



**AGENDA**  
CHARTER TOWNSHIP OF MERIDIAN  
PLANNING COMMISSION – REGULAR MEETING  
October 28, 2024 6:30 PM

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1. CALL MEETING TO ORDER
2. ROLL CALL
3. PUBLIC REMARKS
4. APPROVAL OF AGENDA
5. APPROVAL OF MINUTES
  - A. October 7, 2024
6. COMMUNICATIONS
  - A. None
7. PUBLIC HEARINGS
  - A. SUP #24025 – Panda Express Drive-through
8. UNFINISHED BUSINESS
  - A. None
9. OTHER BUSINESS
  - A. None
10. REPORTS AND ANNOUNCEMENTS
  - A. Township Board update.
  - B. Liaison reports.
11. PROJECT UPDATES
12. PUBLIC REMARKS
13. COMMISSIONER COMMENTS
14. ADJOURNMENT

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Individuals with disabilities requiring auxiliary aids or services should contact: Director of Community Planning and Development  
Timothy R. Schmitt, 5151 Marsh Road, Okemos, MI 48864 or 517.853.4506 - Ten Day Notice is Required.  
Meeting Location: 5151 Marsh Road, Okemos, MI 48864



**TENTATIVE PLANNING COMMISSION AGENDA**  
**November 18, 2024**

1. PUBLIC HEARINGS
  - A. None
  
2. UNFINISHED BUSINESS
  - A. SUP #24025 – Panda Express Drive-Through
  
3. OTHER BUSINESS
  - A. None

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Individuals with disabilities requiring auxiliary aids or services should contact: Director of Community Planning and Development  
Timothy R. Schmitt, 5151 Marsh Road, Okemos, MI 48864 or 517.853.4506 - Ten Day Notice is Required.  
Meeting Location: 5151 Marsh Road, Okemos, MI 48864

Providing a safe and welcoming, sustainable, prime community.



CHARTER TOWNSHIP OF MERIDIAN  
REGULAR MEETING PLANNING COMMISSION  
5151 Marsh Road, Okemos MI 48864-1198  
517.853.4000, Township Hall Room  
Monday, October 7, 2024, 6:30 pm

PRESENT: Chair Shrewsbury, Commissioners Brooks, McConnell, Romback, Blumer, and Scales

ABSENT: Vice Chair Snyder

STAFF: Principal Planner Brian Shorkey

1. CALL MEETING TO ORDER

Chair Shrewsbury called the October 7, 2024, regular meeting for the Meridian Township Planning Commission to order at 6:30 pm.

2. ROLL CALL

Chair Shrewsbury called the roll of the Board. All board members were present except Vice Chair Snyder.

3. PUBLIC REMARKS

Chair Shrewsbury opened public remarks at 6:31 pm.

Debra Major, township resident, followed up with regards to her email communication in the packet. Ms. Major does not want to violate the Open Meetings Act and have a quorum at the visit to the property. Ms. Major encouraged members to contact her individually to come walk the property.

Chair Shrewsbury closed public remarks at 6:34 pm.

4. APPROVAL OF AGENDA

Chair Shrewsbury asked for approval of the agenda.

**Commissioner Scales moved to approve the October 7, 2024, regular Planning Commission meeting agenda. Seconded by Commissioner Blumer. Motion passed unanimously.**

5. APPROVAL OF MINUTES

Chair Shrewsbury asked for approval of the minutes.

**Commissioner Romback moved to approve the Minutes of the September 23, 2024, Planning Commission Regular Meeting as written. Seconded by Commissioner Brooks. Motion passed unanimously.**

6. COMMUNICATIONS

- A. Debra Major re: REZ #24013 – Email

7. PUBLIC HEARINGS

- A. By-law Changes

Chair Shrewsbury opened the public hearing at 6:36 pm.

Principal Planner Shorkey reviewed the change made from reducing the number of members of the Planning Commission from nine to seven resulting in a change in the number for quorum. Originally, the by-laws stated five members constitutes a quorum and that has been changed to read the majority of the members. Also, under decisions, it has been updated to state 2/3 of the members.

Chair Shrewsbury closed the public hearing at 6:38 pm.

**Commissioner Blumer moved to waive the waiting period needed for this vote. Supported by Commissioner Scales.**

**ROLL CALL VOTE      YEAS: Commissioners Brooks, McConnell, Rombach, Chair Shrewsbury, Commissioner Blumer and Scales**

**NAYS: NONE**

**Motion carried: 6-0**

**Commission McConnell moved to approve the 2024 amended Planning Commission bylaws. Supported by Commissioner Blumer.**

**ROLL CALL VOTE      YEAS: Commissioners Brooks, McConnell, Rombach, Chair Shrewsbury, Commissioner Blumer and Scales**

**NAYS: NONE**

**Motion carried: 6-0**

8. UNFINISHED BUSINESS

None.

9. OTHER BUSINESS

- A. MAP Conference Update

Principal Planner Shorkey highlighted the conference he attended. The session entitled Bridging the Affordable Housing Gap in Michigan focused on manufactured housing. Principal Planner Shorkey informed the Planning Commission that received his ethics credit at the conference. Principal Planner Shorkey said that he learned Detroit's population grew for the first time in 60 years and that he attended a great session on fact finding decisions.

Commissioner Brooks asked the definition of manufactured housing. Principal Planner Shorkey described manufacturing housing and the difference between trailers and manufactured housing. Principal Planner Shorkey said that he could research the question further if desired.

Principal Planner Shorkey reviewed a session from the last day of the conference on creating tree protection. Canton Township had a tree preservation ordinance that was struck down last year when two business partners bought a 16 acre property and clear cut it. It was suggested that the Master Plan have clear tree preservation goals and why it is important, individual assessments should be done, and a tree study conducted by an Arborist.

Commissioner Scales asked if we have any forested wetlands in the Township. Principal Planner Shorkey mentioned we have GIS records delineating different types of wetlands and he can look to see if we have any forested wetlands.

## 10. REPORTS AND ANNOUNCEMENTS

### A. Township Board Update

None.

### B. Liaison Reports

Commissioner Blumer reported he attended the DDA meeting this morning, but there was not a quorum to hold the meeting.

Commissioner Scales reported that the EDC did not meet and the BRA meeting is Thursday.

Commissioner McConnell mentioned that the Environmental Commission study group is reviewing the 2004 Green Space Plan and presented its first findings at the last meeting. They are now working on scheduling a meeting with Staff to review GIS data. With the approval of the 2025 Township Budget, looking to hire an Environmental Engineer to assist.

## 11. PROJECT UPDATES

Principal Planner Shorkey reviewed the projects. At the next meeting, there will be a public hearing for a Special Use Permit for a drive thru at 4990 Marsh Road (former Wheat Jeweler) for a new Panda Express restaurant.

## 12. PUBLIC REMARKS

Debra Major, township resident, thanked the Commission for the update and stated the same email communication was also sent to Mr. Fedewa.

## 13. COMMISSIONER COMMENTS

Commissioner Scales requested to speak regarding the communications item on the rezoning #24013. Principal Planner Shorkey explained that if a majority of the Commission visited the site at once, and any decisions were made, that could be in violation of the Open Meetings Act.

Mr. Scales mentioned it does not look good to have a group meeting, outside of the regular public meeting space, regarding the issue and appreciated the invitation to visit the property, but did decline.

Chair Shrewsbury did mention that she agrees and does not want to seem disinterested or dismissive to the invitation but would rather to have any meeting or discussion at a meeting in a public setting.

14. ADJOURNMENT

Chair Shrewsbury called for a motion to adjourn the meeting at 7:09 pm

**Commissioner Romback moved to adjourn the October 7, 2024 regular meeting of the Planning Commission. Seconded by Commissioner McConnell. Motion passed unanimously.**



**To: Planning Commission**

**From: Brian Shorkey, Principal Planner**

**Date: October 28, 2024**

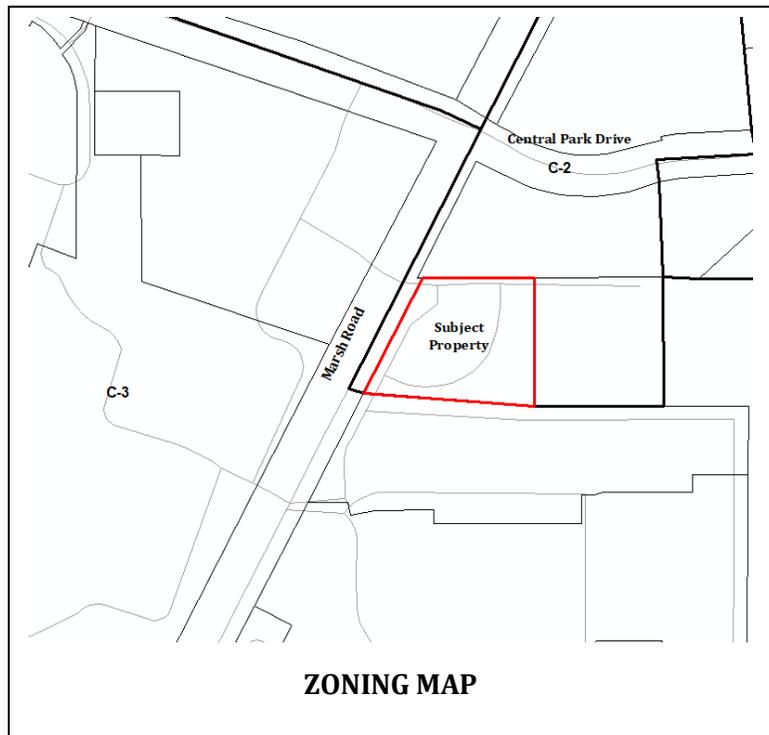
**Re: Special Use Permit #24028 (Panda Express), to construct a restaurant with a drive-through at 4949 Okemos Road, Okemos, MI 48864.**

Panda Express (Applicant) has submitted a Special Use Permit (SUP) application for the construction of a drive-through for a new restaurant at the property located at 4990 Marsh Road, Okemos, MI 48864 (Subject Property). The Subject Property is approximately 2.2 acre in size and is zoned C-2 – Commercial. Restaurants are allowed by right in the C-2 zoning district and the SUP is for the drive-through.

#### **Zoning and Future Land Use**

The Subject Property is located in the C-2 – Commercial zoning district. The same zoning designation applies to the adjacent properties to the east and north. The properties to the west and south are zoned C-3 – Commercial.

The C-2 district requires a minimum of 100 feet of lot frontage and 4,000 square feet of lot area for new lots. The Subject Property totals approximately 2.2 acres in size. The Subject Property has a total of approximately 300 feet of frontage along Grand River Avenue. The Subject Property conforms to the C-2 zoning district.

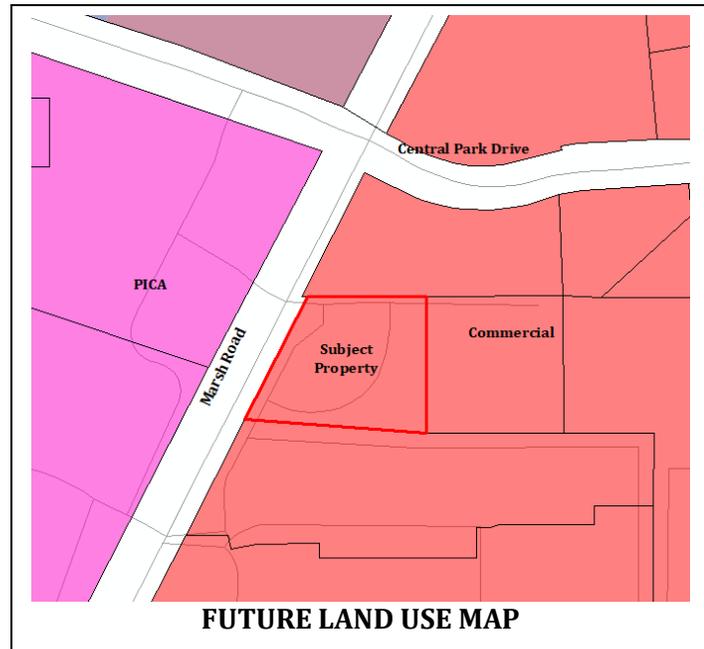


The Future Land Use Map from the 2023 Master Plan designates the Subject Property in the Commercial category. The same designation applies to the properties adjacent to the north, east, and south. The property adjacent to the west, on the other side of Marsh Road, is designated as the Meridian Mall PICA.

