Land Planning Inc.

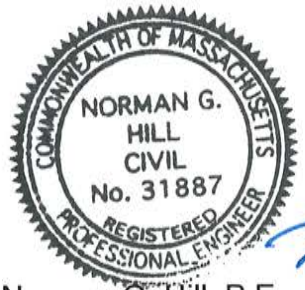
Traffic Impact Analysis

Cultivate Holdings LLC
1764 Main Street
Leicester, Massachusetts

June 12, 2018

Prepared For

Cultivate Holdings, LLC
P.O.Box 812006
Wellesley, MA 02482
Rob Lally



Norman G. Hill, P.E. 6-12-18

214 Worcester Street, North Grafton, MA 01536 Phone: 508-839-9526 Fax: 508-839-9528
www.landplanninginc.com

Introduction

This report provides an analysis of the traffic impacts associated with the existing and proposed expanded uses of the commercial space located at 1764 Main Street, Leicester, MA.

Cultivate Holdings, LLC currently operates medical marijuana production and dispensary facilities at this location. Cultivate proposes to add Adult Use sales in July 2018. While the floor space dedicated to the retail dispensary will not be increased, it is anticipated the trips generated by the expanded use will increase beyond that of the existing operation.

The site is located on Main Street, approximately 200 feet north of Route 9. The location of the project with respect to the area's roadway system is shown on the Parking Plan prepared by Land Planning, Inc., dated April 30, 2018. The parking facilities are also included on this plan.

Analysis of Probable Impacts

The focus of this section is to identify the probable impacts the proposed project will have on anticipated traffic conditions. Included in this section is an estimate of the proposed project travel characteristics.

Project Related Volumes

In forecasting site generated traffic volumes, standard procedures of trip generation and distribution are followed. The following sections summarize the results.

Trip Generation

The traffic generated by the Cultivate facility will follow established patterns with respect to magnitude and distribution. The Institute of Transportation Engineers has published relevant data for the existing and proposed uses.

The trip generation forecasts for this project were based on data collected in the field by Land Planning, Inc. Turning movement counts were performed for both the 7:00 AM – 9:00 PM and 4:00 PM – 6:00 PM peak travel periods. The turning movement counts included the Cultivate driveway/Main Street intersection and the nearby Main Street/Route 9 intersection.

Cultivate's operations include 3 uses:

- Retail – Classified by the ITE as Land Use code 882, Marijuana Dispensary. The total area dedicated to this use is 988 ft².
- Manufacturing – Classified by the ITE as Land Use code 140. This space is used for the processing and packaging product and is 8946 ft² in area.
- Warehousing – Classified by the ITE as Land Use code 150. This space is used for the growing operation and product storage. The warehousing space is 12,466 ft² in area.

Existing trip generation for the 3 uses are based upon turning movement counts performed by Land Planning, Inc. The existing trips are attributed to the individual uses based upon observations of where the vehicles park (retail space has dedicated parking), and by the percentage of the volume predicted by the ITE data.

Proposed trip generation is based upon ITE data. The warehousing trips remain fixed at the existing level as the growing and storage operations are not expected to require additional employees. The trips related to the manufacturing and dispensary operations are expected to increase; the majority being related to the expanded dispensary.

Cultivate's existing and projected employment information has also been factored into the trip generation analysis. Cultivate currently has 17 employees and expects to have 32 employees with the expanded dispensary use. The employees are not all simultaneously on site as they are split into shifts. For the proposed conditions, it is assumed that half of each shift of employees will arrive within the AM peak hour, and half of each shift of employees will exit the site within the PM peak hour.

Cultivate's retail hours of operation are 9:00 AM to 9:00 PM. The existing and proposed dispensary operations will not affect the AM peak travel hour. The increases in AM trip rates are attributed to the proposed additional employees.

The existing and proposed generated trips are summarized by use within the following tables:

Trip Generation – Marijuana Dispensary

		Existing	Proposed
AM	Enter	0	0
	Exit	0	0
PM	Enter	5	12
	Exit	5	12

Trip Generation – Manufacturing

		Existing	Proposed
AM	Enter	4	6
	Exit	1	2
PM	Enter	3	3
	Exit	3	10

Trip Generation – Warehousing

		Existing	Proposed
AM	Enter	1	1
	Exit	1	1
PM	Enter	1	1
	Exit	1	2

Trip Generation Totals – All Uses

		Existing	Proposed
AM	Enter	5	7
	Exit	2	3
PM	Enter	9	16
	Exit	13	24

Trip Distribution / Assignment

Virtually all site generated trips arrive and exit via Route 9. This analysis assumes that all site traffic will traverse the Main Street/Route 9 intersection as this represents the worst case for impacts to the existing roadways.

