generated by the project as appropriate.

This study is divided into seven (7) sections, as listed below:

1. Inventory
2. Existing Conditions
3. Traffic Counts
4. Trip Generation
5. Trip Distribution and Traffic Assignment
6. Traffic Analysis
7. Conclusions

¹ A traffic study methodology meeting was held on Monday February 7, 2022 with City staff and the City's traffic engineering review consultant. The agreed upon methodology is included as Appendix A.



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Project Location Map

FIGURE 1
 199 NW 5 Avenue
 Fort Lauderdale, Florida

INVENTORY

Existing Land Use and Access

The subject 1.36-acre site is currently occupied by two (2), one (1)-story industrial buildings (6,520 square feet and 1,146 square feet) and a two (2)-story building (4,880 square feet) most recently used by various food and beverage entities. Vehicular access to the site is provided at one (1) location along NW 2 Street and across much of the NW 5 Avenue frontage.

Proposed Land Uses and Access

The project site is proposed to be redeveloped with the following:

- 400 multifamily dwelling units, and
- 5,499 square feet of retail space.

Access to the mixed-used development is proposed as follows:

- One (1) two-way, two-lane driveway on NW 5 Avenue.

A security gate will be located on the ramp leading to the residential parking floors as shown in the Ground Floor Plan included as Appendix B. Due to its location within the property, it is unlikely vehicles will queue into the public right-of-way. As a result, a queuing analysis is not included herein.

The project is expected to be built and occupied by the first quarter of 2026. The proposed site plan for the 199 NW 5 Avenue project is included in Appendix B.

On-Street Parking

Eight (8) on-street parking spaces are proposed according to the current site plan. It is understood these spaces may be used by any member of the public and do not count toward the project's parking requirement.

EXISTING CONDITIONS

This section addresses the roadway system adjacent to and surrounding the project site.

Roadway System

The transportation network within the study area includes one (1) state principal arterial (Broward Boulevard (SR 842)), one (1) county minor arterial (NW 7 Avenue), one (1) city minor collector (NW 2 Street) and NW 5 Avenue, a local roadway.

Broward Boulevard (SR 842) is a six (6) lane state maintained facility near the project site. This arterial, providing access into downtown Fort Lauderdale, has a posted speed limit of 35 miles per hour (mph) and a current (2019) AADT of 40,000 vpd.

NW 7 Avenue (Avenue of the Arts) is a four (4) lane county maintained facility with a two (2)-way left turn lane near the project site. This arterial has a posted speed limit of 35 miles per hour (mph) and a current (2019) AADT of 18,900 vpd.

NW 2 Street is a two (2) lane city maintained facility within the project study area. The collector has a posted speed limit of 25 miles per hour (mph) and a current (2019) AADT of 2,400 vpd.

Due to abnormal conditions, 2019 (rather than 2020) volumes are referenced. The Florida Department of Transportation (FOOT) is the source of all AADT volumes.

