Traffic Impact Study Report

Ford Kentucky Truck Plant Louisville, KY

Prepared For:

Luckett & Farley

Architecture | Engineering | Interior Design

Luckett & Farley

Prepared By:
United Consulting

June 2026

Traffic Impact Study Certification

I **Heather Kilgour** certify that this Traffic Impact Study has been prepared under my direct supervision and that I am a Professional Engineer registered in the State of Kentucky and have successfully completed the Traffic Impact Study Requirements training course required by KYTC. Furthermore, I certify that this study has been completed in accordance with the KYTC Traffic Impact Study Requirements and in accordance with engineering standards of practice. The results presented have been determined to be accurate representations of existing and anticipated conditions based on the assumptions and methodologies presented in this report.

_____

Heather Kilgour
KY PE No. 10001062

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INSERT TRAFFIC IMPACT STUDY CERTIFICATE HERE

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Contents

Appendix

1.0 Introduction

A 1.6 million square foot expansion to the Ford Kentucky Truck Plant is planned in Louisville, Kentucky located west of Collins Lane and north of Chamberlain Lane. The current employee parking lot is being expanded as a part of the project. Gate 10 has been identified as the truck access point for the expansion. A Traffic Impact Study (TIS) is required as a part of the development planning to determine impacts to the adjacent roadway network and intersections. The TIS will identify appropriate improvements to be made to mitigate impacts from the expansion.

The objectives of the TIS are to determine the appropriate improvements to the roadway system and intersections to mitigate the traffic and operational impacts from the Ford Kentucky Truck Plant manufacturing expansion for Luckett & Farley.

2.0 Study Area

This traffic study analyzes the impact the proposed developments will have on traffic operations for five existing intersections. The following are included in the study area:

1. Gate 10 Main Truck Access & Chamberlain Ln
2. Employee Parking Access & Collins Ln
3. Chamberlain Ln & Collins Ln
4. Chamberlain Ln & Old LaGrange Rd/LaGrange Rd (two intersections separated by an at-grade railroad crossing)
5. Collins Ln & Old LaGrange Rd

See **Appendix A** for location map.

3.0 Analysis Scenarios

The study will examine the following Traffic analysis scenarios:

1. 2026 No-Build (Ex. Traffic Only)
2. 2036 No-Build (Background Traffic Only)
3. 2026 Build (Background + Site Traffic)
4. 2036 Build (Background + Site Traffic)

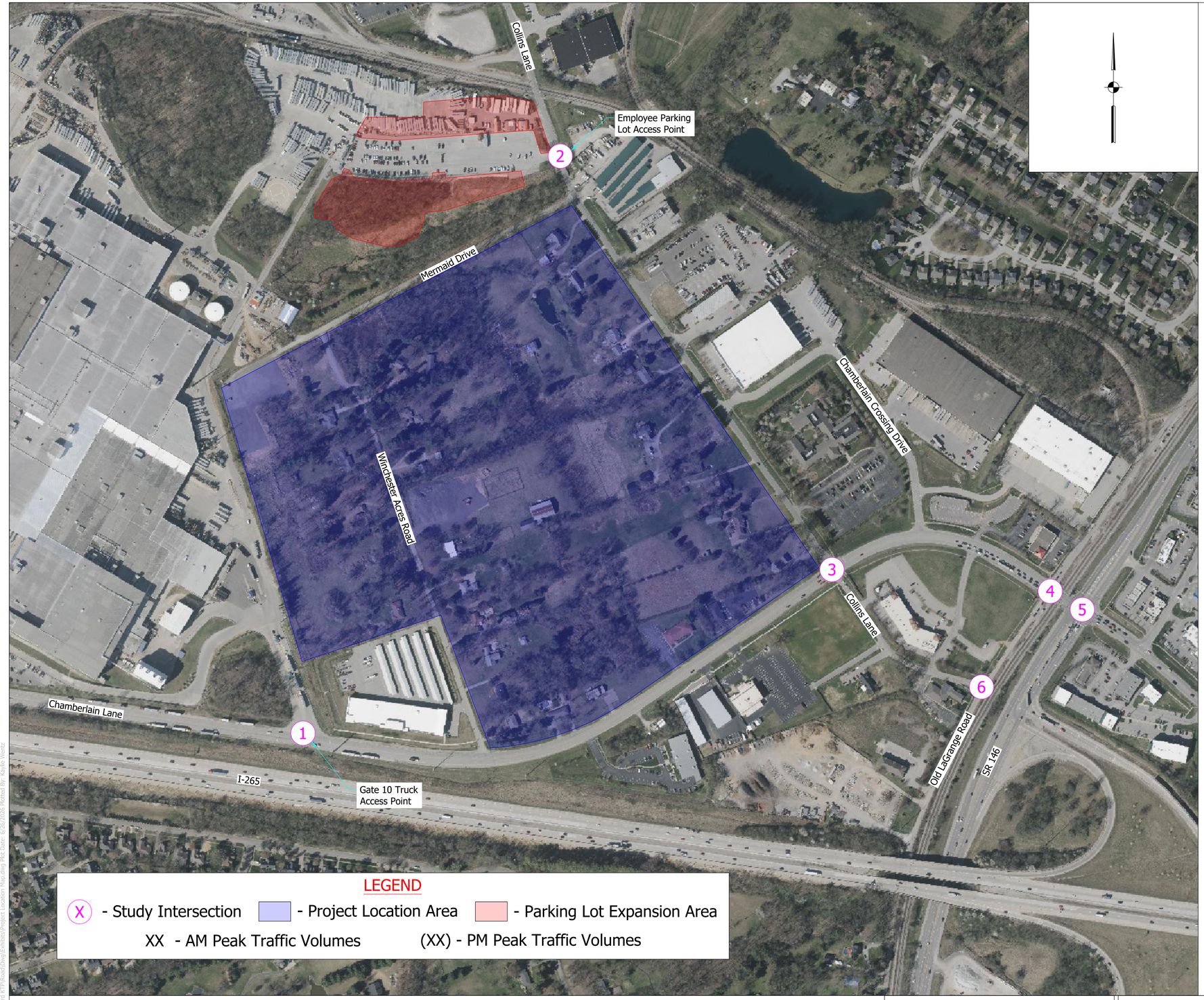
The study will additionally analyze the roadway network with the following proposed conditions at the request of the City of Louisville:

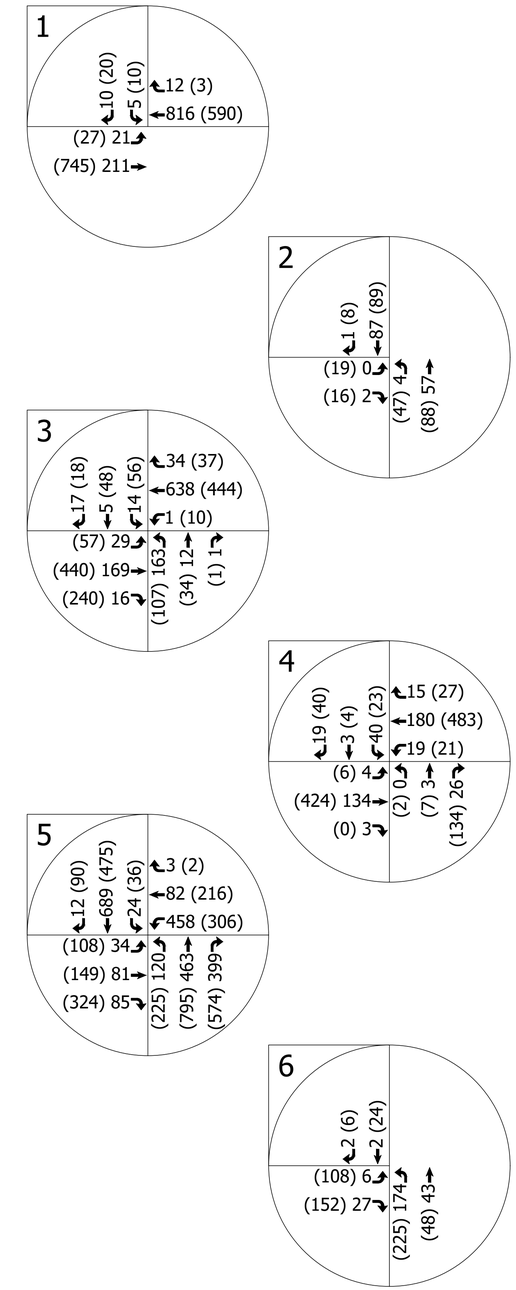
- 2036 Build Traffic Volumes with the closure along Old LaGrange Road at Collins Lane. This closure will eliminate the south leg at the intersection of Old LaGrange Road & Chamberlain Lane.

