

**TRAFFIC IMPACT STUDY
FOR
CENTER ROAD TRACT RESIDENTIAL DEVELOPMENT
CITY OF CARTERSVILLE, GEORGIA**



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1.0 INTRODUCTION

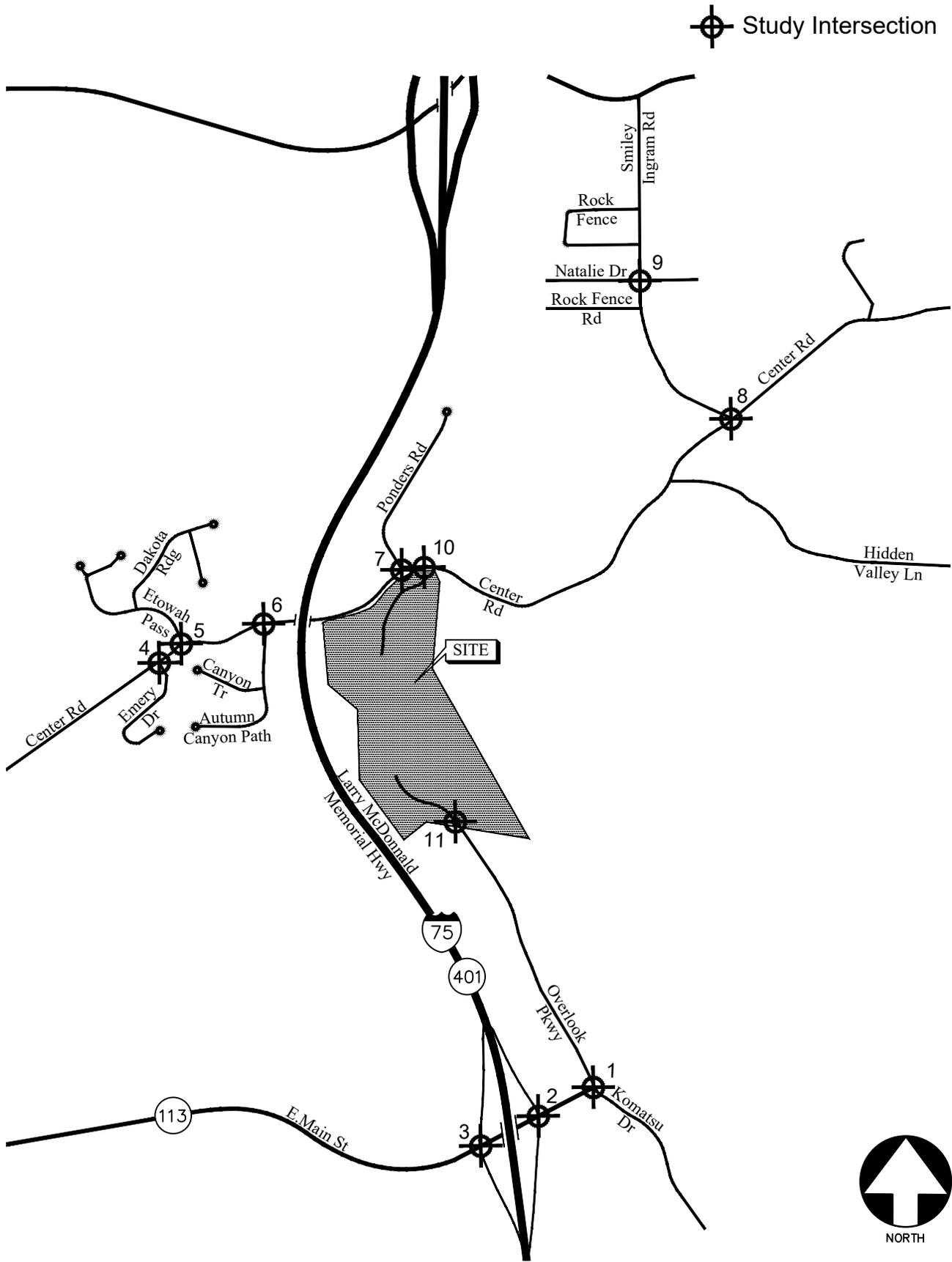
The purpose of this study is to determine the traffic impact from the proposed residential development that will be located east of I-75 in the City of Cartersville, between Center Road to the north and East Main Street to the south. The traffic analysis includes an evaluation of the current operations and future conditions with the traffic generated by the development. The development will be made up of two unconnected sections: The northern section will have 70 single-family detached houses with a full access driveway on Center Road, while the southern section will consist of 113 townhome units and will have access by a driveway connection with Overlook Parkway to the south.



The AM and PM peak hours have been analyzed in this study. In addition to the site access points, this study includes the evaluation of traffic operations at the intersections of:

1. East Main Street at Komatsu Drive / Overlook Parkway
2. East Main Street at I-75 Northbound Ramps
3. East Main Street at I-75 Southbound Ramps
4. Center Road at Emery Drive
5. Center Road at Etowah Pass
6. Center Road at Autumn Canyon Path
7. Center Road at Ponders Road
8. Center Road at Smiley Ingram Road
9. Smiley Ingram Road at Natalie Drive / Eastwood Townhomes Driveway

Recommendations to improve traffic operations have been identified as appropriate and are discussed in detail in the following sections of the report. The location of the development and the surrounding roadway network are shown in Figure 1.



LOCATION MAP

FIGURE 1
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2.0 EXISTING FACILITIES / CONDITIONS

2.1 Roadway Facilities

The following is a brief description of each of the roadway facilities located in proximity to the site:

2.1.1 I-75 (Larry McDonald Memorial Highway)

I-75 (Larry McDonald Memorial Highway) is a north-south, multilane, median-divided roadway with a posted speed limit of 70 mph in the vicinity of the site. GDOT traffic counts (Station ID: 015-0274) indicate that the daily traffic volume on I-75 (Larry McDonald Memorial Highway) was 101,000 vehicles per day south of Center Road. GDOT classifies I-75 (Larry McDonald Memorial Highway) as an interstate roadway.

2.1.2 Center Road

Center Road is an east-west, two-lane, undivided roadway with a posted speed limit of 35 mph in the vicinity of the site. Georgia Department of Transportation (GDOT) traffic counts (Station ID: 015-0358) indicate that the daily traffic volume on Center Road in 2023 was 3,940 vehicles per day west of I-75. GDOT classifies Center Road as a major collector roadway.

2.1.3 Ponders Road

Ponders Road is a north-south, two-lane, residential roadway with a posted speed limit of 25 mph in the vicinity of the site.

2.1.4 Smiley Ingram Road

Smiley Ingram Road is a north-south, two-lane, undivided roadway with a posted speed limit of 35 mph in the vicinity of the site.

2.1.5 Natalie Drive

Natalie Drive is an east-west, two-lane, undivided roadway with a posted speed limit of 25 mph in the vicinity of the site.

2.1.6 Emery Drive

Emery Drive is a two-lane residential roadway in the vicinity of the site.

2.1.7 Etowah Pass

Etowah Pass is a two-lane residential roadway in the vicinity of the site.

2.1.8 Autumn Canyon Path

Autumn Canyon Path is a two-lane residential roadway with a posted speed limit of 25 mph in the vicinity of the site.

2.1.9 *Komatsu Drive / Overlook Parkway*

Komatsu Drive is a north-south, two-lane, undivided roadway with a posted speed limit of 25 mph in the vicinity of the site. Komatsu Drive connects to Overlook Parkway to the north of its intersection with East Main Street at the Prose Cartersville apartment development.

2.1.10 *East Main Street*

East Main Street is an east-west, four-lane, median-divided roadway with a posted speed limit of 45 mph in the vicinity of the site. Georgia Department of Transportation (GDOT) traffic counts (Station ID: 015-0201) indicate that the daily traffic volume on East Main Street in 2023 was 19,000 vehicles per day west of I-75. GDOT classifies East Main Street as an urban principal arterial roadway.

3.0 STUDY METHODOLOGY

In this study, the methodology used for evaluating traffic operations at each of the subject intersections is based on the criteria set forth in the Transportation Research Board Highway Capacity Manual, 6th edition (HCM 6). Synchro software, which utilizes the HCM methodology, was used for the analysis. The following is a description of the methodology employed for the analysis of unsignalized and signalized intersections.

3.1 Unsignalized Intersections

For unsignalized intersections controlled by a stop sign on minor streets, the level of service (LOS) for motor vehicles with controlled movements is determined by the computed control delay according to the thresholds stated in Table 1 below. LOS is determined for each minor street movement (or shared movement), as well as major street left turns. LOS is not defined for the intersection as a whole or for major street approaches. The LOS of any controlled movement which experiences a volume to capacity ratio greater than 1 is designated as “F” regardless of the control delay.