### **Staff Analysis**

Applications for special land use permits are reviewed under Sec. 86-126 in the Zoning Ordinance. Following is a staff response to the nine special use permit review criteria:

1. *The project is consistent with the intent and purposes of this Chapter.*



The proposed Panda Express restaurant, and the associated drive-through, are consistent with the C-2 zoning district, as the restaurant is a use by right and the drive-through is allowed as a special land use.

2. *The project is consistent with applicable land use policies contained in the Township's comprehensive development plan of current adoption.*

The Future Land Use Map from the 2023 Master Plan designates the Subject Property in the Commercial category. The C-2 zoning district is consistent with the Future Land Use Map.

3. *The project is designed, constructed, operated, and maintained so as to be harmonious and appropriate in appearance with the existing or intended character of the general vicinity and that such a use will not change the essential character of the same area.*

The proposed Panda Express restaurant is consistent with uses in the general vicinity of the Subject Property and is located in a commercial corridor that includes other restaurants and drive-throughs within a quarter mile. The attached site plan (Attachment #1) shows proposed landscaping on the north and south property lines. The specifics of the landscaping will be required to be included with the Site Plan for approval.

4. *The project will not adversely affect or be hazardous to existing neighboring uses.*

The proposed Panda Express restaurant is not expected to be hazardous to existing neighboring uses.

5. *The project will not be detrimental to the economic welfare of surrounding properties or the community.*

The proposed Panda Express restaurant and drive-through are not expected to be detrimental to the economic welfare of the surrounding properties or the community. The restaurant is located in a commercial corridor that includes similar land uses, including other drive-through restaurants.

6. *The project is adequately served by public facilities, such as existing roads, schools, stormwater drainage, public safety, public transportation, and public recreation, or that the persons or agencies responsible for the establishment of the proposed use shall be able to provide any such service.*

The project is adequately served by public facilities, including sewer, water, roads, public safety, and public transportation.

The application included an attached traffic assessment (Attachment #3). The traffic assessment concludes that the following:

- Existing conditions all approaches and movements within the study are currently operating acceptably.
- All approaches and movements at the study intersection (marsh Road and Mall Drive/Site Access) are expected to operate acceptably.
- The results of the analysis indicate that a north-eastbound right-turn taper is warranted along Marsh Road at the existing site access driveway.
- The proposed site plan can adequately accommodate the projected vehicle queueing, without impacting the internal site circulation or the operations along Marsh Road.

The traffic assessment will be required to be approved by the Ingham County Road Department during site plan review.

7. *The project is adequately served by public sanitation facilities if so designed. If on-site sanitation facilities for sewage disposal, potable water supply, and stormwater are proposed, they shall be properly designed and capable of handling the long-term needs of the proposed project.*

Improvements to the public utility systems are not necessary to facilitate the construction of the Panda Express restaurant or the associated drive-through.

The attached site plan (Attachment #1) shows a proposed detention pond to handle the expected stormwater runoff. The proposed detention pond will have to be reviewed and approved by the Ingham County Drain Commission during site plan review.

8. *The project will not involve uses, activities, processes, materials, and equipment and conditions of operation that will be detrimental to any persons, property, or the general welfare by reason of excessive production of traffic, noise, smoke, fumes, glare, or odors.*

The project is not expected to involve uses, activities, processes, materials, and equipment and conditions of operation that will be detrimental to any persons, property, or the general welfare by reason of excessive production of traffic, noise, smoke, fumes, glare, or odors.

9. *The project will not directly or indirectly have a substantial adverse impact on the natural resources of the Township, including, but not limited to, prime agricultural soils, water recharge areas, lakes, rivers, streams, major forests, wetlands, and wildlife areas.*

The project is not expected to directly or indirectly have a substantial adverse impact on the natural resources of the Township. The Subject Property is already developed as a retail store and not within a natural area.

The application includes a natural features inventory (Attachment #4). Most of the existing trees on the Subject Property are proposed to be removed, but the overall green area is proposed to be increased from 1.16 acres to 1.34 acres. The landscape improvements will be required to be approved during site plan review, which will require two canopy trees for every 10 parking spaces.

Based on the information provided by the Applicant, Staff has identified no major concerns that would negatively impact surrounding properties or the Township at large while reviewing the proposed Special Use Permit, except that the traffic assessment suggests that a right-turn taper lane may be warranted.

If this SUP is approved, then the next step will be site plan approval. Site plans are administratively approved and require approvals from all relevant offices and agencies. In this case, the site plan will require approvals from the Township Engineering Department, the Ingham County Drain Commission, and the Ingham County Road Department.

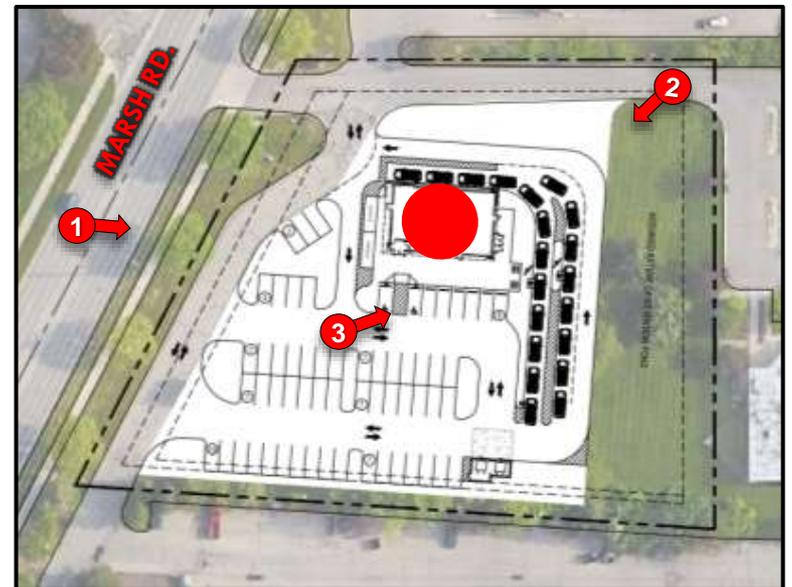
### **Planning Commission Options**

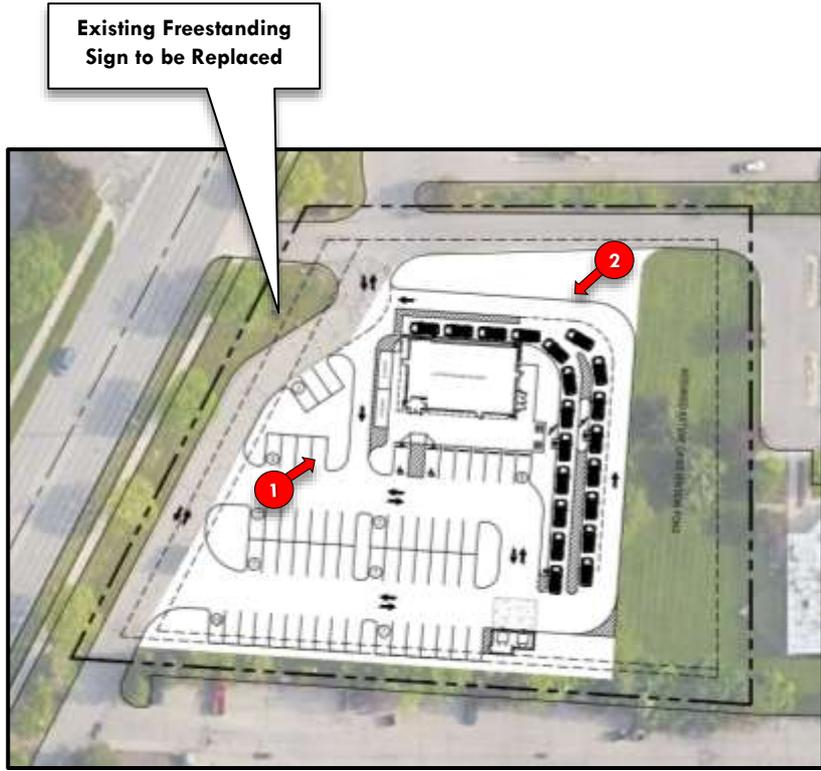
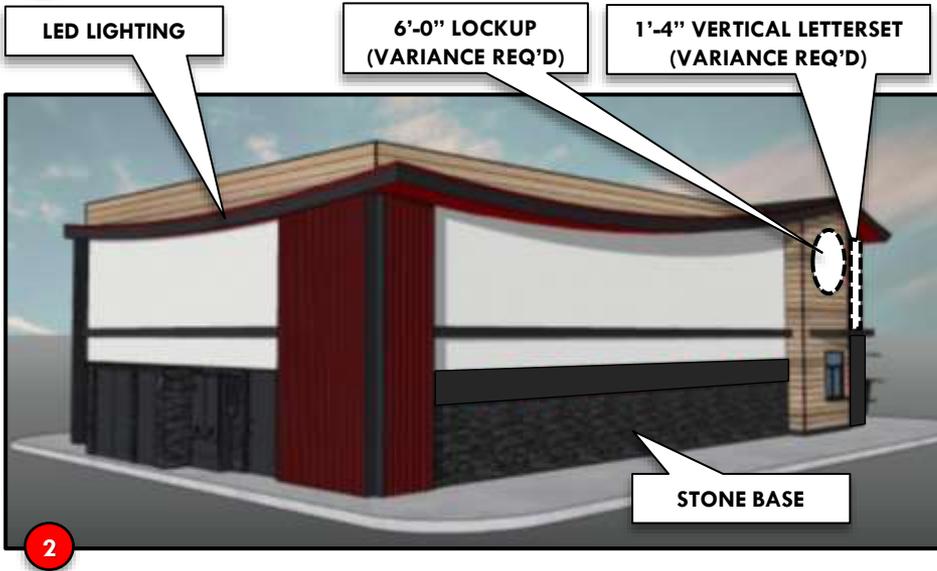
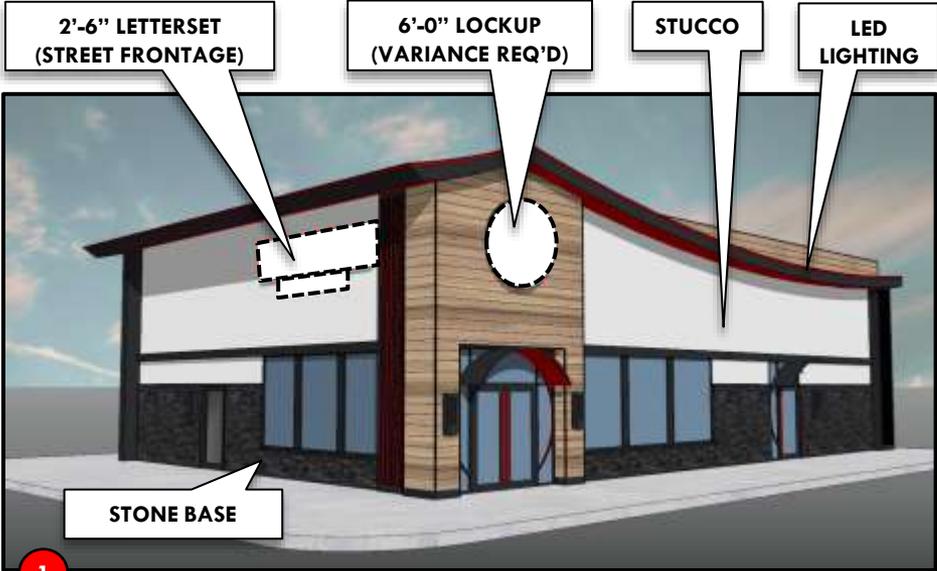
The Planning Commission may approve, approve with conditions, or deny the proposed special use permit for a drive-through on the Subject Property. A resolution will be provided at a future meeting.

