



**NOTICE OF MEETING  
WEDNESDAY, AUGUST 13, 2025 – 6:00 PM  
PLAN COMMISSION  
TENTATIVE AGENDA**

*The Architectural Review Board meeting will immediately follow the Plan Commission meeting.*

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- I. MEETING CALLED TO ORDER
- II. ROLL CALL
- III. APPROVAL OF MINUTES FROM APRIL 9, 2025
- IV. PRELIMINARY PLAT REVIEW: WESTBOROUGH COUNTRY CLUB, 720 W. LOCKWOOD AVE.
- V. FINAL DEVELOPMENT PLAN REVIEW: DWELL COFFEE HOUSE, 415 SAPPINGTON RD.
- VI. ADJOURNMENT

*The fence variance requested for 931 Dwyer Ave. has been withdrawn by the applicant and therefore, will not be a matter before the Plan Commission at this meeting.*

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Gabrielle Macaluso  
Community Engagement Officer

POSTED: 11:30 A.M., August 8, 2025



**MINUTES**  
**PLAN COMMISSION MEETING**  
**April 9, 2025 –6:00 p.m.**

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**CALL TO ORDER**

A meeting of the Plan Commission of the City of Glendale was held on Wednesday, April 9, 2025. Chairman Jeffrey Fernhoff presided and called the meeting to order at 6:00 p.m.

**ROLL CALL**

Members Present

Members Absent

Laura Switzer  
Mike Moran  
Reed Voorhees  
Chairman Jeff Fernhoff

Jon Emert  
John Falk  
Brad Weitekamp

Also present were Frank Johnson, City Administrator; Gabby Macaluso, Deputy City Clerk; and City Attorney, Allie Sievers.

**APPROVAL OF MINUTES**

Moved by Mr. Moran, seconded by Mr. Voorhees and unanimously carried, to approve the minutes from the March 12, 2025 meeting as submitted.

**PUBLIC COMMENT**

There was no public comment.

**SPECIAL USE PERMIT  
REVIEW – The Glendale  
Grind, 421 N. Sappington Rd.**

Chairman Fernhoff introduced the special use permit (SUP) request from the soon-to-open The Glendale Grind coffee shop located at 421 N. Sappington Rd. The applicants, Diana Allen and Bill Boesler, are planning to open The Glendale Grind later this spring. Their SUP request included adding 4-5 tables with two chairs each in front of the windows in the front of the building to enable outdoor dining adjacent to the sidewalk. They state that these tables will only be in place during their business hours, 6:30 a.m.-4:00 p.m.

The SUP request also included serving shaved ice out a “to-go” window located in the rear of the coffeeshop. Ms. Allen and Mr. Boesler specified that only shaved ice, not coffeeshop items, would be served out of this window. Additionally, the window would only operate from mid-May to September.

Chairman Fernhoff invited the applicant to present their request to the Plan Commission.

Ms. Allen and Mr. Boesler asked if they could serve the shaved ice from a mobile cart located in front of their store instead of from the rear window as their written request stated.

City Attorney Sievers noted that because this is a different request than what was made at the time they requested the SUP, a mobile food-serving cart would require a separate SUP process.

City Administrator Frank Johnson noted that the Plan Commission could review the written SUP request for the outdoor dining and rear window service. If approved, the applicant could submit a request to amend their SUP to add the cart-based shaved ice service. He explained that the current SUP request and the future amended SUP would both require public hearings, which would determine the timeline of meetings and adoption.

In preparation for missing the meeting, Mr. Weitekamp submitted comments for the Plan Commission members to consider as they reviewed the SUP request. He expressed concern for the safety of pedestrians/customers as they crossed the parking lot to access the “to-go” window in the rear of the building. Mr. Weitekamp proposed that a walking lane be painted on the pavement adjacent to the building to separate the vehicle/driving lane from pedestrians.

The Plan Commission members thought this would improve safety. Mr. Boesler agreed with the request. Mr. Moran noted that the pedestrian lane would need to meet the standards of St. Louis County for safety.

Mr. Johnson asked that in the future if a cart is added to the front of the building, would there be fewer tables. The applicant explained that they would move the tables to make way for the cart during the hours that the cart would be operating (just afternoon and evening).

Chairman Fernhoff asked if the applicant checked with the chiropractor office next door to see if they were okay with their plans. Ms. Allen explained that they had and the chiropractor was on-board with the outdoor dining plans.

Chairman Fernhoff asked if there was any public comment regarding the SUP request. A woman from the audience asked if the coffeeshop had plans to employ people with special needs. Mr. Boesler said that they would.

Chairman Fernhoff made a motion to recommend approval of the special use permit to allow for outdoor dining and “to-go” rear window service at The Glendale Grind to the Board of Aldermen with the following conditions.

1. Furniture and other items may not be placed in the public right-of-way along Sappington Road so as to maintain a clear sidewalk and the City’s compliance with the Americans with Disabilities Act

2. Only furniture and other items permitted to be located in the outdoor dining area are those included in the application and no other items (such as napkin holders, salt and pepper shakers, centerpieces for tables, etc.) may be located in the area;
3. The applicant monitor the area to ensure compliance with the special use permit at all times;
4. The applicant provide a trash can for the area, regularly empty the trash, and ensure that no loose trash leaves the property;
5. The applicant clean the area daily or as needed so as to keep the area clean from substances and debris;
6. Any furniture and other items placed in the outdoor dining area be brought indoors or stored securely against the building at the time of closing every day; and
7. In the event applicant serves any drinks or food products other than shaved ice from the rear of the building or serves shaved ice from the rear of the building for a period greater than two (2) months, the applicant shall add a four (4) foot demarcated pedestrian walkway from the parking lot/driving lane to such rear service area.

The motion was seconded by Mr. Moran. The motion passed with a vote of 4 “Aye”, 0 “Nay,” and 3 Absent. The votes was as follows:

Chairman Fernhoff	“Aye”
Reed Vorhees	“Aye”
John Falk	Absent
Mike Moran	“Aye”
Laura Switzer	“Aye”
Jon Emert	Absent
Brad Weitekamp	Absent

**DEVELOPMENT PLAN  
REVIEW – Westborough  
Country Club, 1320 W.  
Lockwood Ave.**

Chairman Fernhoff introduced the development plan review for Westborough Country Club located at 1320 W. Lockwood Ave. He reminded the Plan Commission that this project was presented at the previous meeting and there were numerous requests for more information.

The architect of the Club’s expansion project is David Lisinski with Killeen Studio Architects. Jim Capek, a member and leader of the Westborough Country Club, was also in attendance. Mr. Lisinski addressed the Plan Commission’s prior requests for more information and the changes he made to the plans.

- He updated the plans so that they were all in congruence.
- St. Louis County requested that the existing median cut be filled in in exchange for granting them a new median cut on W. Lockwood Ave. The old median cut will become green space.
- St. Louis County suggested that the project add a 120-foot turn-in lane for west-bound traffic. This addition will allow west-bound traffic to make the left turn into Westborough Country Club without

impacting west-bound traffic on W. Lockwood Ave. This has been added to the plan.

- He referenced in the plans the addition of a berm and landscaping to block light from car headlights from impacting residential neighboring properties.
- He noted an updated lighting plan with lower light levels to address brightness concerns.
- He updated the rendering, so it matched the plans.

Mr. Moran noted that the berm size is sufficient.

Mr. Voorhee's noted that Mr. Weitekamp expressed concerns that the parking lot features a lot of pavement and little landscaping. He's also concerned that the plants planned for the landscaped areas along W. Lockwood Ave. will outgrow their areas if attended to properly. Mr. Lisinski noted that he would work with his landscape team to select the best plant species for the planned space.

Mr. Voorhee's also noted that Mr. Weitekamp expressed concerns regarding the 90-degree pavement corners in drive lanes. Mr. Moran echoed these concerns. He said the Commission would like to see a curve radius of 20-24-foot radius in the northwest corner of the drive rather than the 3-foot radius shown on the plans. Mr. Moran noted that this would significantly decrease the amount of pavement and increase the amount of landscaped space. He said that would also alleviate cramping along the collector walk in that corner.

Ms. Switzer questioned the crosswalk that is behind the stop line and crosses the turn lane. She said the placement is awkward. Mr. Lisinski said he would move it westward to locate pedestrians in an area where drivers expect them to be.

There was no public comment regarding the project.

Mr. Moran made a motion to recommend the applicant's design to the Board of Aldermen with the following comments:

- Increase the curve radius at the north end of the west collector drive to a minimum of 20 feet.
- Adjust the geometry of the pedestrian crossing at W. Lockwood Ave. to have the cross walk closer to the stop line in the left turn lane into the club.
- Consider mature size of plantings in the Lockwood planting buffer. Potentially adjust the plant species and spacing of plantings.

The motion was seconded by Ms. Switzer. The motion passed with a vote of 4 "Aye", 0 "Nay," and 3 Absent. The votes was as follows:

Chairman Fernhoff	“Aye”
Reed Vorhees	“Aye”
John Falk	Absent
Mike Moran	“Aye”
Laura Switzer	“Aye”
Jon Emert	Absent
Brad Weitekamp	Absent

**ADJOURN**

Ms. Moran motioned to adjourn the meeting. The motion was seconded by Mr. Switzer and unanimously carried to adjourn the meeting at 6:51 p.m.



424 N. Sappington Road Glendale, Missouri 63122 (314) 965-3600 fax (314) 965-4772 www.glendalemo.org

## RESIDENTIAL APPLICATION FOR SUBDIVIDING PROPERTY, CONSOLIDATING PROPERTY or BOUNDARY ADJUSTMENTS

R1 SINGLE-FAMILY DWELLING DISTRICT; R2 SINGLE-FAMILY DWELLING DISTRICT

(Preliminary Plats)

### INFORMATION CONCERNING APPLICANT

Applicant hereby submits the following information concerning the use or development proposed:

**Please specify if a subdivision or consolidation of property is being requested, and provide a description of the property's location (address and legal description):**

CONSOLIDATION OF PROPERTIES. Multiple adjacent parcels all located to the southwest of the intersection of Berry Road and West Lockwood Avenue that comprise the Westborough Country Club. The Club's current address is: 631 S. Berry Road. The Club will be changing its mailing address to 1320 W. Lockwood Ave. after current planned construction.

LOCATOR NUMBERS: 23L120104, 23L120012, 23L110240, 23L110121.

**This subdivision, consolidation, or boundary adjustment is for the purpose of:**

Consolidating multiple parcels of adjacent land owned by the Westborough Country Club into a single parcel.

**Name of Applicant:** Westborough Country Club

Represented by (if Applicant is a business entity): James Capek Title: Chief Operating Officer

Full Address: c/o Westborough Country Club 631 S Berry Rd Phone #: 314-968-5333

St. Louis, MO 63122 Cell #: 847-624-7626

**Name of Property Owner:** Westborough Country Club

Full Address: 631 S. Berry Road Phone #: 314-968-5333

St. Louis, MO 63122 Cell #: \_\_\_\_\_

## Submission Requirements

- Eight (8) copies of a preliminary plat of the proposed development must be drawn to scale and with reasonable accuracy.
- An engineer scale of 1" equals 60' or smaller must be used.
- One (1) electronic copy of entire set of plans must be included with the application.
- The filing deadline for the Planning and Zoning Commission is at least fourteen (14) days prior to the regular meeting date.
- Payment of the \$25.00 application fee.

The following information must be on the subdivision or boundary plat. Place a checkmark beside each item to indicate its inclusion on the preliminary plat.

### Preliminary Plat

- Name and address of developer and firm or engineer making plat.
- North point, scale, and date.
- Location of property being subdivided by Block, Section, U.S. Survey, Congressional Township Lines, with names and boundaries of adjoining subdivisions or owners of unsubdivided properties inclusive of boundary lines of any incorporated areas within or adjoining the subdivision.
- Streets and alleys abutting the property or connections to other streets bordering the property with the type and width of existing paving together with the location of existing structures, rights-of-way, and easements with their widths.
- Contours at five (5) feet or less intervals on subdivisions containing more than two (2) acres.
- Water courses, sink holes, tree masses and other similar and existing features together with existing storm and sanitary sewers within the tract and similar facts regarding existing conditions on property immediately adjacent thereto.
- Proposed location and width of streets or alleys with type and width of proposed paving together with proposed easements for utilities, storm and sanitary sewers and approximate locations of catch basins.
- Proposed location of lots giving scaled dimensions of all sides and approximate area of all irregularly shaped lots with proposed building lines. Corner lots shall have extra width to provide for building lines on both front and side streets with special consideration given to lots that abut major thoroughfares.
- Proposed dedications, inclusive of corner roundings, widening strips and any proposed parks.

### Representation Concerning Compliance with Laws

I, the undersigned, have read this application in its entirety and the information contained herein is true, and correct and complete to the best of my knowledge, information, and belief. I hereby represent that the property and the activities proposed to be conducted thereon do not and will not violate any ordinance of the city of Glendale or the laws of the State of Missouri. Applicant acknowledges that failure to truthfully complete this application or failure to comply with all laws may result in revocation of relevant approvals or permits.

Signature of Applicant: James F Capek Date: 07/22/25  
Print Name: James Capek Title: Chief Operating Officer

**Verification by Owner**

If the application is submitted on behalf of an owner of property or by a tenant for property owned by a person or entity other than the tenant, the owner must verify that the owner has read the application and consents to its review and possible approval by the City.

The undersigned hereby acknowledges that she or he has read the application, understands that the application seeks a subdivision of property, and consents to submission to the City of Glendale and possible approval of same.

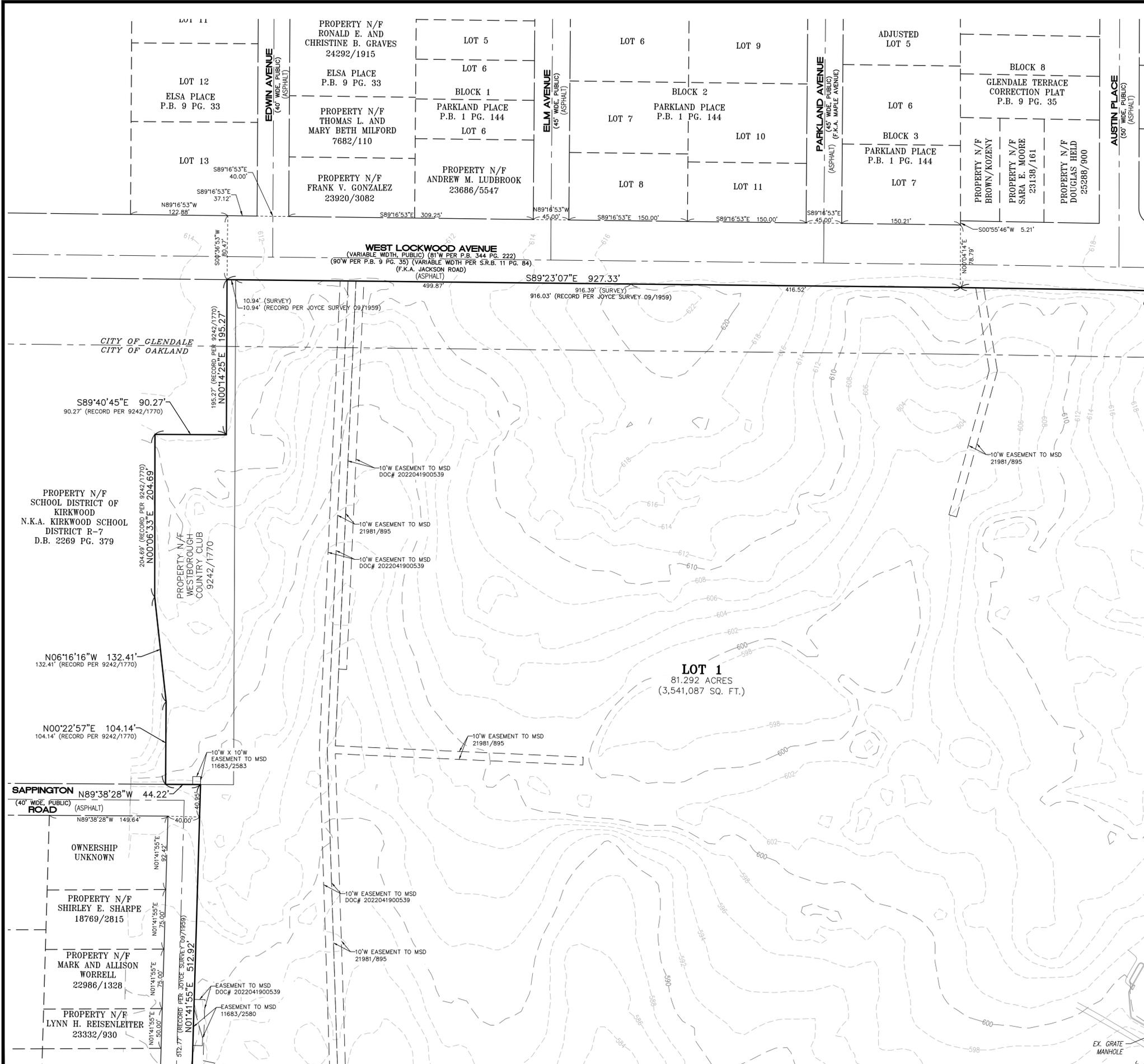
Signature of Owner: \_\_\_\_\_ Date: \_\_\_\_\_

Print Name: \_\_\_\_\_ Phone # \_\_\_\_\_

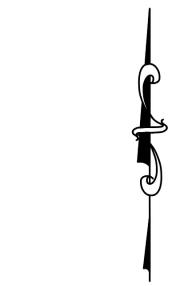
\*\*\*\*\*For Office Use\*\*\*\*\*

Amount Paid: \$ \_\_\_\_\_ Date Received: \_\_\_\_\_

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**WESTBOROUGH COUNTRY CLUB  
PRELIMINARY PLAT**  
PART OF SECTION 6, TOWNSHIP 44  
NORTH, RANGE 6 EAST  
CITY OF GLENDALE AND  
CITY OF OAKLAND  
ST. LOUIS COUNTY, MISSOURI



**OWNER CONTACT INFORMATION:**  
WESTBOROUGH COUNTRY CLUB  
631 SOUTH BERRY  
ST. LOUIS, MISSOURI 63122  
(314) 968-5333  
JIM CAPEK  
jcapek@westboroughcc.com

**ENGINEER CONTACT INFORMATION:**  
THOUVENOT, WADE, AND  
MOERCHEN, INC.  
4940 OLD COLLINSVILLE ROAD  
SWANSEA, ILLINOIS 62226  
(618) 624-4488

**CLIENT MANAGER:**  
MARSHA MALLER, P.E.  
mmaller@twm-inc.com

**LAND DEVELOPMENT MANAGER:**  
NICK SMOCK, P.E.  
nsmock@twm-inc.com

**PROJECT MANAGER:**  
CHRIS KUESTER, P.E.  
ckuester@twm-inc.com

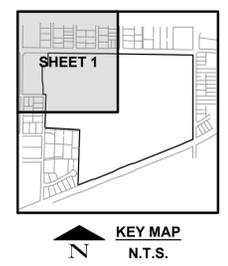
**SITE ZONING -**  
R-1 SINGLE FAMILY DWELLING (CITY OF GLENDALE)  
SP SEMI-PUBLIC DISTRICT (CITY OF OAKLAND)

**ST. LOUIS COUNTY LOCATOR NUMBER -**  
23L120104, 23L120012, 23L110240, 23L110121

**SITE ADDRESS -**  
631 SOUTH BERRY ROAD,  
1200 AND 1320 W. LOCKWOOD AVE

**SITE AREA CLASSIFICATIONS**  
LOT AREA: 81.3+ ACRES

**F.E.M.A. CLASSIFICATION**  
FLOOD PLAIN MAP 29189C0309K, DATED 02-04-2015, SHOWS  
THAT SAID PROPERTY IS WITHIN FLOOD PLAIN ZONE "X"  
(AREAS OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN).



JULY 17, 2025

**TWM**  
CONSULTING ENGINEERING  
GEOSPATIAL SERVICES

ILLINOIS	SWANSEA COLUMBIA GLEN CARBON PEORIA DECATUR
MISSOURI	ST. LOUIS COLUMBIA
TENNESSEE	NASHVILLE CHATTANOOGA ATHENS

**THOUVENOT, WADE  
& MOERCHEN, INC.**  
SWANSEA OFFICE  
4940 OLD COLLINSVILLE RD.  
SWANSEA, ILLINOIS  
62226-2025  
TEL (618) 624-4488  
WWW.TWM-INC.COM

PROF. LICENSE	NUMBER
IL. PROF. DESIGN FIRM	184-001220
IL. PROF. ENGR. CORP.	62-035370
IL. PROF. STR. ENGR. CORP.	81-005202
IL. PROF. LAND SURV. CORP.	048-000029
KS. PROF. ENGR. FACILITY	E-3256
MO. PROF. ENGR. CORP.	001528
MO. LAND SURVEYING CORP.	000346
TN. PROF. ENGR. FIRM	8974

SEAL

SIGNATURE:  
DATE SIGNED:  
LICENSE EXPIRATION:

ISSUED FOR REVIEW  
JULY 17, 2025

REV.	DATE	DESCRIPTION
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DRAWN BY:  
DESIGNED BY: CDK  
CHECKED BY: NTS  
APPROVED BY: MJM  
PROJECT NO: 241115

PROJECT:  
WESTBOROUGH COUNTRY CLUB  
631 SOUTH BERRY ROAD  
CITY OF GLENDALE AND OAKLAND  
ST. LOUIS COUNTY, MISSOURI

TITLE:  
PRELIMINARY PLAT  
NORTHWEST SITE



MATCHLINE - SEE SHEET 1

# WESTBOROUGH COUNTRY CLUB PRELIMINARY PLAT

PART OF SECTION 6, TOWNSHIP 44  
NORTH, RANGE 6 EAST  
CITY OF GLENDALE AND  
CITY OF OAKLAND  
ST. LOUIS COUNTY, MISSOURI



CONSULTING ENGINEERING  
GEOSPATIAL SERVICES

ILLINOIS SWANSEA  
COLUMBIA  
GLEN CARBON  
PEORIA  
DECATUR

MISSOURI ST. LOUIS  
COLUMBIA

TENNESSEE NASHVILLE  
CHATTANOOGA  
ATHENS

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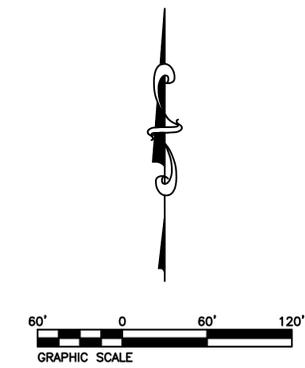
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WESTBOROUGH COUNTRY CLUB  
631 SOUTH BERRY ROAD  
CITY OF GLENDALE AND OAKLAND  
ST. LOUIS COUNTY, MISSOURI

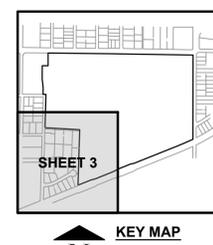
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PRELIMINARY PLAT  
SOUTHWEST SITE



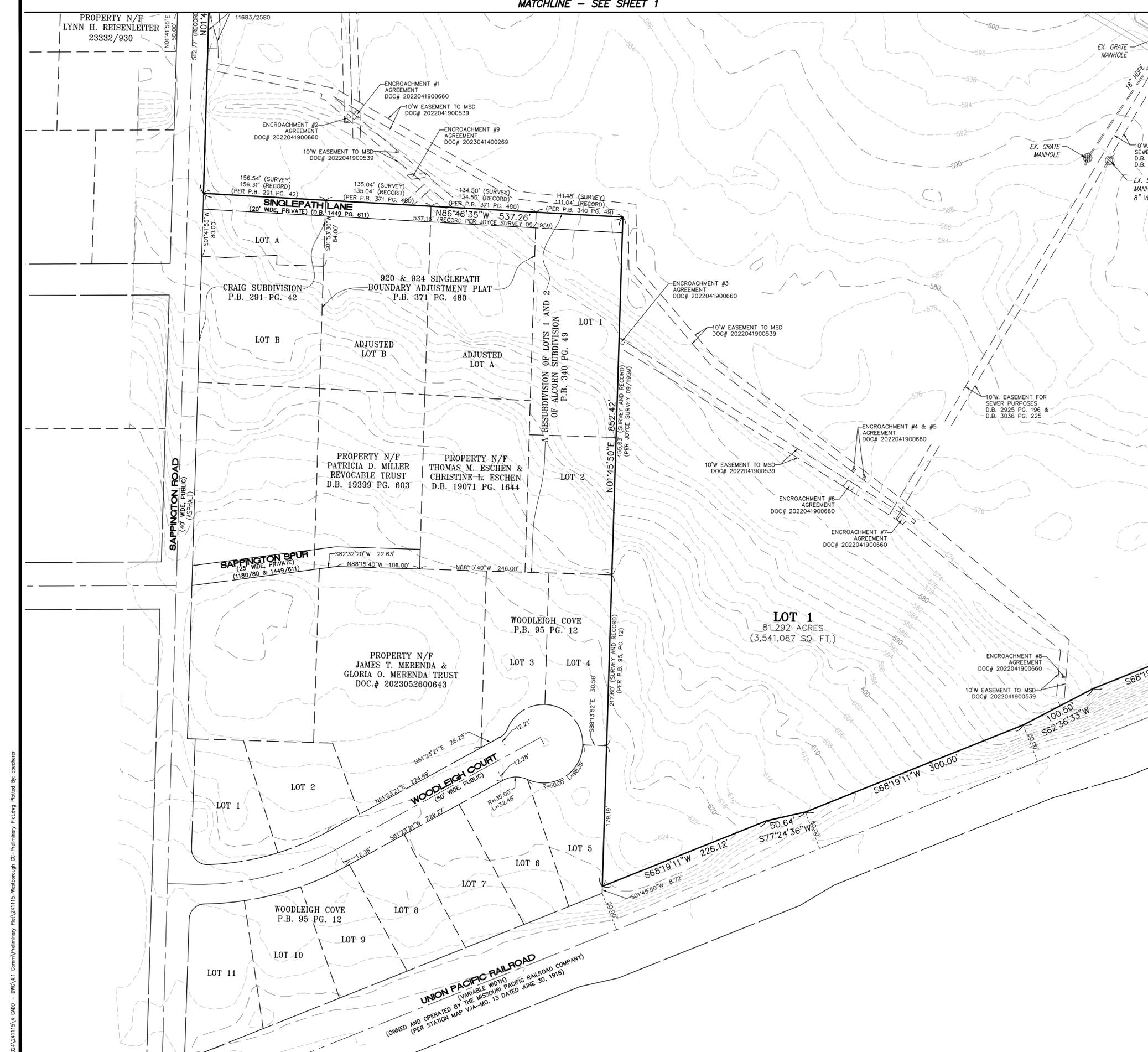
EXISTING LINE TYPE LEGEND	
	BOUNDARY LINE
	CENTER LINE
	CITY LIMITS LINE
	CONTOUR LINE (10 FOOT MAJOR)
	CONTOUR LINE (2 FOOT MINOR)
	LOT LINE
	RIGHT OF WAY LINE
	SANITARY LINE
	STORM CULVERT/LINE

PROPOSED LINE TYPE LEGEND	
	CONTOUR LINE (5 FOOT MAJOR)
	CONTOUR LINE (1 FOOT MINOR)
	STORM SEWER LINE



JULY 17, 2025



MATCHLINE - SEE SHEET 4

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MATCHLINE - SEE SHEET 2

# WESTBOROUGH COUNTRY CLUB PRELIMINARY PLAT

PART OF SECTION 6, TOWNSHIP 44  
NORTH, RANGE 6 EAST  
CITY OF GLENDALE AND  
CITY OF OAKLAND  
ST. LOUIS COUNTY, MISSOURI



CONSULTING ENGINEERING  
GEOSPATIAL SERVICES

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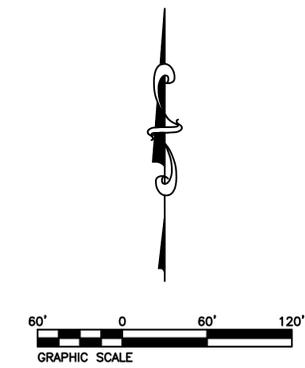
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631 SOUTH BERRY ROAD  
CITY OF GLENDALE AND OAKLAND  
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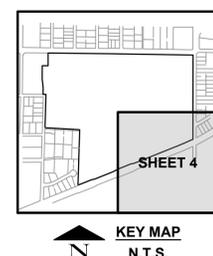
TITLE:  
  
PRELIMINARY PLAT  
SOUTHEAST SITE



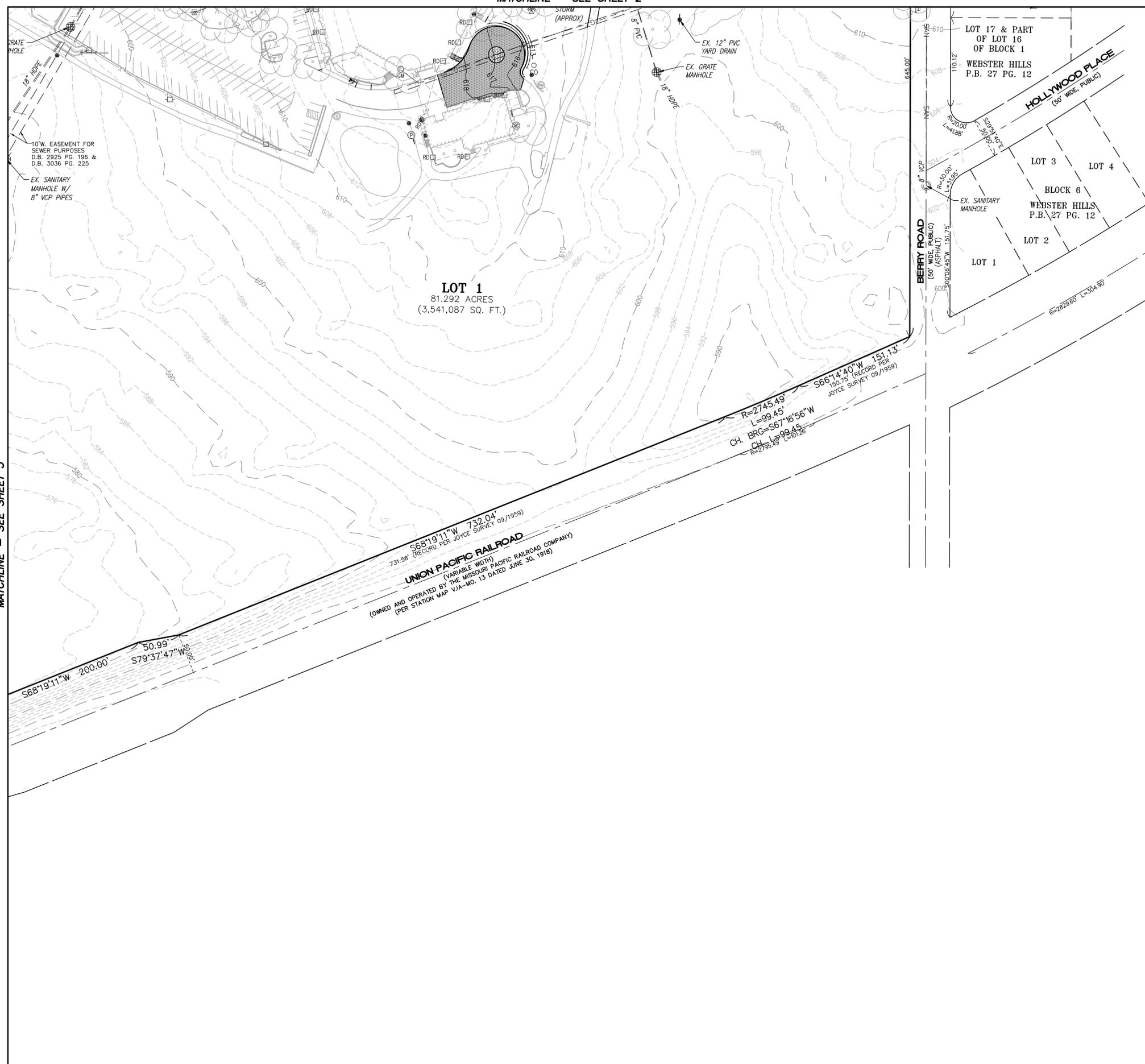
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	CONTOUR LINE (1 FOOT MINOR)
	STORM SEWER LINE



MATCHLINE - SEE SHEET 3



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JULY 17, 2025

4 of 4



August 1, 2025

Mr. Frank Johnson, City Administrator  
424 North Sappington Road  
Glendale, Missouri 63122

RE: Westborough Country Club Preliminary Plat Consolidation Review  
631 South Berry Road, Glendale, Missouri 63122

Dear Mr. Johnson:

In review of the preliminary plat consolidation application including the accompanying plat plans for 631 South Berry Road (to be changed to 1320 West Lockwood Avenue), please reference the following comments.

The proposed plat consolidates four adjacent parcels (Locator Numbers: 23L120104, 23L120012, 23L110240, & 23L110121) into a single unified lot for a future parking lot use. The consolidation appears consistent with the intent of minimizing fragmentation and improving development efficiency.

The existing lot lines, easements, and rights-of-way are correctly identified and labeled. In addition, the survey ties into the cities of Glendale's and Oakland's coordinate system and benchmark data where applicable.

It is determined that adequate public right-of-way is provided per the City of Glendale and St. Louis County standards. Existing access points to public streets are clearly shown and dimensioned. Also, existing utility easements (public and private) are shown and labeled in the preliminary subdivision plat.

The existing stormwater drainage facilities and stormwater easements are reflected on the preliminary plat.

The consolidated lot complies with minimum lot area, frontage, and setback requirements of the current zoning designation.

Preliminary Plat Consolidation Review:

1. The applicant shall ensure closure reports for new lot boundaries are submitted and meet platting standards. Revisions to the preliminary plat are not required.

2. The applicant shall ensure that if a new access is proposed, it may require separate permit reviews under applicable access management guidelines. Revisions to the preliminary plat are not required.
3. Any conflicts between utility easements and proposed building areas must be resolved prior to final plat approval. Revisions to the preliminary plat are not required.
4. The applicant shall ensure dedication of utility easements along each frontage or location as required for future service. Revisions to the preliminary plat are not required.
5. A stormwater drainage management approach may be required depending on the scope of the future development. Revisions to the preliminary plat are not required.
6. The applicant shall ensure that no existing drainage patterns are adversely impacted by the consolidation. Revisions to the preliminary plat are not required.
7. It is recommended that the applicant coordinate with the Planning Department to address any resulting nonconformities. Revisions to the preliminary plat are not required.

The City Engineer has no objection to the preliminary plat consolidation moving forward, subject to resolution of the above comments prior to final plat approval.

Please note, the consolidation plat does not confer development rights or site plan approval. Future development is subject to full review under applicable site development and permitting processes.

Please feel free to let me know if you have any questions.

Sincerely,



Scott J. Smith, PE  
City Engineer  
[ssmith@lochgroup.com](mailto:ssmith@lochgroup.com)  
314.941.6657



# PRELIMINARY / FINAL DEVELOPMENT PLAN APPLICATION

## APPLICANT INFORMATION:

**Business/Site Name:** Glendale Coffee house

**Location/Address:** 415 N. Sappington Ave. Glendale, MO

**Applicant Name:** Brian Ivy - Idea Archtiects

**Address:** 130 W. Lockwood Ave. Webster Groves, MO 63119

**Phone:** 314.369.0209 cell      **Email:** Brian@IdeaSTL.com

**Property Owner Name:** Jamie and Lisa Houston

**Address:** 415 N. Sappington Ave. Glendale, MO

**Phone:** 206.852.2852      **Email:** foresterh@gmail.com

**Architect/Engineer Name:** Brian Ivy - Idea Archtiects

**Address:** 130 W. Lockwood Ave. Webster Groves, MO 63119

**Phone:** 314.369.0209 cell      **Email:** Brian@IdeaStL.com

**Type and nature of business(es), organization(s) or trade(s) (existing or proposed):**

\_\_\_\_\_

**Zoning change requested:**     Yes       No      **C-1 commercial**  
If yes, from: R-2 residential      to: P-1 parking

The undersigned hereby certifies that he/she has a legal interest in the hereinabove described property, is authorized to sign and submit this application on behalf of the property owner and the applicant and that all information given herein is true and a statement of fact.

Brian Keith Ivy  
Name

Brian K. Ivy  
Signature

12.13.2024  
Date

## **PRELIMINARY DEVELOPMENT PLAN SUBMISSION REQUIREMENTS:**

Per Section 400.610 of the Glendale municipal code, applications for a preliminary development plan shall include the following:

- Plot plan showing the size, dimensions and locations of the property.
- The proposed building lines and the location and approximate size of buildings.
- The proposed use.
- The tentative parking, including number and location of parking spaces, and circulation patterns.
- The approximate existing and proposed contours of the parcel.
- The planting areas.
- The type, size and location of proposed signs not attached to the buildings.

Applicants must submit this form with ten (10) copies of the preliminary development plans. An electronic copy must also be provided by email to the Deputy City Clerk or the City Administrator.

## **FINAL DEVELOPMENT PLAN SUBMISSION REQUIREMENTS:**

Within twelve (12) months from the date of the approval by the Board of Aldermen of the preliminary development plan, applicants must submit a final development plan. Such final development plan, in addition to matters shown on the preliminary development plan, shall include the following:

- The existing and proposed contours of the parcel. **civil**
- The landscape plan with the specific location of all plant material specifying size, species and location (Both as to buffer area around the perimeter as well as that in the parking lots). **landscape**
- All proposed uses and all structures, present and future. **arch/civil**
- The number and location of parking spaces, moving traffic lanes, sidewalks, and loading and delivery zones. **arch**
- Ingress and egress facilities. **arch**
- Plan for the provision of water sanitary and storm drainage facilities.\* **civil**
- All easements and dedications. **civil**
- Signs **arch/owner - on elevations** **photometrics**
- Details of lighting of parking lots and outside of buildings, including location, type and intensity.
- All other information which the City Administrator, Plan Commission or Board of Aldermen may designate. **updated site plan, traffic studies**

\* No building permit shall be issued to construct any part or all of the development in the district until such time as the Metropolitan St. Louis Sewer District has approved the sanitary and storm sewers and drainage



**Install and maintain tree protection fence as indicated on preservation plan for all trees marked SAVE.  
Silt protection shall be installed in a trenchless manner if introduced within the critical root zone of any tree to be  
SAVED. ( I.E. woodchips, wattles, and hay bales)**

I hereby certify that I have viewed the premises and provided this professional opinion regarding the survivability of significant trees on this site and abutting the site. Attached is a site plan illustrating the recommended location of tree protection fencing. This fence is to remain erect throughout the construction project . All tree inspections were performed from the ground and are limited in scope. Tree and utility locations are approximate and locations of utilities are subject to change.

A handwritten signature in black ink, appearing to read "Nick Wibbenmeyer".

Nick Wibbenmeyer  
I.S.A. Certified Arborist  
MW 6357A



TREE STUDY  
SITE PLAN REVIEW  
2/10/2025

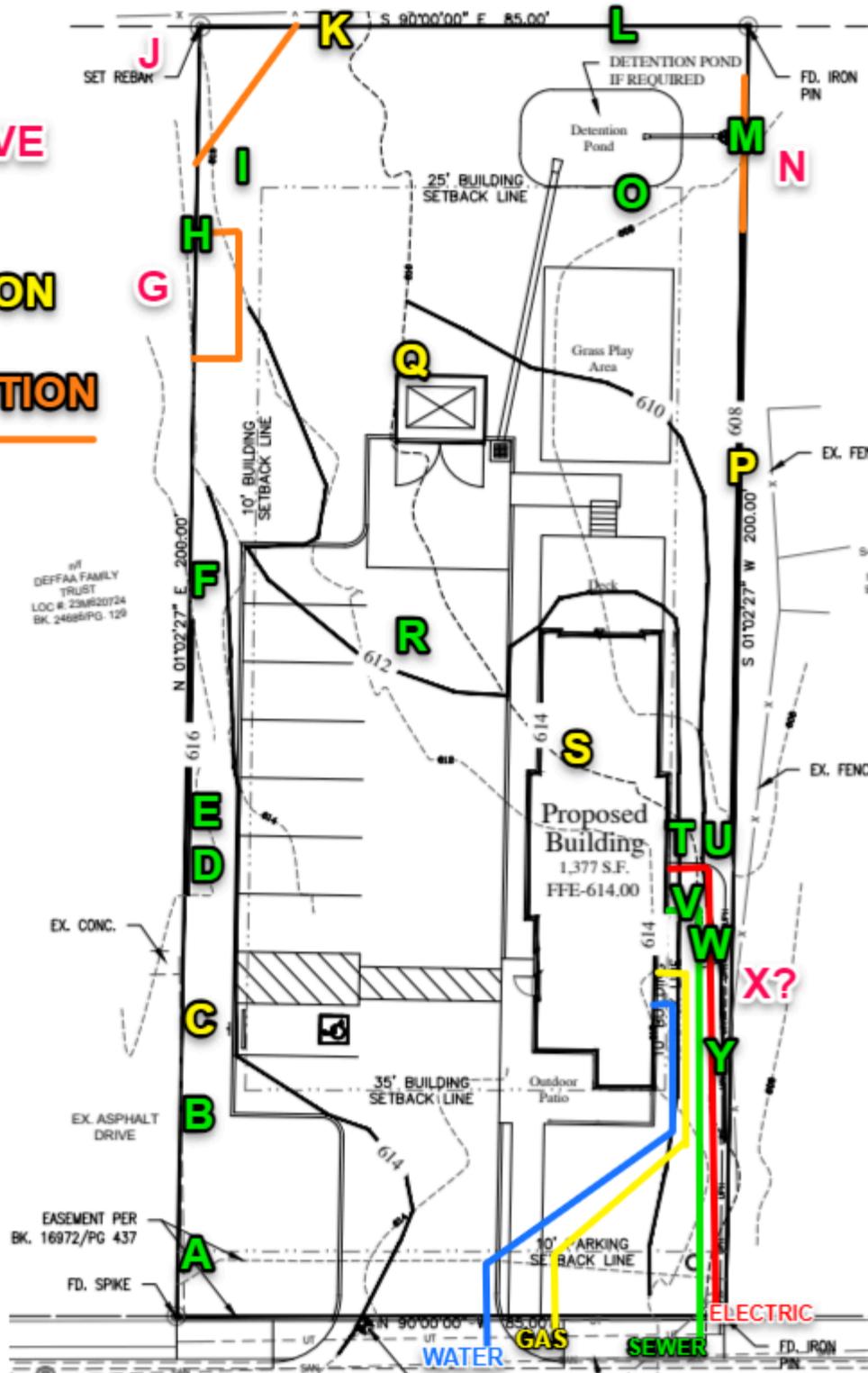
PROPERTY LOCATION: 415 Sappington

#	TREE SPECIES	D B H	PRESERVE/TBR	ADJOINING LOT	COMMENTS	C	L	S
A	red maple	6"	TBR		co-dominant at 2', included bark, epicormic growth, minor deadwood <b>ACCESS/DRIVEWAY DEMO</b>	56	40	62
B	red maple	6"	TBR		strong central leader, one sided, minor deadwood <b>PARKING LOT</b>	60	40	62
C	ash	10"	TBR		signs of EAB <b>CONDITION/PARKING LOT</b>	39	40	35
D	black walnut	16"	TBR		boring insect holes on trunk, co-dominant at 15', slight lean, minor deadwood <b>PARKING LOT</b>	62	40	49
E	black walnut	16"	TBR		boring insect holes on trunk, slight lean, one sided, vines on trunk, deadwood <b>PARKING LOT</b>	60	40	49
F	hackberry	2x20"	TBR		multi-trunk, exposed root flare, vines on trunks, improper pruning cuts, epicormic growth, deadwood <b>PARKING LOT</b>	50	40	68
G	black walnut	22"	PRESERVE	YES	vines on trunk, lean, compartmentalized wounds on trunk, deadwood	59	40	49
H	black walnut	16"	TBR	SHARED	boring holes on trunk, vines on trunk, storm damage, deadwood <b>GARAGE DEMO</b>	54	40	49
I	hackberry	6"	TBR		vines on trunk, minor deadwood, co-dominant at 15' <b>GARAGE DEMO</b>	67	40	68
J	eastern redcedar	11"	PRESERVE	YES	vines throughout, minor deadwood	58	40	52
K	silver maple	36"	TBR	SHARED	exposed root flare, vines on trunk, storm damaged leader, co-dominant at 4', decay at branch union, epicormic growth, exfoliating bark, deadwood <b>CONDITION</b>	34	40	27
L	boxelder	16"	TBR	SHARED	boring insect holes throughout, lean, deadwood <b>STORMWATER MITIGATION</b>	47	40	24

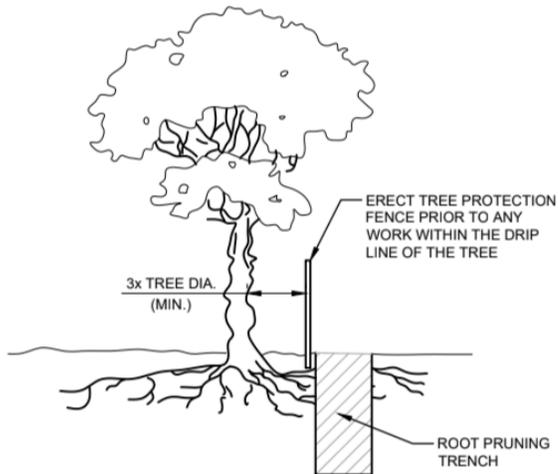
M	silver maple	30"	TBR	SHARED	exposed root flare, irregular trunk taper, vines throughout, epicormic growth, deadwood	47	40	27
N	plum	8"	PRESERVE	YES	exposed surface roots, epicormic growth, included bark, deadwood	49	40	52
O	eastern redbud	6"	TBR		3x2", multi-stemmed, minor deadwood <b>STORMWATER MITIGATION</b>	63	40	64
P	silver maple	2x20"	TBR	SHARED	basal decay, vines on trunk, included bark, large wound on back on leader <b>CONDITION/GRADING</b>	39	40	27
Q	silver maple	34"	TBR		lean, vines on trunk, storm damaged leader, epicormic growth, deadwood <b>CONDITION</b>	35	40	27
R	baldcypress	25"	TBR		exposed root flare, strong central leader, dead scaffold branches <b>PARKING LOT</b>	62	40	74
S	ash	19"	TBR		signs of EAB <b>CONDITION</b>	25	40	35
T	American elm	10"	TBR		vines on trunk, phototropic, epicormic growth, minor deadwood <b>FOUNDTION/UTILITIES</b>	61	40	35
U	dogwood	6"	TBR		co-dominant at 10', minor deadwood <b>FOUNDTION/UTILITIES</b>	64	40	78
V	shingle oak	19"	TBR		exposed root flare, vines on trunk, deadwood <b>FOUNDTION/UTILITIES</b>	62	40	68
W	black walnut	12"	TBR		exposed surface roots, phototropic, deadwood <b>FOUNDTION/UTILITIES</b>	55	40	49
X	tree of heaven	18"	?	YES	co-dominant at 10', included bark, deadwood <b>STRUCTURAL ROOTS WILL BE GREATLY IMPACTED BY UTILITY TRENCHING</b>	57	40	14
Y	tree of heaven	17"	TBR		co-dominant at 12', wound on branch, deadwood, included bark <b>UTILITIES/GRADING</b>	55	40	14

TOTAL TREES ( @ or above 6" DBH )	TOTAL VIABLE TREES	TREES REMOVED	DEAD/DYING/ DISEASED REMOVE	VIABLE TREES REMOVED	# OF VIABLE INCHES REMOVED	# OF 2.5" CALIPER REPLACEMENT TREES REQUIRED (1 per 10" removed)	OR REPLACEMENT COST @ \$120 PER CALIPER INCH (\$2,400 Max)
25	20	21	5	16	247	25 Tree Installed	\$2,400 + 17 trees

**PRESERVE**  
**TBR**  
**POOR**  
**CONDITION**  
**TREE**  
**PROTECTION**  
**FENCE** ———







NOTES:

1. ROOT PRUNING SHALL BE DONE WHENEVER THERE WILL BE GRADING, CUTTING OR COMPACTION DISTURBANCE UNDERNEATH THE DRIP LINE OF A TREE. PRIOR TO ANY WORK WITHIN DRIP LINE, THE CONTRACTOR SHALL ERECT A TREE PROTECTION FENCE AND CONTACT AN ISA CERTIFIED ARBORIST TO COORDINATE WORK. NO DISTURBANCE SHALL BE DONE WITHIN A DISTANCE OF 3X THE DIAMETER OF THE TREE, DUE TO STABILITY CONCERNS.
2. ROOT PRUNING SHALL BE DONE WITH A SHARP TOOL, IN SUCH A WAY THAT DOES NOT PULL ON THE ROOTS, BUT LEAVES SMOOTH CUTS. DO NOT TEAR ROOTS WITH EXCAVATION EQUIPMENT. IT IS PREFERABLE TO EXPOSE THE ROOTS PRIOR TO ROOT PRUNING. AFTER PRUNING, FILL THE AREA WITH QUALITY TOPSOIL AND WATER UNTIL THOROUGHLY SOAKED.
3. ONCE EXPOSED, ROOTS MUST BE COVERED WITHIN 8 HOURS. IF ROOTS WILL BE LEFT EXPOSED FOR LONGER THAN 8 HOURS, THEY MUST BE KEPT MOIST. ONE OPTION IS TO PUT MOIST BURLAP OVER THE EXPOSED ROOTS.