The distribution of traffic entering and exiting the site will follow existing established patterns at the Route 9/Main Street intersection: 70% east bound/30% westbound during the morning peak hour, and 40% eastbound/60% westbound during the afternoon peak hour.

Analysis

This section assesses the impact of the proposed development to the existing intersection and roadways.

Traffic Volume Increases

The project will minimally increase traffic volumes on Route 9. This section of Route 9 operates below capacity throughout the day. The free flow of traffic on Route 9 will not be adversely impacted by the expanded use of the site.

Level of Service / Capacity

An analysis of the level of service was performed for the Main Street and Route 9 intersection. No analysis is provided beyond this intersection due to the minimal impact of the expanded use on the Route 9 traffic.

The Main Street traveled way at the Route 9 intersection is wide and has large corner radii. The south bound Main Street traffic has sufficient space to separate the left and right turning traffic. This separation of the left and right turning traffic was observed during the turning movement counts. Therefore, this analysis assumes that the Main Street southbound lane at the intersection is not shared.

A summary of the Level of Service for both existing and proposed conditions is provided within the following table:

Table 2
Level of Service at Main Street/Route 9 Intersection

		Movement	LOS Existing	LOS Proposed
AM	EBL	Route 9 left turn to Main St.	A	A
	SBL	Main Street left turn to Rte. 9	D	D
	SBR	Main Street right turn to Rte. 9	A	B
PM	EBL	Route 9 left turn to Main St.	B	B
	SBL	Main Street left turn to Rte. 9	E	E
	SBR	Main Street right turn to Rte. 9	C	C

Conclusions

This analysis resulted in the following conclusions:

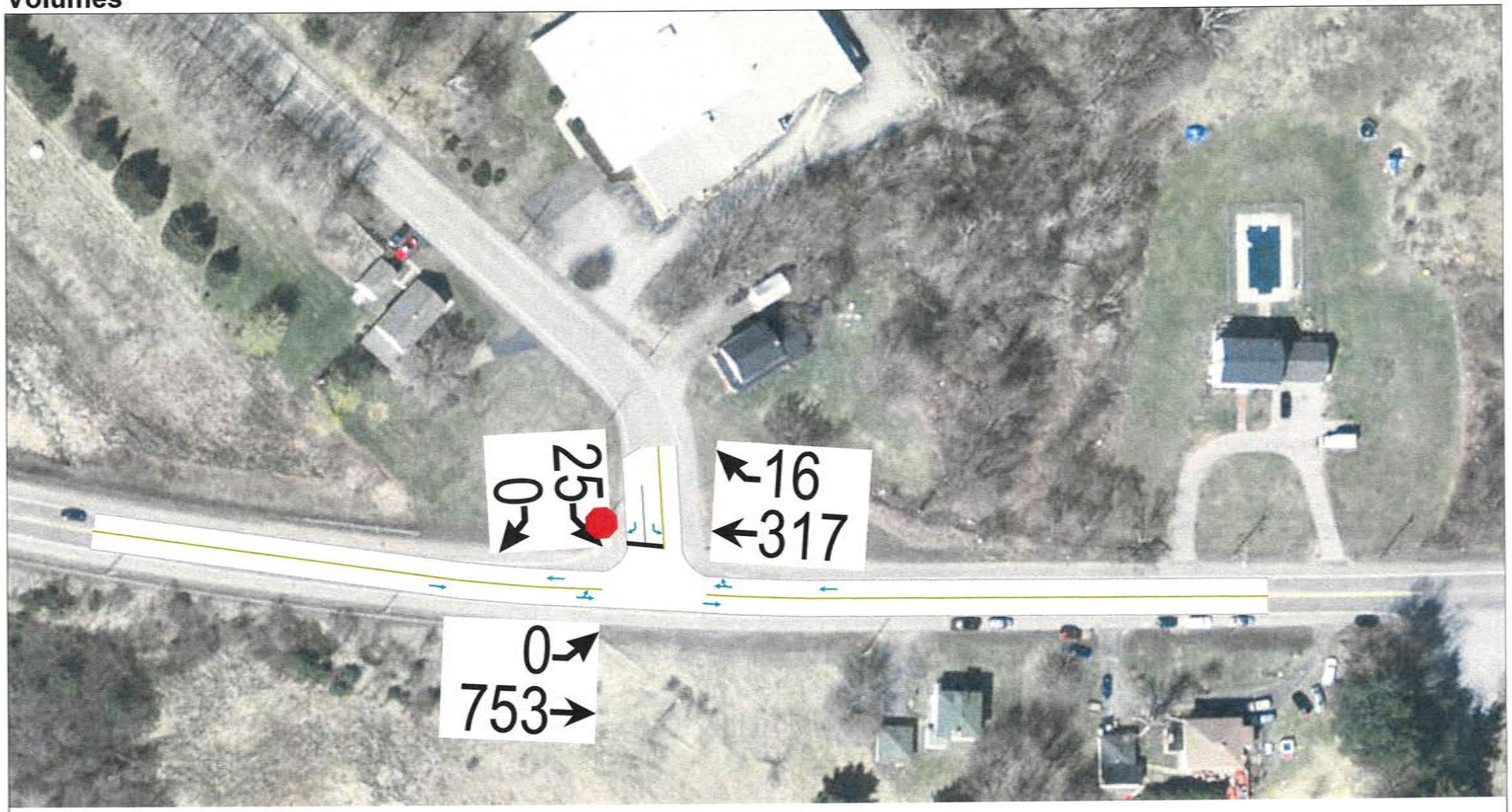
- The number of peak hour trips generated by the proposed development is minor and will not have an adverse impact upon Route 9.
- The proposed project will impact, but not significantly degrade the level of service at the Route 9/Main/ Street intersection.
- The proposed expanded use will not impact Main Street traffic at the site driveway.

