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JMTE WAYN 1582
TECHNICAL MEMORANDUM
August 24, 2026

To: Landmark Properties
315 Oconee Street,
Athens, GA 30601
Bridgette Ganter, Senior Civil Manager
Bridgette.ganter@landmarkproperties.com

From: David W. Hyder, P.E., Engineering Director
J.M. Teague Engineering & Planning

SUBJECT: WAYN 1582 THE WALK AT BOONE (DRIVING RANGE APARTMENTS) - REVISED SITE PLAN EVALUATION

Landmark Properties proposes to construct 179 apartments at 115 Beverly Heights Avenue in Boone, North Carolina, in response to the perceived local need for additional housing. In response to concerns expressed by Town Council and neighboring residents, Landmark Properties has voluntarily modified the proposal in several significant ways, including:

1. Reducing the number of proposed units from 185 to 179 and the number of beds from 642 to 618,
2. Restricting two of the three proposed driveways to emergency and bus access only, and
3. Adding three transit stops on the property.

Landmark Properties has entered discussions with AppalCART Transit to provide transit service to the apartment development. These three stops are in addition to the existing Red Route Stop at NC 105 Extension and Beverly Heights Avenue. However, there may be a separate and/or dedicated transit route once negotiations are completed. Figure 2 shows the AppalCART Red Route.

There are three (3) access points on the revised conceptual site rendering; only the access closest to NC 105 Extension is public access. The remaining two (2) access points will be gated and accessible to emergency vehicles and AppalCART Transit only.

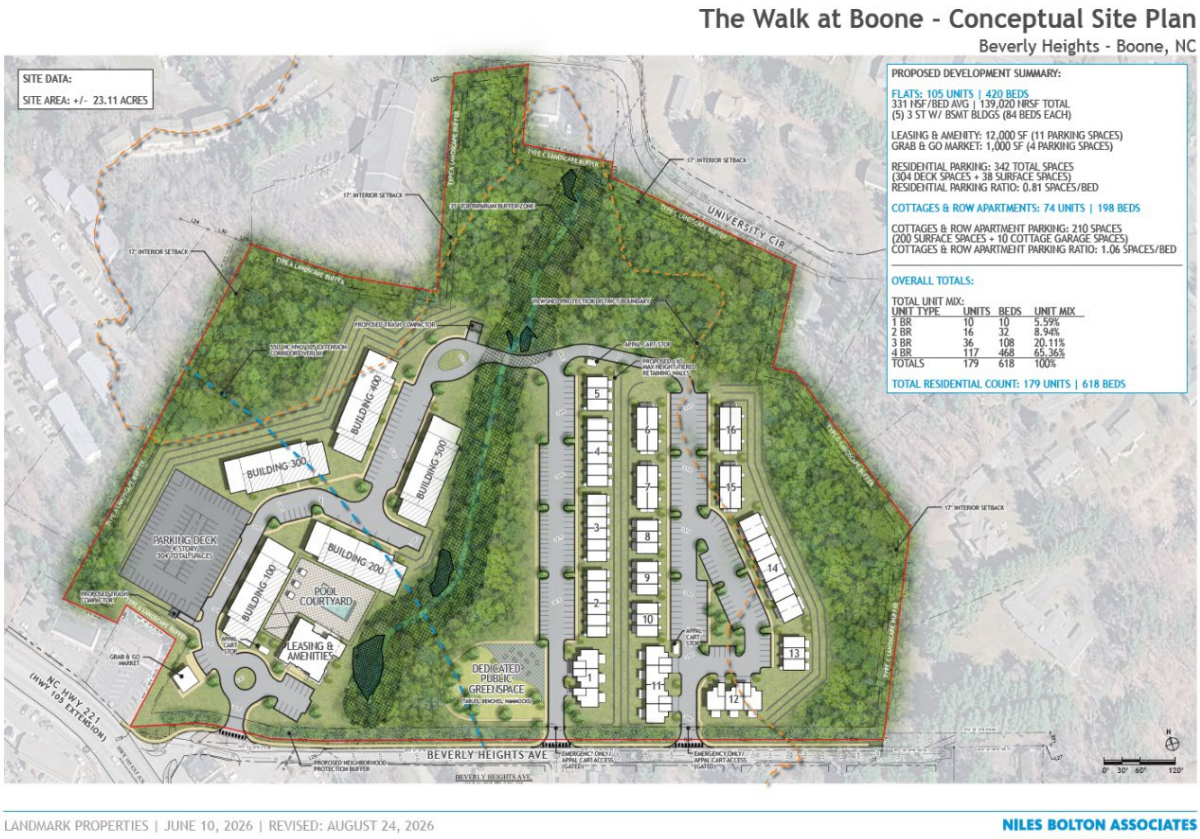


Figure 1: Revised Conceptual Site Plan (Source: Landmark Properties)