Control delay for unsignalized intersections includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Several factors affect the control delay for unsignalized intersections, such as the availability and distribution of gaps in the conflicting traffic stream, critical gaps, and follow-up time for a vehicle in the queue.

Level of service is assigned a letter designation from “A” through “F”. Level of service “A” indicates excellent operations with little delay to motorists, while level of service “F” exists when there are insufficient gaps of acceptable size to allow vehicles on the side street to cross the main road without experiencing long delays.

TABLE 1 — LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS		
Control Delay (sec/vehicle)	LOS by Volume-to-Capacity Ratio*	
	v/c ≤ 1.0	v/c > 1.0
≤ 10	A	F
> 10 and ≤ 15	B	F
> 15 and ≤ 25	C	F
> 25 and ≤ 35	D	F
> 35 and ≤ 50	E	F
> 50	F	F

*The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for Major-street approaches or for the intersection.

Source: Highway Capacity Manual, 6th edition, Exhibit 20-2 *LOS Criteria: Motorized Vehicle Mode*

3.2 Signalized Intersections

According to HCM procedures, LOS can be calculated for the entire intersection, each intersection approach, and each lane group. HCM uses control delay alone to characterize LOS for the entire intersection or an approach. Control delay per vehicle is composed of initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Both control delay and volume-to-capacity ratio are used to characterize LOS for a lane group. A volume-to-capacity ratio of 1.0 or more for a lane group indicates failure from capacity perspective. Therefore, such a lane group is assigned LOS F regardless of the amount of control delay.

Table 2 below summarizes the LOS criteria from HCM for motorized vehicles at signalized intersection.

TABLE 2 — LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS		
Control Delay (sec/vehicle) *	LOS for Lane Group by Volume-to-Capacity Ratio*	
	v/c ≤ 1.0	v/c > 1.0
≤ 10	A	F
> 10 and ≤ 20	B	F
> 20 and ≤ 35	C	F
> 35 and ≤ 55	D	F
> 55 and ≤ 80	E	F
> 80	F	F

*For approach-based and intersection wide assessments, LOS is defined solely by control delay

Source: Highway Capacity Manual, 6th edition, Exhibit 19-8 *LOS Criteria: Motorized Vehicle Mode*

LOS A is typically assigned when the volume-to-capacity (v/c) ratio is low and either progression is exceptionally favorable, or the cycle length is very short. LOS B is typically assigned when the v/c ratio is low and either progression is highly favorable, or the cycle length is short. However, more vehicles are stopped than with LOS A. LOS C is typically assigned when progression is favorable, or the cycle length is moderate. Individual *cycle failures* (one or more queued vehicles are not able to depart because of insufficient capacity during the cycle) may begin to appear at this level. Many vehicles still pass through the intersection without stopping, but the number of vehicles stopping is significant. LOS D is typically assigned when the v/c ratio is high and either progression is ineffective, or the cycle length is long. There are many vehicle-stops and individual cycle failures are noticeable. LOS E is typically assigned when the v/c ratio is high, progression is very poor, the cycle length is long, and individual cycle failures are frequent. LOS F is typically assigned when the v/c ratio is very high, progression is very poor, the cycle length is long, and most cycles fail to clear the queue.

4.0 EXISTING 2025 TRAFFIC ANALYSIS

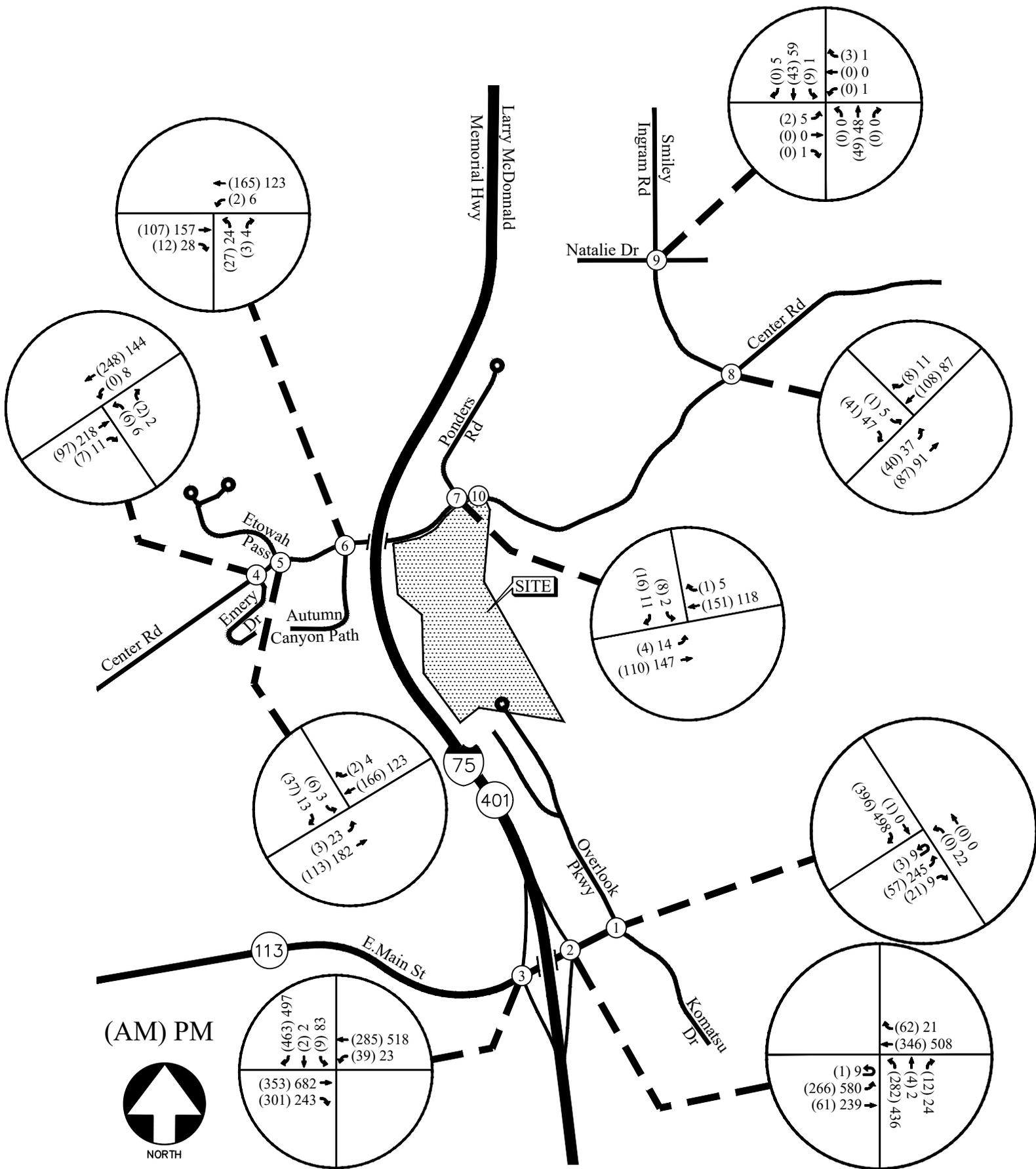
4.1 Existing Traffic Volumes

Existing traffic counts were obtained at the following study intersections:

1. East Main Street at Komatsu Drive / Overlook Parkway
2. East Main Street at I-75 Northbound Ramps
3. East Main Street at I-75 Southbound Ramps
4. Center Road at Emery Drive
5. Center Road at Etowah Pass
6. Center Road at Autumn Canyon Path
7. Center Road at Ponders Road
8. Center Road at Smiley Ingram Road
9. Smiley Ingram Road at Natalie Drive / Eastwood Townhomes Driveway

Turning movement counts were collected on Thursday, January 16, 2025, at intersections 5, 6, 7, 8, and 9. The remaining traffic counts were collected on Tuesday, January 28, 2025, at intersections 1, 2, and 4, and on Thursday, February 6, 2025, at intersection 3. All turning movement counts were recorded during the AM and PM peak hours between 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM, respectively. The four consecutive 15-minute interval volumes that summed to produce the highest volume at the intersections were then determined. These volumes make up the peak hour traffic volumes for the intersections counted and are shown in Figure 2.

The existing traffic control and lane geometry for the intersections are shown in Figure 3.

