
(Space above reserved for Recorder of Deeds certification)

Document Recording Cover Sheet

1. **Title of Document:** Development Agreement
2. **Date of Document:** _____
3. **Grantor(s)/Party indexed as Grantor(s):** Springbrook Crossing, L.L.C.

4. **Grantee(s)/Party indexed as Grantee(s):** City of Columbia, Missouri; "City"

5. **Mailing Address of Grantee or Party:** 701E. Broadway, Columbia, MO 65205-6015

6. **Legal Description:** See Exhibit A

7. **Reference Book and Page(s):** N/A

(If there is not sufficient space on this page for the information required, state the page reference where it is contained within the document.)

DEVELOPMENT AGREEMENT

THIS AGREEMENT ("Agreement"), is made and entered into by and between Springbrook Crossing, L.L.C., a Missouri limited liability company ("Developer") and the City of Columbia, Missouri, a municipal corporation of the State of Missouri ("City") and will be effective the date of signature by the Party last executing this Agreement ("Effective Date"). The City and the Developer may hereinafter be collectively referred to as the Parties and individually as a Party.

RECITALS

WHEREAS, Developer is the owner of a tract of land consisting of approximately 42.02 acres, more or less, located in the City of Columbia, generally located north west of the intersection of State Farm Parkway and Veterans United Drive, and legally described on **Exhibit A attached hereto and incorporated herein by this reference** (the "Subject Property"); and

WHEREAS, a preliminary plat for the Subject Property known as the Springbrook Crossing North Preliminary Plat was submitted to the City for approval and is attached hereto as **Exhibit B** (the "Preliminary Plat"); and

WHEREAS, Developer desires to develop the Subject Property for office and multi-family residential uses. When fully developed, the Subject Property is anticipated to be subdivided and developed into ten (10) lots as shown in the Preliminary Plat attached as **Exhibit B**; and

WHEREAS, the parties desire to set forth responsibility for the construction and dedication of certain public improvements associated with development of the Subject Property in this Agreement, it being the intent of this agreement to provide milestones for which the construction and dedication of such public improvements shall occur;

NOW, THEREFORE, in view of the foregoing Recitals and in consideration of the mutual promises, declarations, covenants and agreements of the City and Developer as hereinafter set forth, the Parties hereby agree as follows:

1. **Agreement to Run with the Land.** The provisions of this Agreement will constitute covenants running with the entirety of the Subject Property and each and every part of the Subject Property, and will bind the current Developer and all of such successors and assigns.

2. **Developer's Obligations.**

a) Traffic Impact Study Improvements. With the exception of Lot 10, upon the submission of any final plat seeking to create any lot or lots as shown on the Springbrook Crossing North Preliminary Plat, Developer shall construct, at Developer's expense and subject to acceptance by the City, the following improvements identified by the City of Columbia or identified/referenced in the January 17, 2024 Traffic Impact Study prepared by CBB Transportation Engineers + Planners and the addendums thereto, dated April 10, 2024, and May 23, 2024, which are attached hereto as **Exhibit C** (the "Traffic Study").

i. Construct the second westbound travel lane of Veterans United Drive located on the northern perimeter of the single-lane roundabout at Veterans United Middle Drive and MU Healthcare Drive as referenced in the Traffic Study and required by the Springbrook Crossing Traffic Impact Study prepared by CBB Transportation Engineers + Planners, dated January 27, 2023 and the Development Agreement between Mid-Am Development, LLC and the City regarding Springbrook Crossing, dated May 9, 2023. No building permit(s) shall be issued for any lot, except Lot 10 of the Subject Property, until construction has begun on said initial single-lane roundabout.

ii. Construct an improvement within the right-of-way of Veterans United Drive that restricts eastbound and westbound left turns from the proposed intersection of Crackley Drive within Springbrook Crossing North and the eastern parking lot entry into the Veterans United Campus.

iii. Upon the submission of any final plat containing either Lot 2 or 3, construct an improvement within the right-of-way of Veterans United Drive that restricts outbound left turns and permits inbound left turns (i.e. a three-quarter eastbound turn lane pocket) to and from the common driveway entrance permitted to be established along the common lot line of Lots 2 and 3 as shown on the Springbrook Crossing North Preliminary Plat. Construction plans for said improvement shall be submitted concurrently with the final plat containing either Lot 2 or 3 for review and approval by the City. The improvement shall be completed by Developer prior to issuance of a building permit for either Lot 2 or 3 of the Subject Property.

iv. Upon the submission of any final plat containing either Lot 4 or 5, construct an improvement within the right-of-way of State Farm Parkway that restricts outbound left turns and permits inbound left turns (i.e. a three-quarter northbound turn lane pocket) to and from the common driveway entrance permitted to be established along the common lot line of Lots 4 and 5 as shown on the Springbrook Crossing North Preliminary Plat. Construction plans for said improvement shall be submitted concurrently with the final plat containing either Lot 4 or 5 for review and approval by

the City. The improvement shall be completed by Developer prior to the issuance of a building permit for either Lot 4 or 5 of the Subject Property.

3. **Construction and Bonding of Improvements.** Except as otherwise expressly indicated herein, all public improvements required under the regulations of the City or this Agreement must be constructed in accordance with the City's Street, Storm Sewer, and Sanitary Sewer Specifications and Standards, as may be amended, or any successor specifications and standards adopted by the City together with any final construction plans approved by the City prior to construction of such facilities. In connection with construction, the Developer shall be required to post bonds or other security as required by the city code. Developer is responsible for obtaining all necessary easements to construct improvements related to Developer's Development of the Subject Property.

4. **Phasing Plan.** If any development of the Subject Property, including final platting, will be phased, then a plan which generally describes the sequence of development of the Subject Property ("**Phasing Plan**") must be submitted to the Director of Community Development ("**Director**") concurrently with the first application for a Final Plat on the Subject Property. The Phasing Plan shall become final and binding upon Developer upon approval of the first Final Plat on the Subject Property. Thereafter, development and platting of the Subject Property shall occur in the sequence established in the Phasing Plan, and any amendments thereto. However, nothing contained in this paragraph shall be construed as precluding Developer from filing or developing more than one phase at a time. The Phasing Plan may not be amended except upon written approval of the Director, which shall not be unreasonably withheld, conditioned or delayed.

5. **Recording.** The City shall record this Agreement in the office of the Boone County Recorder of Deeds at the cost and expense of the Developer.

6. **Amendments.** Any amendment to this Agreement must be in writing and must be executed by the City and the Developer, and any future Developer of any part of the Subject Property who would otherwise be obligated to perform any of the requirements imposed upon the Developer by this Agreement. Oral modifications or amendments of this Agreement are of no force or effect.

7. **Remedies.** The parties to this Agreement may, either in law or equity, by suit, action, mandamus or other proceedings in court, seek declaratory relief, enforce and compel specific performance of this Agreement provided that in no event will the City have any liability in damages, costs or any other monetary liability to Developer or any affiliate of Developer, any person claiming through Developer, or to their respective successors, assigns, heirs and personal representatives in respect of any suit, claim, or cause of action arising out of this Agreement or any of the actions or transactions contemplated herein.

8. **Third Party Actions.** Developer will have the right, but not the obligation to assume the costs of defense of any action or proceeding initiated by a third party challenging this Agreement, the zoning or rezoning of the Subject Property, or any other actions or transactions contemplated by this Agreement (including, without limitation, to settle or compromise any claim or action for which Developer has assumed the defense) with counsel of Developer's choosing and the City and Developer agree that so long as no conflicts of interest exist between them, the same attorney or attorneys may simultaneously represent the City and Developer in any such proceeding. In no event will the City have any liability to Developer for damages or otherwise in the event that all or any part of this Agreement, or the approval of a zoning request or platting request, are declared invalid or unconstitutional in whole or in part by a final (as to which all rights of appeal have been exhausted or expired) judgment of a court of competent jurisdiction, and, in the event Developer elects not to assume such defense and costs, the City will have no obligation to defend or to assume the costs of defense of any such action.

9. **Notices.** All notices between the parties hereto must be in writing and must be sent by certified or registered mail, return receipt requested, by personal delivery against receipt or by overnight courier, will be deemed to have been validly served, given or delivered immediately when delivered against receipt or three (3) business days after deposit in the mail, postage prepaid, or one (1) business day after deposit with an overnight courier, and must be addressed as follows:

If to the City:

City of Columbia
Attn: City Manager
701 E. Broadway
Columbia, MO 65205

If to Developer:

Springbrook Crossing, L.L.C.
4220 Philips Farm Rd., Suite 109
Columbia, MO 65201

Each party will have the right to specify that notice is to be addressed to another address by giving to the other party ten (10) days written notice thereof.

10. **Insurance.** Developer must provide, at its sole expense, and maintain during all times in which Developer is constructing public improvements pursuant to this Agreement commercial general liability insurance with a reputable, qualified, and financially sound company licensed to do business in the State of Missouri, and unless otherwise approved by the City, with a rating by Best of not less than "A," that will protect

the Developer, the City, and the City's officials, officers, and employees from claims which may arise from operations under this Agreement, whether such operations are by the Developer, its officers, directors, employees and agents, or any subcontractors of Developer. This liability insurance must include, but will not be limited to, protection against claims arising from bodily and personal injury and damage to property, resulting from all Developer operations, products, services or use of automobiles, or construction equipment. The amount of insurance required herein must be in no event less than the individual and combined sovereign immunity limits established by § 537.610 RSMo. for political subdivisions; provided that nothing herein will be deemed to waive the City's sovereign immunity. An endorsement must be provided which states that the City is named as an additional insured and stating that the policy will not be canceled or materially modified so as to be out of compliance with the requirements of this Section, or not renewed without 30 days advance written notice of such event being given to the City.

