

Traffic Impact Study

Tailormade Landing

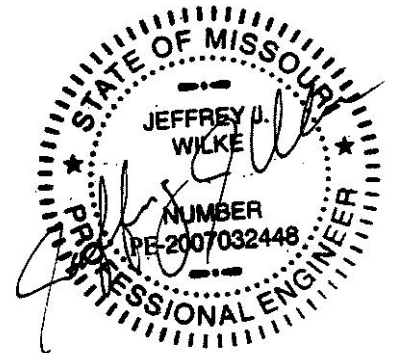


LEE'S SUMMIT, MISSOURI

MAY 2023

Prepared By:

Kimley»Horn



07/24/2023

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1.0 INTRODUCTION

This report serves as the traffic analysis for the Tailormade Landing development, located west of the intersection of Hamblen Road and Kingspoint Drive in Lee's Summit, Missouri. The location of the development site is shown on **Figure 1**.



FIGURE 1: LOCATION MAP

1.1 REPORT PURPOSE AND OBJECTIVES

The purpose of this study is to address traffic and transportation impacts of the proposed development on surrounding streets and intersections. This traffic impact study was prepared based on criteria set forth by the City of Lee's Summit *Access Management Code*. The following information is provided.

- A description and map of the existing and proposed street network to be affected by the proposed development. This information includes existing and proposed roadway characteristics and existing traffic volumes.
- Trip generation calculations based on information about the anticipated operation of the facility.
- Analysis of impacts of the traffic generated by the proposed development on the street network, including analysis of peak period levels of service (LOS), delay times, and queuing at the study area intersection.
- Evaluation of compliance with access management guidelines.

In summary, the study is to determine the trip generation of the Tailormade Landing development, assign new development trips to the street network, analyze various scenarios to determine the impacts of proposed site traffic, and identify potential mitigation measures needed to achieve acceptable operations at the study intersection.

2.0 EXISTING CONDITIONS

2.1 STUDY AREA

The site and the area surrounding the site south of Bailey Road is largely zoned “Planned Industrial”. There are several industrial businesses located to the north and west of the site. To the east of the site across Hamblen Road is a business park that is partially built out. The parcel to the south of the site is zoned “Agricultural” with one single-family residence. To the north of the site, Bailey Road provides a connection to the regional highway system and the arterial street network of Lee’s Summit. South of the site, Hamblen Road provides access to several City maintenance facilities, then becomes more rural in character as it continues south to Greenwood.

Through discussion with City staff, the following intersection was included within the study area for the traffic analysis. The list provides the existing intersection control for the study intersection.

- Hamblen Road & Kingspoint Drive (Side Street Stop)

2.2 STREET NETWORK

The existing street network within the study area includes Hamblen Road and Kingspoint Drive. The following provides a summary of the existing street network within the study area:

Hamblen Road is a north-south roadway that bounds the east side of the proposed development site. According to the Lee’s Summit Thoroughfare Master Plan, Hamblen Road is classified as a Minor Arterial. Hamblen Road is an asphalt roadway is 30 feet in width, with one 13-foot-wide lane striped for each direction of travel. There are turf slopes to ditches along both edges of the roadway. There is a short section of sidewalk along the east side of Hamblen Road that is approximately 175 feet in length to the north of Kingspoint Drive. There are no other sidewalks along Kingspoint Drive. The posted speed limit on Hamblen Road is 40 miles per hour (mph).

Kingspoint Drive is an east-west local street that intersects with the private driveway for the existing business located on the proposed development stie. Kingspoint Drive extends east from Hamblen Road and ends after intersecting with Broadway Drive. There are curbs and gutters along both sides of the roadway.

2.3 TRAFFIC COUNTS

Daily traffic volumes were also collected on Hamblen Road north of Kingspoint Drive on Tuesday, May 2nd, 2023. The count data was totaled in 15-minute increments and is included in the **Appendix**. The 24-hour counts are summarized in **Table 1**.

TABLE 1: EXISTING DAILY TRAFFIC VOLUME

Location	Northbound	Southbound	Total
Hamblen Road, north of Kingspoint Drive	1,053	1,167	2,220

Vehicle classification data collected in conjunction with the daily traffic volume indicates that 52 percent of the total vehicles counted were heavy vehicles. Of the heavy vehicles, 48 percent were smaller 2- or 3-axle single unit trucks, and 4 percent were heavy trucks with four or more axles.

The AM peak hour occurred from 7:30 to 8:30 AM and the PM peak hour occurred from 3:00 to 4:00 PM. Peak hour turning movement counts at the study intersection were estimated based on the daily traffic volume count data. Assumptions were made for the turning movements at the study intersection. The existing conditions peak hour count data at the study intersection is illustrated in **Figure 2**. The existing lane configurations and traffic controls are shown on **Figure 3**.