NOTES (CONT.):

4. ROOT PRUNING SHALL MEET OR EXCEED ANSI A300 OR APPROVED TREE CARE INDUSTRY STANDARDS.

DIGGING PROCESS

1. THE PRUNING TRENCH SHOULD BE CLEARED IN A WAY THAT EXPOSES THE ROOTS WHILE LEAVING THEM INTACT.
  - 1.1. USE HAND TOOLS OR AN AIR KNIFE II) DO NOT USE AN EXCAVATOR, AS THIS WILL PULL ON THE ROOTS AND POSSIBLY DAMAGE THE TRUNK III) IF A ROOT LARGER THAN 2" IS EXPOSED, LEAVE THIS ROOT INTACT AND CONTACT LANDSCAPE SERVICES
2. ONCE THE ROOTS ARE EXPOSED, USE A SHARP TOOL TO CLEANLY CUT ALL ROOTS WHICH ARE BETWEEN 1-2" DIAMETER, TO THE DEPTH OF THE PROPOSED DISTURBANCE
  - 2.1. APPROPRIATE TOOLS INCLUDE SHARP LOPPING SHEARS, HANDSAWS, A SHARPENED AXE, A ROOT PRUNER GRINDER, A RECIPROCATING SAW AND ANY OTHER SHARP TOOL WHICH LEAVES A CLEAN CUT
  - 2.2. YOU MAY NOT USE A CHAINSAW OR CHAIN TRENCHER TO MAKE THE FINAL CUTS
  - 2.3. ALL ROOTS SHALL BE LEFT WITH A CLEAN, SMOOTH ENDS AND NO RAGGED EDGES
3. POST PRUNING
  - 3.1. TREE ROOTS MUST BE KEPT MOIST. IF ROOTS ENDS WILL BE LEFT EXPOSED FOR MORE THAN 8 HOURS, COVER THE HOLE WITH MOIST BURLAP.
  - 3.2. FILL THE HOLE WITH HIGH QUALITY TOP SOIL, MULCH THE AREA WITH TRIPLE SHREDDED HARDWOOD TO A DEPTH OF 3", AND WATER WELL.



**TERRA**  
ENGINEERING LTD.

**DWELL COFFEE HOUSE  
TRAFFIC IMPACT STUDY**



**PROJECT ADDRESS**

415 Sappington Rd  
St. Louis, MO 63122

**PREPARED BY**

Michael C. Hutchinson, P.E., PTOE  
Senior Traffic Engineer

**PREPARED FOR**

Houston Things, LLC  
Jamie Houston  
jamie@houstonthings.com

**DRAFT REPORT DATE**

April 3, 2025

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# SECTION I

## EXECUTIVE SUMMARY

---

This traffic impact study is to evaluate a new Dwell Coffee House coffee shop in Glendale, MO, near City Hall. Existing traffic data was collected in February 2025 at the intersections near the site to determine the existing traffic patterns around the parcel. In the existing condition traffic model, all turn movements performed at a Level of Service (LOS) B or better.

Because of the proposed coffee's shop unique location in a residential area distally isolated from major arterial roads, and is not a major franchise, the Institute of Transportation Engineers (ITE) Trip Generation Manual was not used to estimate how many trips the coffee shop would generate, since it is likely the coffee shops surveyed in the manual are well-known franchises within commercial corridors. Trip generation was estimated by measuring the person trips and vehicle trips made at a similar boutique style coffee shop in the area, Teleo Coffee in Kirkwood, MO. From the flow of person trips entering and exiting Teleo Coffee, TERRA was able to estimate the trips to the proposed coffee shop.

The new trips were assigned to the network based on the existing traffic patterns in the network and where vehicles were likely to access the site. The newly assigned trips and the existing traffic data were combined to form an Opening Day model. This information was then placed into the Synchro models for analysis and evaluation for Opening Day conditions which showed similar results to existing conditions.

It appears the Dwell Coffee shop will operate with similar characteristics to other businesses in the area. There are currently nine (9) parking spaces proposed at the site. Based on person trip flows at Teleo Coffee, it appears that the types of trips to the coffee shop differ throughout the day. It was noted that many trips in the morning peak are pass-by trips with higher turnover where patrons stop to pick up a coffee and leave within a short time. The trips after the morning rush hour show more patrons who come to the shop for longer periods to sit and stay at the shop. Based on the location of the proposed site within a walkable residential neighborhood, it is expected that patrons who stay longer are more likely to travel by foot to the site.

# SECTION II

## INTRODUCTION/SITE BACKGROUND

TERRA Engineering has been asked to evaluate the potential traffic impact of redeveloping a parcel on Sappington Road near Glendale City Hall into a coffee shop, the Dwell Coffee House. The parcel is located on 415 Sappington Road and is currently a residential house. The parcel is located inside a dense suburban neighborhood connected by local roads, with a few other businesses nearby which are located at an adjacent parcel. One is a sandwich shop, the other is a chiropractic office. There is also another coffee shop currently in the process of renovating and opening. The parcel and businesses in the adjacent parcel are distally isolated from major roads or other businesses. Figure 1 shows the location of the project relative inside a residential area and relative to MO 100 (Manchester Road), US 61 Lindbergh Blvd./Kirkwood Rd.), and I-44.

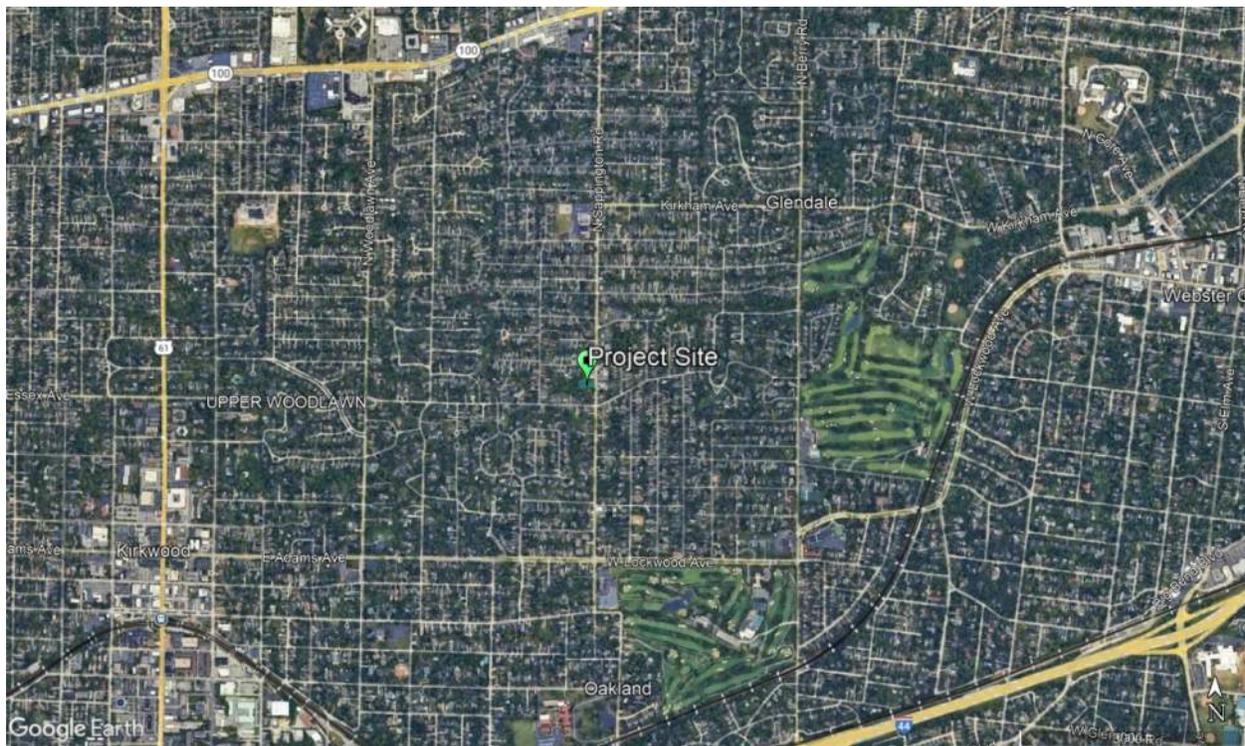


Figure 1 - Project area inside residential area.

# SECTION III

## STUDY AREA

---

The existing site is located at 415 Sappington Road. A layout of the site location and adjacent street network is provided in Figure 2 with the proposed site shown in blue. The roadways included as part of the study area around the proposed site development are described as follows:

**Sappington Road** near the study area is an approximately 1.5-mile, two-lane (one lane in each direction) road running in the north-south direction. It primarily serves a residential area and connects to Manchester Avenue (MO 100) to the north and Lockwood Avenue to the south. The posted speed limit is 25 miles-per-hour (mph). Sidewalk exists on both sides of Sappington Road. Inside the study area, there is a midblock-crossing with stop signs for both vehicle directions. Vehicles must stop whether or not there are pedestrians crossing.

**Fuhrmann Terrace** is an approximately 1,250-foot, two-lane (one lane in each direction) road running in the east-west direction. It serves a residential area and connects to Sappington Road. The posted speed limit is 20 mph. Sidewalk does not exist on either side of the road.

**Sappington Court** is a short, 150-foot-long road that connects to a private driveway and serves as a parking lot for Glendale City Hall and a condominium complex on the north side of the street.

**Essex Avenue** is an approximately 1-mile, two-lane (one lane in each direction) road running in the east-west direction. It primarily serves a residential area. The posted speed limit is 20 mph. Sidewalk exists on some parts of Essex Avenue for short lengths. There appears to be a lack of sidewalk connectivity on Essex Avenue which is currently being addressed by an on-going City of Glendale project.



Figure 2 - Project area.

# SECTION IV

## EXISTING TRAFFIC CONDITIONS

Traffic data was collected on Tuesday, February 25, 2025, at the following locations:

- Sappington Road & Fuhrmann Terrace / Sappington Court
- Sappington Road & Glendale City Hall lot / commercial driveway
- Sappington Road & Essex Avenue

Traffic data was collected on Sappington Road at the three subject intersections from 7:00 AM to 9:00 AM and from 2:00 PM to 6:00 PM to include the morning and evening peak hours of vehicle traffic, colloquially called “rush hour.” This data is included in Appendix A.

The peak hours of traffic for each intersection did not always coincide with other intersections. Although the peak hour of traffic at each intersection do not always occur simultaneously, using the volumes from the hour of highest observed traffic volume at each intersection provides a slightly more conservative calculation for intersection performance. Table 1 shows the starting time of peak hour of traffic for each intersection in the study area. Figure 3 shows the vehicle volume for each turning movement for each peak hour of traffic. TERRA also collected pedestrian data at each location. Figure 4 shows the pedestrian volumes at the time of peak vehicle volumes.

Table 1 – Peak Hours of Traffic		
	AM	PM
Sappington Rd & Fuhrmann Terr	7:45 AM – 8:45 AM	3:45 PM – 4:45 PM
Sappington Rd & City Hall lot	7:45 AM – 8:45 AM	3:45 PM – 4:45 PM
Sappington Rd & Essex Ave	7:45 AM – 8:45 AM	4:00 PM – 5:00 PM

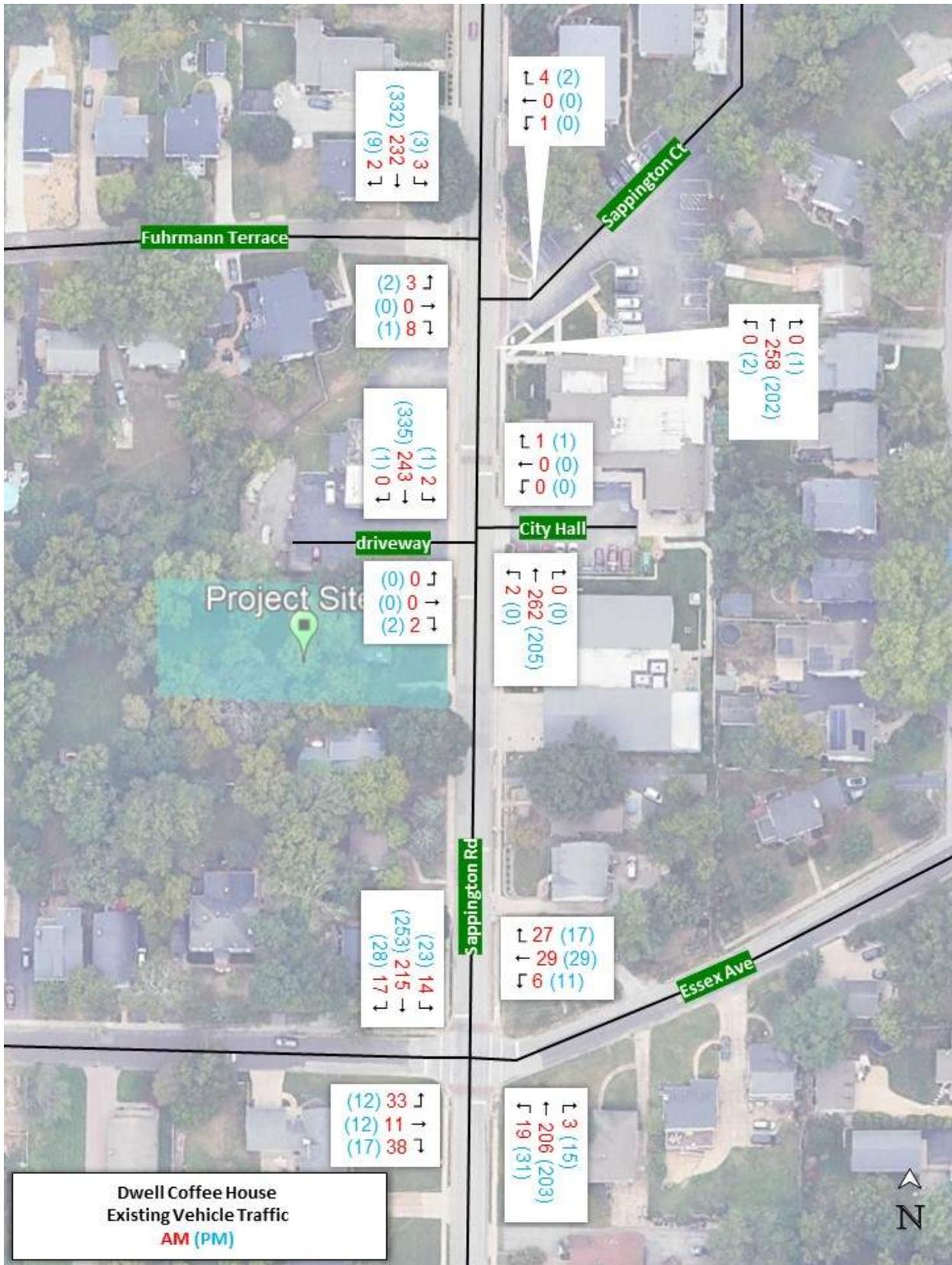


Figure 3 – Existing vehicle volumes.

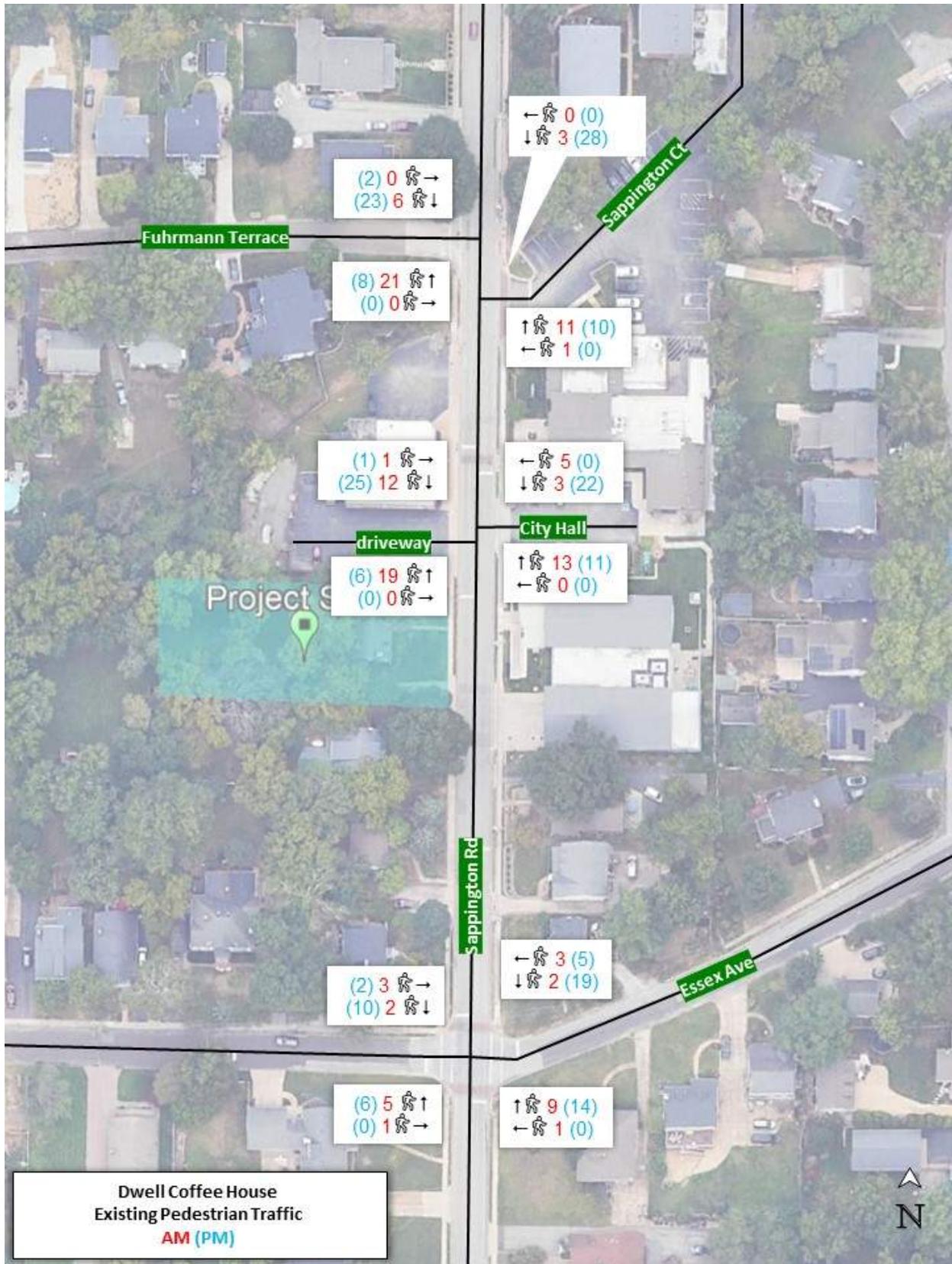


Figure 4 – Existing pedestrian volumes.

## Level of Service and Delay

Delay is one of the main components of measuring the service of an interrupted flow roadway. The principal measure of this delay is control delay which is defined by the Highway Capacity Manual (HCM) as “a quantitative stratification of a performance measure or measures representing quality of service.”

The Level of Service (LOS) designation was created as a tool to help laypersons and decision makers determine the difference in operating conditions for a particular location. There are six representative levels of service defined for each type of facility which can be analyzed, and they are designated using letters A through F. These letters are an attempt to translate “complex numerical performance results into a simple A-F system representative of travelers’ perceptions of the quality of service.” LOS calculations are provided for different modes of travel such as motorized vehicle, pedestrian, bicycle and transit modes. Safety of the intersection is not included in the analysis of LOS. Level of Service is defined separately for signalized intersections and unsignalized intersections as shown in Table 2.

Table 2 – Vehicular Level of Service for Control Delay			
Level of Service	Control Delay per Vehicle (seconds / vehicle)		Interpretation
	Signalized	Unsignalized	
A	0 – 10	0 – 10	Minimal control delay; traffic operates at primarily free-flow conditions; unimpeded movement within traffic stream.
B	10 – 20	10 – 15	Minor control delay at signalized intersections; traffic operates at an unimpeded level with slightly restricted movement within the traffic stream.
C	20 – 35	15 – 25	Moderate control delay; movement within traffic stream more restricted than at LOS B; formation of queues contributes to lower average travel speeds.
D	35 – 55	25 – 35	Considerable control delay that may be substantially increased by small increases in flow; average travel speeds continue to decrease.
E	55 – 80	35 – 50	High control delay; average travel speed no more than 33 percent of free flow speed.
F	> 80	> 50	Extremely high control delay; extensive queuing and high volumes create exceedingly restricted traffic flow.

LOS is a measure of the acceptability of the amount of delay and is therefore considered slightly subjective as what is acceptable in a major metropolitan area may not be acceptable in a smaller city or rural area. These delays are computed as the average control delay per vehicle arriving at the intersection. For signalized intersections, delays are evaluated for the overall intersection; at intersections without traffic signals, delay is analyzed for each movement separately and only includes side street traffic and left turns from the major street as the through movements on the major road are free flow movements.

Another factor evaluated when determining traffic operations at an intersection is the volume to capacity (v/c) ratio of the critical lane group. This ratio compares the rate of flow to the available capacity of the intersection and is considered a measure of the degree of saturation. Sustainable values of a v/c ratio range from 0.01 to 1.0. Values in excess of 1.0 indicate a possible excess of capacity and are considered to be LOS F.

In a dense urban area, it is generally acceptable to provide LOS D in all areas but consider LOS E in certain situations where traffic demand is very high on major arterial routes. Occasionally, side streets will be allowed to operate at LOS F when volume and demand on the side street is considered very low and servicing these vehicles would cause a greater negative impact on the progression of through traffic on the main route.

The peak hours of traffic from the collected traffic volumes were modeled in Synchro 12 modeling software for analysis. The analysis was conducted for the existing conditions during the peak hours of traffic in the morning and afternoon. Table 3 provides the results of the analysis, summarizing the Level of Service, delay, and the v/c ratio for the existing intersection conditions while the full model analysis is provided in Appendix B.

Table 3 – Existing Traffic Analysis						
	Weekday AM Peak			Weekday PM Peak		
	LOS	Delay	v/c	LOS	Delay	v/c
Sappington Rd & Fuhrmann Terr						
<i>Northbound Left</i>	-	-	-	A	8.0	0.01
<i>Eastbound</i>	B	10.6	0.02	B	12.6	0.01
<i>Westbound</i>	B	10.5	0.01	A	9.4	0.01
<i>Southbound Left</i>	A	7.8	0.01	A	7.7	0.01
Sappington Rd midblock crossing						
<i>Northbound</i>	A	9.2	0.33	A	8.8	0.27
<i>Southbound</i>	A	9.1	0.31	B	10.1	0.42
Sappington Rd & City Hall						
<i>Northbound Left</i>	A	7.8	0.01	-	-	-
<i>Eastbound</i>	A	9.7	0.01	B	10.3	0.01
<i>Westbound</i>	A	9.8	0.01	A	9.41	0.01
<i>Southbound Left</i>	A	7.8	0.01	A	7.7	0.01
Sappington Rd & Essex Ave						
<i>Northbound</i>	A	9.9	0.32	A	10.0	0.03
<i>Eastbound</i>	A	8.8	0.13	A	8.6	0.07
<i>Westbound</i>	A	8.6	0.09	A	8.8	0.09
<i>Southbound</i>	A	10.0	0.34	B	10.6	0.41

From the Synchro analysis, all intersections perform at an acceptable Level of Service (LOS) B or better. There are no significant delays at the intersections near the study area. Delays are typically less than 10-15 seconds at all locations and traffic appears to move freely in the area throughout the day.

# SECTION V

## COMPUTATION OF BACKGROUND TRAFFIC

---

Often when projecting traffic for a new development with a future opening date, it is necessary to project an increase in the existing traffic due to background growth in the area. This growth is typically from other sources including new developments and overall growth of the area. The project site is located within an established residential neighborhood. It does not appear there is much available space to spur new development. It is likely that some redevelopment could occur in the area as the retail space turns over and is reused, however it should not create a significant growth or change to the traffic volumes.

For this study, the growth rate for background traffic to be evaluated was assumed to be 0%, meaning that future traffic around the site would remain about the same as the existing traffic if the project was not built. The results of this assumption provide identical LOS results for a future no-build condition to those for existing traffic without the development.

# SECTION VI

## SITE LAYOUT

The proposed plan is to demolish the existing house to build a coffee shop with a driveway connecting to Sappington Road. The site plan is shown in Figure 5.

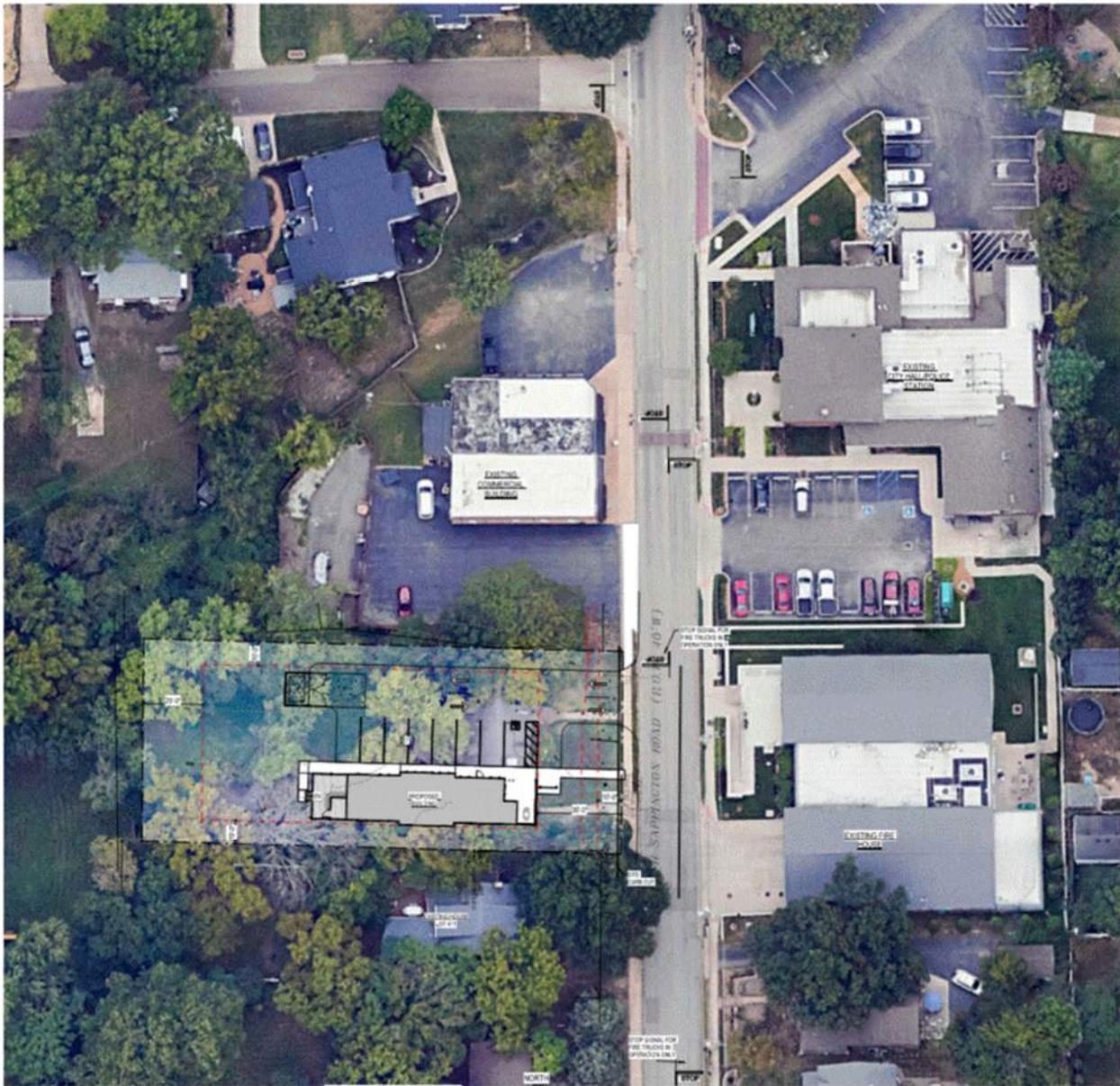


Figure 5 - Site plan.

# SECTION VII

## TRIP GENERATION

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When evaluating proposed traffic at a new development, it is necessary to estimate the number of new vehicle trips which will be created by the new uses at the site. This estimation of trips is generated using data obtained from traffic counts at other similar locations or by using the Institute of Transportation Engineers (ITE) [Trip Generation Manual](#). The ITE Manual collects data at existing sites for all types of uses such as schools, hotels, shopping centers, apartment complexes, subdivisions, offices, etc. and compiles it into book form as a reference for designers. The data in the 11<sup>th</sup> edition is based on more than 5,000 trip generation studies which have been collected over several decades by transportation professionals.

For most land uses, the collected data is broken into many different independent variables which can be used to perform the calculations, including comparing the number of trips to the gross floor area of the building, or in the case of residential comparing the number of trips to the number of housing units. Calculations can also be completed for an entire weekday, the traditional peak hours of adjacent street traffic (one hour between 7:00 AM and 9:00 AM or one hour between 4:00 PM and 6:00 PM), the peak hour of activity for the use type (known as AM Peak Generators or PM Peak Generators), Saturday traffic, or Sunday traffic.

For the proposed site, the trips generated by the land use could closely be modeled by Land Use (936) Coffee/Donut Shop without Drive-Through Window. TERRA reviewed the description for the land use.

### Land Use (936) Coffee/Donut Shop without Drive-Through Window

“This land use includes any coffee and donut restaurant that does not have a drive-through window. The restaurant sells freshly brewed coffee (along with coffee-related accessories) and a variety of food/drink products such as donuts, bagels, breads, muffins, cakes, sandwiches, wraps, salads, and other hot and cold beverages. The restaurant marketing and sales may emphasize coffee beverages over food (or vice versa).”

### Trip Generation Calculations

For a complete evaluation, TERRA ran calculations on Land Use (936) Coffee/Donut Shop without Drive-Through Window using the Gross Floor Area (GFA) as the independent variable. For the purpose of this study the trip generation plots used were the AM Peak of

Adjacent Street Traffic from 7-9 AM and the PM Peak of Adjacent Street Traffic from 4-6 PM which coincide with the peak traffic volumes on Sappington Road which were collected.

Trip generation calculations are performed using both the average rate provided for the vehicle trips per unit, and a fitted curve equation (when available) which is developed from the plots of data collected. Using both methods allows the higher value to be chosen should there be a difference in the total trips, however for this use a fitted curve equation was only available for the AM Peak of Adjacent Street Traffic.

A summary of the calculations is provided in Table 4 for the proposed site while plots from the trip generation manual showing the plots of the data based on the proposed site of the shop are provided in Appendix C.

Table 4 – Trip Generation Data				
Land Use (936) Coffee/Donut Shop without Drive-Through Window (vs 1.29 x 1000 GFA)				
	Average Rate		Fitted Curve	
	Enter	Exit	Enter	Exit
AM Peak of adj. street 7am-9am	61	59	-	-
PM Peak of adj. street 4pm-6pm	21	21	-	-

The trips calculated from the Trip Generation Manual data appeared to be too high for a coffee shop located on a local road inside a residential neighborhood which is not part of a commercial corridor. It is likely that most data points in the Trip Generation Manual are sites that are franchises, similar to a Starbucks or are coffee/donut shops located on collector or arterial roads with higher vehicle traffic or are near multiple other businesses that have a higher volume of vehicle trips. Most of the data points are sites greater than 1,290 gross square feet, with the average being 2,000 square feet. Because the proposed site is located in a residential neighborhood with moderate pedestrian traffic and is a boutique style coffee shop instead of a well-known franchise, it is likely the proposed site will have more trips made by walking than the sites surveyed in the Trip Generation Manual.

With this in mind, TERRA collected traffic and pedestrian trip data at Teleo Coffee, a coffee shop near a residential area in Kirkwood, Missouri. The shared parking lot for Teleo Coffee also contains a small financial planning office, and an American Legion building. There are also other office buildings and commercial areas nearby. Teleo Coffee is open from 6:00 AM to 4:30 PM, which is similar to when the proposed coffee shop is expected to be open. Figure 6 shows an aerial view of the coffee shop.

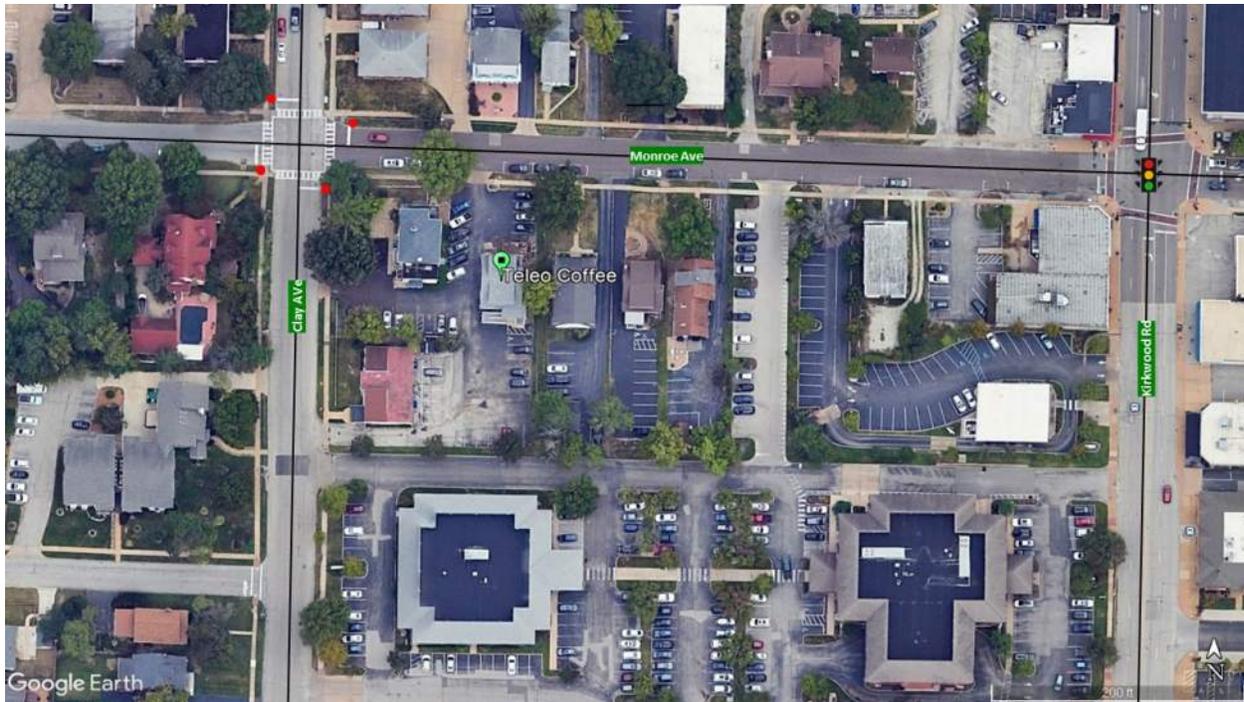


Figure 6 - Teleo Coffee in Kirkwood, MO.

TERRA collected vehicle and pedestrian data on at Teleo Coffee shop on Wednesday, February 26, 2025. The vehicle data were counts of vehicles entering and exiting the driveway on Monroe Avenue and the two driveways on Clay Avenue. The pedestrian data were counts of pedestrians entering the front and back doors of the coffee shop. This data is included in Appendix A.

TERRA first counted the person trips from 6:00 AM to 4:30 PM. The greatest number of person trips for a one-hour period in the morning occurred at the hour starting at 8:45 AM, in which there were 53 persons entering the shop and 34 persons exiting the shop for a total of 87 person trips. In the afternoon, the greatest number of trips occurs at the hour starting at 3:30 PM, in which there are 30 entering person trips and 32 exiting person trips, for a total of 62 person trips.

Based on when the peak hour of person trips occurred, TERRA counted vehicles in and out of the lot from 7:00 AM to 4:00 PM. The peak hour of vehicles entering the lot occurred starting at 7:45 AM, in which there were 39 entering vehicles and 25 exiting vehicles, for a total of 64 vehicle trips. Teleo's floor area is approximately 1,560 square feet, which does not include the 2<sup>nd</sup> floor. If 1,560 square feet of gross floor area was used as the independent variable in the Trip Generation Manual, 145 vehicle trips (74 entering and 71 exiting) would be estimated from the best fit line for Teleo Coffee, which is much greater than the vehicle and pedestrian trips observed by TERRA at the site.

A total of 189 vehicles were counted entering the Teleo lot and 177 vehicles exiting the lot between 7:00 AM and 4:00 PM. During this time, there were 267 entering person trips and 261 exiting person trips. If the vehicle trips for the financial planning firm and the American Legion are small enough to neglect, this equates to roughly 0.69 vehicles per person or an average occupancy of around 1.4 people per vehicle.

TERRA analyzed the Teleo Coffee building occupancy throughout the day and created a graph of persons inside the shop over time. TERRA also analyzed the parking lot occupancy throughout during the vehicle counts. It was assumed that zero (0) people were in the building at 6:00 AM, and using video from the traffic counters, five (5) vehicles were counted in the lot starting at 7:00 AM. Graphs for the building and parking lot occupancy are shown in Figure 7 and Figure 8.

From the pedestrian data, between 6:45 AM to 8:30 AM, there is a constant stream of people entering and exiting the building at about 7 entering persons every 15 minutes and about 6 exiting persons every 15 minutes, but from the occupancy graph, it appears that there is little fluctuation between 6:30 AM and 8:30 AM because the flow of persons in and out of the building is nearly balanced. After 8:30 AM, the occupancy of the building begins to increase, as people after 8:30 AM stay for longer. It is likely that between 6:30 AM and 8:30 AM, the patrons are passing by the coffee shop before going to school or place of employment, and patrons after 8:30 AM are patrons that primarily made a trip for the coffee shop.

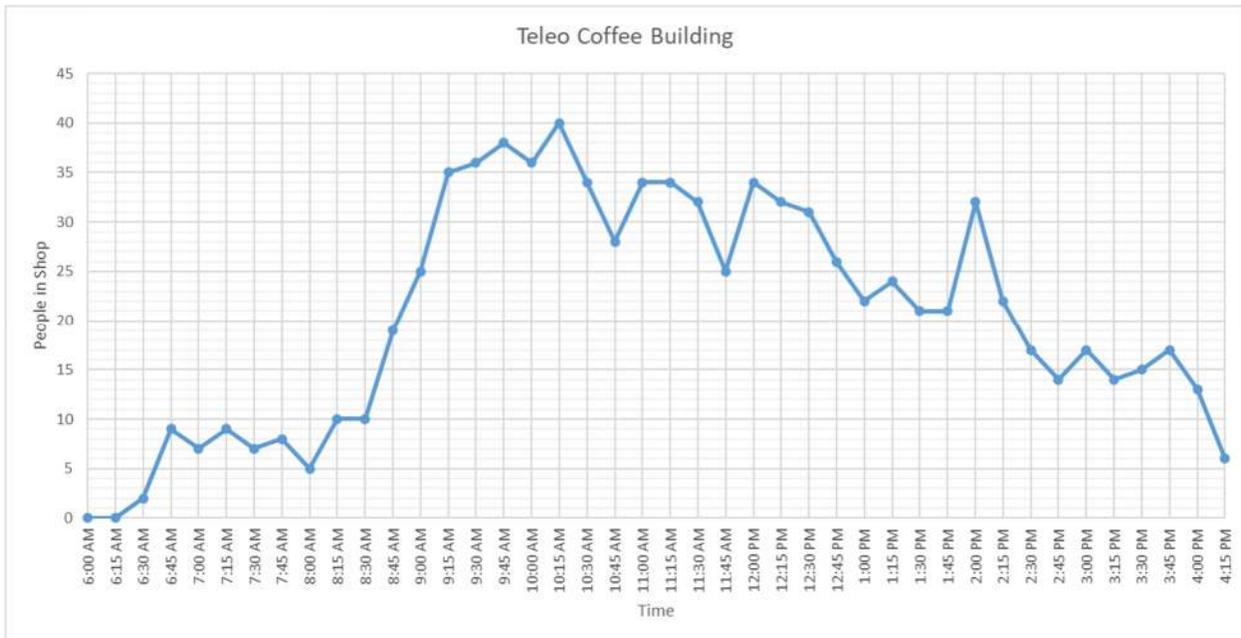


Figure 7 - Teleo Coffee building occupancy.

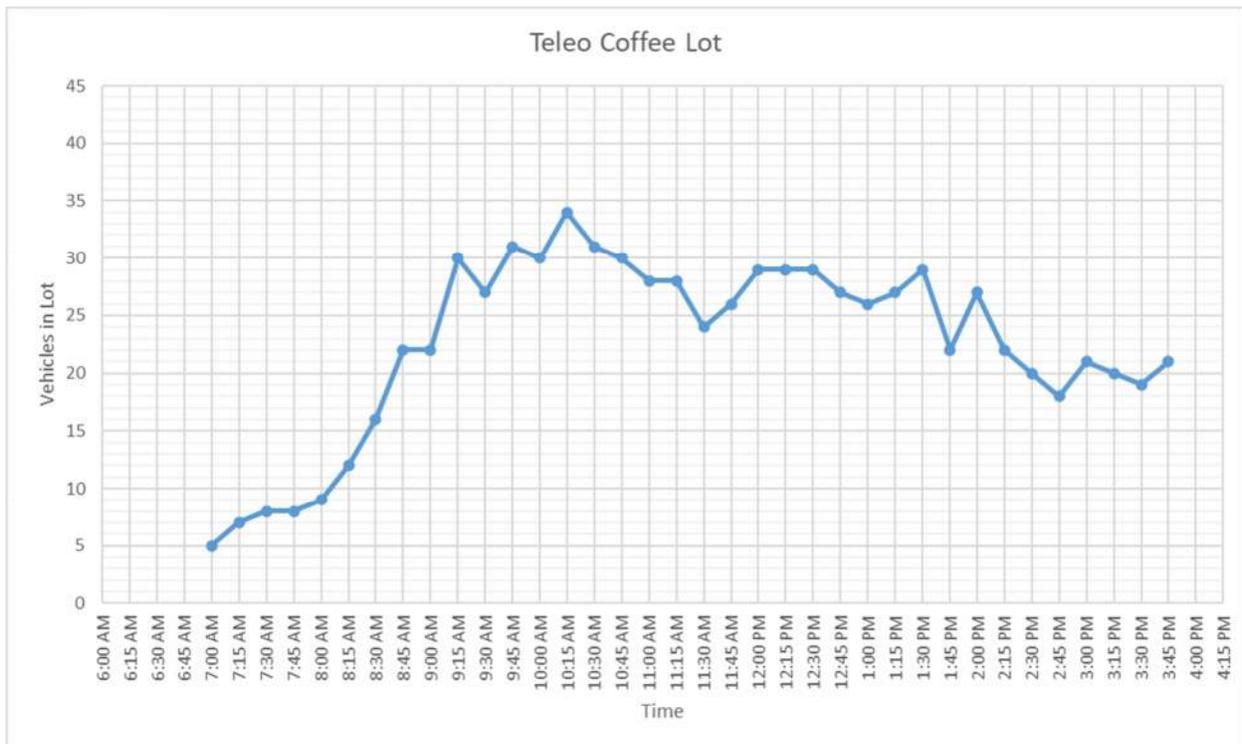


Figure 8 - Lot occupancy at Teleo Coffee.