11. **Hold Harmless.** Developer at its sole cost and expense, hereby agrees to indemnify, protect, release, defend (with counsel acceptable to the City) and hold harmless the City, its municipal officials, elected officials, boards, commissions, officers, employees, attorneys, and agents from and against any and all causes of action, claims, demands, all contractual damages and losses, economic damages and losses, all other damages and losses, liabilities, fines, charges, penalties, administrative and judicial proceedings and orders, judgments, remedial actions of any kind, and all costs and expenses of any kind, including, without limitation, reasonable attorney's fees and costs of defense arising, directly or indirectly, in whole or in part, from the action or inaction of Developer, its agents, representatives, employees, contractors, subcontractors or any other person for whose acts Developer may be liable, in the activities performed, or failed to be performed, by Developer under this Agreement or in the development of the Subject property, except to the extent arising from or caused by the sole or gross negligence or willful misconduct of the City, its elected officials, officers, employees, agents or contractors. The indemnification, duty to defend and hold harmless obligations set forth in this Section will survive for a period of five (5) years from the date of expiration or termination of this Agreement.

12. **Sovereign Immunity.** Nothing in this Agreement shall constitute or be construed as a waiver of the City's governmental or official immunity or its officers or employees from liability or suit pursuant to Section 537.600 RSMo.

13. **No Third Party Beneficiaries.** There are no third party beneficiaries to this Agreement.

14. **Failure or Delay to Enforce.** No failure to exercise or delay in exercising any right hereunder on the part of any Party to this Agreement shall operate as a waiver thereof, and no single or partial exercise of any right of such Party shall preclude any other or further exercise of such right or the exercise of any other right.

15. **Power of the City.** Notwithstanding anything set forth in this Agreement to the contrary, no provision contained herein shall in any manner diminish or usurp the inherent rights and powers of the City to act in its capacity as a public body. Nothing herein shall relieve Developer from complying with all applicable laws and requirements.

16. **Inspection.** Upon reasonable prior notice, the City may conduct such periodic inspections of the projects herein, including any applicable phase, as may be generally provided in the applicable law or regulation for inspection thereof in order to confirm compliance with the terms of this Agreement. The Developer shall not deny the City and its officers and employees the right to inspect, upon reasonable prior written request, all engineering plans, construction contracts or other documents pertaining to the construction of the public infrastructure on the Subject Property. Notwithstanding the foregoing, Developer shall not be required to produce documents for inspection if such documents are attorney-client privileged or contain confidential, proprietary information or if production would violate the rights of any third parties.

17. **Governing Law.** This Agreement will be construed according to the laws of the State of Missouri. The Parties will comply with all local, state, and federal laws and regulations relating to the performance of this Agreement.

18. **Venue.** Any action at law, suit in equity, or other judicial proceeding to enforce or construe this Agreement, or regarding its alleged breach, must be instituted only in the Circuit Court of Boone County, Missouri.

19. **Entire Agreement.** This Agreement contains the entire and complete agreement between the City and the Developer with respect to the requirements imposed upon the Developer for the providing of certain rights-of-way and interests in land, and the construction and installation of certain improvements, all as hereinabove described in the Recitals for this Agreement and the above numbered paragraphs of this Agreement. Parties agree that this Agreement constitutes a lawful contract between the Parties and Developer hereby acknowledges and agrees that this Agreement and provisions of the City's Code of Ordinances applicable to this Agreement constitute lawful exercises of the City's authority and police power.

[Remainder of page intentionally blank. Signature pages follow.]

IN WITNESS WHEREOF, the Parties have executed this Agreement and shall be effective on the last day and year indicated below.

CITY:

City of Columbia, Missouri

By: _____

De'Carlton Seewood, City Manager

Date: _____

ATTEST:

Sheela Amin, City Clerk

Approved as to form:

Nancy Thompson, City Counselor/jwc

On this _____ day of _____, 20____, before me appeared De'Carlton Seewood, to me personally known, who, being by me duly sworn, did say that he is the City Manager of the City of Columbia, Missouri, and that the seal affixed to the foregoing instrument is the corporate seal of the City and that this instrument was signed and sealed on behalf of the City by authority of its City Council and the City Manager acknowledged this instrument to be the free act and deed of the City.

IN TESTIMONY WHEREOF, I have hereunto set by hand and affixed my official seal, at my office in Columbia, Boone County, Missouri, the day and year first above written.

Notary Public

My commission expires: _____.

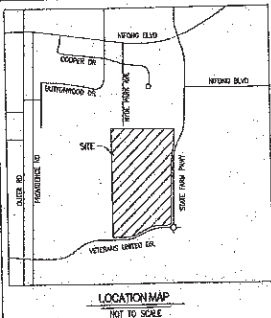
EXHIBIT A
Legal Description Subject Property

A TRACT OF LAND LOCATED IN THE NORTHEAST QUARTER OF SECTION 36,
TOWNSHIP 48 NORTH, RANGE 13 WEST, COLUMBIA, BOONE COUNTY, MISSOURI AND
BEING ALL OF TRACT 2B OF THE SURVEY RECORDED IN BOOK 5746, PAGE 130 AND
CONTAINING 42.23 ACRES.

EXHIBIT B
Springbrook Crossing North Preliminary Plat

PRELIMINARY PLAT SPRINGBROOK CROSSING NORTH

A MAJOR SUBDIVISION LOCATED IN THE NORTHEAST QUARTER
OF SECTION 36, TOWNSHIP 48 NORTH, RANGE 13 WEST
COLUMBIA, BOONE COUNTY, MISSOURI
DECEMBER 11, 2023



LEGEND

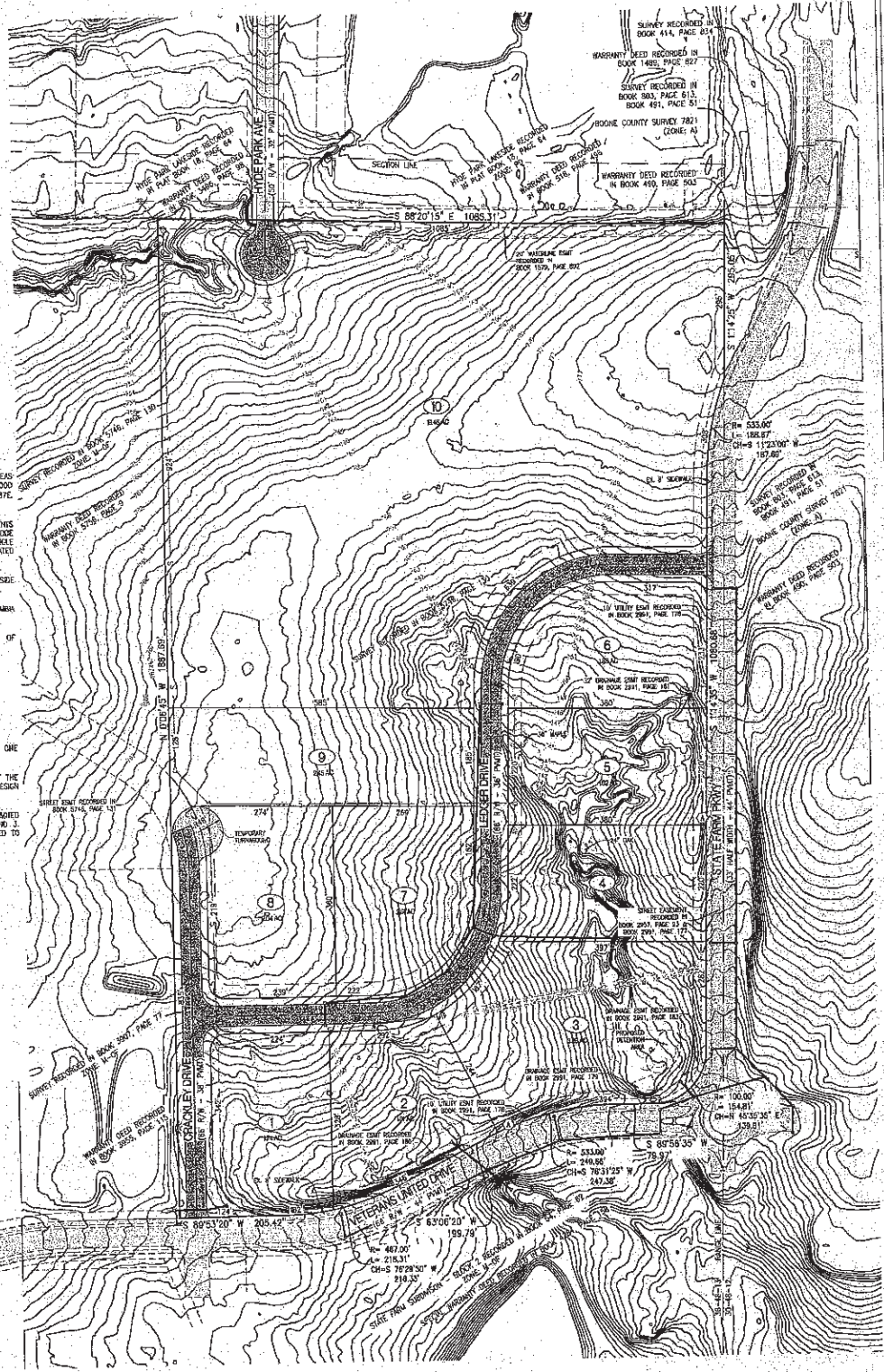
- E EXISTING
- S SET
- SET 1/2" IRON PIPE OR 1/2" REBAR (UNLESS NOTED OTHERWISE)
- COTTON PICKER SPINDLE/HALFROAD SPICE
- STONE
- PERMANENT MONUMENT
- (M) MEASURED DISTANCE
- (RCS) RECORDED DISTANCE
- (D) RADIAL LINE
- DH X DRILL HOLE
- X CHISELED X
- △ RIGHT-OF-WAY MARKER
- P.O.B. POINT OF BEGINNING
- R_c CURVE RADIUS
- L_w CURVE ARC LENGTH
- C_{ch} CURVE CHORD DIRECTION & LENGTH
- E_{ch} CENTERLINE