### **Attachments**

1. Special use permit application and owner consent letter
2. Attachment 1: Site Plan, dated October 1, 2024
3. Attachment 2: Existing site photos, proposed building elevations, and proposed floor plan
4. Attachment 3: Traffic Impact Study, prepared by Fleis & Vandenbrink and dated July 31, 2024
5. Attachment 4: Natural Features Inventory, prepared by Evergreen Design Group and dated September 27, 2024







- Only one wall sign on the facade facing the street will be allowed.
- Variance required for vertical letterset & lockup at drive-thru and lock up above main entry door.

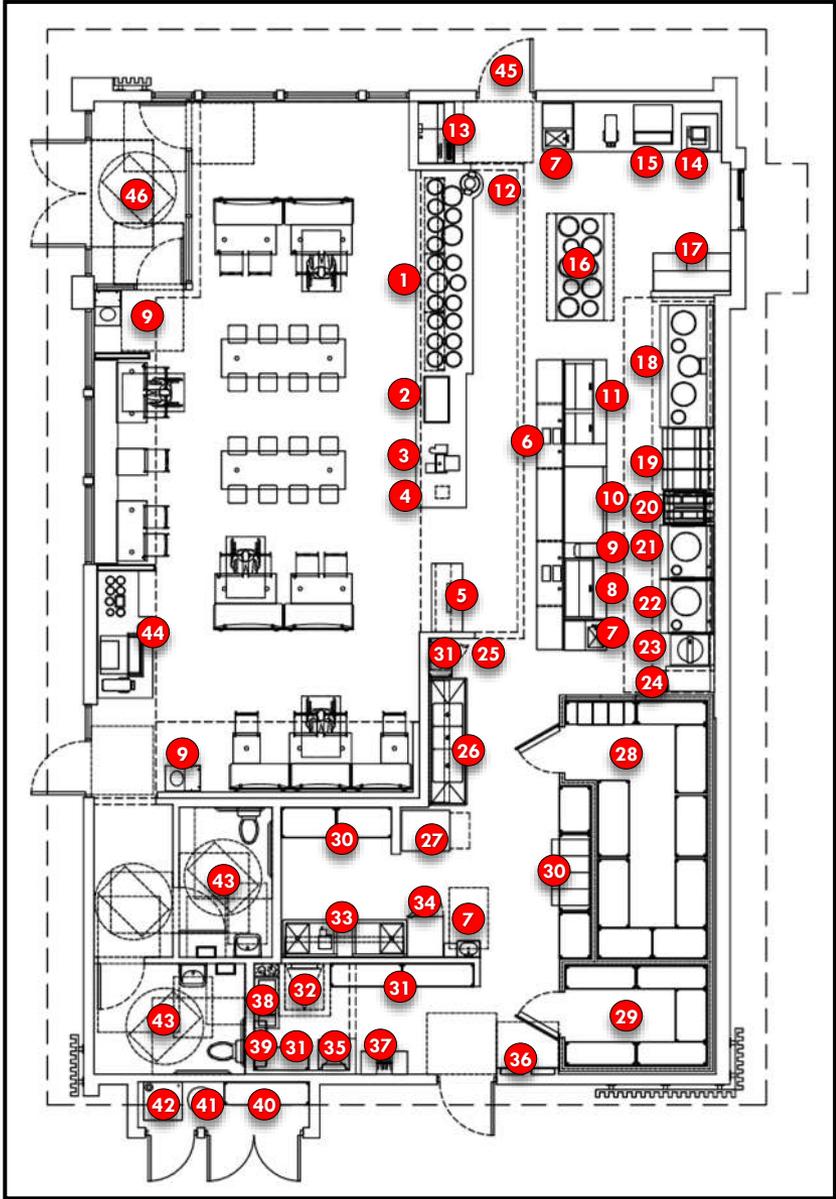




1. INDUCTION TABLE (19)
2. DRINK WELL
3. POS (1)
4. SPACE FOR TABLET
5. OLO SHELF (54")
6. OLO PREP TABLE
7. HANDSINK
8. REF. PREP TABLE (48")
9. TRASH BIN
10. WORKTOP FREEZER (60")
11. REF. PREP TABLE (84")
12. RICE WARMER
13. MANAGER'S STATION
14. DT POS
15. DT BEV STATION
16. MOBILE DT INDUCTION TABLE (10)
17. DT STAGING AREA
18. CHINESE RANGE (96")
19. FRYERS (3)
20. CLAMSHELL
21. CHINESE RANGE (42")
22. AUTO WOK (42")
23. RICE COOKERS (2)
24. RICE HOLDING CABINET
25. MICROWAVE
26. 3-COMP SINK
27. DISHWASHER
28. WALK-IN COOLER
29. WALK-IN FREEZER
30. WIRE SHELVING (24") / STARCH BINS
31. WIRE SHELVING (18")
32. ROOF LADDER
33. PREP SINKS
34. THAWING CABINET
35. MOP SINK
36. ELECTRICAL PANELS
37. LOCKERS
38. BAG-IN-BOX
39. TANKLESS WATER HEATER
40. EXTERIOR STORAGE ROOM
41. CO2 TANK
42. USED OIL TANK
43. RESTROOM
44. BEV STATION
45. DT WAITING EMPLOYEE ACCESS
46. VESTIBULE



**FLOOR PLAN – OPTION 7**  
 SEAT COUNT = 50  
 VESTIBULE  
 NO PATIO



BUILDING SF:	2,700
INTERIOR SEATS:	50
EXTERIOR SEATS:	0

# MEMO



VIA EMAIL [Lannie.cowden@hva.cc](mailto:Lannie.cowden@hva.cc)

**To:** Lannie M. Cowden  
Heights Venture

**From:** Jacob Swanson, PE, PTOE  
Mary Flanagan, EIT  
Fleis & VandenBrink Engineering

**Date:** July 31, 2024

**Re:** Panda Express Restaurant Development  
Meridian Township, Michigan  
Traffic Impact Study

## 1 INTRODUCTION

This memorandum presents the results of the Traffic Impact Study (TIS) for the proposed commercial development in Meridian Township, Michigan. The project site is located at 4990 Marsh Road, generally in the southeast quadrant of the intersection of Marsh Road & Central Park Drive, as shown on the attached **Figure 1**. The proposed development includes the construction of a fast-food restaurant with drive-through, on property that is currently occupied by the existing Wheat Jewelers. Site access is proposed via the existing shared access driveway to Marsh Road; no new site access is proposed. Marsh Road is under the jurisdiction of the Ingham County Road Department (ICRD). A TIS has been required as part of the site plan approval process and for permitting of site access.

Scope of this study was developed based on Fleis & VandenBrink's (F&V) knowledge of the study area, understanding of the development program, professional experience, accepted traffic engineering practice, information published by Institute of Transportation Engineers (ITE), and requirements of Meridian Township and ICRD. Additionally, ICRD provided input on the scope of work via email, dated May 16, 2024. Study analyses were completed using Synchro/SimTraffic (Version 11) traffic analysis software. Sources of data for this study include F&V subconsultant Quality Counts, LLC (QC), Meridian Township, ITE, ICRD, and the Michigan Department of Transportation (MDOT).

## 2 BACKGROUND DATA

### 2.1 EXISTING ROADWAY NETWORK

Vehicle transportation for the study area is provided via Marsh Road. Information on the study roadway is summarized in **Table 1**. The lane use and traffic control within the study roadway network is shown on the attached **Figure 2**. All applicable background data referenced in this memo is attached.

**Table 1: Roadway Information**

Roadway Segment	Marsh Road
Number of Lanes	5 Lanes (2 lanes each direction, TWLTL)
Functional Classification	Minor Arterial
Jurisdiction	ICRD
Speed Limit	40-mph
Traffic Volumes (AADT)	8,636 (MDOT 2016)

2960 Lucerne Drive SE  
Grand Rapids, MI 49546  
P: 616.977.1000  
F: 616.977.1005  
[www.fveng.com](http://www.fveng.com)

**2.2 EXISTING TRAFFIC VOLUMES**

F&V subconsultant QC collected existing Turning Movement Count (TMC) data at the study intersection of Marsh Road & Mall Drive / Site Access. The TMC data collection was collected on Thursday, May 30, 2024, during the MD (11:00 AM to 1:00 PM) and PM (4:00 PM to 6:00 PM) peak periods; additional TMC data was collected on Saturday, June 1, 2024, during the SAT (11:00 AM to 1:00 PM) peak hours.

During collection of the turning movement counts, Peak Hour Factors (PHFs), pedestrian and bicycle volumes, and commercial truck percentages were recorded and utilized in the traffic analysis. The peak hours of the study intersection were utilized; the midday (MD), evening (PM), and Saturday (SAT) peak hours for the adjacent study roadway network were observed to occur between 12:00 PM to 1:00 PM, 4:45 PM to 5:45 PM, and 12:00 PM to 1:00 PM, respectively. The existing peak hour traffic volumes used in the analysis are shown on the attached **Figure 3**.

**3 EXISTING CONDITIONS**

Existing peak hour vehicle delays and Levels of Service (LOS) were calculated at the study intersection of Marsh Road & Mall Drive / Site Access using Synchro/SimTraffic (Version 11) traffic analysis software. This analysis was based on the existing lane use and traffic control shown on the attached **Figure 2**, the existing peak hour traffic volumes shown on the attached **Figure 3**, and the methodologies presented in the *Highway Capacity Manual, 6<sup>th</sup> Edition (HCM6)*.

Descriptions of LOS “A” through “F”, as defined in the HCM6, are attached. Typically, LOS D is considered acceptable, with LOS A representing minimal delay and LOS F indicating failing conditions. Additionally, SimTraffic network simulations were reviewed to evaluate network operations and vehicle queues. The results of the existing conditions analysis are attached and summarized in **Table 2**.

**Table 2: Existing Intersection Operations**

Intersection	Control	Approach	Existing Conditions					
			MD Peak		PM Peak		SAT Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
1 Marsh Road & Mall Drive / Site Access	Stop (Minor)	EB	13.2	B	11.1	B	12.1	B
		WB	24.5	C	40.9	E	36.4	E
		NBL	9.7	A	9.6	A	10.4	B
		SBL	9.3	A	10.3	B	9.7	A

Results of the existing conditions analysis indicates that all approaches and movements at the study intersection of Marsh Road & Mall Drive / Site Access are currently operating acceptably, at LOS D or better during all peak periods (MD, PM, and SAT), with the exception of the following:

- During the PM peak hour: The westbound approach is currently operating at LOS E.
- During the SAT peak hour: The westbound approach is currently operating at LOS E.