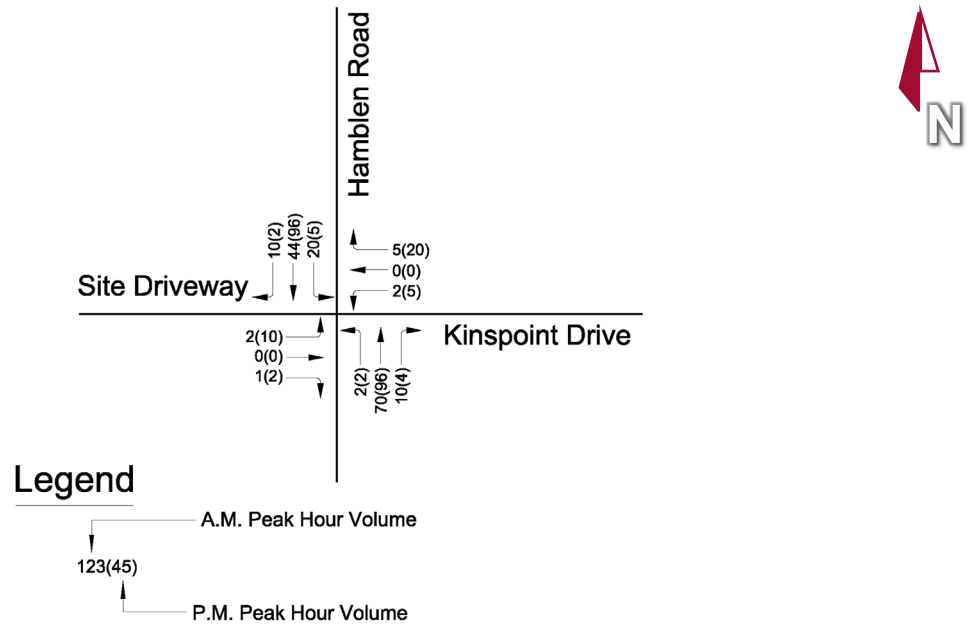


FIGURE 2: EXISTING CONDITIONS PEAK HOUR TRAFFIC VOLUMES

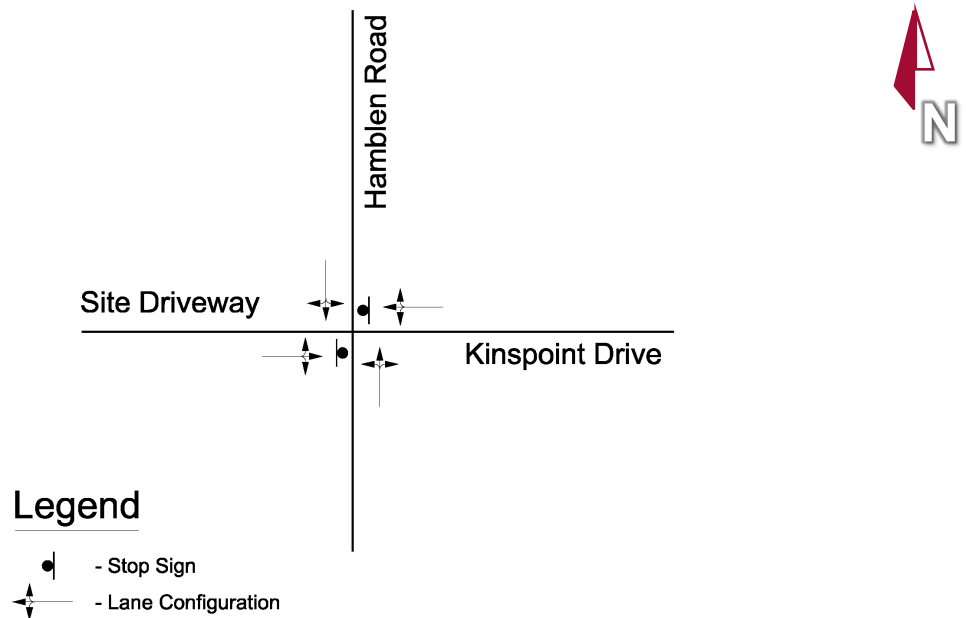


FIGURE 3: LANE CONFIGURATIONS AND TRAFFIC CONTROLS

3.0 PROPOSED DEVELOPMENT

3.1 SITE DESCRIPTION

There is an existing office building located just south of the site that is approximately 13,000 square feet. There is a long existing driveway for the building that becomes the western leg of the intersection of Hamblen Road and Kingspoint Drive.

The proposed development includes a 48,885 square-foot building located at the northwest corner of the 3-acre site. The site is located along the northern edge of the existing driveway. The proposed development consists of an indoor sports training facility and will include four basketball courts and one baseball infield practice area. Parking is located along the driveway and in parking lots located between the proposed building and the driveway. The existing detention pond will remain in the northeast corner of the site.

The proposed site plan is included in the **Appendix** for reference.

3.2 SITE CIRCULATION

The development will be accessed from the existing driveway along Hamblen Road at Kingspoint Drive. Several aisles for the proposed parking lot will intersect the driveway. The total number of parking spaces to be provided is 174.

3.3 TRIP GENERATION

Site generated traffic estimates are determined through a process known as trip generation. Rates and equations are applied to the proposed land use to estimate traffic generated by the development during a specific time interval. The acknowledged source for trip generation rates in the *Trip Generation Manual* published by the Institute of Transportation Engineers (ITE).

There is no single land use in the ITE *Trip Generation Manual* similar to the proposed indoor sports training facility. Therefore, trip generation estimates were developed for this land use based on the following information provided by the developer.

- The indoor sports training facility will include 4 basketball courts and one baseball infield to be used for practices only. No tournaments or games will be held at the facility. As such, no spectators are expected.
- Teams using the facility will typically include up to 12 people, including players and coaching staff.
- During the typical weekday AM peak hour, no practices are anticipated to occur. It is assumed that there may be up to 5 trips in and 5 trips out of the site during the AM peak hour, representing service vehicles and/or employees.
- In the afternoons and evenings, it is assumed that one team would practice on each court and field at a time for a duration of at least one hour.
- For the PM peak hour trip generation, up to 12 people are anticipated to arrive for each team each court and field during the PM peak hour in separate vehicles. (12 people/team x 5 teams ÷ 1 person/vehicle = 60 vehicles)
- Likewise, the same number of vehicles are anticipated to exit the site during the PM peak hour as their practice time ends. This results in 60 outbound trips during the PM peak hour.
- The daily trip generation is difficult to estimate. If there are five different practices for each field during a typical weekday, roughly 600 daily trips would be anticipated.

Based on these assumptions, the proposed development is anticipated to generate approximately 10 trips during the AM peak hour (5 entering and 5 exiting) with approximately 120 trips during the PM peak hour (60 entering and 60 exiting). **Table 2** summarizes the estimated trip generation for the proposed development.

TABLE 2: TRIP GENERATION

Land Use Description	Intensity	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Indoor Sports Training Facility	5 Fields / 48,885 Square Feet	600 ±	5	5	10	60	60	120

The trip generation estimates in **Table 2** indicate that the proposed development will generate a low volume of traffic.

3.4 TRIP DISTRIBUTION AND ASSIGNMENT

Nearly all traffic entering and exiting the site is expected to be traveling to/from the north on Hamblen Road. Because of that, a low volume of northbound left-turn traffic is expected to enter the site at the site access along Hamblen Road. Most trips entering the site will be southbound right-turn traffic at the site access. Exiting the site most traffic will make the eastbound left-turn movement. The trip distribution is anticipated to include 90 percent of site trips traveling to/from the north and 10 percent traveling to/from the south. The trip distribution is summarized in **Table 3**.

TABLE 3: TRIP DISTRIBUTION

Direction To/From	Percentage
North on Hamblen Road	90%
South on Hamblen Road	10%
Total	100%

The site trip assignment at the study intersection is shown on **Figure 4**. The site trips were added to the existing conditions traffic volumes and the resulting Existing plus Development conditions traffic volumes are illustrated on **Figure 5**.