Attachments

- Intersection Volume diagrams
- Intersection Capacity Analysis

Cultivate
Volumes

AM Existing
06/12/2018



MHG

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		↰	↱
Traffic Vol, veh/h	0	753	317	16	25	0
Future Vol, veh/h	0	753	317	16	25	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	150
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	91	85	67	69	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	827	373	24	36	0

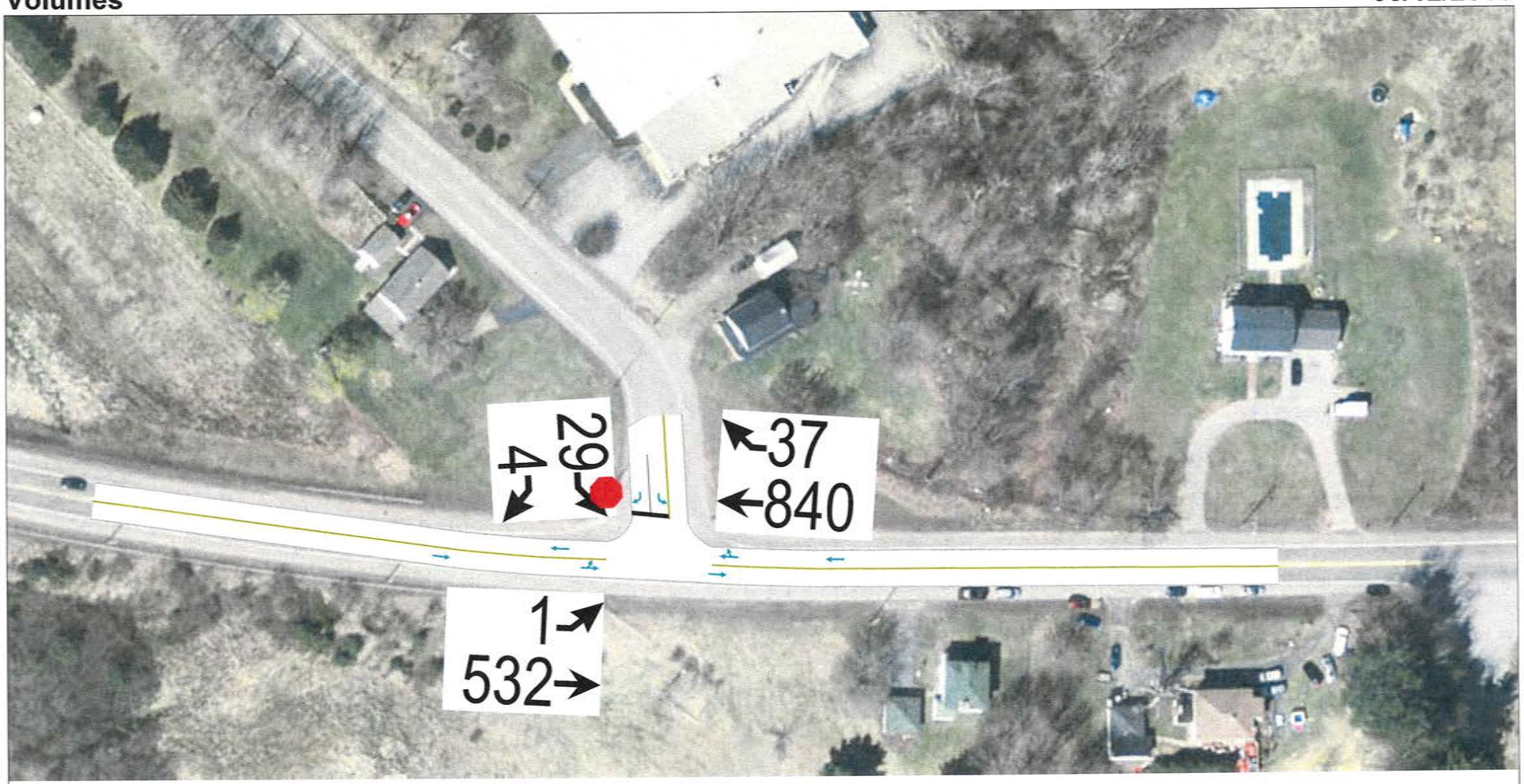
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	397	0	-	0	1212	385
Stage 1	-	-	-	-	385	-
Stage 2	-	-	-	-	827	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1162	-	-	-	201	663
Stage 1	-	-	-	-	688	-
Stage 2	-	-	-	-	430	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1162	-	-	-	201	663
Mov Cap-2 Maneuver	-	-	-	-	201	-
Stage 1	-	-	-	-	688	-
Stage 2	-	-	-	-	430	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	26.8
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1162	-	-	-	201	-
HCM Lane V/C Ratio	-	-	-	-	0.18	-
HCM Control Delay (s)	0	-	-	-	26.8	0
HCM Lane LOS	A	-	-	-	D	A
HCM 95th %tile Q(veh)	0	-	-	-	0.6	-