The requirements of this impact study were coordinated with Louisville Metro Planning.

3.1 Data Collection

The study utilized existing AM and PM peak hour turning movement counts for the intersection analysis. Existing traffic data for the study was collected using MioVision Cameras. The 24-hour turning movement traffic counts were collected in April 2026 during clear weather conditions. The 15-minute traffic count reports generated by Miovision can be found in **Appendix C**. Existing traffic volumes at each study intersection are illustrated in **Figure 1** on the following page.





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FORD MOTOR COMPANY
KENTUCKY TRUCK PLANT

TRAFFIC VOLUMES
2026 NO-BUILD

HORIZONTAL SCALE	BRIDGE FILE
1" = 200'	N/A
VERTICAL SCALE	DESIGNATION
N/A	N/A
SURVEY BOOK	SHEETS
N/A	2 of 8
CONTRACT	PROJECT
N/A	26-412

3.2 Trip Generation

The proposed expansion consists of a manufacturing land use. Employee projections for the Ford Expansion were provided to United by Luckett & Farley and were used to develop a site-specific trip generation estimate. Utilizing the anticipated employee count allowed for a more accurate representation of traffic generated by the facility than would be achieved using generalized rates from the Institute of Transportation Engineers (ITE) Trip Generation Manual. The resulting trip estimates represent employee vehicle trips entering and exiting the employee parking areas.

Truck traffic associated with the expansion was estimated using the ITE Trip Generation Manual, 11th Edition, and was assigned to Gate 10 based on the anticipated site operations and access configuration.

The trip generation methodology applied in this analysis is consistent with the procedures and guidance outlined in the ITE Trip Generation Manual, 11th Edition.

The results of the trip generation can be found in **Table 3.2.1**. The number of vehicles entering and exiting in the AM and PM Peak at the employee parking lot provided by Ford and the ITE Trip Generation reports can be found in **Appendix D**.

Table 3.2.1: Trip Generation Summary

ITE Land Use Code	Land Use Description	Ind. Var. (X)	Ind. Var. Units	Entering/Exiting	Truck Trips	Vehicle Trips
140	Manufacturing	1600	1000 Sq. Ft. GFA	Entering (AM Peak)	13	458
				Exiting (AM Peak)	19	406
				Entering (PM Peak)	34	406
				Exiting (PM Peak)	46	458

Note: Truck Trips were generated using ITE Trip Generation Manual while the vehicle trips were provided by L&F

3.3 Trip Assignment and Distribution

Existing traffic data shows a high percentage of vehicles traveling in the NB/SB direction, toward I-265, in both the AM and PM peak hours. Generated trips from the proposed site were distributed along the roadway network utilizing a similar directional distribution. The same distribution was utilized and is documented in **Appendix B**.

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The methodology used to evaluate the traffic volumes generated by the proposed development and their impact on the street system is outlined below:

Traffic Volume Assignment: Traffic entering and exiting was assigned to available access points based on traffic patterns noted in collected data.

Traffic Volume Distribution: Traffic volumes from each access point were distributed to the local roadway network based on existing directional distributions, traffic patterns, and relative attractiveness or proximity of destinations.

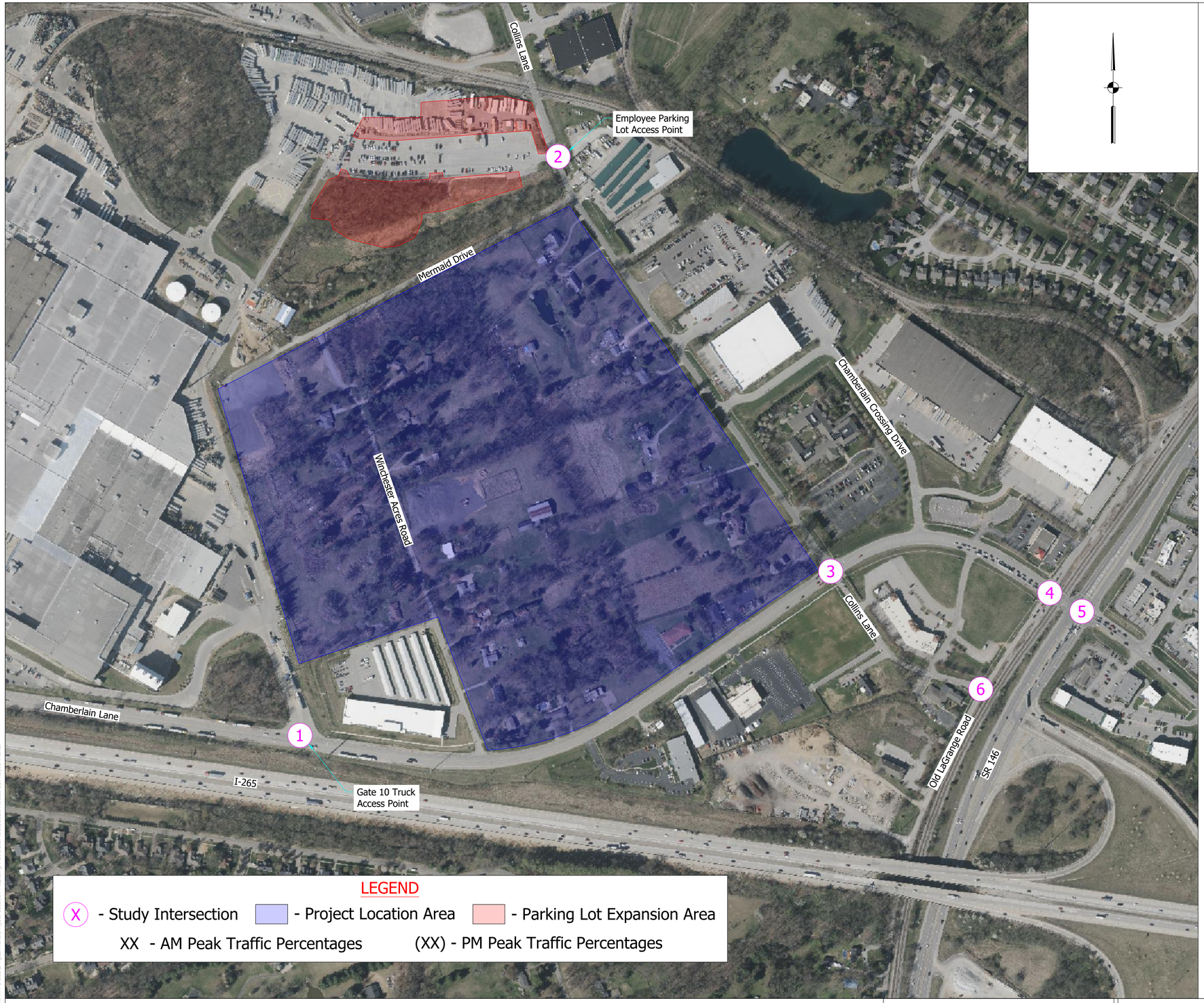
Figure 2 illustrates the proposed trip distribution and assignment percentages for the development, while **Figure 3** depicts the resulting site-generated traffic volumes assigned throughout the surrounding roadway network.