Although the Synchro intersection LOS analysis indicates poor operations for these movements, review of SimTraffic network simulations indicates acceptable operations during all the peak periods. The 95<sup>th</sup> percentile vehicle queue lengths reported for the westbound approach were approximately 56-feet (2-3 vehicles) or less during all peak periods, which is not significant. Additionally, egress vehicles along both minor street approaches were observed to find adequate gaps within the through traffic along Marsh Road, without experiencing significant delays or excessive vehicle queueing.

**4 BACKGROUND (2025) CONDITIONS**

Census population data and historic traffic volumes were obtained for Meridian Township, in order to calculate a background growth rate to project the existing 2024 traffic volumes to the buildout year of 2025. Historical traffic volumes indicate a negative growth; however, population data showed an average annual growth rate of approximately 1.0% per year. Therefore, an annual background growth rate of **1.0%** per year was applied to the existing peak hour traffic volumes to forecast the 2025 traffic volume.



In addition to the background traffic growth, it is important to account for traffic that will be generated by approved developments within the vicinity of the study area that are currently under construction or will be within the buildout year. At the time of this study, no planned background developments were identified by Meridian Township or ICRD, within close proximity to the project site.

However, the previous use of the project site, Wheat Jewelers, was open and operation when the TMC data collection was performed. Therefore, in order to account for the reduction in traffic volumes associated with closing the jewelry store, the trip generation for the existing land use was projected. The number of weekday and Saturday peak hour (MD, PM, and SAT) and daily vehicle trips that would be generated by the existing jewelry store were forecast based on data published by ITE in the *Trip Generation Manual, 11<sup>th</sup> Edition*. The existing development trip generation projections are summarized in **Table 3**.

**Table 3: Existing Jewelry Store – Site Trip Generation Summary**

Land Use	ITE Code	Amount	Units	Average Daily Traffic (vpd)	MD Peak Hour (vph)			PM Peak Hour (vph)			SAT Peak Hour (vph)		
					In	Out	Total	In	Out	Total	In	Out	Total
Strip Retail	822	3,500	SF	377	25	21	46	19	18	37	12	11	23

The projected trip generation associated with the existing jewelry store were subtracted from the study roadway network, based on the trip generation projections shown in **Table 3** and the current turning movement patterns at the site access driveway to Marsh Road. Therefore, the existing peak hour traffic volumes were reduced by the site-generated trips from the existing land use, after applying the calculated background growth rate, in order to forecast the background 2025 peak hour traffic volumes *without the proposed development*, as shown on the attached **Figure 4**.

Background peak hour vehicles delays and LOS *without the proposed development* were calculated at the study intersection based on the existing lane use and traffic control shown on the attached **Figure 2**, the background peak hour traffic volumes shown on the attached **Figure 4**, and the methodologies presented in the HCM6. The results are attached and summarized in **Table 4**.

**Table 4: Background Intersection Operations**

Intersection	Control	Approach	Existing Conditions						Background Conditions						Difference					
			MD Peak		PM Peak		SAT Peak		MD Peak		PM Peak		SAT Peak		MD Peak		PM Peak		SAT Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
1 Marsh Road & Mall Drive / Site Access	Stop (Minor)	EB	13.2	B	11.1	B	12.1	B	13.2	B	11.2	B	12.2	B	0.0	-	0.1	-	0.1	-
		WB	24.5	C	40.9	E	36.4	E	15.0	C	12.1	B	30.4	D	-9.5	-	-28.8	E→B	-6.0	E→D
		NBL	9.7	A	9.6	A	10.4	B	9.7	A	9.6	A	10.5	B	0.0	-	0.0	-	0.1	-
		SBL	9.3	A	10.3	B	9.7	A	9.2	A	10.2	B	9.6	A	-0.1	-	-0.1	-	-0.1	-

*Note: Decreased delays are the result of reduced turning movement volumes at Site Access, associated with removal of the existing land use*

The results of the background conditions analysis indicate that all approaches and movements at the study intersection of Marsh Road & Mall Drive / Site Access are expected to operate acceptably, at LOS D or better during all peak periods. Review of SimTraffic microsimulations also indicates acceptable operations during all peak periods. Vehicles were observed to find adequate gaps within the through traffic along Marsh Road, without experiencing significant delays or excessive vehicle queueing.

**5 SITE TRIP GENERATION**

The number of weekday peak hour (MD and PM), weekend peak hour (SAT), and daily weekday vehicle trips that would be generated by the proposed development was forecast based on data published by ITE in the *Trip Generation Manual, 11<sup>th</sup> Edition*. The proposed development includes the construction of a fast-food restaurant with drive through. Site access is proposed via the existing full access driveway on Marsh Road. The trip generation projections utilized in this analysis are summarized in **Table 5**.

As is typical of commercial developments, a portion of the trips generated by the proposed development are from vehicles already on the adjacent roadway network that will pass the site on their way from an origin to their ultimate destination. Therefore, not all traffic at the site driveway is necessarily new traffic added to the street system. This percentage of the trips generated by the development are considered “pass-by” trips and do not add new traffic to the adjacent street system. These trips are reduced from the total external trips generated by a study site.



The percentage of pass-by trips used in this analysis was determined based on the rates published by ITE in the *Trip Generation Manual, 11th Edition*. However, ITE does not provide pass-by data during the MD and SAT peak periods, for the Fast-Food Restaurant with Drive-Through (ITE #934) land use; therefore, the PM peak hour pass-by data was utilized for all peak periods of evaluation.

**Table 5: Proposed Development – Site Trip Generation Summary**

Land Use	ITE Code	Amount	Units	Average Daily Traffic	MD Peak Hour			PM Peak Hour			SAT Peak Hour		
					In	Out	Total	In	Out	Total	In	Out	Total
Fast-Food w/Drive Through	934	2,700	SF	1,262	70	68	138	46	43	89	76	73	149
<i>Pass-By (55% MD, 55% PM, 55% SAT)</i>				694	38	38	76	24	24	48	41	41	82
New Trips				568	32	30	62	22	19	41	35	32	67

**6 SITE TRIP DISTRIBUTION**

The vehicular trips that would be generated by the proposed development were assigned to the study roadway network based on the proposed site access plan and driveway configurations, the existing peak hour traffic patterns in the adjacent roadway network, and the methodologies published by ITE. The ITE trip distribution methodology assumes that new trips will enter the network and access the development, then leave the development and return to their direction of origin, whereas pass-by trips will enter and exit the development in their original direction of travel. The site trip distribution used in the analysis are summarized in **Table 6**.

**Table 6: Site Trip Distribution**

New Trips						Pass-By Trips		
MD	PM	SAT	From	via	Direction	MD	PM	SAT
53%	45%	55%	North	Marsh Road	Northbound	48%	55%	44%
47%	55%	45%	South	Marsh Road	Southbound	52%	45%	56%
<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>Total</b>			<b>100%</b>	<b>100%</b>	<b>100%</b>

The vehicular traffic volumes shown in **Table 5** were distributed to the study network according to the distribution shown in **Table 6**. The site-generated trips shown on the attached **Figure 5** were added to the background peak hour traffic volumes shown on the attached **Figure 4**, in order to calculate the future peak hour traffic volumes, with the addition of the site-generated trips from the proposed development. The future peak hour traffic volumes used in the analysis are shown on the attached **Figure 6**.

**7 FUTURE CONDITIONS (2025)**

The future peak hour vehicle delays and LOS *with the proposed development* were calculated at the study intersection of Marsh Road & Mall Drive / Site Access based on the proposed lane use and traffic control shown on the attached **Figure 2**, the proposed site access, the future peak hour traffic volumes shown on the attached **Figure 6**, and the methodologies presented in HCM6. The results of the future conditions analysis are attached and summarized in **Table 7**.

**Table 7: Future Intersection Operations**

Intersection	Control	Approach	Background Conditions						Future Conditions						Difference					
			MD Peak		PM Peak		SAT Peak		MD Peak		PM Peak		SAT Peak		MD Peak		PM Peak		SAT Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
1 Marsh Road & Mall Drive / Site Access	Stop (Minor)	EB	13.2	B	11.2	B	12.2	B	13.6	B	11.1	B	12.0	B	0.4	-	-0.1	-	-0.2	-
		WB	15.0	C	12.1	B	30.4	D	32.9	D	59.2	F	133.5	F	17.9	C→D	47.1	B→F	103.1	D→F
		NBL	9.7	A	9.6	A	10.5	B	9.6	A	9.6	A	10.3	B	-0.1	-	0.0	-	-0.2	-
		SBL	9.2	A	10.2	B	9.6	A	9.4	A	10.4	B	10.0	A	0.2	-	0.2	-	0.4	-

*Note: Decreased delays are the result of reduced through volumes along Marsh Road, due to pass-by traffic*

The results of the future conditions analysis, with the addition of the site generated traffic from the proposed development indicate that all approaches and movements at the study intersection of Marsh Road & Mall Drive / Site Access are expected to operate acceptably, at LOS D or better during all (MD, PM, and SAT) peak periods, with the exception of the following:



- During the PM peak hour: The westbound approach is expected to operate at LOS F.
- During the SAT peak hour: The westbound approach is expected to operate at LOS F.

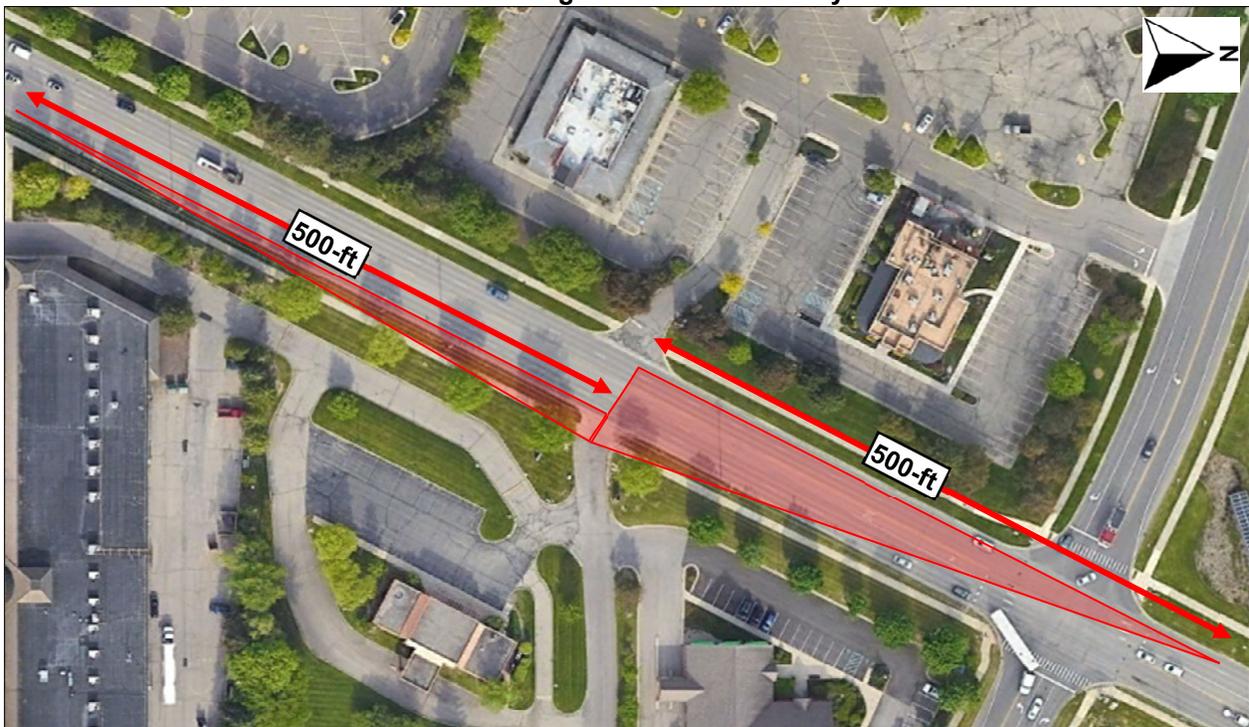
Although the Synchro intersection LOS analysis indicates poor operations, review of SimTraffic network simulations indicates acceptable operations during all the peak periods. The 95<sup>th</sup> percentile queue lengths reported for the westbound approach were approximately 106-feet (4-5 vehicles) or less during all peak periods, which is not significant. Additionally, vehicles were observed to find adequate gaps within the through traffic along Marsh Road, without experiencing significant delays or excessive vehicle queueing.