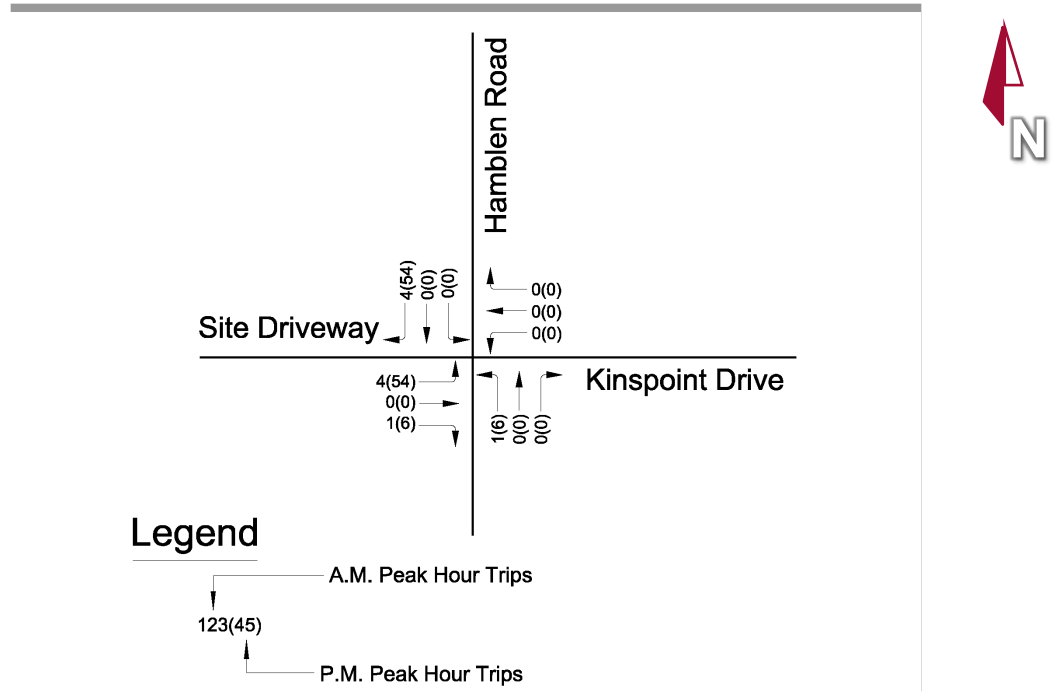


FIGURE 4: SITE TRIP ASSIGNMENT

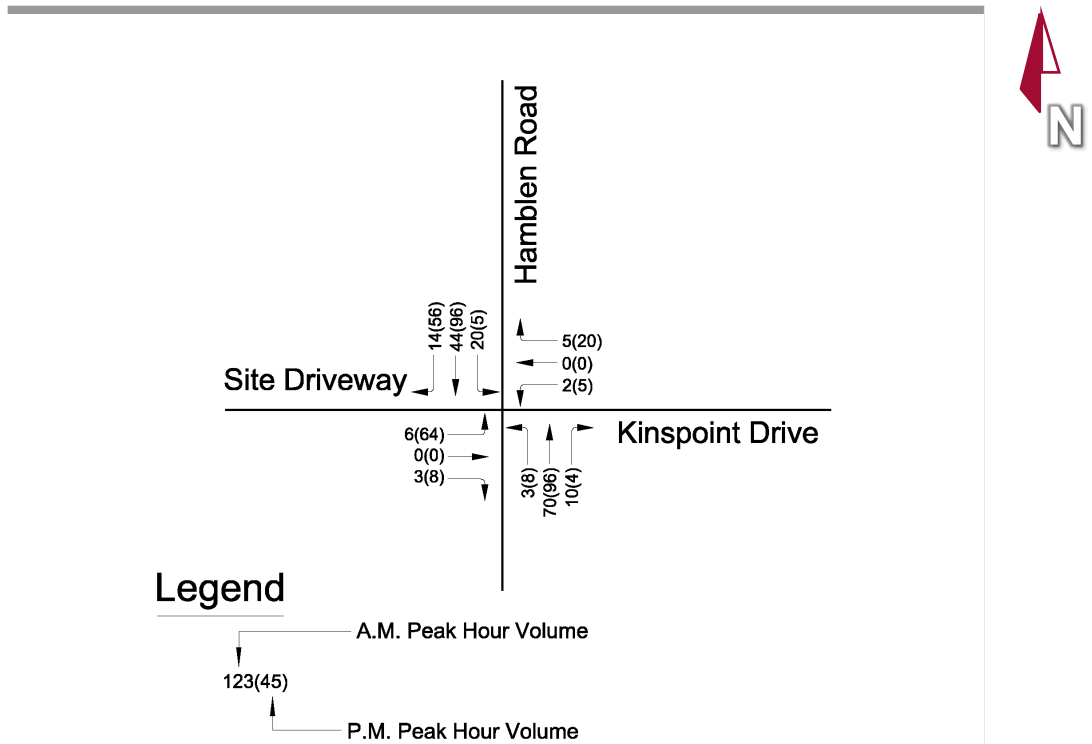


FIGURE 5: EXISTING PLUS DEVELOPMENT CONDITIONS PEAK HOUR TRAFFIC VOLUMES

4.0 ACCESS MANAGEMENT

The City of Lee's Summit *Access Management Code* (AMC) provides guidance for the design of driveways, access spacing, and the need for turn lanes at intersections. These items are discussed in the following paragraphs.

4.1 ACCESS SPACING

The AMC includes requirements for minimum spacing between street connections, depending on street classification. Along Minor Arterial roadways such as Hamblen Road, the minimum spacing is 400 feet, measured between centerlines. The driveway is spaced more than 400 feet from the adjacent access points to the north and south of the site along Hamblen Road. Therefore, the driveway is adequately spaced.

4.2 AUXILIARY LANE ANALYSIS

The *Access Management Code* also provides standards for left- and right-turn lanes based on traffic volumes and street classification. According to the *Access Management Code*, left-turn lanes are required on all arterial streets at the intersection with a driveway where the left-turn volume is at least 20 vehicles in any hour. Similarly, a right-turn lane is required on a Minor Arterial street when the right-turn volume is projected to be at least 60 vehicles in any hour.

The volumes of turning traffic anticipated for the proposed development are below the minimum warranting thresholds. Therefore, no turn-lanes are warranted at the site driveway intersection with Hamblen Road.

4.3 DRIVEWAY THROAT LENGTH

A driveway's throat length is the distance along a driveway from the intersecting roadway to the first location on site where a driver can make a turn. Adequate throat lengths minimize the potential for inbound traffic to queue onto the public street. The throat length also provides space for outbound traffic to queue without adversely impacting site circulation.