KEY FINDINGS

- By lowering project intensity, Landmark Properties has reduced daily trips by 3%, morning trips by 8.3%, and evening trips by 3.5%
- With the addition of AppalCART transit service, total vehicle trips are reduced by approximately 18% on a daily basis, 22% during the morning peak hour, and 18% during the evening peak hour, compared with the original project proposal.
- The revised project with Transit trips generates an estimated 2,085 daily trips, with 84 trips during the morning peak hour and 163 during the evening peak hour.

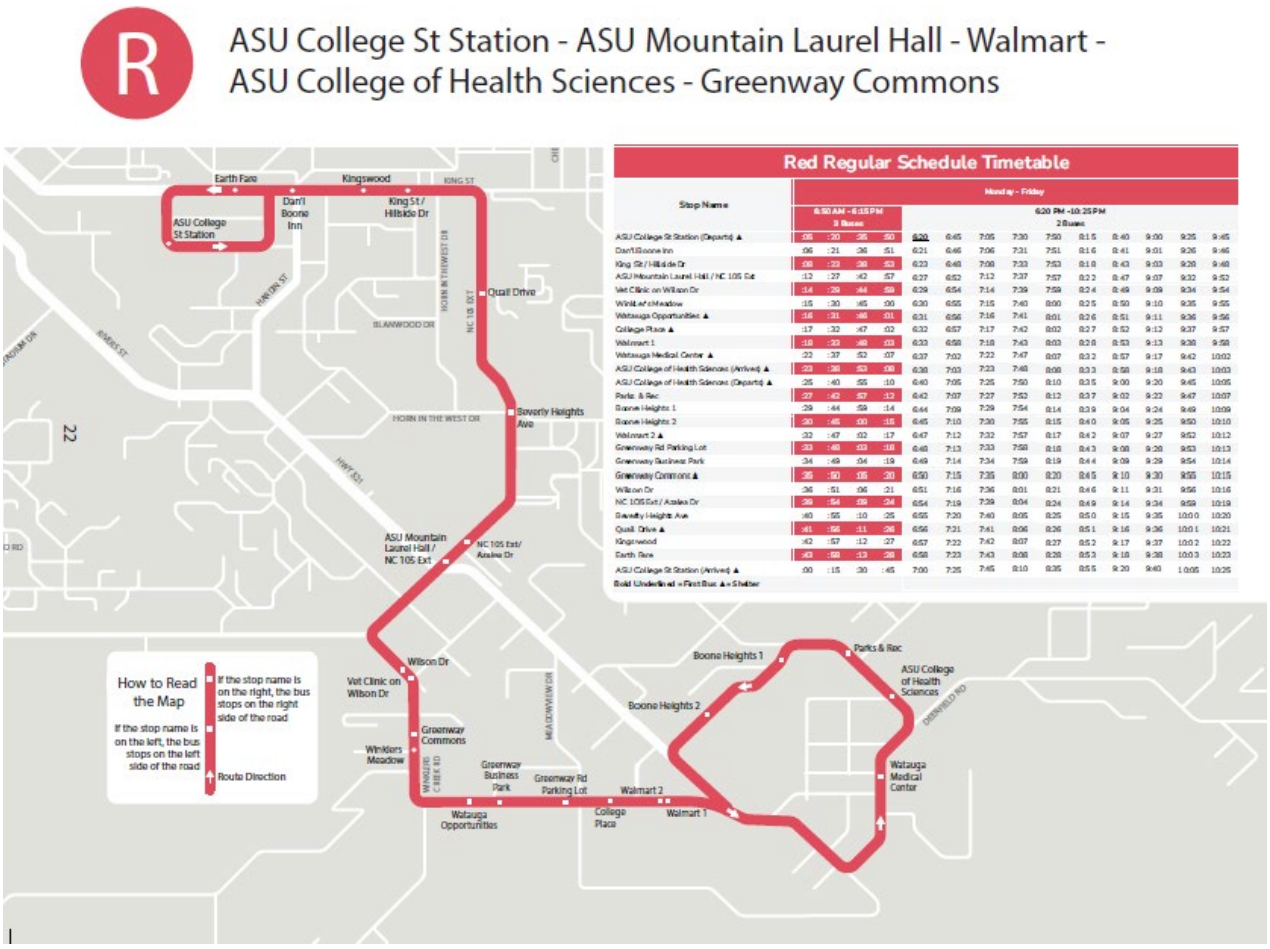


Figure 2: AppalCART Red Route

EXISTING CONDITIONS AND DISCUSSION

Land Use: NC 105 Extension (US 221) is a commercial corridor backing up to residential land uses, with Appalachian State University approximately 1 mile to the west.

Roadway Network: The NCDOT classifies US 221 as an Other Principal Arterial with an AADT of 41,000 and a speed limit of 35 MPH. NC 105 is an Other Principal Arterial with an AADT of 30,500 and a speed limit of 35 MPH. US 321 is a Minor Arterial with an annual average daily traffic (AADT) of 25,500 and a speed limit of 35 MPH. State Farm Road is a Major Collector with an AADT of 11,500 and a speed limit of 35 MPH. Beverly Heights Ave., VFW Drive, Horn Ave., Berkeley Ave., and Sheridan Ave. are all Local streets with a speed limit of 20 MPH.

Safety: Sight distance at the site access points will exceed the required 200 feet for the posted speed limit once some trees are removed.

TRIP GENERATION

Table 1 shows the original vehicle trip generation from the TIA dated April 22, 2026.

Table 1: Original Vehicle Trips

ITE LUC	Proposed Land Use	Size	Units	Daily Trips	AM Peak Hour			PM Peak Hour		
					Entering	Exiting	Total	Entering	Exiting	Total
225	Student Housing Low-Rise	642	Beds	2,549	29	79	108	104	95	199
			Total	2,549	29	79	108	104	95	199

Table 2 shows the revised land use density vehicle trips.

Table 2: Revised Vehicle Trip Generation

ITE LUC	Proposed Land Use	Size	Units	Daily Trips	AM Peak Hour			PM Peak Hour		
					Entering	Exiting	Total	Entering	Exiting	Total
225	Student Housing Low-Rise	618	Beds	2,453	27	72	99	100	92	192
			Total	2,453	27	72	99	100	92	192

