

Traffic Impact Study

Tailormade Landing

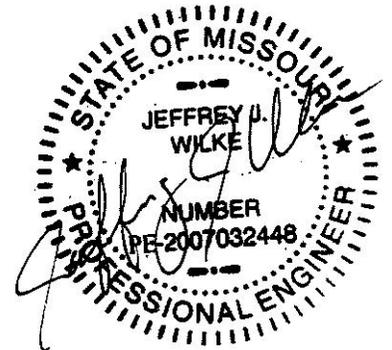


LEE'S SUMMIT, MISSOURI

MAY 2023

Prepared By:

Kimley»»Horn



05/23/2023

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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

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.

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. The turf slopes are generally mild, except adjacent to the development site where the slopes are steeper. A concrete box for an area inlet is located in the deepest part of the ditch roughly 300 feet north of Kingspoint Drive. 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.

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. Some team members are anticipated to carpool which is common for youth sports. A vehicle occupancy rate of 1.25 is assumed. This results in 48 inbound trips during the PM peak hour. (12 people x 5 teams ÷ 1.25 people/vehicle = 48 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 48 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 500 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 96 trips during the PM peak hour (48 entering and 48 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	500 ±	5	5	10	48	48	96

The trip generation estimates in **Table 2** indicate that the proposed development will generate a low volume of traffic which will have a minimal impact on the surrounding street network. According to the City's *Access Management Code* a full traffic impact study with capacity analysis is not required since the peak hour trip generation is less than 100 trips.

3.4 TRIP DISTRIBUTION

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.

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 UNIMPROVED ROAD POLICY

The City of Lee's Summit *Unimproved Road Policy* provides guidance for development activity which impacts unimproved and/ interim standard roadways. Unimproved roadways are generally defined as narrow in width (less than 22 feet of pavement) with drainage ditches adjacent to the roadway. Interim standard roadways are defined as having one 12-foot lane in each direction with 6-foot paved shoulders on each side of the road. Based on these criteria, it is not clear how Hamblen Road is classified according to this policy. The roadway is much wider than 22 feet, so it is not an unimproved road. However, it lacks the paved shoulders that are included in the interim standard.

The policy states that non-residential development will not be permitted on unimproved roads. The policy does allow development on interim standard roadways until the roadway reaches 11,000 vehicles per day. The policy also states that non-residential adjacent to interim roads requires improvement of both sides of the adjacent roadway to the urban standard. Urban standard includes curbs, gutters, sidewalk, and other urban street elements.

Our interpretation of the policy is that since the proposed development is non-residential, both sides of Hamblen Road would need to be improved to the urban standard adjacent to the site per the third policy point in the interim road section. The remainder of Hamblen Road north to Bailey Road would need to have paved shoulders to meet the interim standard. With these improvements, the development could be permitted on Hamblen Road as it would be an interim road that operates well below capacity.

Improving a short segment of Hamblen Road to the urban standard would be awkward given that no other segment of Hamblen Road south of Bailey Road is improved to the urban standard, even though many the parcels adjacent to the roadway are already developed. It is not likely that any of these road segments would be improved to the urban standard in the foreseeable future since the adjacent parcels are already developed. Adding paved shoulders to Hamblen Road may not be appropriate given that shoulders would encourage vehicles park or stop on the shoulders. Parking on the shoulders has been a concern in this area in the past, as evidenced by a number of parking restriction signs in this section of Hamblen Road.

Given these factors, a different improvement may be most appropriate in conjunction with the proposed development. The developer is proposing widening the west side of Hamblen Road to provide a 16-foot-wide lane in the southbound direction from the private driveway roughly 675 feet north of Kingspoint Drive to the proposed site access at Kingspoint Drive. Curb and gutter would be added along the west side of the roadway adjacent to the widening. The existing area inlet could be incorporated into the drainage system for the roadway, located behind the curb.

Sidewalk is not proposed because there is minimal sidewalk in the surrounding area. It is unlikely that this site will be connected to the existing sidewalk network without a significant roadway improvement project. Adequate right-of-way will be provided to allow for future sidewalk construction, should a such a roadway improvement project be constructed in the future.

While the proposed improvement of Hamblen Road does not exactly follow the Unimproved Road Policy, the improvement would address current safety concerns and provide the ultimate roadway configuration for an entire segment of the west side of the road. Currently, the west side of Hamblen Road adjacent to the site has a steep slope to a ditch. This is not a recoverable slope. There is an existing concrete drainage inlet in the ditch that is within five feet of the edge of the roadway. The inlet is a fixed object in close proximity to the road.

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 500 daily trips, with 10 trips during the AM peak hour and 96 trips during the PM peak hour. The trip generation estimates indicate that the proposed development will generate a low volume of traffic and have a minimal impact on the surrounding street network. According to the City's *Access Management Code* a full traffic impact study with capacity analysis is not required for the proposed development since the total trip generation is less than 100 trips.