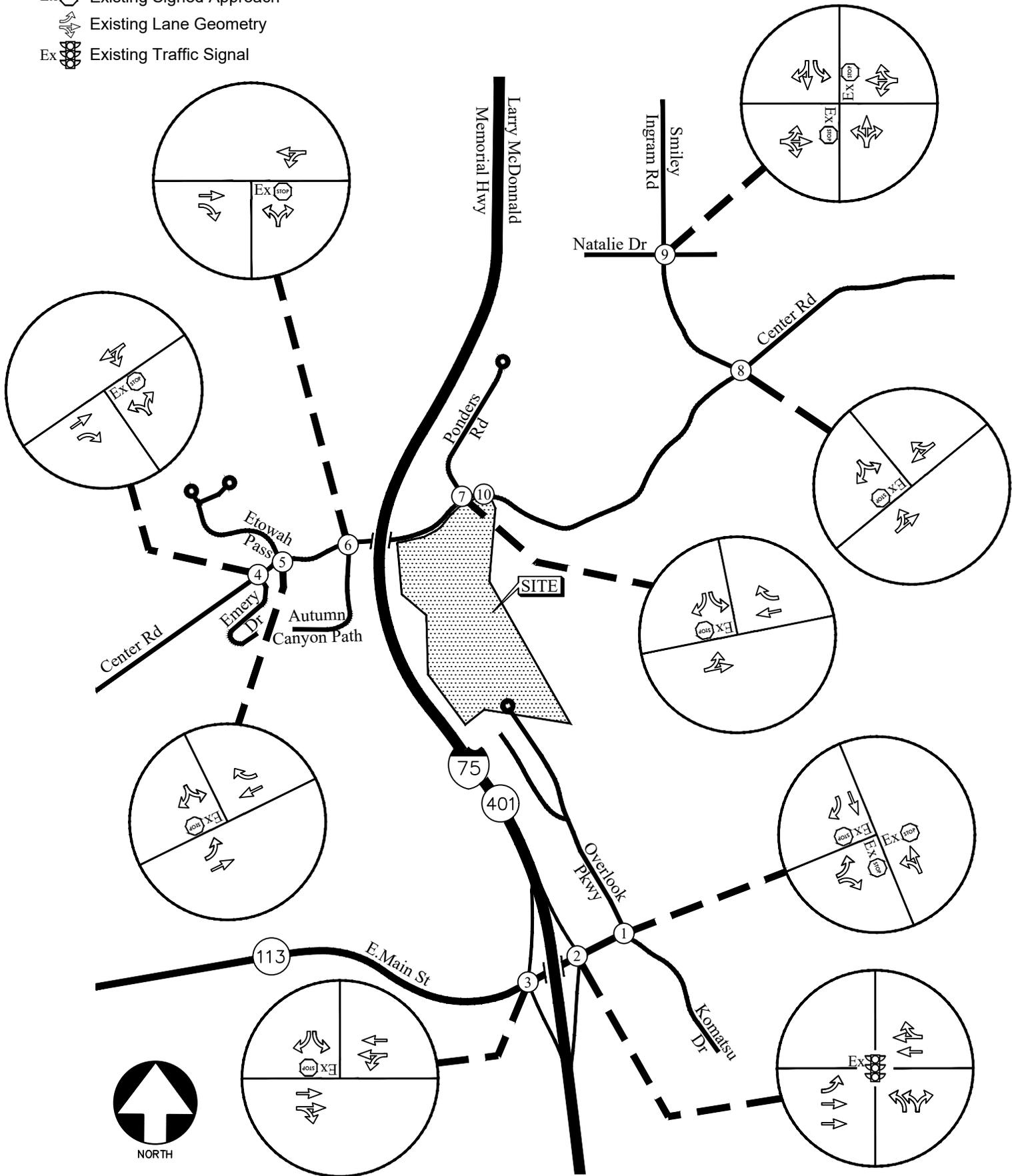


LEGEND

Ex  Existing Signed Approach

 Existing Lane Geometry

Ex  Existing Traffic Signal



EXISTING TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 3

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4.2 Existing Traffic Operations

Existing 2025 traffic operations were analyzed at the study intersections in accordance with the HCM methodology. The results of the analysis are shown in Table 3.

TABLE 3 – EXISTING INTERSECTION OPERATIONS			
Intersection	Traffic Control	LOS (Delay)	
		AM Peak Hour	PM Peak Hour
1 <u>East Main Street @ Komatsu Drive / Overlook Parkway</u> -Eastbound Approach -Northbound Approach -Southbound Approach	All-Way Stop Controlled	<u>B (11.2)</u> A (9.1) A (8.2) B (11.7)	<u>C (17.8)</u> C (15.4) A (9.6) C (19.5)
2 <u>East Main Street @ I-75 Northbound Ramps</u> -Eastbound Approach -Westbound Approach -Northbound Approach	Signalized	<u>C (20.6)</u> A (4.8) A (8.5) D (54.9)	<u>C (23.9)</u> B (10.1) B (17.1) E (56.6)
3 <u>East Main Street @ I-75 Southbound Ramps</u> -Westbound Left -Southbound Approach	Stop Controlled on SB Approach	A (8.3) C (15.8)	A (9.6) D (30.2)
4 <u>Center Road @ Emery Drive</u> -Westbound Left -Northbound Approach	Stop Controlled on NB Approach	A (7.5) B (10.5)	A (7.8) B (10.9)
5 <u>Center Road @ Etowah Pass</u> -Eastbound Left -Southbound Approach	Stop Controlled on SB Approach	A (7.6) A (9.7)	A (7.5) A (9.3)
6 <u>Center Road @ Autumn Canyon Path</u> -Westbound Left -Northbound Approach	Stop Controlled on NB Approach	A (7.5) B (10.3)	A (7.6) B (10.4)
7 <u>Center Road @ Ponders Road</u> -Eastbound Left -Southbound Approach	Stop Controlled on SB Approach	A (7.6) A (9.7)	A (7.5) A (9.2)
8 <u>Center Road @ Smiley Ingram Road</u> -Eastbound Left -Southbound Approach	Stop Controlled on SB Approach	A (7.6) A (9.1)	A (7.5) A (9.3)
9 <u>Smiley Ingram Road @ Natalie Drive / Eastwood Townhomes Driveway</u> -Eastbound Approach -Westbound Approach -Northbound Left -Southbound Left	Stop Controlled on EB and WB Approaches	A (9.5) A (8.6) A (7.3) A (7.4)	A (9.3) A (9.0) A (7.4) A (7.3)

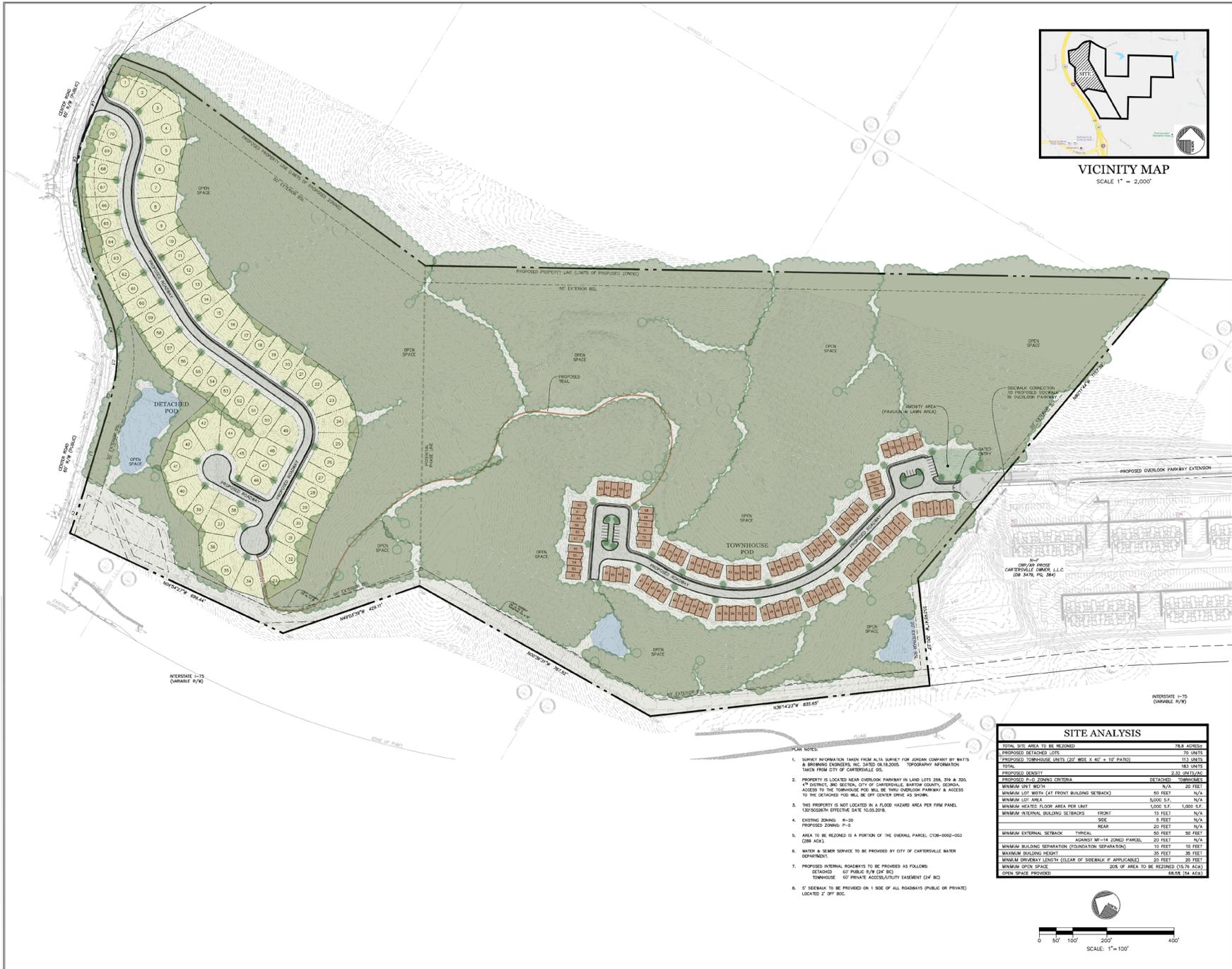
The results of the existing traffic operations analysis indicate that the stop-controlled side street approaches at the unsignalized study intersections are operating at a level of service “D” or better in both the AM and PM peak hours, while the signalized study intersection (East Main Street at the I-75 northbound ramps) is operating at an overall level of service “C” with peak hour traffic.