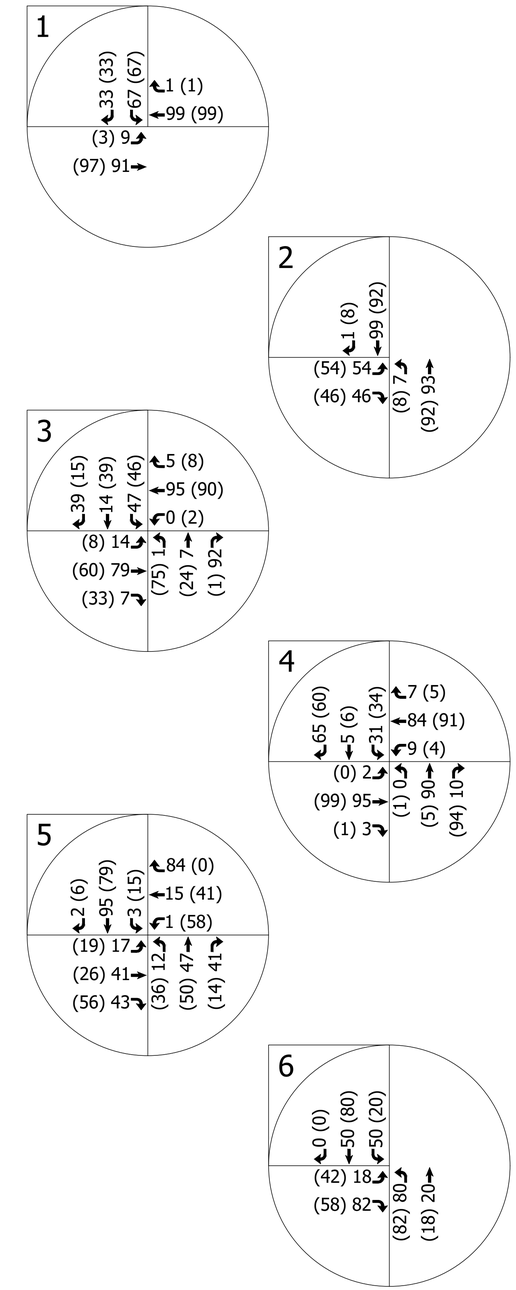
3.4 Design Year Forecast

The design year analysis forecasted background traffic volumes based on historical growth patterns. The design year assumed a 10-year horizon. The future year forecast was determined through the use of the forecast spreadsheet provided on the KYTC division of planning website (see **Appendix E**). This spreadsheet calculated the estimated growth rate for the design year 2036. Traffic count data from Chamberlain Lane, Collins Lane, and LaGrange Road were input into the spreadsheet and the growth rate was found to be -0.68%. A worse-case growth rate of 0.5% was assumed for the purpose of this study. The 2036 no-build traffic volumes are illustrated in **Figure 4** below.

2026 and 2036 build traffic volumes are illustrated in **Figures 5** and **6**, respectively.

Figure 7 shows the 2036 build traffic volumes with the closure along Old LaGrange Road at Collins Lane.





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FORD MOTOR COMPANY
KENTUCKY TRUCK PLANT

TRAFFIC VOLUMES
AM/PM PEAK TRAFFIC PERCENTAGES

HORIZONTAL SCALE	BRIDGE FILE
1" = 200'	N/A
VERTICAL SCALE	DESIGNATION
N/A	N/A
SURVEY BOOK	SHEETS
N/A	8 of 8
CONTRACT	PROJECT
N/A	26-412

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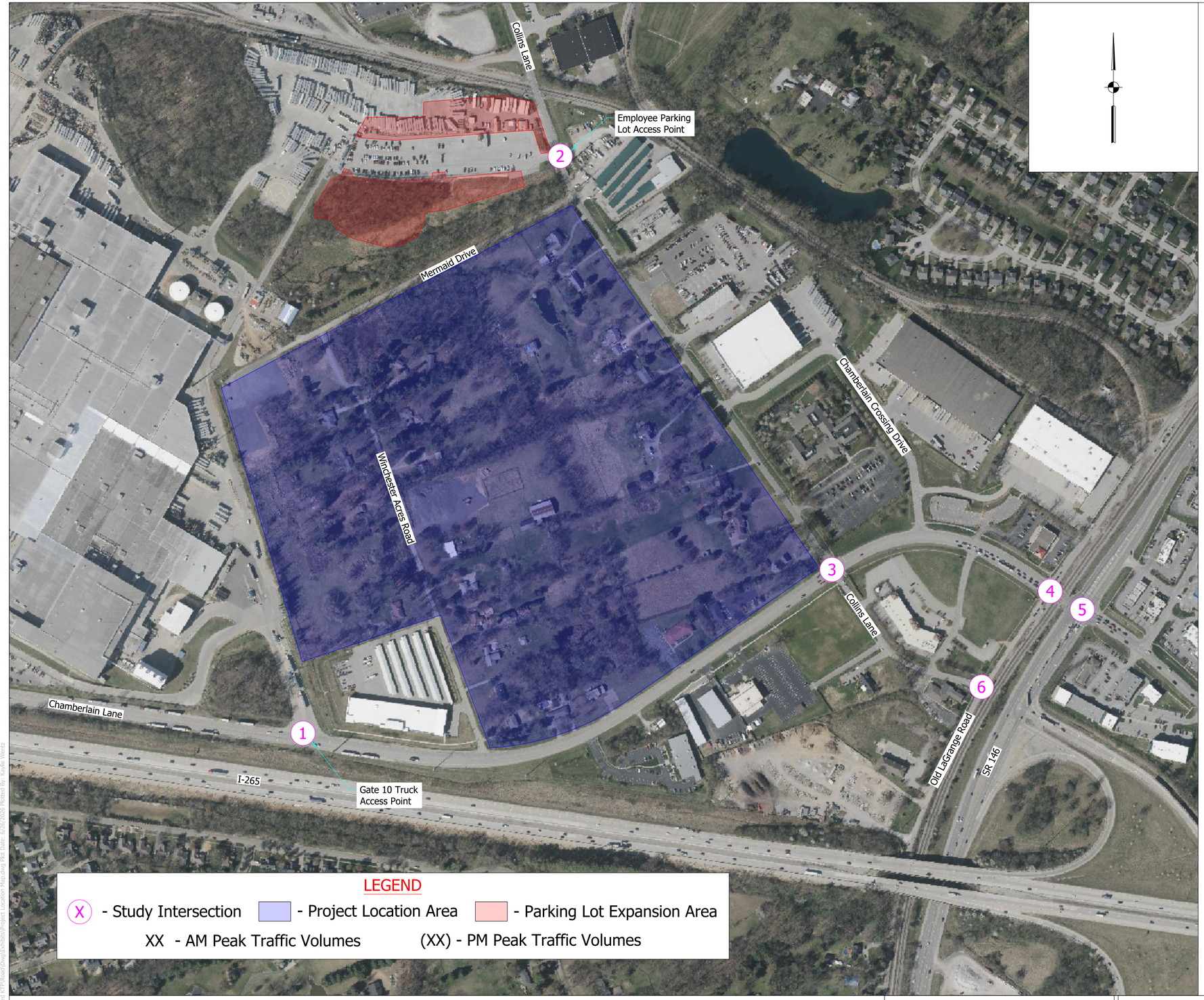

