

# Drive-Through Queue Analysis

For

## Zaxby's Restaurant

2560 E Main Street  
Plainfield, IN 46168

Prepared for:  
Design Review Committee  
Town of Plainfield  
206 W. Main Street  
Plainfield, IN 46168

December 1, 2025

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Kevin Whaley  
Director of Planning  
Town of Plainfield  
206 W. Main St,  
Plainfield, IN 46168

RE: 2560 East Main Street, Plainfield, IN  
Zaxby's Drive-Through Queueing Analysis

A Zaxby's Restaurant with a drive thru is planned for 2560 East Main Street. This letter outlines our findings of the drive-through queueing analysis for the proposed Zaxby's Restaurant located at 2560 E Main Street in Plainfield, Indiana. The development will occupy an abandoned restaurant site with a parcel number of 32-10-25-235-022.000-012 consisting of 0.928 acres. A copy of the proposed site plan along with supporting documentation is attached.

Access to the site will be a full access curb cut at Smith Road. The existing curb cut will be moved to the north, further away from the intersection of E Main Street. There is an existing curb cut located on E Main Street that will be demolished and removed from the site.

### **Drive-Through Lane Configuration**

The development is planned to include two drive-through lanes that merge into a single lane after the ordering board. The proposed drive-through lane configuration provides a total of 374 feet of queue storage from the drive through entrance to the pickup point. A conservative bumper-to-bumper vehicle length is considered to be 21 feet. Based on a value of 21 feet per vehicle, the drive through lane configuration would conservatively accommodate 18 vehicles. The 21 feet of queue length per vehicle is a conservative assumption as an average full-sized car is approximately 16 feet and bumper-to-bumper queue lengths typically range from 18 – 21 feet within drive-through queue lanes.

### **Drive-Through Lane Queue Surveys**

The anticipated queueing demand of the proposed Zaxby's site was estimated using queueing data collected at three existing Zaxby's Restaurants. There are no Zaxby's Restaurants in the immediate area of Plainfield IN so traffic queueing data was collected at similar drive through's in Georgia and Tennessee.

- Madisonville, TN: This site is located on the east side of Highway 411 northeast of Ballplay Road (4461 US-411) and provides two drive-through lanes that merge into a single lane after the order boards. This store is a 30-seat restaurant similar to the one that is planned for Plainfield.

- Valdosta, Ga: This site is located along the west side of Ashley Street (Highway 41) south of Moore Street (1620 N Ashley Street) and provides two drive-through lanes that merge into a single lane after the ordering boards. This store is a 30-seat restaurant similar to the one that is planned for Plainfield.
- Monroe, Ga: This site is located along the east side of M.L.K. Jr Boulevard north of Michael Etchison Road (195 M.L.K. Jr Blvd) and provides two drive-through lanes that merge into a single lane after the ordering boards. This store is a larger 70 seat store that is significantly larger than what is planned for Plainfield.

It should be noted that the Madisonville TN and Valdosta sites are the most similar to the proposed development in Plainfield in terms of building size and drive-through lane configurations. Both Madisonville and Valdosta stores have been built in 2025 while the Monroe store is approximately 20 years old. The Madisonville and Valdosta stores have more modern kitchens and order processing systems than the Monroe location that results in more efficient order processing.

Data was collected in May of 2025 for all three sites. The number of queued vehicles in the drive-through was documented in one-minute intervals during the peak lunch period from 11:00am to 2:00pm and the peak dinner period from 5:00pm to 8:00pm for a two day period. Zaxby's is not open for breakfast so the early morning period is not a factor.

### **Maximum Observed Queue**

The maximum observed queues at each survey site on a weekday and weekend are summarized in **Table 1**. The drive-through queuing data is attached.

**Table 1 – Maximum Observed Drive-Through Queues**

Survey Site	Maximum Observed Queue (Vehicles)			
	Weekday		Weekend	
	Lunch (11A-2P)	Dinner (5P-8P)	Lunch (11A-2P)	Dinner (5P-8P)
Madisonville, TN	6	12	11	10
Valdosta, Ga	14	11	7	8
Monroe, Ga	17	16	14	12
Average	12	13	10	10
Maximum	17	16	14	12

As shown in **Table 1**, the maximum drive-through queue ranged from 6 to 17 vehicles. On weekdays, the maximum queue observed at any individual site was 17 vehicles. On weekends, the maximum queue observed at any individual survey site was 14 vehicles. Both weekday and weekend maximum queues were observed at the Monroe, Ga site. The operational characteristics of the Madison, TN and Valdosta, Ga sites are anticipated to be most similar to the proposed development. The maximum queue observed across both Madison, TN and Valdosta, Ga sites was 14 vehicles on a weekday and 11 vehicles on a weekend.