5.0 PROPOSED DEVELOPMENT

The proposed development will consist of two unconnected sections: The north section will consist of 70 single-family detached homes with a full access driveway on Center Road, while the southern section will consist of 113 townhome units and have access by a driveway connection with Overlook Parkway to the south.



A site plan is shown in Figure 4.



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CHRISTOPHER PLANNING & ENGINEERING

GEORGIA PROFESSIONAL SEAL
8/19/2024

OSWOC LEVEL II CERTIFIED DESIGN PROFESSIONAL #05744
(EXP. 03.31.2027)

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ZONING PLAN
FOR:
CENTER ROAD TRACT
LAND LOTS 258, 319 & 320
4TH DISTRICT, 3RD SECTION
CITY OF CARTERSVILLE
BARTOW COUNTY, GEORGIA
PIN: C108-0002-003

REVISIONS

DATE	REVISION
06.13.2022	CLIENT COMMENTS
07.14.2022	CLIENT COMMENTS
03.24.2023	CLIENT COMMENTS
06.26.2023	CITY COMMENTS
07.20.2024	CLIENT COMMENTS
08.19.2024	CLIENT COMMENTS
09.12.2024	CITY COMMENTS
09.12.2024	CLIENT COMMENTS

DATE: MAY 24, 2022 CP&E DRAWING NO: 202075927.dwg

ZONING SITE PLAN

SHEET NO. **2** OF **2**

Figure 4 – Site Plan

5.1 Trip Generation

Trip generation estimates for the project were based on the rates and equations published in the 11th edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual. This reference contains traffic volume count data collected at similar facilities nationwide. The trip generation was based on the ITE land use categories 210 – *Single-Family Detached Housing* and 215 – *Single-Family Attached Housing*. The calculated trip generation volumes for the proposed development are shown in Table 4A.

Land Use	Size	AM Peak Hour			PM Peak Hour			24 Hour
		Enter	Exit	Total	Enter	Exit	Total	Two-Way
ITE 210 – Single-Family Detached Housing	70 Units	13	41	54	45	26	71	727
ITE 215 – Single-Family Attached Housing	113 Units	13	40	53	38	26	64	811
Total Trips		26	81	107	83	52	135	1,538

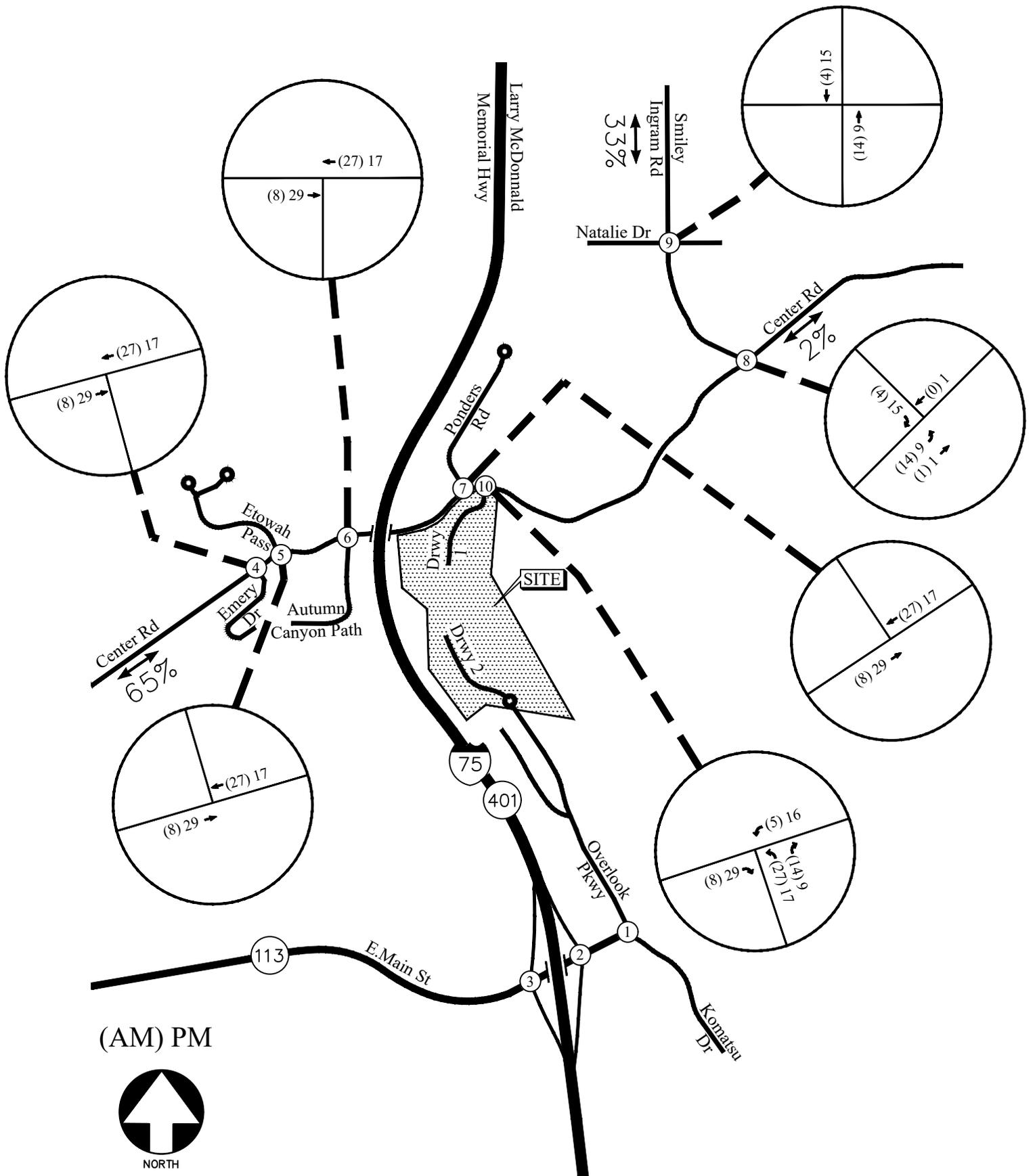
5.2 Trip Distribution

The trip distribution describes how traffic arrives and departs from the site. An overall trip distribution was developed for the site based on a review of the existing travel patterns in the area and the locations of major roadways and highways that will serve the development. The site-generated peak hour traffic volumes, shown in Table 4A, were assigned to the study area intersections based on this distribution. The outer-leg distribution and AM and PM peak hour new traffic volumes generated by the site are shown in Figures 5 (Detached Homes) and Figure 6 (Attached Homes).