NOTES

1. THIS TRACT IS LOCATED IN ZONE 7 - UNSHADOWED AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAN AS SHOWN BY THE FEMA FIRM PANEL #22018C0276C, DATED APRIL 10, 2017.
2. THIS TRACT IS REGULATED BY THE STREAM BUFFER REQUIREMENTS IN SECTION 124-230, ARTICLE V OF THE CITY OF COLUMBIA CODE OF ORDINANCES AS SHOWN BY THE COLUMBIA UTILS GUARDRAIL MAP. THIS PLAT DOES NOT CONTAIN ANY SUCH REGULATED STREAM BUFFER.
3. THERE SHALL BE A 10 FOOT UTILITY EASEMENT ALONG THE SIDE OF EACH LOT ADJACENT TO PUBLIC RIGHT-OF-WAY AS SHOWN.
4. WATER DISTRIBUTION TO BE DESIGNED BY THE CITY OF COLUMBIA WATER & LIGHT.
5. ELECTRIC DISTRIBUTION TO BE DESIGNED BY THE CITY OF COLUMBIA.
6. NATURAL GAS DISTRIBUTION TO BE DESIGNED BY AMEREN.
7. LOT NUMBERS SHOWN ARE FOR INVENTORY PURPOSES ONLY.
8. THE EXISTING ZONING OF THIS TRACT IS M-OF.
9. THIS PLAT CONTAINS 42.02 ACRES.
10. THE INTENT FOR THIS DEVELOPMENT IS TO BE DEVELOPED IN ONE PHASE.
11. ALL SEWER AND WATER QUALITY DESIGN SHALL MEET THE CITY OF COLUMBIA STORM WATER MANUAL AND DESIGN REGULATIONS.
12. PRIVATE ACCESS ONTO VETERANS UNITED DRIVE SHALL BE LIMITED TO A SINGLE SHARED DRIVE LOCATED BETWEEN LOTS 2 AND 3. FRONT ACCESS TO STATE FARM PARKWAY SHALL BE LIMITED TO A SINGLE SHARED DRIVE LOCATED BETWEEN LOTS 4 AND 5.



OWNER/DEVELOPER:
SPRINGBROOK CROSSING, L.L.C.
420 PHILIP FARLAND
COLUMBIA, MO 65011



LEGEND

- EXISTING STRIP CENTER
- EXISTING MAJOR CENTER
- CENTER
- CENTER SHARED CENTER
- PROPOSED SHARED CENTER
- UNWELLED/TEMP
- PROPOSED MAINLINE
- PROPOSED LOW POLE
- PROPOSED FOR MONITOR
- PROPOSED OUTLINE
- EXISTING TIE LINE
- EXISTING STRIP CENTER
- PROPOSED DRAIN CENTER
- EASEMENT LINE
- EASEMENT
- LOT NUMBER
- PROPOSED PROJECT
- EXISTING PROJECT

APPROVED BY THE CITY OF COLUMBIA PLANNING AND ZONING
COMMISSION THIS 9th DAY OF May 2024

John Lee
PLANNING COMMISSION CLERK JAMES OVERBERGER

SPRINGBROOK CROSSING NORTH	
A MAJOR SUBDIVISION LOCATED IN SECTION 36, TOWNSHIP 48 NORTH, RANGE 13 WEST COLUMBIA, BOONE COUNTY, MISSOURI	
CORPORATE NUMBER: 2002024	CROCKETT ENGINEERING CONSULTANTS 1000 W. HIGHWAY 63, SUITE 1 COLUMBIA, MISSOURI 65204 (573) 447-0259 www.crockettengineering.com
DATE: 02/11/2023	SCALE: 1"=50'
PROJECT: 20204	DRAWN BY: JWS



04/30/2024

EXHIBIT C

Traffic Impact Study (dated January 17, 2024 and addendums dated April 10, 2024 and May 23, 2024)

January 17, 2024

Mr. Tim Crockett, P.E.
Crockett Engineering
1000 West Nifong Boulevard, Building 1
Columbia, MO 65203

RE: Traffic Impact Study
Springbrook Crossing North- Veterans United Drive and State Farm Parkway
Columbia, Missouri
CBB Job No. 105-23

Dear Mr. Crockett:

As requested, CBB has completed a traffic impact study pertaining to a mixed-use development, known as Springbrook Crossing North, in Columbia, Missouri. The location of the site in relation to the surrounding road system is depicted in **Figure 1**.

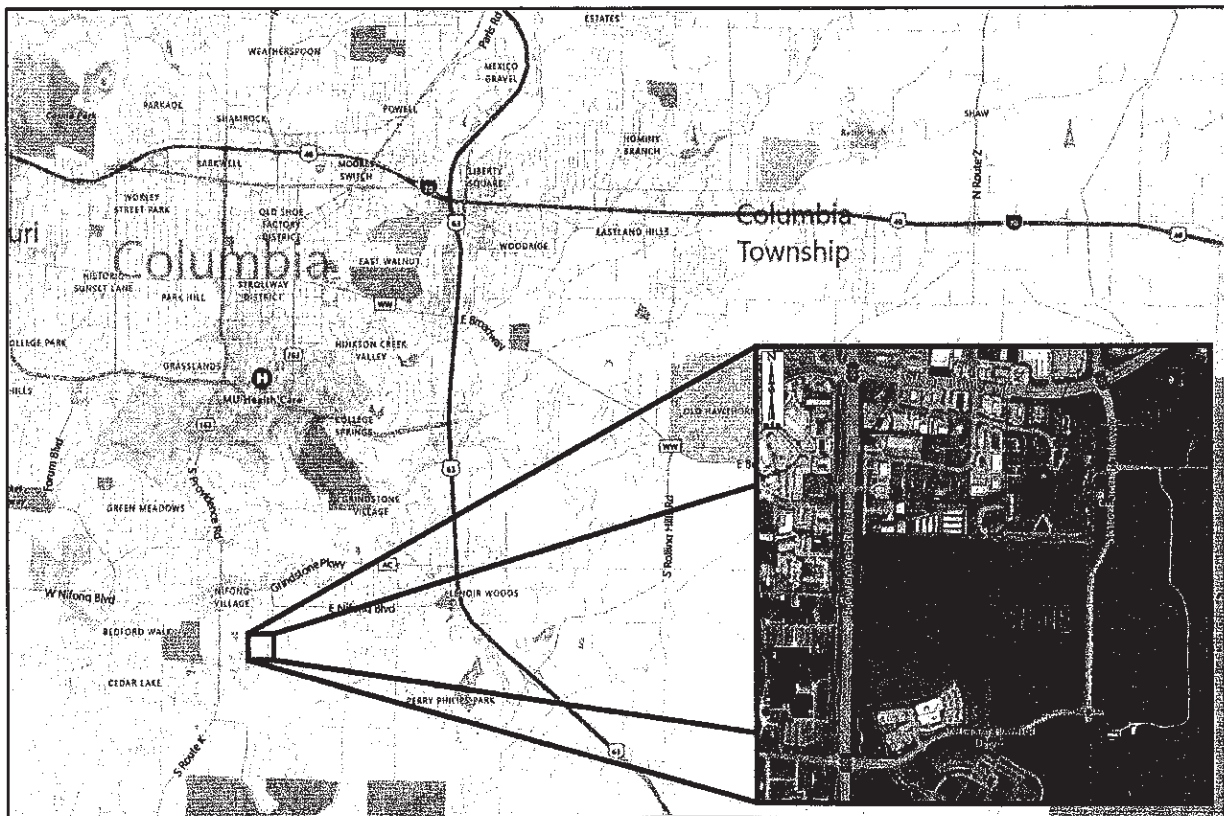


Figure 1: Project Location Map



The proposed development is located in the northwest quadrant of the Veterans United Drive and State Farm Parkway intersection. Although the exact users are unknown at this time, it is anticipated that the proposed development will consist of a mix of multi-family residential and office. Access to the development is proposed via a new roadway connection to Veterans United Drive opposite the existing east drive for Veterans United and via two new roadways on State Farm Parkway: one for the multi-family and one for the office. It is our understanding that additional access is desired on Veterans United Drive between Lots 2 and 3 and on State Farm Parkway between Lots 4 and 5. A schematic of the concept plan provided is shown in **Exhibit 1**.

The purpose of this study was to determine the number of trips that would be generated by the proposed development, evaluate the impact of those trips on operating conditions along the adjacent roadways, and determine the ability of motorists to safely enter and exit the site. Where necessary, roadway improvements and/or traffic control modifications were recommended to mitigate the impact of the development. The focus of this study was the AM and PM peak hours of a typical weekday.

The following intersections were included in the study:

- Grindstone Parkway & State Farm Parkway;
- State Farm Parkway & Nifong Boulevard
- Veterans United Drive & VU East Driveway;
- Veterans United Drive & MU East Driveway;
- Veterans United Drive & VU Middle/MU West Driveway;
- Veterans United Drive & VU West Driveway; and
- Providence Road and Veterans United Drive.

The following analysis scenarios were considered:

- 2023 Base Conditions (existing traffic with other approved development trips); and
- 2023 Build Conditions (Base plus Site trips)

The following report presents the methodology and findings relative to the 2023 Base and Build conditions.