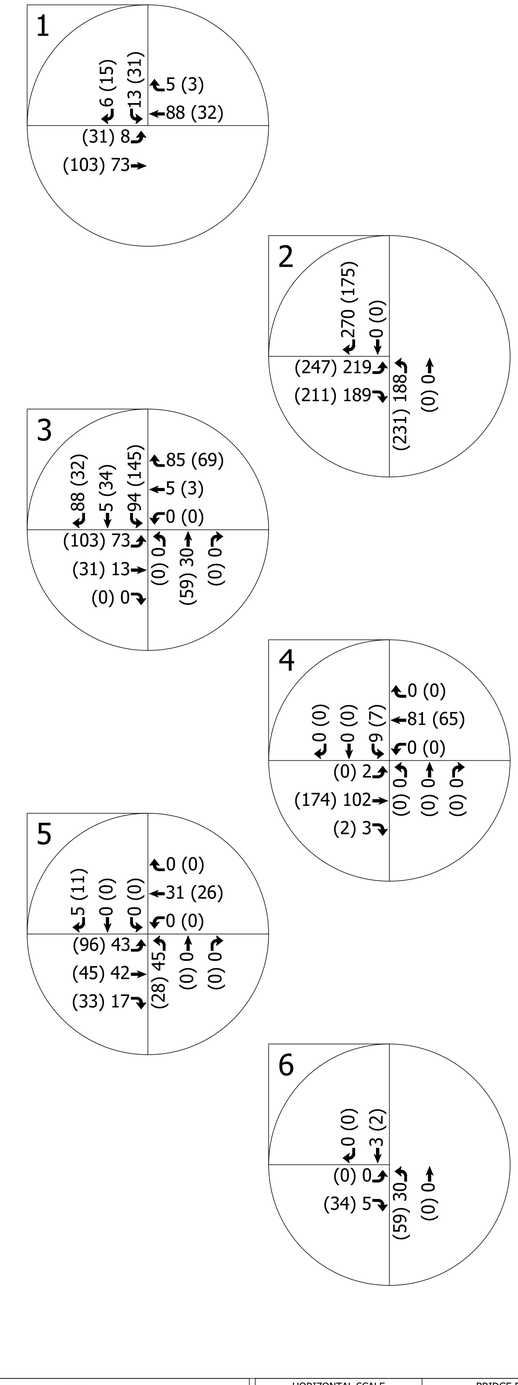

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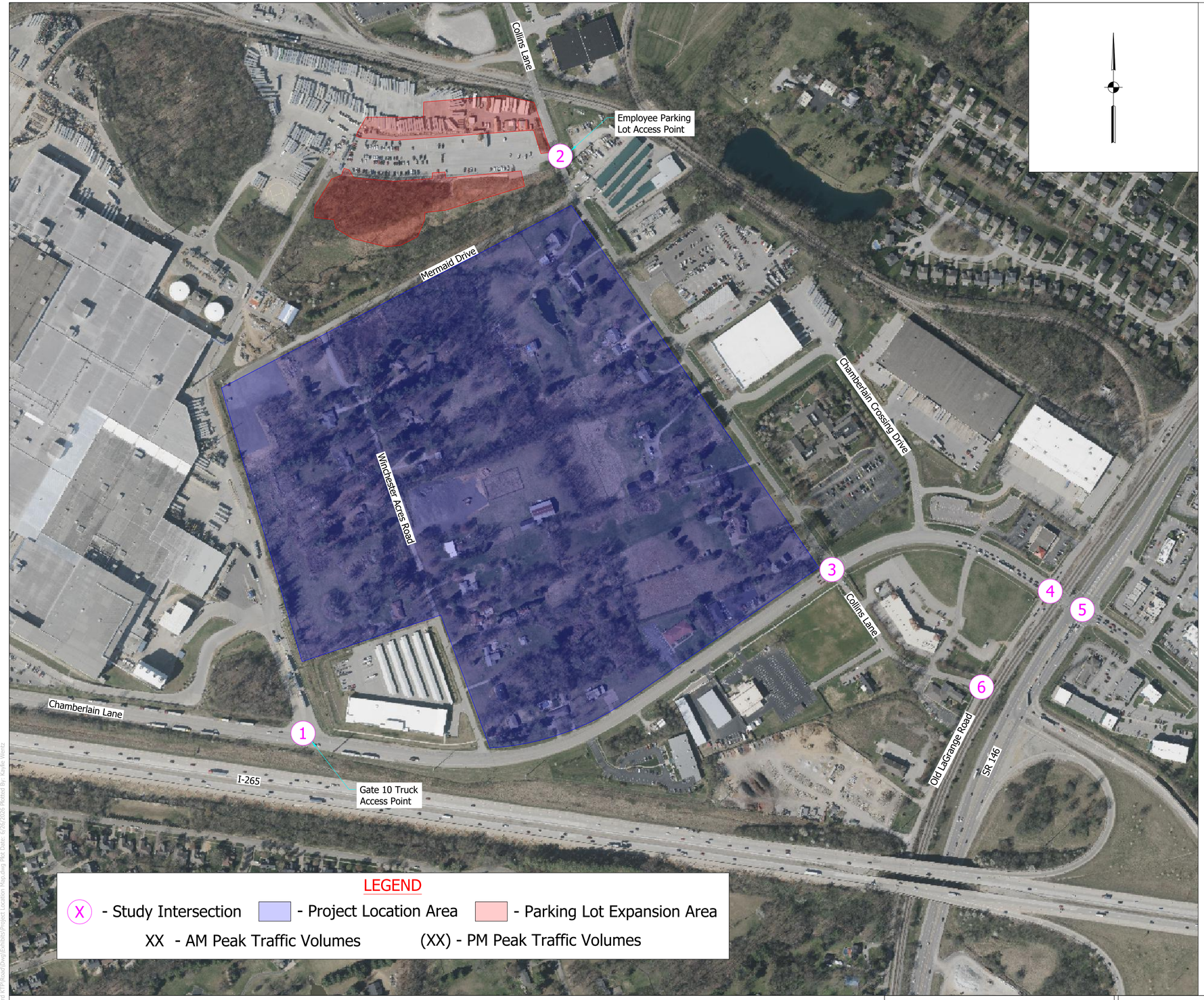
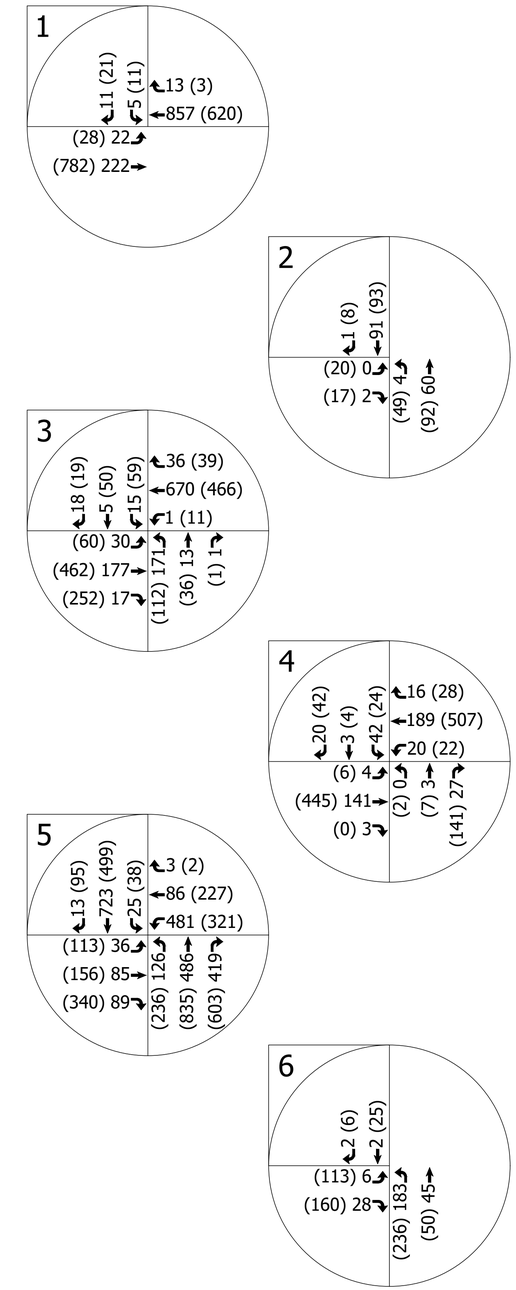
TRAFFIC VOLUMES
AM/PM TRIP GENERATION