5.2.1 Future Residential Developments Within Study Area

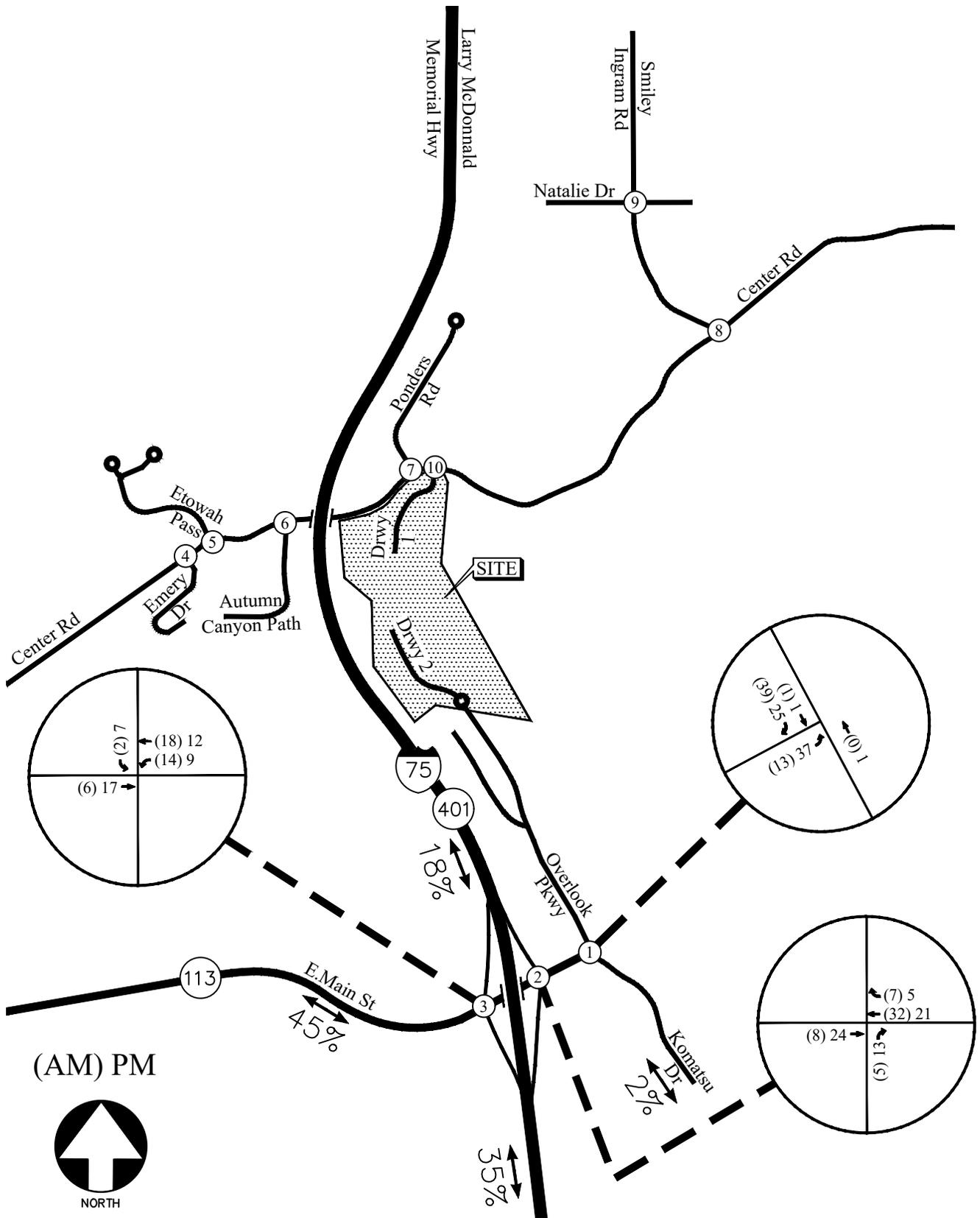
In addition to several nearby neighbourhoods that have been built along Center Road within the last 5 years (Everton Estates, Satterfield Commons, etc.), there are two planned residential developments within the study area that are expected to be constructed before or around 2027. The closer of these two developments will be the Merrill Townhomes site that will consist of 199 attached units with a driveway on Center Road aligned with Autumn Canyon Path. The second of these two developments is currently under construction (Eastwood Homes) and is located to the northeast on Smiley Ingram Road across from Natalie Drive. It will consist of 220 townhomes units and will have one full access driveway aligned with Natalie Drive on Smiley Ingram Road. The added traffic from both these developments were considered and included in both the future “No-Build” and “Build” condition evaluations. The calculated site-generated traffic volumes for these two nearby developments are shown in Table 4B, and the AM and PM peak hour volumes passing through the study area are shown in Figures 7 and 8.

TABLE 4B – TRIP GENERATION (ADJACENT SITES)								
Land Use	Size	AM Peak Hour			PM Peak Hour			24 Hour
		Enter	Exit	Total	Enter	Exit	Total	Two-Way
Adjacent Site 1: ITE 215 – Single-Family Attached Housing	199 Units	24	74	98	68	47	115	1,466
Adjacent Site 2: ITE 215 – Single-Family Attached Housing	220 Units	27	82	109	76	52	128	1,626



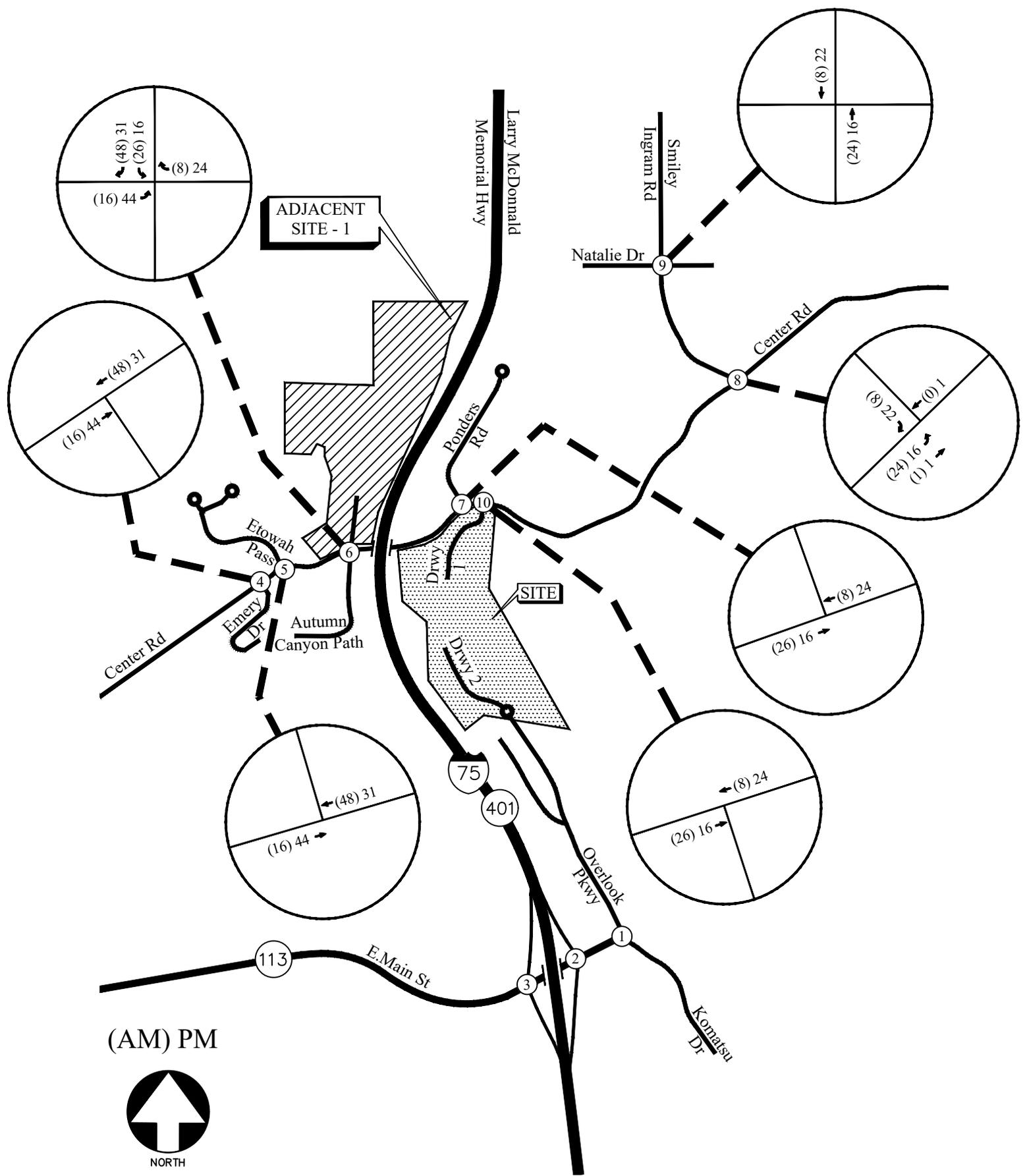
TRIP DISTRIBUTION AND SITE-GENERATED WEEKDAY
PEAK HOUR VOLUMES (DETACHED HOMES)

FIGURE 5
A&R Engineering Inc.