The throat length requirements in the AMC are based on the two-way traffic volume on the driveway and the adjacent street classification. The site driveway is projected to have between 50 and 100 vehicles during the peak hours. As such the minimum required throat length for arterial roadways is 100 feet. With the proposed site plan, the site access driveway will have a throat length of roughly 60 feet. Therefore, the driveway does not meet the minimum required throat length. However, with the low volume of traffic on Hamblen Road, short queues of two or less vehicles are expected for traffic exiting the site. These queues are anticipated to be contained within the throat length of the driveway.

5.0 INTERSECTION CAPACITY ANALYSIS

5.1 LEVEL OF SERVICE OVERVIEW

Intersection capacity analysis was performed at the study intersection for Existing plus Development Conditions.

The capacity analysis was performed for the weekday AM and PM peak hours using Synchro traffic modeling software to determine intersection delay and level of service (LOS). Calculations were performed based on the methodologies outlined in the *Highway Capacity Manual (HCM)*, 6th Edition, which is published by the Transportation Research Board.

LOS is a quantitative measure used by traffic engineers to describe the operations of an intersection. It ranges from A to F, with A being the best and F being the worst level of operation. LOS A conditions are characterized by minimal vehicle delay and free-flow conditions, while LOS F is characterized by long vehicle delay – usually when demand exceeds available roadway capacity. **Table 4** shows the definition of LOS for unsignalized and signalized intersections.

TABLE 4: LEVEL OF SERVICE

Level of Service	Average Control Delay (seconds/vehicle) at:	
	Unsignalized Intersections	Signalized Intersections
A	0 – 10	0 – 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80

Levels of service are evaluated based on the movement groupings which are required to yield to other traffic. Typically, these are left turns off the major street and the side street approaches for two-way stop-controlled intersections. For signalized intersections each movement grouping is evaluated, and LOS is evaluated for the intersection as a whole.

The City of Lee's Summit has adopted LOS C as the minimum desirable LOS. However, LOS D and E may be considered acceptable for low to moderate traffic volumes, the availability of alternate routes, and the duration of activity resulting in lower LOS.

The volume-to-capacity (v/c) ratio is a secondary measure of intersection performance. The v/c ratio represents the sufficiency of an intersection to accommodate the vehicular demand. A v/c ratio less than 0.85 generally indicates that adequate capacity is available, and vehicles are not expected to experience significant queues and delays. As the v/c ratio approaches 1.0, traffic flow may become unstable, and delay and queuing conditions may occur. Once the demand exceeds the capacity (a v/c ratio greater than 1.0), traffic flow is unstable and excessive delay and queuing is expected.

Traffic queues were also evaluated as part of the analyses. Long traffic queues which extend beyond the amount of storage available, either between intersections or within turn lanes, can have significant impacts on operations. The projected vehicular queues were analyzed to ensure the analyses are reflective of the physical constraints of the study intersections and to identify if additional storage is needed for turn lanes.

5.2 EXISTING CONDITIONS ANALYSIS

Capacity analysis was conducted for existing traffic conditions at the study intersection to determine baseline conditions for the existing analysis year and to calibrate the models. The analysis was performed for weekday AM and PM peak hours and is based on the lane configurations and traffic volumes shown in **Figures 2 and 3**. The Synchro reports are provided in the **Appendix**.

Table 5 provides a summary of the capacity analysis at the study intersections.

TABLE 5: EXISTING PEAK HOUR CONDITIONS

Intersection	Control	Movement	Operational Analysis Results							
			AM Peak Hour				PM Peak Hour			
			Delay (sec/veh)	LOS	95% Queue	V/C Ratio	Delay (sec/veh)	LOS	95% Queue	V/C Ratio
Hamblen Road & Kingspoint Drive	Side Street Stop	EB	9.7	A	< 50'	0.01	10.1	B	< 50'	0.02
		WB	9.3	A	< 50'	0.01	9.3	A	< 50'	0.03
		NBL	7.4	A	< 50'	0.01	7.4	A	< 50'	0.01
		SBL	7.4	A	< 50'	0.02	7.5	A	< 50'	0.01

Based on the analysis, all intersections currently operate acceptably at good levels of service.

5.3 EXISTING PLUS DEVELOPMENT CONDITIONS ANALYSIS

Capacity analysis was conducted for Existing plus Development Conditions at the study intersections to determine the impact of site generated traffic from the proposed development. The analysis was performed for weekday AM and PM peak hours and is based on the lane configurations and traffic volumes shown in **Figures 2 and 5**. The Synchro reports are provided in the **Appendix**.

Table 6 provides a summary of the capacity analysis at the study intersections.

TABLE 6: EXISTING PLUS DEVELOPMENT PEAK HOUR CONDITIONS

Intersection	Control	Movement	Operational Analysis Results							
			AM Peak Hour				PM Peak Hour			
			Delay (sec/veh)	LOS	95% Queue	V/C Ratio	Delay (sec/veh)	LOS	95% Queue	V/C Ratio
Hamblen Road & Kingspoint Drive	Side Street Stop	EB	9.6	A	< 50'	0.02	11.1	B	< 50'	0.12
		WB	9.3	A	< 50'	0.01	9.4	A	< 50'	0.04
		NBL	7.4	A	< 50'	0.01	7.6	A	< 50'	0.01
		SBL	7.4	A	< 50'	0.02	7.5	A	< 50'	0.01

The analysis results indicate that the study intersection is projected to continue operating acceptably with the addition of development traffic. The good levels of service are not anticipated to change.

6.0 CONCLUSIONS AND RECOMMENDATIONS

A traffic impact study for the Tailormade Landing development has been prepared by Kimley-Horn. The proposed site is located west of the intersection at Hamblen Road and Kingspoint Drive in Lee's Summit, Missouri. The purpose of this study was to assess the impact of the proposed development on the surrounding transportation system. The following provides a summary of the analysis.

The proposed development includes one 48,885 square-foot building in the northwest corner of the site. The building will consist of an indoor sports training facility containing four practice fields. The proposed facility will be accessed from four access points located along the north side of the existing driveway.