## 8 ACCESS MANAGEMENT

### 8.1 INTERSECTION SIGHT DISTANCE

An evaluation was performed reviewing the sight distance at the existing site driveway on Marsh Road, based on the AASHTO intersection sight distance guidelines for a posted speed limit of 40-mph. The results of the sight distance evaluation are shown in **Exhibit 1** and further discussed below.

**Exhibit 1: Sight Distance Summary**



Review of the sight distance to the east and west of the project site, along Marsh Road, indicates that there is adequate intersection sight distance at the existing site driveway location, assuming the shoulder ROW area remains clear of any vegetation and/or obstructions.

### 8.2 AUXILIARY LANE EVALUATION

The ICRD auxiliary turn lane criteria were evaluated at the existing site driveway on Marsh Road, with the addition of the site-generated traffic volumes from the proposed development. Marsh Road has an existing center two-way left-turn lane (TWLTL); therefore, only the right-turn warranting criteria was evaluated. The results of the analysis are shown on the attached ICRD warranting chart and summarized in **Table 8**.

**Table 8: Auxiliary Right-Turn Lane Evaluation Summary**

Intersection	MD Peak Hour	PM Peak Hour	SAT Peak Hour	Recommendation
Marsh Road & Site Access	Taper	No Treatment	Taper	RT Taper

The results of the auxiliary turn lane evaluation indicate that a right-turn deceleration taper is warranted along north-eastbound Marsh Road at the existing site driveway, based on future traffic volumes.

## 9 SITE CIRCULATION AND QUEUEING

The peak trip generation for this project site is expected to occur during the Saturday period; therefore, the projected drive-through vehicle queueing was reviewed, in order to determine if the proposed on-site queue length for the drive-through is adequate to accommodate the projected peak operations. Fast-food restaurants with drive-throughs typically have an average service rate of approximately 90 vehicles per hour and service approximately 70% of customers via the drive-through. Therefore, of the total 76 inbound vehicles generated by the proposed development during the SAT peak hour, it is estimated that approximately 53 vehicles will use the drive-through and the remaining 23 vehicles will park and walk-in. A queueing analysis was performed to determine the maximum projected queue length for the site.

The service rate is greater than the projected arrival rate; therefore, the required queueing for the proposed drive-through is based on the maximum potential for random arrivals. A Poisson Distribution was performed to determine the probability of random arrivals; the results are attached and indicate that a maximum potential of four (4) vehicles arriving simultaneously at any given time. The results of the analysis show a projected maximum queue length of 100-feet as summarized in **Table 9**.

**Table 9: Vehicle Queueing Analysis**

PANDA EXPRESS DRIVE-THROUGH STACKING SPACE CALCULATOR	
Number of Arrivals	53
Time per Vehicle (s)	40
Service Rate (veh/hr)	90
Peak Arrival (veh)	4
Vehicle Length	25
<b>TOTAL QUEUE (ft)</b>	<b>100</b>

Therefore, the results of the projected vehicle queueing analysis indicate that the maximum anticipated arrivals generated by the proposed development can be adequately accommodated within the available queue length, without impacting internal site circulation or the adjacent roadway operations along Marsh Road.

## 10 CONCLUSIONS

The conclusions of this TIS are as follows:

### 1. Existing Conditions (2024)

- The existing conditions analysis results indicate that all approaches and movements at the study intersection of Marsh Road & Mall Drive / Site Access are currently operating acceptably, at LOS D or better during all peak hours (MD, PM, and SAT), with the exception of the following:
  - The WB approach is currently operating at LOS E, during both the PM and SAT peak hours. Although the LOS analysis indicates poor operations, review of SimTraffic indicates acceptable operations during all the peak periods. The 95<sup>th</sup> percentile queue lengths reported was approximately 56-feet (2-3 vehicles) or less, which is not significant. Additionally, vehicles were observed to find adequate gaps within the through traffic along Marsh Road, without experiencing significant delays or excessive vehicle queueing.

### 2. Background Conditions (2025 No Build)

- A conservative annual growth rate of **1.0%** per year was utilized to project the existing 2024 traffic volumes to the buildout year of 2025. No background developments were identified.
  - However, the existing use of the property (Wheat Jewelers) was still open and operational during data collection. Therefore, the trips generated by the jewelry store were projected and then subtracted from the study roadway network, based on the current turning movement patterns at the site access driveway.

- The results of the background conditions analysis indicate that all approaches and movements at the study intersection of Marsh Road & Mall Drive / Site Access are expected to operate acceptably, at LOS D or better, during all peak periods. SimTraffic network simulations also indicates acceptable operations during all peak periods.

**3. Future Conditions (2025 Build)**

- The results of the future conditions analysis indicate that all approaches and movements at the study intersection of Marsh Road & Mall Drive / Site Access are expected to operate acceptably, at LOS D or better during all peak periods, with the exception of the following:
  - The WB approach is currently operating at LOS E, during both the PM and SAT peak hours. Although the LOS analysis indicates poor operations, SimTraffic indicates acceptable operations during all the peak periods. The 95<sup>th</sup> percentile queue lengths reported was approximately 106-feet (4-5 vehicles) or less, which is not significant. Additionally, vehicles were observed to find adequate gaps within the through traffic along Marsh Road, without experiencing significant delays or excessive vehicle queueing.

**4. Access Management**

- Review of the sight distance to the east and west of the project site, along Marsh Road, indicates there is adequate intersection sight distance at the existing site driveway location, assuming the shoulder ROW area remains clear of any vegetation and/or obstructions.
- The ICRD auxiliary right-turn lane warranting criteria were evaluated at the existing site driveway, with the addition of the site generated traffic volumes from the proposed development. The study section of Marsh Road currently provides a center two-way left-turn lane (TWLT); therefore, only the right-turn lane treatment warranting criteria was evaluated.
  - The results of the analysis indicate that a north-eastbound right-turn taper is warranted along Marsh Road at the existing site access driveway, based on future traffic volumes.

**5. Site Circulation and Drive-Through Queueing**

- The results of the drive-through queueing evaluation indicate that the proposed site plan can adequately accommodate the projected vehicle queueing, without impacting the internal site circulation or the operations along Marsh Road.

Any questions related to this memorandum, study, analysis, and results should be addressed to Fleis & VandenBrink.



I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Michigan.

- Attachments:** Figures 1-6  
 Proposed Site Plan  
 Traffic Volume Data  
 US Census Data  
 Synchro / SimTraffic Results  
 Auxiliary Right-Turn Warrant  
 Poisson Distribution



**FIGURE 1**  
**SITE LOCATION MAP**

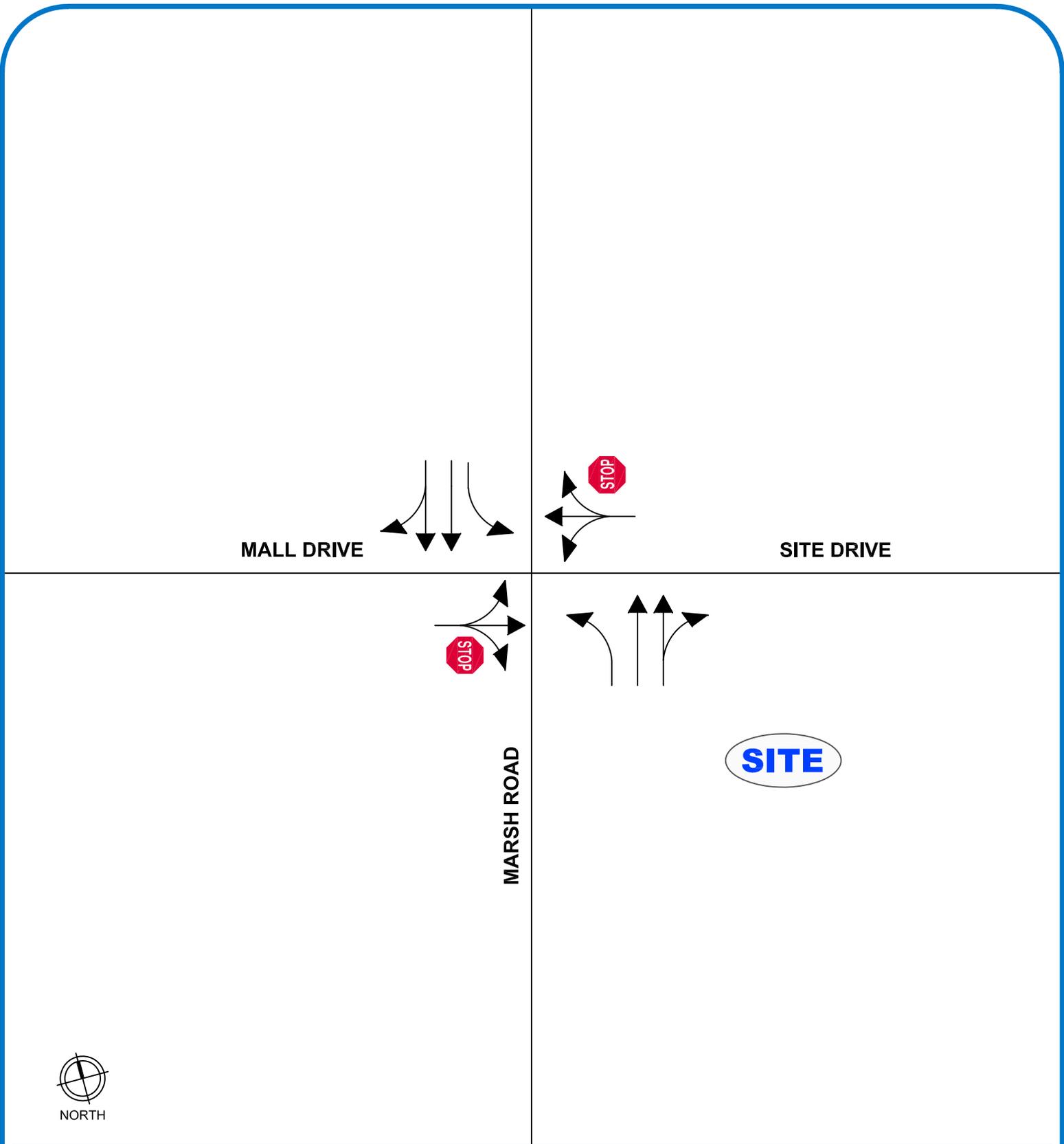
PANDA EXPRESS TIS - MERIDIAN TOWNSHIP, MI