Cultivate
Volumes

PM Existing
06/12/2018



MHG

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		↰	↱
Traffic Vol, veh/h	1	532	840	37	29	4
Future Vol, veh/h	1	532	840	37	29	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	150
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	25	94	89	77	91	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	566	944	48	32	4

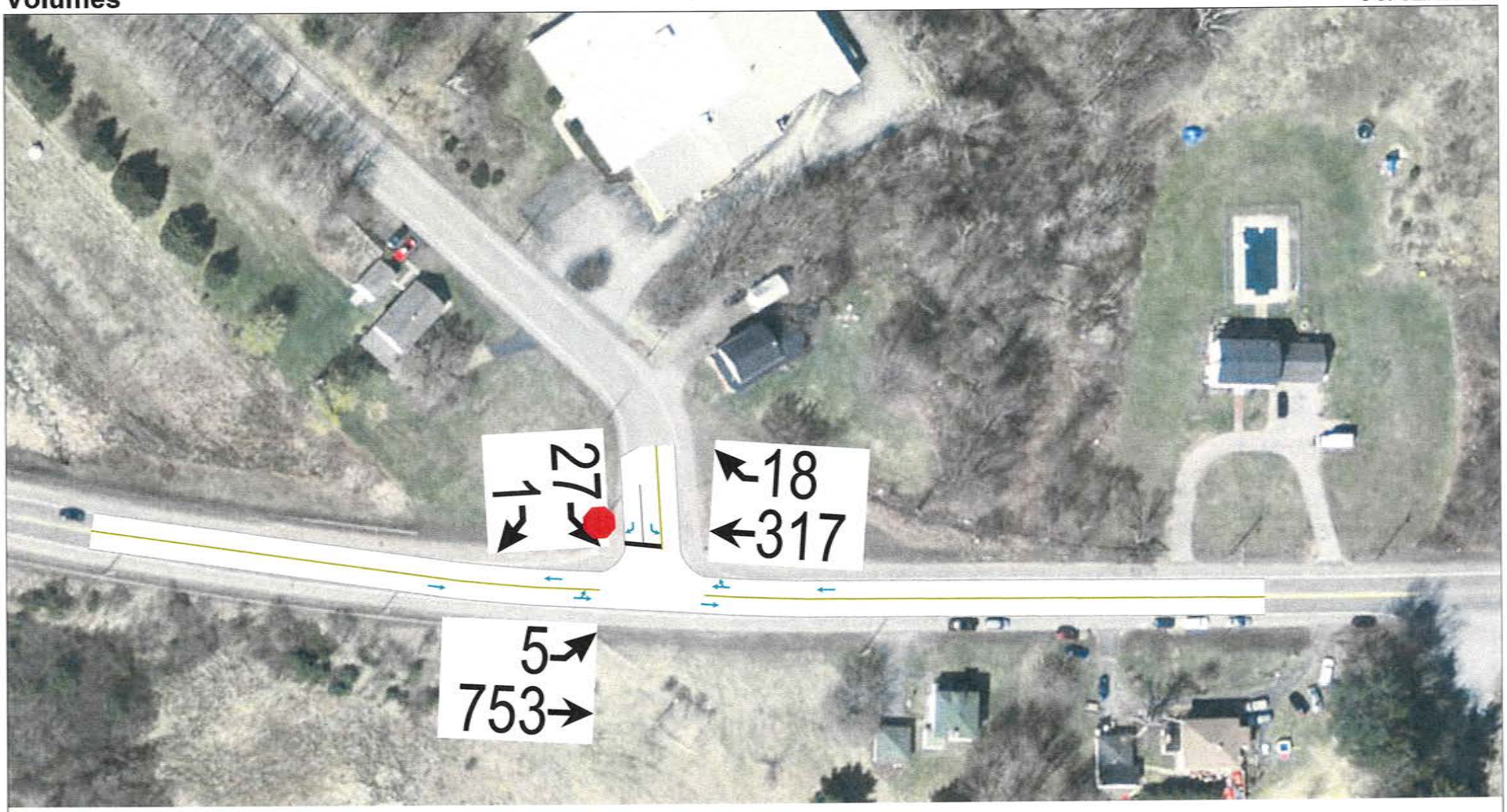
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	992	0	-	0	1542	968
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	574	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	697	-	-	-	127	308
Stage 1	-	-	-	-	368	-
Stage 2	-	-	-	-	563	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	697	-	-	-	126	308
Mov Cap-2 Maneuver	-	-	-	-	126	-
Stage 1	-	-	-	-	365	-
Stage 2	-	-	-	-	563	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	40.1
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	697	-	-	-	126	308
HCM Lane V/C Ratio	0.006	-	-	-	0.253	0.013
HCM Control Delay (s)	10.2	0	-	-	43	16.8
HCM Lane LOS	B	A	-	-	E	C
HCM 95th %tile Q(veh)	0	-	-	-	0.9	0

Cultivate
Volumes

AM Proposed
06/12/2018



MHG

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		↰	↱
Traffic Vol, veh/h	5	753	317	18	27	1
Future Vol, veh/h	5	753	317	18	27	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	150
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	91	85	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	827	373	20	29	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	393	0	-	0	1220	383
Stage 1	-	-	-	-	383	-