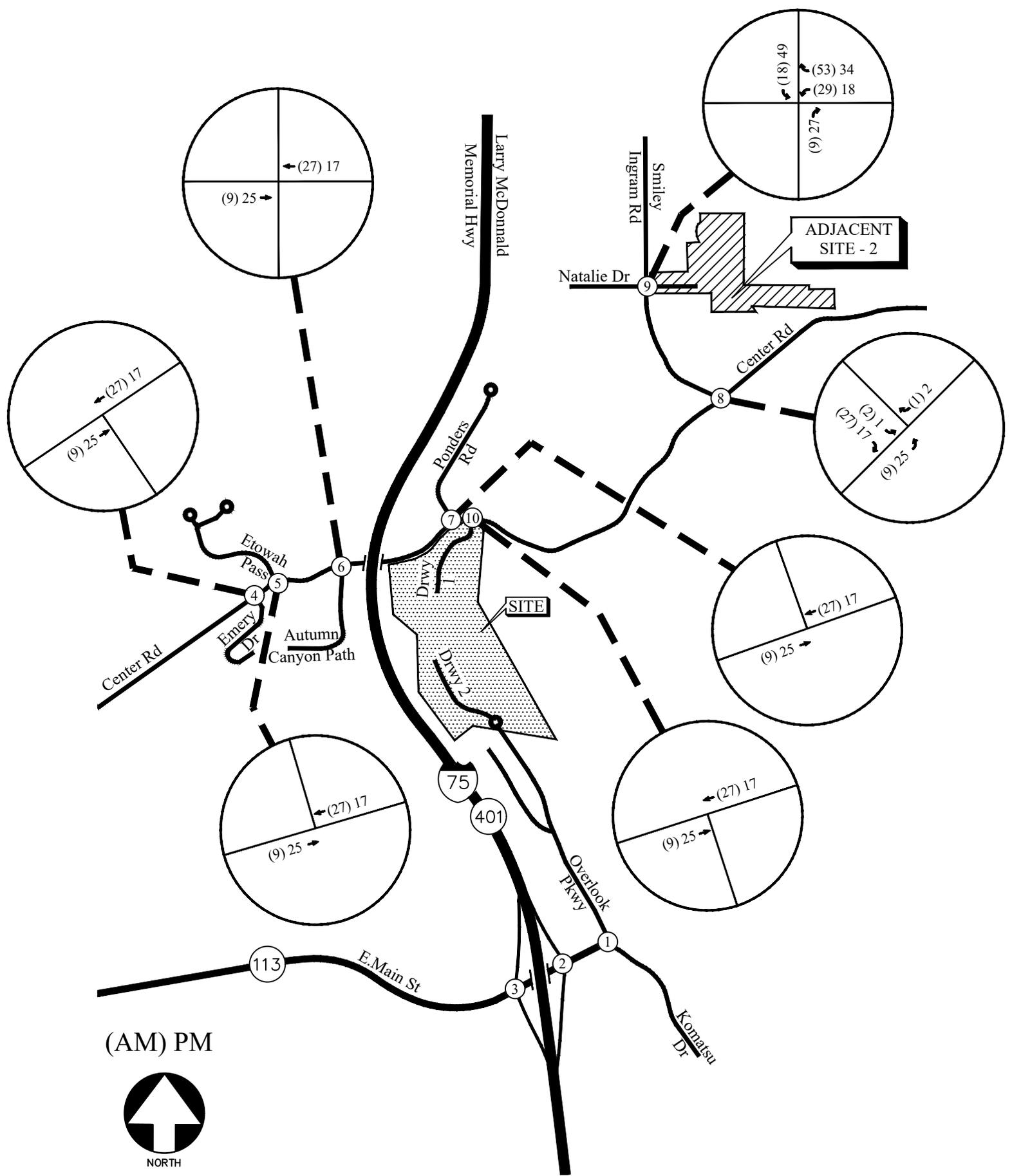
TRIP DISTRIBUTION AND SITE-GENERATED WEEKDAY
PEAK HOUR VOLUMES (ATTACHED HOMES)

FIGURE 6
A&R Engineering Inc.



TRIP DISTRIBUTION AND SITE-GENERATED WEEKDAY
PEAK HOUR VOLUMES (ADJACENT SITE - 1)

FIGURE 7
A&R Engineering Inc.



TRIP DISTRIBUTION AND SITE-GENERATED WEEKDAY
PEAK HOUR VOLUMES (ADJACENT SITE - 2)

FIGURE 8
A&R Engineering Inc.

6.0 FUTURE 2027 TRAFFIC ANALYSIS

The future 2027 traffic operations are analysed for the “Build” and “No-Build” conditions.

6.1 Future “No-Build” Conditions

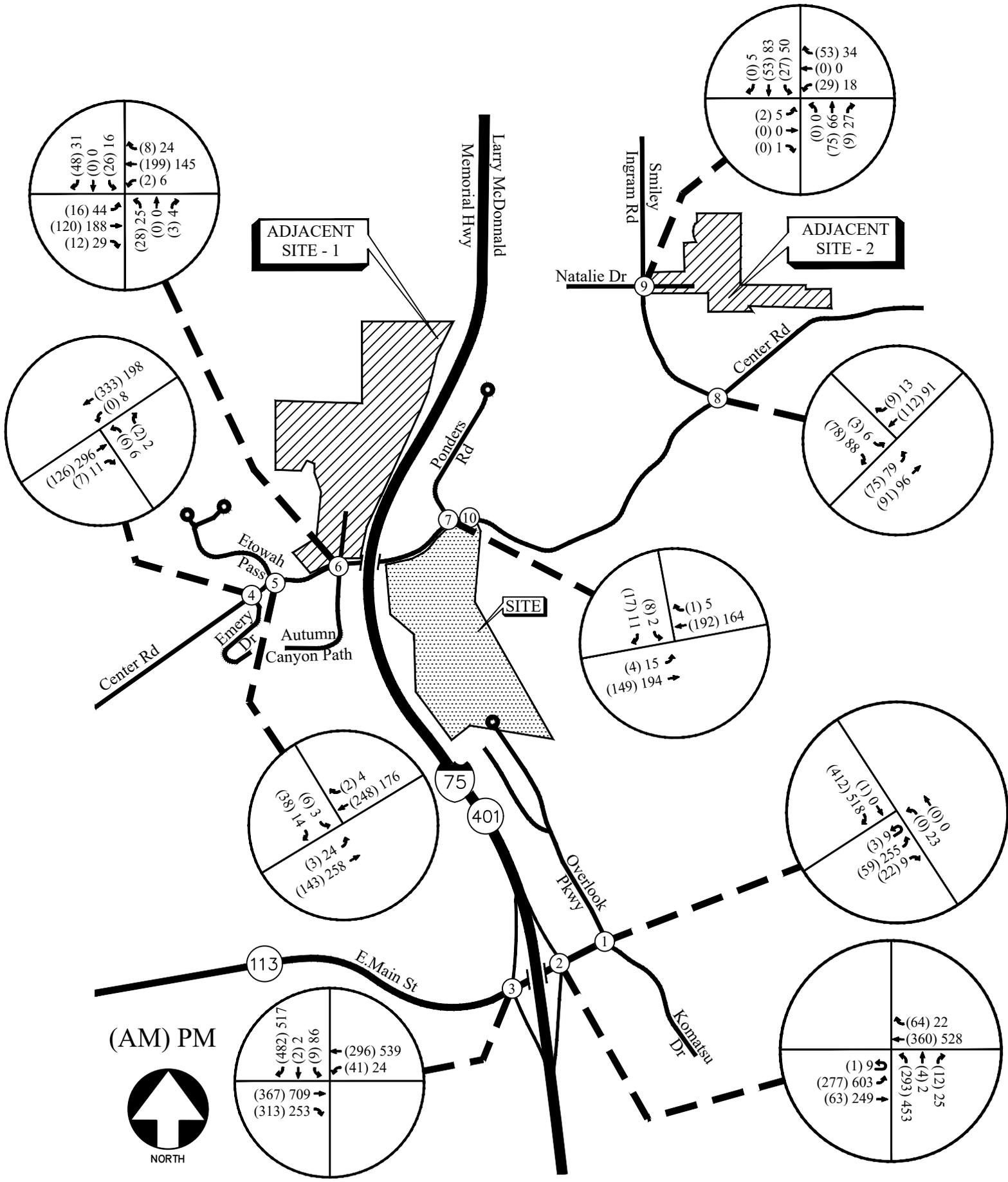
The “No-Build” (or background) conditions provide an assessment of how traffic will operate in the study horizon year without the study site being developed as proposed, with projected increases in through traffic volumes due to normal annual growth. The future “No-Build” volumes consist of the existing traffic volumes (Figure 2) plus increases due to the annual growth of through traffic and additional traffic from the nearby future developments (Figures 7 and 8).

6.1.1 Annual Traffic Growth

To evaluate future traffic operations in this area, a projection of normal traffic growth was applied to the existing volumes. The Georgia Department of Transportation recorded average daily traffic volumes at several locations in the vicinity of the site. Reviewing the growth over the last five years (2018-2019 & 2021-2023) revealed a traffic volume increase of approximately 2% in the area. This growth factor was applied to the existing traffic volumes between collector and arterial roadways to estimate the future year traffic volumes prior to the addition of site-generated traffic. The resulting future “No-Build” volumes on the roadway are shown in Figure 9.