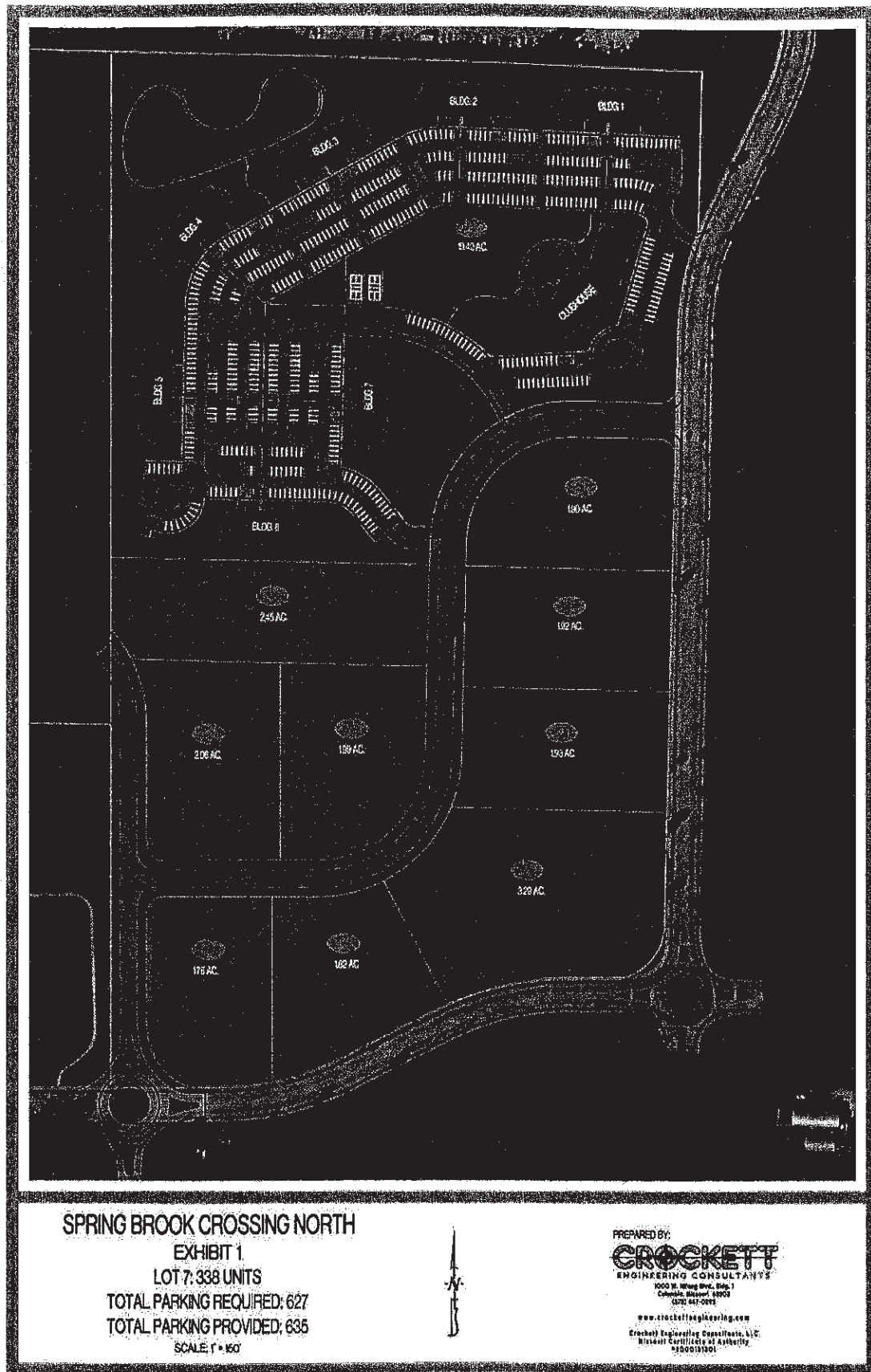


Exhibit 1: Preliminary Site Plan (provided by others)

Job# 105-23
01/17/2024





EXISTING CONDITIONS

Area Roadway System: Providence Road (Missouri Route 163) is a north-south minor arterial owned and maintained by the Missouri Department of Transportation (MoDOT). North of Southampton Drive, Providence Road has four lanes, two in each direction with a center concrete median. Between Southampton Drive and Corporate Lake Drive, Providence Road has three lanes, one northbound and two southbound. Providence Road terminates the second southbound through lane as a separate right turn lane at Corporate Lake Drive and is two lanes south of Corporate Lake Drive. Providence Road has a speed limit of 50 mph throughout the study area. There are paved shoulders on both sides of the road and a multi-use path that runs parallel to Providence Road along the west side of the road.

Veterans United Drive is an east-west major collector owned and maintained by the City of Columbia. Veterans United Drive has three lanes, one in each direction with a center two way left-turn lane (TWLTL). Sidewalks and shared bike lane arrows are provided along both sides of the road. The posted speed limit on Veterans United Drive is 35 mph.

State Farm Parkway is a north-south major collector owned and maintained by the City of Columbia. State Farm Parkway has three lanes, one in each direction with a center two way left-turn lane (TWLTL). Sidewalks and shoulders are provided along both sides of the road. The posted speed limit on State Farm Parkway is 45 mph.

Grindstone Parkway is an east-west principal arterial owned and maintained by MoDOT. East Nifong Boulevard/ Grindstone Parkway generally has four lanes, two in each direction with a grass median. Auxiliary turn lanes are provided at most cross streets. A sidewalk is provided along the north side and shared bike lane arrows and shoulders are provided along both sides of the road. The posted speed limit on East Nifong Boulevard/Grindstone Parkway is 50 mph.

Nifong Boulevard is an east-west major collector owned and maintained by the City of Columbia. Nifong Boulevard has two lanes, one in each direction. Sidewalks and shoulders are not provided on either side of the road. The posted speed limit on Nifong Boulevard is 50 mph.

The intersection of Providence Road and Southampton Drive/Veterans United Drive is controlled by a traffic signal. The southbound Providence Road approach has two left-turn lanes, one through lane and one channelized separate right-turn lane. The northbound approach has one left turn lane, one through lane and one shared through-right turn lane. The eastbound Southampton Drive approach has two left-turn lanes and one shared through right-turn lane. The westbound Veterans United Drive approach has two left turn lanes, one through lane and one right turn lane. All approaches operate with protected only left-turn phasing. Crosswalks are provided across all legs except the south leg of the intersection. **Figure 2** provides an aerial view of the Providence Road and Southampton Drive/Veterans United Drive.

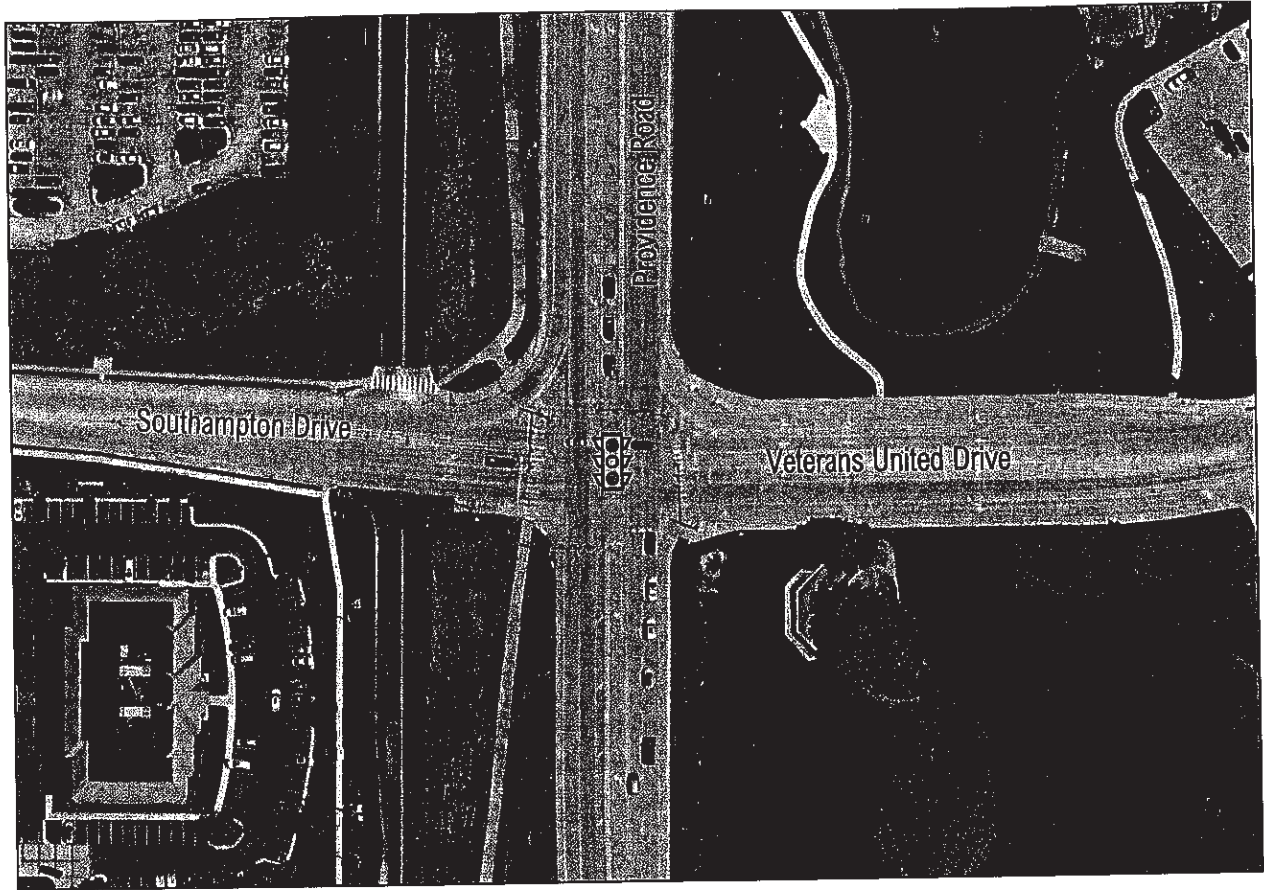


Figure 2: Aerial View of Providence Road and Southampton Drive/Veterans United Drive

The intersection of Veterans United Drive and VU West Drive is controlled by a side-street stop with VU West Drive required to stop. The northbound VU West Drive approach has one left-turn lane and one right-turn lane. The eastbound Veterans United Drive approach has a separate right-turn lane and a through lane. The westbound approach has a through lane and a center TWLTL that provides a left turn lane to VU West Drive. **Figure 3** provides an aerial view of the Veterans United Drive and VU West Drive intersection.