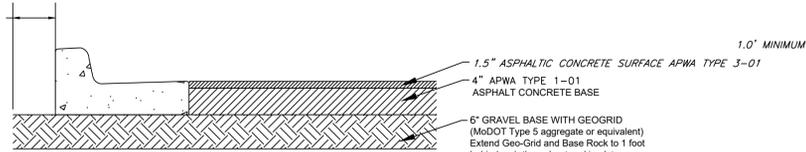
A review of the site plan determined that the access for the development satisfy the City of Lee's Summit *Access Management Code* (AMC) guidelines for driveway spacing. No turn lanes are required on Hamblen Road at the access location. The throat length of the site access driveway is less than the minimum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

The developer is proposing roadway improvements to Hamblen Road that does not exactly follow the City's Unimproved Road Policy, but the improvements would address current safety concerns along Hamblen Road near the site. The west side of the road will be widened to its ultimate configuration with one 16-foot wide lane and curb and gutter between the site driveway and the next private driveway, roughly 675 feet to the north. This will eliminate the existing non-recoverable ditch slope along the west side of the road and eliminate the concrete area inlet, which is a fixed object in the ditch.

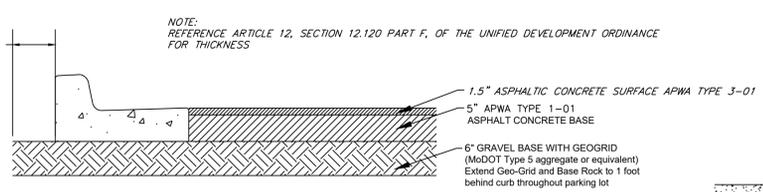
Appendix



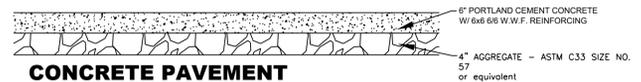
-  Indicates Drive Lane Private Asphalt Pavement
-  Indicates Parking Stalls Private Asphalt Pavement



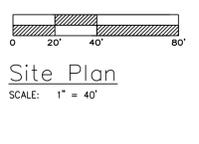
"PARKING STALLS" PRIVATE ASPHALT PAVEMENT
NOT TO SCALE



"DRIVE LANE" PRIVATE ASPHALT PAVEMENT
NOT TO SCALE



CONCRETE PAVEMENT
NOT TO SCALE



Site Plan
SCALE: 1" = 40'

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

DL - 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.

-  Indicates Drive Lane Private Asphalt Pavement
-  Indicates Parking Stalls Private Asphalt Pavement
-  Indicates New Gravel Placement

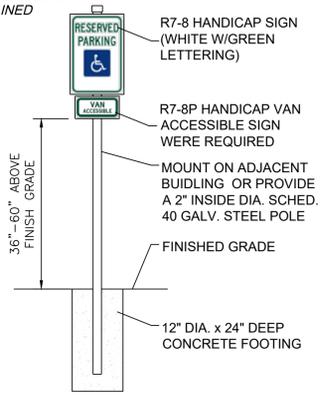
Site Impervious Area

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 be collected 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.