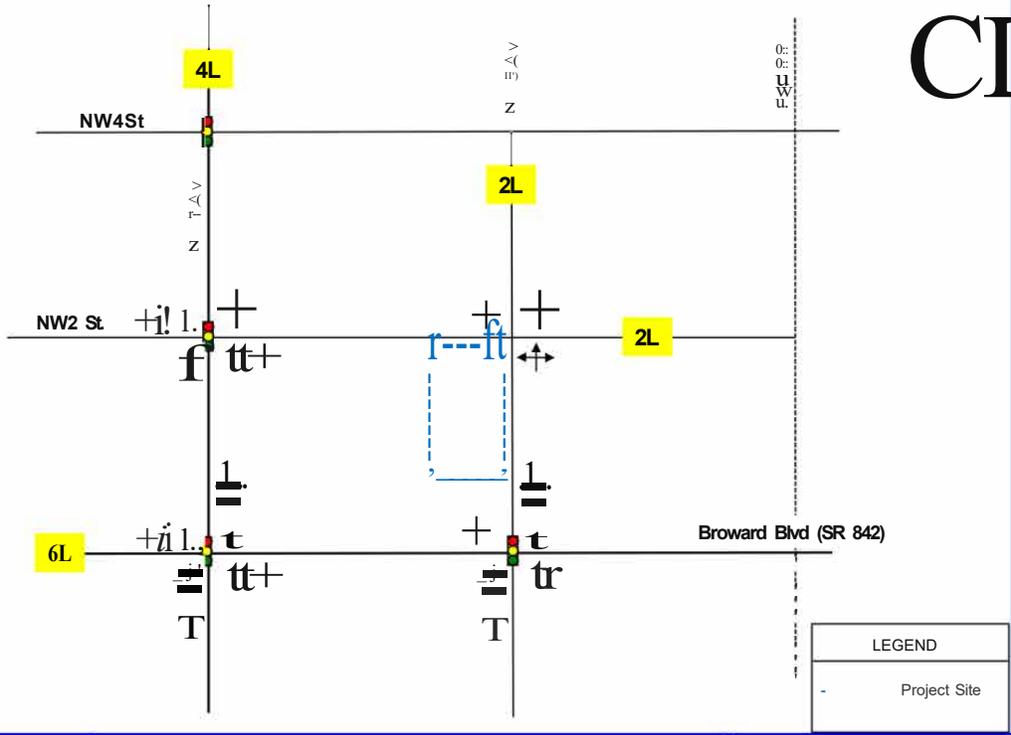
Study Intersections

For purposes of this study, the following four (4) intersections were selected for detailed analysis.

- o Broward Boulevard (SR 842) at NW 7 Avenue,
- o Broward Boulevard (SR 842) at NW 5 Avenue,
- o NW 2 Street at NW 7 Avenue, and
- o NW 2 Street at NW 5 Avenue (unsignalized).

Figure 2 shows approach lanes at each intersection under study and the number of through lanes on corresponding roadway segments.

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Existing Lane Geometry

FIGURE 2
199 NW 5 Avenue
Fort Lauderdale, Florida

Transit Service and Facilities

As the Broward Central Terminal is located three (3) blocks east of the project site, at least 15 Broward Transit routes are immediately available to future residents as well as employees and patrons of the new development. The following four (4) routes provide access on adjacent or nearby roadways.

- o **Route 6** traverses eastern Broward County between County Line Road and the Broward Central Terminal along Broward Boulevard, **NW 7 Avenue** and **NW 4 Street** near the project site.
- o **Route 9** traverses central Broward County beginning at Young Circle extending west to Davie Road and north to the Broward Central Terminal including Broward Boulevard, **NW 7 Avenue** and **NW 4 Street** near the project site.
- o **Route 22** traverses Broward County from west to east between the FLA Live Arena and the Broward Central Terminal via Broward Boulevard.
- o **Route 81** traverses Broward County from west to east between the Broward Mall on University Drive and the Broward Central Terminal via Oakland Park Boulevard, Broward Boulevard, **NW 7 Avenue** and **NW 4 Street**.

Fixed route schedules are included as Appendix C.

Three (3) additional routes (11, 14 and 31) provide service along **NW 4 Street** north of the project site.

Broward County Transit's community shuttle service (LauderGO!) increases the number of destinations accessible to residents through public transit. The Neighborhood Link trolley traverses Broward Boulevard, **NW 15 Avenue**, **NW 4 Street**, **NW 7 Avenue**, and **SW 2 Street** on a continuous loop and is active Monday through Friday between 8:00 AM and 1:10 PM. The Neighborhood Link trolley provides convenient connection to the Las Olas Link, the Beach Link, the Downtown Link and the NW Community Link.

The Fort Lauderdale Brightline\Virgin Trains USA (an express inter-city rail system) station is located along the west side of NW 2 Avenue north of Broward Boulevard. Brightline\Virgin Trains USA currently provides non-stop service to downtown West Palm Beach and downtown Miami with planned future service to Orlando. Trains generally run at one-hour headways with one-half hour headways during the AM peak.