With the addition of the proposed AppalCART transit stops within the development, the Engineer evaluated the potential reduction in vehicular traffic associated with transit service.

The Federal Transit Administration has documented the effectiveness of transit programs at university campuses in increasing transit mode share. For example, student transit mode share at the University of Washington increased from approximately 21 percent to 35 percent following implementation of a university transit program, while the University of California, Berkeley experienced an increase from approximately 5.6 percent to 14.1 percent. Based on these documented university experiences, a 15-percent transit mode share is considered a reasonable and conservative assumption for the proposed student housing, particularly given the site's proximity to Appalachian State University and the proposed addition of transit stops within the development. Figure 3 shows the revised trip generation including Transit.

The Appendix shows the NCHRP 684 Internal Capture Estimation for both the AM and PM Transit Trips.

Table 3: Revised Trip Generation Including Transit

ITE LUC	Proposed Land Use	Size	Units	Daily Trips	AM Peak Hour			PM Peak Hour		
					Entering	Exiting	Total	Entering	Exiting	Total
225	Student Housing Low-Rise	618	Beds	2,085	23	61	84	85	78	163
			Total	2,085	23	61	84	85	78	163

TRIP DISTRIBUTION

In this site plan, Landmark Properties is taking deliberate, proactive steps to reduce neighborhood cut-through traffic. The revised plan deliberately removes two opportunities for ordinary apartment traffic to penetrate the surrounding neighborhood while preserving those connections for emergency response and campus transit. The original plan provided three general-purpose access points serving vehicular traffic. Under the revised plan, one access point will remain available for general vehicular traffic, while the two additional access points will be restricted to emergency services and AppalCART buses. This modification reduces the number of locations through which general-purpose traffic can enter and exit the development and therefore changes the expected distribution of site-generated traffic within the surrounding street network.