LEGEND

 SITE LOCATION



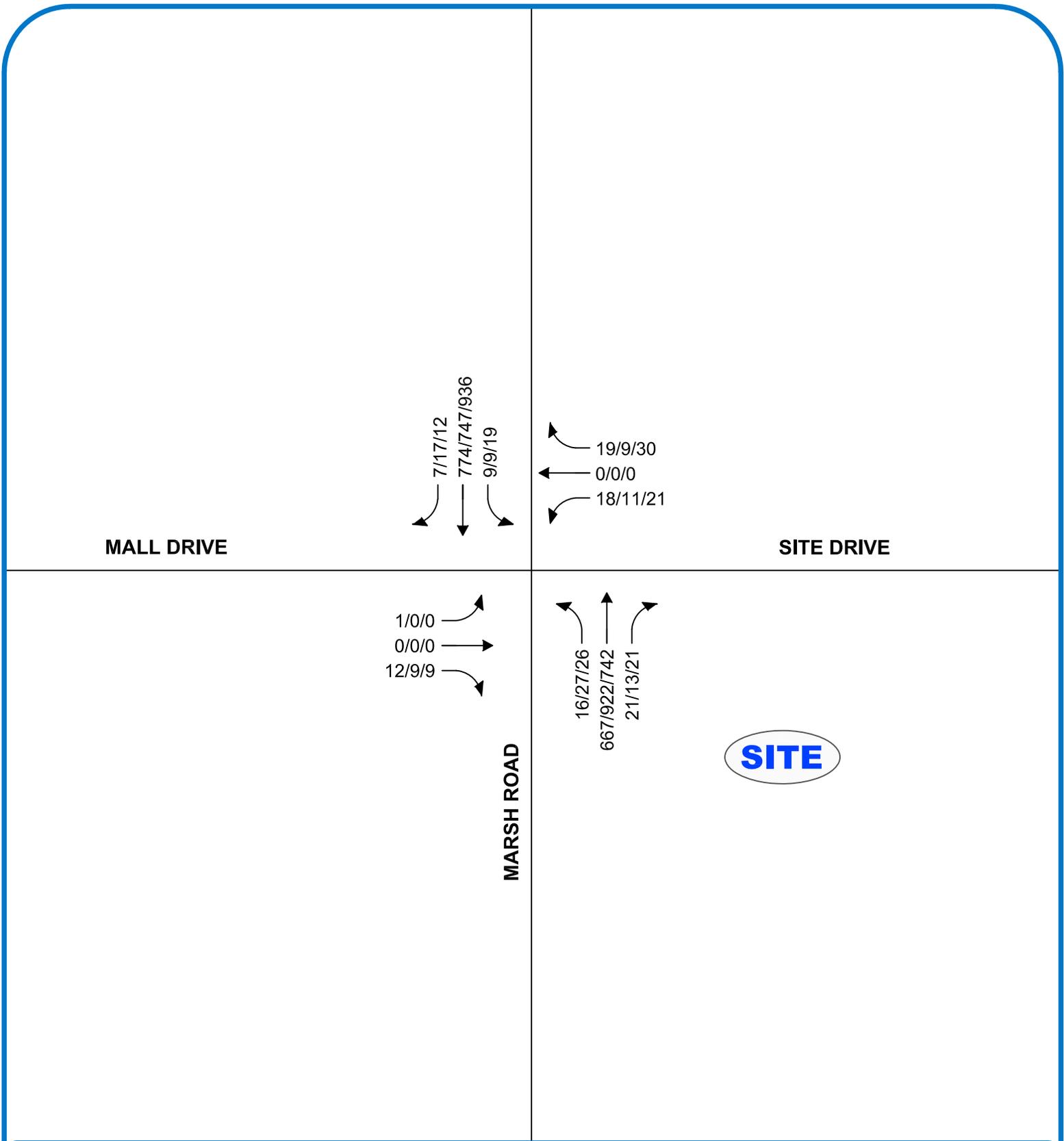


## FIGURE 2 LANE USE AND TRAFFIC CONTROL

PANDA EXPRESS TIS - MERIDIAN TOWNSHIP, MI

### LEGEND

	ROADS		PROPOSED ROADS
	LANE USE		PROPOSED LANE USE
	UNSIGNALIZED INTERSECTION		



# FIGURE 3 EXISTING (2024) TRAFFIC VOLUMES

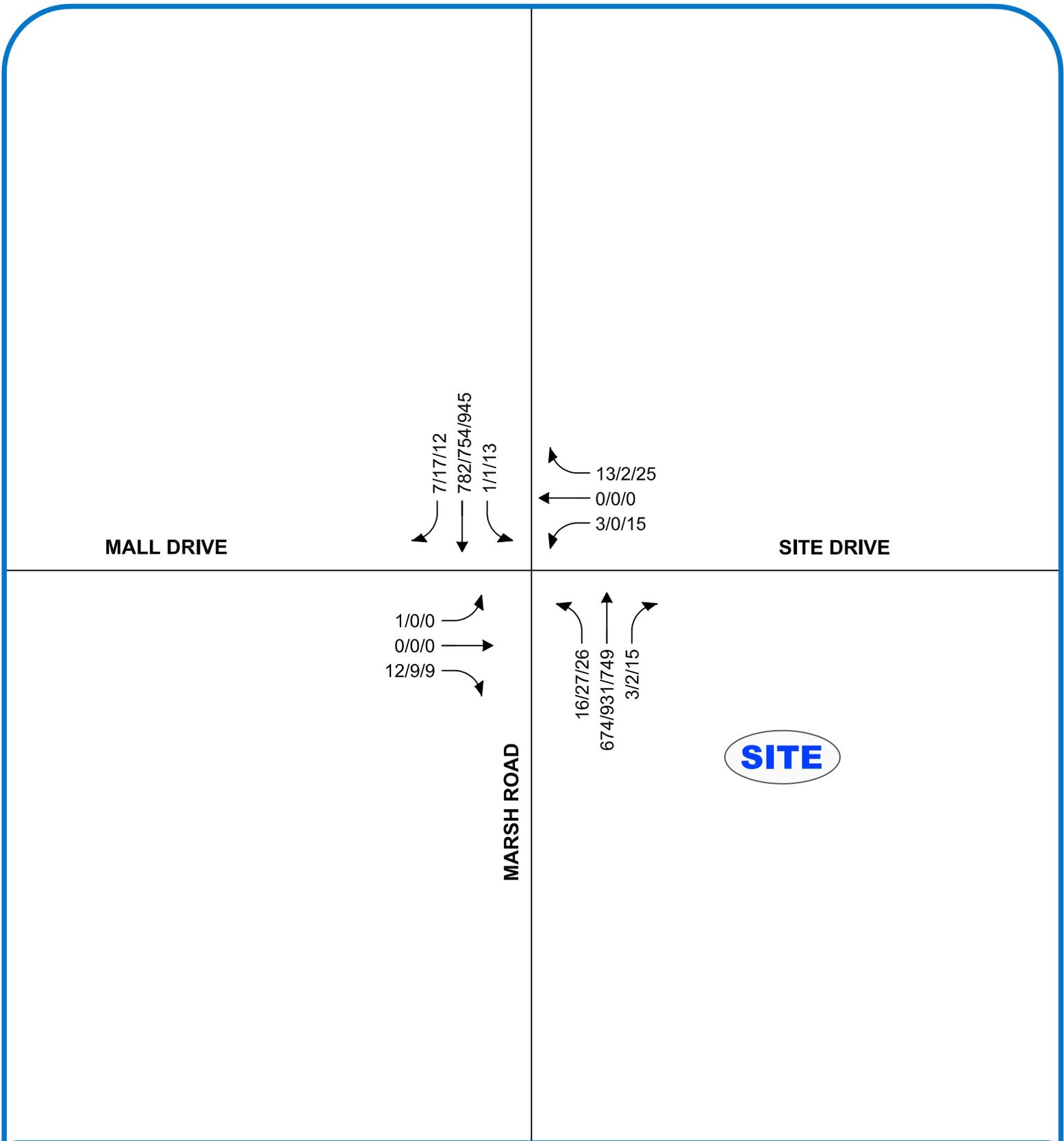
PANDA EXPRESS TIS - MERIDIAN TOWNSHIP, MI

## LEGEND

- ROADS
- PROPOSED ROADS
- TRAFFIC VOLUMES (MD/PM/SAT)



NORTH



# FIGURE 4 BACKGROUND (2025) TRAFFIC VOLUMES

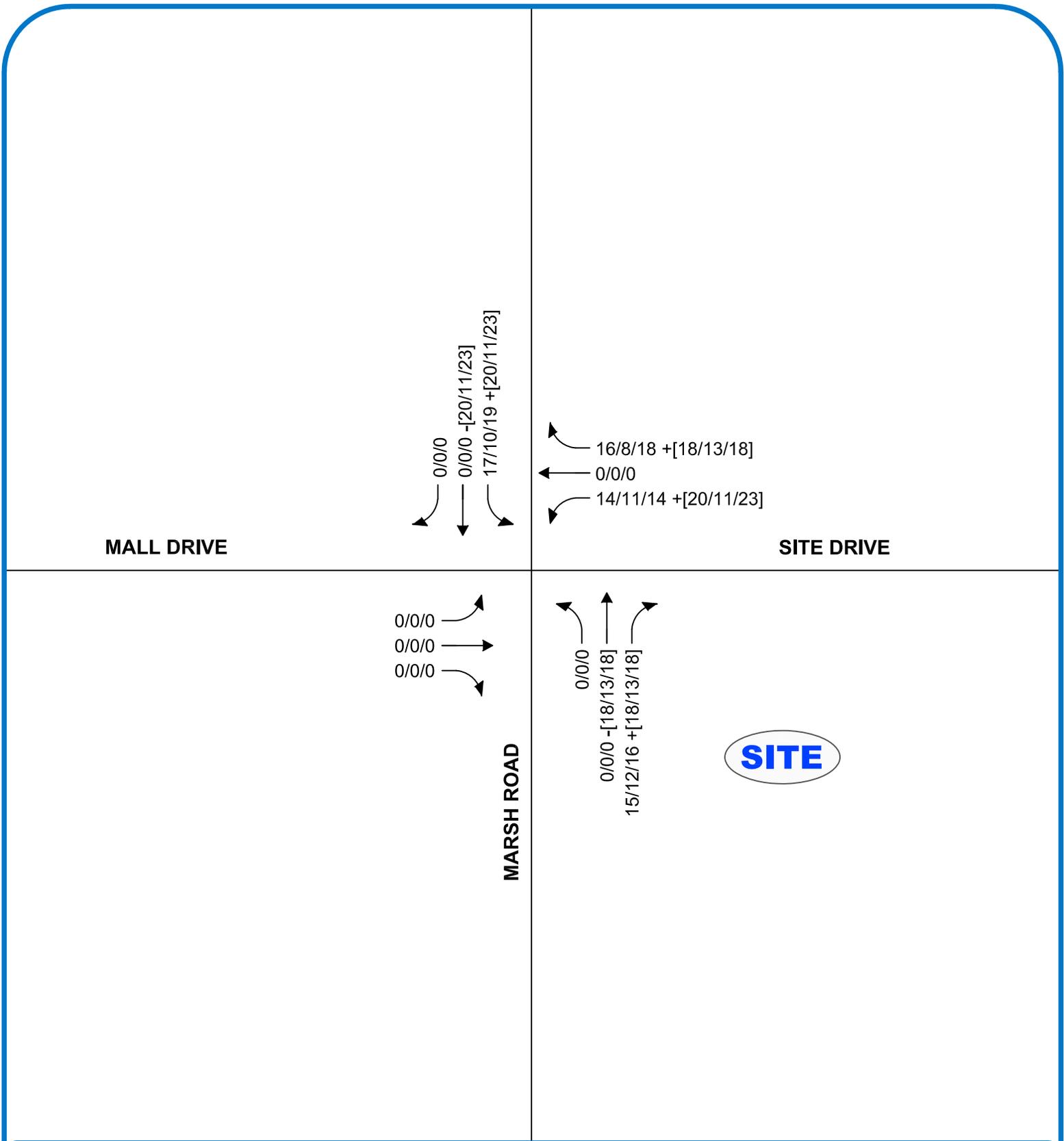
PANDA EXPRESS TIS - MERIDIAN TOWNSHIP, MI