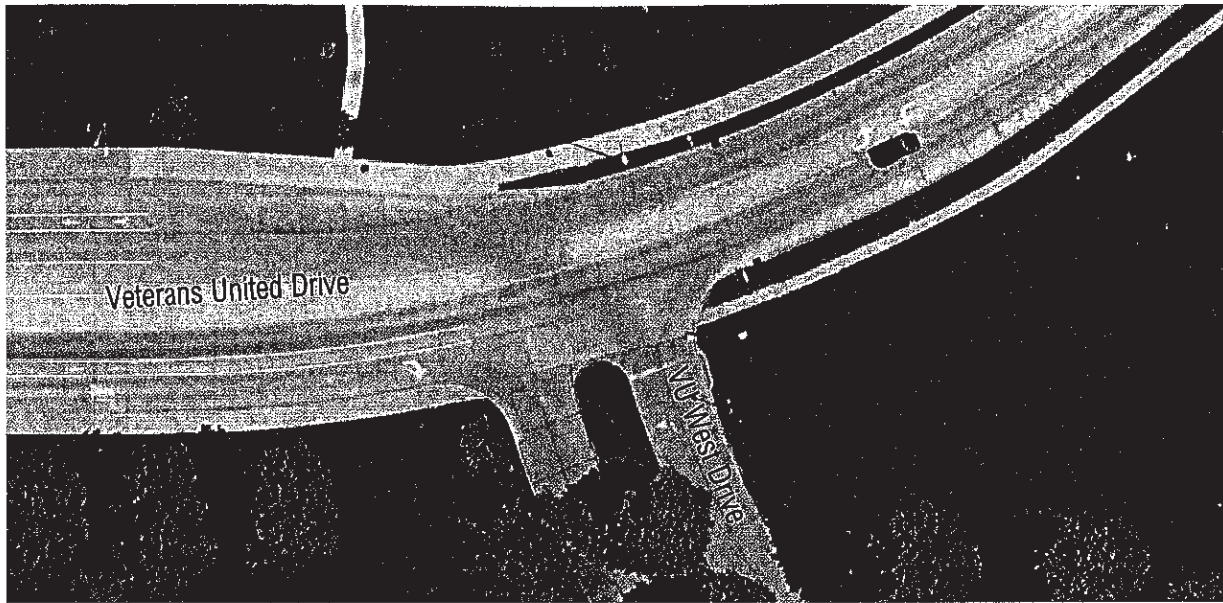


Figure 3: Aerial View of Veterans United Drive and VU West Drive

The intersection of Veterans United Drive and MU Healthcare/VU Middle drive is controlled by side-street stop with the MU Healthcare and VU Middle driveways required to stop. The southbound MU Healthcare drive approach has one left-turn lane and one right-turn lane. The northbound VU Middle drive has one shared lane. Eastbound and westbound approaches for Veterans United Drive have a shared through/right turn lane and a center TWLTL that provides a left turn lane to MU East Drive and VU Middle Drive. **Figure 4** provides an aerial view of the Veterans United Drive and MU Healthcare/VU Middle drives intersection.

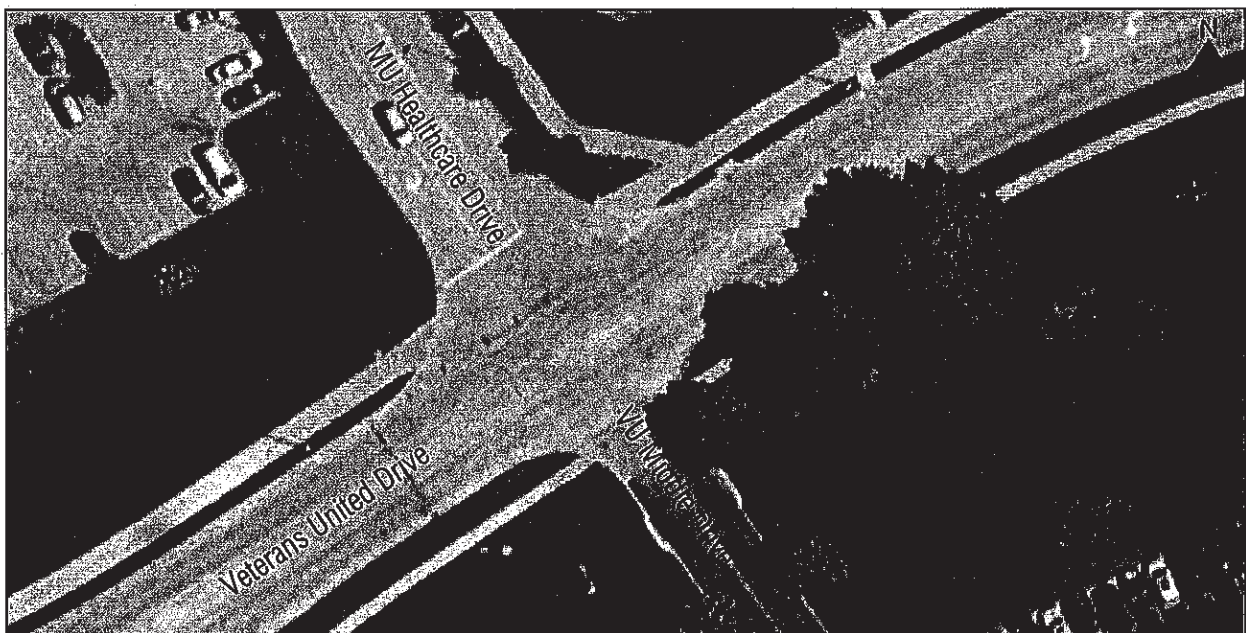


Figure 4: Aerial View of Veterans United Drive and MU Healthcare/ VU Middle Drives



The intersection of Veterans United Drive and MU East Drive is controlled by side-street stop with MU East Drive required to stop. The southbound MU East Drive approach has one shared lane. The eastbound Veterans United Drive approach has a through lane and a center TWLTL that provides a left turn lane to MU East Drive and the westbound approach has a shared through/right turn lane. **Figure 5** provides an aerial view of the Veterans United Drive and MU East Drive intersection.

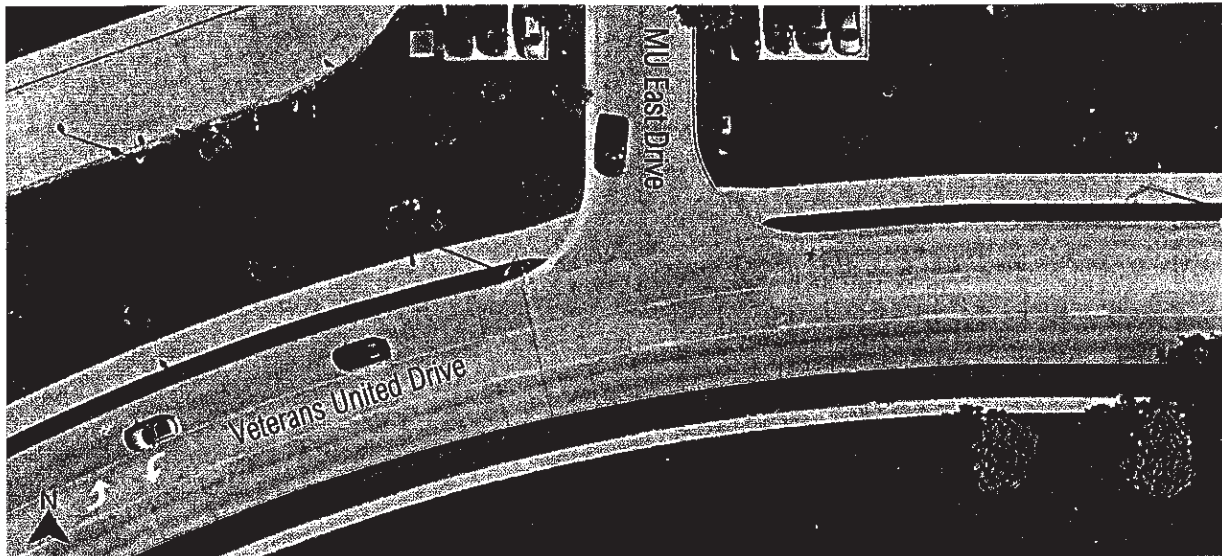


Figure 5: Aerial View of Veterans United Drive and MU East Drive

The intersection of Veterans United Drive and VU East Drive is controlled by side-street stop with VU East Drive required to stop. The northbound VU East Drive approach has one shared lane. The eastbound Veterans United Drive approach has a shared through/right turn lane and the westbound approach has a through lane and a center TWLTL that provides a left turn lane to VU East Drive. **Figure 6** provides an aerial view of the Veterans United Drive and VU East Drive intersection.