Since the AM peak hour of traffic on Sappington Road begins at 7:45 AM, TERRA considered the vehicle trips into Teleo Coffee Shop from 7:45 AM to 8:45 AM. From 7:45 AM to 8:45 AM, there were a total of 39 vehicles entering the lot and 25 vehicles exiting the lot.

To estimate the trips at the Dwell Coffee Shop, TERRA assumed the distribution and total trips would be similar to Teleo but with some modifications. The gross floor area of Telco Coffee is larger than the proposed Dwell location so the smaller location would result in lower trips. Teleo also likely attracts trips from nearby offices and is located adjacent to a commercial area in Kirkwood with a higher density of people and vehicles which provide a larger pool of potential customers. Additionally, there is another small coffee shop which will be located in close proximity to this location which would further reduce trips. With these factors in mind, TERRA reduced the entering and exiting trips from Teleo by 25% to account for these differences. The estimated vehicle trips for the Dwell Coffee Shop generated during the AM peak hour of traffic then would theoretically be 30 entering vehicle trips and 27 exiting vehicle trips. The 27 projected trips exiting the site is actually greater than the value recorded at Teleo Coffee. This value was developed based on information which was calculated based on the projected pass-by trips which would be expected to arrive and leave within the same hour. This value also increases the total traffic at the site which provides a more conservative evaluation of the overall traffic during the

AM peak hour. This potential evaluation of pass-by trips will be discussed further in the trip assignments section.

The peak hour of PM traffic on Sappington Road began at 3:45 PM. From the person trips at Teleo Coffee, the occupancy of the building rapidly declines rapidly after 4:00 PM, and most person trips were exiting the building since the business closes at 4:30 PM. Between 3:00 PM and 4:00 PM, there are 11 vehicles entering the Teleo Coffee lot and 15 vehicles exiting the lot. Applying the 25% reduction to the Teleo Coffee shop trips and the proposed coffee shop, it is estimated during the PM peak hour of traffic, nine (9) vehicles would enter the shop and 12 vehicles would exit the shop.

Table 5 summarizes the vehicle trip generation.

Table 5 - Trip Generation Summary				
Teleo Coffee AM Peak			Dwell Coffee AM Peak	
Entering Vehicles	Exiting Vehicles		Entering Vehicles	Exiting Vehicles
39	25	25% Reduction ⇒	30	27*
Teleo Coffee PM Peak			Dwell Coffee PM Peak	
Entering Vehicles	Exiting Vehicles		Entering Vehicles	Exiting Vehicles
11	15	25% Reduction ⇒	9	12

\* Increased value based on pass-by trips during AM Peak

# SECTION VIII

## TRIP ASSIGNMENTS

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After the total vehicle trips the development would generate into the traffic network was calculated, the next step was to determine how the vehicles entering or exiting the site would maneuver around the traffic network. This is done by determining where the generated vehicles would enter and exit the network and assigning the generated trips as turning movements throughout the network.

Not all trips attracted to the site will be primary trips to the development. It is expected that some trips made by drivers will be for the sole purpose of visiting the site, however for a coffee shop, many trips are typically intermediate trips made on the way to another destination by vehicles already in the roadway network.

The ITE manual differentiates between three different types of trips. “Primary Trips” are trips made for the sole purpose of visiting a site, meaning that drivers leave an origin for the specific purpose of visiting the site and then potentially return to the origin. “Pass-By” trips are trips made by vehicles already on the adjacent road prior to the development, are driving past the access point to the site and enter the development as they are passing by before continuing on their original path to another destination. “Diverted Link” trips are vehicles that are nearby in the roadway network prior to the development, but now alter their path from their primary destination along a roadway not connected to the site entrances to visit the site before rerouting back through the network toward their original destination. Figure 9 graphically illustrates the different types of trips in a sample network. Since the number of vehicles turning away from the development on Essex Avenue and Fuhrmann Terrace were low, diverted link trips were not considered.

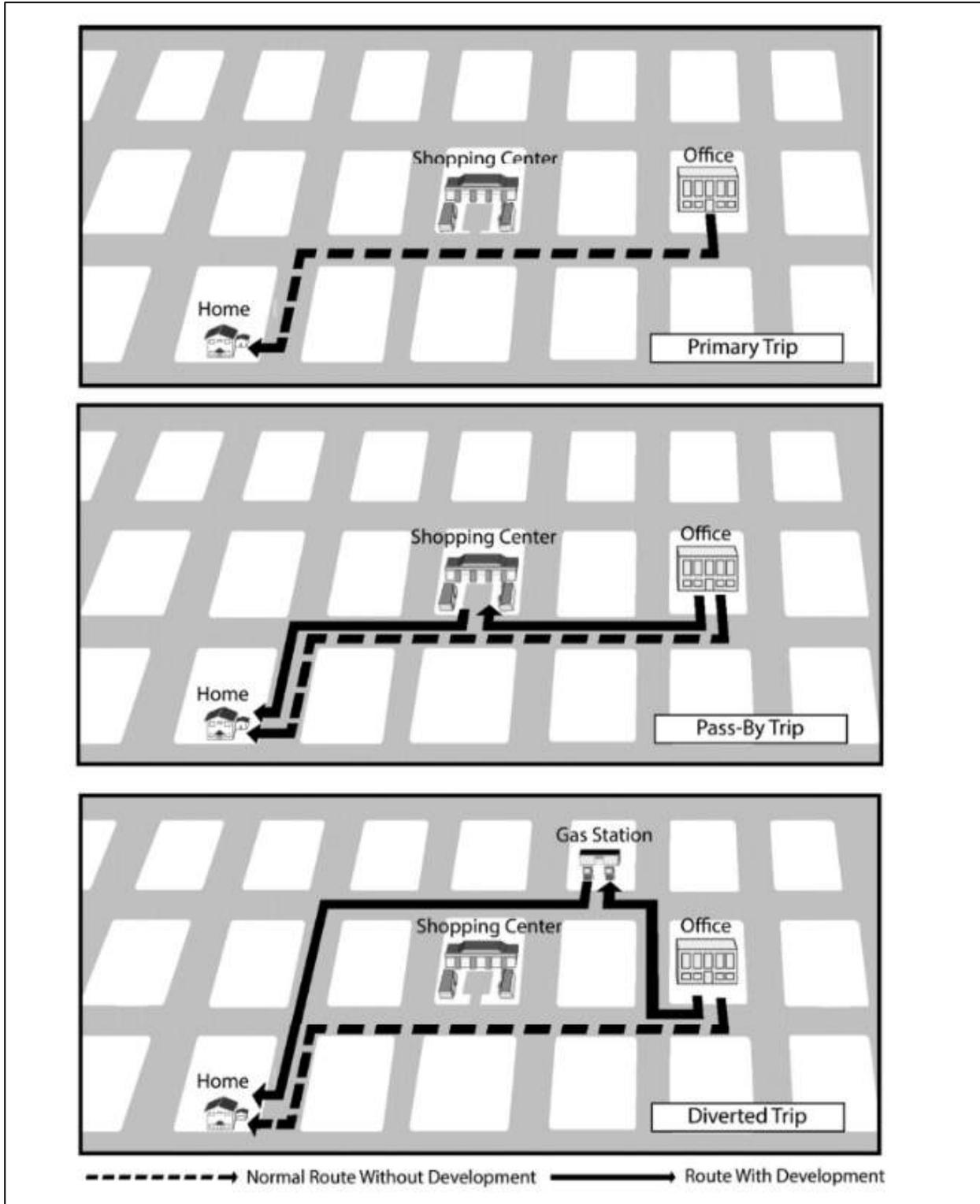


Figure 9 - Primary, Pass-by, and Diverted Link illustrations from the ITE Trip Generation Handbook 3rd Edition

The ITE Trip Generation Manual - Users Guide and Handbook provides estimated percentages of primary, pass-by, and diverted link trips for some land uses based on collected data at similar sites. These percentages are based on interviews with patrons entering and exiting various land use types during peak traffic hours. Based on information in the most recent edition of the handbook, no pass-by or diverted link data is provided for Land Use (936) Coffee/Donut Shop without Drive-Through Window. However as mentioned in the previous section, the type of patrons seen at Teleo Coffee between 7:45 AM to 8:30 AM appear to be making pass-by trips and those from 8:30 AM to 8:45 AM patrons seem to include more primary trips.

From the person trips at Teleo Coffee, it appears that 70% of trips during the AM peak are pass-by trips. For the PM peak hour of traffic, the building occupancy of Teleo fluctuates similarly, but for a conservative estimate, TERRA assumed 50% of site-generated trips were pass-by trips. For calculation purposes, TERRA assumed all pass-by trips would be made in the same hour, so the volume of pass-by trips entering and exiting would be the same, and the higher value of the entering and exiting trips was used as both the entering and exiting pass-by trips. Table 6 shows the primary and pass-by trips for vehicles entering and exiting the site.

Table 6 – Primary and Pass-by Trips			
Proposed Coffee Shop			
	Total Trips	Primary	Pass-by
AM Entering	30	9	21
AM Exiting	27	6	21
PM Entering	9	4	6
PM Exiting	12	6	6

The primary trips were assigned to the network based upon how traffic is currently entering and exiting the study area. To establish this traffic, TERRA evaluated the percentage of vehicles entering and exiting the external legs of the study intersections. This included the north and west legs of Sappington Road at Fuhrmann Terrace, and the west, south, and east legs of Sappington Road at Essex Avenue. The east leg of Sappington Road at Sappington Court was not considered because it functions primarily as a parking lot for City Hall and the adjacent condominiums.

The traffic volumes from each external legs were summed for both the AM and PM peaks of traffic hour which gave a total number of vehicles entering and exiting the study area. Then the entering and exiting volume at each external leg of was divided by the total number of vehicles entering or exiting the study area to get a percentage of traffic entering or exiting at each leg. Table 7 shows the percent of vehicles entering and exiting at each leg in the study area. Figure 10 graphically shows the percentages.

Table 7 – External Node Method Traffic Volume Percentages		
	Entering Intersection	
Sappington Rd & Fuhrmann Terr	AM Peak	PM Peak
Southbound (north leg)	38%	50%
Eastbound (west leg)	2%	0%
Sappington Rd & Essex Ave	AM Peak	PM Peak
Eastbound (west leg)	13%	6%
Northbound (south leg)	37%	36%
Westbound (east leg)	10%	8%
<b>Total*</b>	<b>100%</b>	<b>100%</b>
	Exiting Intersection	
Sappington Rd & Fuhrmann Terr	AM Peak	PM Peak
Northbound (north leg)	43%	32%
Westbound (west leg)	0%	2%
Sappington Rd & Essex Ave	AM Peak	PM Peak
Westbound (west leg)	11%	14%
Southbound (south leg)	42%	44%
Eastbound (east leg)	5%	8%
<b>Total*</b>	<b>101%</b>	<b>100%</b>

\*Values may not add to 100% due to rounding. Actual calculations were not rounded.

The primary trips were then multiplied by each percentage from Table 7 and were assigned to enter or leave the network from the corresponding leg of the intersection. The vehicles were then assigned throughout the network to and from the development. Figure 11 shows the trip assignment map for primary vehicles.

For pass-by trips, the directionality on Sappington Road at City Hall was used to determine how many vehicles in each direction would perform a pass-by trip. During the AM peak hour of traffic, 48% of vehicles traveled southbound, and 52% of vehicles traveled northbound. Once in the site, vehicles were assigned back to the direction they were originally travelling before altering their direction of travel. Figure 12 shows the trip assignment map for pass-by vehicles.

Figure 13 shows the combined trip assignments for primary and pass-by vehicles generated by the site.



Figure 10 – Percent of vehicles entering/exiting at external legs.







# SECTION IX

## OPENING DAY ANALYSIS

The next step in the process analyzing forecasted traffic was to add the assigned trips on the opening day of the development. The newly generated trips were then added to the existing traffic to develop a “Opening Day” traffic volumes which are shown in Figure 14. The opening day traffic model represents traffic around the study area with the new development fully built out and in operation.

The opening day traffic volumes were inserted into the Synchro 12 traffic modeling software and compared with the existing traffic model to determine if there were any significant changes to the traffic delay or LOS levels at the study intersections around the site. The modeled traffic performance of the intersection network for Opening Day is shown in Table 8. The full Synchro analysis is included in Appendix D.

Table 8 – Opening Day Traffic Analysis

	Weekday AM Peak			Weekday PM Peak		
	LOS	Delay	v/c	LOS	Delay	v/c
Sappington Rd & Fuhrmann Terr						
<i>Northbound Left</i>	-	-	-	A	8.0	0.01
<i>Eastbound</i>	B	10.7	0.02	B	12.7	0.01
<i>Westbound</i>	B	10.5	0.01	A	9.4	0.01
<i>Southbound Left</i>	A	7.8	0.01	A	7.7	0.01
Sappington Rd midblock crossing						
<i>Northbound</i>	A	9.3	0.33	A	8.8	0.27
<i>Southbound</i>	A	9.1	0.31	B	10.1	0.42
Sappington Rd & City Hall						
<i>Northbound Left</i>	A	7.8	0.01	-	-	-
<i>Eastbound</i>	A	9.7	0.01	B	10.3	0.01
<i>Westbound</i>	A	9.8	0.01	A	9.4	0.01
<i>Southbound Left</i>	A	7.8	0.01	A	7.7	0.01
Sappington Rd & Proposed Coffee Shop Lot						
<i>Northbound Left</i>	A	7.8	0.01	A	8.0	0.01
<i>Eastbound Left</i>	B	11.5	0.05	A	11.2	0.02
Sappington Rd & Essex Ave						
<i>Northbound</i>	A	9.9	0.33	A	10	0.35
<i>Eastbound</i>	A	8.8	0.13	A	8.6	0.07
<i>Westbound</i>	A	8.6	0.09	A	8.8	0.09
<i>Southbound</i>	B	10.1	0.35	B	10.7	0.42

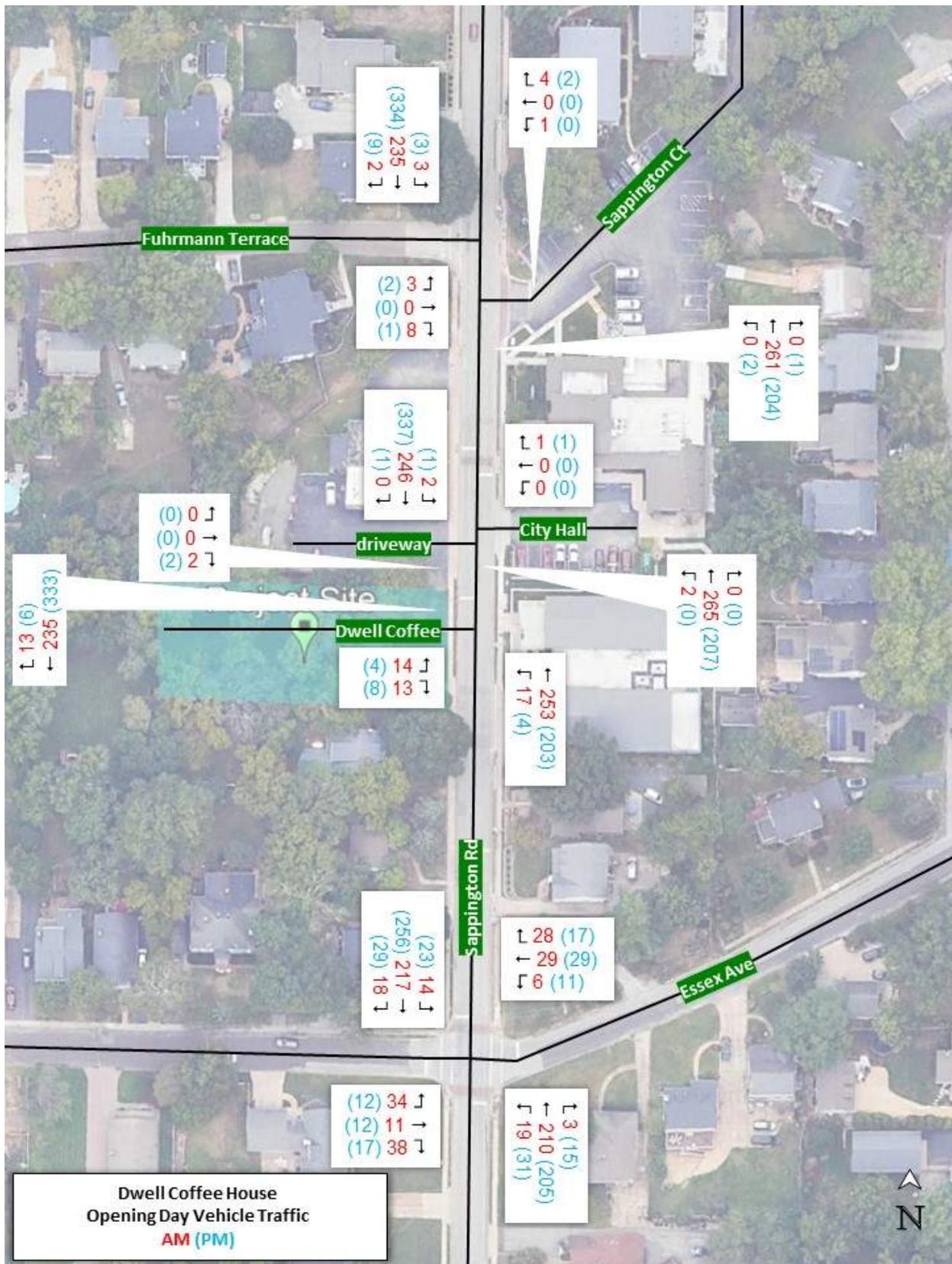


Figure 14 – Opening Day vehicle traffic.

Comparing the opening day scenario to the existing scenario, there is little to no impact on the study intersections due to the proposed coffee shop. The Level of Service (LOS) for the southbound movements on Sappington Road at Essex Avenue changes from a LOS A to a LOS B during the AM peak hour of traffic, however the LOS in the existing condition was on the threshold between LOS A and LOS B, at exactly 10.0 seconds of delay. The additional traffic increases the delay by 0.1 seconds, bringing it to LOS B with 10.1 seconds of delay.

# SECTION X

## PARKING ANALYSIS

The proposed coffee shop coffee shop has nine (9) parking spaces, one (1) of which is an American with Disabilities Act (ADA) space. Though 30 vehicles theoretically entered the site during the AM peak hour of traffic, 27 would also be expected to exit during the same hour. The number of pass-by trips is based on the profile of patrons at the Teleo Coffee shop. As mentioned previously in the report, from Figure 7, it appears that between 6:45 AM to 8:30 AM, there is a high turnover of patrons with few patrons lingering for longer periods in the shop. The person trips in and out of the building are shown in Table 9. From 6:45 AM to 8:30 AM, the number of people in and out of the building is high compared to the net change in the occupants of the building, consistent with a high turnover rate.

**Table 9 – Flow of Persons in Teleo Coffee During AM Peak Hour**

Time	Building Occupants	In	Out	Net
6:45 AM	9	5	7	-2
7:00 AM	7	5	3	2
7:15 AM	9	7	9	-2
7:30 AM	7	2	1	1
7:45 AM	8	10	13	-3
8:00 AM	5	15	10	5
8:15 AM	10	6	6	0

Based on the high turnover rate of Teleo Coffee, it is expected that in the morning most vehicle trips in the morning will be pass-by trips that turnover quickly. This Based on the location being in the middle of a residential area with few other nearby businesses, it is likely trips for extended stays at the coffee shop will include people walking from the neighborhood on foot which should reduce the number of vehicle trips developed previously.

As discussed earlier the later morning user at the coffee shop appears to change behaviors based on the time of day. Where morning commuters tend to stop in for coffee and then typically leave within a relatively short period of time, those arriving later appear to stay for longer periods at the shop. Looking again at the data from the Teleo Coffee shop beginning at 9:00 AM we can see that the total building occupants, which also includes their patio area increases as patrons arrive, but don't necessarily leave the property. It was noted that it was a very nice day in February when counts were collected which led to numerous customers observed in the video recordings on the patio throughout the day lingering for extended periods. The data observed at Teleo show the people at the shop increase to a maximum of 40 people around 10:15 AM and then fluctuate up and down throughout the day. The shop then begins lowering in occupancy throughout the afternoon until closing. Table 10 shows the flow of people in and out at Teleo throughout the morning.

Table 10 – Flow of Persons at Teleo Coffee During Mid-Morning				
Time	Building Occupants	In	Out	Net
9:00 AM	25	17	7	10
9:15 AM	35	15	14	1
9:30 AM	36	8	6	2
9:45 AM	38	8	10	-2
10:00 AM	36	11	7	4
10:15 AM	40	6	12	-6
10:30 AM	34	7	13	-6
10:45 AM	28	10	4	6
11:00 AM	34	6	6	0
11:15 AM	34	10	12	-2
11:30 AM	32	3	10	-7
11:45 AM	25	11	2	9
12:00 PM	34	5	7	-2

Applying this data to the dwell location in Glendale, it has been noted that the density of the area is lower with a more residential area as the base for the customers. Also, there is another coffee shop of a similar style to be opened in the vicinity which should also split the volume of users between coffee shop options. To estimate the potential person trips throughout the day TERRA assumed that the mid-morning trips would be about 50% of the observed volumes at Teleo Coffee. The values in Table 10 were multiplied by 50% and then rounded up. These estimated values for person trips are then provided in Table 11.

Table 11 – Projected Person Trips at Dwell Coffee During Mid-Morning				
Time	Building Occupants	In	Out	Net
9:00 AM	13	9	4	5
9:15 AM	18	8	7	1
9:30 AM	19	4	3	1
9:45 AM	20	4	5	-1
10:00 AM	19	6	4	2
10:15 AM	21	3	6	-3
10:30 AM	18	4	7	-3
10:45 AM	15	5	2	3
11:00 AM	18	3	3	0
11:15 AM	18	5	6	-1
11:30 AM	17	2	5	-3
11:45 AM	14	6	1	5
12:00 PM	19	3	4	-1

As discussed in the existing analysis of the traffic from Teleo Coffee that the approximate value of vehicles per person was about 0.69 at their location. This value does consider that some vehicles have more than one occupant and would also account for anyone walking to the store. It would be expected that this ratio would be lower at Dwell Coffee due to the walkability of the neighborhood which may reduce the vehicles per person as low as 0.50 for Dwell Coffee shop. Using 0.50 vehicles per person trip yields the estimated vehicles provided in Table 12. Based on these projections it appears that the parking provided should be adequate for the expected typical daily traffic.

Table 12 – Projected Vehicle Trips at Dwell Coffee During Mid-Morning				
Time	Vehicles	In	Out	Net
9:00 AM	6	5	2	3
9:15 AM	9	4	4	0
9:30 AM	9	2	2	0
9:45 AM	9	2	3	-1
10:00 AM	8	3	2	1
10:15 AM	9	2	3	-1
10:30 AM	8	2	4	-2
10:45 AM	6	3	1	2
11:00 AM	8	2	2	0
11:15 AM	8	3	3	0
11:30 AM	8	1	3	-2
11:45 AM	6	3	1	2
12:00 PM	8	2	2	0



# SECTION XI

## SUMMARY AND CONCLUSIONS

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This study was undertaken to determine the impact of developing a parcel in Glendale, MO near City Hall into the Dwell Coffee House. Existing traffic data was collected in February 2024 at the intersections near the site to determine the existing traffic patterns around the parcel.

The existing traffic was modeled in Synchro 12 traffic simulation software. In the existing condition traffic model, all turn movements perform at Level of Service (LOS) B or better.

Because of the unique location and boutique style of the proposed coffee shop, vehicle trips generated by the site were not estimated using Institute of Transportation Engineers (ITE) Trip Generation Manual as it would be expected that these trips would be an overestimation as many of the sites in the manual include large chains like Starbucks. To estimate the trips, TERRA measured the person trips and vehicle trips of Teleo Coffee in Kirkwood, MO, a nearby similar style of coffee shop to the proposed coffee shop and used the trip data to estimate how many trips the proposed coffee shop might generate. Based on the flow of persons and vehicles in and out of Teleo Coffee, TERRA was also able to estimate the percentage of pass-by trips and average number of vehicles per person.

The generated trips were assigned to the network based on the existing traffic patterns in the network and where vehicles were likely to access the site. The assigned trips were then added to the existing traffic model to create an Opening Day model.

The Opening Day model which simulates traffic with the development in place was analyzed in Synchro. The overall intersection performance appears similar to the existing condition with no significant change in the average delay and LOS which is due to the small change in additional new primary trips. From a LOS perspective, the addition of the coffee shop does not appear to have a noticeable impact on the traffic.

It was inferred from the turnover rate at the model coffee shop, that the morning rush hour would consist of a large number of pass-by trips which stay for a short duration which should keep the parking turnover rate high. It was noted that patrons later in the morning may be expected to stay longer in the shop which will increase parking duration, but based on assumptions including being in the middle of a residential area, the neighborhood walkability and another nearby adjacent coffee shop the expected volumes of vehicles expected throughout the day should be manageable with the proposed parking.



# APPENDIX A

## EXISTING TRAFFIC DATA

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# APPENDIX B

## EXISTING SYNCHRO OUTPUT

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# APPENDIX C

# TRIP GENERATION

# CALCULATIONS

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# APPENDIX D

# OPENING DAY SYNCHRO

# OUTPUT

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# APPENDIX A

## EXISTING TRAFFIC DATA

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Sappington Rd & Fuhrmann Terrace - TMC

Tue Feb 25, 2025

Full Length (7 AM-9 AM, 2 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1272166, Location: 38.590078, -90.386483



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6,  
Saint Louis, MO, 63119, US

Leg Direction	Sappington Rd Southbound							Sappington Ct Westbound							Sappington Rd Northbound						
Time	R	BR	T	L	U	App	Ped*	R	T	BL	L	U	App	Ped*	R	T	L	HL	U	App	Ped*
2025-02-25 7:00AM	0	1	27	0	0	28	0	1	0	0	0	0	1	2	0	29	0	0	0	29	0
7:15AM	2	0	40	0	0	42	0	0	0	0	1	0	1	1	0	38	0	0	0	38	0
7:30AM	1	0	58	0	0	59	0	0	0	0	1	0	1	2	0	62	2	1	0	65	0
7:45AM	1	2	54	1	0	58	0	0	0	0	1	0	1	1	0	72	0	0	0	72	0
Hourly Total	4	3	179	1	0	187	0	1	0	0	3	0	4	6	0	201	2	1	0	204	0
8:00AM	0	0	50	0	0	50	0	3	0	0	0	0	3	6	0	50	0	2	0	52	0
8:15AM	1	0	55	0	0	56	0	1	0	0	0	0	1	7	0	78	0	0	0	78	0
8:30AM	0	0	71	2	0	73	0	0	0	0	0	0	0	0	0	58	0	0	0	58	1
8:45AM	0	1	47	0	0	48	0	0	0	0	0	0	0	1	0	48	0	0	0	48	0
Hourly Total	1	1	223	2	0	227	0	4	0	0	0	0	4	14	0	234	0	2	0	236	1
2:00PM	1	0	46	1	0	48	1	0	0	0	2	0	2	6	0	39	0	0	0	39	0
2:15PM	1	1	34	0	0	36	0	1	0	0	0	0	1	5	1	29	1	0	0	31	0
2:30PM	0	0	38	2	0	40	4	0	0	0	2	0	2	5	1	33	0	0	0	34	0
2:45PM	1	0	51	0	0	52	1	0	0	0	0	0	0	1	1	37	1	1	0	40	0
Hourly Total	3	1	169	3	0	176	6	1	0	0	4	0	5	17	3	138	2	1	0	144	0
3:00PM	1	0	48	1	0	50	0	0	0	0	1	0	1	2	1	49	2	0	0	52	0
3:15PM	2	0	43	2	0	47	5	1	0	0	1	0	2	5	1	64	2	0	0	67	0
3:30PM	0	0	47	0	0	47	1	1	0	0	1	0	2	7	0	54	1	0	0	55	0
3:45PM	5	0	110	0	0	115	0	1	0	0	0	0	1	13	0	32	1	0	0	33	0
Hourly Total	8	0	248	3	0	259	6	3	0	0	3	0	6	27	2	199	6	0	0	207	0
4:00PM	1	0	83	0	0	84	0	1	0	0	0	0	1	16	0	44	0	0	0	44	0
4:15PM	2	0	80	0	0	82	1	0	0	0	0	0	0	4	1	69	0	0	0	70	0
4:30PM	1	0	59	3	0	63	1	0	0	0	0	0	0	5	0	57	1	0	0	58	0
4:45PM	1	0	74	2	0	77	0	1	0	0	0	0	1	8	0	63	3	0	0	66	0
Hourly Total	5	0	296	5	0	306	2	2	0	0	0	0	2	33	1	233	4	0	0	238	0
5:00PM	1	0	74	1	0	76	0	2	0	0	3	0	5	0	0	52	1	0	0	53	0
5:15PM	2	1	67	0	0	70	5	1	0	0	0	0	1	0	2	51	0	0	0	53	0
5:30PM	2	0	76	0	0	78	0	1	0	0	0	0	1	0	2	54	0	0	0	56	0
5:45PM	3	0	66	1	0	70	0	1	0	0	0	0	1	0	0	38	0	0	0	38	0
Hourly Total	8	1	283	2	0	294	5	5	0	0	3	0	8	0	4	195	1	0	0	200	0
<b>Total</b>	29	6	1398	16	0	1449	19	16	0	0	13	0	29	97	10	1200	15	4	0	1229	1
<b>% Approach</b>	2.0%	0.4%	96.5%	1.1%	0%	-	-	55.2%	0%	0%	44.8%	0%	-	-	0.8%	97.6%	1.2%	0.3%	0%	-	-
<b>% Total</b>	1.1%	0.2%	50.8%	0.6%	0%	52.7%	-	0.6%	0%	0%	0.5%	0%	1.1%	-	0.4%	43.6%	0.5%	0.1%	0%	44.7%	-
<b>Lights</b>	27	6	1379	16	0	1428	-	16	0	0	13	0	29	-	9	1168	14	4	0	1195	-
<b>% Lights</b>	93.1%	100%	98.6%	100%	0%	98.6%	-	100%	0%	0%	100%	0%	100%	-	90.0%	97.3%	93.3%	100%	0%	97.2%	-
<b>Articulated Trucks</b>	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	2	0	0	0	2	-
<b>% Articulated Trucks</b>	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	0%	0.2%	0%	0%	0%	0.2%	-
<b>Buses and Single-Unit Trucks</b>	2	0	19	0	0	21	-	0	0	0	0	0	0	-	1	30	1	0	0	32	-
<b>% Buses and Single-Unit Trucks</b>	6.9%	0%	1.4%	0%	0%	1.4%	-	0%	0%	0%	0%	0%	0%	-	10.0%	2.5%	6.7%	0%	0%	2.6%	-
<b>Pedestrians</b>	-	-	-	-	-	-	17	-	-	-	-	-	-	80	-	-	-	-	-	-	1
<b>% Pedestrians</b>	-	-	-	-	-	-	89.5%	-	-	-	-	-	-	82.5%	-	-	-	-	-	-	100%
<b>Bicycles on Crosswalk</b>	-	-	-	-	-	-	2	-	-	-	-	-	-	17	-	-	-	-	-	-	0
<b>% Bicycles on Crosswalk</b>	-	-	-	-	-	-	10.5%	-	-	-	-	-	-	17.5%	-	-	-	-	-	-	0%

\*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

Sappington Rd & Fuhrmann Terrace - TMC

Tue Feb 25, 2025

Full Length (7 AM-9 AM, 2 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1272166, Location: 38.590078, -90.386483



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6,  
Saint Louis, MO, 63119, US

Leg Direction	Vitale's Deli Northeastbound								Fuhrmann Terrace Eastbound								Int
	HR	BR	BL	HL	U	App	Ped*	HR	R	T	L	U	App	Ped*			
Time																	
2025-02-25 7:00AM	0	0	0	0	0	0	1	0	1	0	1	0	2	0	60		
7:15AM	0	0	0	0	0	0	4	0	2	0	2	0	4	4	85		
7:30AM	0	0	0	0	0	0	1	0	1	0	0	0	1	1	126		
7:45AM	1	0	0	0	0	1	0	0	1	0	0	0	1	0	133		
Hourly Total	1	0	0	0	0	1	6	0	5	0	3	0	8	5	404		
8:00AM	1	0	0	0	0	1	4	0	1	0	1	0	2	4	108		
8:15AM	1	0	0	0	0	1	14	0	2	0	2	0	4	15	140		
8:30AM	0	0	0	0	0	0	8	0	4	0	0	0	4	8	135		
8:45AM	0	0	1	0	0	1	0	0	1	0	0	0	1	0	98		
Hourly Total	2	0	1	0	0	3	26	0	8	0	3	0	11	27	481		
2:00PM	0	0	0	0	0	0	1	0	1	0	0	0	1	1	90		
2:15PM	1	0	0	0	0	1	1	0	2	0	0	0	2	1	71		
2:30PM	0	0	0	0	0	0	1	0	2	0	0	0	2	2	78		
2:45PM	1	0	2	0	0	3	1	0	0	0	0	0	0	0	95		
Hourly Total	2	0	2	0	0	4	4	0	5	0	0	0	5	4	334		
3:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	103		
3:15PM	1	0	0	0	0	1	6	0	0	0	1	0	1	7	118		
3:30PM	0	0	0	0	0	0	5	0	0	0	0	0	0	5	104		
3:45PM	0	0	0	0	0	0	17	0	0	0	1	0	1	15	150		
Hourly Total	1	0	0	0	0	1	28	0	0	0	2	0	2	27	475		
4:00PM	0	0	0	0	0	0	6	0	0	0	0	0	0	5	129		
4:15PM	0	0	0	0	0	0	7	0	1	0	0	0	1	9	153		
4:30PM	0	0	0	0	0	0	3	0	0	0	1	0	1	2	122		
4:45PM	0	0	0	0	0	0	3	0	0	0	0	0	0	3	144		
Hourly Total	0	0	0	0	0	0	19	0	1	0	1	0	2	19	548		
5:00PM	0	0	0	0	0	0	1	0	1	0	0	0	1	1	135		
5:15PM	0	0	1	0	0	1	0	0	0	0	1	0	1	2	126		
5:30PM	0	0	0	0	0	0	1	0	0	0	2	0	2	1	137		
5:45PM	0	0	0	0	0	0	6	0	0	0	1	0	1	6	110		
Hourly Total	0	0	1	0	0	1	8	0	1	0	4	0	5	10	508		
<b>Total</b>	6	0	4	0	0	10	91	0	20	0	13	0	33	92	2750		
<b>% Approach</b>	60.0%	0%	40.0%	0%	0%	-	-	0%	60.6%	0%	39.4%	0%	-	-	-		
<b>% Total</b>	0.2%	0%	0.1%	0%	0%	0.4%	-	0%	0.7%	0%	0.5%	0%	1.2%	-	-		
<b>Lights</b>	6	0	4	0	0	10	-	0	19	0	13	0	32	-	2694		
<b>% Lights</b>	100%	0%	100%	0%	0%	100%	-	0%	95.0%	0%	100%	0%	97.0%	-	98.0%		
<b>Articulated Trucks</b>	0	0	0	0	0	0	-	0	0	0	0	0	0	-	2		
<b>% Articulated Trucks</b>	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	0.1%		
<b>Buses and Single-Unit Trucks</b>	0	0	0	0	0	0	-	0	1	0	0	0	1	-	54		
<b>% Buses and Single-Unit Trucks</b>	0%	0%	0%	0%	0%	0%	-	0%	5.0%	0%	0%	0%	3.0%	-	2.0%		
<b>Pedestrians</b>	-	-	-	-	-	-	78	-	-	-	-	-	-	88	-		
<b>% Pedestrians</b>	-	-	-	-	-	-	85.7%	-	-	-	-	-	-	95.7%	-		
<b>Bicycles on Crosswalk</b>	-	-	-	-	-	-	13	-	-	-	-	-	-	4	-		
<b>% Bicycles on Crosswalk</b>	-	-	-	-	-	-	14.3%	-	-	-	-	-	-	4.3%	-		

\*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

**Sappington Rd & Fuhrmann Terrace - TMC**

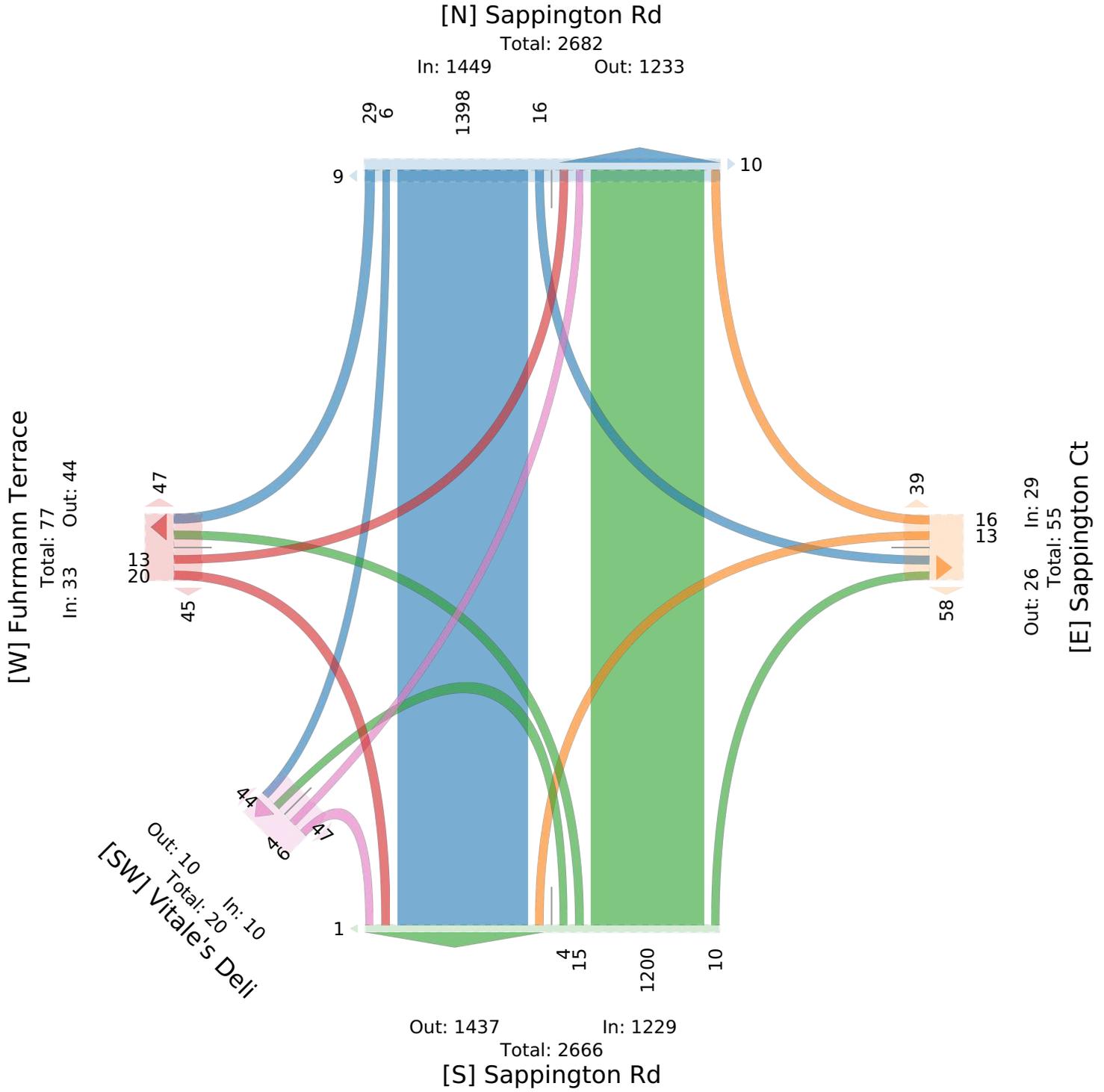
Tue Feb 25, 2025

Full Length (7 AM-9 AM, 2 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1272166, Location: 38.590078, -90.386483



Sappington Rd & Fuhrmann Terrace - TMC

Tue Feb 25, 2025

AM Peak, Forced Peak (7:45 AM - 8:45 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1272166, Location: 38.590078, -90.386483



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6,  
Saint Louis, MO, 63119, US

Leg Direction	Sappington Rd Southbound							Sappington Ct Westbound							Sappington Rd Northbound						
	R	BR	T	L	U	App	Ped*	R	T	BL	L	U	App	Ped*	R	T	L	HL	U	App	Ped*
2025-02-25 7:45AM	1	2	54	1	0	58	0	0	0	0	1	0	1	1	0	72	0	0	0	72	0
8:00AM	0	0	50	0	0	50	0	3	0	0	0	0	3	6	0	50	0	2	0	52	0
8:15AM	1	0	55	0	0	56	0	1	0	0	0	0	1	7	0	78	0	0	0	78	0
8:30AM	0	0	71	2	0	73	0	0	0	0	0	0	0	0	0	58	0	0	0	58	1
<b>Total</b>	2	2	230	3	0	237	0	4	0	0	1	0	5	14	0	258	0	2	0	260	1
<b>% Approach</b>	0.8%	0.8%	97.0%	1.3%	0%	-	-	80.0%	0%	0%	20.0%	0%	-	-	0%	99.2%	0%	0.8%	0%	-	-
<b>% Total</b>	0.4%	0.4%	44.6%	0.6%	0%	45.9%	-	0.8%	0%	0%	0.2%	0%	1.0%	-	0%	50.0%	0%	0.4%	0%	50.4%	-
<b>PHF</b>	0.500	0.250	0.810	0.375	-	0.812	-	0.333	-	-	0.250	-	0.417	-	-	0.827	-	0.250	-	0.833	-
<b>Lights</b>	2	2	226	3	0	233	-	4	0	0	1	0	5	-	0	251	0	2	0	253	-
<b>% Lights</b>	100%	100%	98.3%	100%	0%	98.3%	-	100%	0%	0%	100%	0%	100%	-	0%	97.3%	0%	100%	0%	97.3%	-
<b>Articulated Trucks</b>	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-
<b>% Articulated Trucks</b>	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-
<b>Buses and Single-Unit Trucks</b>	0	0	4	0	0	4	-	0	0	0	0	0	0	-	0	7	0	0	0	7	-
<b>% Buses and Single-Unit Trucks</b>	0%	0%	1.7%	0%	0%	1.7%	-	0%	0%	0%	0%	0%	0%	-	0%	2.7%	0%	0%	0%	2.7%	-
Pedestrians	-	-	-	-	-	-	0	-	-	-	-	-	-	13	-	-	-	-	-	-	1
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	92.9%	-	-	-	-	-	-	100%
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	7.1%	-	-	-	-	-	-	0%

\*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

Sappington Rd & Fuhrmann Terrace - TMC

Tue Feb 25, 2025

AM Peak, Forced Peak (7:45 AM - 8:45 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1272166, Location: 38.590078, -90.386483



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6,  
Saint Louis, MO, 63119, US

Leg Direction	Vitale's Deli Northeastbound							Fuhrmann Terrace Eastbound							
Time	HR	BR	BL	HL	U	App	Ped*	HR	R	T	L	U	App	Ped*	Int
2025-02-25 7:45AM	1	0	0	0	0	1	0	0	1	0	0	0	1	0	133
8:00AM	1	0	0	0	0	1	4	0	1	0	1	0	2	4	108
8:15AM	1	0	0	0	0	1	14	0	2	0	2	0	4	15	140
8:30AM	0	0	0	0	0	0	8	0	4	0	0	0	4	8	135
<b>Total</b>	3	0	0	0	0	3	26	0	8	0	3	0	11	27	516
<b>% Approach</b>	100%	0%	0%	0%	0%	-	-	0%	72.7%	0%	27.3%	0%	-	-	-
<b>% Total</b>	0.6%	0%	0%	0%	0%	0.6%	-	0%	1.6%	0%	0.6%	0%	2.1%	-	-
<b>PHF</b>	0.750	-	-	-	-	0.750	-	-	0.500	-	0.375	-	0.688	-	0.921
<b>Lights</b>	3	0	0	0	0	3	-	0	7	0	3	0	10	-	504
<b>% Lights</b>	100%	0%	0%	0%	0%	100%	-	0%	87.5%	0%	100%	0%	90.9%	-	97.7%
<b>Articulated Trucks</b>	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0
<b>% Articulated Trucks</b>	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	0%
<b>Buses and Single-Unit Trucks</b>	0	0	0	0	0	0	-	0	1	0	0	0	1	-	12
<b>% Buses and Single-Unit Trucks</b>	0%	0%	0%	0%	0%	0%	-	0%	12.5%	0%	0%	0%	9.1%	-	2.3%
Pedestrians	-	-	-	-	-	-	20	-	-	-	-	-	-	27	-
% Pedestrians	-	-	-	-	-	-	76.9%	-	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	-	6	-	-	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	23.1%	-	-	-	-	-	-	0%	-