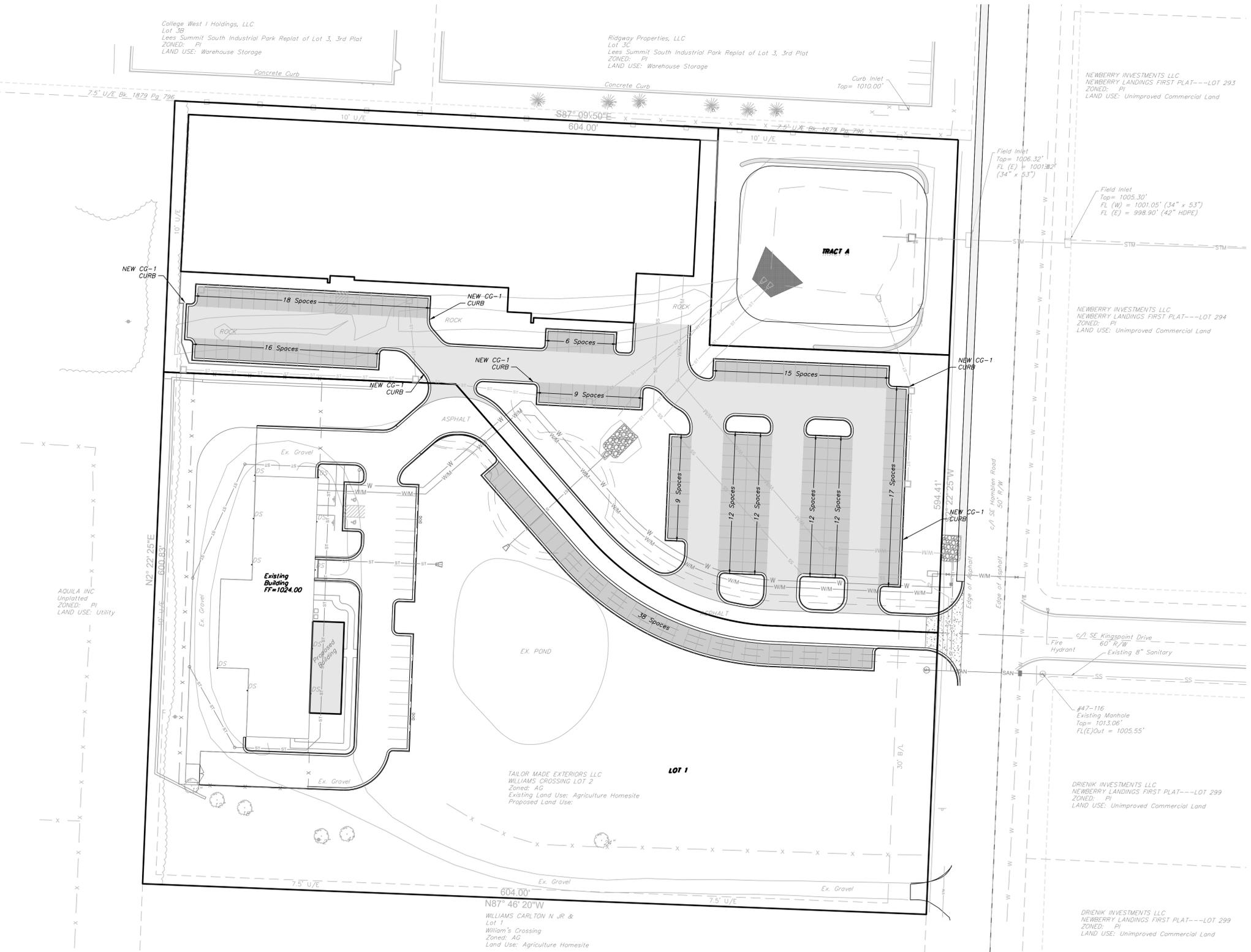
SIGN MAY BE WALL MOUNTED DIRECTLY TO BUILDING. DIMENSIONS MUST BE MAINTAINED



HANDICAP SIGN DETAIL
NOT TO SCALE

GENERAL NOTES:

- 1 - ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL AS ADOPTED BY ORDINANCE 5813.
- 2 - ALL REQUIRED EASEMENTS WITHIN THE BOUNDARY OF THIS PROJECT SHALL BE PROVIDED BY SEPARATE DOCUMENT
- 3 - ANY REQUIRED EASEMENT LOCATED OUTSIDE OF THE BOUNDARY OF THIS PROJECT SHALL BE PROVIDED FOR BY SEPARATE INSTRUMENT PRIOR TO ISSUANCE OF CONSTRUCTION PERMITS.
- 4 - 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.
- 5 - THE CONTRACTOR SHALL NOTIFY ENGINEERING SOLUTIONS AT 816.623.9888 OF ANY CONFLICT WITH THE IMPROVEMENTS PROPOSED BY THESE PLANS AND SITE CONDITIONS.
- 6 - 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

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

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

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

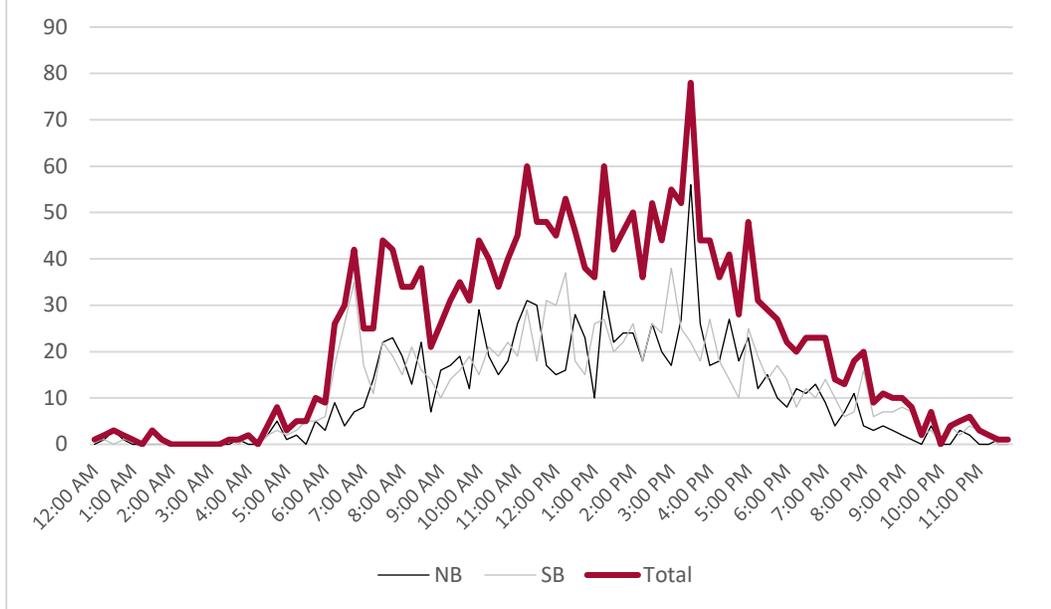
Tailormade Landing TIS

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