### LEGEND

- ROADS
- PROPOSED ROADS
- TRAFFIC VOLUMES (MD/PM/SAT)



NORTH



# FIGURE 5 SITE-GENERATED TRAFFIC VOLUMES

PANDA EXPRESS TIS - MERIDIAN TOWNSHIP, MI

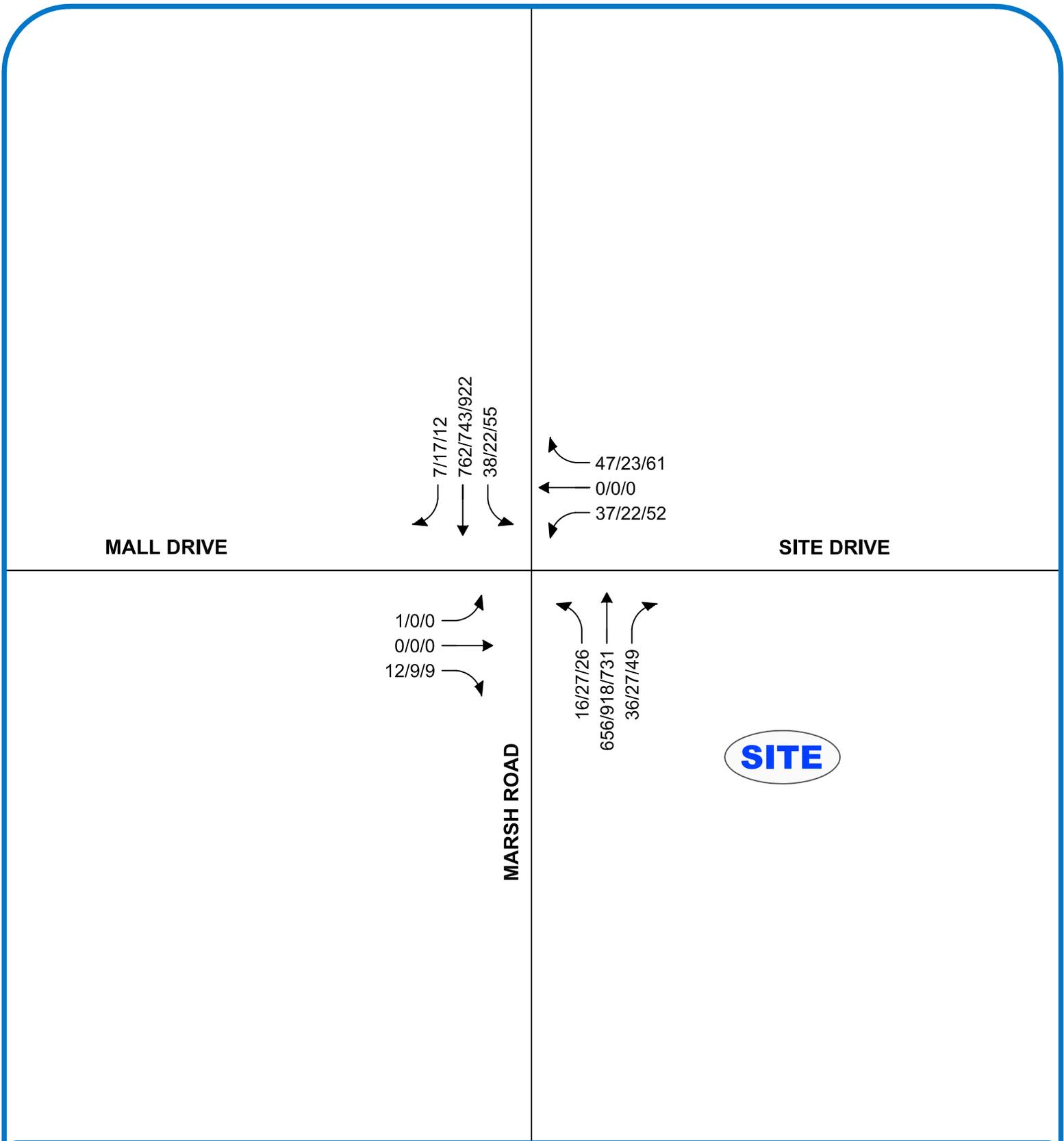
### LEGEND

- ROADS
- - - PROPOSED ROADS
- TRAFFIC VOLUMES (MD/PM/SAT)



NORTH

+/-[000/000/000]  
PASS-BY



# FIGURE 6

## FUTURE (2025) TRAFFIC VOLUMES

PANDA EXPRESS TIS - MERIDIAN TOWNSHIP, MI

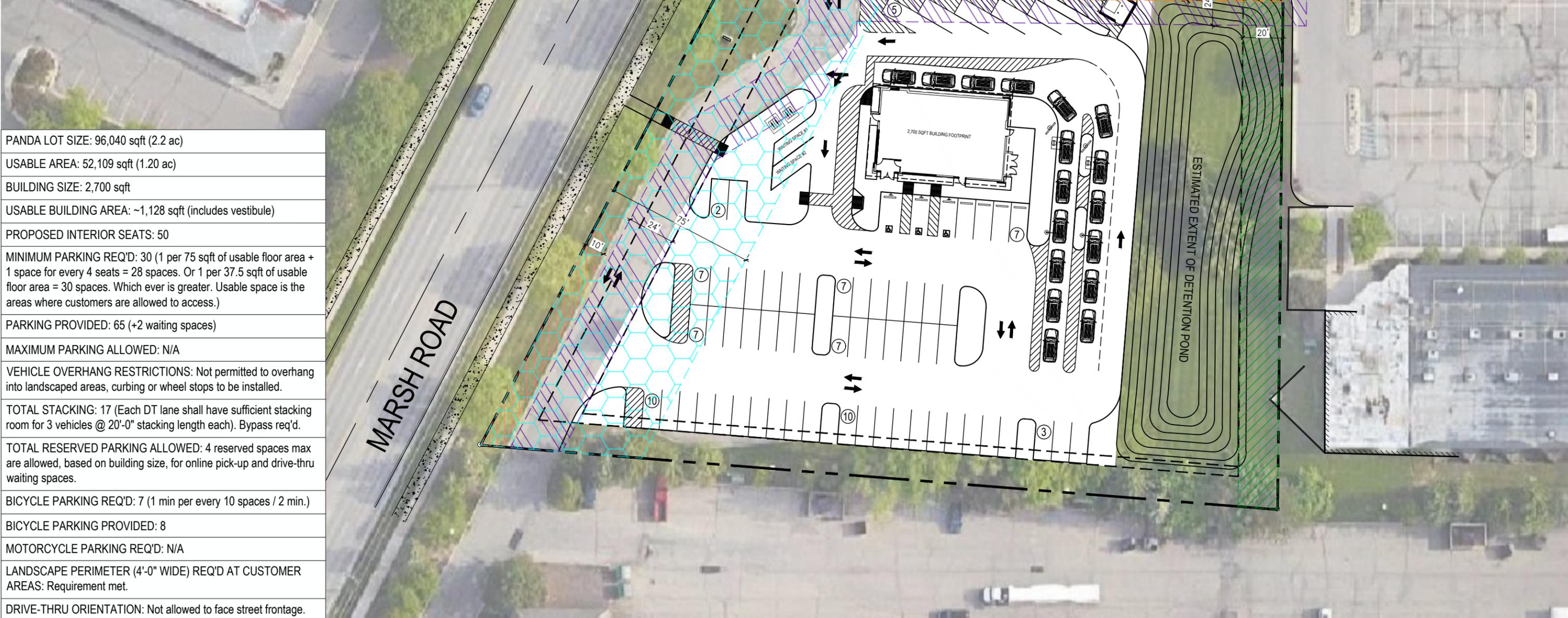
### LEGEND

- ROADS
- - - PROPOSED ROADS
- TRAFFIC VOLUMES (MD/PM/SAT)



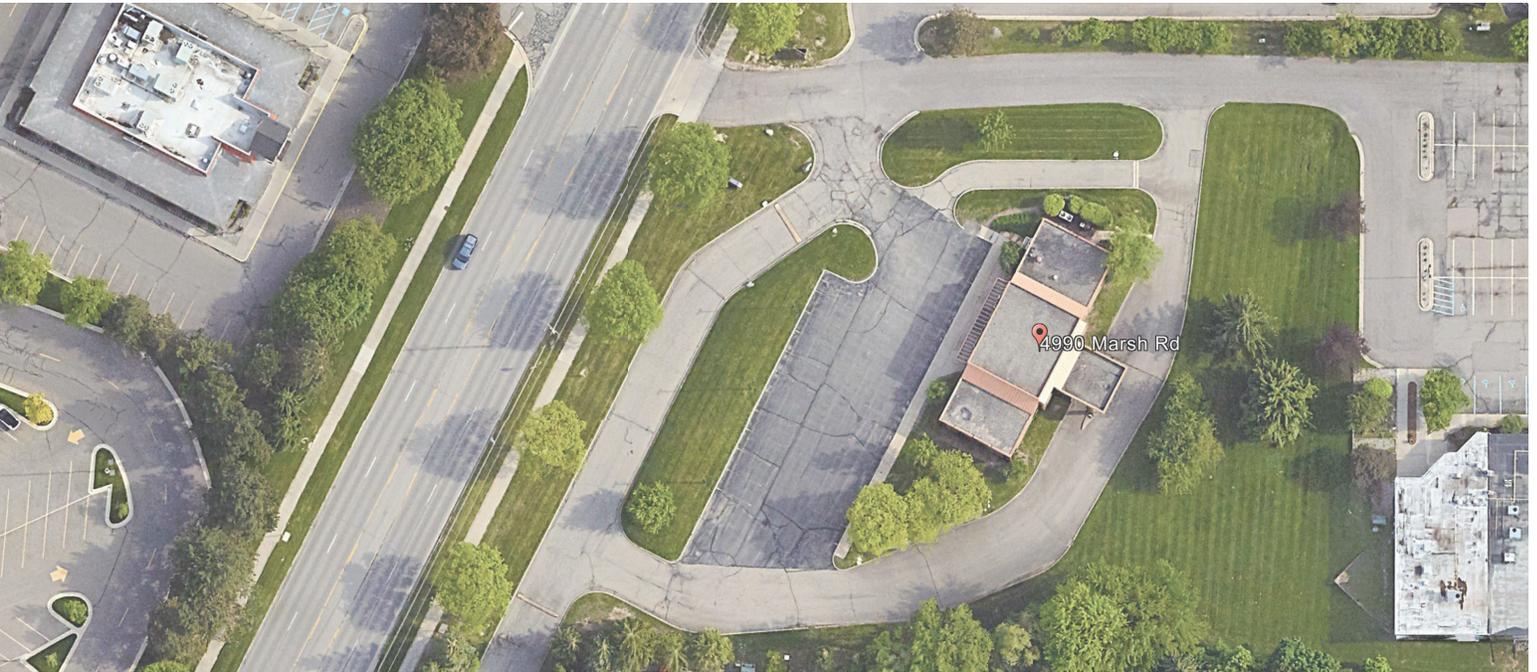
NORTH

EASEMENT LEGEND:	
	ROW and / or easement and rights incidental there to as set forth in favor of Charter Township of Meridian.
	Easement for ingress and egress.
	Easement for storm drain.
	1. ROW and / or easement and rights incidental there to as set forth in favor of Charter Township of Meridian. 2. ROW and / or easement and rights incidental there to as set forth in favor of Consumers Power Company (Now known as Consumers Energy). 3. Rights of others in an easement for ingress and egress.
	ROW and / or easement and rights incidental there to as set forth in favor of Charter Township of Meridian.
	ROW and / or easement and rights incidental there to as set forth in favor of Consumers Power Company (Now known as Consumers Energy).