\*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

**Sappington Rd & Fuhrmann Terrace - TMC**

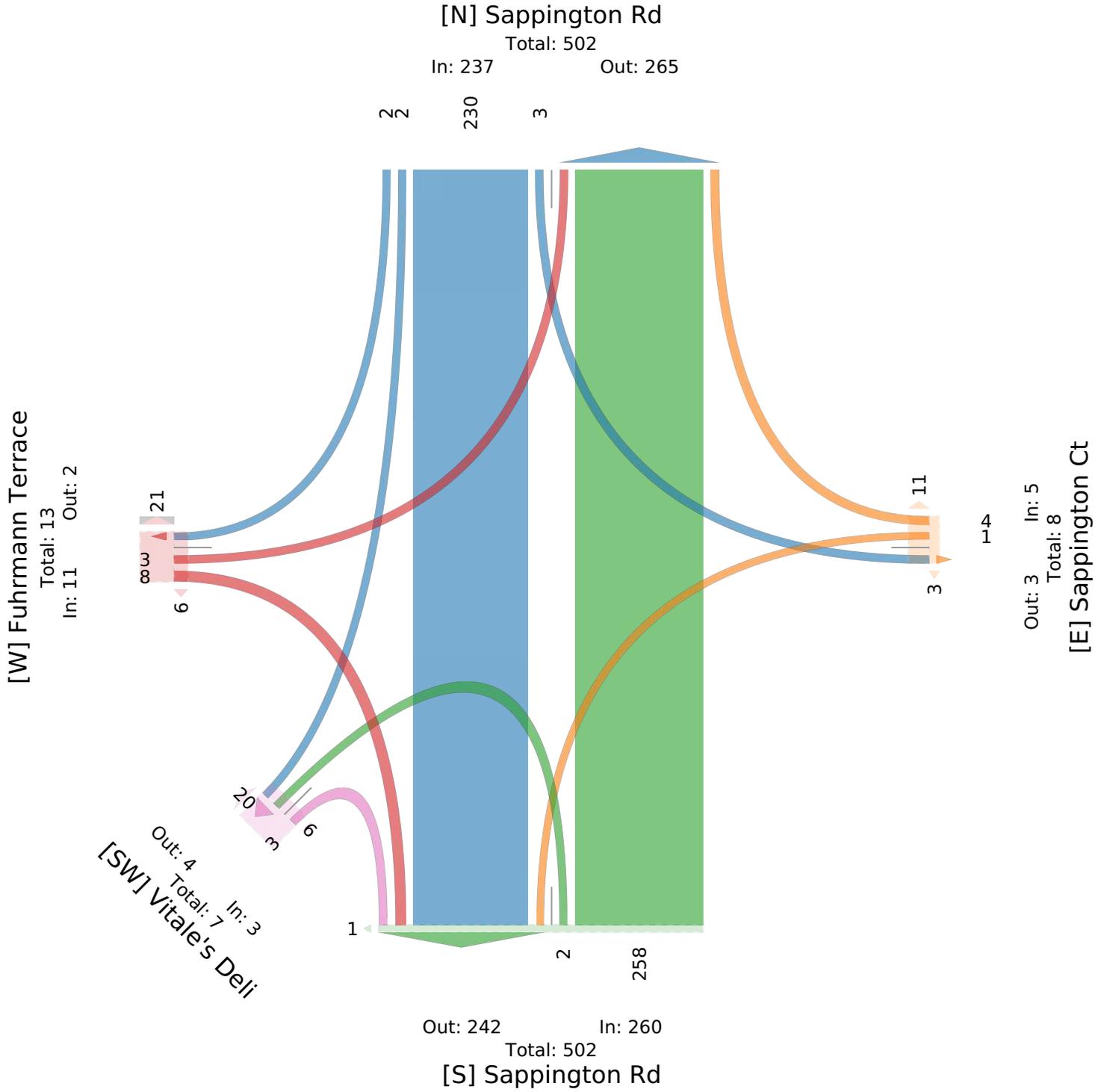
Tue Feb 25, 2025

AM Peak, Forced Peak (7:45 AM - 8:45 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1272166, Location: 38.590078, -90.386483



Sappington Rd & Fuhrmann Terrace - TMC

Tue Feb 25, 2025

PM Peak (3:45 PM - 4:45 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1272166, Location: 38.590078, -90.386483



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6,  
Saint Louis, MO, 63119, US

Leg Direction	Sappington Rd Southbound							Sappington Ct Westbound							Sappington Rd Northbound						
	R	BR	T	L	U	App	Ped*	R	T	BL	L	U	App	Ped*	R	T	L	HL	U	App	Ped*
2025-02-25 3:45PM	5	0	110	0	0	115	0	1	0	0	0	0	1	13	0	32	1	0	0	33	0
4:00PM	1	0	83	0	0	84	0	1	0	0	0	0	1	16	0	44	0	0	0	44	0
4:15PM	2	0	80	0	0	82	1	0	0	0	0	0	0	4	1	69	0	0	0	70	0
4:30PM	1	0	59	3	0	63	1	0	0	0	0	0	0	5	0	57	1	0	0	58	0
<b>Total</b>	9	0	332	3	0	344	2	2	0	0	0	0	2	38	1	202	2	0	0	205	0
<b>% Approach</b>	2.6%	0%	96.5%	0.9%	0%	-	-	100%	0%	0%	0%	0%	-	-	0.5%	98.5%	1.0%	0%	0%	-	-
<b>% Total</b>	1.6%	0%	59.9%	0.5%	0%	62.1%	-	0.4%	0%	0%	0%	0%	0.4%	-	0.2%	36.5%	0.4%	0%	0%	37.0%	-
<b>PHF</b>	0.450	-	0.755	0.250	-	0.748	-	0.500	-	-	-	-	0.500	-	0.250	0.732	0.500	-	-	0.732	-
<b>Lights</b>	9	0	329	3	0	341	-	2	0	0	0	0	2	-	1	200	2	0	0	203	-
<b>% Lights</b>	100%	0%	99.1%	100%	0%	99.1%	-	100%	0%	0%	0%	0%	100%	-	100%	99.0%	100%	0%	0%	99.0%	-
<b>Articulated Trucks</b>	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-
<b>% Articulated Trucks</b>	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-
<b>Buses and Single-Unit Trucks</b>	0	0	3	0	0	3	-	0	0	0	0	0	0	-	0	2	0	0	0	2	-
<b>% Buses and Single-Unit Trucks</b>	0%	0%	0.9%	0%	0%	0.9%	-	0%	0%	0%	0%	0%	0%	-	0%	1.0%	0%	0%	0%	1.0%	-
Pedestrians	-	-	-	-	-	-	1	-	-	-	-	-	-	28	-	-	-	-	-	-	0
<b>% Pedestrians</b>	-	-	-	-	-	-	50.0%	-	-	-	-	-	-	73.7%	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	-	1	-	-	-	-	-	-	10	-	-	-	-	-	-	0
<b>% Bicycles on Crosswalk</b>	-	-	-	-	-	-	50.0%	-	-	-	-	-	-	26.3%	-	-	-	-	-	-	-

\*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

Sappington Rd & Fuhrmann Terrace - TMC

Tue Feb 25, 2025

PM Peak (3:45 PM - 4:45 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1272166, Location: 38.590078, -90.386483



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6,  
Saint Louis, MO, 63119, US

Leg Direction	Vitale's Deli Northeastbound								Fuhrmann Terrace Eastbound								Int
	HR	BR	BL	HL	U	App	Ped*	HR	R	T	L	U	App	Ped*			
Time																	
2025-02-25 3:45PM	0	0	0	0	0	0	17	0	0	0	1	0	1	15	150		
4:00PM	0	0	0	0	0	0	6	0	0	0	0	0	0	5	129		
4:15PM	0	0	0	0	0	0	7	0	1	0	0	0	1	9	153		
4:30PM	0	0	0	0	0	0	3	0	0	0	1	0	1	2	122		
<b>Total</b>	0	0	0	0	0	0	33	0	1	0	2	0	3	31	554		
<b>% Approach</b>	0%	0%	0%	0%	0%	-	-	0%	33.3%	0%	66.7%	0%	-	-	-		
<b>% Total</b>	0%	0%	0%	0%	0%	0%	0%	0%	0.2%	0%	0.4%	0%	0.5%	-	-		
<b>PHF</b>	-	-	-	-	-	-	-	-	0.250	-	0.500	-	0.750	-	0.905		
<b>Lights</b>	0	0	0	0	0	0	-	0	1	0	2	0	3	-	549		
<b>% Lights</b>	0%	0%	0%	0%	0%	-	-	0%	100%	0%	100%	0%	100%	-	99.1%		
<b>Articulated Trucks</b>	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0		
<b>% Articulated Trucks</b>	0%	0%	0%	0%	0%	-	-	0%	0%	0%	0%	0%	0%	-	0%		
<b>Buses and Single-Unit Trucks</b>	0	0	0	0	0	0	-	0	0	0	0	0	0	-	5		
<b>% Buses and Single-Unit Trucks</b>	0%	0%	0%	0%	0%	-	-	0%	0%	0%	0%	0%	0%	-	0.9%		
Pedestrians	-	-	-	-	-	-	28	-	-	-	-	-	-	29			
% Pedestrians	-	-	-	-	-	-	84.8%	-	-	-	-	-	-	93.5%			
Bicycles on Crosswalk	-	-	-	-	-	-	5	-	-	-	-	-	-	2			
% Bicycles on Crosswalk	-	-	-	-	-	-	15.2%	-	-	-	-	-	-	6.5%			

\*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

**Sappington Rd & Fuhrmann Terrace - TMC**

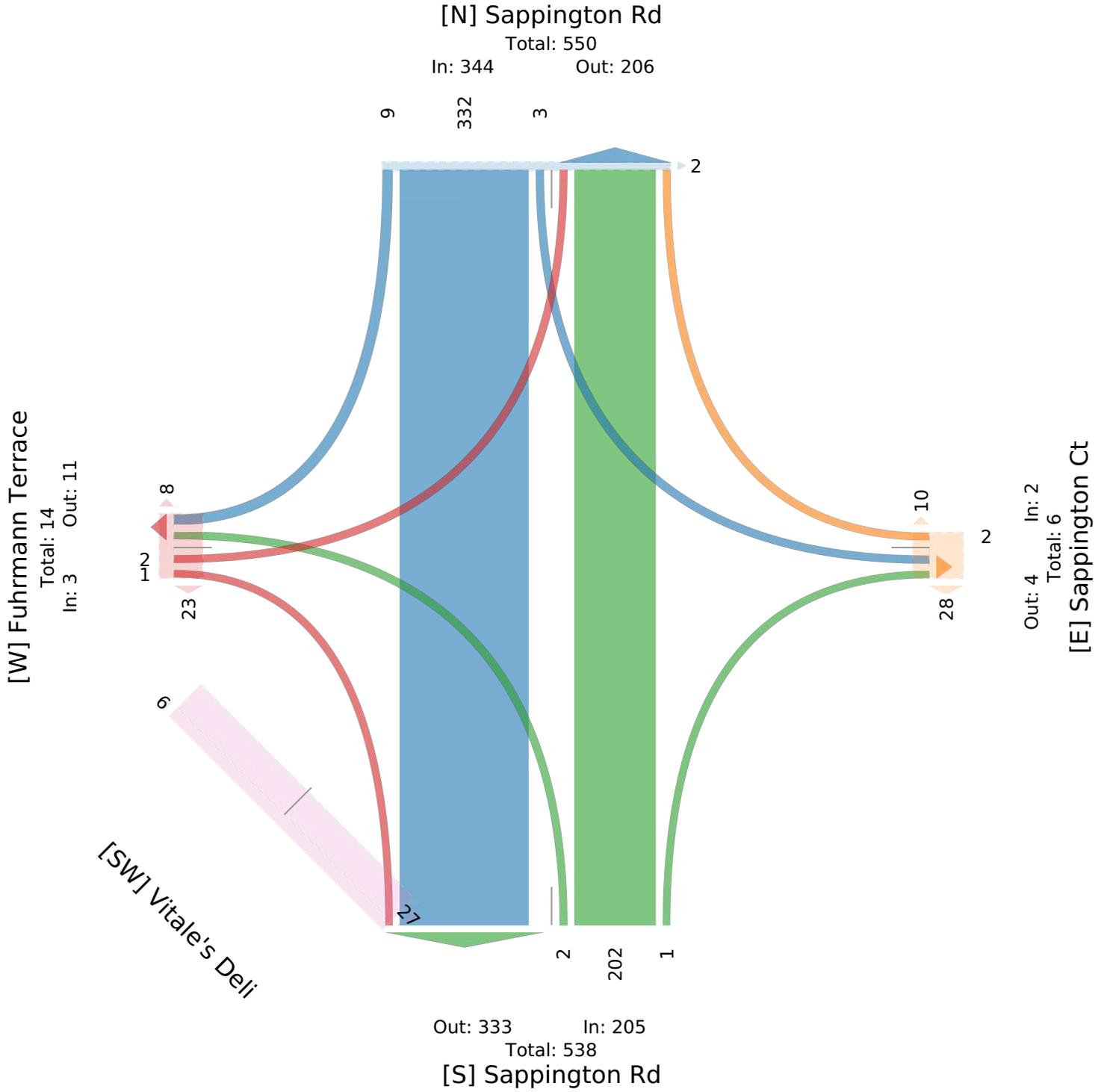
Tue Feb 25, 2025

PM Peak (3:45 PM - 4:45 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1272166, Location: 38.590078, -90.386483





Terra Engineering  
357 Marshall Ave, Suite 6

Saint Louis, Missouri, United States 63119  
314-499-0123 song@terraengineering.com  
TERRA Engineering

Count Name: Sappington Rd & Glendale City Hall  
Site Code:  
Start Date: 02/25/2025  
Page No: 1

### Turning Movement Data

Start Time	Sappington Rd Southbound						Glendale City Hall Westbound						Sappington Rd Northbound						Moonbeam driveway Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	28	0	0	0	28	0	0	0	0	2	0	0	29	0	0	0	29	0	0	0	0	2	0	57
7:15 AM	0	42	0	0	0	42	0	0	0	0	1	0	0	39	0	0	0	39	0	0	0	0	4	0	81
7:30 AM	0	59	0	0	2	59	0	0	2	0	1	2	1	61	0	0	0	62	0	0	0	0	9	0	123
7:45 AM	1	58	0	0	0	59	0	0	0	0	1	0	2	72	0	0	0	74	0	0	1	0	9	1	134
Hourly Total	1	187	0	0	2	188	0	0	2	0	5	2	3	201	0	0	0	204	0	0	1	0	24	1	395
8:00 AM	0	52	0	0	0	52	0	0	0	0	4	0	0	54	0	0	0	54	0	0	1	0	5	1	107
8:15 AM	0	58	0	0	5	58	0	0	0	0	10	0	0	79	0	0	0	79	0	0	0	0	10	0	137
8:30 AM	1	75	0	0	1	76	0	0	1	0	1	1	0	57	0	0	0	57	0	0	0	0	7	0	134
8:45 AM	0	49	0	0	0	49	0	0	0	0	1	0	0	48	0	0	0	48	0	0	0	0	2	0	97
Hourly Total	1	234	0	0	6	235	0	0	1	0	16	1	0	238	0	0	0	238	0	0	1	0	24	1	475
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2:00 PM	0	48	0	0	3	48	0	0	1	0	4	1	0	37	2	0	0	39	0	0	0	0	3	0	88
2:15 PM	1	36	0	0	0	37	1	0	2	0	5	3	3	29	0	0	0	32	0	0	4	0	2	4	76
2:30 PM	0	42	0	0	0	42	1	0	0	0	5	1	2	31	0	0	0	33	2	0	0	0	3	2	78
2:45 PM	0	51	0	0	0	51	0	0	0	0	1	0	0	42	0	0	0	42	0	0	0	0	0	0	93
Hourly Total	1	177	0	0	3	178	2	0	3	0	15	5	5	139	2	0	0	146	2	0	4	0	8	6	335
3:00 PM	1	47	0	0	0	48	1	0	1	0	2	2	1	51	0	0	0	52	0	0	1	0	1	1	103
3:15 PM	0	46	0	0	0	46	0	0	0	0	6	0	0	66	0	0	0	66	0	0	1	0	8	1	113
3:30 PM	0	49	0	0	1	49	0	0	0	0	8	0	0	52	0	0	1	52	1	0	0	0	3	1	102
3:45 PM	0	111	0	0	0	111	0	0	0	0	16	0	0	33	0	0	0	33	0	0	0	0	14	0	144
Hourly Total	1	253	0	0	1	254	1	0	1	0	32	2	1	202	0	0	1	203	1	0	2	0	26	3	462
4:00 PM	1	83	0	0	0	84	0	0	1	0	6	1	0	44	0	0	0	44	0	0	1	0	9	1	130
4:15 PM	0	82	0	0	1	82	0	0	0	0	4	0	0	70	0	0	0	70	0	0	0	0	5	0	152
4:30 PM	0	59	1	0	0	60	0	0	0	0	7	0	0	58	0	0	0	58	0	0	1	0	3	1	119
4:45 PM	0	74	0	0	1	74	0	0	0	0	8	0	0	63	0	0	0	63	0	0	0	0	4	0	137
Hourly Total	1	298	1	0	2	300	0	0	1	0	25	1	0	235	0	0	0	235	0	0	2	0	21	2	538
5:00 PM	0	76	0	0	0	76	0	0	0	0	4	0	0	53	0	0	0	53	0	0	0	0	1	0	129
5:15 PM	0	64	0	0	0	64	0	0	0	0	2	0	0	50	1	0	0	51	0	0	0	0	3	0	115
5:30 PM	1	67	0	0	1	68	0	0	0	0	3	0	0	57	0	0	0	57	0	0	0	0	0	0	125
5:45 PM	0	67	0	0	2	67	1	0	0	0	5	1	0	39	0	0	0	39	0	0	0	0	4	0	107
Hourly Total	1	274	0	0	3	275	1	0	0	0	14	1	0	199	1	0	0	200	0	0	0	0	8	0	476
Grand Total	6	1423	1	0	17	1430	4	0	8	0	107	12	9	1214	3	0	1	1226	3	0	10	0	111	13	2681
Approach %	0.4	99.5	0.1	0.0	-	-	33.3	0.0	66.7	0.0	-	-	0.7	99.0	0.2	0.0	-	-	23.1	0.0	76.9	0.0	-	-	-
Total %	0.2	53.1	0.0	0.0	-	53.3	0.1	0.0	0.3	0.0	-	0.4	0.3	45.3	0.1	0.0	-	45.7	0.1	0.0	0.4	0.0	-	0.5	-

Lights	6	1404	1	0	-	1411	4	0	8	0	-	12	9	1180	3	0	-	1192	3	0	10	0	-	13	2628
% Lights	100.0	98.7	100.0	-	-	98.7	100.0	-	100.0	-	-	100.0	100.0	97.2	100.0	-	-	97.2	100.0	-	100.0	-	-	100.0	98.0
Mediums	0	18	0	0	-	18	0	0	0	0	-	0	0	33	0	0	-	33	0	0	0	0	-	0	51
% Mediums	0.0	1.3	0.0	-	-	1.3	0.0	-	0.0	-	-	0.0	0.0	2.7	0.0	-	-	2.7	0.0	-	0.0	-	-	0.0	1.9
Articulated Trucks	0	1	0	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	2
% Articulated Trucks	0.0	0.1	0.0	-	-	0.1	0.0	-	0.0	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.0	-	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	20	-	-	-	-	-	0	-	-	-	-	-	7	-	-
% Bicycles on Crosswalk	-	-	-	-	5.9	-	-	-	-	18.7	-	-	-	-	-	-	0.0	-	-	-	-	-	6.3	-	-
Pedestrians	-	-	-	-	16	-	-	-	-	87	-	-	-	-	-	-	1	-	-	-	-	-	104	-	-
% Pedestrians	-	-	-	-	94.1	-	-	-	-	81.3	-	-	-	-	-	-	100.0	-	-	-	-	-	93.7	-	-





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TERRA Engineering

Count Name: Sappington Rd & Glendale City Hall  
Site Code:  
Start Date: 02/25/2025  
Page No: 4

### Turning Movement Peak Hour Data (7:45 AM)

Start Time	Sappington Rd Southbound						Glendale City Hall Westbound						Sappington Rd Northbound						Moonbeam driveway Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:45 AM	1	58	0	0	0	59	0	0	0	0	1	0	2	72	0	0	0	74	0	0	1	0	9	1	134
8:00 AM	0	52	0	0	0	52	0	0	0	0	4	0	0	54	0	0	0	54	0	0	1	0	5	1	107
8:15 AM	0	58	0	0	5	58	0	0	0	0	10	0	0	79	0	0	0	79	0	0	0	0	10	0	137
8:30 AM	1	75	0	0	1	76	0	0	1	0	1	1	0	57	0	0	0	57	0	0	0	0	7	0	134
Total	2	243	0	0	6	245	0	0	1	0	16	1	2	262	0	0	0	264	0	0	2	0	31	2	512
Approach %	0.8	99.2	0.0	0.0	-	-	0.0	0.0	100.0	0.0	-	-	0.8	99.2	0.0	0.0	-	-	0.0	0.0	100.0	0.0	-	-	-
Total %	0.4	47.5	0.0	0.0	-	47.9	0.0	0.0	0.2	0.0	-	0.2	0.4	51.2	0.0	0.0	-	51.6	0.0	0.0	0.4	0.0	-	0.4	-
PHF	0.500	0.810	0.000	0.000	-	0.806	0.000	0.000	0.250	0.000	-	0.250	0.250	0.829	0.000	0.000	-	0.835	0.000	0.000	0.500	0.000	-	0.500	0.934
Lights	2	240	0	0	-	242	0	0	1	0	-	1	2	254	0	0	-	256	0	0	2	0	-	2	501
% Lights	100.0	98.8	-	-	-	98.8	-	-	100.0	-	-	100.0	100.0	96.9	-	-	-	97.0	-	-	100.0	-	-	100.0	97.9
Mediums	0	3	0	0	-	3	0	0	0	0	-	0	0	8	0	0	-	8	0	0	0	0	-	0	11
% Mediums	0.0	1.2	-	-	-	1.2	-	-	0.0	-	-	0.0	0.0	3.1	-	-	-	3.0	-	-	0.0	-	-	0.0	2.1
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	-	0.0	-	-	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	5	-	-	-	-	-	-	0	-	-	-	-	2	-	-	-
% Bicycles on Crosswalk	-	-	-	-	16.7	-	-	-	-	31.3	-	-	-	-	-	-	-	-	-	-	-	6.5	-	-	-
Pedestrians	-	-	-	-	5	-	-	-	-	11	-	-	-	-	-	-	0	-	-	-	-	29	-	-	-
% Pedestrians	-	-	-	-	83.3	-	-	-	-	68.8	-	-	-	-	-	-	-	-	-	-	-	93.5	-	-	-





Terra Engineering  
357 Marshall Ave, Suite 6

Saint Louis, Missouri, United States 63119  
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TERRA Engineering

Count Name: Sappington Rd & Glendale City Hall  
Site Code:  
Start Date: 02/25/2025  
Page No: 6

### Turning Movement Peak Hour Data (3:45 PM)

Start Time	Sappington Rd Southbound						Glendale City Hall Westbound						Sappington Rd Northbound						Moonbeam driveway Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
3:45 PM	0	111	0	0	0	111	0	0	0	0	16	0	0	33	0	0	0	33	0	0	0	0	14	0	144
4:00 PM	1	83	0	0	0	84	0	0	1	0	6	1	0	44	0	0	0	44	0	0	1	0	9	1	130
4:15 PM	0	82	0	0	1	82	0	0	0	0	4	0	0	70	0	0	0	70	0	0	0	0	5	0	152
4:30 PM	0	59	1	0	0	60	0	0	0	0	7	0	0	58	0	0	0	58	0	0	1	0	3	1	119
Total	1	335	1	0	1	337	0	0	1	0	33	1	0	205	0	0	0	205	0	0	2	0	31	2	545
Approach %	0.3	99.4	0.3	0.0	-	-	0.0	0.0	100.0	0.0	-	-	0.0	100.0	0.0	0.0	-	-	0.0	0.0	100.0	0.0	-	-	-
Total %	0.2	61.5	0.2	0.0	-	61.8	0.0	0.0	0.2	0.0	-	0.2	0.0	37.6	0.0	0.0	-	37.6	0.0	0.0	0.4	0.0	-	0.4	-
PHF	0.250	0.755	0.250	0.000	-	0.759	0.000	0.000	0.250	0.000	-	0.250	0.000	0.732	0.000	0.000	-	0.732	0.000	0.000	0.500	0.000	-	0.500	0.896
Lights	1	330	1	0	-	332	0	0	1	0	-	1	0	203	0	0	-	203	0	0	2	0	-	2	538
% Lights	100.0	98.5	100.0	-	-	98.5	-	-	100.0	-	-	100.0	-	99.0	-	-	-	99.0	-	-	100.0	-	-	100.0	98.7
Mediums	0	4	0	0	-	4	0	0	0	0	-	0	0	2	0	0	-	2	0	0	0	0	-	0	6
% Mediums	0.0	1.2	0.0	-	-	1.2	-	-	0.0	-	-	0.0	-	1.0	-	-	-	1.0	-	-	0.0	-	-	0.0	1.1
Articulated Trucks	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Articulated Trucks	0.0	0.3	0.0	-	-	0.3	-	-	0.0	-	-	0.0	-	0.0	-	-	-	0.0	-	-	0.0	-	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	8	-	-	-	-	-	0	-	-	-	-	-	4	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	24.2	-	-	-	-	-	-	-	-	-	-	-	12.9	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	25	-	-	-	-	-	0	-	-	-	-	-	27	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	75.8	-	-	-	-	-	-	-	-	-	-	-	87.1	-	-





Terra Engineering  
357 Marshall Ave, Suite 6

Saint Louis, Missouri, United States 63119  
314-499-0123 song@terraengineering.com  
TERRA Engineering

Count Name: Sappington Rd & Essex Ave  
Site Code:  
Start Date: 02/25/2025  
Page No: 1

### Turning Movement Data

Start Time	Sappington Rd Southbound						Essex Ave Westbound						Sappington Rd Northbound						Essex Ave Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	26	3	0	0	29	2	4	0	0	3	6	1	28	0	0	2	29	1	0	3	0	0	4	68
7:15 AM	1	33	10	0	0	44	1	17	2	0	3	20	5	31	1	0	2	37	9	0	4	0	1	13	114
7:30 AM	2	51	3	0	0	56	1	7	10	0	0	18	4	47	2	0	0	53	4	0	11	0	0	15	142
7:45 AM	3	53	5	0	0	61	2	6	7	0	1	15	4	54	2	0	1	60	12	2	6	0	0	20	156
Hourly Total	6	163	21	0	0	190	6	34	19	0	7	59	14	160	5	0	5	179	26	2	24	0	1	52	480
8:00 AM	3	46	4	0	1	53	2	6	5	0	5	13	2	45	1	0	0	48	6	1	7	0	0	14	128
8:15 AM	3	48	4	0	3	55	1	9	13	0	5	23	8	57	0	0	0	65	8	4	13	0	4	25	168
8:30 AM	5	68	4	0	2	77	1	8	2	0	0	11	5	50	0	0	1	55	7	4	12	0	3	23	166
8:45 AM	0	44	3	0	0	47	2	6	1	0	0	9	3	45	1	0	0	49	1	1	4	0	1	6	111
Hourly Total	11	206	15	0	6	232	6	29	21	0	10	56	18	197	2	0	1	217	22	10	36	0	8	68	573
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2:00 PM	4	43	5	0	0	52	0	1	1	0	4	2	1	37	1	0	0	39	2	0	3	0	1	5	98
2:15 PM	2	30	7	0	0	39	4	4	3	0	3	11	2	29	1	0	0	32	2	1	2	0	1	5	87
2:30 PM	2	31	10	0	0	43	1	5	4	0	2	10	1	29	2	0	1	32	0	2	1	0	3	3	88
2:45 PM	1	46	4	0	1	51	1	4	3	0	0	8	2	36	3	0	0	41	2	2	4	0	1	8	108
Hourly Total	9	150	26	0	1	185	6	14	11	0	9	31	6	131	7	0	1	144	6	5	10	0	6	21	381
3:00 PM	5	36	6	0	1	47	4	1	6	0	3	11	3	47	1	0	0	51	1	4	3	0	1	8	117
3:15 PM	2	33	10	0	17	45	1	6	7	0	6	14	8	54	6	0	0	68	7	4	2	0	4	13	140
3:30 PM	4	38	6	0	1	48	3	1	4	0	9	8	11	48	4	0	0	63	3	1	3	0	1	7	126
3:45 PM	17	83	9	0	5	109	2	1	6	0	7	9	4	22	1	0	2	27	3	4	1	0	8	8	153
Hourly Total	28	190	31	0	24	249	10	9	23	0	25	42	26	171	12	0	2	209	14	13	9	0	14	36	536
4:00 PM	3	80	5	0	2	88	6	7	3	0	15	16	4	38	3	0	4	45	3	3	3	0	8	9	158
4:15 PM	9	66	6	0	1	81	1	10	3	0	6	14	12	65	2	0	1	79	2	5	3	0	6	10	184
4:30 PM	4	51	7	0	3	62	2	4	6	0	5	12	7	46	3	0	2	56	2	3	5	0	2	10	140
4:45 PM	7	56	10	0	1	73	2	8	5	0	7	15	8	54	7	0	2	69	5	1	6	0	0	12	169
Hourly Total	23	253	28	0	7	304	11	29	17	0	33	57	31	203	15	0	9	249	12	12	17	0	16	41	651
5:00 PM	5	58	14	0	2	77	1	5	1	0	4	7	4	48	0	0	0	52	4	6	6	0	2	16	152
5:15 PM	4	52	5	0	2	61	0	5	4	0	5	9	4	44	4	0	0	52	4	6	6	0	0	16	138
5:30 PM	9	54	6	0	2	69	2	5	4	0	5	11	5	50	1	0	0	56	2	4	4	0	0	10	146
5:45 PM	3	53	13	0	1	69	2	5	4	0	3	11	4	34	4	0	0	42	0	3	4	0	2	7	129
Hourly Total	21	217	38	0	7	276	5	20	13	0	17	38	17	176	9	0	0	202	10	19	20	0	4	49	565
Grand Total	98	1179	159	0	45	1436	44	135	104	0	101	283	112	1038	50	0	18	1200	90	61	116	0	49	267	3186
Approach %	6.8	82.1	11.1	0.0	-	-	15.5	47.7	36.7	0.0	-	-	9.3	86.5	4.2	0.0	-	-	33.7	22.8	43.4	0.0	-	-	-
Total %	3.1	37.0	5.0	0.0	-	45.1	1.4	4.2	3.3	0.0	-	8.9	3.5	32.6	1.6	0.0	-	37.7	2.8	1.9	3.6	0.0	-	8.4	-

Lights	97	1161	156	0	-	1414	43	135	101	0	-	279	109	1007	49	0	-	1165	88	60	112	0	-	260	3118
% Lights	99.0	98.5	98.1	-	-	98.5	97.7	100.0	97.1	-	-	98.6	97.3	97.0	98.0	-	-	97.1	97.8	98.4	96.6	-	-	97.4	97.9
Mediums	1	17	3	0	-	21	1	0	3	0	-	4	3	29	1	0	-	33	2	1	4	0	-	7	65
% Mediums	1.0	1.4	1.9	-	-	1.5	2.3	0.0	2.9	-	-	1.4	2.7	2.8	2.0	-	-	2.8	2.2	1.6	3.4	-	-	2.6	2.0
Articulated Trucks	0	1	0	0	-	1	0	0	0	0	-	0	0	2	0	0	-	2	0	0	0	0	-	0	3
% Articulated Trucks	0.0	0.1	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	17	-	-	-	-	-	6	-	-	-	-	-	10	-	-
% Bicycles on Crosswalk	-	-	-	-	4.4	-	-	-	-	-	16.8	-	-	-	-	-	33.3	-	-	-	-	-	20.4	-	-
Pedestrians	-	-	-	-	43	-	-	-	-	-	84	-	-	-	-	-	12	-	-	-	-	-	39	-	-
% Pedestrians	-	-	-	-	95.6	-	-	-	-	-	83.2	-	-	-	-	-	66.7	-	-	-	-	-	79.6	-	-





Terra Engineering  
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TERRA Engineering

Count Name: Sappington Rd & Essex Ave  
Site Code:  
Start Date: 02/25/2025  
Page No: 4

### Turning Movement Peak Hour Data (7:45 AM)

Start Time	Sappington Rd Southbound						Essex Ave Westbound						Sappington Rd Northbound						Essex Ave Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:45 AM	3	53	5	0	0	61	2	6	7	0	1	15	4	54	2	0	1	60	12	2	6	0	0	20	156
8:00 AM	3	46	4	0	1	53	2	6	5	0	5	13	2	45	1	0	0	48	6	1	7	0	0	14	128
8:15 AM	3	48	4	0	3	55	1	9	13	0	5	23	8	57	0	0	0	65	8	4	13	0	4	25	168
8:30 AM	5	68	4	0	2	77	1	8	2	0	0	11	5	50	0	0	1	55	7	4	12	0	3	23	166
Total	14	215	17	0	6	246	6	29	27	0	11	62	19	206	3	0	2	228	33	11	38	0	7	82	618
Approach %	5.7	87.4	6.9	0.0	-	-	9.7	46.8	43.5	0.0	-	-	8.3	90.4	1.3	0.0	-	-	40.2	13.4	46.3	0.0	-	-	-
Total %	2.3	34.8	2.8	0.0	-	39.8	1.0	4.7	4.4	0.0	-	10.0	3.1	33.3	0.5	0.0	-	36.9	5.3	1.8	6.1	0.0	-	13.3	-
PHF	0.700	0.790	0.850	0.000	-	0.799	0.750	0.806	0.519	0.000	-	0.674	0.594	0.904	0.375	0.000	-	0.877	0.688	0.688	0.731	0.000	-	0.820	0.920
Lights	14	213	16	0	-	243	6	29	27	0	-	62	19	197	3	0	-	219	33	11	38	0	-	82	606
% Lights	100.0	99.1	94.1	-	-	98.8	100.0	100.0	100.0	-	-	100.0	100.0	95.6	100.0	-	-	96.1	100.0	100.0	100.0	-	-	100.0	98.1
Mediums	0	2	1	0	-	3	0	0	0	0	-	0	0	9	0	0	-	9	0	0	0	0	-	0	12
% Mediums	0.0	0.9	5.9	-	-	1.2	0.0	0.0	0.0	-	-	0.0	0.0	4.4	0.0	-	-	3.9	0.0	0.0	0.0	-	-	0.0	1.9
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	16.7	-	-	-	-	-	27.3	-	-	-	-	-	0.0	-	-	-	-	-	28.6	-	-
Pedestrians	-	-	-	-	5	-	-	-	-	-	8	-	-	-	-	-	2	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	83.3	-	-	-	-	-	72.7	-	-	-	-	-	100.0	-	-	-	-	-	71.4	-	-





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TERRA Engineering

Count Name: Sappington Rd & Essex Ave  
Site Code:  
Start Date: 02/25/2025  
Page No: 6

### Turning Movement Peak Hour Data (4:00 PM)

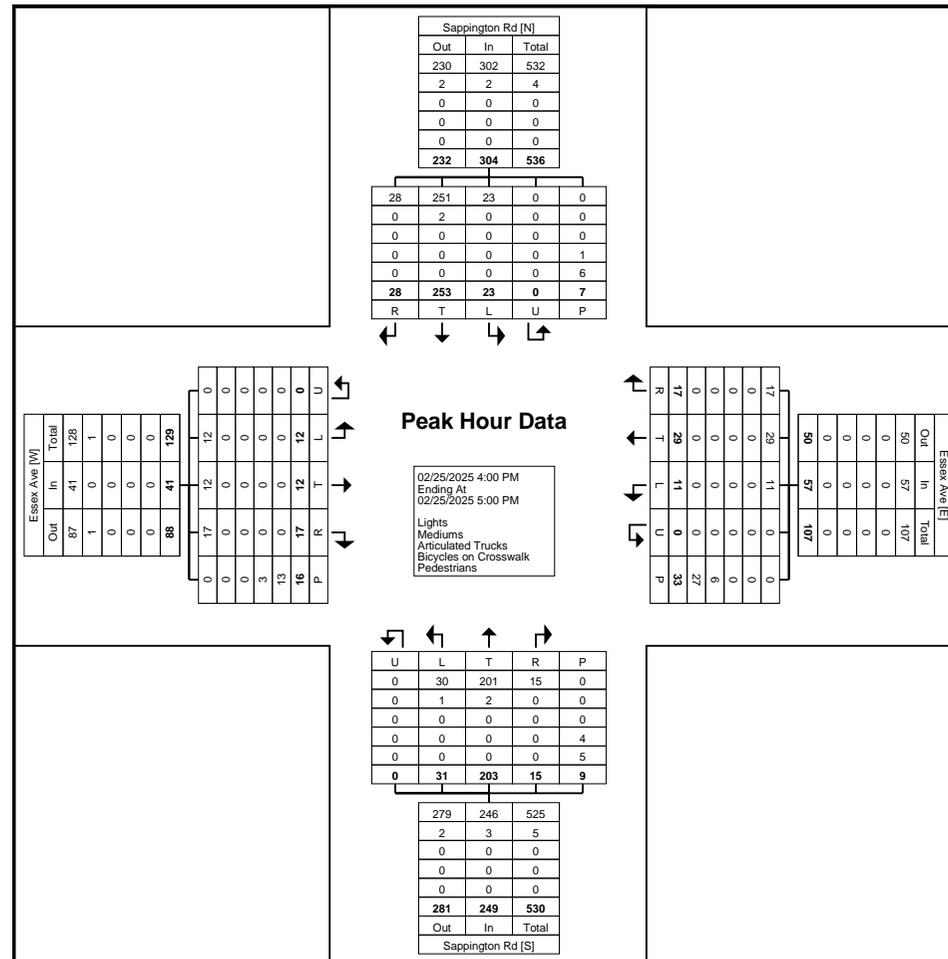
Start Time	Sappington Rd Southbound						Essex Ave Westbound						Sappington Rd Northbound						Essex Ave Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:00 PM	3	80	5	0	2	88	6	7	3	0	15	16	4	38	3	0	4	45	3	3	3	0	8	9	158
4:15 PM	9	66	6	0	1	81	1	10	3	0	6	14	12	65	2	0	1	79	2	5	3	0	6	10	184
4:30 PM	4	51	7	0	3	62	2	4	6	0	5	12	7	46	3	0	2	56	2	3	5	0	2	10	140
4:45 PM	7	56	10	0	1	73	2	8	5	0	7	15	8	54	7	0	2	69	5	1	6	0	0	12	169
Total	23	253	28	0	7	304	11	29	17	0	33	57	31	203	15	0	9	249	12	12	17	0	16	41	651
Approach %	7.6	83.2	9.2	0.0	-	-	19.3	50.9	29.8	0.0	-	-	12.4	81.5	6.0	0.0	-	-	29.3	29.3	41.5	0.0	-	-	-
Total %	3.5	38.9	4.3	0.0	-	46.7	1.7	4.5	2.6	0.0	-	8.8	4.8	31.2	2.3	0.0	-	38.2	1.8	1.8	2.6	0.0	-	6.3	-
PHF	0.639	0.791	0.700	0.000	-	0.864	0.458	0.725	0.708	0.000	-	0.891	0.646	0.781	0.536	0.000	-	0.788	0.600	0.600	0.708	0.000	-	0.854	0.885
Lights	23	251	28	0	-	302	11	29	17	0	-	57	30	201	15	0	-	246	12	12	17	0	-	41	646
% Lights	100.0	99.2	100.0	-	-	99.3	100.0	100.0	100.0	-	-	100.0	96.8	99.0	100.0	-	-	98.8	100.0	100.0	100.0	-	-	100.0	99.2
Mediums	0	2	0	0	-	2	0	0	0	0	-	0	1	2	0	0	-	3	0	0	0	0	-	0	5
% Mediums	0.0	0.8	0.0	-	-	0.7	0.0	0.0	0.0	-	-	0.0	3.2	1.0	0.0	-	-	1.2	0.0	0.0	0.0	-	-	0.0	0.8
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	6	-	-	-	-	-	4	-	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	-	14.3	-	-	-	-	-	18.2	-	-	-	-	-	44.4	-	-	-	-	-	18.8	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	27	-	-	-	-	-	5	-	-	-	-	-	13	-	-
% Pedestrians	-	-	-	-	85.7	-	-	-	-	-	81.8	-	-	-	-	-	55.6	-	-	-	-	-	81.3	-	-



Terra Engineering  
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TERRA Engineering

Count Name: Sappington Rd & Essex Ave  
Site Code:  
Start Date: 02/25/2025  
Page No: 7



Turning Movement Peak Hour Data Plot (4:00 PM)

**Teleo Coffee front door - Ped & Bike Pathway**

Wed Feb 26, 2025

Full Length (6 AM-4:30 PM)

All Classes (Pedestrians)

All Channels

ID: 1272184, Location: 38.578569, -90.408288



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US

Leg Direction	East		West		Int
	Westbound		Eastbound		
Time	T	App	T	App	
2025-02-26 6:00AM	5	5	5	5	10
6:15AM	2	2	4	4	6
6:30AM	2	2	9	9	11
6:45AM	7	7	3	3	10
<b>Hourly Total</b>	<b>16</b>	<b>16</b>	<b>21</b>	<b>21</b>	<b>0</b>
7:00AM	3	3	4	4	7
7:15AM	8	8	7	7	15
7:30AM	1	1	2	2	3
7:45AM	11	11	9	9	20
<b>Hourly Total</b>	<b>23</b>	<b>23</b>	<b>22</b>	<b>22</b>	<b>0</b>
8:00AM	9	9	11	11	20
8:15AM	5	5	6	6	11
8:30AM	2	2	8	8	10
8:45AM	7	7	10	10	17
<b>Hourly Total</b>	<b>23</b>	<b>23</b>	<b>35</b>	<b>35</b>	<b>0</b>
9:00AM	4	4	16	16	20
9:15AM	12	12	13	13	25
9:30AM	6	6	8	8	14
9:45AM	10	10	6	6	16
<b>Hourly Total</b>	<b>32</b>	<b>32</b>	<b>43</b>	<b>43</b>	<b>0</b>
10:00AM	7	7	11	11	18
10:15AM	12	12	5	5	17
10:30AM	12	12	5	5	17
10:45AM	3	3	9	9	12
<b>Hourly Total</b>	<b>34</b>	<b>34</b>	<b>30</b>	<b>30</b>	<b>0</b>
11:00AM	5	5	5	5	10
11:15AM	10	10	9	9	19
11:30AM	7	7	3	3	10
11:45AM	1	1	9	9	10
<b>Hourly Total</b>	<b>23</b>	<b>23</b>	<b>26</b>	<b>26</b>	<b>0</b>
12:00PM	6	6	4	4	10
12:15PM	6	6	5	5	11
12:30PM	9	9	5	5	14
12:45PM	7	7	4	4	11
<b>Hourly Total</b>	<b>28</b>	<b>28</b>	<b>18</b>	<b>18</b>	<b>0</b>
1:00PM	2	2	4	4	6
1:15PM	8	8	7	7	15
1:30PM	4	4	5	5	9
1:45PM	2	2	14	14	16
<b>Hourly Total</b>	<b>16</b>	<b>16</b>	<b>30</b>	<b>30</b>	<b>0</b>
2:00PM	12	12	3	3	15
2:15PM	7	7	2	2	9
2:30PM	5	5	3	3	8
2:45PM	1	1	3	3	4
<b>Hourly Total</b>	<b>25</b>	<b>25</b>	<b>11</b>	<b>11</b>	<b>0</b>
3:00PM	6	6	4	4	10
3:15PM	2	2	3	3	5
3:30PM	2	2	3	3	5
3:45PM	7	7	4	4	11
<b>Hourly Total</b>	<b>17</b>	<b>17</b>	<b>14</b>	<b>14</b>	<b>0</b>
4:00PM	8	8	3	3	11
4:15PM	6	6	1	1	7
<b>Hourly Total</b>	<b>14</b>	<b>14</b>	<b>4</b>	<b>4</b>	<b>0</b>
<b>Total</b>	<b>251</b>	<b>251</b>	<b>254</b>	<b>254</b>	<b>505</b>

Leg Direction	East Westbound	West Eastbound	
Time	T App	T App	Int

<b>% Approach</b>	100%	-	100%	-	-
<b>% Total</b>	49.7%	<b>49.7%</b>	50.3%	<b>50.3%</b>	-
Pedestrians	251	251	254	254	505
% Pedestrians	100%	100%	100%	100%	100.0%

\*T: Thru

Teleo Coffee front door - Ped & Bike Pathway

Wed Feb 26, 2025

Full Length (6 AM-4:30 PM)

All Classes (Pedestrians)

All Channels

ID: 1272184, Location: 38.578569, -90.408288



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US



Teleo Coffee front door - Ped & Bike Pathway

Wed Feb 26, 2025

AM Peak (8:45 AM - 9:45 AM) - Overall Peak Hour

All Classes (Pedestrians)

All Channels

ID: 1272184, Location: 38.578569, -90.408288



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US

Leg Direction	East Westbound		West Eastbound		
Time	T	App	T	App	Int
2025-02-26 8:45AM	7	7	10	10	17
9:00AM	4	4	16	16	20
9:15AM	12	12	13	13	25
9:30AM	6	6	8	8	14
<b>Total</b>	29	29	47	47	76
<b>% Approach</b>	100%	-	100%	-	-
<b>% Total</b>	38.2%	38.2%	61.8%	61.8%	-
Pedestrians	29	29	47	47	76
% Pedestrians	100%	100%	100%	100%	100.0%