TRAFFIC COUNTS

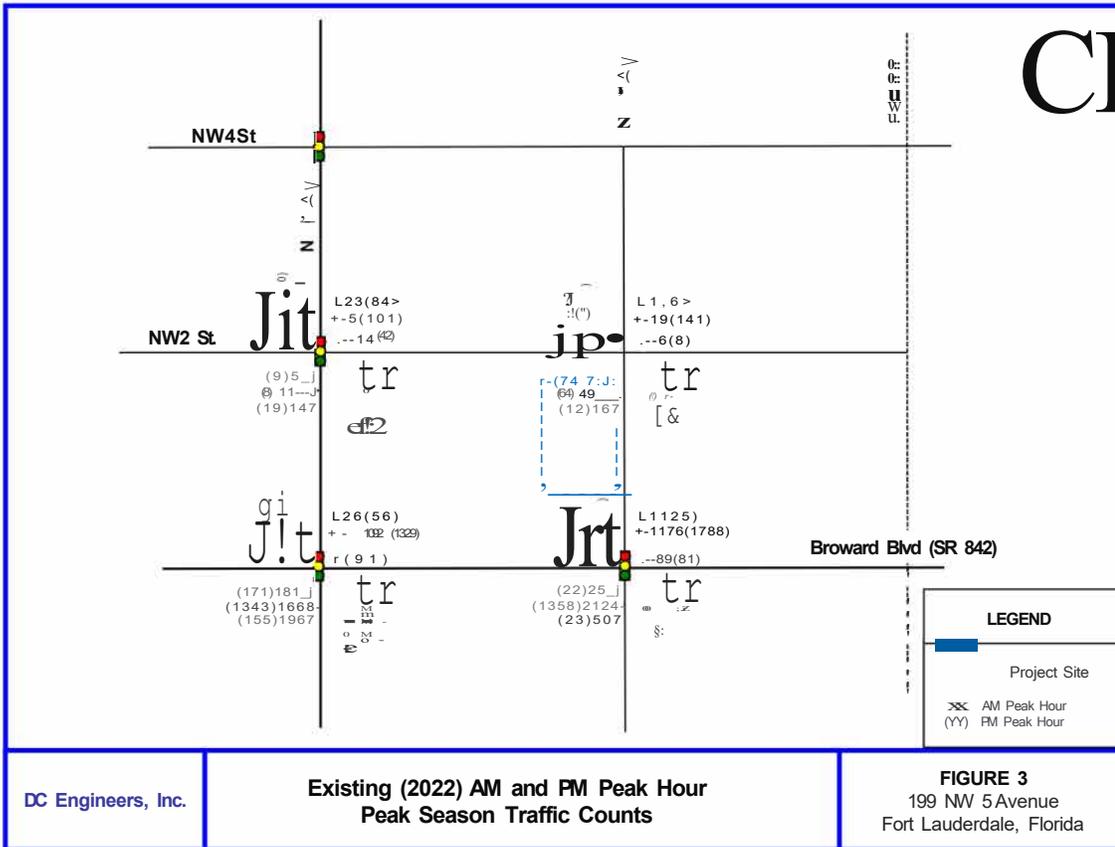
Danielsen Consulting Engineers, Inc., in association with Traffic Survey Specialists, Inc., collected turning movement count data at the following locations:

- o Broward Boulevard (SR 842) at NW 7 Avenue,
- o Broward Boulevard (SR 842) at NW 5 Avenue,
- o NW 2 Street at NW 7 Avenue, and
- o NW 2 Street at NW 5 Avenue (unsignalized).

Intersection turning movements including bicycles and pedestrians were documented on Wednesday February 23, 2022 and Tuesday March 15, 2022. Data was collected during both AM (7:00 to 9:00) and PM (4:00 to 6:00) peak periods. Traffic data collected on Wednesday February 23, 2022 and Tuesday March 15, 2022 were reviewed with respect to average peak season conditions. According to the Florida Department of Transportation's (FDOT) Peak Season Factor Category (PSFC) report (reference Appendix D), adjustment factors of 1.00 and 0.99 are required to convert traffic counts collected during this time period to average peak season conditions. A peak season factor of 1.00 was incorporated for both count days.

Existing peak hour traffic volumes adjusted to peak season are shown in Figure 3 and are included within Appendix D. Signal timing plans obtained from Broward County Traffic Engineering Division (BCTED) are also contained within Appendix D.