HORIZONTAL SCALE	BRIDGE FILE
1" = 200'	N/A
VERTICAL SCALE	DESIGNATION
N/A	N/A
SURVEY BOOK	SHEETS
N/A	7 of 8
CONTRACT	PROJECT
N/A	26-412





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KENTUCKY TRUCK PLANT

TRAFFIC VOLUMES
2036 NO-BUILD

HORIZONTAL SCALE	BRIDGE FILE
1" = 200'	N/A
VERTICAL SCALE	DESIGNATION
N/A	N/A
SURVEY BOOK	SHEETS
N/A	3 of 8
CONTRACT	PROJECT
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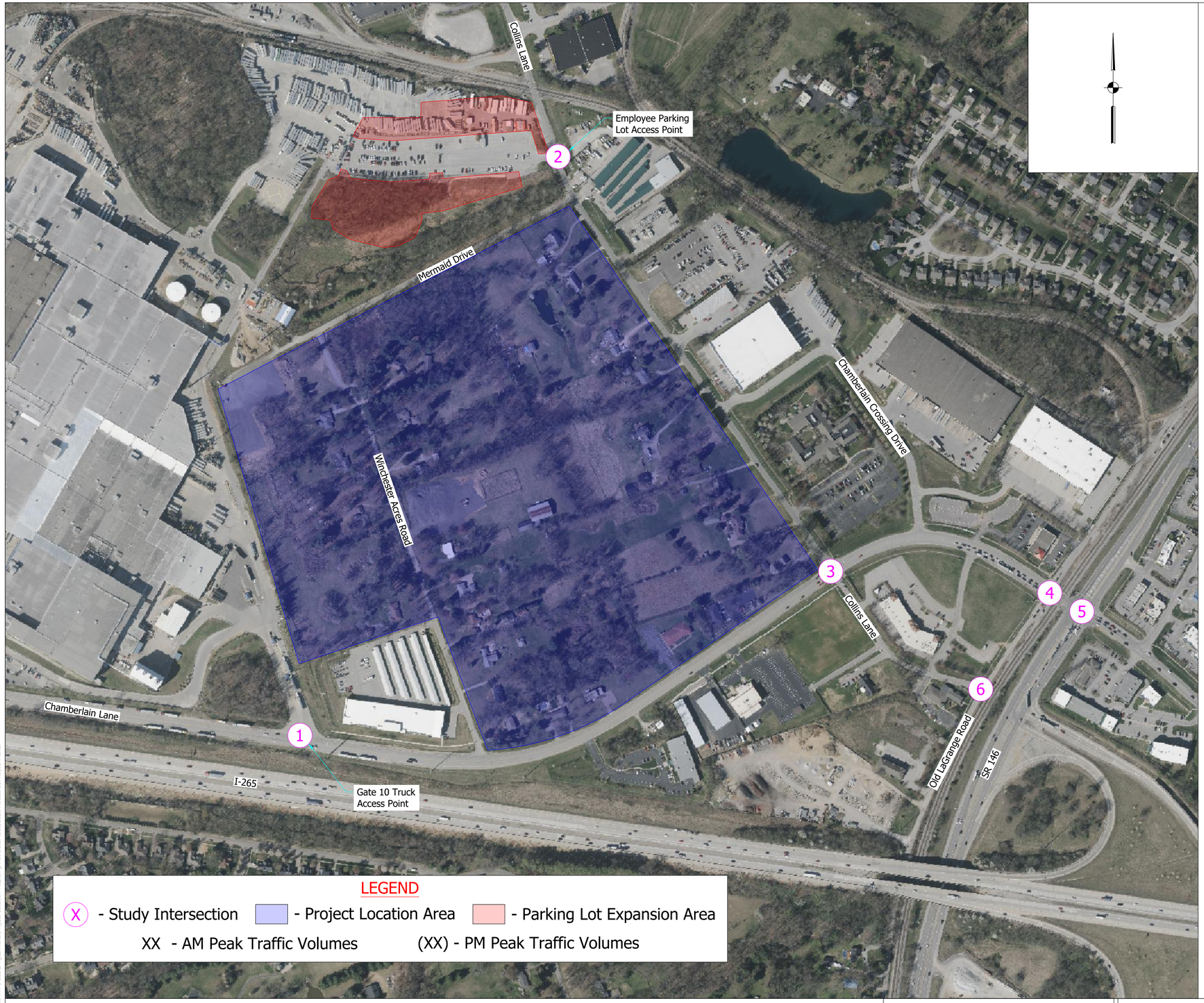