Stage 2	-	-	-	-	837	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1166	-	-	-	199	664
Stage 1	-	-	-	-	689	-
Stage 2	-	-	-	-	425	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1166	-	-	-	197	664
Mov Cap-2 Maneuver	-	-	-	-	197	-
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	425	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	25.8
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1166	-	-	-	197	664
HCM Lane V/C Ratio	0.005	-	-	-	0.149	0.002
HCM Control Delay (s)	8.1	0	-	-	26.4	10.4
HCM Lane LOS	A	A	-	-	D	B
HCM 95th %tile Q(veh)	0	-	-	-	0.5	0

Cultivate
Volumes

PM Proposed
06/12/2018

MHG

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↰	↱
Traffic Vol, veh/h	7	532	840	47	39	18
Future Vol, veh/h	7	532	840	47	39	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	150
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	94	89	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	566	944	51	42	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	995	0	-	0	1552	970
Stage 1	-	-	-	-	970	-
Stage 2	-	-	-	-	582	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	695	-	-	-	125	307
Stage 1	-	-	-	-	368	-
Stage 2	-	-	-	-	559	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	695	-	-	-	123	307
Mov Cap-2 Maneuver	-	-	-	-	123	-
Stage 1	-	-	-	-	362	-
Stage 2	-	-	-	-	559	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	39
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	695	-	-	-	123	307
HCM Lane V/C Ratio	0.011	-	-	-	0.345	0.064
HCM Control Delay (s)	10.2	0	-	-	48.9	17.5
HCM Lane LOS	B	A	-	-	E	C
HCM 95th %tile Q(veh)	0	-	-	-	1.4	0.2