The revised access configuration is also expected to reduce the potential for neighborhood cut-through traffic. Under the original configuration, the availability of multiple general-purpose access points could have allowed residents to select different routes between the development, the campus, and the surrounding roadway network. Restricting two of the three access points to emergency services and transit eliminates those opportunities for routine vehicular traffic while maintaining emergency access and transit connectivity. Consequently, traffic that would otherwise have been distributed among the three access points will be concentrated at the remaining general-purpose access, while traffic on neighborhood streets associated with the two restricted access points is expected to be reduced. Figure 6 shows the revised trip distribution.

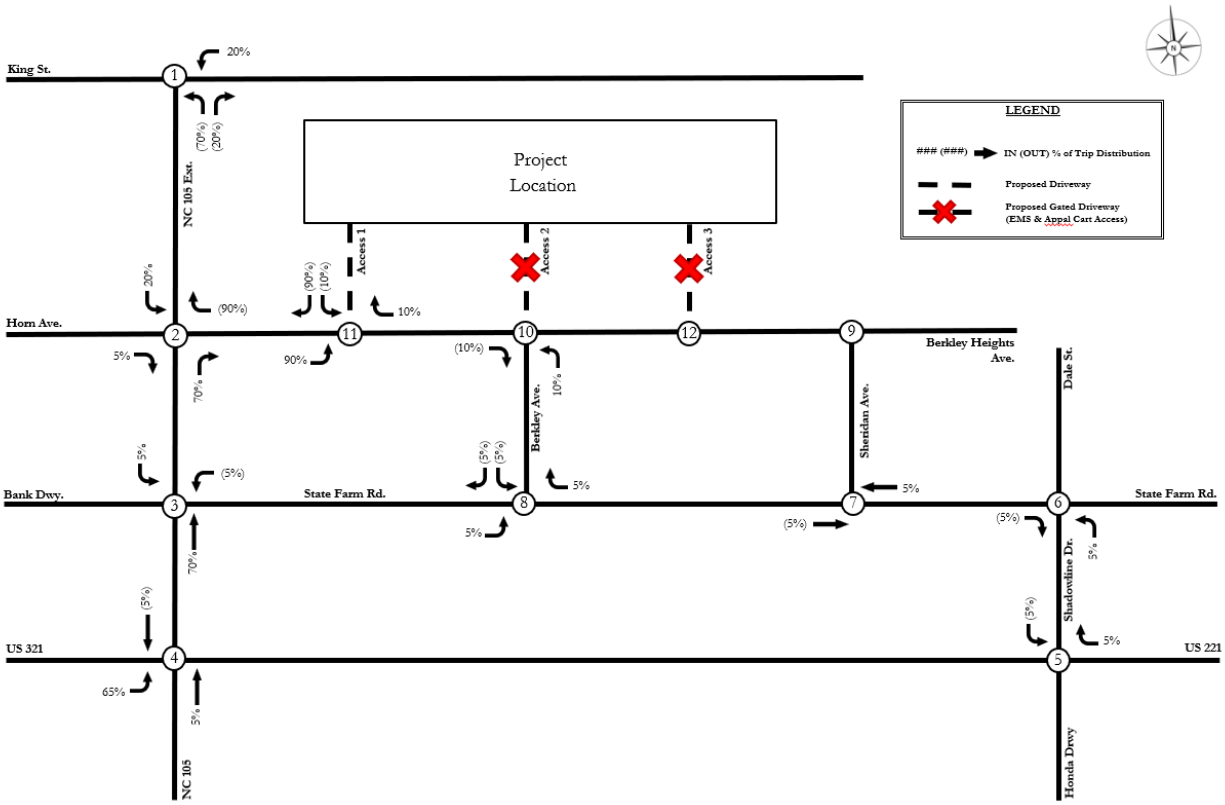


Figure 3: Revised Trip Distribution

The Intersection of US 221 (NC 105 Extension) and Horn Avenue

The analysis continues to identify an existing and future operational deficiency at the intersection of NC 105 Extension and the Beverly Heights access.