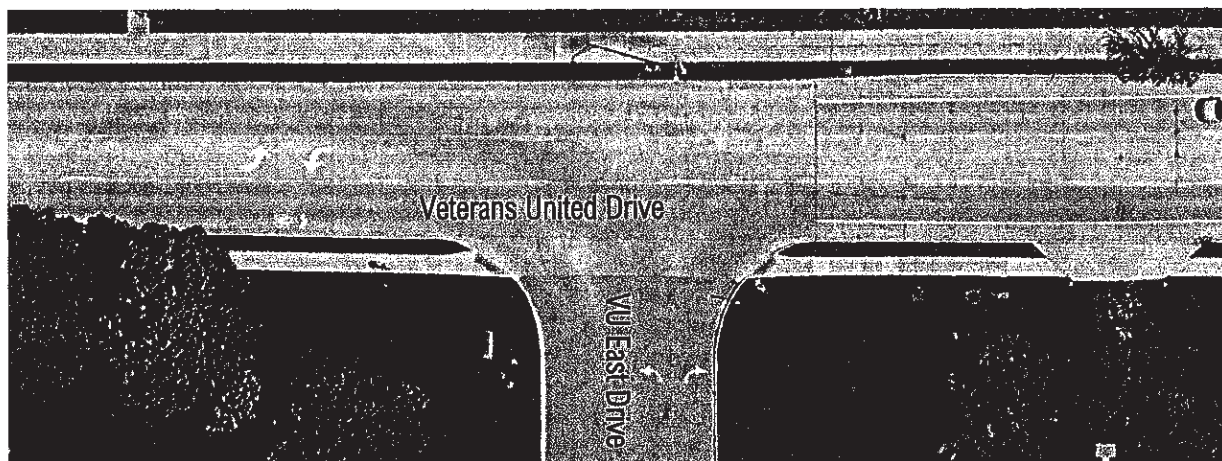


Figure 6: Aerial View of Veterans United Drive and VU East Drive

The intersection of Grindstone Parkway and State Farm Parkway/Green Meadows Road is controlled by a traffic signal. The northbound and southbound approaches have two left turn lanes, one through lane, and a channelized right turn lane. The eastbound Grindstone Parkway approach has two left turn lanes, two through lanes, and one channelized right turn lane. The westbound Grindstone Parkway approach has one left turn lane, two through lanes, and one channelized right turn lane. All approaches operate with protected only left-turn phasing. Crosswalks are provided on all four legs of the intersection. **Figure 7** provides an aerial view of the Grindstone Parkway and State Farm Parkway/Green Meadows Road intersection.



Figure 7: Aerial View of Grindstone Parkway and State Farm Parkway/Green Meadows Road

The intersection of Nifong Boulevard and State Farm Parkway is controlled by side-street stop with Nifong Boulevard required to stop. The northbound State Farm Parkway approach has a shared through/channelized right turn lane. The southbound lane has a through lane and a center TWLTL that provides a left turn lane to Nifong Boulevard. The westbound Nifong Boulevard approach has a shared left turn/through/channelized right turn lane. Crosswalks are provided across Nifong Boulevard. **Figure 8** provides an aerial view of the Nifong Boulevard and State Farm Parkway intersection.



Figure 8: Aerial View of Nifong Boulevard and State Farm Parkway



Existing Traffic Volumes: Video turning movement traffic counts were conducted at the following intersections during the weekday morning (7:00 - 9:00 a.m.) and weekday afternoon (2:00 - 6:00 p.m.) peak periods on Wednesday, October 11, 2023, while area schools were in session:

- Grindstone Parkway & State Farm Parkway;
- State Farm Parkway & Nifong Boulevard;
- Veterans United Drive & VU East Driveway;
- Veterans United Drive & MU East Driveway;
- Veterans United Drive & VU Middle/MU West Driveway;
- Veterans United Drive & VU West Driveway; and
- Providence Road and Veterans United Drive.

Based on the traffic data collected, the morning peak hour occurred between 7:30 and 8:30 a.m. and the afternoon peak hour occurred between 4:30 and 5:30 p.m. The existing peak hour volumes are summarized in **Exhibit 2**.

Based on the prior counts collected as part of the Springbrook Crossing South study, the weekday commuter PM peak hour was found to be the highest traffic volume hour when compared to the weekday AM and school dismissal peak hours. As such, a school dismissal peak hour analysis is not necessary as the weekday AM and PM conditions would govern any improvement needs.

Given the traffic characteristics in the area and the anticipated trip generation for the proposed development, the weekday AM and PM peak periods would represent a “worst-case scenario” with regards to the traffic impact. If traffic operations are acceptable during these peak periods, it can be reasoned that conditions would be acceptable throughout the remainder of the day.

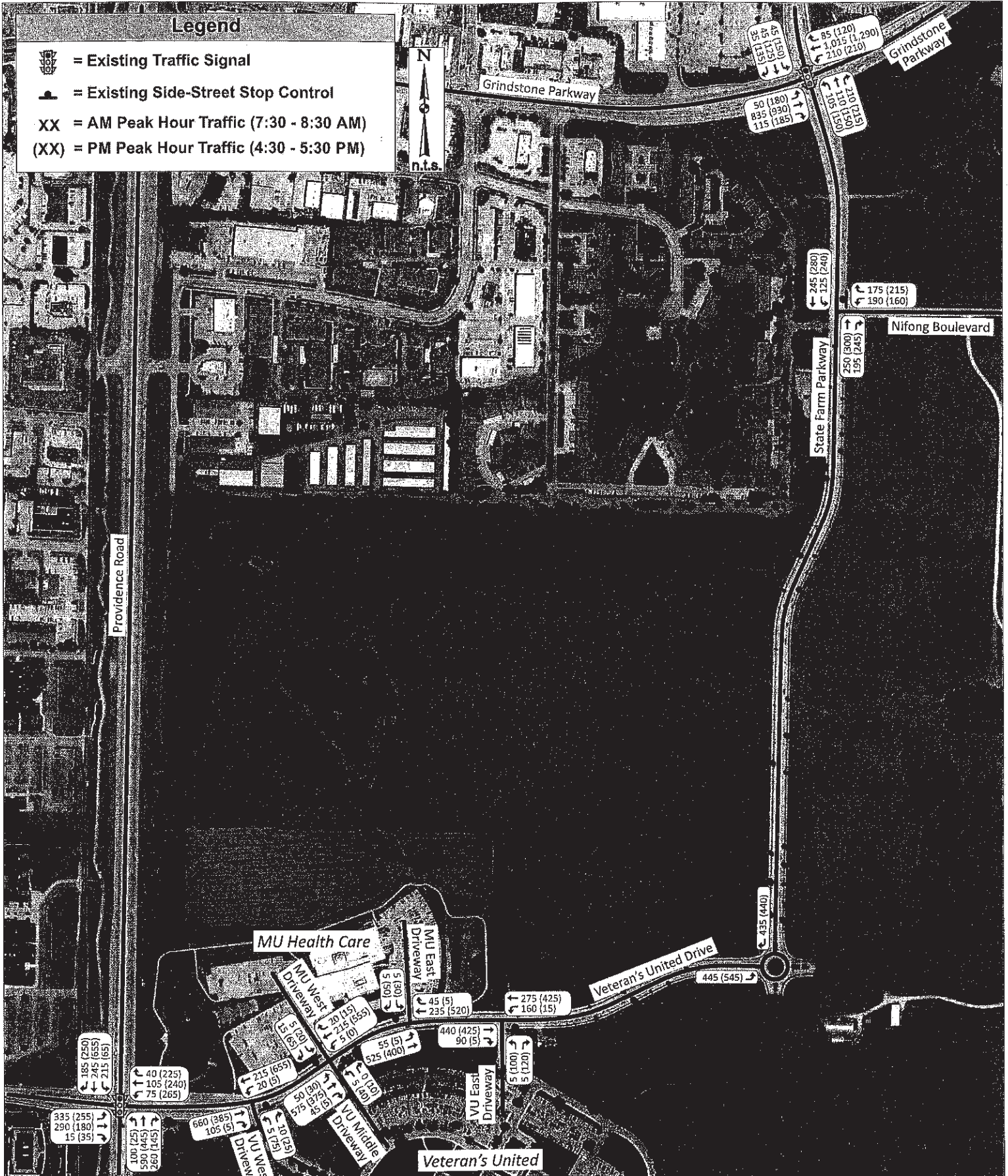


Exhibit 2: Existing Traffic Volumes



2023 BASE CONDITIONS

CBB recently completed a traffic study for the Springbrook Crossing (South) development located in the southeast quadrant of the Providence Road and Veterans United Drive in January 2023. As requested by the City, the planned Springbrook Crossing (South) development was included in the 2023 Base scenario for this study. The recommended roadway improvements planned in conjunction with the Springbrook Crossing (South) development were also assumed in the Base scenario, specifically the construction of a new roundabout at the Veterans United Drive and MU Healthcare/VU Middle Drive intersection.

Figure 9 is an excerpt of the “Exhibit 3: Site-Generated Trips” in the Springbrook Crossing South Traffic Impact Study, dated January 27, 2023. The trips shown in Figure 9 represent the full build-out of the Springbrook Crossing South development. The Springbrook Crossing South trips shown in Figure 9 were carried through the adjacent study intersections along Veterans United Drive to the east and State Farm Parkway to the north and are shown in **Exhibit 3**.