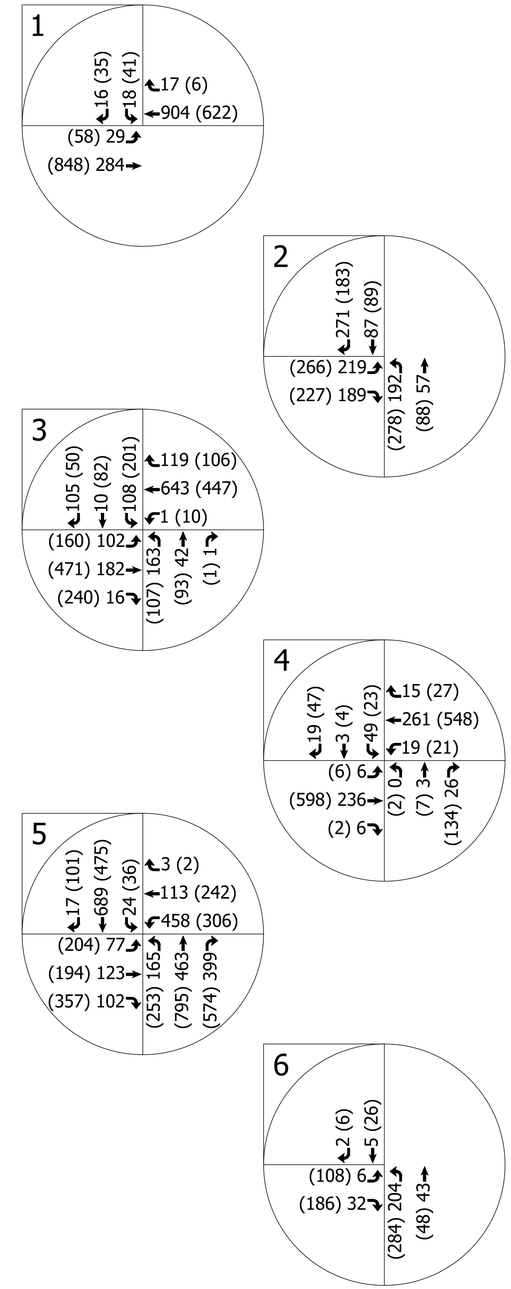

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TRAFFIC VOLUMES
2026 BUILD

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1" = 200'	N/A
VERTICAL SCALE	DESIGNATION
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SURVEY BOOK	SHEETS
N/A	4 of 8
CONTRACT	PROJECT
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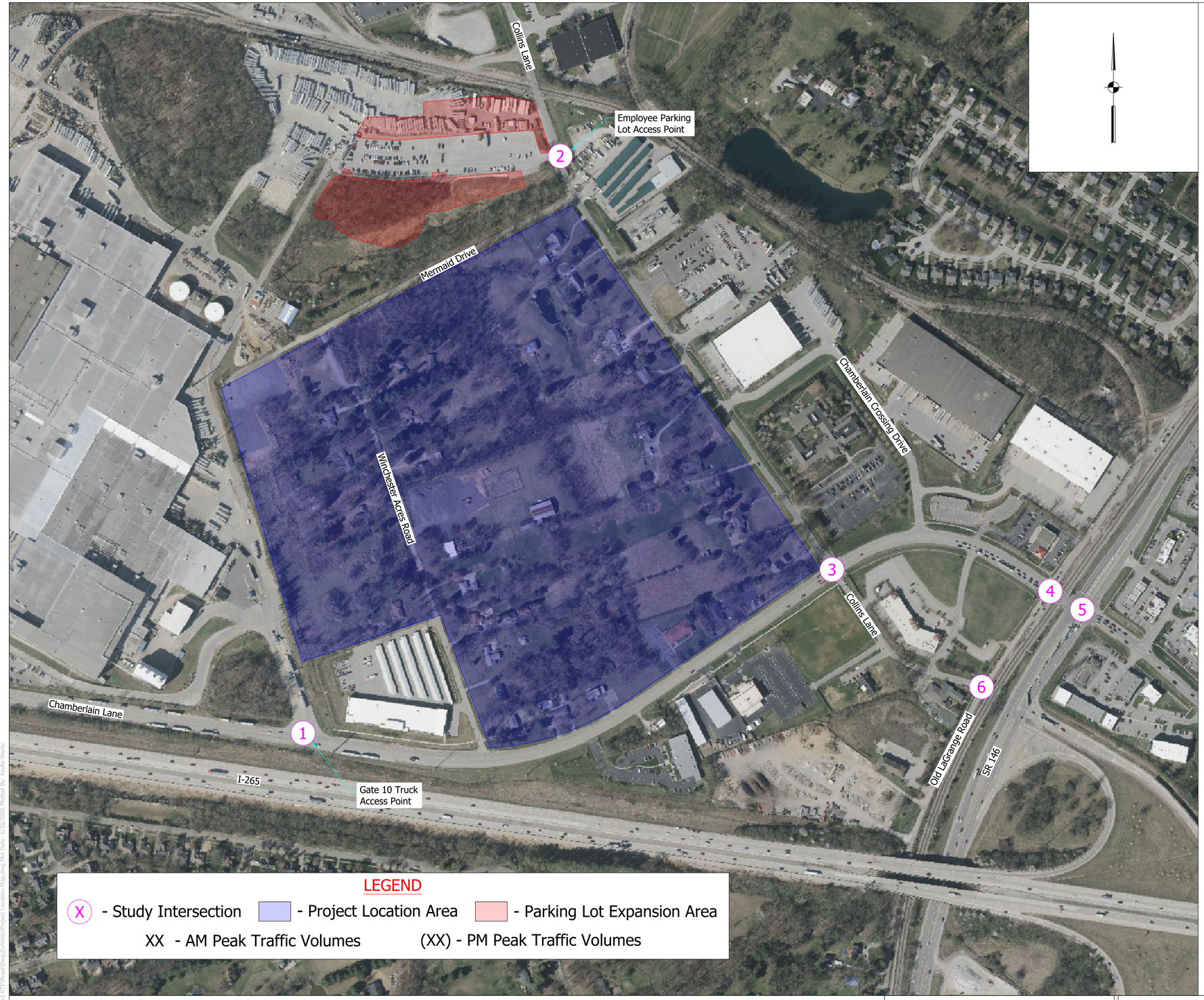

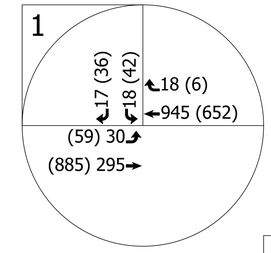

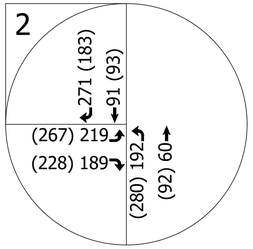

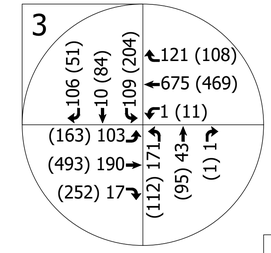

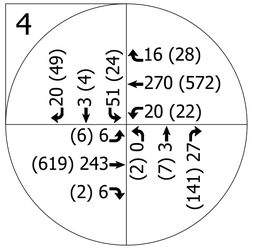

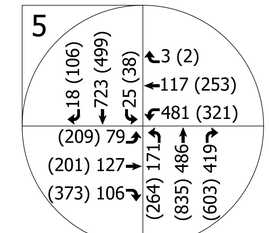

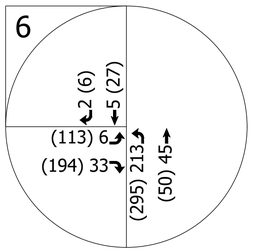

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TRAFFIC VOLUMES
2036 BUILD

HORIZONTAL SCALE	BRIDGE FILE
1" = 200'	N/A
VERTICAL SCALE	DESIGNATION
N/A	N/A
SURVEY BOOK	SHEETS
N/A	5 of 8
CONTRACT	PROJECT
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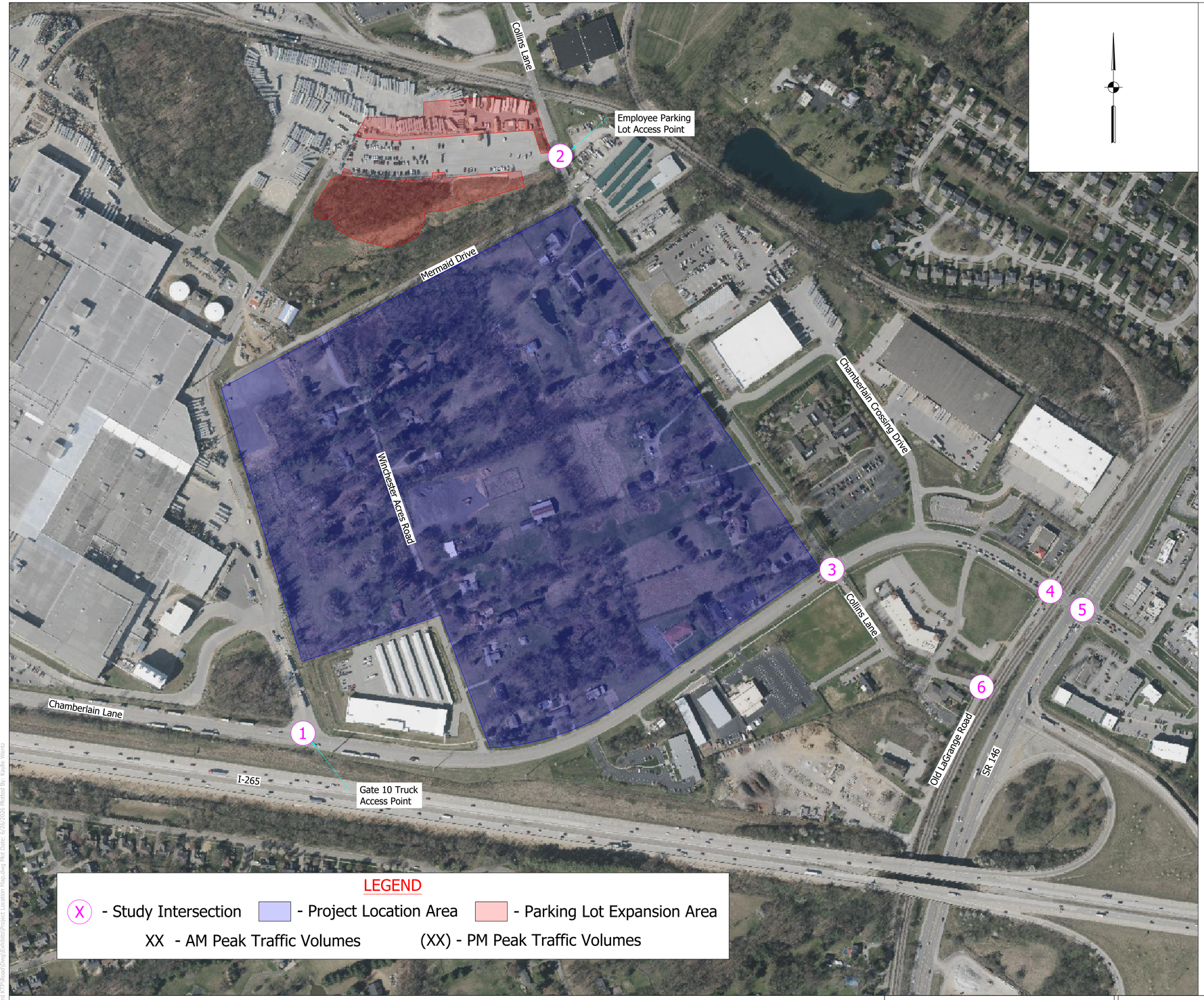