\*T: Thru

Teleo Coffee front door - Ped & Bike Pathway  
Wed Feb 26, 2025  
AM Peak (8:45 AM - 9:45 AM) - Overall Peak Hour  
All Classes (Pedestrians)  
All Channels  
ID: 1272184, Location: 38.578569, -90.408288



Teleo Coffee front door - Ped & Bike Pathway

Wed Feb 26, 2025

Midday Peak (11 AM - 12 PM)

All Classes (Pedestrians)

All Channels

ID: 1272184, Location: 38.578569, -90.408288



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US

Leg Direction	East		West		Int
	Westbound		Eastbound		
Time	T	App	T	App	
2025-02-26 11:00AM	5	5	5	5	10
11:15AM	10	10	9	9	19
11:30AM	7	7	3	3	10
11:45AM	1	1	9	9	10
<b>Total</b>	23	23	26	26	49
<b>% Approach</b>	100%	-	100%	-	-
<b>% Total</b>	46.9%	46.9%	53.1%	53.1%	-
Pedestrians	23	23	26	26	49
% Pedestrians	100%	100%	100%	100%	100.0%

\*T: Thru

Teleo Coffee front door - Ped & Bike Pathway

Wed Feb 26, 2025

Midday Peak (11 AM - 12 PM)

All Classes (Pedestrians)

All Channels

ID: 1272184, Location: 38.578569, -90.408288



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US



Teleo Coffee front door - Ped & Bike Pathway

Wed Feb 26, 2025

PM Peak (1:15 PM - 2:15 PM)

All Classes (Pedestrians)

All Channels

ID: 1272184, Location: 38.578569, -90.408288



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US

Leg Direction	East		West		Int
	Westbound		Eastbound		
Time		T	App	T	App
2025-02-26 1:15PM		8	8	7	7
1:30PM		4	4	5	5
1:45PM		2	2	14	14
2:00PM		12	12	3	3
<b>Total</b>		26	26	29	29
<b>% Approach</b>		100%	-	100%	-
<b>% Total</b>		47.3%	47.3%	52.7%	52.7%
Pedestrians		26	26	29	29
% Pedestrians		100%	100%	100%	100%

\*T: Thru

Teleo Coffee front door - Ped & Bike Pathway

Wed Feb 26, 2025

PM Peak (1:15 PM - 2:15 PM)

All Classes (Pedestrians)

All Channels

ID: 1272184, Location: 38.578569, -90.408288



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US



**Teleo Coffee back door - Ped & Bike Pathway**

Wed Feb 26, 2025

Full Length (6 AM-4:30 PM)

All Classes (Pedestrians)

All Channels

ID: 1272189, Location: 38.578569, -90.408288



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US

Leg Direction	North Southbound		South Northbound		Int
	T	App	T	App	
Time					
2025-02-26 6:00AM	0	0	0	0	0
6:15AM	0	0	0	0	0
6:30AM	0	0	0	0	0
6:45AM	0	0	2	2	2
Hourly Total	0	0	2	2	0
7:00AM	0	0	1	1	1
7:15AM	1	1	0	0	1
7:30AM	0	0	0	0	0
7:45AM	2	2	1	1	3
Hourly Total	3	3	2	2	0
8:00AM	1	1	4	4	5
8:15AM	1	1	0	0	1
8:30AM	0	0	3	3	3
8:45AM	0	0	3	3	3
Hourly Total	2	2	10	10	0
9:00AM	3	3	1	1	4
9:15AM	2	2	2	2	4
9:30AM	0	0	0	0	0
9:45AM	0	0	2	2	2
Hourly Total	5	5	5	5	0
10:00AM	0	0	0	0	0
10:15AM	0	0	1	1	1
10:30AM	1	1	2	2	3
10:45AM	1	1	1	1	2
Hourly Total	2	2	4	4	0
11:00AM	1	1	1	1	2
11:15AM	2	2	1	1	3
11:30AM	3	3	0	0	3
11:45AM	1	1	2	2	3
Hourly Total	7	7	4	4	0
12:00PM	1	1	1	1	2
12:15PM	1	1	1	1	2
12:30PM	2	2	1	1	3
12:45PM	3	3	2	2	5
Hourly Total	7	7	5	5	0
1:00PM	0	0	0	0	0
1:15PM	2	2	0	0	2
1:30PM	1	1	0	0	1
1:45PM	1	1	0	0	1
Hourly Total	4	4	0	0	0
2:00PM	2	2	1	1	3
2:15PM	1	1	1	1	2
2:30PM	1	1	0	0	1
2:45PM	2	2	3	3	5
Hourly Total	6	6	5	5	0
3:00PM	1	1	0	0	1
3:15PM	0	0	0	0	0
3:30PM	0	0	1	1	1
3:45PM	3	3	2	2	5
Hourly Total	4	4	3	3	0
4:00PM	2	2	0	0	2
4:15PM	0	0	0	0	0
Hourly Total	2	2	0	0	0
<b>Total</b>	<b>42</b>	<b>42</b>	<b>40</b>	<b>40</b>	<b>82</b>

Leg Direction	North Southbound	South Northbound	
Time	T App	T App	Int

<b>% Approach</b>	100%	-	100%	-	-
<b>% Total</b>	51.2%	<b>51.2%</b>	48.8%	<b>48.8%</b>	-
Pedestrians	42	42	40	40	82
% Pedestrians	100%	100%	100%	100%	100.0%

\*T: Thru

Teleo Coffee back door - Ped & Bike Pathway

Wed Feb 26, 2025

Full Length (6 AM-4:30 PM)

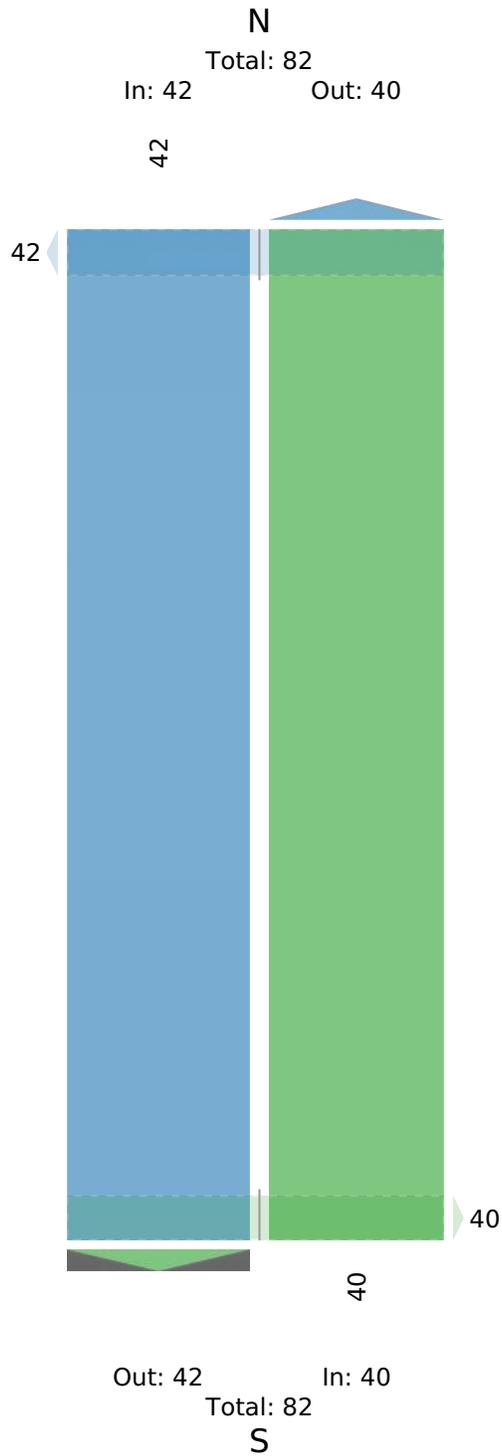
All Classes (Pedestrians)

All Channels

ID: 1272189, Location: 38.578569, -90.408288



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US



Teleo Coffee back door - Ped & Bike Pathway

Wed Feb 26, 2025

AM Peak (8:30 AM - 9:30 AM) - Overall Peak Hour

All Classes (Pedestrians)

All Channels

ID: 1272189, Location: 38.578569, -90.408288

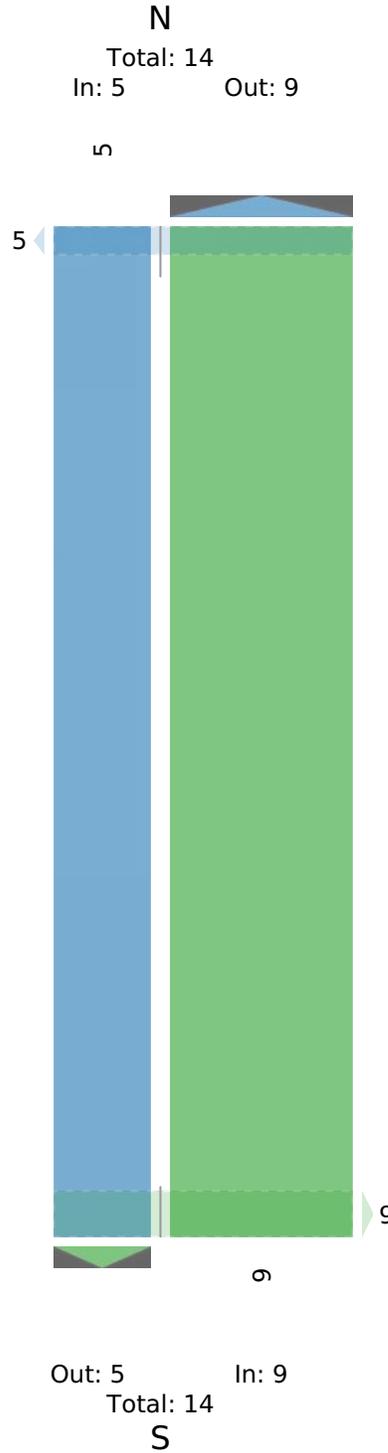


Provided by: Terra Engineering  
357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US

Leg Direction	North Southbound		South Northbound		Int
	T	App	T	App	
Time					
2025-02-26 8:30AM	0	0	3	3	3
8:45AM	0	0	3	3	3
9:00AM	3	3	1	1	4
9:15AM	2	2	2	2	4
<b>Total</b>	5	5	9	9	14
<b>% Approach</b>	100%	-	100%	-	-
<b>% Total</b>	35.7%	<b>35.7%</b>	64.3%	<b>64.3%</b>	-
Pedestrians	5	5	9	9	14
% Pedestrians	100%	100%	100%	100%	100.0%

\*T: Thru

Teleo Coffee back door - Ped & Bike Pathway  
Wed Feb 26, 2025  
AM Peak (8:30 AM - 9:30 AM) - Overall Peak Hour  
All Classes (Pedestrians)  
All Channels  
ID: 1272189, Location: 38.578569, -90.408288



Teleo Coffee back door - Ped & Bike Pathway

Wed Feb 26, 2025

Midday Peak (12 PM - 1 PM)

All Classes (Pedestrians)

All Channels

ID: 1272189, Location: 38.578569, -90.408288



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US

Leg Direction	North Southbound		South Northbound		Int
	T	App	T	App	
Time					
2025-02-26 12:00PM	1	1	1	1	2
12:15PM	1	1	1	1	2
12:30PM	2	2	1	1	3
12:45PM	3	3	2	2	5
<b>Total</b>	7	7	5	5	12
<b>% Approach</b>	100%	-	100%	-	-
<b>% Total</b>	58.3%	<b>58.3%</b>	41.7%	<b>41.7%</b>	-
Pedestrians	7	7	5	5	12
% Pedestrians	100%	100%	100%	100%	100.0%

\*T: Thru

Teleo Coffee back door - Ped & Bike Pathway

Wed Feb 26, 2025

Midday Peak (12 PM - 1 PM)

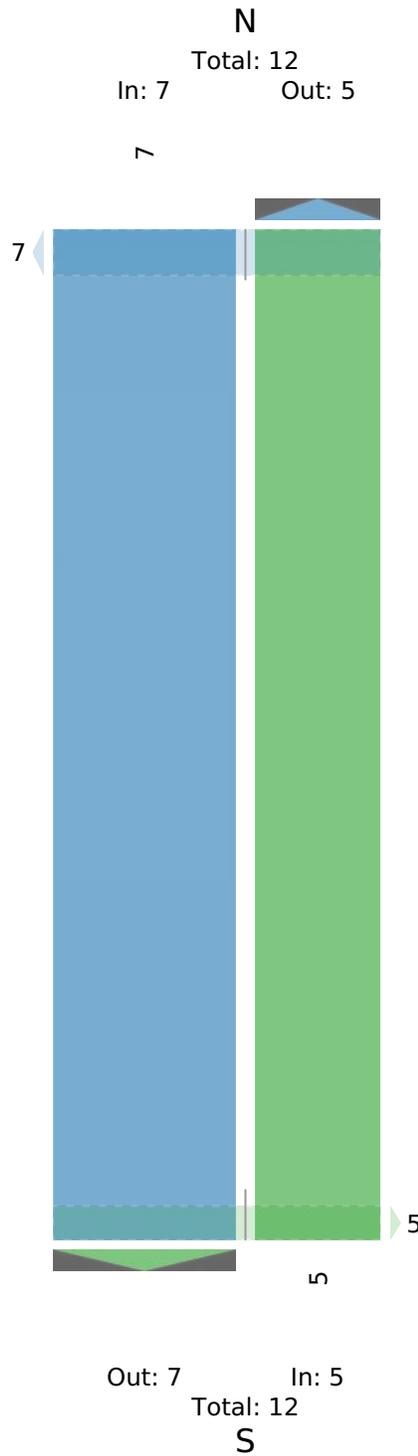
All Classes (Pedestrians)

All Channels

ID: 1272189, Location: 38.578569, -90.408288



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US



Teleo Coffee back door - Ped & Bike Pathway

Wed Feb 26, 2025

PM Peak (2 PM - 3 PM)

All Classes (Pedestrians)

All Channels

ID: 1272189, Location: 38.578569, -90.408288



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US

Leg Direction	North Southbound		South Northbound		Int
	T	App	T	App	
Time					
2025-02-26 2:00PM	2	2	1	1	3
2:15PM	1	1	1	1	2
2:30PM	1	1	0	0	1
2:45PM	2	2	3	3	5
<b>Total</b>	6	6	5	5	11
<b>% Approach</b>	100%	-	100%	-	-
<b>% Total</b>	54.5%	54.5%	45.5%	45.5%	-
Pedestrians	6	6	5	5	11
% Pedestrians	100%	100%	100%	100%	100.0%

\*T: Thru

Teleo Coffee back door - Ped & Bike Pathway

Wed Feb 26, 2025

PM Peak (2 PM - 3 PM)

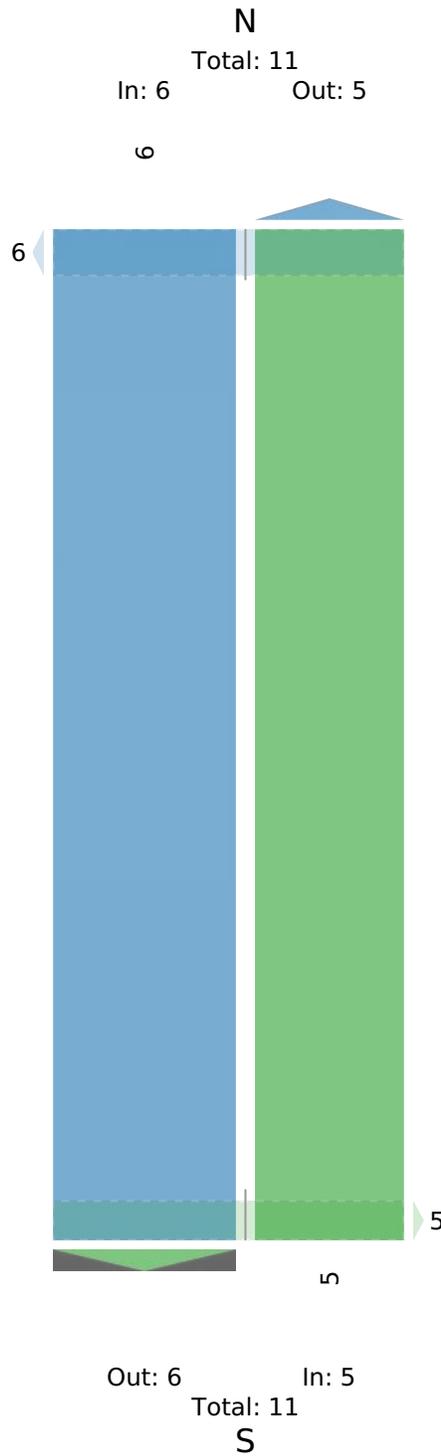
All Classes (Pedestrians)

All Channels

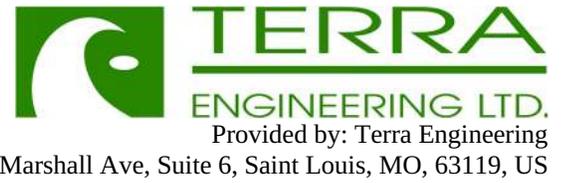
ID: 1272189, Location: 38.578569, -90.408288



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US



**Teleo Coffee Monroe Ave driveway (20240226 0... - ATR**  
 Wed Feb 26, 2025  
 Full Length (7 AM-4 PM)  
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)  
 All Channels  
 ID: 1272487, Location: 38.578569, -90.408288



Leg Direction	North Southbound		South Northbound		Int
	T	App	T	App	
Time					
2025-02-26 7:00AM	2	2	0	0	2
7:15AM	6	6	1	1	7
7:30AM	1	1	0	0	1
7:45AM	9	9	3	3	12
<b>Hourly Total</b>	<b>18</b>	<b>18</b>	<b>4</b>	<b>4</b>	<b>22</b>
8:00AM	9	9	3	3	12
8:15AM	7	7	2	2	9
8:30AM	9	9	0	0	9
8:45AM	7	7	1	1	8
<b>Hourly Total</b>	<b>32</b>	<b>32</b>	<b>6</b>	<b>6</b>	<b>38</b>
9:00AM	13	13	0	0	13
9:15AM	5	5	1	1	6
9:30AM	6	6	0	0	6
9:45AM	4	4	1	1	5
<b>Hourly Total</b>	<b>28</b>	<b>28</b>	<b>2</b>	<b>2</b>	<b>30</b>
10:00AM	6	6	2	2	8
10:15AM	2	2	1	1	3
10:30AM	4	4	2	2	6
10:45AM	4	4	3	3	7
<b>Hourly Total</b>	<b>16</b>	<b>16</b>	<b>8</b>	<b>8</b>	<b>24</b>
11:00AM	4	4	3	3	7
11:15AM	3	3	3	3	6
11:30AM	4	4	0	0	4
11:45AM	7	7	0	0	7
<b>Hourly Total</b>	<b>18</b>	<b>18</b>	<b>6</b>	<b>6</b>	<b>24</b>
12:00PM	2	2	1	1	3
12:15PM	3	3	0	0	3
12:30PM	4	4	2	2	6
12:45PM	3	3	1	1	4
<b>Hourly Total</b>	<b>12</b>	<b>12</b>	<b>4</b>	<b>4</b>	<b>16</b>
1:00PM	2	2	0	0	2
1:15PM	4	4	2	2	6
1:30PM	1	1	0	0	1
1:45PM	6	6	0	0	6
<b>Hourly Total</b>	<b>13</b>	<b>13</b>	<b>2</b>	<b>2</b>	<b>15</b>
2:00PM	2	2	0	0	2
2:15PM	2	2	2	2	4
2:30PM	0	0	1	1	1
2:45PM	1	1	0	0	1
<b>Hourly Total</b>	<b>5</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>8</b>
3:00PM	1	1	0	0	1
3:15PM	2	2	0	0	2
3:30PM	2	2	0	0	2
3:45PM	3	3	2	2	5
<b>Hourly Total</b>	<b>8</b>	<b>8</b>	<b>2</b>	<b>2</b>	<b>10</b>
<b>Total</b>	<b>150</b>	<b>150</b>	<b>37</b>	<b>37</b>	<b>187</b>
<b>% Approach</b>	100%	-	100%	-	-
<b>% Total</b>	80.2%	<b>80.2%</b>	19.8%	<b>19.8%</b>	-
<b>Lights</b>	150	<b>150</b>	37	<b>37</b>	187
<b>% Lights</b>	100%	<b>100%</b>	100%	<b>100%</b>	100%
<b>Articulated Trucks</b>	0	<b>0</b>	0	<b>0</b>	0
<b>% Articulated Trucks</b>	0%	<b>0%</b>	0%	<b>0%</b>	0%
<b>Buses and Single-Unit Trucks</b>	0	<b>0</b>	0	<b>0</b>	0
<b>% Buses and Single-Unit Trucks</b>	0%	<b>0%</b>	0%	<b>0%</b>	0%

Leg Direction	North Southbound	South Northbound	
Time	T App	T App	Int

\*T: Thru

Teleo Coffee Monroe Ave driveway (20240226 0... - ATR

Wed Feb 26, 2025

Full Length (7 AM-4 PM)

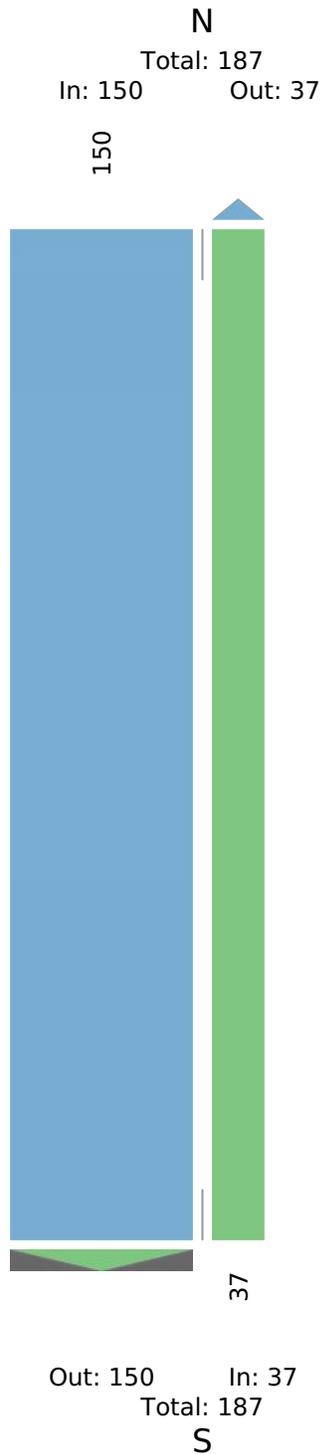
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Channels

ID: 1272487, Location: 38.578569, -90.408288



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US



Teleo Coffee Monroe Ave driveway (20240226 0... - ATR  
 Wed Feb 26, 2025  
 AM Peak (7:45 AM - 8:45 AM) - Overall Peak Hour  
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)  
 All Channels  
 ID: 1272487, Location: 38.578569, -90.408288



Leg Direction	North Southbound		South Northbound		Int
	T	App	T	App	
Time					
2025-02-26 7:45AM	9	9	3	3	12
8:00AM	9	9	3	3	12
8:15AM	7	7	2	2	9
8:30AM	9	9	0	0	9
<b>Total</b>	34	34	8	8	42
<b>% Approach</b>	100%	-	100%	-	-
<b>% Total</b>	81.0%	<b>81.0%</b>	19.0%	<b>19.0%</b>	-
<b>PHF</b>	0.944	<b>0.944</b>	0.667	<b>0.667</b>	0.875
<b>Lights</b>	34	34	8	8	42
<b>% Lights</b>	100%	<b>100%</b>	100%	<b>100%</b>	100%
<b>Articulated Trucks</b>	0	0	0	0	0
<b>% Articulated Trucks</b>	0%	<b>0%</b>	0%	<b>0%</b>	0%
<b>Buses and Single-Unit Trucks</b>	0	0	0	0	0
<b>% Buses and Single-Unit Trucks</b>	0%	<b>0%</b>	0%	<b>0%</b>	0%

\*T: Thru

Teleo Coffee Monroe Ave driveway (20240226 0... - ATR

Wed Feb 26, 2025

AM Peak (7:45 AM - 8:45 AM) - Overall Peak Hour

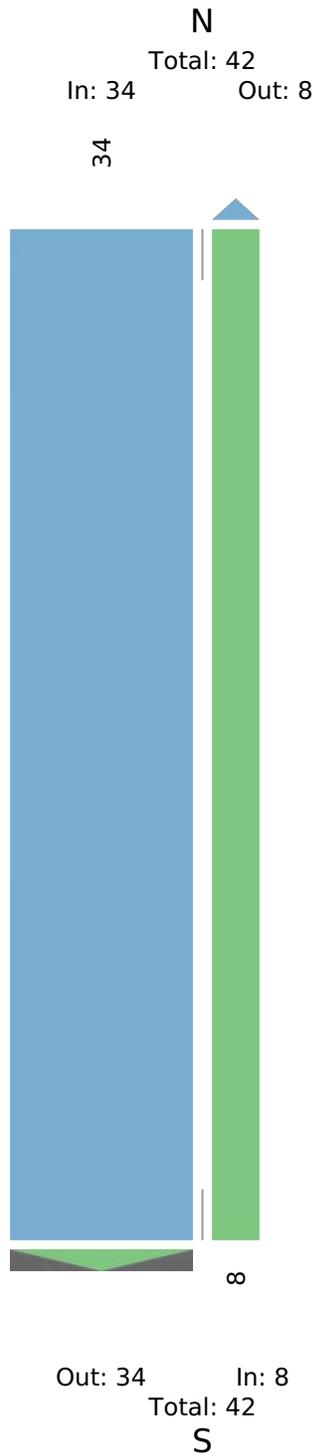
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Channels

ID: 1272487, Location: 38.578569, -90.408288



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US



**Teleo Coffee Monroe Ave driveway (20240226 0... - ATR**  
 Wed Feb 26, 2025  
 Midday Peak (11 AM - 12 PM)  
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)  
 All Channels  
 ID: 1272487, Location: 38.578569, -90.408288



Leg Direction	North Southbound		South Northbound		Int
	T	App	T	App	
Time					
2025-02-26 11:00AM	4	4	3	3	7
11:15AM	3	3	3	3	6
11:30AM	4	4	0	0	4
11:45AM	7	7	0	0	7
<b>Total</b>	18	18	6	6	24
<b>% Approach</b>	100%	-	100%	-	-
<b>% Total</b>	75.0%	75.0%	25.0%	25.0%	-
<b>PHF</b>	0.643	0.643	0.500	0.500	0.857
<b>Lights</b>	18	18	6	6	24
<b>% Lights</b>	100%	100%	100%	100%	100%
<b>Articulated Trucks</b>	0	0	0	0	0
<b>% Articulated Trucks</b>	0%	0%	0%	0%	0%
<b>Buses and Single-Unit Trucks</b>	0	0	0	0	0
<b>% Buses and Single-Unit Trucks</b>	0%	0%	0%	0%	0%

\*T: Thru

Teleo Coffee Monroe Ave driveway (20240226 0... - ATR

Wed Feb 26, 2025

Midday Peak (11 AM - 12 PM)

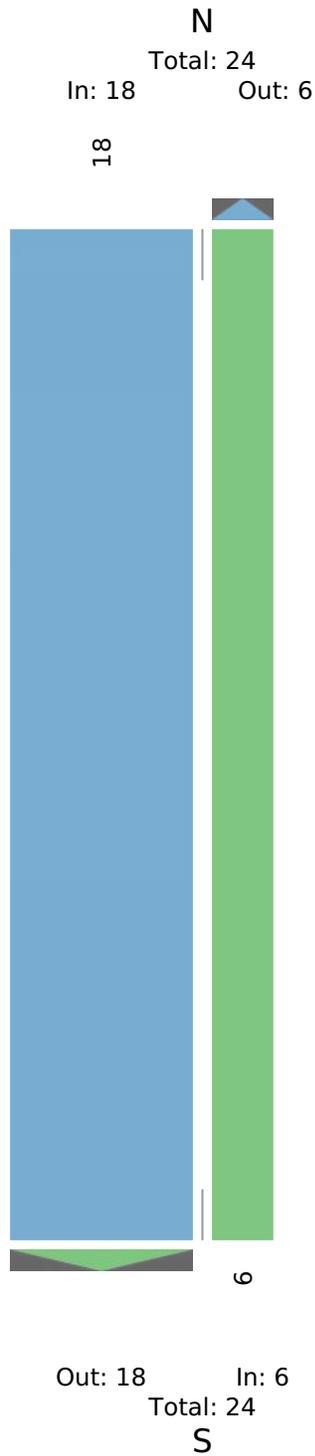
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Channels

ID: 1272487, Location: 38.578569, -90.408288



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US



Teleo Coffee Monroe Ave driveway (20240226 0... - ATR  
 Wed Feb 26, 2025  
 PM Peak (1 PM - 2 PM)  
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)  
 All Channels  
 ID: 1272487, Location: 38.578569, -90.408288



Leg Direction	North Southbound		South Northbound		Int
	T	App	T	App	
Time					
2025-02-26 1:00PM	2	2	0	0	2
1:15PM	4	4	2	2	6
1:30PM	1	1	0	0	1
1:45PM	6	6	0	0	6
<b>Total</b>	13	13	2	2	15
<b>% Approach</b>	100%	-	100%	-	-
<b>% Total</b>	86.7%	<b>86.7%</b>	13.3%	<b>13.3%</b>	-
<b>PHF</b>	0.542	<b>0.542</b>	0.250	<b>0.250</b>	0.625
<b>Lights</b>	13	13	2	2	15
<b>% Lights</b>	100%	<b>100%</b>	100%	<b>100%</b>	100%
<b>Articulated Trucks</b>	0	0	0	0	0
<b>% Articulated Trucks</b>	0%	<b>0%</b>	0%	<b>0%</b>	0%
<b>Buses and Single-Unit Trucks</b>	0	0	0	0	0
<b>% Buses and Single-Unit Trucks</b>	0%	<b>0%</b>	0%	<b>0%</b>	0%

\*T: Thru

Teleo Coffee Monroe Ave driveway (20240226 0... - ATR

Wed Feb 26, 2025

PM Peak (1 PM - 2 PM)

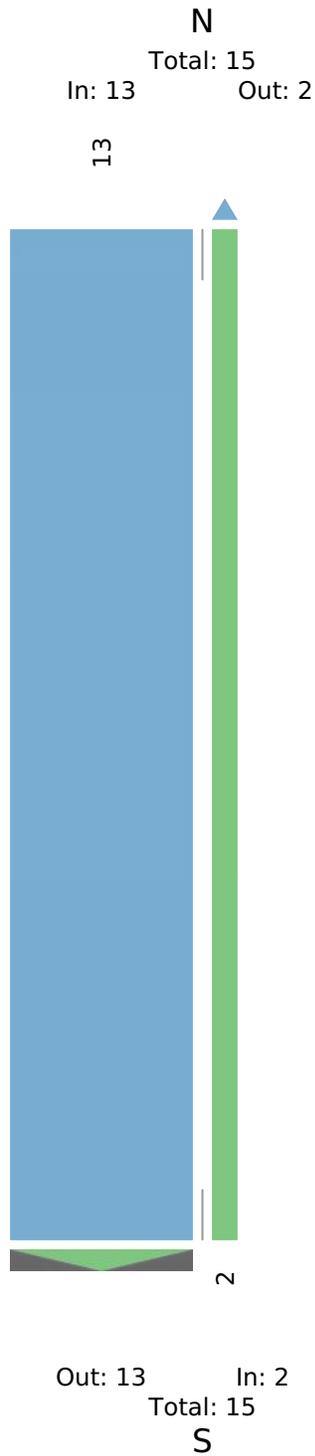
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Channels

ID: 1272487, Location: 38.578569, -90.408288



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US



Teleo Coffee Clay Ave north driveway (202402... - ATR

Wed Feb 26, 2025

Full Length (7 AM-4 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Channels

ID: 1272490, Location: 38.578569, -90.408288



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US

Leg Direction	East Westbound		West Eastbound		Int
	T	App	T	App	
Time					
2025-02-26 7:00AM	0	0	0	0	0
7:15AM	1	1	1	1	2
7:30AM	1	1	0	0	1
7:45AM	6	6	1	1	7
Hourly Total	8	8	2	2	10
8:00AM	1	1	1	1	2
8:15AM	2	2	0	0	2
8:30AM	3	3	2	2	5
8:45AM	7	7	0	0	7
Hourly Total	13	13	3	3	16
9:00AM	1	1	1	1	2
9:15AM	3	3	2	2	5
9:30AM	3	3	0	0	3
9:45AM	2	2	1	1	3
Hourly Total	9	9	4	4	13
10:00AM	1	1	1	1	2
10:15AM	6	6	2	2	8
10:30AM	3	3	1	1	4
10:45AM	2	2	1	1	3
Hourly Total	12	12	5	5	17
11:00AM	2	2	0	0	2
11:15AM	0	0	0	0	0
11:30AM	0	0	0	0	0
11:45AM	3	3	1	1	4
Hourly Total	5	5	1	1	6
12:00PM	1	1	1	1	2
12:15PM	2	2	1	1	3
12:30PM	3	3	0	0	3
12:45PM	1	1	1	1	2
Hourly Total	7	7	3	3	10
1:00PM	1	1	0	0	1
1:15PM	0	0	1	1	1
1:30PM	2	2	0	0	2
1:45PM	2	2	1	1	3
Hourly Total	5	5	2	2	7
2:00PM	5	5	1	1	6
2:15PM	0	0	0	0	0
2:30PM	1	1	0	0	1
2:45PM	1	1	1	1	2
Hourly Total	7	7	2	2	9
3:00PM	1	1	1	1	2
3:15PM	0	0	0	0	0
3:30PM	1	1	1	1	2
3:45PM	1	1	0	0	1
Hourly Total	3	3	2	2	5
<b>Total</b>	69	69	24	24	93
<b>% Approach</b>	100%	-	100%	-	-
<b>% Total</b>	74.2%	74.2%	25.8%	25.8%	-
<b>Lights</b>	67	67	24	24	91
<b>% Lights</b>	97.1%	97.1%	100%	100%	97.8%
<b>Articulated Trucks</b>	0	0	0	0	0
<b>% Articulated Trucks</b>	0%	0%	0%	0%	0%
<b>Buses and Single-Unit Trucks</b>	2	2	0	0	2
<b>% Buses and Single-Unit Trucks</b>	2.9%	2.9%	0%	0%	2.2%

Leg Direction	East Westbound	West Eastbound	
Time	T <b>App</b>	T <b>App</b>	<b>Int</b>

\*T: Thru

Teleo Coffee Clay Ave north driveway (202402... - ATR  
Wed Feb 26, 2025  
Full Length (7 AM-4 PM)  
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)  
All Channels  
ID: 1272490, Location: 38.578569, -90.408288



Teleo Coffee Clay Ave north driveway (202402... - ATR

Wed Feb 26, 2025

AM Peak (8:30 AM - 9:30 AM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Channels

ID: 1272490, Location: 38.578569, -90.408288



357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US

Leg Direction	East		West		Int
	Westbound		Eastbound		
Time	T	App	T	App	
2025-02-26 8:30AM	3	3	2	2	5
8:45AM	7	7	0	0	7
9:00AM	1	1	1	1	2
9:15AM	3	3	2	2	5
<b>Total</b>	14	14	5	5	19
<b>% Approach</b>	100%	-	100%	-	-
<b>% Total</b>	73.7%	73.7%	26.3%	26.3%	-
<b>PHF</b>	0.500	0.500	0.625	0.625	0.679
<b>Lights</b>	14	14	5	5	19
<b>% Lights</b>	100%	100%	100%	100%	100%
<b>Articulated Trucks</b>	0	0	0	0	0
<b>% Articulated Trucks</b>	0%	0%	0%	0%	0%
<b>Buses and Single-Unit Trucks</b>	0	0	0	0	0
<b>% Buses and Single-Unit Trucks</b>	0%	0%	0%	0%	0%

\*T: Thru

Teleo Coffee Clay Ave north driveway (202402... - ATR  
Wed Feb 26, 2025  
AM Peak (8:30 AM - 9:30 AM) - Overall Peak Hour  
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)  
All Channels  
ID: 1272490, Location: 38.578569, -90.408288



Teleo Coffee Clay Ave north driveway (202402... - ATR

Wed Feb 26, 2025

Midday Peak (11:45 AM - 12:45 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Channels

ID: 1272490, Location: 38.578569, -90.408288



357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US

Leg Direction	East		West		Int
	Westbound		Eastbound		
Time	T	App	T	App	
2025-02-26 11:45AM	3	3	1	1	4
12:00PM	1	1	1	1	2
12:15PM	2	2	1	1	3
12:30PM	3	3	0	0	3
<b>Total</b>	9	9	3	3	12
<b>% Approach</b>	100%	-	100%	-	-
<b>% Total</b>	75.0%	75.0%	25.0%	25.0%	-
<b>PHF</b>	0.750	0.750	0.750	0.750	0.750
<b>Lights</b>	9	9	3	3	12
<b>% Lights</b>	100%	100%	100%	100%	100%
<b>Articulated Trucks</b>	0	0	0	0	0
<b>% Articulated Trucks</b>	0%	0%	0%	0%	0%
<b>Buses and Single-Unit Trucks</b>	0	0	0	0	0
<b>% Buses and Single-Unit Trucks</b>	0%	0%	0%	0%	0%

\*T: Thru

Teleo Coffee Clay Ave north driveway (202402... - ATR  
Wed Feb 26, 2025  
Midday Peak (11:45 AM - 12:45 PM)  
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)  
All Channels  
ID: 1272490, Location: 38.578569, -90.408288



Teleo Coffee Clay Ave north driveway (202402... - ATR

Wed Feb 26, 2025

PM Peak (1:15 PM - 2:15 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Channels

ID: 1272490, Location: 38.578569, -90.408288



357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US  
 Provided by: Terra Engineering

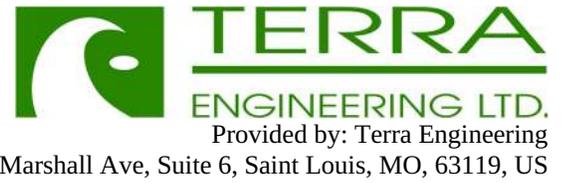
Leg Direction	East		West		Int
	Westbound		Eastbound		
Time	T	App	T	App	
2025-02-26 1:15PM	0	0	1	1	1
1:30PM	2	2	0	0	2
1:45PM	2	2	1	1	3
2:00PM	5	5	1	1	6
<b>Total</b>	9	9	3	3	12
<b>% Approach</b>	100%	-	100%	-	-
<b>% Total</b>	75.0%	75.0%	25.0%	25.0%	-
<b>PHF</b>	0.450	0.450	0.750	0.750	0.500
<b>Lights</b>	9	9	3	3	12
<b>% Lights</b>	100%	100%	100%	100%	100%
<b>Articulated Trucks</b>	0	0	0	0	0
<b>% Articulated Trucks</b>	0%	0%	0%	0%	0%
<b>Buses and Single-Unit Trucks</b>	0	0	0	0	0
<b>% Buses and Single-Unit Trucks</b>	0%	0%	0%	0%	0%

\*T: Thru

Teleo Coffee Clay Ave north driveway (202402... - ATR  
Wed Feb 26, 2025  
PM Peak (1:15 PM - 2:15 PM)  
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)  
All Channels  
ID: 1272490, Location: 38.578569, -90.408288



**Teleo Coffee Clay Ave south driveway (202402... - ATR**  
 Wed Feb 26, 2025  
 Full Length (7 AM-4 PM)  
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)  
 All Channels  
 ID: 1273190, Location: 38.578569, -90.408288



Leg Direction	East Westbound		West Eastbound		Int
	T	App	T	App	
Time					
2025-02-26 7:00AM	0	0	0	0	0
7:15AM	4	4	0	0	4
7:30AM	0	0	0	0	0
7:45AM	0	0	0	0	0
Hourly Total	4	4	0	0	4
8:00AM	3	3	0	0	3
8:15AM	0	0	1	1	1
8:30AM	2	2	0	0	2
8:45AM	1	1	2	2	3
Hourly Total	6	6	3	3	9
9:00AM	5	5	0	0	5
9:15AM	7	7	1	1	8
9:30AM	1	1	2	2	3
9:45AM	3	3	0	0	3
Hourly Total	16	16	3	3	19
10:00AM	1	1	1	1	2
10:15AM	1	1	1	1	2
10:30AM	1	1	0	0	1
10:45AM	3	3	1	1	4
Hourly Total	6	6	3	3	9
11:00AM	0	0	1	1	1
11:15AM	4	4	0	0	4
11:30AM	2	2	0	0	2
11:45AM	2	2	0	0	2
Hourly Total	8	8	1	1	9
12:00PM	1	1	0	0	1
12:15PM	2	2	0	0	2
12:30PM	2	2	1	1	3
12:45PM	3	3	0	0	3
Hourly Total	8	8	1	1	9
1:00PM	0	0	0	0	0
1:15PM	1	1	0	0	1
1:30PM	6	6	0	0	6
1:45PM	0	0	0	0	0
Hourly Total	7	7	0	0	7
2:00PM	3	3	0	0	3
2:15PM	2	2	0	0	2
2:30PM	1	1	1	1	2
2:45PM	0	0	2	2	2
Hourly Total	6	6	3	3	9
3:00PM	2	2	0	0	2
3:15PM	3	3	0	0	3
3:30PM	1	1	1	1	2
3:45PM	4	4	0	0	4
Hourly Total	10	10	1	1	11
<b>Total</b>	71	71	15	15	86
<b>% Approach</b>	100%	-	100%	-	-
<b>% Total</b>	82.6%	82.6%	17.4%	17.4%	-
<b>Lights</b>	71	71	13	13	84
<b>% Lights</b>	100%	100%	86.7%	86.7%	97.7%
<b>Articulated Trucks</b>	0	0	0	0	0
<b>% Articulated Trucks</b>	0%	0%	0%	0%	0%
<b>Buses and Single-Unit Trucks</b>	0	0	2	2	2
<b>% Buses and Single-Unit Trucks</b>	0%	0%	13.3%	13.3%	2.3%

Leg Direction	East Westbound	West Eastbound	
Time	T <b>App</b>	T <b>App</b>	<b>Int</b>

\*T: Thru

Teleo Coffee Clay Ave south driveway (202402... - ATR  
Wed Feb 26, 2025  
Full Length (7 AM-4 PM)  
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)  
All Channels  
ID: 1273190, Location: 38.578569, -90.408288



Teleo Coffee Clay Ave south driveway (202402... - ATR  
 Wed Feb 26, 2025  
 AM Peak (8:45 AM - 9:45 AM) - Overall Peak Hour  
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)  
 All Channels  
 ID: 1273190, Location: 38.578569, -90.408288



Leg Direction	East		West		Int
	Westbound		Eastbound		
Time	T	App	T	App	
2025-02-26 8:45AM	1	1	2	2	3
9:00AM	5	5	0	0	5
9:15AM	7	7	1	1	8
9:30AM	1	1	2	2	3
<b>Total</b>	14	14	5	5	19
<b>% Approach</b>	100%	-	100%	-	-
<b>% Total</b>	73.7%	73.7%	26.3%	26.3%	-
<b>PHF</b>	0.500	0.500	0.625	0.625	0.594
<b>Lights</b>	14	14	5	5	19
<b>% Lights</b>	100%	100%	100%	100%	100%
<b>Articulated Trucks</b>	0	0	0	0	0
<b>% Articulated Trucks</b>	0%	0%	0%	0%	0%
<b>Buses and Single-Unit Trucks</b>	0	0	0	0	0
<b>% Buses and Single-Unit Trucks</b>	0%	0%	0%	0%	0%

\*T: Thru

Teleo Coffee Clay Ave south driveway (202402... - ATR  
Wed Feb 26, 2025  
AM Peak (8:45 AM - 9:45 AM) - Overall Peak Hour  
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)  
All Channels  
ID: 1273190, Location: 38.578569, -90.408288



Teleo Coffee Clay Ave south driveway (202402... - ATR

Wed Feb 26, 2025

Midday Peak (12:45 PM - 1:45 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Channels

ID: 1273190, Location: 38.578569, -90.408288



Provided by: Terra Engineering  
357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US

Leg Direction	East Westbound		West Eastbound		Int	
	T	App	T	App		
Time						
	2025-02-26 12:45PM	3	3	0	0	3
	1:00PM	0	0	0	0	0
	1:15PM	1	1	0	0	1
	1:30PM	6	6	0	0	6
	<b>Total</b>	10	10	0	0	10
	<b>% Approach</b>	100%	-	0%	-	-
	<b>% Total</b>	100%	100%	0%	0%	-
	<b>PHF</b>	0.417	0.417	-	-	0.417
	<b>Lights</b>	10	10	0	0	10
	<b>% Lights</b>	100%	100%	0%	-	100%
	<b>Articulated Trucks</b>	0	0	0	0	0
	<b>% Articulated Trucks</b>	0%	0%	0%	-	0%
	<b>Buses and Single-Unit Trucks</b>	0	0	0	0	0
	<b>% Buses and Single-Unit Trucks</b>	0%	0%	0%	-	0%

\*T: Thru

Teleo Coffee Clay Ave south driveway (202402... - ATR  
Wed Feb 26, 2025  
Midday Peak (12:45 PM - 1:45 PM)  
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)  
All Channels  
ID: 1273190, Location: 38.578569, -90.408288



Teleo Coffee Clay Ave south driveway (202402... - ATR

Wed Feb 26, 2025

PM Peak (1:30 PM - 2:30 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Channels