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Existing (2022) AM and PM Peak Hour Peak Season Traffic Counts

FIGURE 3
199 NW 5 Avenue
Fort Lauderdale, Florida

TRIP GENERATION

Trip generation for the proposed development is based upon rates and formulae published in the Institute of Transportation Engineer's (ITE) report *Trip Generation* (11th Edition). According to ITE, the most appropriate land use categories for the proposed residential units and retail space is Land Use Code (LUC) 222 'Multifamily Housing (High-Rise)' and LUC 822 'Strip Retail Plaza (<40k)'. Applicable trip generation equations for the proposed land uses as published by ITE, are as follows:

Multifamily Housing (High-Rise) - ITE Land Use #222

- o Weekday: $T = 3.76(X) + 377.04$
where T = number of trips and X = dwelling units
- o AM Peak Hour: $T = 0.22(X) + 18.85$ (34% in/ 66% out)
- o PM Peak Hour: $T = 0.26(X) + 23.12$ (56% in/ 44% out)

Strip Retail Plaza (<40k) - ITE Land Use #822*

- o Weekday: $T = 42.20(X) + 229.68$
where T = number of trips and X = gross leasable area (GLA)
- o AM Peak Hour: $T = 2.36(X)$ (60% in/ 40% out)
- o PM Peak Hour: $T = 6.59(X)$ (50% in/ 50% out)

* As the amount of retail space proposed is very small compared to the average (18,000 - 21,000 sq ft) of the 25 studies compiled by ITE, the average rate was used for peak hour calculations rather than the regression equation.

Using the above trip generation formulae from the ITE document, a trip generation analysis was undertaken for the proposed development. The results of this effort are documented in report Table 1. As shown in Table 1, the proposed development is expected to produce 2,343 gross vehicle trips per day, approximately 120 gross AM peak hour trips (44 inbound and 76 outbound), and approximately 163 gross PM peak hour trips (89 inbound and 74 outbound).

Internal Capture

Internal capture is expected between complementary land uses within a multi-use project and are those vehicle trip ends that can be satisfied onsite without impact to the adjacent roadway network. Peak hour internal capture trips are determined through application of methodologies contained within ITE's *Trip Generation Handbook*, 3rd Edition. A daily internalization estimate was established by averaging AM and PM peak hour percentages, as the ITE document does not provide a definitive methodology. Internalization summary sheets are included as Appendix E.

Multimodal Reduction

The multimodal reduction factor acknowledges that a portion of residents and retail patrons or employees may arrive or leave through an alternative mode of travel. That is, rather than a private vehicle, some may choose to use a transit alternative (bus, for example), ride a bicycle, scooter, or walk. Although recent census data indicate the multimodal factor may be as high as 16.6 percent within this census tract (Table BO8301 - Means of Transportation to Work (Tract 416): 9.3 percent use public transportation, 5.2 percent walk and 2.1 percent work from home), a 15 percent multimodal factor has been incorporated to provide a conservative analysis. A census summary for the 0.7 square mile Tract 416 is included within Appendix E.

Net New Vehicle Trips

Trip Generation estimates provided in Table 1 'Trip Generation Summary Existing Uses' consider the project site as it exists today. As shown in Table 1, the existing industrial buildings (ITE LUC 110) which are fully occupied today likely produce 31 vehicle trips per day with five (5) vehicle trips occurring during the AM peak hour and four (4) vehicle trips occurring during the PM peak hour. The 4,880 square foot, two (2)-story building also existing on site is currently only partially occupied and is, therefore, not considered in the trip generation analysis.

Acknowledging vehicle trips attributable to the existing development to be removed, the effect of internalization and the use of alternative modes of travel as described above, yields 1,842 net new vehicle trips per day, approximately 94 net new AM peak hour trips (32 inbound and 62 outbound), and approximately 123 net new PM peak hour trips (69 inbound and 54 outbound).