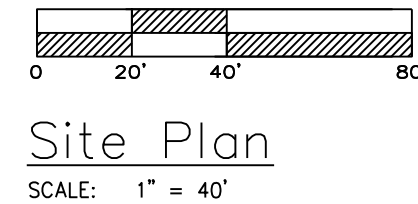
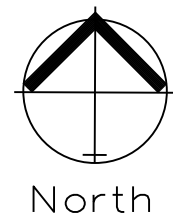
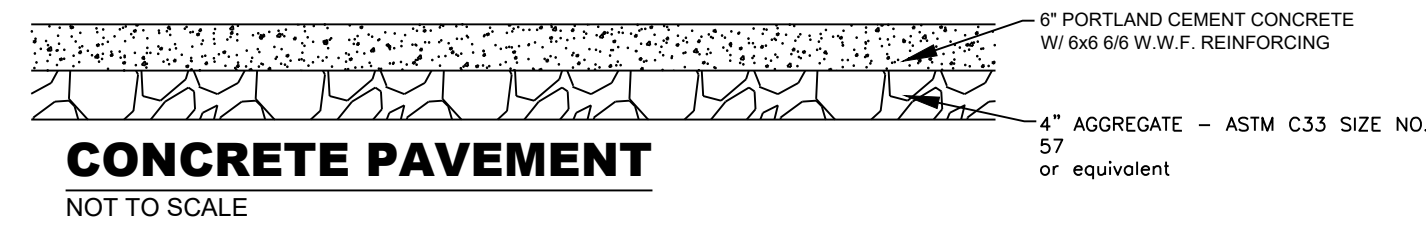
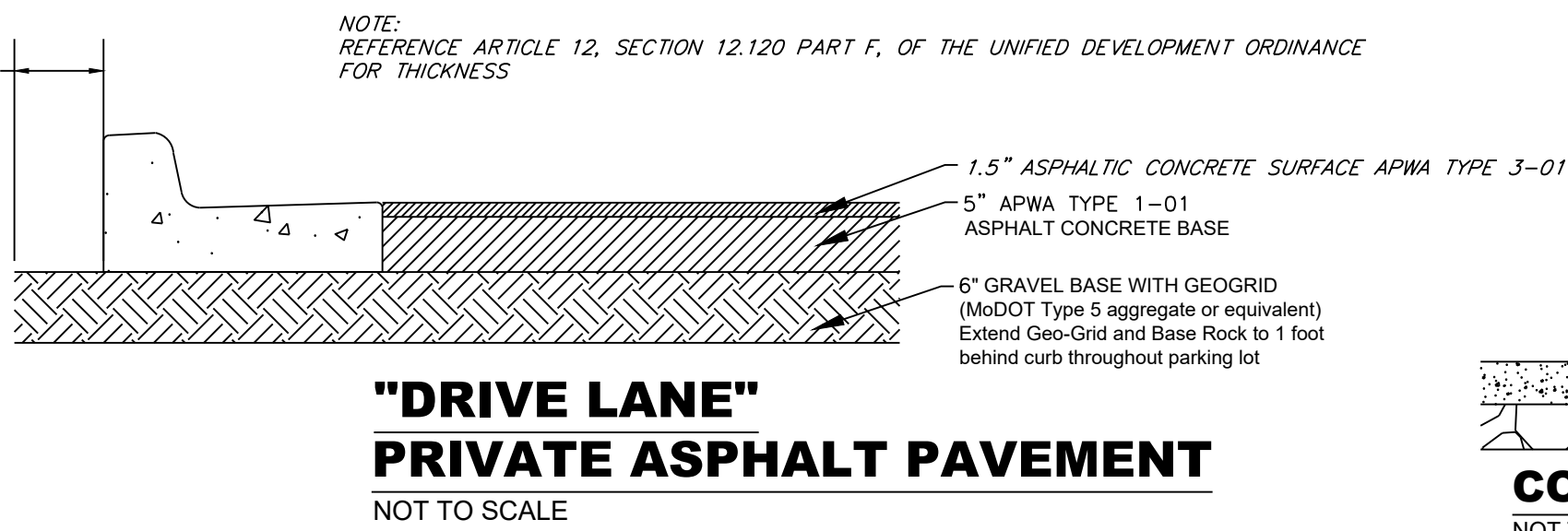
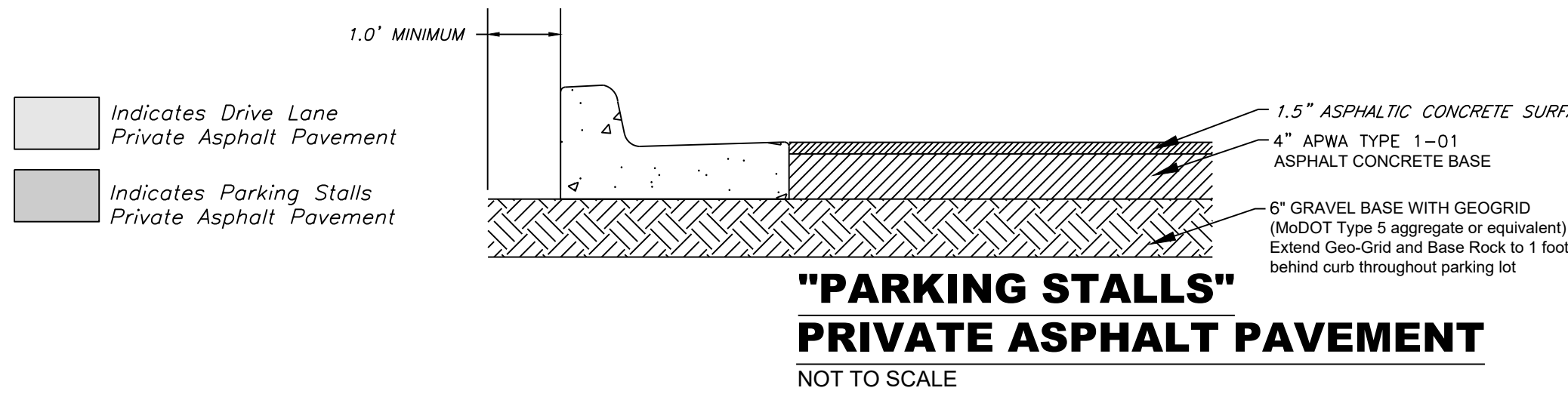
The proposed development is projected to generate about 600 daily trips, with 10 trips during the AM peak hour and 120 trips during the PM peak hour. The trip generation estimates indicate that the proposed development will generate a low volume of traffic.

A review of the site plan determined that the access for the development satisfy the City of Lee's Summit *Access Management Code* (AMC) guidelines for driveway spacing. No turn lanes are required on Hamblen Road at the access location. The throat length of the site access driveway is less than the minimum throat length requirements of the AMC. However, the projected queues of less than 50 feet will be contained within the throat length of the driveway.

Capacity analysis indicated that all levels of service are currently acceptable at the intersection of Hamblen Road and Kingspoint Drive. With the addition of development traffic these good levels of service are not projected to change.