ID: 1273190, Location: 38.578569, -90.408288



357 Marshall Ave, Suite 6, Saint Louis, MO, 63119, US

Leg Direction	East Westbound		West Eastbound		Int
	T	App	T	App	
Time					
2025-02-26 1:30PM	6	6	0	0	6
1:45PM	0	0	0	0	0
2:00PM	3	3	0	0	3
2:15PM	2	2	0	0	2
<b>Total</b>	11	11	0	0	11
<b>% Approach</b>	100%	-	0%	-	-
<b>% Total</b>	100%	100%	0%	0%	-
<b>PHF</b>	0.458	0.458	-	-	0.458
<b>Lights</b>	11	11	0	0	11
<b>% Lights</b>	100%	100%	0%	-	100%
<b>Articulated Trucks</b>	0	0	0	0	0
<b>% Articulated Trucks</b>	0%	0%	0%	-	0%
<b>Buses and Single-Unit Trucks</b>	0	0	0	0	0
<b>% Buses and Single-Unit Trucks</b>	0%	0%	0%	-	0%

\*T: Thru

Teleo Coffee Clay Ave south driveway (202402... - ATR  
Wed Feb 26, 2025  
PM Peak (1:30 PM - 2:30 PM)  
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)  
All Channels  
ID: 1273190, Location: 38.578569, -90.408288





# APPENDIX B

## EXISTING SYNCHRO OUTPUT

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Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	0	8	1	0	4	0	258	0	3	232	2
Future Vol, veh/h	3	0	8	1	0	4	0	258	0	3	232	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									
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	9	1	0	4	0	280	0	3	252	2

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	540	540	253	539	541	280	254	0	0	280	0	0
Stage 1	260	260	-	280	280	-	-	-	-	-	-	-
Stage 2	280	280	-	259	261	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	452	448	785	453	448	758	1311	-	-	1282	-	-
Stage 1	745	693	-	726	679	-	-	-	-	-	-	-
Stage 2	726	679	-	746	692	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	449	447	785	447	447	758	1311	-	-	1282	-	-
Mov Cap-2 Maneuver	449	447	-	447	447	-	-	-	-	-	-	-
Stage 1	743	691	-	726	679	-	-	-	-	-	-	-
Stage 2	722	679	-	736	690	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v10.63		10.45	0	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1311	-	-	652	666	23	-
HCM Lane V/C Ratio	-	-	-	0.018	0.008	0.003	-
HCM Control Delay (s/veh)	0	-	-	10.6	10.5	7.8	0
HCM Lane LOS	A	-	-	B	B	A	A
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	2	0	0	1	2	262	0	2	243	0
Future Vol, veh/h	0	0	2	0	0	1	2	262	0	2	243	0
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									
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	2	0	0	1	2	285	0	2	264	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	558	558	264	558	558	285	264	0	0	285	0	0
Stage 1	268	268	-	289	289	-	-	-	-	-	-	-
Stage 2	289	289	-	268	268	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	441	438	775	441	438	754	1300	-	-	1277	-	-
Stage 1	737	687	-	719	673	-	-	-	-	-	-	-
Stage 2	719	673	-	737	687	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	438	437	775	438	437	754	1300	-	-	1277	-	-
Mov Cap-2 Maneuver	438	437	-	438	437	-	-	-	-	-	-	-
Stage 1	736	686	-	717	672	-	-	-	-	-	-	-
Stage 2	716	672	-	734	686	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s/v	9.66		9.78		0.06		0.06	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	14	-	-	775	754	15	-	-
HCM Lane V/C Ratio	0.002	-	-	0.003	0.001	0.002	-	-
HCM Control Delay (s/veh)	7.8	0	-	9.7	9.8	7.8	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	0	0	263	0	0	245
Future Vol, veh/h	0	0	263	0	0	245
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	286	0	0	266
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	0	9.2	9.1
HCM LOS	-	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%
Vol Thru, %	100%	100%	100%
Vol Right, %	0%	0%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	263	0	245
LT Vol	0	0	0
Through Vol	263	0	245
RT Vol	0	0	0
Lane Flow Rate	286	0	266
Geometry Grp	1	1	1
Degree of Util (X)	0.328	0	0.307
Departure Headway (Hd)	4.131	5.106	4.145
Convergence, Y/N	Yes	Yes	Yes
Cap	863	0	860
Service Time	2.19	3.106	2.207
HCM Lane V/C Ratio	0.331	0	0.309
HCM Control Delay, s/veh	9.2	8.1	9.1
HCM Lane LOS	A	N	A
HCM 95th-tile Q	1.4	0	1.3

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	33	11	38	6	29	27	19	206	3	14	215	17
Future Vol, veh/h	33	11	38	6	29	27	19	206	3	14	215	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	12	41	7	32	29	21	224	3	15	234	18
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.8	8.6	9.9	10
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	40%	10%	6%
Vol Thru, %	90%	13%	47%	87%
Vol Right, %	1%	46%	44%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	228	82	62	246
LT Vol	19	33	6	14
Through Vol	206	11	29	215
RT Vol	3	38	27	17
Lane Flow Rate	248	89	67	267
Geometry Grp	1	1	1	1
Degree of Util (X)	0.319	0.124	0.093	0.34
Departure Headway (Hd)	4.634	5.006	4.994	4.577
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	773	712	713	783
Service Time	2.679	3.065	3.058	2.621
HCM Lane V/C Ratio	0.321	0.125	0.094	0.341
HCM Control Delay, s/veh	9.9	8.8	8.6	10
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.4	0.4	0.3	1.5

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	0	1	0	0	2	2	202	1	3	332	9
Future Vol, veh/h	2	0	1	0	0	2	2	202	1	3	332	9
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									
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	0	1	0	0	2	2	220	1	3	361	10

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	596	597	366	592	602	220	371	0	0	221	0	0
Stage 1	372	372	-	224	224	-	-	-	-	-	-	-
Stage 2	224	225	-	367	377	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	415	416	679	418	414	820	1188	-	-	1349	-	-
Stage 1	648	619	-	778	718	-	-	-	-	-	-	-
Stage 2	779	718	-	652	616	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	412	414	679	415	412	820	1188	-	-	1349	-	-
Mov Cap-2 Maneuver	412	414	-	415	412	-	-	-	-	-	-	-
Stage 1	646	617	-	777	716	-	-	-	-	-	-	-
Stage 2	775	716	-	649	614	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s/v12.64			9.4		0.08		0.07	
HCM LOS	B		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	18	-	-	474	820	16	-	-
HCM Lane V/C Ratio	0.002	-	-	0.007	0.003	0.002	-	-
HCM Control Delay (s/veh)	8	0	-	12.6	9.4	7.7	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	2	0	0	1	0	205	0	1	335	1
Future Vol, veh/h	0	0	2	0	0	1	0	205	0	1	335	1
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									
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	2	0	0	1	0	223	0	1	364	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	590	590	365	589	590	223	365	0	0	223	0	0
Stage 1	367	367	-	223	223	-	-	-	-	-	-	-
Stage 2	223	223	-	366	367	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	419	420	680	420	420	817	1193	-	-	1346	-	-
Stage 1	653	622	-	780	719	-	-	-	-	-	-	-
Stage 2	780	719	-	653	622	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	418	420	680	418	420	817	1193	-	-	1346	-	-
Mov Cap-2 Maneuver	418	420	-	418	420	-	-	-	-	-	-	-
Stage 1	652	622	-	780	719	-	-	-	-	-	-	-
Stage 2	779	719	-	650	621	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v10.31		9.41	0	0.02
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1193	-	-	680	817	5	-	-
HCM Lane V/C Ratio	-	-	-	0.003	0.001	0.001	-	-
HCM Control Delay (s/veh)	0	-	-	10.3	9.4	7.7	0	-
HCM Lane LOS	A	-	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Intersection Delay, s/veh	9.6
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	0	0	206	0	0	337
Future Vol, veh/h	0	0	206	0	0	337
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	224	0	0	366
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	0	8.8	10.1
HCM LOS	-	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%
Vol Thru, %	100%	100%	100%
Vol Right, %	0%	0%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	206	0	337
LT Vol	0	0	0
Through Vol	206	0	337
RT Vol	0	0	0
Lane Flow Rate	224	0	366
Geometry Grp	1	1	1
Degree of Util (X)	0.262	0	0.417
Departure Headway (Hd)	4.205	5.186	4.1
Convergence, Y/N	Yes	Yes	Yes
Cap	844	0	872
Service Time	2.281	3.186	2.152
HCM Lane V/C Ratio	0.265	0	0.42
HCM Control Delay, s/veh	8.8	8.2	10.1
HCM Lane LOS	A	N	B
HCM 95th-tile Q	1.1	0	2.1

Intersection	
Intersection Delay, s/veh	10.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	12	17	11	29	17	31	203	15	23	253	28
Future Vol, veh/h	12	12	17	11	29	17	31	203	15	23	253	28
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	13	18	12	32	18	34	221	16	25	275	30
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.6	8.8	10	10.6
HCM LOS	A	A	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	12%	29%	19%	8%
Vol Thru, %	82%	29%	51%	83%
Vol Right, %	6%	41%	30%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	249	41	57	304
LT Vol	31	12	11	23
Through Vol	203	12	29	253
RT Vol	15	17	17	28
Lane Flow Rate	271	45	62	330
Geometry Grp	1	1	1	1
Degree of Util (X)	0.342	0.064	0.089	0.41
Departure Headway (Hd)	4.552	5.173	5.193	4.464
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	788	689	686	806
Service Time	2.59	3.234	3.252	2.499
HCM Lane V/C Ratio	0.344	0.065	0.09	0.409
HCM Control Delay, s/veh	10	8.6	8.8	10.6
HCM Lane LOS	A	A	A	B
HCM 95th-tile Q	1.5	0.2	0.3	2



# APPENDIX C

# TRIP GENERATION

# CALCULATIONS

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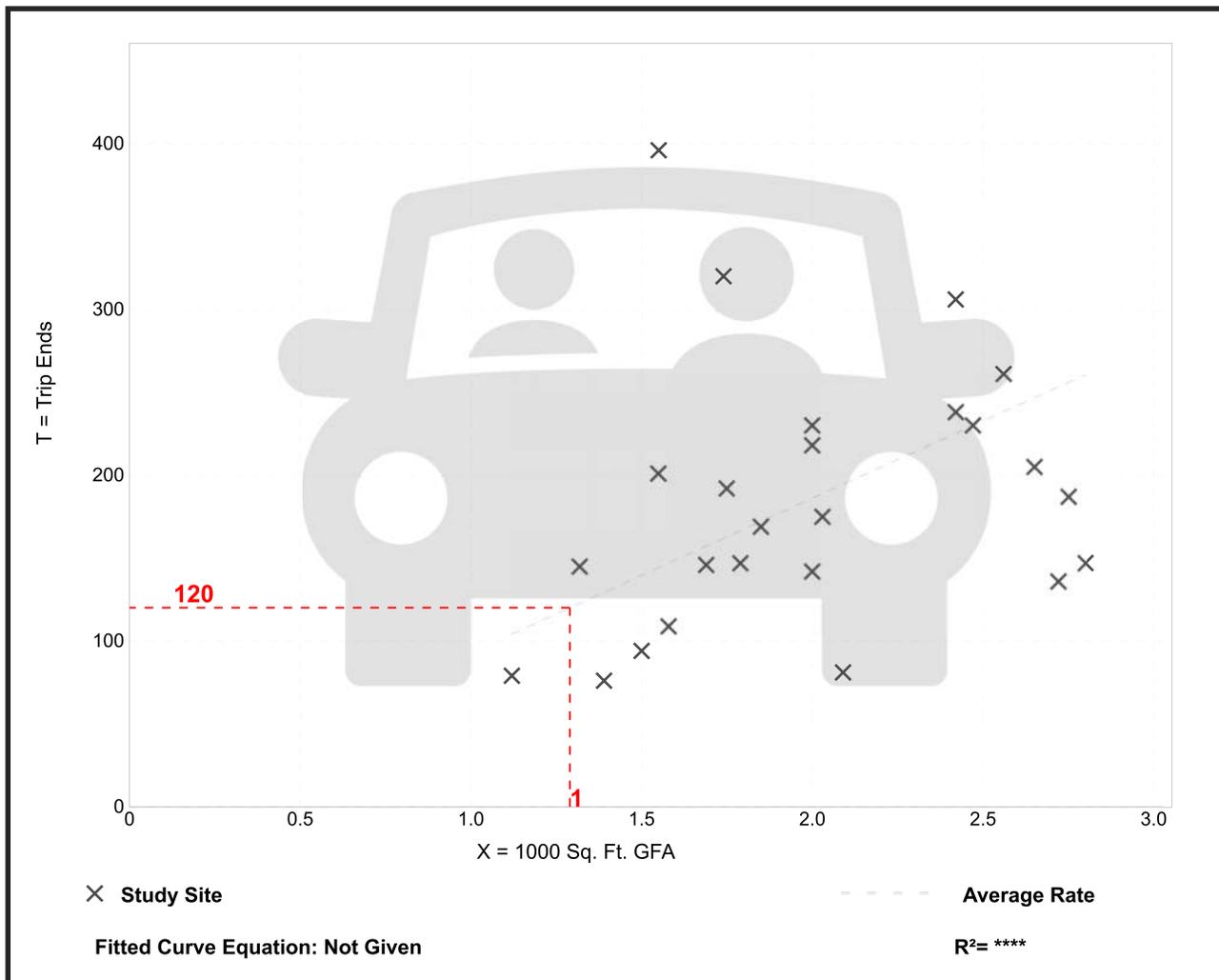
# Coffee/Donut Shop without Drive-Through Window (936)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 7 and 9 a.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 25  
 Avg. 1000 Sq. Ft. GFA: 2  
 Directional Distribution: 51% entering, 49% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
93.08	38.76 - 255.48	42.71

## Data Plot and Equation



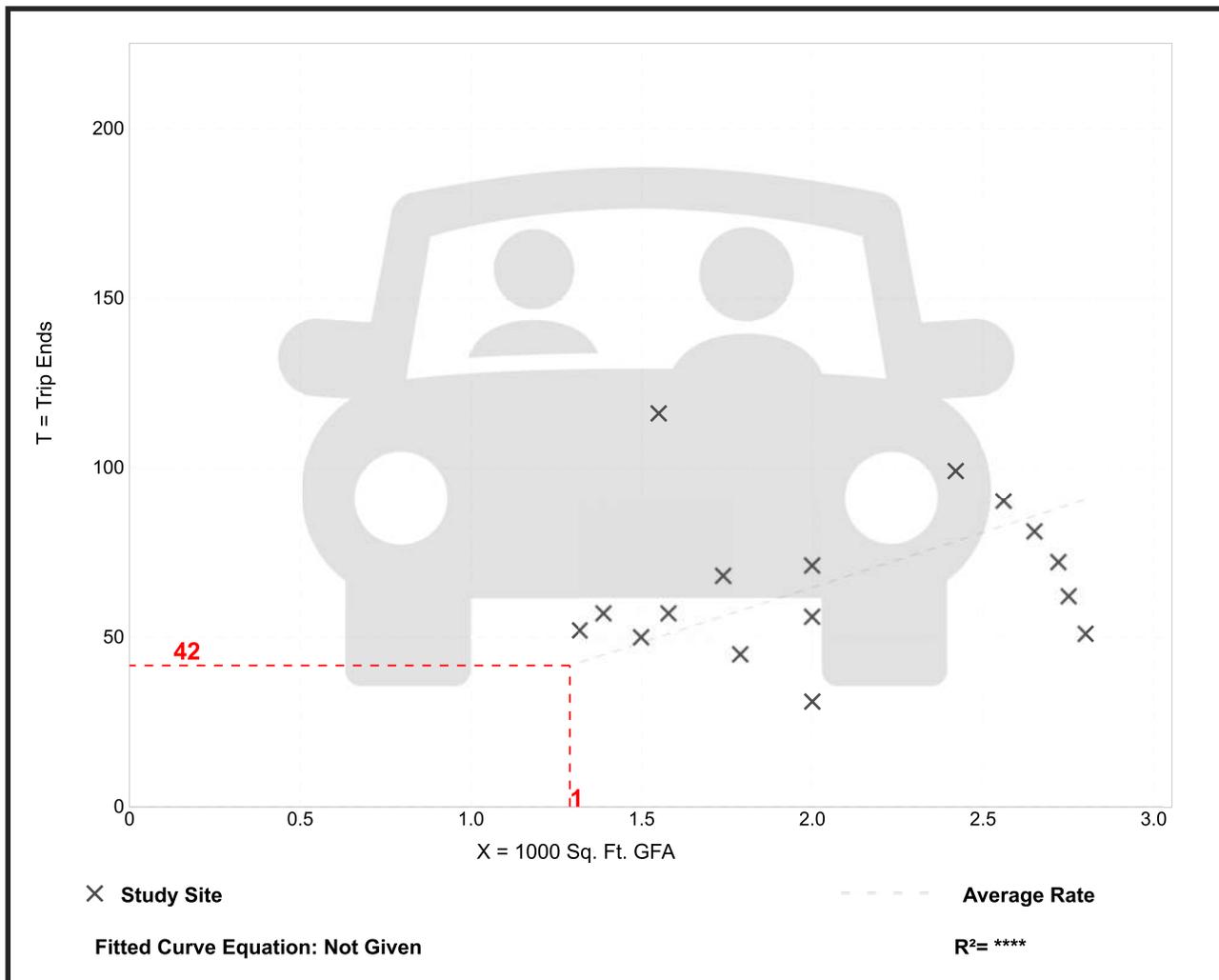
# Coffee/Donut Shop without Drive-Through Window (936)

**Vehicle Trip Ends vs:** 1000 Sq. Ft. GFA  
**On a:** Weekday,  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**  
**Setting/Location:** General Urban/Suburban  
 Number of Studies: 16  
 Avg. 1000 Sq. Ft. GFA: 2  
 Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
32.29	15.50 - 74.84	12.64

## Data Plot and Equation





# APPENDIX D

# OPENING DAY SYNCHRO

# OUTPUT

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Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	0	8	1	0	4	0	261	0	3	235	2
Future Vol, veh/h	3	0	8	1	0	4	0	261	0	3	235	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									
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	9	1	0	4	0	284	0	3	255	2

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	547	547	257	546	548	284	258	0	0	284	0	0
Stage 1	263	263	-	284	284	-	-	-	-	-	-	-
Stage 2	284	284	-	262	264	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	448	445	782	449	444	755	1307	-	-	1279	-	-
Stage 1	742	691	-	723	677	-	-	-	-	-	-	-
Stage 2	723	677	-	743	690	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	444	443	782	442	443	755	1307	-	-	1279	-	-
Mov Cap-2 Maneuver	444	443	-	442	443	-	-	-	-	-	-	-
Stage 1	740	689	-	723	677	-	-	-	-	-	-	-
Stage 2	719	677	-	733	688	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v10.66		10.49	0	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1307	-	-	648	662	22	-	-
HCM Lane V/C Ratio	-	-	-	0.018	0.008	0.003	-	-
HCM Control Delay (s/veh)	0	-	-	10.7	10.5	7.8	0	-
HCM Lane LOS	A	-	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	2	0	0	1	2	265	0	2	246	0
Future Vol, veh/h	0	0	2	0	0	1	2	265	0	2	246	0
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									
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	2	0	0	1	2	288	0	2	267	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	564	564	267	564	564	288	267	0	0	288	0	0
Stage 1	272	272	-	292	292	-	-	-	-	-	-	-
Stage 2	292	292	-	272	272	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	436	435	771	436	435	751	1296	-	-	1274	-	-
Stage 1	734	685	-	716	671	-	-	-	-	-	-	-
Stage 2	716	671	-	734	685	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	434	433	771	433	433	751	1296	-	-	1274	-	-
Mov Cap-2 Maneuver	434	433	-	433	433	-	-	-	-	-	-	-
Stage 1	733	683	-	714	669	-	-	-	-	-	-	-
Stage 2	713	669	-	731	683	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s/v	9.68		9.8		0.06		0.06	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	13	-	-	771	751	15	-	-
HCM Lane V/C Ratio	0.002	-	-	0.003	0.001	0.002	-	-
HCM Control Delay (s/veh)	7.8	0	-	9.7	9.8	7.8	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	14	13	17	253	235	13
Future Vol, veh/h	14	13	17	253	235	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	14	18	275	255	14

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	574	263	270	0	-	0
Stage 1	263	-	-	-	-	-
Stage 2	312	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	480	776	1294	-	-	-
Stage 1	781	-	-	-	-	-
Stage 2	742	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	472	776	1294	-	-	-
Mov Cap-2 Maneuver	472	-	-	-	-	-
Stage 1	768	-	-	-	-	-
Stage 2	742	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	11.52	0.49	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	113	-	582	-	-
HCM Lane V/C Ratio	0.014	-	0.05	-	-
HCM Control Delay (s/veh)	7.8	0	11.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	0	0	266	0	0	248
Future Vol, veh/h	0	0	266	0	0	248
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	289	0	0	270
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	0	9.3	9.1
HCM LOS	-	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%
Vol Thru, %	100%	100%	100%
Vol Right, %	0%	0%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	266	0	248
LT Vol	0	0	0
Through Vol	266	0	248
RT Vol	0	0	0
Lane Flow Rate	289	0	270
Geometry Grp	1	1	1
Degree of Util (X)	0.332	0	0.311
Departure Headway (Hd)	4.134	5.12	4.148
Convergence, Y/N	Yes	Yes	Yes
Cap	862	0	860
Service Time	2.193	3.12	2.21
HCM Lane V/C Ratio	0.335	0	0.314
HCM Control Delay, s/veh	9.3	8.1	9.1
HCM Lane LOS	A	N	A
HCM 95th-tile Q	1.5	0	1.3

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	34	11	38	6	29	28	19	210	3	14	217	18
Future Vol, veh/h	34	11	38	6	29	28	19	210	3	14	217	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	12	41	7	32	30	21	228	3	15	236	20
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.8	8.6	9.9	10.1
HCM LOS	A	A	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	41%	10%	6%
Vol Thru, %	91%	13%	46%	87%
Vol Right, %	1%	46%	44%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	232	83	63	249
LT Vol	19	34	6	14
Through Vol	210	11	29	217
RT Vol	3	38	28	18
Lane Flow Rate	252	90	68	271
Geometry Grp	1	1	1	1
Degree of Util (X)	0.325	0.126	0.095	0.345
Departure Headway (Hd)	4.644	5.028	5.007	4.585
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	772	708	710	782
Service Time	2.692	3.092	3.075	2.632
HCM Lane V/C Ratio	0.326	0.127	0.096	0.347
HCM Control Delay, s/veh	9.9	8.8	8.6	10.1
HCM Lane LOS	A	A	A	B
HCM 95th-tile Q	1.4	0.4	0.3	1.5

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	0	1	0	0	2	2	204	1	3	334	9
Future Vol, veh/h	2	0	1	0	0	2	2	204	1	3	334	9
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									
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	0	1	0	0	2	2	222	1	3	363	10

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	601	602	368	596	606	222	373	0	0	223	0	0
Stage 1	374	374	-	227	227	-	-	-	-	-	-	-
Stage 2	226	227	-	370	379	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	412	414	677	415	411	817	1186	-	-	1346	-	-
Stage 1	647	617	-	776	716	-	-	-	-	-	-	-
Stage 2	777	716	-	650	614	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	409	412	677	412	409	817	1186	-	-	1346	-	-
Mov Cap-2 Maneuver	409	412	-	412	409	-	-	-	-	-	-	-
Stage 1	645	615	-	774	715	-	-	-	-	-	-	-
Stage 2	773	714	-	647	612	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s/v12.69			9.42		0.08		0.07	
HCM LOS	B		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	17	-	-	471	817	16	-	-
HCM Lane V/C Ratio	0.002	-	-	0.007	0.003	0.002	-	-
HCM Control Delay (s/veh)	8	0	-	12.7	9.4	7.7	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	2	0	0	1	0	207	0	1	337	1
Future Vol, veh/h	0	0	2	0	0	1	0	207	0	1	337	1
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									
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	2	0	0	1	0	225	0	1	366	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	594	594	367	593	595	225	367	0	0	225	0	0
Stage 1	369	369	-	225	225	-	-	-	-	-	-	-
Stage 2	225	225	-	368	370	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	417	418	678	417	418	814	1191	-	-	1344	-	-
Stage 1	651	621	-	778	718	-	-	-	-	-	-	-
Stage 2	778	718	-	651	620	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	416	418	678	415	417	814	1191	-	-	1344	-	-
Mov Cap-2 Maneuver	416	418	-	415	417	-	-	-	-	-	-	-
Stage 1	650	620	-	778	718	-	-	-	-	-	-	-
Stage 2	777	718	-	649	620	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v10.32		9.43	0	0.02
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1191	-	-	678	814	5	-
HCM Lane V/C Ratio	-	-	-	0.003	0.001	0.001	-
HCM Control Delay (s/veh)	0	-	-	10.3	9.4	7.7	0
HCM Lane LOS	A	-	-	B	A	A	A
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	4	8	4	203	333	6
Future Vol, veh/h	4	8	4	203	333	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	9	4	221	362	7

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	595	365	368	0	-	0
Stage 1	365	-	-	-	-	-
Stage 2	229	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	467	680	1190	-	-	-
Stage 1	702	-	-	-	-	-
Stage 2	809	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	465	680	1190	-	-	-
Mov Cap-2 Maneuver	465	-	-	-	-	-
Stage 1	699	-	-	-	-	-
Stage 2	809	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v11.25		0.16	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	35	-	589	-	-
HCM Lane V/C Ratio	0.004	-	0.022	-	-
HCM Control Delay (s/veh)	8	0	11.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Intersection Delay, s/veh	9.6
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	0	0	208	0	0	339
Future Vol, veh/h	0	0	208	0	0	339
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	226	0	0	368
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	0	8.8	10.1
HCM LOS	-	A	B

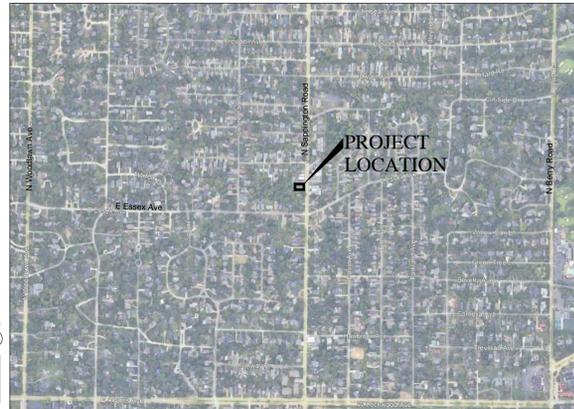
Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%
Vol Thru, %	100%	100%	100%
Vol Right, %	0%	0%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	208	0	339
LT Vol	0	0	0
Through Vol	208	0	339
RT Vol	0	0	0
Lane Flow Rate	226	0	368
Geometry Grp	1	1	1
Degree of Util (X)	0.264	0	0.42
Departure Headway (Hd)	4.207	5.194	4.101
Convergence, Y/N	Yes	Yes	Yes
Cap	843	0	873
Service Time	2.284	3.194	2.154
HCM Lane V/C Ratio	0.268	0	0.422
HCM Control Delay, s/veh	8.8	8.2	10.1
HCM Lane LOS	A	N	B
HCM 95th-tile Q	1.1	0	2.1

Intersection	
Intersection Delay, s/veh	10.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	12	17	11	29	17	31	205	15	23	256	29
Future Vol, veh/h	12	12	17	11	29	17	31	205	15	23	256	29
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	13	18	12	32	18	34	223	16	25	278	32
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.6	8.8	10	10.7
HCM LOS	A	A	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	12%	29%	19%	7%
Vol Thru, %	82%	29%	51%	83%
Vol Right, %	6%	41%	30%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	251	41	57	308
LT Vol	31	12	11	23
Through Vol	205	12	29	256
RT Vol	15	17	17	29
Lane Flow Rate	273	45	62	335
Geometry Grp	1	1	1	1
Degree of Util (X)	0.346	0.064	0.09	0.415
Departure Headway (Hd)	4.559	5.187	5.209	4.467
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	788	686	684	803
Service Time	2.597	3.251	3.268	2.503
HCM Lane V/C Ratio	0.346	0.066	0.091	0.417
HCM Control Delay, s/veh	10	8.6	8.8	10.7
HCM Lane LOS	A	A	A	B
HCM 95th-tile Q	1.5	0.2	0.3	2.1



**VICINITY MAP**  
NOT TO SCALE

# NEW CIVIL CONSTRUCTION DOCUMENTS FOR: Dwell Coffee House GLENDALE, MO

**415 NORTH SAPPINGTON ROAD  
ST. LOUIS, MO. 63122  
ST. LOUIS COUNTY, MISSOURI**

**SITE INFORMATION:**

PARCEL # LOCATOR: 23M620816

C-1, COMMERCIAL

AREA OF LOT: 16,997 S.F. (0.39 ACRES)

AREA OF IMPROVEMENTS: 16,575 S.F. (0.38 ACRES)

FIRST FLOOR BUILDING AREA: 1,377 S.F.  
SECOND FLOOR BUILDING AREA: 262 S.F.  
GROSS TOTAL BUILDING AREA: 1,639 S.F.

BUILDING LOT COVERAGE: 8.10%

BUILDING SETBACKS:  
FRONT - 35 FEET  
SIDE - 10 FEET  
REAR - 25 FEET

PARKING SETBACKS:  
10 FEET FROM N. SAPPINGTON ROAD RIGHT-OF-WAY

**PARKING SPACES REQUIRED:**

COFFEE SHOP - (RETAIL STORE AND SERVICE ESTABLISHMENTS):

(1 SPACE FOR EVERY 200 S.F. GROSS FLOOR AREA)	
GLENDALE COFFEE HOUSE - 1,639 S.F.:	9
ADA PARKING SPACES REQUIRED:	1

PARKING SPACES PROVIDED:	8
ADA PARKING SPACES PROVIDED:	1
TOTAL PARKING SPACES PROVIDED:	9

**OWNER/DEVELOPER**

JAMIE AND LISA HOUSTON  
415 N SAPPINGTON ROAD  
ST. LOUIS, MO 63122  
FORESTERH@GMAIL.COM  
206.852.2852

**ARCHITECT/DESIGNER**

IDEA ARCHITECTS, LLC  
BRIAN IVY, AIA  
130 W. LOCKWOOD AVE., SUITE 2  
ST. LOUIS, MO 63119  
314.801.8601

**CIVIL ENGINEER**

RDC, LLC  
TODD REYLING, P.E.  
4516 BOARDWALK  
SMITHTON, IL 62285  
618-530-1694

**LAND SURVEYOR**

ALTEA SURVEYING, LLC  
3906 S. OLD HWY 94, SUITE 600  
ST. CHARLES, MO 63304  
636.477.6000

**CIVIL SHEET INDEX**

C000	COVER SHEET
C001-C002	CIVIL CONSTRUCTION NOTES
C100	EXISTING TOPOGRAPHY AND DEMOLITION PLAN
C200	CIVIL SITE PLAN
C201	CIVIL SITE PLAN - HORIZONTAL CONTROL
C300	GRADING PLAN
C400	EXISTING DRAINAGE AREA MAP
C401	PROPOSED DRAINAGE AREA MAP
C402	STORM SEWER DRAINAGE PLAN
C500	SITE UTILITY PLAN
C600	SEDIMENT AND EROSION CONTROL PLAN
C700-C704	CIVIL CONSTRUCTION DETAILS

**BENCHMARK INFORMATION**

**SITE BENCHMARK (AS SHOWN ON SURVEY)**

GPS OBSERVED - MODOT VRS NETWORK  
CUT SQAURE  
ELEV.=614.08'

**OBSERVED ST. LOUIS COUNTY BENCHMARK**

ST. LOUIS COUNTY BENCHMARK GPS MO STATE PLANE COORDINATES  
N:974497.427,E: 868238.521, EL=599.47' USFT  
+/-0.15' ELEVATION TOLERANCE.

SCALE FACTOR = 0.999912348  
ST. LOUIS COUNTY BENCHMARK #14353  
NAVD88(SLC2011A) ELEV = 619.05 FTUS (OR) 188.686 METER  
NGVD29 ELEV = 619.39 FTUS

"L" ON THE NORTHWEST CORNER OF THE FIRST CONCRETE STEP AT #500 SAPPINGTON ROAD; (GLENDALE PRESBYTERIAN CHURCH) 41' EAST OF THE CENTERLINE OF SAPPINGTON ROAD AND 15' NORTH OF THE CENTERLINE OF WINNETKA LANE EXTENDED. SP MO EAST N=306126± E=259901± METER - ESTIMATED ROUGH NAD83 LAT=38.591809±(N/+) LONG=90.386347±(W/-)

**STORMWATER MANAGEMENT FUTURE**

**DISTURBANCE NOTE:**

PROJECT DISTURBANCE = 0.38 ACRES  
PROJECT RUNOFF DIFFERENTIAL = 0.09 CFS  
ANY FUTURE LAND DISTURBANCE AND/OR INCREASE IN IMPERVIOUS AREA ON THIS SITE MAY REQUIRE ADDITIONAL STORMWATER MANAGEMENT PER MSD REGULATIONS IN PLACE AT THAT TIME (INCLUDING TOTAL LAND DISTURBANCE AND/OR IMPERVIOUSNESS ADDED ON THIS PLAN, 25MSD-00160.)

**TITLE DISCLAIMER:**

IT IS NOT WARRANTED THAT THESE DRAWINGS CONTAIN COMPLETE INFORMATION REGARDING EASEMENTS, RESERVATIONS, RESTRICTIONS, RIGHT-OF-WAYS, BUILDING LINE SETBACKS, AND OTHER ENCUMBRANCES. FOR COMPLETE INFORMATION, A TITLE OPINION OR COMMITMENT FOR TITLE INSURANCE SHOULD BE OBTAINED AND THOROUGHLY REVIEWED.

**UTILITY INFORMATION:**

UNDERGROUND FACILITIES, STRUCTURES, AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS, AND THEREFORE DO NOT NECESSARILY REFLECT THE ACTUAL EXISTENCE, NON-EXISTENCE, SIZE, TYPE, NUMBER, OR LOCATION OF THESE FACILITIES, STRUCTURES, AND UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACTUAL LOCATION OF ALL UNDERGROUND FACILITIES, STRUCTURES, AND UTILITIES, EITHER SHOWN OR NOT SHOWN ON THESE PLANS. THE UNDERGROUND FACILITIES, STRUCTURES, AND UTILITIES SHALL BE LOCATED IN THE FIELD PRIOR TO ANY GRADING, EXCAVATION, OR CONSTRUCTION OF IMPROVEMENTS.



MISSOURI UTILITY LOCATE SERVICES  
PHONE:800.344.7483 OR WWW.MO1CALL.COM

**CONTRACTOR NOTE:**

THE CONTRACTOR AND/OR ALL SUBCONTRACTORS SHALL INVESTIGATE, ASCERTAIN, AND CONFORM TO ANY AND ALL PERMIT REQUIREMENTS OF ALL THE AFFECTED UTILITY COMPANIES AND/OR REGULATORY AGENCIES WITH REGARDS TO MAKING CONNECTIONS TO; OR CROSSING OF THEIR FACILITIES; WORKING WITHIN THEIR RIGHT OF WAY OR EASEMENTS; INSPECTIONS AND ASSOCIATED MONETARY CHARGES; AND/OR SPECIAL BACKFILL REQUIREMENTS. SUCH INVESTIGATION SHALL INCLUDE BUT NOT LIMITED TO THE MAKING OF NECESSARY APPLICATIONS AND PAYMENTS OF ALL REQUIRED FEES.

THE LOCATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS OR PROFILES ARE APPROXIMATE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR/SUBCONTRACTOR TO VERIFY THE FIELD LOCATIONS, ANTICIPATED CLEARANCES, AND THE EXISTENCE OF ANY FACILITIES NOT SHOWN HEREON, AS PART OF THE INVESTIGATIONS IN THE PARAGRAPH ABOVE.

**SURVEY/TOPOGRAPHY NOTE:**

THE BOUNDARY AND TOPOGRAPHIC SURVEY INFORMATION SHOWN ON THESE PLANS WAS PREPARED FROM AN ACTUAL FIELD SURVEY PROVIDED BY CHECKPOINT SURVEYING ALL EXISTING INFORMATION PRESENTED IN THESE PLANS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR. ANY DISCREPANCIES IN THE PLANS SHALL BE MADE AWARE TO THE ARCHITECT AND ENGINEER PRIOR TO BEGINNING CONSTRUCTION.

**GENERAL NOTES:**

THE FOLLOWING SHALL REQUIRE SEPARATE PERMITS: LAND DISTURBANCE, PARKING LOT, BUILDINGS/STRUCTURES, RETAINING WALLS, FENCES TALLER THAN 6' IN HEIGHT, TRASH ENCLOSURES, AND SIGNAGE.

**SITE LEGEND**

BENCHMARK CONTROL POINT			
<b>EXISTING</b>	<b>EXISTING</b>	<b>PROPOSED</b>	<b>PROPOSED</b>
LIGHT POLE	EDGE OF SHOULDER	LIGHT POLE	EDGE OF SHOULDER
FLARED END SECTION	FLOW LINE	FLARED END SECTION	FLOW LINE
TRAFFIC SIGN	TOP OF BANK	TRAFFIC SIGN	TOP OF BANK
FIRE HYDRANT	CONTOUR	FIRE HYDRANT	CONTOUR
WATER VALVE	SILT FENCE	WATER VALVE	SILT FENCE
TREE	PROPERTY LINE	TREE	PROPERTY LINE
DRAINAGE MANHOLE	EASEMENT	DRAINAGE MANHOLE	EASEMENT
DRAINAGE CATCHBASIN	FENCE	DRAINAGE CATCHBASIN	FENCE
SANITARY MANHOLE	GAS LINE	SANITARY MANHOLE	GAS LINE
SANITARY CLEANOUT	FIBER OPTIC	SANITARY CLEANOUT	FIBER OPTIC
	OVERHEAD ELECTRIC		OVERHEAD ELECTRIC
	UNDERGROUND ELECTRIC		UNDERGROUND ELECTRIC
	OVERHEAD TELEPHONE		OVERHEAD TELEPHONE
	UNDERGROUND TELEPHONE		UNDERGROUND TELEPHONE
	SANITARY SEWER		SANITARY SEWER
	STORM SEWER		STORM SEWER
	WATERLINE		WATERLINE

**UTILITY CONTACTS**

WATER:	MISSOURI AMERICAN WATER 866.430.0820
ELECTRIC:	AMEREN 866.992.6619
GAS:	SPIRE 800.887.4173
SANITARY SEWER:	METROPOLITAN ST. LOUIS SEWER DISTRICT 314.768.6260
STORM SEWER:	METROPOLITAN ST. LOUIS SEWER DISTRICT 314.768.6260
COMMUNICATIONS:	CHARTER 833.267.6094
FIRE DISTRICT:	GLENDALE CITY FIRE DEPARTMENT 314.965.0000

Architect:  
**idea ARCHITECTS**  
Idea Architects, LLC  
Attn: Brian Ivy  
130 W Lockwood Ave., Ste 2  
St. Louis, MO 63119  
314.801.8601  
Brian@IdeaSTL.com  
www.IdeaSTL.com

Civil Engineer:  
**RDC**  
REYLING DESIGN & CONSULTING  
4516 Boardwalk | Smithton, IL | 62285  
reylingdc@gmail.com



Missouri Firm License: 2016012969  
MO Certificate of Authority: LC001485066  
LICENSE EXPIRES - 12.31.2025  
DATE SIGNED - 07.10.2025

ISSUED / REVISED	DATE
ISSUED FOR REVIEW	04.21.2025
REVISED PER MSD REVIEW	07.10.2025

PROJECT NUMBER: 24-157

New Civil Site Plan for:  
**Dwell Coffee House**  
415 North Sappington Road  
St. Louis, MO 63122  
St. Louis County

Cover Sheet  
**C000**



**C-900 SANITARY PIPE:**

PVC GRAVITY SANITARY SEWER PIPE SIZES 4" THROUGH 15" SHALL BE AWWA C-900, CLASS 15 WITH DR18. PIPE TO BE LAID IN 20 FOOT LENGTHS WITH JOINTS WRAPPED 3 TIMES WITH FILTER FABRIC. EXTEND FILTER FABRIC 3 FEET EACH SIDE OF THE JOINT. ALL FITTINGS FOR PVC PIPE SHALL BE OF THE SAME MATERIAL AND STRENGTH REQUIREMENTS AS THE SEWER PIPE.

**CONTRACTOR'S INSURANCE (OFFSITE):**

PRIOR TO OBTAINING A CONSTRUCTION PERMIT FROM THE METROPOLITAN ST. LOUIS SEWER DISTRICT, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE THE DISTRICT WITH A COPY OF AN EXECUTED CERTIFICATE OF INSURANCE INDICATING THAT THE PERMITTEE HAS OBTAINED AND WILL CONTINUE TO CARRY COMMERCIAL GENERAL LIABILITY AND COMPREHENSIVE AUTO LIABILITY INSURANCE. THE REQUIREMENTS AND LIMITS SHALL BE AS STATED IN THE RULES AND REGULATIONS AND ENGINEERING DESIGN REQUIREMENTS FOR SANITARY AND STORMWATER DRAINAGE FACILITIES, SECTION 10.090.

**EXISTING CONNECTIONS:**

EXISTING WATER CONNECTION WILL BE REMAIN AS IS FOR THIS BUILDING. THE EXISTING TAP SIZE IS 1-1/2 INCH.

**LIMITS OF DISTURBANCE:**

THE CONTRACTOR SHALL STAY WITHIN THE LIMITS OF DISTURBANCE AS SHOWN ON THE PLANS AND MINIMIZE DISTURBANCE WITHIN THE WORK AREA WHEREVER POSSIBLE.

**PUBLIC SEWER MAINTENANCE:**

MAINTENANCE OF THE SEWERS DESIGNATED "PUBLIC" SHALL BE THE RESPONSIBILITY OF THE METROPOLITAN ST. LOUIS SEWER DISTRICT UPON DEDICATION OF THE SEWERS TO THE DISTRICT.

**REMOVE REPLACE OR REHAB NOTE:**

THE REMOVAL AND REPLACEMENT, OR REHABILITATION OF THE EXISTING STRUCTURE WILL BE DETERMINED BY THE MSD FIELD INSPECTOR. IF THE STRUCTURE IS DETERMINED TO REMAIN IN PLACE, THEN THE TOP SHALL BE ADJUSTED TO GRADE, IF NEEDED.

**SANITARY LATERALS:**

LATERALS TO BE 6-INCH PVC AND CONSTRUCTED AT 2.0% MINIMUM SLOPE. NO NEW LATERALS ARE PROPOSED FOR THIS PROJECT.

**STORMWATER MANAGEMENT FUTURE DISTURBANCE NOTE:**

PROJECT DISTURBANCE = 0.38 ACRES  
DIFFERENTIAL = 0.09 CFS  
ANY FUTURE LAND DISTURBANCE AND/OR INCREASE IN IMPERVIOUS AREA ON THIS SITE MAY REQUIRE ADDITIONAL STORMWATER MANAGEMENT PER MSD REGULATIONS IN PLACE AT THAT TIME (INCLUDING TOTAL LAND DISTURBANCE AND/OR IMPERVIOUSNESS ADDED ON THIS PLAN, 25MSD-00160.)

**STANDARD CONSTRUCTION 2023 VERSION:**

ALL STORM AND SANITARY SEWER STRUCTURES AND APPURTENANCES TO BE DEDICATED TO MSD, OR TO BE PRIVATE UNDER MSD INSPECTION, SHALL CONFORM TO THE METROPOLITAN ST. LOUIS SEWER DISTRICT, STANDARD CONSTRUCTION SPECIFICATIONS FOR SEWERS AND DRAINAGE FACILITIES, 2023. THAT WILL INCLUDE STANDARD DETAILS SHOWN THEREIN, ALL SUBSEQUENT CHANGES MADE THERETO, AND SHALL ALSO INCLUDE THE FOLLOWING:

**PART 2 - MATERIALS OF CONSTRUCTION**

**SECTION G PIPE.**

**12. CORRUGATED POLYPROPYLENE PIPE.**

SUBPARAGRAPHS A AND B SHALL BE DELETED IN THEIR ENTIRETY AND REPLACED WITH THE FOLLOWING:

a. FOR USE IN SANITARY, STORM AND COMBINED SEWERS 12 TO 60 INCHES IN DIAMETER IT SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2764 "STANDARD SPECIFICATION FOR 6 TO 60 IN. POLYPROPYLENE (PP) CORRUGATED DOUBLE AND TRIPLE WALL PIPE AND FITTINGS FOR NON-PRESSURE SANITARY SEWER APPLICATIONS." PIPE SHALL HAVE A MINIMUM STIFFNESS OF 46 PSI WHEN TESTED IN ACCORDANCE WITH ASTM D2412.

b. IN ADDITION TO THE JOINT REQUIREMENTS INDICATED IN PART 2, SEC. H, ALL POLYPROPYLENE PIPE SHALL UTILIZE A DOUBLE GASKETED JOINT.

PARAGRAPHS D. AND E. BELOW SHALL BE ADDED:

d. PIPE FOR GRAVITY SEWER INSTALLATIONS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321. CONSOLIDATION BY WATER (JETTING OR PUDDLING) SHALL NOT BE USED. CONSOLIDATION SHALL BE IN ACCORDANCE WITH MSD STANDARD CONSTRUCTION SPECIFICATIONS FOR TRENCH BACKFILL. PRICE FOR COMPACTED BACKFILL SHALL BE INCLUDED IN PIPE UNIT COST.

1. FOR USE IN SANITARY AND COMBINED SEWER INSTALLATIONS, A REPRESENTATIVE FROM THE PIPE MANUFACTURER SHALL VISIT THE SITE WITHIN THE FIRST 100 FEET OF PIPE INSTALLATION. COORDINATION OF THIS SITE VISIT SHALL BE ARRANGED BY THE CONTRACTOR. THE CONTRACTOR SHALL PROVIDE THE MSD INSPECTOR AT LEAST 24 HOURS' NOTICE OF THE PLANNED DATE AND TIME OF THE MANUFACTURER'S SITE VISIT.