PANDA LOT SIZE: 96,040 sqft (2.2 ac)
USABLE AREA: 52,109 sqft (1.20 ac)
BUILDING SIZE: 2,700 sqft
USABLE BUILDING AREA: ~1,128 sqft (includes vestibule)
PROPOSED INTERIOR SEATS: 50
MINIMUM PARKING REQ'D: 30 (1 per 75 sqft of usable floor area + 1 space for every 4 seats = 28 spaces. Or 1 per 37.5 sqft of usable floor area = 30 spaces. Which ever is greater. Usable space is the areas where customers are allowed to access.)
PARKING PROVIDED: 65 (+2 waiting spaces)
MAXIMUM PARKING ALLOWED: N/A
VEHICLE OVERHANG RESTRICTIONS: Not permitted to overhang into landscaped areas, curbing or wheel stops to be installed.
TOTAL STACKING: 17 (Each DT lane shall have sufficient stacking room for 3 vehicles @ 20'-0" stacking length each). Bypass req'd.
TOTAL RESERVED PARKING ALLOWED: 4 reserved spaces max are allowed, based on building size, for online pick-up and drive-thru waiting spaces.
BICYCLE PARKING REQ'D: 7 (1 min per every 10 spaces / 2 min.)
BICYCLE PARKING PROVIDED: 8
MOTORCYCLE PARKING REQ'D: N/A
LANDSCAPE PERIMETER (4'-0" WIDE) REQ'D AT CUSTOMER AREAS: Requirement met.
DRIVE-THRU ORIENTATION: Not allowed to face street frontage.

# NATURAL FEATURES ASSESSMENT



**PANDA EXPRESS**  
**4990 MARSH ROAD**  
**OKEMOS MI**

Prepared by:



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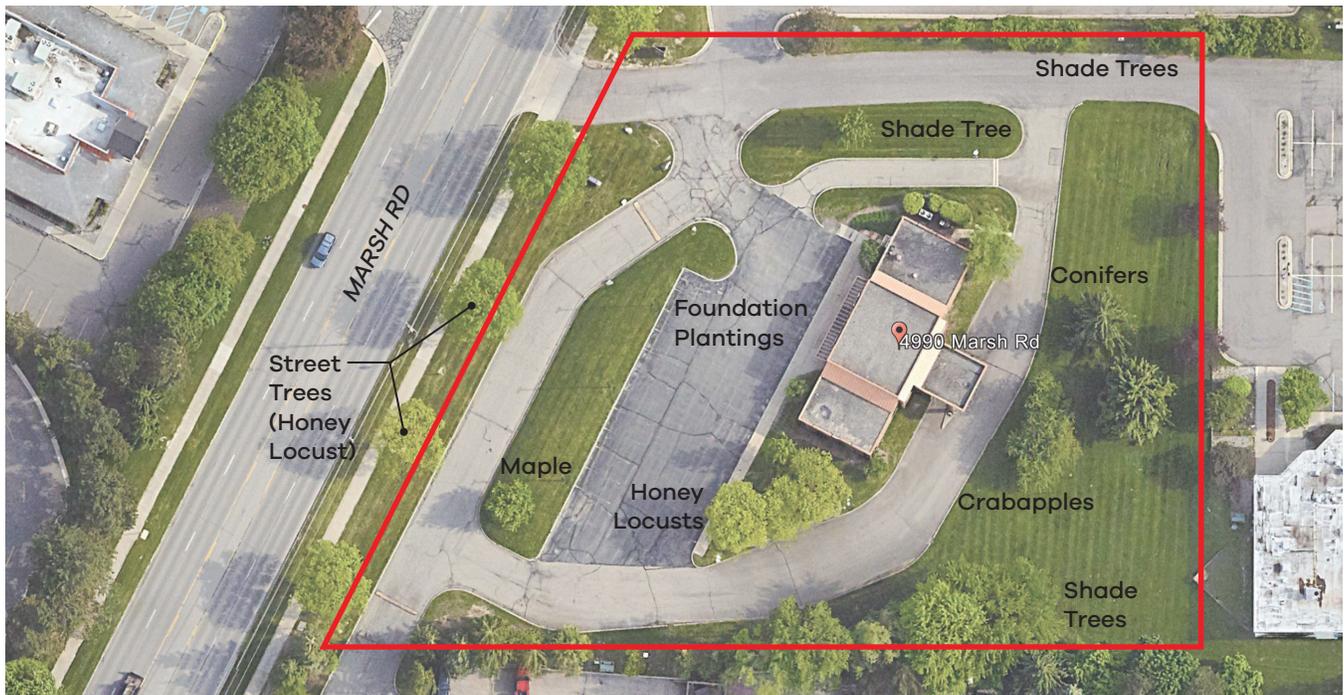
**SUP SUBMITTAL**  
**SEPTEMBER 27, 2024**



## NATURAL FEATURES INVENTORY

The existing site at 4990 Marsh Road is approximately 2.2 acres with 1.16 acres of landscape area. The open space consists of lawn, foundation plantings, mature shade trees, ornamental and evergreen trees. These landscape elements provide shade, visual interest as well as providing habitat for insects, birds and small animals.

There are currently over 22 trees on-site and 4 street trees within the Marsh Rd. Right-of-Way. The type, size and health of these trees will be identified on the tree inventory report which is expected to be completed in mid-October by an ISA certified Arborist.



The 4 street trees (right) within the Marsh Rd. Right-of-Way are Honey Locust (*Gleditsia Triacanthos*).

These will be preserved and protected during construction.





## NATURAL FEATURES INVENTORY

The trees currently on-site range in size and variety. There are large evergreen trees, ornamental tree and medium to large shade trees. The remainder of the site is covered with lawn with some foundation plantings around the existing building. (See photos below for existing conditions)



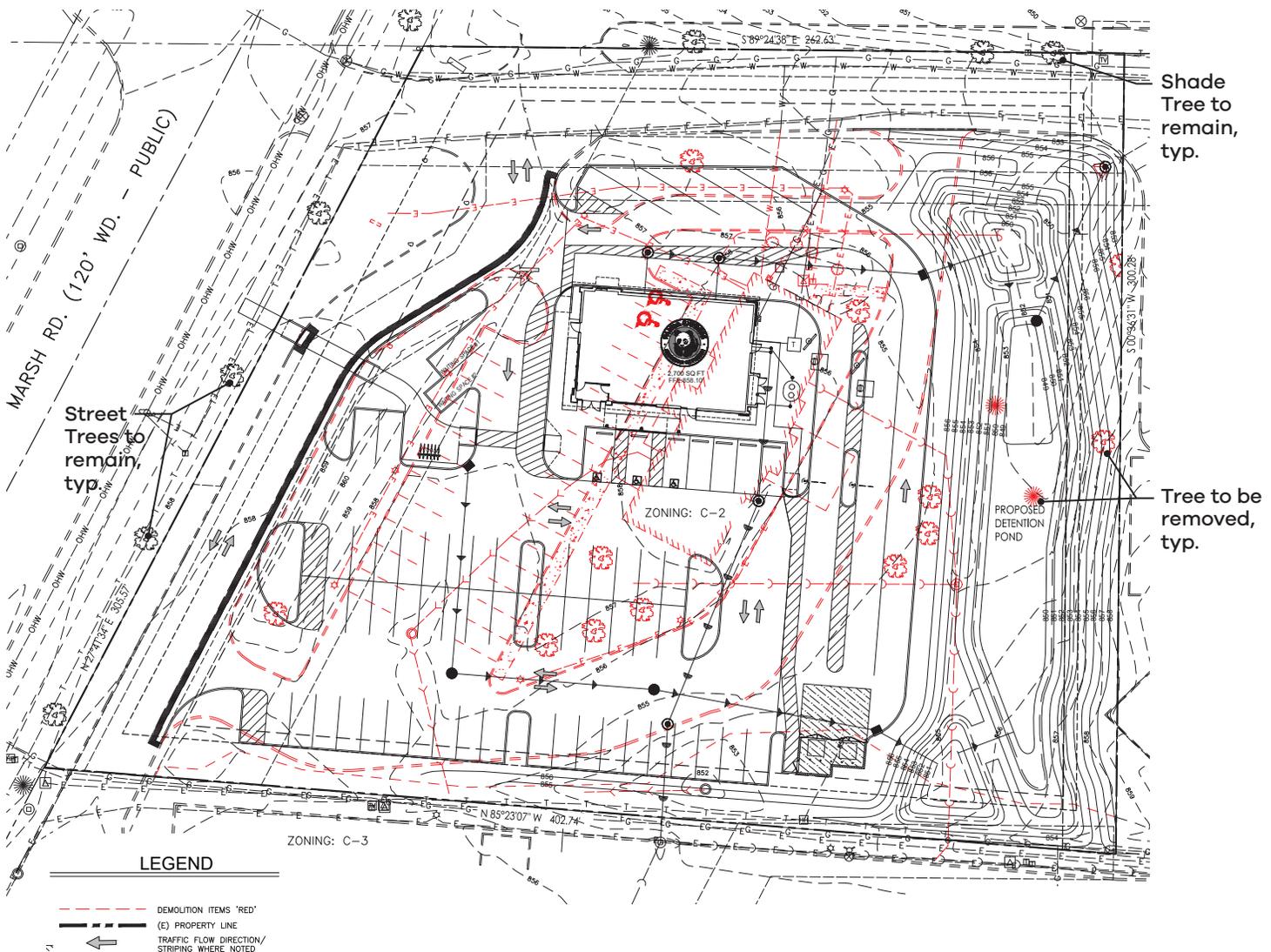
There are no wetlands, significant stands of trees, floodways, floodplains, waterbodies, identified groundwater vulnerable areas, slopes greater than 20 percent, nor vegetative cover with the potential to sustain significant or endangered wildlife.



## IMPACTS ON NATURAL FEATURES

As part of the property development, most of the site will be cleared to make room for improvements including a new building, parking lot, sidewalks, detention pond, utilities and landscape. The Proposed disturbed area is 1.73 acres (see Demolition Plan below). This will impact all but 2 of the site trees, which are located on the north side of the property. This reduction will decrease the overall tree canopy for the site.

Street trees will be preserved and protected during construction with appropriate tree preservation techniques including tree protection fence, root pruning and proper boring through the root protection zone as needed for utility placement.





## MITIGATION EFFORTS

The proposed landscape area is 1.34 acres, which exceeds the current condition (1.16 acres). This will provide ample room for landscape improvements by which we can mitigate any negative impacts to the natural environment caused by site development.

Efforts to include but not limited to:

- Planting of new large canopy trees in parking lot islands and throughout the site to provide shade, improve air and water quality, and provide homes for wildlife.
- Preserving existing Street Trees to maintain a mature landscape at the street level.
- Planting new evergreen trees to help buffer neighboring properties.
- Providing a variety of plants that provide year-round interest with texture and seasonal color.
- Use native or adapted plants to promote pollinators, reduce water consumption and decrease landscape maintenance.