Table 1: Trip Generation Summary Existing Uses

Land Use	Scale	Units	AM Peak Hour			PM Peak Hour			Daily Total
			Total Trips	Inbound	Outbound	Total Trips	Inbound	Outbound	
General Light Industrial (LUC 110)	7.666	ksf	6	5	1	5	1	4	37
Subtotal			6	5	1	5	1	4	37
Internal (0%)									
Subtotal			6	5	1	5	1	4	37
Multi-Modal Reduction (15%)*			(1)	(1)	0	(1)	0	(1)	(6)
Total			5	4	1	4	1	3	31

Source: ITE Trip Generation Manual (11th Edition)

* obtained from 2019 Census, Tract 416

Table 2: Trip Generation Summary Proposed Uses

Land Use	Scale	Units	AM Peak Hour			PM Peak Hour			Daily Total Trips
			Total Trips	Inbound	Outbound	Total Trips	Inbound	Outbound	
Multi-Family Housing, High Rise (LUC 222)	400	du	107	36	71	127	71	56	1,881
Retail(< 40k) (LUC 822)	5.499	ksf	13	8	5	36	18	18	462
Subtotal			120	44	76	163	89	74	2,343
Internal (3%, 9%, 6%)			(4)	(2)	(2)	(14)	(7)	(7)	(140)
Subtotal			116	42	74	149	82	67	2,203
Multi-Modal Reduction (15%)*			(17)	(6)	(11)	(22)	(12)	(10)	(330)
Total			99	36	63	127	70	57	1,873

Source: ITE Trip Generation Manual (11th Edition)

* obtained from 2019 Census, Tract 416

† LUC 822 Daily calculation from equation rather than average rate.

Net New Trips			94	32	62	123	69	54	1,842
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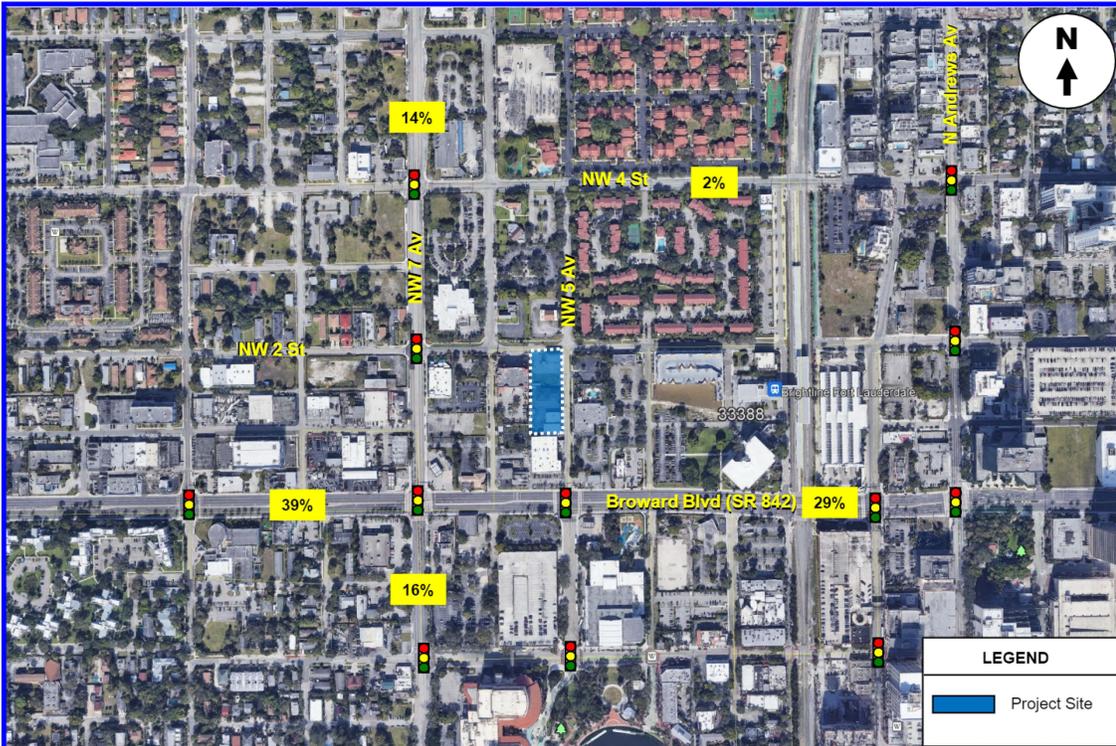
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TRIP DISTRIBUTION AND TRAFFIC ASSIGNMENT

For purposes of this study, the distribution and assignment of project-related vehicle trips are based on current travel patterns and knowledge of the immediate area. A global distribution of 14 percent to and from the north, 16 percent to and from the south, 39 percent to and from the west and 31 percent to and from the east was utilized as demonstrated below and shown in Figure 4.