Appendix

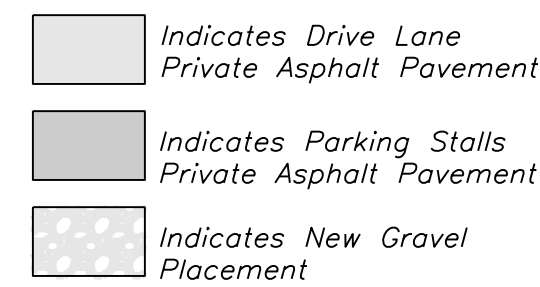




OWNER:
TAILORMADE EXTERIORS
RICK MULLIN
317 NW OLIVE STREET
LEE'S SUMMIT, MO
816-322-2444

ALL PAVING ON THE PARKING LOT WILL COMPLY WITH THE UNIFIED DEVELOPMENT ORDINANCE ARTICLE 12 IN TERMS OF PAVING THICKNESS AND BASE

OIL - GAS WELLS
ACCORDING TO EDWARD ALTON'S ENVIRONMENTAL IMPACT STUDY OF ABANDONED OIL AND GAS WELLS IN LEE'S SUMMIT, MISSOURI IN 1995, THERE ARE NOT OIL AND GAS WELLS WITHIN 185 FEET OF THE PROPERTY AS SURVEYED HEREON.



PROPERTY DESCRIPTION
WILLIAMS CROSSING LOT 2

Site Impervious Area

Total Area Lot 2 3.31 acres (144,332.01 sq. ft.)

Floor/Area Ratio	33.87%
Building	48,885 sq. ft.
Parking/Sidewalk	51,977 sq. ft.
Impervious Area	100,862 sq. ft. (70% of Site)
Parking Spaces	174 Standard / 2 Handicap

Site Improvement Notes

Sanitary Sewer Improvements
-The site will require a sanitary service from the existing sanitary to the east.

Water Main Improvements
-The existing 8" water main locate to the east of Hamblen Road.

Storm Sewer
-Enclosed pipe systems and inlets will collect and convey the onsite storm water runoff and direct it toward the new detention facility located at the northeast corner of the site. The storm sewer shall be designed to convey the 10 year storm event and the building runoff will be collected and directed into the enclosed pipe system.

Storm Water Detention
-The site will be designed to control the storm water runoff per the current standards as set forth in APWA Section 5600. The system will be an open aired basin and release into the existing storm of Hamblen Road.

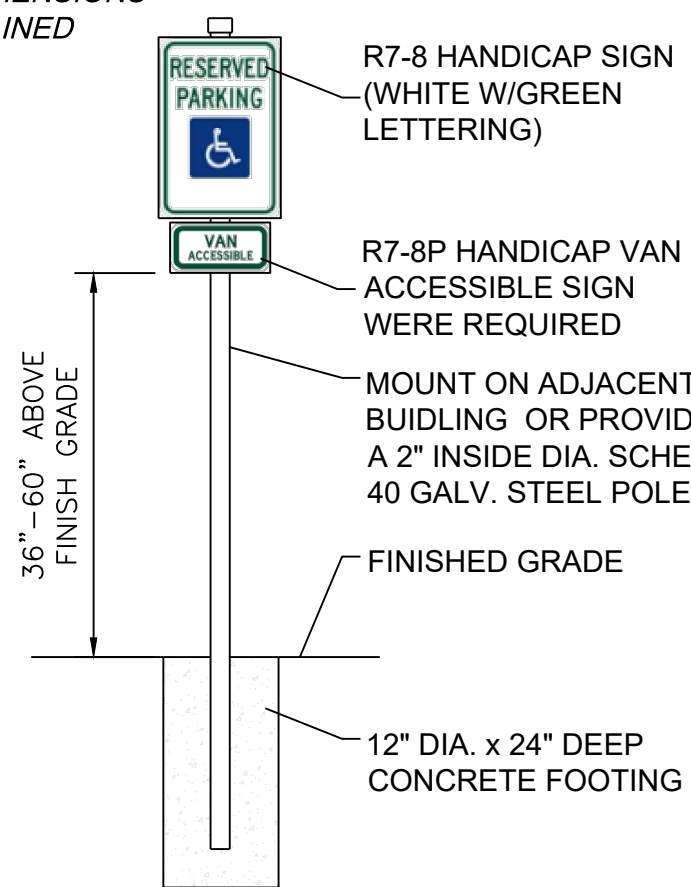
Storm Water Quality Elements
-The detention system will incorporate an infiltration system into the bottom of the basin to provide the opportunity for infiltration back into the existing ground. The system will be designed to handle and control the 2 year storm flows and will consist of a gravel base and filter fabric located on the eastern side of the site will be converted into a infiltration system to control the storm.

Hamblen Road
-No improvements are anticipated for Hamblen Road

Detention Basin design is for entire site full build out.

All future lots and tracts to be completed with another application. Shown for reference only.

SIGN MAY BE WALL MOUNTED DIRECTLY TO BUILDING. DIMENSIONS MUST BE MAINTAINED



HANDICAP SIGN DETAIL

NOT TO SCALE

GENERAL NOTES:

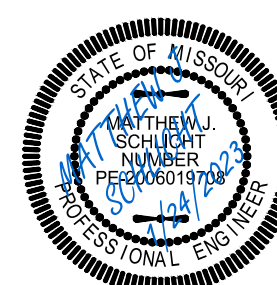
- ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL AS ADOPTED BY ORDINANCE 5813.
- ALL REQUIRED EASEMENTS WITHIN THE BOUNDARY OF THIS PROJECT SHALL BE PROVIDED BY SEPARATE DOCUMENT
- ANY REQUIRED EASEMENT LOCATED OUTSIDE OF THE BOUNDARY OF THIS PROJECT SHALL BE PROVIDED FOR BY SEPARATE INSTRUMENT PRIOR TO ISSUANCE OF CONSTRUCTION PERMITS.
- THE CONTRACTOR SHALL NOTIFY THE CITY OF LEE'S SUMMIT PUBLIC WORKS INSPECTION AT 816.969.1800 AT LEAST 48 HOURS PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.
- THE CONTRACTOR SHALL NOTIFY ENGINEERING SOLUTIONS AT 816.623.9888 OF ANY CONFLICT WITH THE IMPROVEMENTS PROPOSED BY THESE PLANS AND SITE CONDITIONS.
- THE CONTRACTOR SHALL NOTIFY THE CITY ENGINEER AND OBTAIN THE APPROPRIATE BLASTING PERMITS FOR A REQUIRED BLASTING, IF BLASTING IS ALLOWED, ALL BLASTING SHALL CONFORM TO STATE REGULATIONS AND LOCAL ORDINANCES.

Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005008319-D
Kansas
Engineering E-1685
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

1600 Hamblen Road
Lee's Summit, Jackson County, Missouri

Project:
1600 SE HAMBLEN RD, LEE'S SUMMIT, MO
January 24, 2023

SITE PLAN
Tailormade Landing Phase 2
1600 Hamblen Road
Lee's Summit, Jackson County, Missouri



Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS

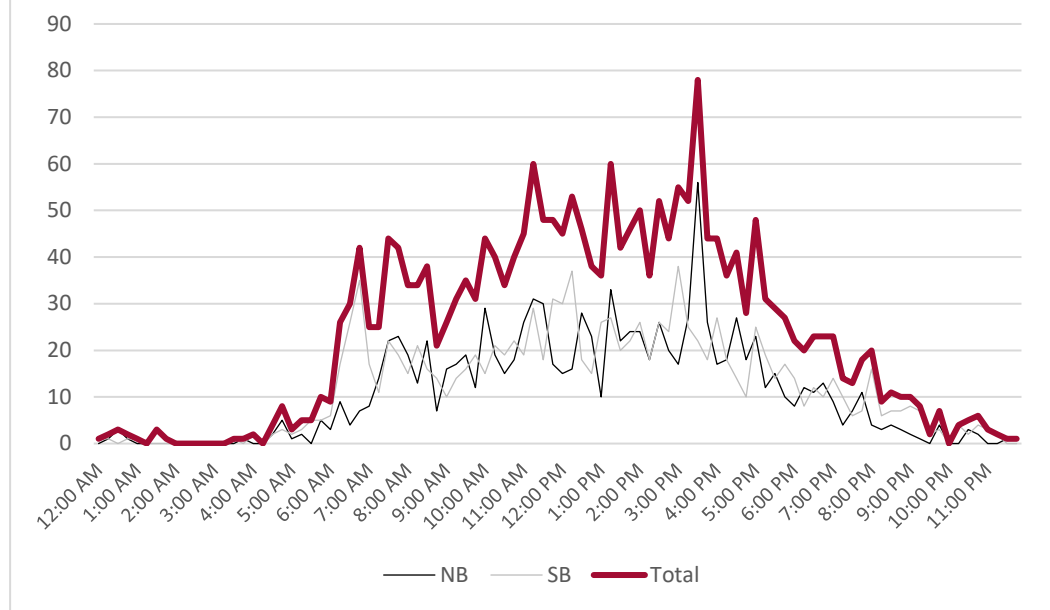
Tailormade Landing TIS

Lees Summit, Missouri

Location: Hamblen Road, north of Kingspoint Drive

Date: Tuesday, May 2nd, 2023

Time	NB	SB	Total	Time	NB	SB	Total	Time	NB	SB	Total	Time	NB	SB	Total	Time	NB	SB	Total
12:00 AM	0	1	1	5:00 AM	1	2	3	10:00 AM	29	15	44	3:00 PM	17	38	55	8:00 PM	4	16	20
12:15 AM	1	1	2	5:15 AM	2	3	5	10:15 AM	19	21	40	3:15 PM	27	25	52	8:15 PM	3	6	9
12:30 AM	3	0	3	5:30 AM	0	5	5	10:30 AM	15	19	34	3:30 PM	56	22	78	8:30 PM	4	7	11
12:45 AM	1	1	2	5:45 AM	5	5	10	10:45 AM	18	22	40	3:45 PM	26	18	44	8:45 PM	3	7	10
1:00 AM	0	1	1	6:00 AM	3	6	9	11:00 AM	26	19	45	4:00 PM	17	27	44	9:00 PM	2	8	10
1:15 AM	0	0	0	6:15 AM	9	17	26	11:15 AM	31	29	60	4:15 PM	18	18	36	9:15 PM	1	7	8
1:30 AM	3	0	3	6:30 AM	4	26	30	11:30 AM	30	18	48	4:30 PM	27	14	41	9:30 PM	0	2	2
1:45 AM	1	0	1	6:45 AM	7	35	42	11:45 AM	17	31	48	4:45 PM	18	10	28	9:45 PM	4	3	7
2:00 AM	0	0	0	7:00 AM	8	17	25	12:00 PM	15	30	45	5:00 PM	23	25	48	10:00 PM	0	0	0
2:15 AM	0	0	0	7:15 AM	14	11	25	12:15 PM	16	37	53	5:15 PM	12	19	31	10:15 PM	0	4	4
2:30 AM	0	0	0	7:30 AM	22	22	44	12:30 PM	28	18	46	5:30 PM	15	14	29	10:30 PM	3	2	5
2:45 AM	0	0	0	7:45 AM	23	19	42	12:45 PM	23	15	38	5:45 PM	10	17	27	10:45 PM	2	4	6
3:00 AM	0	0	0	8:00 AM	19	15	34	1:00 PM	10	26	36	6:00 PM	8	14	22	11:00 PM	0	3	3
3:15 AM	0	0	0	8:15 AM	13	21	34	1:15 PM	33	27	60	6:15 PM	12	8	20	11:15 PM	0	2	2
3:30 AM	0	1	1	8:30 AM	22	16	38	1:30 PM	22	20	42	6:30 PM	11	12	23	11:30 PM	1	0	1
3:45 AM	1	0	1	8:45 AM	7	14	21	1:45 PM	24	22	46	6:45 PM	13	10	23	11:45 PM	1	0	1
4:00 AM	0	2	2	9:00 AM	16	10	26	2:00 PM	24	26	50	7:00 PM	9	14	23				
4:15 AM	0	0	0	9:15 AM	17	14	31	2:15 PM	18	18	36	7:15 PM	4	10	14				
4:30 AM	2	2	4	9:30 AM	19	16	35	2:30 PM	26	26	52	7:30 PM	7	6	13				
4:45 AM	5	3	8	9:45 AM	12	19	31	2:45 PM	20	24	44	7:45 PM	11	7	18				