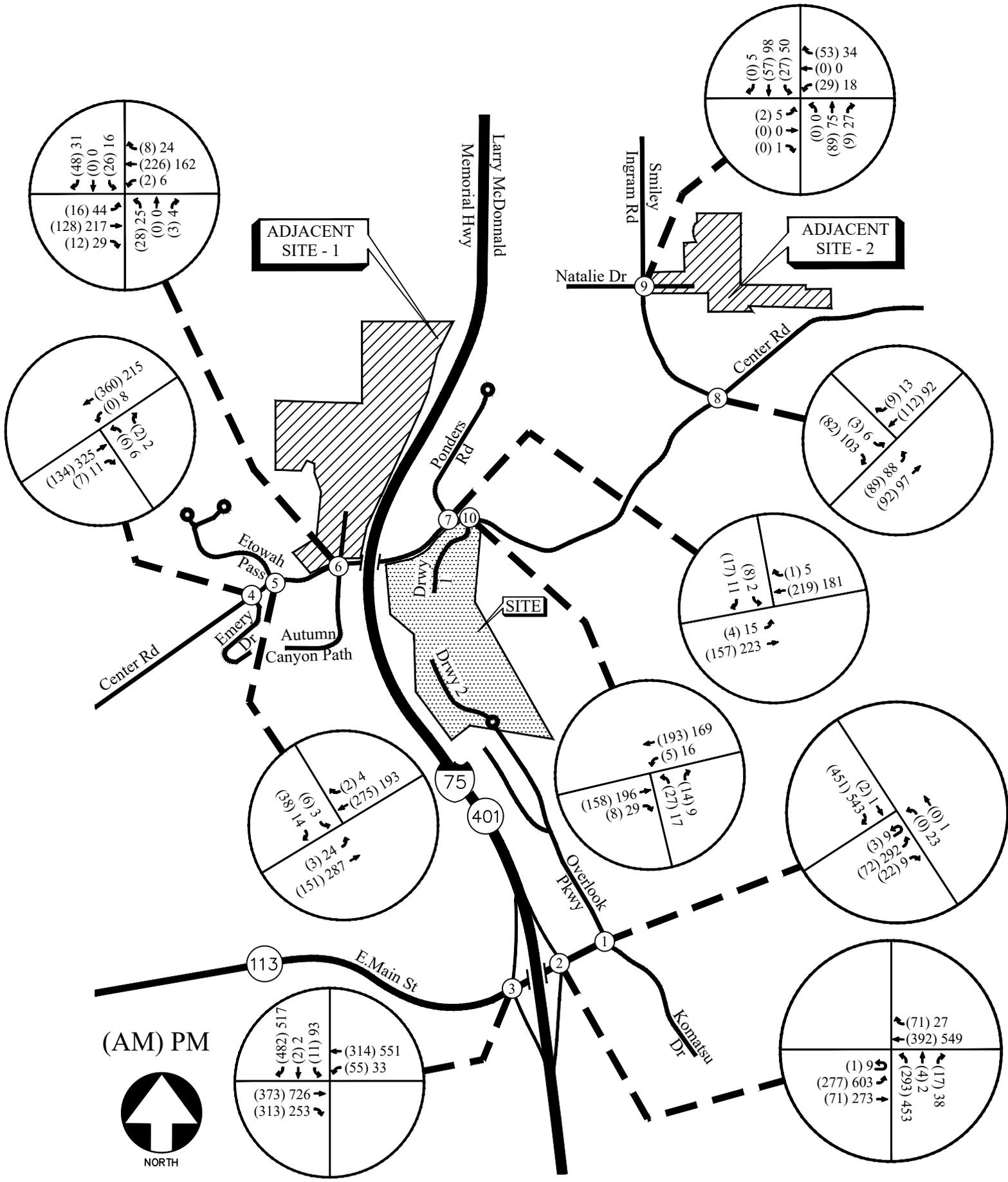
6.2 Future “Build” Conditions

The “Build” or development conditions include the estimated background traffic from the “No-Build” conditions plus the added traffic from the proposed development. To evaluate future traffic operations in this area, the additional traffic volumes from the site (Figure 5 and 6) were added to the base traffic volumes (Figure 9) to calculate the future traffic volumes after the construction of the development. These total future “Build” traffic volumes are shown in Figure 10.



FUTURE (NO-BUILD) WEEKDAY PEAK HOUR VOLUMES

FIGURE 9
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FUTURE (BUILD) WEEKDAY PEAK HOUR VOLUMES

FIGURE 10
A&R Engineering Inc.

6.3 Auxiliary Lane Analysis

Included below are analyses for turn lanes at site driveway 1 (northern driveway) per GDOT standards. No turn lane analyses were necessary for site driveway 2 at the southern section of the development, as it will simply consist of a connection at the end of the planned Overlook Parkway Extension directly to the south. The analyses below are based off the trip distribution explained in Section 5.2. According to the projected trip generation, the 24-hour two-way volume for traffic the entering and exiting the northern section of the site is 727 vehicles.

6.3.1 Left Turn Lane Analysis

For a two-lane roadway with an AADT under 6,000 vehicles and a posted speed limit of 35 mph, the daily site-generated left turn movements threshold to warrant a turn lane is 300 left-turning vehicles a day. The projected daily left turn volume at site driveway 1 is included in Table 5 below.

TABLE 5 – GDOT REQUIREMENTS FOR LEFT TURN LANES					
Intersection	Left Turn Traffic (% total entering)	Left Turn Volume (vehicles/day)	Roadway Speed / # Lanes / AADT	GDOT Threshold (vehicles/day)	Warrants Met?
Center Road @ Site Driveway 1 (N)	35% Westbound	127 (Total Trips) ÷ 2 × 0.35 = (727) ÷ 2 × 0.35 = 127	35 mph / 2-Lane / < 6,000	300	No

A left turn lane is not warranted at site driveway 1.

6.3.2 Deceleration Turn Lane Analysis

For a two-lane roadway with an AADT under 6,000 vehicles and a posted speed limit of 35 mph, the daily site-generated right turn movements threshold to warrant a deceleration lane is 200 right-turning vehicles a day. The projected daily right turn volume at site driveway 1 is included in Table 6 below.

TABLE 6 – GDOT REQUIREMENTS FOR DECELERATION LANES					
Intersection	Right Turn Traffic (% total entering)	Right Turn Volume (vehicles/day)	Roadway Speed / # Lanes / AADT	GDOT Threshold (vehicles/day)	Warrants Met?
Center Road @ Site Drwy 1 (N)	65% Eastbound	236 (Total Trips) ÷ 2 × 0.65 = (1,538) ÷ 2 × 0.65 = 236	35 mph / 2-Lane / < 6,000	200	Yes

A right turn lane is warranted at site driveway 1 as per GDOT standards.

6.4 Future “Build” Traffic Operations

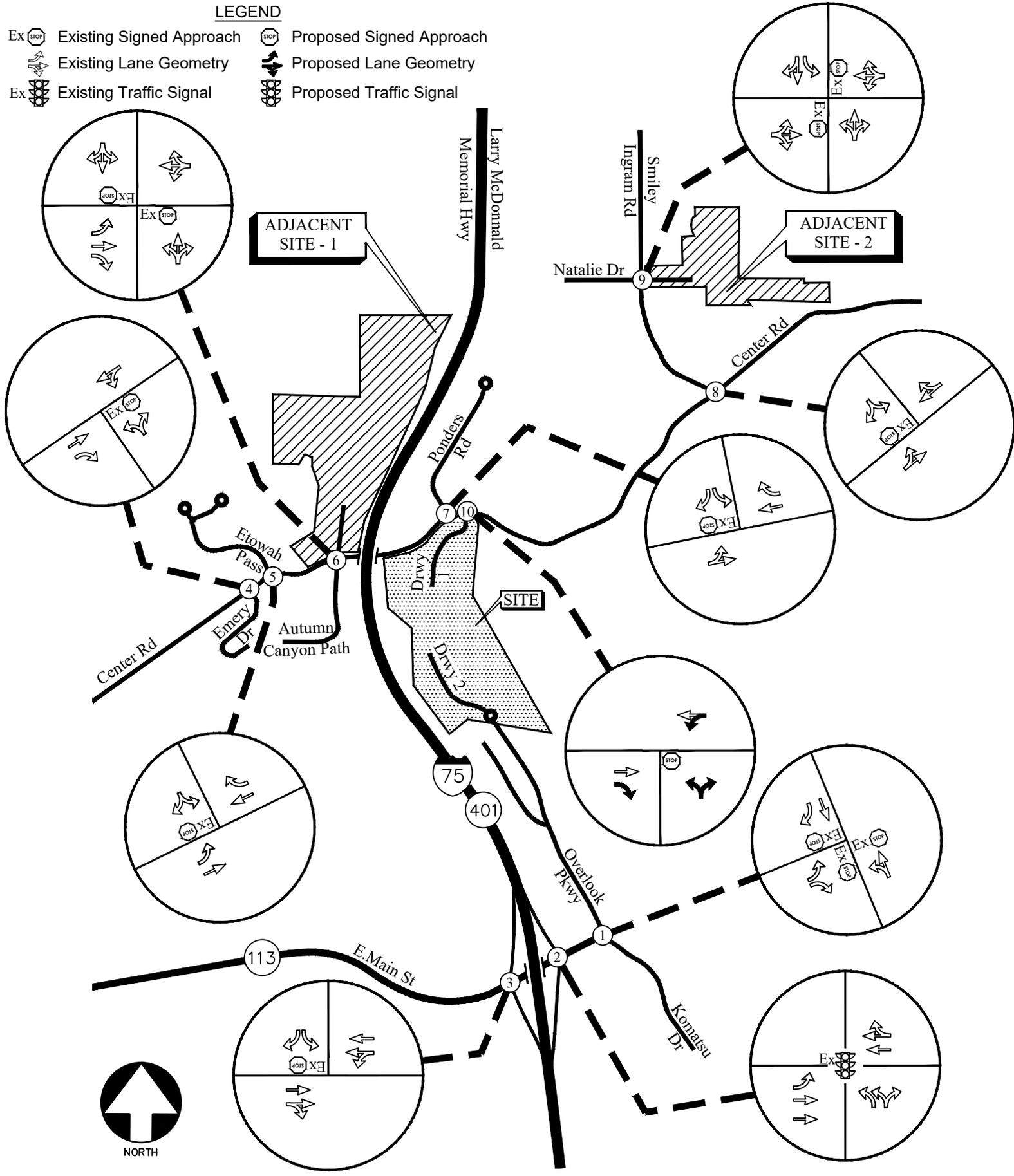
The future “No-Build” and “Build” traffic operations were analyzed using the volumes in Figures 9 and 10, respectively. The results of the future traffic operations analyses are shown below in Table 7. Recommendations on traffic control and lane geometry are shown in Figure 11.