- NW 7 Avenue (north of Broward Boulevard) - 18,900 vpd - 14%,
- NW 7 Avenue (south of Broward Boulevard) - 22,000 vpd - 16%,
- Broward Boulevard (west of NW 7 Avenue) - 53,000 vpd - 39%,
- Broward Boulevard (east of NW 7 Avenue) - 40,000 vpd - 29%, and
- NW 4 Street (east of NW 7 Avenue) - 2,800 vpd - 2%.

Peak hour trips generated by the proposed development were assigned to area roadways and intersections using the traffic assignment detailed above and net new project trips shown in Table 1. Project traffic assignment is summarized in Figure 5.



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Project Traffic Distribution

FIGURE 4
199 NW 5 Avenue
Fort Lauderdale, Florida

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*Traffic volumes at project driveway (Inset) reflect total project volume, while traffic volumes at external intersections are net new trips accounting for existing development to be removed.

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Project Traffic Assignment

FIGURE 5
199 NW 5 Avenue
Fort Lauderdale, Florida

TRAFFIC ANALYSIS

This section of the study is divided into two (2) distinct parts. The first part involves development of future (2026) traffic volumes for the study area. The second part includes level-of-service analyses for both existing and future year conditions.

Future Conditions Traffic Volumes

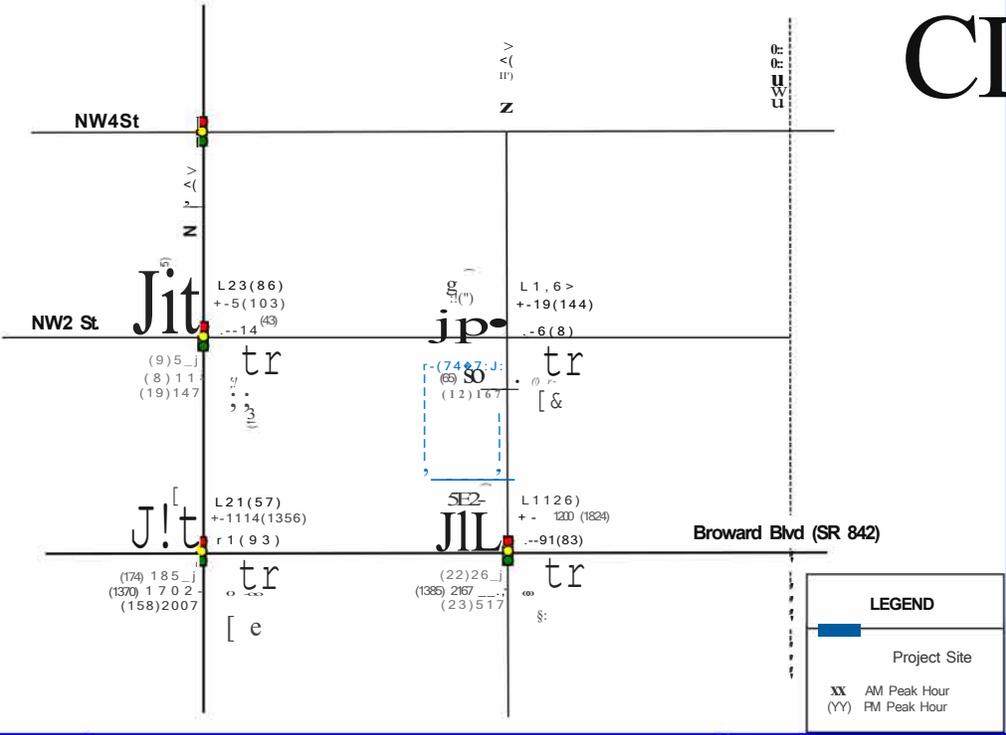
Future, build-out year (2026) traffic volumes were developed for the project study area in the following manner:

- **Average Peak Season Conversion Factor:** Traffic data collected on Wednesday February 23, 2022 and Tuesday March 15, 2002 were reviewed with respect to average peak season conditions. According to the Florida Department of Transportation's (FOOT) Peak Season Factor Category (PSFC) report (reference Appendix D), adjustment factors of 1.00 and 0.99 are required to convert traffic counts collected during this time period to average peak season conditions. A peak season factor of 1.00 was incorporated for both count days.
- **Historic Growth:** FOOT maintains four (4) traffic count stations on roadways within the identified study area. Annual Average Daily Traffic Volumes at these count stations for the past five (5) years (2015-2019) yield a growth rate of -3.06 percent compounded annually. The data from FOOT and the growth rate analysis are included as Appendix F. To provide a conservative analysis a growth rate of +0.50 percent compounded annually was applied.
- **Committed Development:** Vehicle trips associated with approved projects including Sistrunk and 7 Avenue and West Village were added to peak season volumes to produce 2026 background traffic volumes for the study area. Excerpts from these reports are included within Appendix F.

Volume development worksheets (detailing peak season adjustments, traffic growth, approved but unbuilt development and traffic associated with the proposed project for study intersections and the primary project driveway) are attached as Appendix G.

Figures 6 and 7 include future traffic volumes for the study area. Figure 6 provides projected background traffic (without the proposed project) and Figure 7 includes the additional traffic anticipated to be generated by the proposed project.

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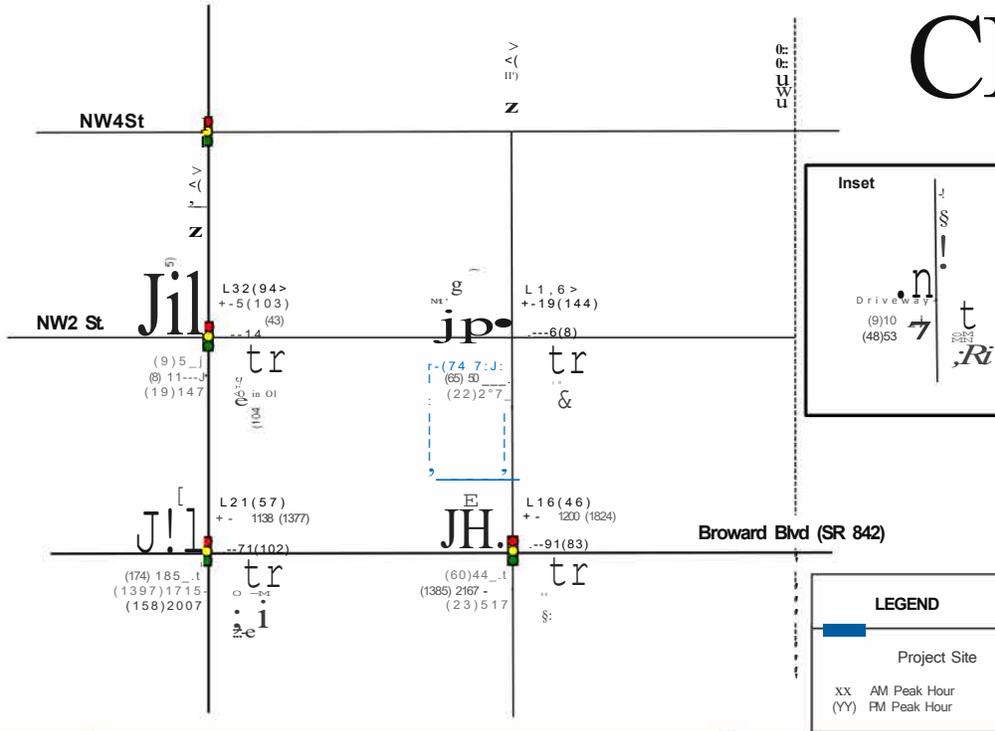