Hourly	NB	SB	Total
12:00 AM	5	3	8
1:00 AM	4	1	5
2:00 AM	0	0	0
3:00 AM	1	1	2
4:00 AM	7	7	14
5:00 AM	8	15	23
6:00 AM	23	84	107
7:00 AM	67	69	136
8:00 AM	61	66	127
9:00 AM	64	59	123
10:00 AM	81	77	158
11:00 AM	104	97	201
12:00 PM	82	100	182
1:00 PM	89	95	184
2:00 PM	88	94	182
3:00 PM	126	103	229
4:00 PM	80	69	149
5:00 PM	60	75	135
6:00 PM	44	44	88
7:00 PM	31	37	68
8:00 PM	14	36	50
9:00 PM	7	20	27
10:00 PM	5	10	15
11:00 PM	2	5	7

AM Peak 154
7:30 AM

Mid-day Peak 201
11:00 AM

PM Peak 153
4:15 PM

1,053 Northbound
1,167 Southbound
2,220 Total of Both Directions

Kimley»Horn

HCM 6th TWSC
1: Hamblen Road & Kingspoint Drive

AM Peak Hour
Existing Conditions

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	2	1	2	2	5	2	70	10	20	44	10
Future Vol, veh/h	2	2	1	2	2	5	2	70	10	20	44	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	2	2	1	2	2	5	2	76	11	22	48	11

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	187	189	54	185	189	82	59	0	0	87	0	0
Stage 1	98	98	-	86	86	-	-	-	-	-	-	-
Stage 2	89	91	-	99	103	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.54	6.24	7.14	6.54	6.24	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.036	3.336	3.536	4.036	3.336	2.236	-	-	2.236	-	-
Pot Cap-1 Maneuver	769	702	1008	771	702	972	1532	-	-	1496	-	-
Stage 1	904	810	-	917	820	-	-	-	-	-	-	-
Stage 2	914	816	-	902	806	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	754	691	1008	759	691	972	1532	-	-	1496	-	-
Mov Cap-2 Maneuver	754	691	-	759	691	-	-	-	-	-	-	-
Stage 1	903	798	-	916	819	-	-	-	-	-	-	-
Stage 2	906	815	-	885	794	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.7		9.3		0.2		2	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1532	-	-	765	843	1496	-
HCM Lane V/C Ratio	0.001	-	-	0.007	0.012	0.015	-
HCM Control Delay (s)	7.4	0	-	9.7	9.3	7.4	0
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-

HCM 6th TWSC
1: Hamblen Road & Kingspoint Drive

PM Peak Hour
Existing Conditions

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	2	2	5	2	20	2	96	4	5	96	2
Future Vol, veh/h	10	2	2	5	2	20	2	96	4	5	96	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	11	2	2	5	2	22	2	104	4	5	104	2

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	237	227	105	227	226	106	106	0	0	108	0	0
Stage 1	115	115	-	110	110	-	-	-	-	-	-	-
Stage 2	122	112	-	117	116	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.54	6.24	7.14	6.54	6.24	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.036	3.336	3.536	4.036	3.336	2.236	-	-	2.236	-	-
Pot Cap-1 Maneuver	713	669	944	724	670	943	1473	-	-	1470	-	-
Stage 1	885	797	-	890	800	-	-	-	-	-	-	-
Stage 2	877	799	-	883	796	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	692	666	944	717	667	943	1473	-	-	1470	-	-
Mov Cap-2 Maneuver	692	666	-	717	667	-	-	-	-	-	-	-
Stage 1	884	794	-	889	799	-	-	-	-	-	-	-
Stage 2	854	798	-	875	793	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.1		9.3		0.1		0.4	
HCM LOS	B		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1473	-	-	715	866	1470	-
HCM Lane V/C Ratio	0.001	-	-	0.021	0.034	0.004	-
HCM Control Delay (s)	7.4	0	-	10.1	9.3	7.5	0
HCM Lane LOS	A	A	-	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-

HCM 6th TWSC
1: Hamblen Road & Kingspoint Drive

AM Peak Hour
Existing plus Development

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	2	3	2	2	5	3	70	10	20	44	14
Future Vol, veh/h	6	2	3	2	2	5	3	70	10	20	44	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	7	2	3	2	2	5	3	76	11	22	48	15

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	191	193	56	190	195	82	63	0	0	87	0	0
Stage 1	100	100	-	88	88	-	-	-	-	-	-	-
Stage 2	91	93	-	102	107	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.54	6.24	7.14	6.54	6.24	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.036	3.336	3.536	4.036	3.336	2.236	-	-	2.236	-	-
Pot Cap-1 Maneuver	764	699	1005	766	697	972	1527	-	-	1496	-	-
Stage 1	901	808	-	915	818	-	-	-	-	-	-	-
Stage 2	911	814	-	899	803	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	748	687	1005	751	685	972	1527	-	-	1496	-	-
Mov Cap-2 Maneuver	748	687	-	751	685	-	-	-	-	-	-	-
Stage 1	899	796	-	913	816	-	-	-	-	-	-	-
Stage 2	902	812	-	880	791	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.6		9.3		0.3		1.9	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1527	-	-	790	839	1496	-
HCM Lane V/C Ratio	0.002	-	-	0.015	0.012	0.015	-
HCM Control Delay (s)	7.4	0	-	9.6	9.3	7.4	0
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-

HCM 6th TWSC
1: Hamblen Road & Kingspoint Drive

PM Peak Hour
Existing plus Development

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	64	2	8	5	2	20	8	96	4	5	96	56
Future Vol, veh/h	64	2	8	5	2	20	8	96	4	5	96	56
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	70	2	9	5	2	22	9	104	4	5	104	61

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	281	271	135	274	299	106	165	0	0	108	0	0
Stage 1	145	145	-	124	124	-	-	-	-	-	-	-
Stage 2	136	126	-	150	175	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.54	6.24	7.14	6.54	6.24	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.036	3.336	3.536	4.036	3.336	2.236	-	-	2.236	-	-
Pot Cap-1 Maneuver	667	632	909	674	610	943	1401	-	-	1470	-	-
Stage 1	853	773	-	875	789	-	-	-	-	-	-	-
Stage 2	862	788	-	848	750	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	644	625	909	661	603	943	1401	-	-	1470	-	-
Mov Cap-2 Maneuver	644	625	-	661	603	-	-	-	-	-	-	-
Stage 1	847	770	-	869	783	-	-	-	-	-	-	-
Stage 2	834	782	-	834	747	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.2		9.4		0.6		0.2	
HCM LOS	B		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1401	-	-	664	841	1470	-
HCM Lane V/C Ratio	0.006	-	-	0.121	0.035	0.004	-
HCM Control Delay (s)	7.6	0	-	11.2	9.4	7.5	0
HCM Lane LOS	A	A	-	B	A	A	A
HCM 95th %tile Q(veh)	0	-	-	0.4	0.1	0	-