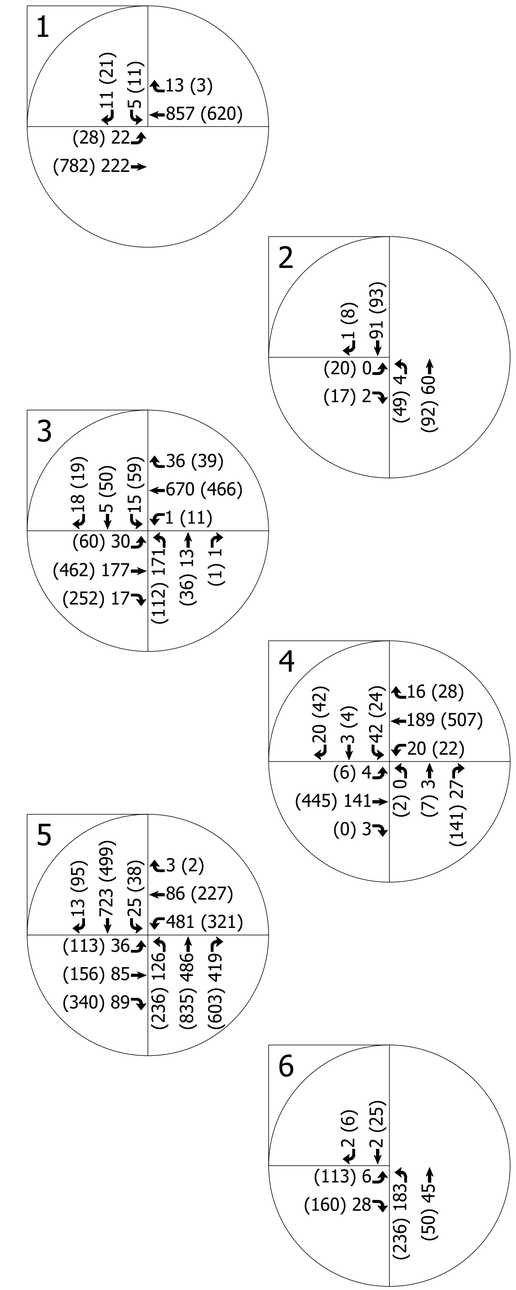

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TRAFFIC VOLUMES
2036 NO-BUILD

HORIZONTAL SCALE	BRIDGE FILE
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VERTICAL SCALE	DESIGNATION
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SURVEY BOOK	SHEETS
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3.5 Coordination

The final study requirements and methodologies have been established with Louisville Metro Planning.

3.6 Turn Lane Analysis

A turn lane warrant analysis was conducted for the proposed employee parking entrance on Collins Lane in accordance with KYTC guidelines. Based on the projected Build traffic volumes, the analysis determined that a northbound left-turn lane is warranted to improve traffic operations and enhance safety for vehicles entering the site. The analysis also determined that a southbound right-turn lane is not warranted under the projected Build conditions. The complete turn lane warrant analysis is provided in **Appendix F**.

3.7 Capacity Analysis

Intersection capacity analyses were performed for the weekday AM and PM peak hour at each of the study intersections using Synchro version 12. Synchro 12, a traffic analysis software, was used to determine the Level of Service (LOS) at each study intersection. The software is based on methodology outlined in the Highway Capacity Manual. **Tables 3.7.1** and **3.7.2** from the Highway Capacity Manual 7th Edition show the level of service thresholds for signalized and unsignalized intersections.

Table 3.7.1: LOS for Signalized Intersection

Level of Service	Control Delay (s/veh)
A	10 or less
B	>10-20
C	>20-35
D	>35-55
E	>55-80
F	>80

*Exhibit 19-8 HCM Version 7.

Table 3.7.2: LOS for Unsignalized Intersection

Level of Service	Control Delay (s/veh)
A	10 or less
B	>10-15
C	>15-25
D	>25-35
E	>35-50
F	>50

*Exhibit 19-8 HCM Version 7.

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The LOS is affected by factors such as the volume to capacity ratio, control delay, and queue delay. LOS is measured by letters from A to F. LOS A is the best operating condition while LOS F is the worst operating condition. Based on KYTC guidelines, it is desirable for intersection delay to not exceed 30% of the No Build condition for existing intersections.

The intersection capacity analysis was used to identify operational deficiencies at each study intersection. Deficiencies were based on the LOS and intersection delay. Traffic analysis results for the analysis scenarios described above are provided in the tables below. Additional information from the Synchro analysis reports can be found in **Appendix G**.

2026 No-Build Analysis:

The 2026 no-build analysis reflects the current intersection lane configurations and forms of stop control using existing traffic data. The existing traffic analysis establishes a baseline LOS for the study intersections before the addition of site traffic. The LOS and delay results for this scenario are summarized in **Table 3.7.3** below.

Table 4.6.3: Level of Service Results – AM & PM Peak Hours for Year 2026 (No-Build)

#	Intersection	Control Type	Intersection LOS & Delay		Approach	Approach LOS	
			AM Peak	PM Peak		AM Peak	PM Peak
1	Gate 10 Main Truck Access at Chamberlain Ln	Signal	A (9.5)	A (9.8)	NB	-	-
					SB	B	B
					EB	A	B
					WB	B	A
2	Employee Parking Approach at Collins Ln	TWSC	-	-	NB	A	A
					SB	-	-
					EB	A	B
					WB	-	-
3	Chamberlain Ln & Collins Ln	Signal	B (15.0)	B (12.7)	NB	B	B
					SB	A	B
					EB	B	B
					WB	B	B
4	Chamberlain Ln & LaGrange Rd	Signal	D (47.8)	F (83.5)	NB	C	E
					SB	E	F
					EB	A	C
					WB	E	F
5	Collins Ln & Old LaGrange Rd	TWSC	-	-	NB	A	A
					SB	-	-
					EB	B	C
					WB	-	-

2036 No-Build Analysis:

The 2036 no-build analysis includes an analysis of the study intersections with only background traffic included. The no-build analysis establishes levels of service for the study intersections with background growth to 2036. The level of service and delay results for this scenario are summarized in **Table 3.7.4** below.