2. FOLLOWING THE SITE VISIT, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE A LETTER FROM THE PIPING MANUFACTURER SUMMARIZING THEIR OBSERVATIONS. AT A MINIMUM, THE LETTER SHALL:

- a) INDICATE THE DATE THE INITIAL SECTION OF PIPE WAS INSTALLED; AND
- b) VERIFY THAT THE INSTALLATION OCCURRED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDED PROCEDURES.
- e. TRENCH WIDTH SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION RECOMMENDATIONS. DISTRICT STANDARD PAYLINE WIDTHS BASED ON THE NOMINAL INSIDE PIPE DIAMETER SHALL APPLY.

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Missouri Firm License: 2016012969  
MO Certificate of Authority: LC001485066



LICENSE EXPIRES - 12.31.2025  
DATE SIGNED - 07.10.2025

ENGINEER OF RECORD:  
Todd J. Reyling, PE  
Missouri Professional  
Engineer # 2011020072

ISSUED / REVISED	DATE
ISSUED FOR REVIEW	04.21.2025
REVISED PER MSD REVIEW	07.10.2025

PROJECT NUMBER: 24-157

New Civil Site Plan for:  
**Dwell Coffee House**  
415 North Sappington Road  
St. Louis, MO 63122  
St. Louis County

Civil  
Construction  
Notes  
**C002**

**EXISTING CONDITIONS PLAN NOTES:**

CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND/OR PROTECTION OF THE EXISTING ITEMS AS NOTED ON THIS PLAN.

THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING THE CONSTRUCTION PHASES OF THIS PROJECT. THE CONTRACTOR WILL BE HELD SOLELY RESPONSIBLE FOR ANY AND ALL DAMAGES.

THE CONTRACTOR IS CAUTIONED TO LOCATE ALL EXISTING UTILITIES AND CONFLICTS. CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY CONSTRUCTION ACTIVITY IN ORDER TO FIELD VERIFY EXISTING UTILITY INFORMATION.

CONTRACTOR SHALL PROTECT EXISTING STREET LIGHTS & POSTS, TRAFFIC CONTROL DEVICES, SIGNS, UTILITY BOXES, ELECTRIC, TELEPHONE, GAS, FIBER OPTIC, CABLE, WATER, STORM SEWER, SANITARY SEWER, AND ALL OTHER UTILITIES UNLESS OTHERWISE NOTED ON THE PLANS.

**TITLE DISCLAIMER:**

IT IS NOT WARRANTED THAT THESE DRAWINGS CONTAIN COMPLETE INFORMATION REGARDING EASEMENTS, RESERVATIONS, RESTRICTIONS, RIGHT-OF-WAYS, BUILDING LINE SETBACKS, AND OTHER ENCUMBRANCES. FOR COMPLETE INFORMATION, A TITLE OPINION OR COMMITMENT FOR TITLE INSURANCE SHOULD BE OBTAINED AND THOROUGHLY REVIEWED.

**UTILITY INFORMATION:**

UNDERGROUND FACILITIES, STRUCTURES, AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS, AND THEREFORE DO NOT NECESSARILY REFLECT THE ACTUAL EXISTENCE, NON-EXISTENCE, SIZE, TYPE, NUMBER, OR LOCATION OF THESE FACILITIES, STRUCTURES, AND UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACTUAL LOCATION OF ALL UNDERGROUND FACILITIES, STRUCTURES, AND UTILITIES, EITHER SHOWN OR NOT SHOWN ON THESE PLANS. THE UNDERGROUND FACILITIES, STRUCTURES, AND UTILITIES SHALL BE LOCATED IN THE FIELD PRIOR TO ANY GRADING, EXCAVATION, AND CONSTRUCTION OF IMPROVEMENTS.



**MISSOURI ONE CALL SYSTEM**  
MISSOURI UTILITY LOCATE SERVICES  
PHONE: 800.344.7483 OR WWW.MO1CALL.COM

**SURVEYOR NOTES:**

1. CONTOURS DEPICTED HEREON ARE DISPLAYED IN TWO (2) FOOT INTERVALS.
2. SITE BENCHMARK: ELEVATION = 614.008'. CUT SQUARE ON SIDEWALK NEAR THE CENTER OF THE EAST LINE OF THE SITE.
3. ANY UTILITIES AS SHOWN ON THIS DRAWING WERE DEVELOPED FROM ABOVE GROUND OBSERVATIONS ONLY. THIS COMPANY HAS MADE NO ATTEMPT TO EXCAVATE OR GO BELOW SURFACE TO LOCATE UTILITIES AND DOES NOT EXTEND OR IMPLY A GUARANTY OR WARRANTY AS TO THE EXACT LOCATION OF OR COMPLETE INVENTORY OF UTILITIES IN THIS AREA. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES (WHETHER SHOWN OR NOT) PRIOR TO EXCAVATION OR CONSTRUCTION AND TO PROTECT SAID UTILITIES FROM DAMAGE.
4. BASIS OF BEARINGS ARE DERIVED FROM TIES TO MISSOURI STATE PLANE COORDINATES USING GPS OBSERVATIONS REFERENCED TO MODOT VRS NET

MISSOURI EAST 2401  
HORIZONTAL DATUM: NAD83  
VRS BASE STATION PRS143356476177 (CORS-ID MOSI)  
N (Y) = 302843.569 (METERS)  
E (X) = 253367.387 (METERS)  
COMBINED FACTOR = 0.99993347  
VERTICAL DATUM: NAVD88 (GEOID12B)

**EXISTING CONDITIONS KEY NOTES:**

- 1 — EXISTING UTILITY LINES TO REMAIN, CONTRACTOR TO PROTECT IN PLACE.
- 2 — EXISTING SANITARY SEWER AND MANHOLE TO REMAIN, CONTRACTOR TO PROTECT IN PLACE.
- 3 — EXISTING WATER SERVICE TO REMAIN, CONTRACTOR TO PROTECT IN PLACE. THE EXISTING TAP SIZE IS 1-1/2 INCH.
- 4 — EXISTING ROADWAY/CURB TO REMAIN, CONTRACTOR TO PROTECT IN PLACE.
- 5 — EXISTING FENCE TO REMAIN, CONTRACTOR TO PROTECT IN PLACE.

**DEMOLITION LEGEND/KEY NOTES:**

-  CLEAR AND GRUB AREAS OF PROPOSED GRADING. REFER TO GEOTECHNICAL REPORT FOR ALL SPECIFICATIONS.
-  SAWCUT PAVEMENT AND CONFORM TO A CLEAN, NEAT EDGE. CONTRACTOR TO COORDINATE WITH CITY FOR PRIOR TO CONSTRUCTION.
-  LIMITS OF DISTURBANCE, CLEARING AND GRUBBING, AND SOIL STRIPPING.
-  CONTRACTOR TO REMOVE EXISTING BUILDING IN ITS ENTIRETY.
-  CONTRACTOR TO REMOVE EXISTING UTILITIES IN THEIR ENTIRETY.
-  CONTRACTOR TO REMOVE EXISTING CONCRETE AND CONCRETE SIDEWALK IN ITS ENTIRETY.
-  CONTRACTOR TO REMOVE EXISTING GRAVEL DRIVEWAY IN ITS ENTIRETY.
-  CONTRACTOR TO REMOVE EXISTING DECK IN ITS ENTIRETY.
-  CONTRACTOR TO REMOVE EXISTING BLOCK WALL IN ITS ENTIRETY.

**LEGAL DESCRIPTION:**

PART OF LOT 1 OF THE PARTITION OF BERNARD H. VENNEMAN'S HOMESTEAD FARM, IN THE SOUTHWEST 1/4 OF SECTION 31, TOWNSHIP 45 NORTH, RANGE 6 EAST, ST. LOUIS COUNTY, MISSOURI

**BENCHMARK INFORMATION**

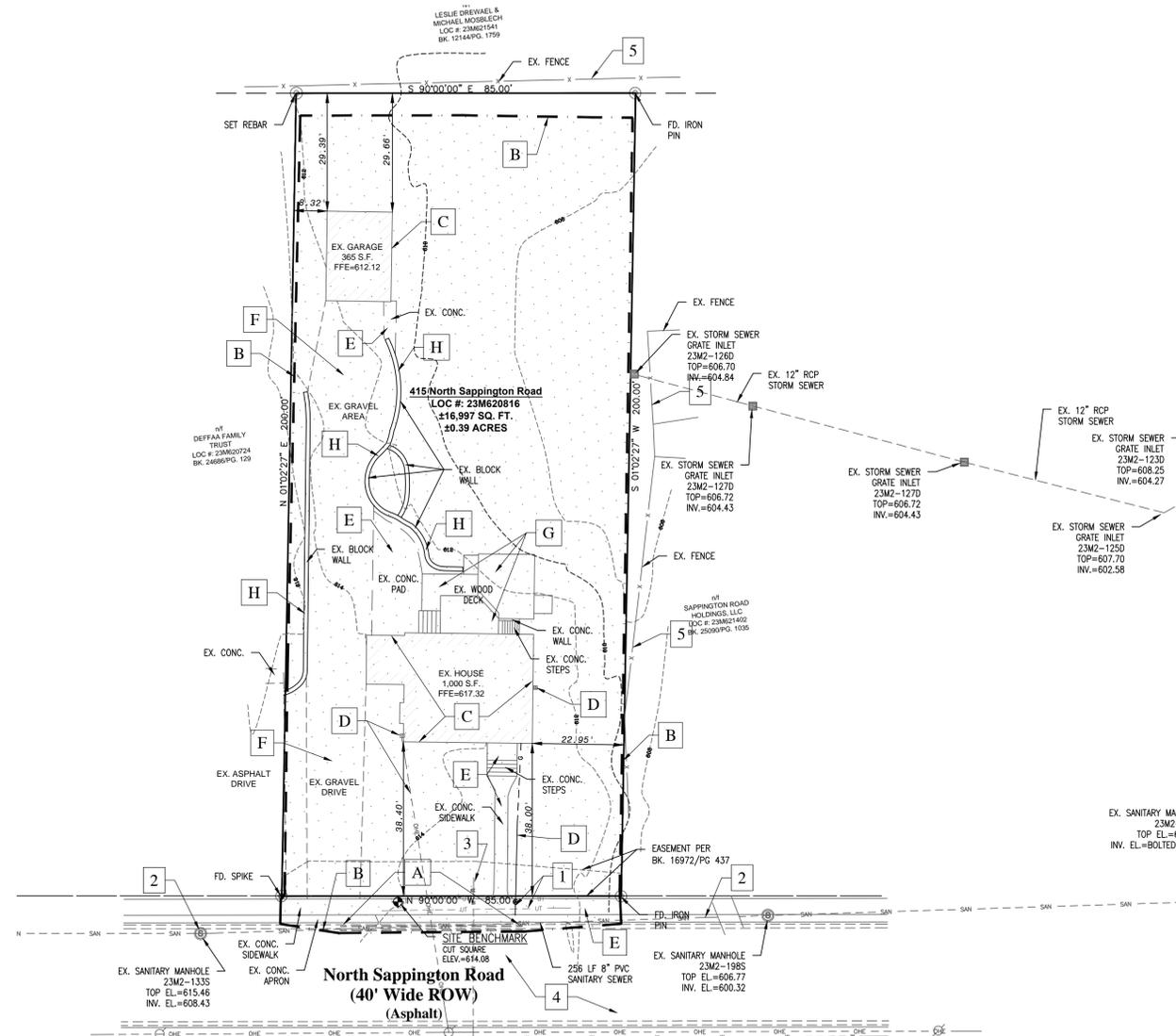
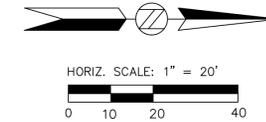
**SITE BENCHMARK (AS SHOWN ON SURVEY)**

GPS OBSERVED - MODOT VRS NETWORK  
CUT SQAURE  
ELEV.=614.08'

**OBSERVED ST. LOUIS COUNTY BENCHMARK**

ST. LOUIS COUNTY BENCHMARK GPS MO STATE PLANE COORDINATES  
N:974497.427,E: 868238.521, EL=599.47' USFT  
+/-0.15' ELEVATION TOLERANCE.  
SCALE FACTOR = 0.999912348  
ST. LOUIS COUNTY BENCHMARK #14353  
NAVD88(SLC2011A) ELEV = 619.05 FTUS (OR) 188.686 METER  
NGVD29 ELEV = 619.39 FTUS

"L" ON THE NORTHWEST CORNER OF THE FIRST CONCRETE STEP AT #50 SAPPINGTON ROAD; (GLENDALE PRESBYTERIAN CHURCH) 41' EAST OF THE CENTERLINE OF SAPPINGTON ROAD AND 15' NORTH OF THE CENTERLINE OF WINNETKA LANE EXTENDED. SP MO EAST N=306126± E=259901± METER - ESTIMATED ROUGH NAD83 LAT=38.591809±(N/+) LONG=90.386347±(W/-)



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**Civil Engineer:**  
  
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New Civil Site Plan for:  
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St. Louis County

Existing  
Topography  
and Demolition  
Plan  
**C100**

**GENERAL SITE NOTES:**

ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST CITY OF GLENDALE AND THE MISSOURI DEPARTMENT OF TRANSPORTATION CODES, STANDARDS AND SPECIFICATIONS.

ANY CITY OF GLENDALE INFRASTRUCTURE (ABOVE OR BELOW GRADE, VISIBLE OR NOT) OR PROPERTY DAMAGED AS A RESULT OF CONSTRUCTION SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE CITY

ALL CONSTRUCTION SHALL CONFORM TO THE APPLICABLE LOCAL, STATE, AND FEDERAL CODE REQUIREMENTS. WHEN CODES ARE IN CONFLICT, THE MORE STRINGENT SHALL APPLY.

ALL SIGNAGE AND PAVEMENT MARKINGS SHALL COMPLY WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), OR AS OTHERWISE SPECIFIED. INSTALLATION OF ALL SIGNS SHALL BE GOVERNED BY LOCAL CODES.

THE CONTRACTOR IS RESPONSIBLE TO HAVE ALL EXISTING UTILITIES LOCATED AND PROTECTED DURING CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE UTILITY PROTECTION CENTER AT LEAST THREE (3) DAYS PRIOR TO ANY SITE WORK FOR IDENTIFICATION OF EXISTING UTILITIES.

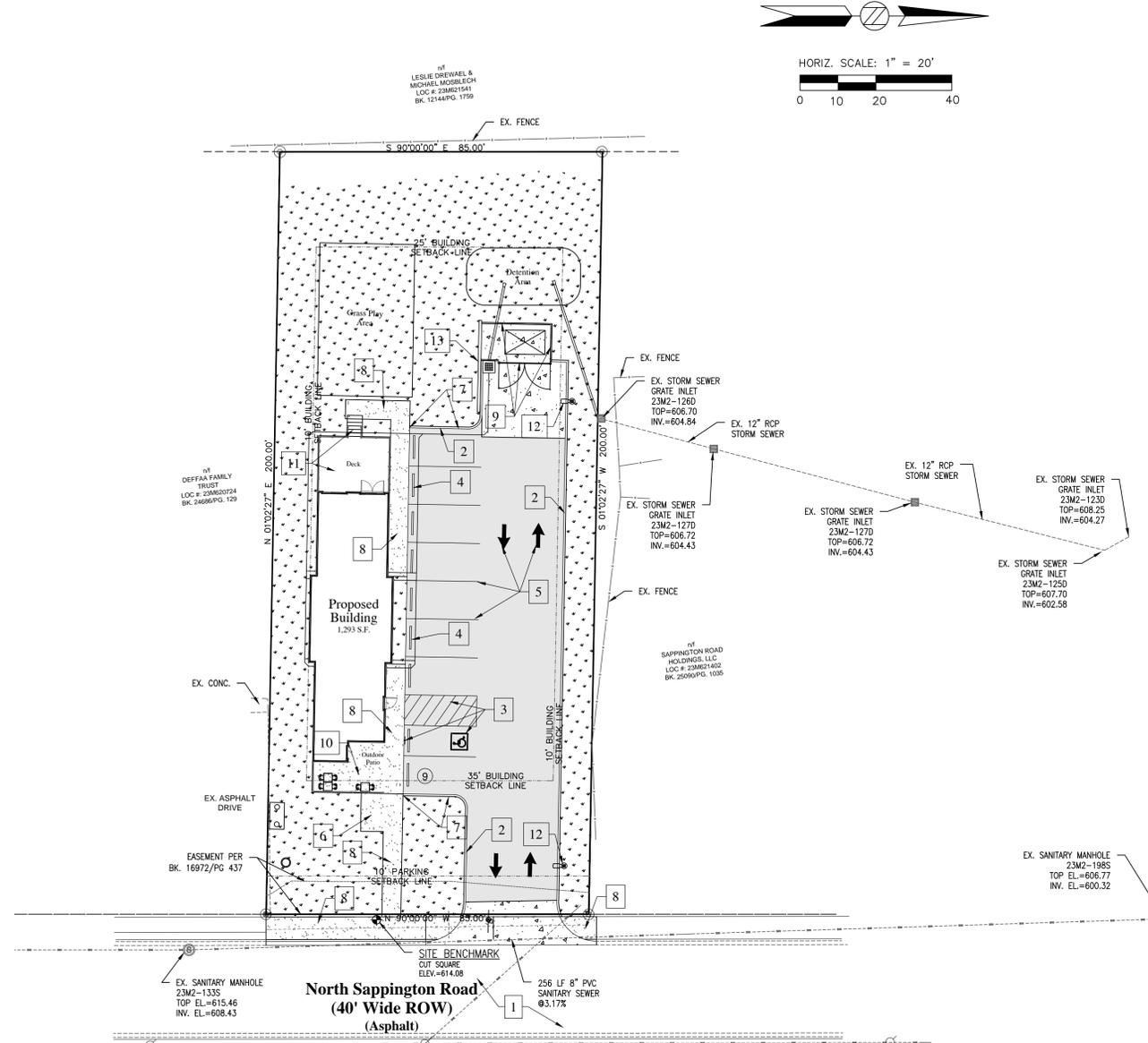
THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AT THE PROJECT SITE BEFORE BEGINNING CONSTRUCTION.

**SITE PAVING LEGEND:**

-  PROPOSED PCC CONCRETE SIDEWALK (4" PCC/4" AB STONE), SEE DETAIL
-  PROPOSED PCC CONCRETE PAVEMENT (6" PCC/6" AB STONE), SEE DETAIL
-  PROPOSED ASPHALT PAVEMENT-LIGHT DUTY (2" ASC/2" A1/6" AB STONE), SEE DETAIL
-  PROPOSED LANDSCAPE AND GRASS AREA. SEE LANDSCAPE PLAN.

**CIVIL SITE KEY NOTES:**

- 1 EXISTING ROADWAY AND CURB TO REMAIN – PROTECT IN PLACE.
- 2 PROPOSED 6" PCC BARRIER CURB, SEE DETAIL.
- 3 PROPOSED ACCESSIBLE PARKING STALL STRIPING AND SIGNAGE, SEE DETAIL.
- 4 PROPOSED CONCRETE PARKING BLOCK, SEE DETAIL.
- 5 PROPOSED 4" WIDE PARKING STALL STRIPING AND WHITE PAVEMENT MARKING, PEDESTRIAN ACCESS, TRAFFIC WHITE PAINT PER DETAIL. SEE PLAN FOR TYPICAL DIMENSIONS.
- 6 PROPOSED BICYCLE PARKING PER CITY OF GLENDALE REQUIREMENTS.
- 7 PROPOSED PCC CURB TAPER TO MATCH PAVEMENT AND/OR SIDEWALK GRADE.
- 8 PROPOSED CONCRETE SIDEWALK, CONTRACTOR SHALL CONSTRUCT TO MEET CURRENT ADA STANDARDS.
- 9 PROPOSED TRASH RECEPTACLE WITH PIPE BOLLARDS. SEE ARCHITECTURAL PLANS FOR DETAILS.
- 10 PROPOSED OUTDOOR SEATING AND PATIO AREA.
- 11 PROPOSED DECK AND STEPS, SEE ARCHITECTURAL PLANS FOR DETAILS.
- 12 PROPOSED PARKING LOT LIGHTING. SEE SITE LIGHTING PLAN FOR DETAILS.
- 13 PROPOSED MURAL SCREEN WALL, SEE ARCHITECTURAL PLANS FOR DETAILS.



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 St. Louis County

Civil Site Plan  
**C200**

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ALL SIGNAGE AND PAVEMENT MARKINGS SHALL COMPLY WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), OR AS OTHERWISE SPECIFIED. INSTALLATION OF ALL SIGNS SHALL BE GOVERNED BY LOCAL CODES.

THE CONTRACTOR IS RESPONSIBLE TO HAVE ALL EXISTING UTILITIES LOCATED AND PROTECTED DURING CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE UTILITY PROTECTION CENTER AT LEAST THREE (3) DAYS PRIOR TO ANY SITE WORK FOR IDENTIFICATION OF EXISTING UTILITIES.

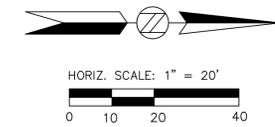
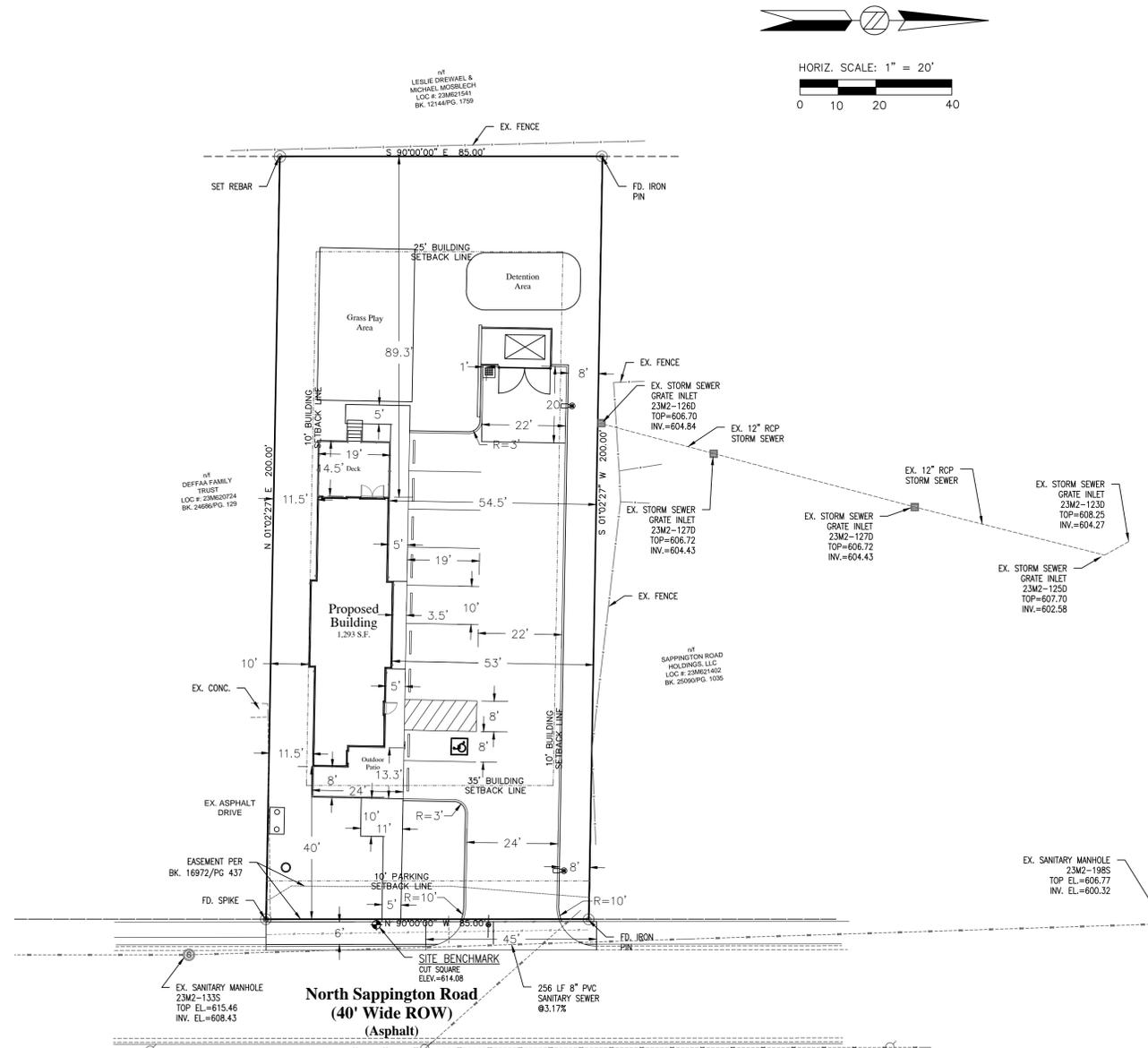
THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AT THE PROJECT SITE BEFORE BEGINNING CONSTRUCTION.

**HORIZONTAL CONTROL NOTES:**

CONTRACTOR SHALL VERIFY ALL DIMENSIONS AT PROJECT SITE PRIOR TO BEGINNING CONSTRUCTION AND NOTIFY THE ENGINEER OF DISCREPANCIES.

ALL DIMENSIONS ARE TO FACE OF CURB/EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

ALL PARKING LOT CURB RADII ARE DIMENSIONED TO THE BACK OF CURB.



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 St. Louis County

Civil Site Plan  
 Horizontal  
 Control  
**C201**

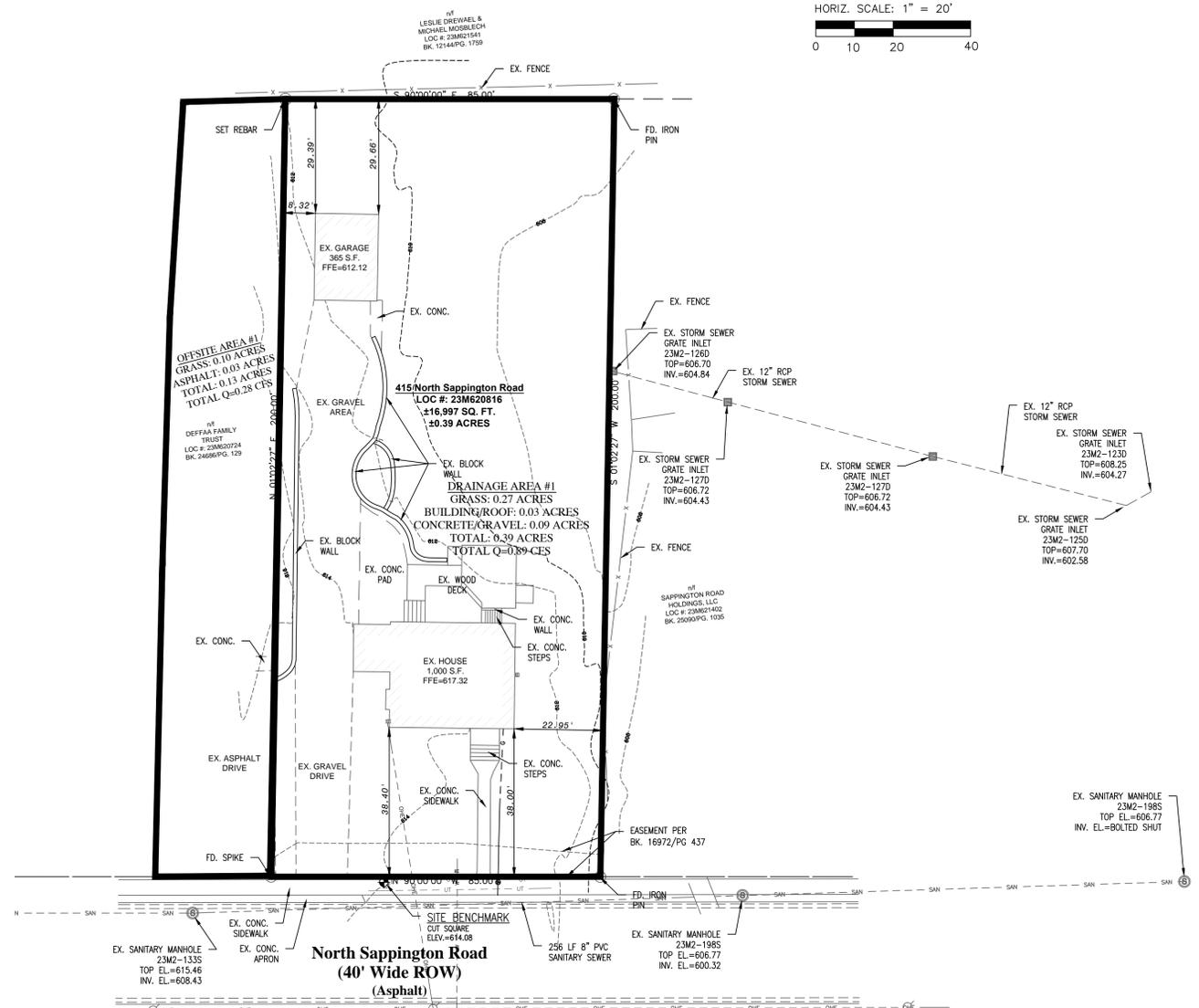
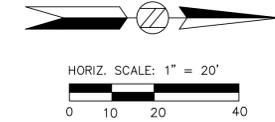


P.I. FACTOR IN CUBIC FEET PER SECOND PER ACRE

DURATION OF RAIN IN MINUTES	% IMPERVIOUS	15-YEAR RAINFALL FREQUENCY						20-YEAR RAINFALL FREQUENCY					
		15	20	30	60	90	120	15	20	30	60	90	120
0	1.59	1.61	1.52	1.22	1.04	0.92	1.65	1.68	1.60	1.29	1.08	0.96	
5	1.70	1.70	1.59	1.27	1.08	0.95	1.76	1.78	1.68	1.34	1.11	0.99	
10	1.80	1.79	1.68	1.33	1.12	0.97	1.87	1.87	1.77	1.40	1.15	1.02	
15	1.91	1.89	1.76	1.38	1.15	1.00	1.98	1.97	1.85	1.45	1.19	1.05	
20	2.01	2.00	1.85	1.43	1.19	1.03	2.09	2.09	1.95	1.50	1.22	1.07	
25	2.12	2.09	1.92	1.49	1.22	1.06	2.20	2.18	2.03	1.56	1.26	1.10	
30	2.23	2.19	2.00	1.54	1.26	1.08	2.31	2.28	2.11	1.61	1.30	1.13	
35	2.33	2.28	2.09	1.58	1.29	1.11	2.42	2.38	2.20	1.66	1.33	1.16	
40	2.44	2.39	2.18	1.63	1.33	1.13	2.53	2.50	2.28	1.71	1.37	1.18	
45	2.54	2.48	2.26	1.69	1.37	1.16	2.64	2.59	2.35	1.78	1.41	1.22	
50	2.65	2.58	2.35	1.74	1.40	1.19	2.75	2.69	2.46	1.83	1.44	1.24	
55	2.75	2.67	2.41	1.79	1.43	1.22	2.86	2.78	2.54	1.88	1.48	1.27	
60	2.86	2.76	2.50	1.85	1.47	1.24	2.97	2.88	2.63	1.94	1.52	1.30	
65	2.97	2.88	2.57	1.90	1.51	1.27	3.08	3.00	2.71	1.99	1.56	1.33	
70	3.07	2.97	2.66	1.94	1.54	1.29	3.19	3.10	2.81	2.04	1.59	1.35	
75	3.18	3.08	2.74	2.00	1.58	1.32	3.30	3.19	2.89	2.10	1.63	1.38	
80	3.29	3.15	2.81	2.05	1.62	1.35	3.41	3.29	2.96	2.15	1.67	1.41	
85	3.39	3.24	2.90	2.10	1.65	1.38	3.52	3.38	3.06	2.21	1.70	1.44	
90	3.50	3.36	2.98	2.16	1.68	1.40	3.63	3.50	3.14	2.27	1.74	1.46	
95	3.60	3.45	3.07	2.21	1.72	1.43	3.74	3.60	3.24	2.32	1.78	1.50	
100	3.71	3.54	3.15	2.26	1.75	1.45	3.85	3.70	3.32	2.37	1.81	1.52	
RAINFALL	5.30	4.80	3.70	2.40	1.86	1.53	5.50	4.80	3.90	2.52	1.92	1.60	

TABLE 4-2

P.I. VALUES FOR VARIOUS IMPERVIOUS CONDITIONS  
(15 YEAR & 20 YEAR RAINFALL FREQUENCIES)



Architect:  
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Professional Engineer Seal:  
 STATE OF MISSOURI  
 TODD JEFFREY REYLING  
 NUMBER: PE-201102072  
 LICENSE EXPIRES - 12.31.2025  
 DATE SIGNED - 07.10.2025  
 ENGINEER OF RECORD:  
 Todd J. Reyling, PE  
 Missouri Professional Engineer # 201102072  
 ISSUED / REVISED DATE  
 ISSUED FOR REVIEW 04.21.2025  
 REVISED PER MSD REVIEW 07.10.2025  
 PROJECT NUMBER: 24-157

New Civil Site Plan for:  
**Dwell Coffee House**  
 415 North Sappington Road  
 St. Louis, MO 63122  
 St. Louis County

Existing Drainage Area Map  
**C400**

P.I. FACTOR IN CUBIC FEET PER SECOND PER ACRE

DURATION OF RAIN IN MINUTES	% IMPERVIOUS	15-YEAR RAINFALL FREQUENCY						20-YEAR RAINFALL FREQUENCY					
		15	20	30	60	90	120	15	20	30	60	90	120
0		1.59	1.61	1.52	1.22	1.04	0.92	1.65	1.68	1.60	1.29	1.08	0.96
5		1.70	1.70	1.59	1.27	1.08	0.95	1.76	1.78	1.68	1.34	1.11	0.99
10		1.80	1.79	1.68	1.33	1.12	0.97	1.87	1.87	1.77	1.40	1.15	1.02
15		1.91	1.89	1.76	1.38	1.15	1.00	1.98	1.97	1.85	1.45	1.19	1.05
20		2.01	2.00	1.85	1.43	1.19	1.03	2.09	2.09	1.95	1.50	1.22	1.07
25		2.12	2.09	1.92	1.49	1.22	1.06	2.20	2.18	2.03	1.56	1.26	1.10
30		2.23	2.19	2.00	1.54	1.26	1.08	2.31	2.28	2.11	1.61	1.30	1.13
35		2.33	2.28	2.09	1.58	1.29	1.11	2.42	2.38	2.20	1.66	1.33	1.16
40		2.44	2.39	2.18	1.63	1.33	1.13	2.53	2.50	2.28	1.71	1.37	1.18
45		2.54	2.48	2.26	1.69	1.37	1.16	2.64	2.59	2.35	1.78	1.41	1.22
50		2.65	2.58	2.33	1.74	1.40	1.19	2.75	2.69	2.46	1.83	1.44	1.24
55		2.75	2.67	2.41	1.79	1.43	1.22	2.86	2.78	2.54	1.88	1.48	1.27
60		2.86	2.76	2.50	1.85	1.47	1.24	2.97	2.88	2.63	1.94	1.52	1.30
65		2.97	2.88	2.57	1.90	1.51	1.27	3.08	3.00	2.71	1.99	1.56	1.33
70		3.07	2.97	2.66	1.94	1.54	1.29	3.19	3.10	2.81	2.04	1.59	1.35
75		3.18	3.08	2.74	2.00	1.58	1.32	3.30	3.19	2.89	2.10	1.63	1.38
80		3.29	3.15	2.81	2.05	1.62	1.35	3.41	3.29	2.98	2.15	1.67	1.41
85		3.39	3.24	2.90	2.10	1.65	1.38	3.52	3.38	3.08	2.21	1.70	1.44
90		3.50	3.36	2.98	2.16	1.68	1.40	3.63	3.50	3.14	2.27	1.74	1.46
95		3.60	3.45	3.07	2.21	1.72	1.43	3.74	3.60	3.24	2.32	1.78	1.50
100		3.71	3.54	3.15	2.26	1.75	1.45	3.85	3.70	3.32	2.37	1.81	1.52
RAINFALL		5.30	4.80	3.70	2.40	1.86	1.53	5.50	4.80	3.90	2.52	1.92	1.60

TABLE 4-2

P.I. VALUES FOR VARIOUS IMPERVIOUS CONDITIONS  
(15 YEAR & 20 YEAR RAINFALL FREQUENCIES)

Dwell Coffee House

415 North Sappington Rd Glendale, MO  
Stormwater Runoff Differential

Existing Land Usage (Drainage Area #1)

Land Description	Area (Acres)	% Impervious	PI*	Flow (cfs)
Grass	0.27	0	1.70	0.46
Building/Roof (DS not tied in)	0.03	100	3.54	0.11
Concrete/Gravel/Deck	0.09	100	3.54	0.32
<b>Total Area</b>	<b>0.39</b>			<b>0.89</b>

Existing Offsite Land Usage (Drainage Area #1)

Land Description	Area (Acres)	% Impervious	PI*	Flow (cfs)
Grass	0.10	0	1.70	0.17
Asphalt	0.03	100	3.54	0.11
<b>Total Area</b>	<b>0.13</b>			<b>0.28</b>
<b>Total Flow #1</b>				<b>1.17</b>

Proposed Land Usage (Drainage Area #1)

Land Description	Area (Acres)	% Impervious	PI*	Flow (cfs)
Grass	0.23	0	1.70	0.39
Building/Roof	0.03	100	4.20	0.13
Asphalt/Concrete/Deck	0.13	100	3.54	0.46
<b>Total Area</b>	<b>0.39</b>			<b>0.98</b>

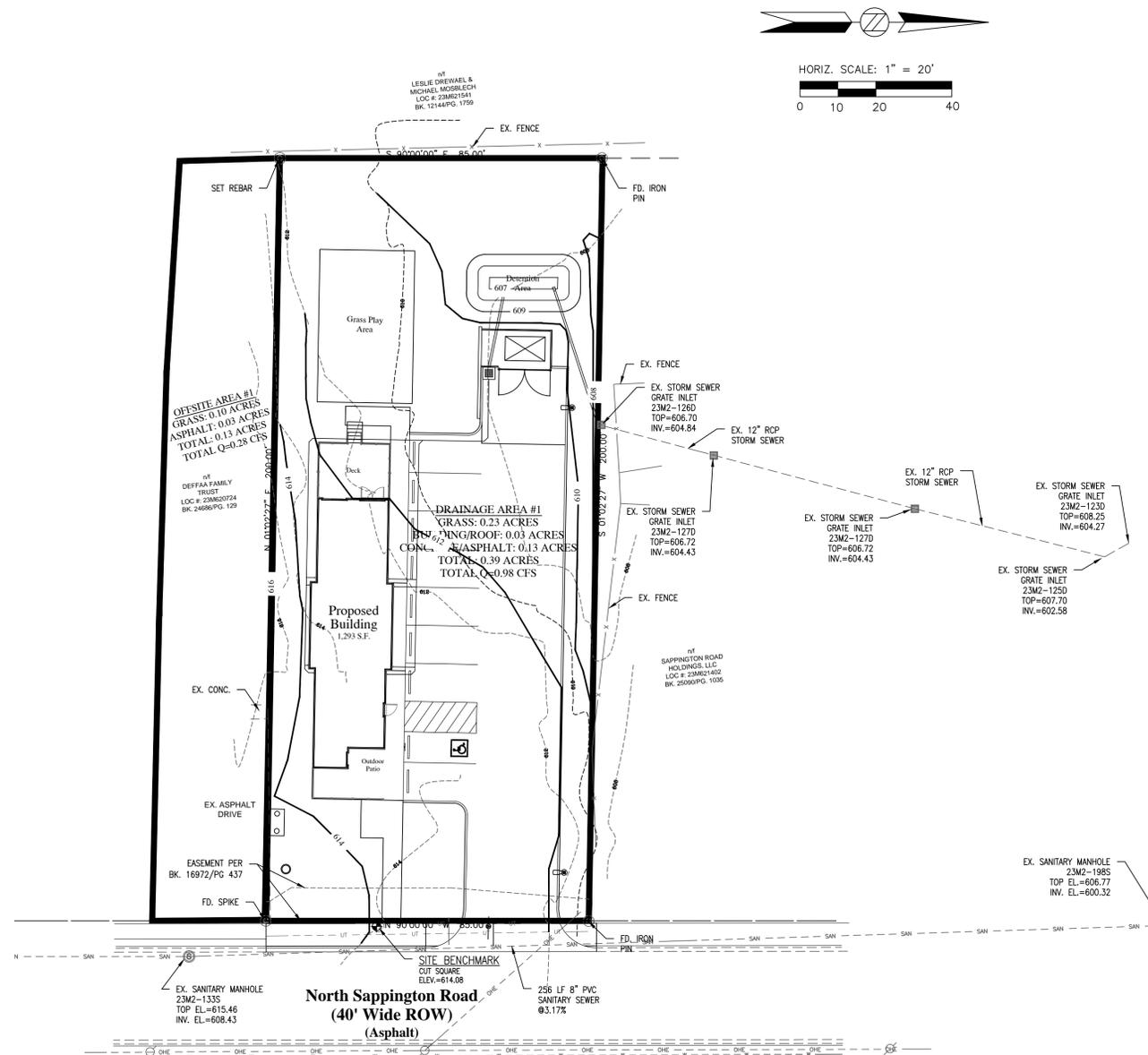
Proposed Offsite Land Usage (Drainage Area #1)

Land Description	Area (Acres)	% Impervious	PI*	Flow (cfs)
Grass	0.10	0	1.70	0.17
Asphalt	0.03	100	3.54	0.11
<b>Total Area</b>	<b>0.13</b>			<b>0.28</b>
<b>Total Flow #1</b>				<b>1.26</b>

Overall Differential (Drainage Area #1)

Land Description	Area (Acres)	% Impervious	PI*	Flow (cfs)
<b>Total Area</b>	<b>0.39</b>			<b>0.09</b>

\*\*Roof tied directly to storm sewer is 4.2, per MSD  
Runoff factors were based upon 15-year rainfall with 20 minute duration  
\*PI - derived from St. Louis MSD Table 4-2



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New Civil Site Plan for:  
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415 North Sappington Road  
St. Louis, MO 63122  
St. Louis County

Proposed  
Drainage  
Area Map  
**C401**



### SANITARY SEWER KEY NOTES

- 1 PROPOSED 6" PVC SDR-26 GREASE SANITARY SEWER SERVICE TO BUILDING AT INVERT = 610.00 ±. SEE PLUMBING PLANS FOR CONNECTION INTO BUILDING.
- 2 PROPOSED 6" PVC SDR-26 SANITARY SEWER SERVICE TO BUILDING AT INVERT = 610.00 ±. SEE PLUMBING PLANS FOR CONNECTION INTO BUILDING.
- 3 PROPOSED SANITARY SEWER CLEANOUT, SEE DETAIL SHEET C702.
- 4 PROPOSED 8 LF OF 6" PVC SDR-26 GREASE SANITARY SEWER LATERAL AT 2.00%.
- 5 PROPOSED 56 LF OF 6" PVC SDR-26 GREASE SANITARY SEWER LATERAL AT 2.00%.
- 6 PROPOSED GREASE INTERCEPTOR. TOP ELEVATION 614.50. SEE DETAILS SHEET C702. UPSTREAM INV.-608.70, DOWNSTREAM INV.-608.45
- 7 PROPOSED 5 LF OF 6" PVC SDR-26 SANITARY SEWER LATERAL AT 2.00%.
- 8 PROPOSED 70 LF OF 6" PVC SDR-26 SANITARY SEWER LATERAL AT 2.36%.
- 9 PROPOSED 5 LF OF 6" PVC SDR-26 SANITARY SEWER LATERAL AT 2.00%.
- 10 PROPOSED 5 LF OF 6" PVC SDR-26 SANITARY SEWER LATERAL AT 2.00%.
- 11 PROPOSED 22 LF OF 6" PVC SDR-26 SANITARY SEWER LATERAL AT 2.77%.
- 12 CONTRACTOR TO CONNECT PROPOSED 6" PVC SDR-26 SANITARY SEWER SERVICE TO EXISTING SANITARY SEWER WITH A ROLL-IN WYE CONNECTION AT INV. 607.64±. CONTRACTOR TO COORDINATE WITH METROPOLITAN ST. LOUIS SEWER DISTRICT (MSD) BEFORE CONNECTION.

### WATER KEY NOTES

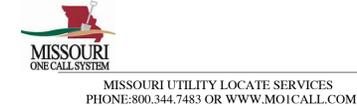
- 1 PROPOSED 1-1/2" DOMESTIC WATER SERVICE STUB INTO BUILDING. SEE PLUMBING PLANS FOR CONNECTION INTO BUILDING.
- 2 PROPOSED 1-1/2" DOMESTIC WATER LINE (PVC) FROM METER TO BUILDING. MINIMUM BURY DEPTH 48" BELOW FINISHED GRADE.
- 3 PROPOSED 1-1/2" DOMESTIC WATER METER. CONTRACTOR TO COORDINATE INSTALLATION OF METER WITH MISSOURI AMERICAN WATER COMPANY.
- 4 PROPOSED 1-1/2" DOMESTIC WATER SERVICE TAP. CONTRACTOR TO COORDINATE INSTALLATION OF TAP AND SERVICE WITH MISSOURI AMERICAN WATER COMPANY.