TABLE 7 – FUTURE INTERSECTION OPERATIONS					
Intersection		Future Condition: LOS (Delay)			
		NO-BUILD		BUILD	
		AM Peak	PM Peak	AM Peak	PM Peak
1	<u>East Main Street @ Komatsu Drive / Overlook Parkway</u>	<u>B (11.7)</u>	<u>C (19.6)</u>	<u>B (13.0)</u>	<u>D (25.2)</u>
	-Eastbound Approach	A (9.2)	C (16.3)	A (9.6)	C (19.4)
	-Northbound Approach	A (8.3)	A (9.7)	A (8.4)	A (10.0)
	-Southbound Approach	B (12.2)	C (21.8)	B (13.8)	D (29.1)
2	<u>East Main Street @ I-75 Northbound Ramps</u>	<u>C (20.8)</u>	<u>C (25.3)</u>	<u>C (20.6)</u>	<u>C (26.2)</u>
	-Eastbound Approach	A (5.1)	B (12.4)	A (5.3)	B (13.4)
	-Westbound Approach	A (9.0)	B (18.7)	A (9.2)	B (19.2)
	-Northbound Approach	D (54.6)	E (56.1)	D (54.6)	E (57.3)
3	<u>East Main Street @ I-75 Southbound Ramps</u>				
	-Westbound Left	A (8.4)	A (9.7)	A (8.4)	A (9.9)
	-Southbound Approach	C (16.8)	E (35.7)	C (17.3)	E (38.6)
4	<u>Center Road @ Emery Drive</u>				
	-Westbound Left	A (7.5)	A (8.0)	A (7.5)	A (8.1)
	-Northbound Approach	B (11.5)	B (12.1)	B (11.8)	B (12.6)
5	<u>Center Road @ Etowah Pass</u>				
	-Eastbound Left	A (7.8)	A (7.6)	A (7.9)	A (7.7)
	-Southbound Approach	B (10.5)	A (9.7)	B (10.7)	A (9.9)
6	<u>Center Road @ Autumn Canyon Path / Merrill Townhomes Driveway</u>				
	-Eastbound Left	A (7.7)	A (7.7)	A (7.8)	A (7.7)
	-Westbound Left	A (7.5)	A (7.7)	A (7.5)	A (7.8)
	-Northbound Approach	B (12.3)	B (12.9)	B (12.8)	B (13.5)
	-Southbound Approach	B (10.9)	B (10.7)	B (11.2)	B (11.0)
7	<u>Center Road @ Ponders Road</u>				
	-Eastbound Left	A (7.7)	A (7.6)	A (7.8)	A (7.7)
	-Southbound Approach	B (10.0)	A (9.5)	B (10.3)	A (9.7)
8	<u>Center Road @ Smiley Ingram Road</u>				
	-Eastbound Left	A (7.6)	A (7.6)	A (7.7)	A (7.7)
	-Southbound Approach	A (9.5)	A (9.6)	A (9.5)	A (9.7)
9	<u>Smiley Ingram Road @ Natalie Drive / Eastwood Townhomes Driveway</u>				
	-Eastbound Approach	B (11.1)	B (11.3)	B (11.4)	B (11.6)
	-Westbound Approach	B (10.0)	B (10.1)	B (10.2)	B (10.2)
	-Northbound Left	A (7.4)	A (7.4)	A (7.4)	A (7.5)
	-Southbound Left	A (7.5)	A (7.6)	A (7.6)	A (7.6)
10	<u>Center Road @ Site Driveway 1</u>				
	-Westbound Left	-	-	A (7.6)	A (7.8)
	-Northbound Approach			B (10.7)	B (10.9)

The results of the future “No-Build” and “Build” traffic operations analyses indicate that the stop-controlled side street approaches at the unsignalized study intersections will continue to operate at a level of service “D” or better in both the AM and PM peak hours, except for the southbound I-75 ramp approach at intersection 3, which will operate at a level of service “E” in the PM peak hour. It is not unusual for stop-controlled minor street approaches at arterial roadways to experience higher delays during peak hours due to the time gap required to make a turning movement onto the mainline. The signalized study intersection of East Main Street at the I-75 northbound ramps (intersection 2) will continue to operate at an overall level of service “C” with peak hour traffic.

LEGEND

- Ex  Existing Signed Approach
-  Proposed Signed Approach
- Ex  Existing Lane Geometry
-  Proposed Lane Geometry
- Ex  Existing Traffic Signal
-  Proposed Traffic Signal



FUTURE TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 11

A&R Engineering Inc.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Traffic impacts were evaluated for the proposed residential development that will be located east of I-75 in the City of Cartersville, between Center Road to the north and East Main Street to the south. The development will be made up of two unconnected sections: The northern section will have 70 single-family detached houses with a full access driveway on Center Road, while the southern section will consist of 113 townhome units and will have access by a driveway connection with Overlook Parkway to the south.

Existing and future operations after the completion of the project were analysed at the intersections of:

1. East Main Street at Komatsu Drive / Overlook Parkway
2. East Main Street at I-75 Northbound Ramps
3. East Main Street at I-75 Southbound Ramps
4. Center Road at Emery Drive
5. Center Road at Etowah Pass
6. Center Road at Autumn Canyon Path / Merrill Townhomes Driveway
7. Center Road at Ponders Road
8. Center Road at Smiley Ingram Road
9. Smiley Ingram Road at Natalie Drive / Eastwood Townhomes Driveway
10. Center Road at Site Driveway 1 (North)

The analysis included the evaluation of future operations for “No-Build” and “Build” conditions, with the differences between “No-Build” and “Build” accounting for an increase in traffic due to the proposed development. The results of the future “No-Build” and “Build” traffic operations analyses indicate that the stop-controlled side street approaches at the unsignalized study intersections will continue to operate at a level of service “D” or better in both the AM and PM peak hours, except for the southbound I-75 ramp approach at intersection 3, which will operate at a level of service “E” in the PM peak hour. It is not unusual for stop-controlled minor street approaches at arterial roadways to experience higher delays during peak hours due to the time gap required to make a turning movement onto the mainline. The signalized study intersection of East Main Street at the I-75 northbound ramps (intersection 2) will continue to operate at an overall level of service “C” with peak hour traffic. Based on the analysis results, the impact on traffic operations in the study network from the proposed development will be minimal.

7.1 Recommendations for Site Access Configuration

The following configurations are recommended for the proposed site driveways:

- Site Driveway 1 (North): Full Access Driveway on Center Road
 - One entering lane and one exiting lane
 - Stop-sign controlled on the driveway approach with Center Road remaining free flow
 - A right turn lane for entering traffic
 - Provide/confirm adequate sight distance per AASHTO standards

- Site Driveway 2 (South): Full Access Driveway Connection with Planned Overlook Parkway Extension to the South
 - One entering lane and one exiting lane