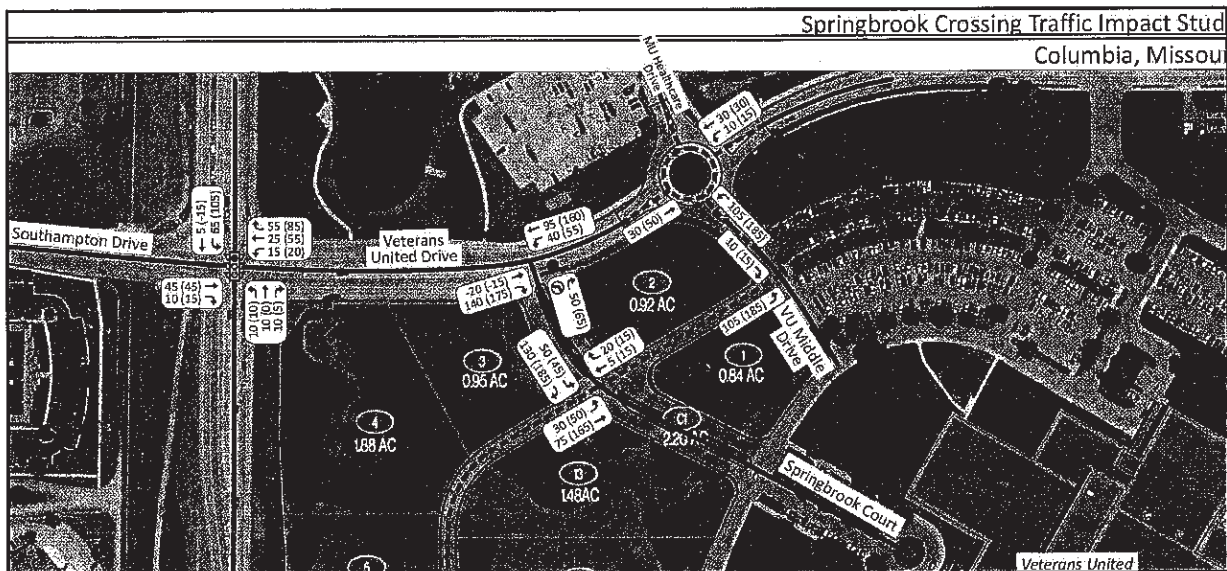


Figure 9: Excerpt from "Exhibit 3: Site-Generated Trips" from Springbrook Crossing South Traffic Study dated January 27, 2023

In order to provide a worst-case scenario at the study intersections, the trips for the Springbrook Crossing South development (Exhibit 3) were added to the 2023 Existing traffic volumes (Exhibit 2) to develop the 2023 Base traffic volumes (Exhibit 4) which includes the build out of the Springbrook Crossing South development. Note that the 2023 Base traffic volumes reflect the reassignment of the left-turns exiting the VU West Drive to the VU Middle Drive, since the west drive would be converted to three-quarter access (left-in/right-in/right-out) with the build out of the Springbrook Crossing South development.

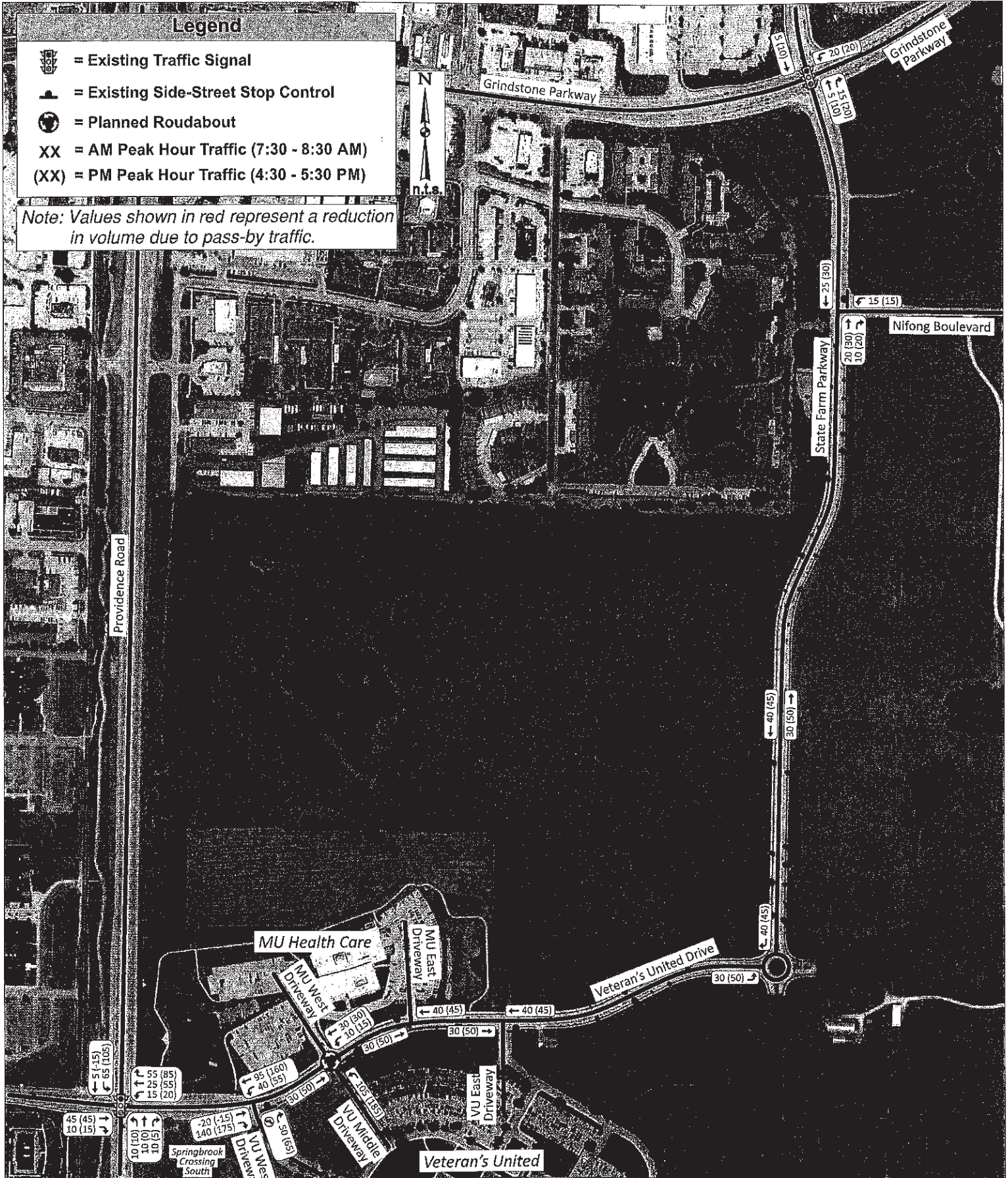


Exhibit 3: Springbrook Crossing South Site Trips



PROPOSED SITE

Proposed Land Use: Based on the concept plan provided by Crockett Engineering and the current zoning, the proposed development will likely consist of a mix of residential and office uses. For the purposes of this study, it was assumed the northern portion of the site would consist of 338 multi-family units with the southern portion of the site consisting of a mix of general office and medical office uses. It was assumed there would be approximately 130,000 SF of general office space and 50,000 SF of medical office space.

Site Access: As shown on the concept plan, access is proposed via a new roadway connection to Veterans United Drive opposite the existing east drive for Veterans United and two new driveways on State Farm Parkway: one for the multi-family and one for the office. It is our understanding that additional access is desired on Veterans United Drive between Lots 2 and 3 and on State Farm Parkway between Lots 4 and 5.

Note that the sight distance was not measured in the field to evaluate the available sight distance at the proposed site drives. It is recommended the site design engineer verify adequate sight distance is provided at the proposed site drives on Veterans United Drive and State Farm Parkway.

Careful consideration should be given to sight distance obstructions when planning future aesthetics enhancements, such as signs, berms, fencing and landscaping, to ensure that these improvements do not obstruct the view of entering and exiting traffic at the intersection of all drives with the public roadways. It is generally recommended that all improvements higher than 3 ½ feet above the elevation of the nearest pavement edge be held back at least 20 feet from the traveled roadway.

Trip Generation: Traffic forecasts were prepared to estimate the amount of traffic that the proposed Springbrook Crossing North development would generate during the peak hours. These forecasts were based upon information provided in the *Trip Generation Manual*, 11th Edition, published by the Institute of Transportation Engineers (ITE). This manual, which is a standard resource for transportation engineers, is based on a compilation of nationwide studies documenting the characteristics of various land uses. Estimates for proposed Springbrook Crossing North development were based upon the following land uses:

- Land Use 220 – Multifamily Housing Low-Rise
- Land Use 710 – General Office
- Land Use 720 – Medical Office

Based upon the recommended procedures for estimating trip generation outlined in the “Trip Generation Handbook, A Recommended Practice”, published by ITE (March 2001), the regression equation was utilized for:

- Land Use 220 – Multifamily Housing Low-Rise;



- Land Use 710 – General Office; and
- Land Use 720 – Medical Office.

The peak hour of adjacent street traffic (one hour between 7 and 9 a.m.) was utilized for the AM peak hour and the peak hour of adjacent street traffic (one hour between 4 and 6 p.m.) was utilized for the PM peak hour trip generation.

The resulting trip generation estimate for the proposed Springbrook Crossing North development is summarized in **Table 1**. As shown in the table, the proposed Springbrook Crossing North development is estimated to generate 470 new trips during the weekday AM peak hour and 570 new trips during the weekday PM peak hour.

Table 1: Trip Generation Estimate - Springbrook Crossing North

Land Use	Size	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Multifamily	338 units	30	100	130	105	60	165
General Office	130,000 ft ²	185	25	210	35	170	205
Medical Office	50,000 ft ²	105	25	130	60	140	200
Total New Trips		320	150	470	200	370	570

Trip Distribution: The site-generated trips for the proposed Springbrook Crossing North development were assigned into and out of the site based upon an estimated directional distribution. Based upon the existing travel patterns and the surrounding area and roadway network, it is anticipated that the distribution of new site-generated trips would be as summarized in **Table 2**.