Table 3.7.4: Level of Service Results – AM & PM Peak Hours for Year 2036 (No-Build)

#	Intersection	Control Type	Intersection LOS & Delay		Approach	Approach LOS	
			AM Peak	PM Peak		AM Peak	PM Peak
1	Gate 10 Main Truck Access at Chamberlain Ln	Signal	A (9.6)	A (9.9)	NB	-	-
					SB	B	B
					EB	A	B
					WB	B	A
2	Employee Parking Approach at Collins Ln	TWSC	-	-	NB	A	A
					SB	-	-
					EB	A	B
					WB	-	-
3	Chamberlain Ln & Collins Ln	Signal	B (15.2)	B (12.9)	NB	B	B
					SB	A	B
					EB	B	B
					WB	B	B
4	Chamberlain Ln & LaGrange Rd	Signal	D (52.2)	F (103.3)	NB	C	F
					SB	E	F
					EB	A	D
					WB	F	F
5	Collins Ln & Old LaGrange Rd	TWSC	-	-	NB	A	A
					SB	-	-
					EB	B	C
					WB	-	-

2026 Build Analysis:

The 2026 build analysis reviews the impacts of site traffic with the addition of the Ford Kentucky Truck Plant manufacturing expansion. The LOS and delay results and for this scenario are summarized in **Table 3.7.5** below.

Table 3.7.5: Level of Service Results – AM & PM Peak Hours for Year 2026 (Build)

#	Intersection	Control Type	Intersection LOS & Delay		Approach	Approach LOS	
			AM Peak	PM Peak		AM Peak	PM Peak
1	Gate 10 Main Truck Access at Chamberlain Ln	Signal	A (9.5)	B (10.2)	NB	-	-
					SB	B	B
					EB	A	B
					WB	B	A
2	Employee Parking Approach at Collins Ln	TWSC	-	-	NB	A	A
					SB	-	-
					EB	F	F
					WB	-	-
3	Chamberlain Ln & Collins Ln	Signal	B (16.2)	C (23.5)	NB	B	C
					SB	B	C
					EB	B	C
					WB	B	B
4	Chamberlain Ln & LaGrange Rd	Signal	D (61.6)	F (108.7)	NB	D	F
					SB	E	F
					EB	B	E
					WB	F	F
5	Collins Ln & Old LaGrange Rd	TWSC	-	-	NB	A	A
					SB	-	-
					EB	B	C
					WB	-	-

2036 Build Analysis:

The 2036 build analysis reviews the impacts of site traffic and background traffic with the addition of the Ford Kentucky Truck Plant manufacturing expansion in the year 2036. The LOS and delay results for this scenario are summarized in **Table 3.7.6** below.

Table 4.6.6: Level of Service Results – AM & PM Peak Hours for Year 2036 (Build)

#	Intersection	Control Type	Intersection LOS & Delay		Approach	Approach LOS	
			AM Peak	PM Peak		AM Peak	PM Peak
1	Gate 10 Main Truck Access at Chamberlain Ln	Signal	A (9.5)	B (10.5)	NB	-	-
					SB	B	B
					EB	A	B
					WB	B	A
2	Employee Parking Approach at Collins Ln	TWSC	-	-	NB	A	A
					SB	-	-
					EB	F	F
					WB	-	-
3	Chamberlain Ln & Collins Ln	Signal	B (16.9)	C (27.1)	NB	B	D
					SB	B	C
					EB	B	C
					WB	B	B
4	Chamberlain Ln & LaGrange Rd	Signal	E (59.1)	F (105.1)	NB	D	F
					SB	E	F
					EB	A	E
					WB	F	F
5	Collins Ln & Old LaGrange Rd	TWSC	-	-	NB	A	A
					SB	-	-
					EB	B	C
					WB	-	-

2036 Build with Closure Analysis:

The 2036 build analysis with closure reviews the same impacts as the 2036 build analysis with the addition of a closure of the north approach of Old LaGrange Road closed at Collins Lane. The LOS and delay results for this scenario are summarized in **Table 4.6.7** below.

Table 3.7.7: Level of Service Results – AM & PM Peak Hours for Year 2036 (Build with Closure)

#	Intersection	Control Type	Intersection LOS & Delay		Approach	Approach LOS	
			AM Peak	PM Peak		AM Peak	PM Peak
1	Gate 10 Main Truck Access at Chamberlain Ln	Signal	A (9.5)	B (10.5)	NB	-	-
					SB	B	B
					EB	A	B
					WB	B	A
2	Employee Parking Approach at Collins Ln	TWSC	-	-	NB	A	A
					SB	-	-
					EB	F	F
					WB	-	-
3	Chamberlain Ln & Collins Ln	Signal	B (17.6)	C (30.9)	NB	B	C
					SB	B	C
					EB	B	C
					WB	B	C
4	Chamberlain Ln & LaGrange Rd	Signal	E (71.8)	F (245.7)	NB	D	F
					SB	E	E
					EB	A	E
					WB	F	F
5	Collins Ln & Old LaGrange Rd	TWSC	-	-	NB	-	-
					SB	-	-
					EB	-	-
					WB	-	-

4.0 Conclusions and Recommendations

Gate 10 Main Truck Access & Chamberlain Lane

Capacity analysis has shown that the intersection currently operates at acceptable levels of service and will continue to operate at acceptable levels of service under future traffic volume scenarios.

Employee Parking Access & Collins Lane

Capacity analysis has shown that the northbound and southbound approaches currently operate at acceptable levels of service and will continue to operate at acceptable levels of service under future traffic volume scenarios. However, the employee parking within the development will experience increased delay and will not impact traffic operations along Collins Lane. Based on the turn-lane warrant analysis, a northbound left-turn lane along Collins Lane is recommended at this intersection.

Chamberlain Lane & Collins Lane

Capacity analysis has shown that the intersection currently operates at acceptable levels of service and will continue to operate at acceptable levels of service under future traffic volume scenarios.

Chamberlain Lane & Old LaGrange Road/LaGrange Road

The existing intersection operates below acceptable levels of service during the PM peak hours. Therefore, adding generated traffic will add more delay. However, the impact at the intersection is minimal and within the allowable 30% increase in delay. Therefore, no mitigations were made to this intersection as it is constrained by several factors such as the railroad crossing, number of approaches, geometric layout, and phasing. The following table summarizes the delays and delays for all traffic volume scenarios.

Collins Lane & Old LaGrange Road

Capacity analysis has shown that the intersection currently operates at acceptable levels of service and will continue to operate at acceptable levels of service under future traffic volume scenarios.

Table 4.1: 2026 Intersection Delay Increase

Intersection #	Intersection	Control Type	2026 No-Build Delay (s)		2026 Build Delay (s)		% Increase AM	% Increase PM
			AM Peak	PM Peak	AM Peak	PM Peak		
4	Chamberlain Ln & LaGrange Rd	Signal	47.8	83.5	61.6	108.7	29	30

Table 4.2: 2036 Intersection Delay Increase

Intersection #	Intersection	Control Type	2036 No-Build Delay (s)		2036 Build Delay (s)		% Increase AM	% Increase PM
			AM Peak	PM Peak	AM Peak	PM Peak		
4	Chamberlain Ln & LaGrange Rd	Signal	52.2	103.3	59.1	105.1	13	2

2036 Build with Closure Scenario

Capacity analysis has shown that the study intersections will operate at similar levels of service as the 2036 build scenario. However, the Chamberlain Lane & Old LaGrange Road/LaGrange Road intersection will experience increased delays that exceed the 30% threshold set by KYTC. Additionally, no mitigations were made at this intersection as it is constrained by several factors such as the railroad crossing, number of approaches, geometric layout, and phasing.