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**Future (2026) Background Traffic (w/out Project)
AM and PM Peak Hour Traffic Volumes**

FIGURE 6
199 NW 5 Avenue
Fort Lauderdale, Florida

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**Future (2026) Total Traffic (with Project)
AM and PM Peak Hour Traffic Volumes**

FIGURE 7
199 NW 5 Avenue
Fort Lauderdale, Florida

Detailed Intersection and Driveway level of Service Analyses

Intersection capacity analyses were performed for all study intersections and the project driveway. The analyses were undertaken following the capacity/level of service procedures outlined in the current (6th) edition of the Highway Capacity Manual using the SYNCHRO 11 software. The results of the intersection analyses are summarized in report Table 3.

According to the City of Fort Lauderdale Comprehensive Plan (Transportation Element), LOS 'E' is acceptable within the Downtown Core area and is thus applicable to the analysis contained herein. As shown in Table 3 all study intersections are expected to operate within this acceptable level of service in future year 2026 with traffic from the project as proposed. Appendix H includes Synchro summary sheets and a table examining queue lengths at each study intersection.

Table 3: Intersection Levels of Service

Intersection/Approaches	Existing (2022)	Future Traffic Conditions		
		Year 2026 Without Project	Year 2026 With Project	Year 2026 With Project Improvement
<i>Broward Blvd at NW 7 Av</i>	C\33.7 (D\39.3)	D\38.8 (D\43.4)	D\39.1 (D\44.3)	
- NB Approach	E (E)	E (F)	E (F)	
- SB Approach	E (D)	F (D)	F (D)	
- EB Approach	B (C)	C (C)	C (C)	
- WB Approach	B (C)	B (C)	B (C)	
<i>Broward Blvd at NW 5 Av</i>	A\4.8 (A\5.4)	A\4.8 (A\5.4)	A\6.0 IA\7.1)	
- NB Approach	E (E)	E (E)	E (E)	
- SB Approach	E (E)	E (E)	E (E)	
- EB Approach	A(A)	A(A)	A(A)	
- WB Approach	A(A)	A(A)	A(A)	
<i>NW 2 St at NW 7 Av</i>	A\3.6 (A\6.6)	A\3.6 (A\6.5)	A\3.8 (A\6.6)	
- NB Approach	A(A)	A(A)	A(A)	
- SB Approach	A(A)	A(A)	A(A)	
- EB Approach	D (C)	D (C)	D (C)	
- WB Approach	D (C)	D (C)	D (C)	
<i>NW 2 St at NW 5 Av (unsignalized)</i>				
- EB Approach	A (B)	A (B)	A (B)	
- WB Approach	A (B)	A (B)	A (B)	
<i>Project Dwy at NW 5 AV</i>				
- EB Approach	NA	NA	A(A)	

Source: HCM 6. LEGEND: A M Peak Hour (PMPeakHour); vehicular delay (sec/veh)

CONCLUSIONS AND RECOMMENDATIONS

Station Village Development, LLC proposes to construct 400 multifamily dwelling units and 5,499 square feet of retail space along the west side of NW 5 Avenue south of NW 2 Street within municipal limits of the City of Fort Lauderdale. The proposed project is anticipated to be built and occupied within the first quarter of 2026.

Access to the mixed use development is proposed as follows:

- One (1) two-way, two-lane driveway on NW 5 Avenue.

Conclusions and recommendations of the traffic study are as follows:

- As shown in Table 2, the project as proposed is expected to produce 1,842 net new vehicle trips per day, approximately 94 net new AM peak hour trips (32 inbound and 62 outbound), and approximately 123 net new PM peak hour trips (69 inbound and 54 outbound).
- Signalized and unsignalized intersections within the study area currently operate within acceptable levels of service and are expected to continue operating within acceptable levels upon buildout of the project as proposed.
- The unsignalized project driveway is expected operate within acceptable levels of service upon buildout of the project as proposed.
- It is recommended that after the project is built and occupied, the development team contact BCTED to request the signal timing of area wide traffic signals be reviewed and optimized.