### DRY UTILITY KEY NOTES

- 1 PROPOSED ELECTRICAL SERVICE STUB TO BUILDING WITH TWO BOLLARDS TO PROTECT METER.
- 2 PROPOSED ELECTRICAL SERVICE AND NEW POLE MOUNTED TRANSFORMER TO BUILDING. CONTRACTOR TO COORDINATE WITH AMEREN AND ELECTRICAL ENGINEER FOR SERVICE.
- 3 EXISTING ELECTRICAL SERVICE. CONTRACTOR TO COORDINATE WITH AMEREN AND ELECTRICAL ENGINEER FOR CONNECTION AND SERVICE.
- 4 PROPOSED TELEPHONE AND DATA SERVICE STUB TO BUILDING. CONTRACTOR TO COORDINATE WITH UTILITY COMPANY FOR SERVICE.
- 5 PROPOSED TELEPHONE AND DATA CONNECTION FROM BUILDING TO PROPOSED TELEPHONE PEDESTAL.
- 6 PROPOSED TELEPHONE AND DATA CONNECTION FROM PROPOSED POWER POLE TO EXISTING POWER POLE. CONTRACTOR TO COORDINATE WITH UTILITY COMPANY FOR SERVICE.
- 7 PROPOSED GAS METER AND SERVICE STUB INTO BUILDING. SEE MECHANICAL PLANS FOR CONNECTION INTO BUILDING.
- 8 PROPOSED GAS SERVICE CONNECTION FROM NEW BUILDING TO EXISTING GAS MAIN. CONTRACTOR TO COORDINATE WITH DUKE ENERGY AND MEP ENGINEER FOR SERVICE SIZE AND LOCATION.
- 9 EXISTING GAS MAIN. CONTRACTOR TO COORDINATE WITH GAS COMPANY FOR PROPOSED TAP.
- 10 PROPOSED SITE LIGHTING. SEE ELECTRICAL SITE LIGHTING PLAN FOR DETAILS.

### UTILITY INFORMATION:

UNDERGROUND FACILITIES, STRUCTURES, AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS, AND THEREFORE DO NOT NECESSARILY REFLECT THE ACTUAL EXISTENCE, NON-EXISTENCE, SIZE, TYPE, NUMBER, OR LOCATION OF THESE FACILITIES, STRUCTURES, AND UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACTUAL LOCATION OF ALL UNDERGROUND FACILITIES, STRUCTURES, AND UTILITIES, EITHER SHOWN OR NOT SHOWN ON THESE PLANS. THE UNDERGROUND FACILITIES, STRUCTURES, AND UTILITIES SHALL BE LOCATED IN THE FIELD PRIOR TO ANY GRADING, EXCAVATION, OR CONSTRUCTION OF IMPROVEMENTS.



### UTILITY CONTACTS

WATER: MISSOURI AMERICAN WATER  
866.430.0820

ELECTRIC: AMEREN  
866.992.6619

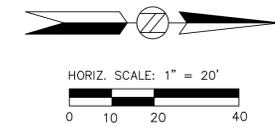
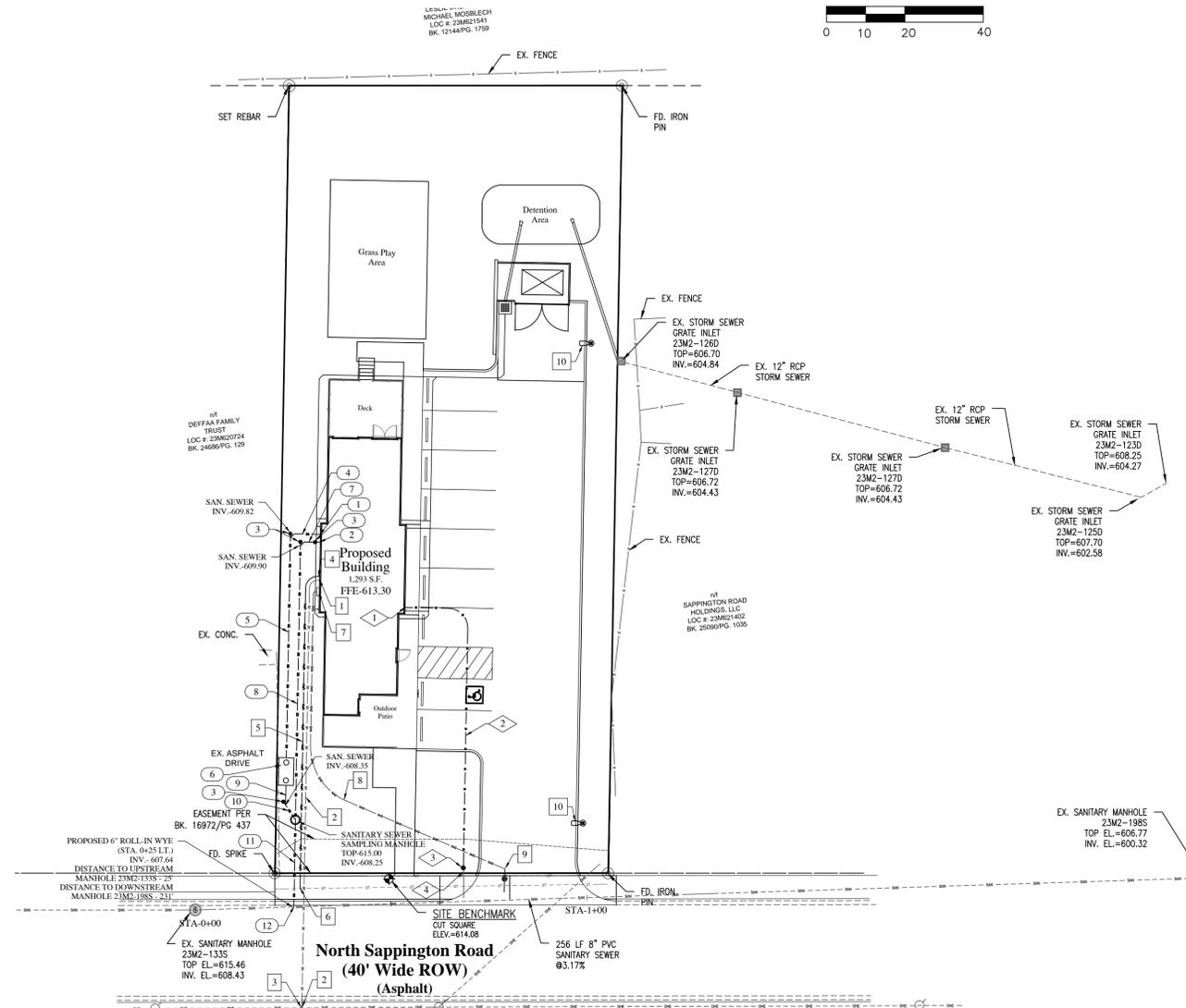
GAS: SPIRE  
800.887.4173

SANITARY SEWER: METROPOLITAN ST. LOUIS SEWER DISTRICT  
314.768.6260

STORM SEWER: METROPOLITAN ST. LOUIS SEWER DISTRICT  
314.768.6260

COMMUNICATIONS: CHARTER  
833.267.6094

FIRE DISTRICT: GLENDALE CITY FIRE DEPARTMENT  
314.965.0000



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New Civil Site Plan for:  
**Dwell Coffee House**  
415 North Sappington Road  
St. Louis, MO 63122  
St. Louis County

Site Utility Plan  
**C500**

Base Map: 23M2  
MSD Project No.: 25MSD-00160

**EROSION AND SEDIMENT CONTROL BASIC PRACTICES:**

PRESERVE AND PROTECT AREAS OF NATURAL VEGETATION. AREAS TO BE PRESERVED SHALL BE PROTECTED WITH SILT FENCING TO PREVENT DAMAGE FROM CONSTRUCTION OPERATIONS.

TAKE SPECIAL PRECAUTIONS TO PREVENT DAMAGE THAT COULD RESULT FROM DEVELOPMENT ACTIVITIES NEAR WATERCOURSES, LAKES, AND WETLANDS.

MINIMIZE THE EXTENT AND DURATION OF THE DEVELOPMENT AREA EXPOSED AT ONE TIME.

APPLY TEMPORARY EROSION CONTROL PRACTICES AS SOON AS POSSIBLE TO STABILIZE EXPOSED SOILS AND PREVENT ON-SITE DAMAGE.

INSTALL SEDIMENT BASINS OR TRAPS, FILTER BARRIERS, DIVERSIONS, AND PERIMETER CONTROL MEASURES PRIOR TO SITE CLEARING AND GRADING TO PROTECT THE DISTURBED AREA FROM OFF-SITE AND ON-SITE RUNOFF AND TO PREVENT SEDIMENT TRANSPORT TO AREAS DOWNSTREAM OF THE DEVELOPMENT SITE.

KEEP RUNOFF VELOCITIES LOW, AND RETAIN RUNOFF ON SITE AS MUCH AS POSSIBLE.

PROVIDE MEASURES TO PREVENT SEDIMENT FROM BEING TRACKED ONTO PUBLIC OR PRIVATE ROADWAYS.

IMPLEMENT FINAL GRADING AND INSTALL PERMANENT VEGETATION ON DISTURBED AREAS AS SOON AS POSSIBLE.

SITE AND BEST MANAGEMENT PRACTICE (BMPs) INSPECTIONS MUST BE COMPLETED WEEKLY, OR AFTER EACH STORM EVENT RESULTING IN MORE THAN 0.5 INCH OF RAINFALL. THE PURPOSE OF THE INSPECTIONS IS TO ASSESS AND DETERMINE WHETHER THE SOIL EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE EROSION CONTROL PLAN ARE OPERATING PROPERLY AND EFFECTIVELY, AND TO INITIATE MAINTENANCE AS NEEDED. INSPECTIONS SHOULD INCLUDE A VISUAL OBSERVATION OF ALL DISTURBED AREAS OF THE REGULATED DEVELOPMENT, MATERIAL STORAGE AREAS, SEDIMENT AND EROSION CONTROL MEASURES, LOCATIONS WHERE VEHICLES ENTER AND EXIT THE SITE, AND ACCESSIBLE DISCHARGE POINTS/OUTFALLS.

INSPECTIONS SHOULD BE COMPLETED AND CONDUCTED BY QUALIFIED INSPECTORS WHO ARE FAMILIAR WITH THE EROSION CONTROL PLAN AND THE BMPs IMPLEMENTED AT THE SITE. IN GENERAL, IF INSPECTIONS INDICATE THAT A BMP IS NOT OPERATING PROPERLY, IT IS RECOMMENDED THAT MAINTENANCE AND MODIFICATION OF THE BMP BE PERFORMED AS SOON AS POSSIBLE AND BEFORE THE NEXT STORM EVENT WHENEVER PRACTICABLE AND NO LATER THAN SEVEN (7) CALENDAR DAYS FROM THE INSPECTION DATE, TO ENSURE ITS CONTINUED EFFECTIVENESS. MINIMUM MAINTENANCE STANDARDS FOR EACH SPECIFIC BMP ARE INCLUDED IN THE EROSION CONTROL PLAN.

THE REGULATED DEVELOPMENT MUST KEEP A COPY OF THE EROSION CONTROL PLAN ON SITE AT ALL TIMES DURING CONSTRUCTION AND MAKE THE PLAN AVAILABLE FOR REVIEW BY A FIELD REPRESENTATIVE UPON REQUEST.

**EROSION AND SEDIMENTATION CONTROL RECOMMENDED CONSTRUCTION SEQUENCE:**

1. CONTRACTOR TO CONDUCT A PRE-CONSTRUCTION MEETING.
2. CONTRACTOR TO POST A SIGN WITH NAME AND PHONE NUMBER OF ESC RESPONSIBLE PARTY.
3. CONTRACTOR TO FLAG AND FENCE CLEARING LIMITS.
4. INSTALL CATCH BASIN PROTECTION, IF REQUIRED.
5. GRADE AND INSTALL CONSTRUCTION ENTRANCE(S).
6. CONTRACTOR TO INSTALL PERIMETER BARRIER, SILT FENCE, ETC.
7. CONSTRUCT SEDIMENT PONDS AND TRAPS, IF REQUIRED.
8. GRADE AND STABILIZE CONSTRUCTION ROADS.
9. CONSTRUCT SURFACE WATER CONTROLS (INTERCEPTOR DIKES, PIPE SLOPE DRAINS, ETC.) SIMULTANEOUSLY WITH CLEARING AND GRADING FOR PROJECT DEVELOPMENT.
10. MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH APPLICABLE STANDARDS AND MANUFACTURERS RECOMMENDATIONS.
11. RELOCATED EROSION CONTROL MEASURES OR INSTALL NEW MEASURES AS SITE CONDITIONS CHANGE TO ENSURE THE SEDIMENT AND EROSION CONTROL IS ALWAYS IN ACCORDANCE WITH APPLICABLE STANDARDS.
12. COVER ALL AREAS THAT WILL NOT BE WORKED ON FOR MORE THAN SEVEN DAYS DURING THE DRY SEASON OR TWO DAYS DURING THE WET SEASON WITH STRAW, WOOD FIBER MULCH, COMPOST OR EQUIVALENT.
13. STABILIZE ALL AREAS THAT REACH FINAL GRADE WITHIN SEVEN DAYS.
14. SEED OR SOD ANY AREAS THAT WILL NOT BE WORKED ON FOR MORE THAN 30 DAYS.
15. UPON COMPLETION OF THE PROJECT, ALL DISTURBED AREAS MUST BE STABILIZED AND BMPs REMOVED IF APPROPRIATE.

**STREET SWEEPING NOTE:**

CONTRACTOR SHALL SWEEP/REMOVE ALL SEDIMENT AND DEBRIS WITHIN THE ROADWAY AT THE END OF EACH DAY

**SEDIMENT AND EROSION CONTROL NOTES:**

ALL SEDIMENT AND EROSION CONTROL PRACTICES SHALL BE IN COMPLIANCE WITH THE CITY OF GLENDALE, MO. AND THE MISSOURI DEPARTMENT OF NATURAL RESOURCES.

APPROVAL OF THIS EROSION AND SEDIMENTATION CONTROL (ESC) PLAN DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD OR DRAINAGE DESIGN.

THE IMPLEMENTATION OF THESE ESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR/ESC RESPONSIBLE PARTY UNTIL ALL CONSTRUCTION IS APPROVED.

THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED BY SURVEY TAPE OR FENCING, PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE CLEARING LIMITS SHALL BE PERMITTED. THE CLEARING LIMITS SHALL BE MAINTAINED BY THE CONTRACTOR/ESC RESPONSIBLE PARTY FOR THE DURATION OF THE CONSTRUCTION.

THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT. ADDITIONAL MEASURES, SUCH AS CONSTRUCTED WHEEL WASH SYSTEMS OR WASH PADS, MAY BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN AND THAT TRACK OUT TO ROAD RIGHT OF WAY DOES NOT OCCUR FOR THE DURATION OF THE PROJECT.

THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED PRIOR TO OR IN CONJUNCTION WITH ALL CLEARING AND GRADING SO AS TO ENSURE THAT THE TRANSPORT OF SEDIMENT TO SURFACE WATERS, DRAINAGE SYSTEMS, AND ADJACENT PROPERTIES IS MINIMIZED.

THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED CONSTRUCTION ACTIVITIES. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND MODIFIED TO ACCOUNT FOR CHANGING SITE CONDITIONS.

THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR/ESC RESPONSIBLE PARTY AND MAINTAINED TO ENSURE CONTINUED PROPER FUNCTIONING. WRITTEN RECORDS SHALL BE KEPT OF WEEKLY REVIEW OF THE ESC FACILITIES.

ANY AREAS OF EXPOSED SOILS, INCLUDING ROADWAY EMBANKMENTS, THAT WILL NOT BE DISTURBED FOR TWO DAYS DURING WET SEASON OR SEVEN DAYS THE DRY SEASON SHALL BE IMMEDIATELY STABILIZED WITH THE APPROVED ESC COVER METHODS (SEEDING, MULCHING, ETC.)

ANY AREA NEEDING ESC MEASURES, NOT REQUIRING IMMEDIATE ATTENTION SHALL BE ADDRESSED WITHIN SEVEN DAYS.

THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN 24 HOURS FOLLOWING A STORM EVENT.

ANY PERMANENT RETENTION/DETENTION FACILITY USED AS A TEMPORARY SETTLING BASIN SHALL BE MODIFIED WITH THE NECESSARY EROSION CONTROL MEASURES AND SHALL PROVIDE ADEQUATE STORAGE CAPACITY. IF THE PERMANENT FACILITY IS TO FUNCTION ULTIMATELY AS AN INFILTRATION SYSTEM, THE TEMPORARY FACILITY MUST BE ROUGH GRADED SO THAT THE BOTTOM AND SIDES ARE AT LEAST THREE FEET ABOVE THE FINAL GRADE OF THE PERMANENT FACILITY.

PRIOR TO THE BEGINNING OF THE WET SEASON, ALL DISTURBED AREAS SHALL BE REVIEWED TO IDENTIFY WHICH ONES CAN BE SEEDED IN PREPARATION FOR THE WINTER WEATHER. DISTURBED AREAS SHALL BE SEEDED WITHIN ONE WEEK OF THE BEGINNING OF THE WET SEASON. A SKETCH MAP OF THOSE AREAS TO BE SEEDED AND THOSE AREAS TO REMAIN UNCOVERED SHALL BE SUBMITTED TO THE ESC INSPECTOR FOR REVIEW.

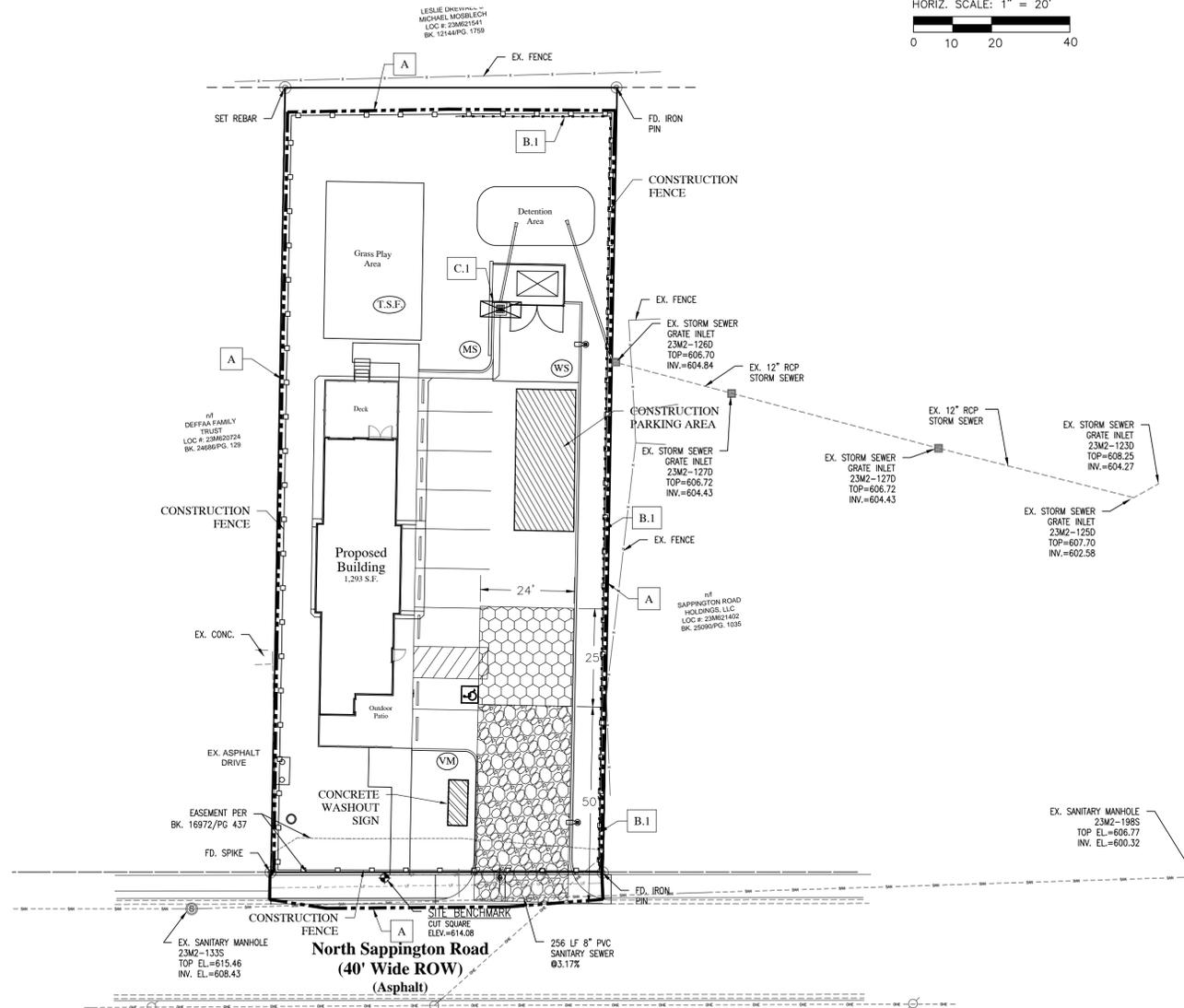
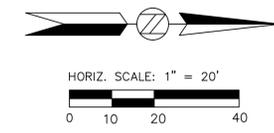
EROSION CONTROL BLANKETS, SOIL BINDERS, OR HYDROSEEDING SHALL BE USED TO PREVENT SOIL EROSION. AREAS THAT ARE EXPOSED FOR 14 DAYS OR MORE ARE INACTIVE AND MUST BE COVERED. ALL OTHER AREAS SHALL BE PROTECTED AS REQUIRED TO PREVENT SOIL EROSION.

**LAND DISTURBANCE NOTE:**

THE TOTAL SITE DISTURBANCE FOR THIS DEVELOPMENT IS 0.38 ACRES. SINCE THIS IS AREA IS LESS THAN ONE (1.00) ACRE, A NOI PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES FROM THE MISSOURI DEPARTMENT OF NATURAL RESOURCES IS NOT REQUIRED, HOWEVER, THE CONTRACTOR IS STILL REQUIRED TO PROVIDE AND MEET THE EROSION AND SEDIMENT CONTROL MEASURES PER THE MISSOURI DEPARTMENT OF NATURAL RESOURCES AND THE CITY OF GLENDALE, MO.

**EROSION AND SEDIMENT CONTROL KEY NOTES:**

<b>A</b> — LIMITS OF CONSTRUCTION	—————	TEMPORARY CONSTRUCTION SANITARY FACILITIES	(T.S.F.)
<b>B.X</b> — PERIMETER EROSION BARRIER SILT FENCE	-----	STAGING AREA FOR VEHICLE AND EQUIPMENT CLEANING, FUELING, AND MAINTENANCE	(VM)
<b>C.X</b> — PAVEMENT INLET/PIPE SEDIMENT PROTECTION (DANDY BAG)	⊠	STAGING AREA FOR MATERIAL DELIVERY AND STORAGE	(MS)
		WASTE STORAGE AREA	(WS)
		TEMPORARY CONCRETE WASHOUT AREA	[Hatched Box]
		STABILIZED CONSTRUCTION ENTRANCE	[Stippled Box]
		WASHDOWN AREA	[Circular Pattern Box]



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 Missouri Professional Engineer # 201102072

ISSUED / REVISED	DATE
ISSUED FOR REVIEW	04.21.2025
REVISED PER MSD REVIEW	07.10.2025

PROJECT NUMBER: 24-157

New Civil Site Plan for:  
**Dwell Coffee House**  
 415 North Sappington Road  
 St. Louis, MO 63122  
 St. Louis County

Sediment and Erosion Control Plan  
**C600**





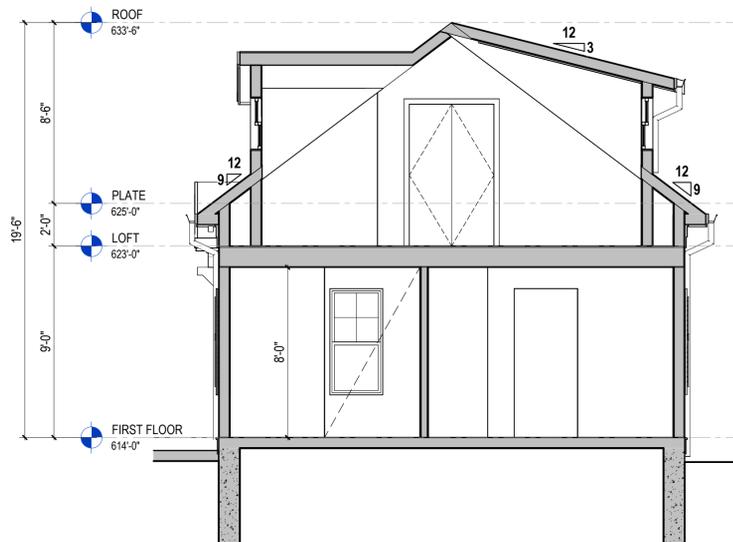




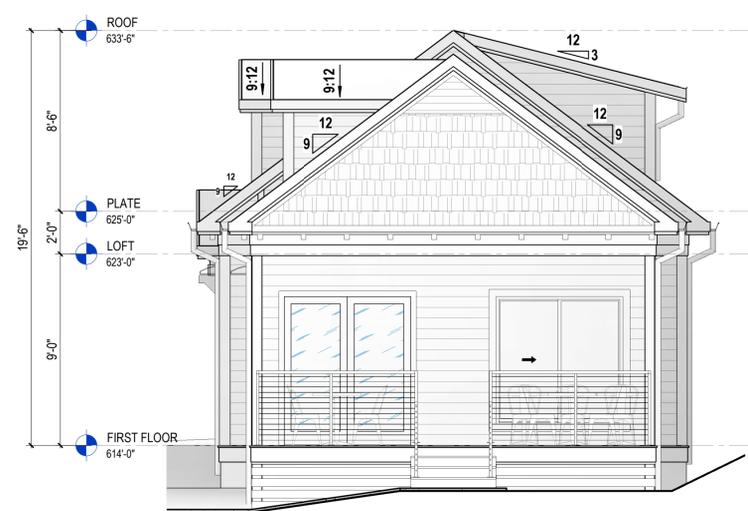




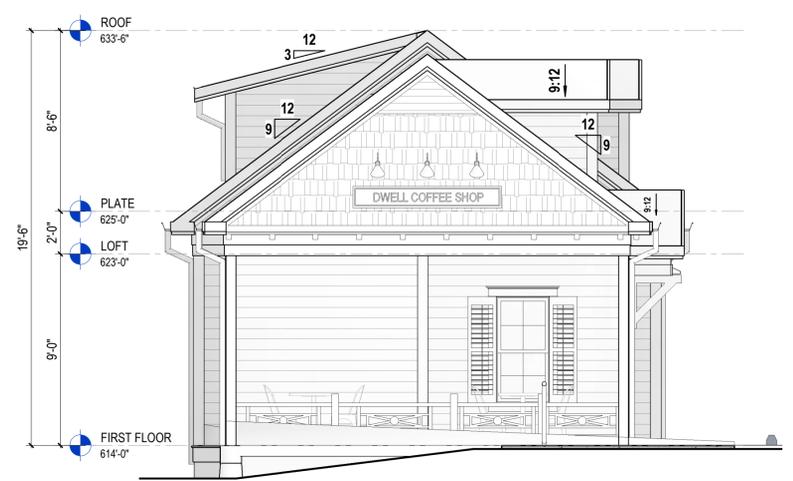




**1 SECTION @ DINING**  
 SCALE: 1/4" = 1'-0"



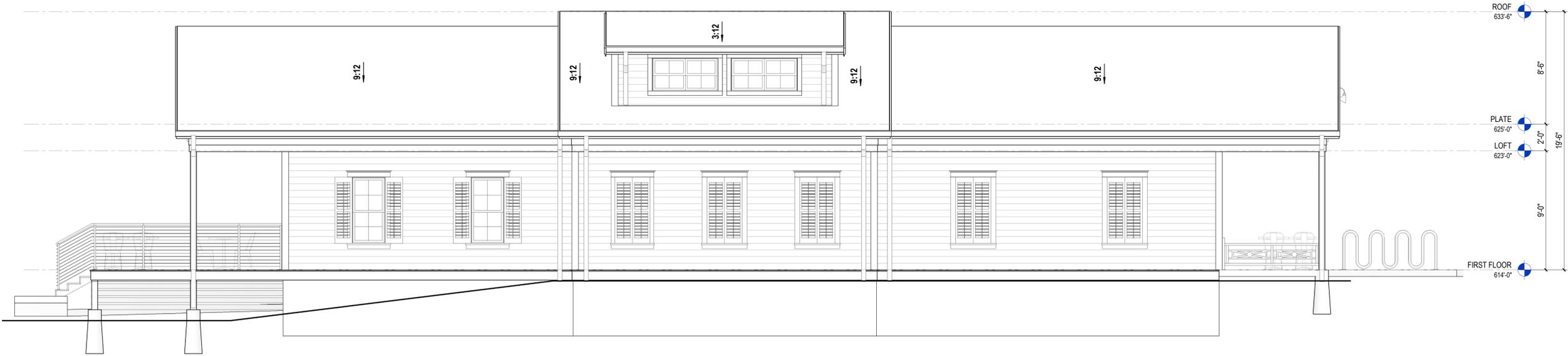
**17 RIGHT ELEVATION**  
 SCALE: 1/4" = 1'-0"



**12 LEFT ELEVATION**  
 SCALE: 1/4" = 1'-0"



**19 FRONT ELEVATION**  
 SCALE: 1/4" = 1'-0"



**20 REAR ELEVATION**  
 SCALE: 1/4" = 1'-0"

CONSULTANTS

12/13/2024  
 Brian Ivy, Architect  
 MO# A-2004008995

PRELIMINARY DEVELOPMENT PLAN FOR:

**DWELL COFFEE HOUSE**

415 N Sappington Rd  
 Saint Louis, MO 63122

ISSUE DATE: PERMIT SET 07/21/2025

REVISIONS:

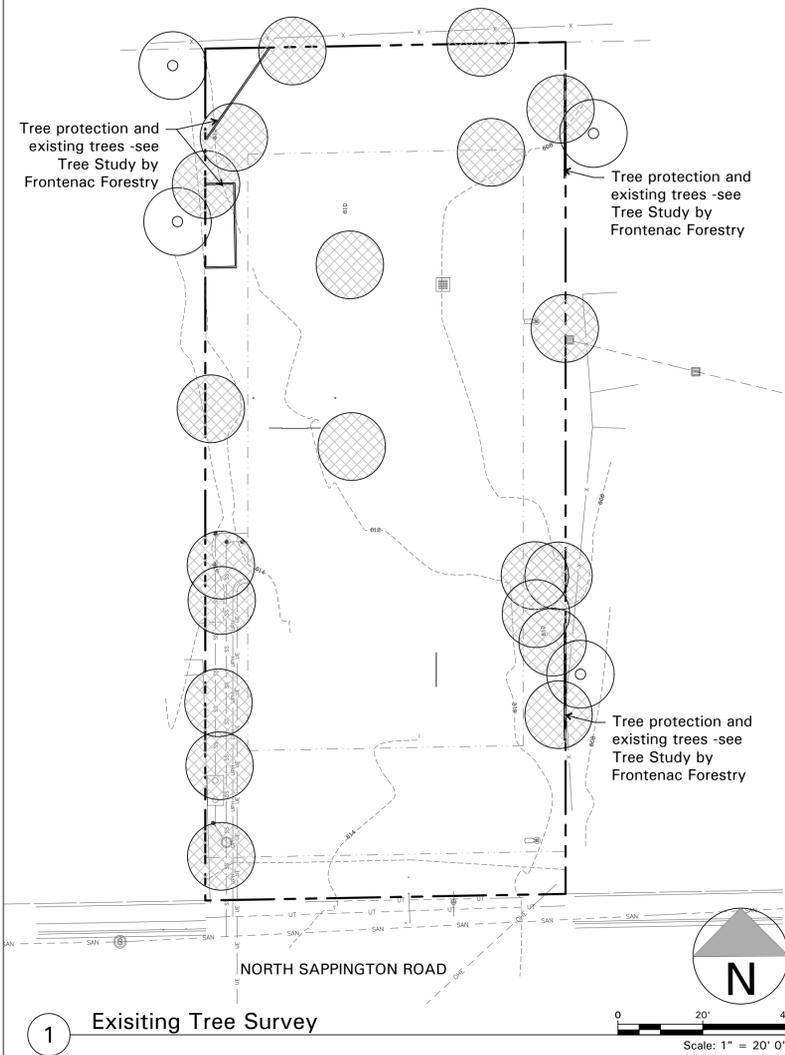
NO.	DESCRIPTION	DATE

DRAWN BY: APD  
 PROJECT NUMBER: 24-63  
 SHEET NUMBER:

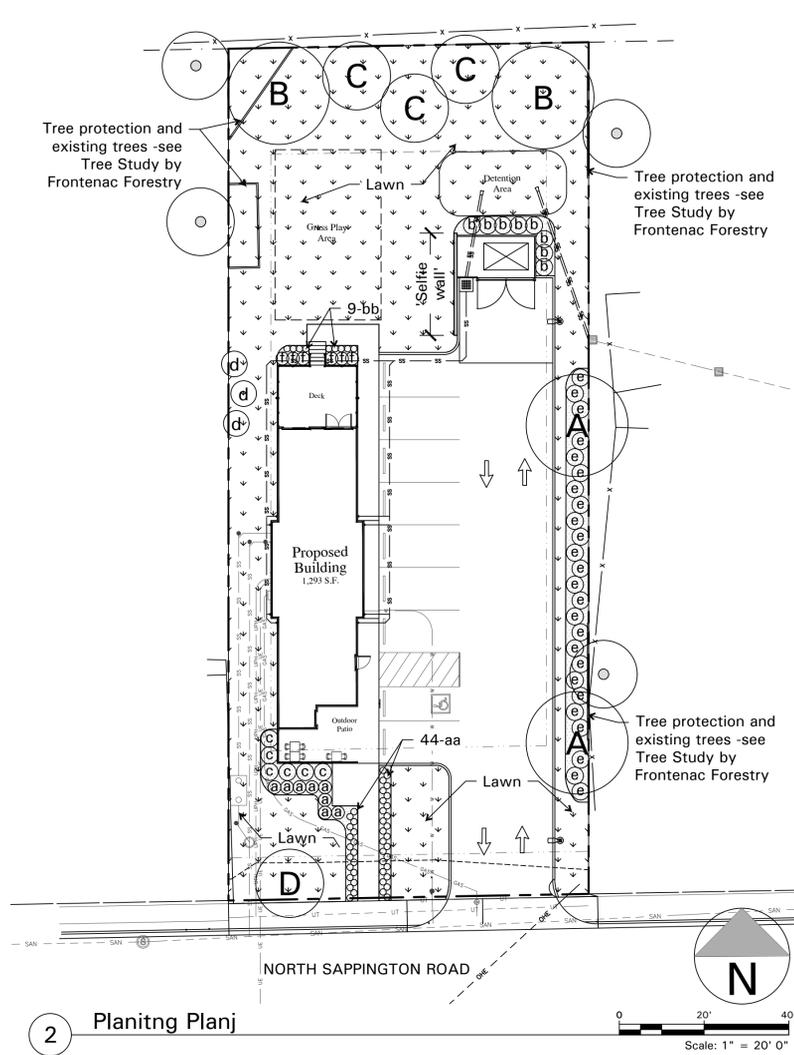




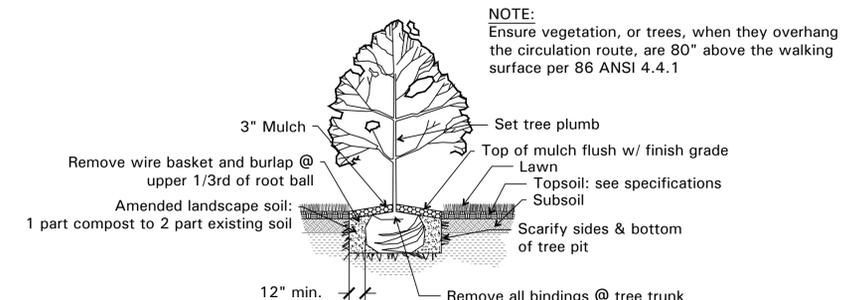
Architect:  
Idea Architects, LLC  
130 W. Lockwood Ave. Ste. #2  
Webster Groves, MO 63119



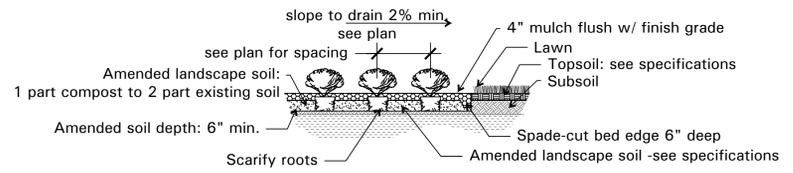
1 Existing Tree Survey



2 Planting Plan



TREE PLANTING DETAIL



SHRUB/ PERENNIAL/ ANNUAL PLANTING DETAIL

LEGEND:

Symbol	Description
	Existing tree -see Tree Study by Frontenac Forestry
	Existing tree to be removed -see Tree Study by Frontenac Forestry

EXISTING TREE NOTE:  
1. Existing trees and vegetation documented by Frontenac Forestry on or about February 10, 2025. Tree Survey provided as separate document and includes tree condition, root zones, tree canopies, tree protection measures.  
2. No tree mitigation required.

Landscape Schedule					
Key	Qty.	Common Name	Botanical Name	Size	Comment
A	2	Red Maple	Acer rubrum 'Brandywine'	2.5 Cal.	Ball & Burlapped
B	2	Sugar Maple	Acer saccharum 'Legacy'	2.5 Cal.	Ball & Burlapped
C	3	Ivory Silk Tree	Syringa reticulata 'Ivory Silk'	2.5 Cal.	Ball & Burlapped
D	1	Redbud	Cercis canadensis	2.5 Cal.	Ball & Burlapped
a	8	Boxwood	Buxus sinica var. insularis 'Winter Gem'	18-20" / B&B	
b	8	Juniper	Juniperus chinensis 'Gold Lace'	5 Gal.	
c	6	Hydrangea	Hydrangea paniculata 'Bobo'	3 Gal.	
d	3	Dark Lavender Hibiscus	Hibiscus syriacus 'Dark Lavender Chiffon'	5 Gal.	
e	25	Switch Grass	Panicum virgatum 'Purple Tears'	5 Gal.	
f	6	Feather Reed Grass	Calamagrostis x acutiflora 'Karl Foerster'	5 Gal.	
aa	44	Variegated Liriope	Liriope muscari 'Variegata'	1 Gal.	
bb	9	Ornamental Onion	Allium lusitanicum 'Summer Beauty'	1 Qt.	
8,000		+/- Sq. Ft. Lawn			
1,150		+/- Sq. Ft. Double Ground Bark Mulch			

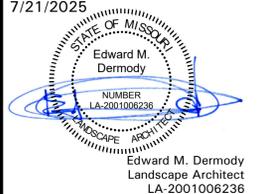
- GENERAL NOTES:
- Landscape quantities shown for reference and bid comparison only, contractor to furnish and install plant quantities shown on plan. Notify Owner/ Landscape Architect of any discrepancies.
  - CONTRACTOR SHALL WATER ALL LANDSCAPE PLANTINGS FOR ONE (1) YEAR AFTER INITIAL ACCEPTANCE -SEE SPECIFICATIONS.
  - Contractor to review and field verify existing and proposed conditions prior to
  - Contractor to coordinate and cooperate with other trades.
  - Contractor to adjust plantings as field directed by owner and or as unforeseen field conditions require.
  - No trees shall be planted within ten (10) foot of private or public utilities unless approved by owner.
  - Contractor is responsible for installing all plant material, sod, topsoil and mulch as shown on plan and in specifications.
  - Plan(s) do not constitute contractor means and methods. Job site safety and project coordination is responsibility of contractor(s).

Landscape Development Plan for:  
Dwell Coffee House  
415 N Sappington Rd  
Glendale, MO 63122

Drawing prepared for:  
Houston Things, LLC  
744 Fuhrmann Terrace  
St Louis, MO 63122

Revisions:

No.	Description	Date:



This drawing and the details on it are the sole property of the landscape architect and may be used for this specific project only. It shall not be loaned, copied or reproduced, in whole or in part, or for any other purpose or project without the written consent of the Landscape Architect.  
Copyright © by Dermody & Associates, LLC

Issue Date: July, 21, 2025  
Drawn by: EMD  
Checked By: EMD  
Sheet Title  
Planting Plan

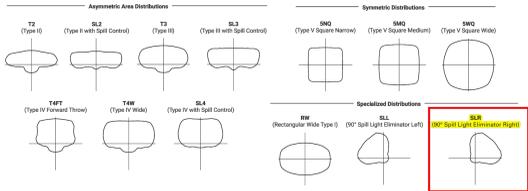
Project Number: 263.001  
Sheet Number:  
L1.0



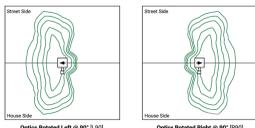


**McGraw-Edison** **GPC Galleon Pedestrian Companion**

**Optical Distributions**

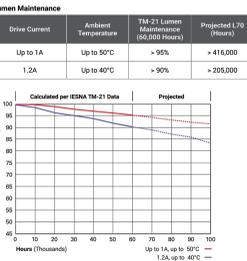


**Optic Orientation**



**Energy and Performance Data**

Ambient Temperature	Lumen Multiplier	FACD Position	Lumen Multiplier	Lumen Maintenance
0°C	1.02	1	25%	
10°C	1.01	2	46%	
25°C	1.00	3	55%	
40°C	0.99	4	62%	
50°C	0.97	5	72%	
		6	77%	
		7	82%	
		8	85%	
		9	90%	
		10	100%	



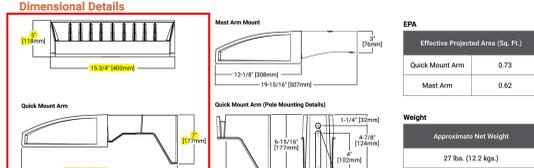
**FIXTURE IS MOUNTED 16" ABOVE GRADE ON SQUARE STRAIGHT STEEL POLE.**

Project	Catalog #	GPC-SA1A-740-U-SLR-QM-FINISH-H SS	Type	S2
Prepared by	Notes		Date	



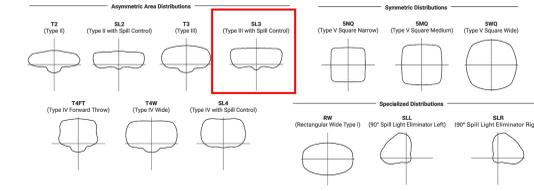
**McGraw-Edison**  
**GPC Galleon Pedestrian Companion**  
 Area / Site Luminaire  
**Product Features**  
 • Patented high-efficiency injection-molded AccuLED optics technology  
 • 13 optical distributions  
 • Dark Sky Approved (SDSOK CCT and warmer only)

**Interactive Menu**  
 • Ordering Information page 2  
 • Product Specifications page 2  
 • Optical Configurations page 3  
 • Energy and Performance Data page 4  
 • Control Options page 6

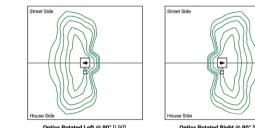


**McGraw-Edison** **GPC Galleon Pedestrian Companion**

**Optical Distributions**

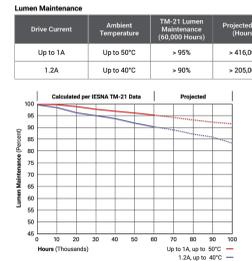


**Optic Orientation**



**Energy and Performance Data**

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		7	82%	
		8	85%	
		9	90%	
		10	100%	



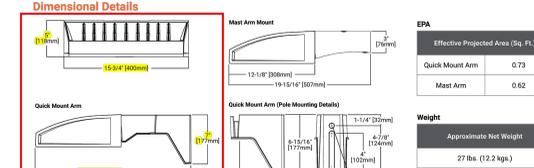
**FIXTURE IS MOUNTED 16" ABOVE GRADE ON SQUARE STRAIGHT STEEL POLE.**

Project	Catalog #	GPC-SA1A-740-U-SL3-QM-FINISH-H SS	Type	S1
Prepared by	Notes		Date	



**McGraw-Edison**  
**GPC Galleon Pedestrian Companion**  
 Area / Site Luminaire  
**Product Features**  
 • Patented high-efficiency injection-molded AccuLED optics technology  
 • 13 optical configurations  
 • Energy and Performance Data page 4  
 • Control Options page 6

**Interactive Menu**  
 • Ordering Information page 2  
 • Product Specifications page 2  
 • Optical Configurations page 3  
 • Energy and Performance Data page 4  
 • Control Options page 6



**McGraw-Edison** **GPC Galleon Pedestrian Companion**

**Energy and Performance Data**

Drive Current	615mA	800mA	1050mA	1.2A
Nominal Power (Watts)	34	44	59	67
Input Current @ 120V (A)	0.28	0.36	0.51	0.56
Input Current @ 240V (A)	0.17	0.22	0.26	0.33
Input Current @ 277V (A)	0.14	0.17	0.23	0.26
Input Current @ 347V (A)	0.11	0.15	0.24	0.32
Input Current @ 480V (A)	0.08	0.11	0.14	0.16

**McGraw-Edison** **GPC Galleon Pedestrian Companion**

**Ordering Information**

Product Family	Configuration	Drive Current	Color Temperature	Voltage	Distribution	Mounting Options	Finish
GPC Galleon Pedestrian Companion	SA1A-740-U-SL3-QM-FINISH-H	1.2A	5000K	120V	T2-Type II	Quick Mount Arm	Black

**McGraw-Edison** **GPC Galleon Pedestrian Companion**

**Energy and Performance Data**

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**McGraw-Edison** **GPC Galleon Pedestrian Companion**

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**POLE MTD. LIGHT (S2)**

SCALE: NO SCALE

**POLE MTD. LIGHT (S1)**

SCALE: NO SCALE

**POLE MTD. LIGHT (S2)**

SCALE: NO SCALE

**POLE MTD. LIGHT (S1)**

SCALE: NO SCALE

DATE: 07.21.2025  
 REVISIONS:  
 P&Z submission



**CONSULTANTS**  
 Brian Ivy, Architect  
 MO# A-2004008995

**Photometric Design**  
**Proposed New Coffee House for:**  
**DWELL COFFEE HOUSE**  
 415 N Sappington Rd. Glendale, MO 63122

**DRAWN BY:** Bivy  
**PROJECT NUMBER:** 2024-063  
**SHEET NUMBER:**

**P202**  
 Photometric fixtures