RECOMMENDED IMPROVEMENTS

To improve intersection operations and safety, Landmark Properties should modify Beverly Heights Avenue to a right-in/right-out

The recommendation is scaled to the problem and consistent with NCDOT requirements. The intersection has an existing operational deficiency that is not created by the project.

The Engineer recommends that Landmark Properties modernize Beverly Heights Drive, along the width of its frontage, to a modern two-lane two-way cross section. Any construction should meet the stricter NCDOT standards or Town of Boone Standards.

Sight distance at the site access points will exceed the required 200 feet for the posted speed limit once some trees are removed. It is Landmark Properties' responsibility to ensure and maintain adequate sight distance for the duration of construction.

CONCLUSIONS

Taken together, the revised development plan incorporates several changes that address the transportation concerns associated with the original proposal:

Table 4: Summary of Improvements

Issue	Original/Existing Condition	Revised Plan / Recommendation
Student transportation	Auto oriented Limited campus parking	15% transit mode share assumed; AppalCART access improved with 3 new stops
General-purpose access	Three general-purpose driveways	One general-purpose driveway
Emergency/transit access	Three general-purpose connections	Two additional connections restricted to emergency services and AppalCART
Neighborhood traffic	Multiple opportunities for traffic to enter/exit through surrounding streets	General traffic concentrated at one access, reducing cut-through opportunities.
Southbound left turn	Approximately 55-foot evening peak queue	Use a right-in/right out to minimize southbound left turns.

The revised plan represents a meaningful improvement over the original access configuration. It limits general-purpose vehicular access to a single location, preserves the other connections for emergency response and transit, reduces opportunities for neighborhood cut-through traffic, and incorporates a specific roadway improvement to address the project's incremental impact at the NC 105 Extension/Beverly Heights intersection.

APPENDIX

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	WAYN 1582 Driving Range Apts	**Organization:**	JM teague Engineering & Planning
Project Location:	Boone, NC	**Performed By:**	M. Prindiville
Scenario Description:		**Date:**	08.19.26
Analysis Year:	2026	**Checked By:**	
Analysis Period:	AM Street Peak Hour	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				0		
Restaurant				0		
Cinema/Entertainment				0		
Residential	225	618	Bedrooms	618	27	72
Hotel				0		
All Other Land Uses[2]				0		
				618	27	72

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.10	0%	0%	1.10	0%	0%
Retail	1.10	0%	0%	1.10	0%	0%
Restaurant	1.10	0%	0%	1.10	0%	0%
Cinema/Entertainment	1.10	0%	0%	1.10	0%	0%
Residential	1.10	15%	0%	1.10	15%	0%
Hotel	1.10	0%	0%	1.10	0%	0%
All Other Land Uses[2]	1.10	0%	0%	1.10	0%	0%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	109	30	79
Internal Capture Percentage	0%	0%	0%
External Vehicle-Trips[5]	84	23	61
External Transit-Trips[5]	17	5	12
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	N/A	N/A
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

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NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	WAYN 1582 Driving Range Apts	**Organization:**	JM teague Engineering & Planning
Project Location:	Boone, NC	**Performed By:**	M. Prindiville
Scenario Description:		**Date:**	08.19.26
Analysis Year:	2026	**Checked By:**	
Analysis Period:	PM Street Peak Hour	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				0		
Restaurant				0		
Cinema/Entertainment				0		
Residential	225	618	Bedrooms	618	100	92
Hotel				0		
All Other Land Uses[2]				0		
				618	100	92

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.10	0%	0%	1.10	0%	0%
Retail	1.10	0%	0%	1.10	0%	0%
Restaurant	1.10	0%	0%	1.10	0%	0%
Cinema/Entertainment	1.10	0%	0%	1.10	0%	0%
Residential	1.10	15%	0%	1.10	15%	0%
Hotel	1.10	0%	0%	1.10	0%	0%
All Other Land Uses[2]	1.10	0%	0%	1.10	0%	0%

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		4000	4000		4000	
Retail					4000	
Restaurant					4000	
Cinema/Entertainment					4000	
Residential		4000	4000			
Hotel					4000	

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	211	110	101
Internal Capture Percentage	0%	0%	0%
External Vehicle-Trips[5]	163	85	78
External Transit-Trips[6]	32	17	15
External Non-Motorized Trips[6]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	N/A	N/A
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).
Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-P, 8-P (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

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