### **85<sup>th</sup> Percentile Queues**

The 85<sup>th</sup> percentile describes the value at which 85 percent of the samples are distributed at or below and is a commonly used statistical figure in traffic engineering for determining the appropriate design value. In Terms of the drive through queue surveys obtained for this analysis, the 85<sup>th</sup> percentile queue represents the value at which the queue length was at or below 85 percent of the time. Whereas designing for the average queue length would be expected to result in drive-through queue overflow approximately half the time, use of the 85<sup>th</sup> percentile value is intended to provide a more conservative approach without unnecessarily over designing the drive-through lane to accommodate maximum queues that only occur a small minority of the time.

An evaluation of the 85<sup>th</sup> percentile queues was conducted for the restaurant hours of operation across a day. A review of the 85<sup>th</sup> percentile queues within peak period was also conducted. Table2 shows a summary of the 85<sup>th</sup> percentile drive-through queue length (in vehicles) observed at each of the survey sites during the peak periods.

**Table 2 – Peak Period 85<sup>th</sup> Percentile Drive-Through Queues**

Survey Site	Peak Period 85 <sup>th</sup> Percentile Queue (Vehicles)			
	Weekday		Weekend	
	Lunch (11A-2P)	Dinner (5P-8P)	Lunch (11A-2P)	Dinner (5P-8P)
Madisonville, TN	5	8	7	6
Valdosta, Ga	8	9	4	5
Monroe, Ga	14	12	11	10
<b>Average</b>	<b>9</b>	<b>10</b>	<b>8</b>	<b>7</b>
<b>Maximum</b>	<b>14</b>	<b>12</b>	<b>11</b>	<b>10</b>

As shown in **Table 2**, the 85<sup>th</sup> percentile drive-through queue during peak operating periods ranged from 4-14 vehicles. On weekdays, the highest 85<sup>th</sup> percentile queue observed at any individual survey site was 14 vehicles. On weekends, the highest 85<sup>th</sup> percentile queue observed at any individual survey site was 11 vehicles. The highest average 85<sup>th</sup> percentile queue across peak periods was 10 vehicles during the weekday dinner time period.

**Table 3** shows a summary of the 85<sup>th</sup> percentile queues observed at each of the surveyed sites across a weekday and during a Saturday. In order to calculate the values for the daily 85<sup>th</sup> percentile queue, it was assumed that the vehicle queues outside of three peak lunch time hours and three peak dinner time hours remained within the lower 85<sup>th</sup> percent of queue values. The restaurant hours of operation were also utilized in the computation.

**Table 3 – Daily 85<sup>th</sup> Percentile Drive- Through Queues**

Survey Site	Daily 85 <sup>th</sup> Percentile Queue (Vehicles)	
	Weekday	Weekend
Madisonville, TN	5	5
Valdosta, Ga	7	4
Monroe, Ga	11	8
<b>Average</b>	<b>7</b>	<b>5</b>
<b>Maximum</b>	<b>11</b>	<b>8</b>

As shown in **Table 3**, the daily 85<sup>th</sup> percentile drive through queue ranged from 4-11 vehicle. The highest 85<sup>th</sup> percentile drive-through queue was 11 vehicles during the weekday. When considering the Madison and Valdosta sites, which are anticipated to be most similar to the proposed development, the highest 85<sup>th</sup> percentile daily queue was 7 vehicles

### **Conclusion**

The proposed Zaxby's development provides 374 feet of queue storage within the drive-through lanes from the drive-through entrance to the pickup window. The proposed queue storage would conservatively accommodate 18 vehicles. The maximum observed stacking at the Monroe, Ga location was 17 spaces; however, it should be noted this store is over 20 years old while the other two observed locations are new stores. The new stores have more modern kitchens and order processing systems which results in a more accurate assessment of the drive through stacking length needed for the Plainfield, IN location. The maximum observed stacking at the Madisonville, TN and Valdosta, Ga was 14 cars.

The drive through stacking configuration for the Plainfield, IN site provides sufficient capacity to accommodate the required vehicles during peak periods.



CARTER ENGINEERING CONSULTANTS, INC.

By: Jeff Carter  
Jeff Carter, PE  
President

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