Table 2: Trip Distribution Assumptions

DIRECTION OF TRAVEL	RESIDENTIAL TRIPS	OFFICE TRIPS
To/from the north on Providence Road (via Veterans United to Providence)	20%	25%
To/from the north on Providence Road (via State Farm Pkwy to Grindstone to Providence)	20%	10%
To/from the east on Grindstone Parkway (via State Farm Pkwy)	35%	15%
To/from the east on East Nifong Boulevard (via State Farm Pkwy)	10%	15%
To/from the south on Providence Road	5%	15%
To/from the west on Southampton Drive	10%	20%



The resulting assignment of site-generated trips for the weekday AM and PM peak hours is summarized in **Exhibit 5**.

2023 Build Traffic Volumes: The proposed site-generated trips (Exhibit 5) were added to the 2023 Base Traffic Volumes (Exhibit 4) to determine the total volumes in the forecasted scenario. The forecasted, or 2023 Build, traffic volumes for the AM and PM peak hours are shown in **Exhibit 6**.



2023 TRAFFIC ANALYSES

Study Procedures: The 2023 operating conditions were analyzed using SYNCHRO 11, a macro-level analytical traffic flow model. SYNCHRO is based on study procedures outlined in the *Highway Capacity Manual*, published by the Transportation Research Board. This manual, which is used universally by traffic engineers to measure roadway capacity, establishes six levels of traffic service: Level A ("Free Flow"), to Level F ("Fully Saturated"). Levels of service (LOS) are measures of traffic flow, which consider such factors as speed, delay, traffic interruptions, safety, driver comfort, and convenience. Level C, which is normally used for highway design, represents a roadway with volumes ranging from 70% to 80% of its capacity. However, Level D is often considered acceptable for peak period conditions in urban and suburban areas.

The thresholds that define level of service at an intersection are based upon the type of control used (i.e., whether it is signalized or unsignalized) and the calculated delay. For signalized and all-way stop intersections, the average control delay per vehicle is estimated for each movement and aggregated for each approach and then the intersection as a whole. At intersections with partial (side-street) stop control, delay is calculated for the minor movements only since motorists on the main road are not required to stop.

Level of service is directly related to control delay. At signalized intersections, the level of service criteria differ from that at unsignalized intersections primarily because varying transportation facilities create different driver expectations. The expectation is that a signalized intersection is designed to carry higher traffic volumes, and consequently may experience greater delay than an unsignalized intersection. **Table 3** summarizes the thresholds used in the analysis for signalized and unsignalized intersections.

Table 3: Level of Service Thresholds

LEVEL OF SERVICE (LOS)	CONTROL DELAY PER VEHICLE (SEC/VEH)	
	SIGNALIZED INTERSECTIONS	UNSIGNALIZED INTERSECTIONS
A	≤ 10	0-10
B	> 10-20	> 10-15
C	> 20-35	> 15-25
D	> 35-55	> 25-35
E	> 55-80	> 35-50
F	> 80	> 50



2023 Operating Conditions: The study intersections were evaluated using the methodologies described previously. **Table 4** summarizes the results of this analysis, which reflects the 2023 Base and Build operating conditions and average delay at the study intersections during the weekday AM and PM peak hours. The existing lanes and traffic control for the study intersections were assumed for the existing intersections.

Table 4: 2023 Capacity Analysis Summary

INTERSECTION / APPROACH	WEEKDAY AM PEAK HOUR		WEEKDAY PM PEAK HOUR	
	2023	2023	2023	2023
	BASE	BUILD	BASE	BUILD
Providence Road and Southampton Drive/Veterans United Drive (Signalized)				
Eastbound Southampton Drive Approach	F (80.0) 95 th Q: 540' TR	F (114.8) 95 th Q: 665' TR	E (59.5) 95 th Q: 365' TR	E (65.1) 95 th Q: 420' TR
Westbound Veterans United Drive Approach	D (38.0) 95 th Q: 165' T	D (38.6) 95 th Q: 190' T	D (41.4) 95 th Q: 400' T	D (52.6) 95 th Q: 520' T
Northbound Providence Road Approach	D (41.2) 95 th Q: 415' T	D (42.4) 95 th Q: 435' T	C (33.5) 95 th Q: 250' T	D (35.5) 95 th Q: 260' T
Southbound Providence Road Approach	D (42.4) 95 th Q: 260' T	D (49.5) 95 th Q: 260' T	D (42.8) 95 th Q: 760' T	D (44.9) 95 th Q: 760' T
Overall	D (51.4)	E (62.8)	D (43.4)	D (48.9)
Veterans United Drive and VU West Driveway (Side-Street STOP – ¾ access)				
Eastbound Veterans United Drive Approach	Free Flow	Free Flow	Free Flow	Free Flow
Westbound Veterans United Drive Left-Turn	B (11.2)	B (13.2)	A (9.0)	A (9.5)
Northbound VU West Driveway Right-Turn	B (14.5)	C (19.1)	B (11.6)	B (12.4)
Veterans United Drive and VU Middle/MU West Driveway (Roundabout)				
Eastbound Veterans United Drive Approach	A (4.2) 95 th Q: 180'	A (4.5) 95 th Q: 420'	A (4.2)	A (4.2)
Westbound Veterans United Drive Approach	A (5.2)	A (5.3)	B (13.6) 95 th Q: 315'	F (61.4) 95 th Q: 1190'
Northbound VU Middle Driveway Approach	B (13.8)	C (18.3)	B (11.7)	B (13.6)
Southbound MU West Driveway Approach	A (6.0)	A (6.6)	B (13.5)	C (18.4)
Overall	A (5.5)	A (5.9)	B (10.3)	D (33.1)
Veterans United Drive and MU East Driveway (Side-Street STOP)				
Eastbound Veterans United Drive Left-Turn	A (8.2)	A (8.4)	A (8.8)	A (9.6)
Westbound Veterans United Drive Approach	Free Flow	Free Flow	Free Flow	Free Flow
Southbound MU East Driveway Approach	B (12.1)	B (13.5)	B (14.4)	C (18.2)



Table 4: 2023 Capacity Analysis Summary (cont.)

INTERSECTION / APPROACH	WEEKDAY AM PEAK HOUR		WEEKDAY PM PEAK HOUR	
	2023 BASE	2023 BUILD	2023 BASE	2023 BUILD
Veterans United Drive and VU East Driveway/Proposed Site Drive (Side-Street STOP)				
Eastbound Veterans United Drive Left-Turn		A (8.6)		A (8.9)
Westbound Veterans United Drive Left-Turn	A (9.5)	A (9.6)	A (8.5)	A (8.6)
Northbound VU East Driveway Approach	B (13.6)	D (27.0)	B (14.8)	F (60.6) 95 th Q: 150' T
Southbound Proposed Site Drive Approach		B (13.9)		C (19.3)
State Farm Parkway and Proposed Site Drive (Side-Street STOP)				
Eastbound Proposed Site Drive Approach		B (14.4)		C (19.1)
Northbound State Farm Parkway Left-Turn		A (8.9)		A (8.7)
Southbound State Farm Parkway Approach	Free Flow	Free Flow	Free Flow	Free Flow
State Farm Parkway and Proposed Multi-Family Site Drive (Side-Street STOP)				
Eastbound Proposed MF Site Drive Approach		B (14.5)		C (15.7)
Northbound State Farm Parkway Left-Turn		A (8.9)		A (8.9)
Southbound State Farm Parkway Approach	Free Flow	Free Flow	Free Flow	Free Flow
State Farm Parkway and Nifong Boulevard (Side-Street STOP)				
Westbound Nifong Boulevard Approach	D (33.1) 95 th Q: 185'	F (77.3) 95 th Q: 340'	F (91.9) 95 th Q: 350'	F (208) 95 th Q: 555'
Northbound State Farm Parkway Approach	Free Flow	Free Flow	Free Flow	Free Flow
Southbound State Farm Parkway Left-Turn	A (8.2)	A (8.4)	A (8.8)	A (9.4)
Grindstone Parkway and State Farm Parkway/Green Meadows Road (Signalized)				
Eastbound Grindstone Parkway Approach	C (22.0) 95 th Q: 375' T	C (23.2) 95 th Q: 375' T	C (30.8) 95 th Q: 485' T	C (32.8) 95 th Q: 510' T
Westbound Grindstone Parkway Approach	C (31.8) 95 th Q: 465' T	C (34.5) 95 th Q: 465' T	D (38.8) 95 th Q: 685' T	D (40.0) 95 th Q: 685' T
Northbound State Farm Parkway Approach	D (44.7) 95 th Q: 175' T	D (43.4) 95 th Q: 175' T	D (51.7) 95 th Q: 270' T	D (49.3) 95 th Q: 270' T
Southbound Green Meadows Road Approach	D (50.7) 95 th Q: 95' T	D (51.6) 95 th Q: 95' T	E (55.5) 95 th Q: 210' T	E (58.0) 95 th Q: 225' T
Overall	C (31.3)	C (32.9)	D (39.7)	D (41.0)

X (XX.X) - Level of Service (Vehicular delay in seconds per vehicle)



As shown in Table 4, the overall intersections and all individual intersection approaches operate at acceptable levels of service (i.e., LOS D or better) in the 2023 Base conditions during the peak hours with the following exceptions:

- The eastbound Southampton Drive approach at Providence Road operates at LOS F in the AM peak hour and LOS E in the PM peak hour;
- The westbound Nifong Boulevard approach at State Farm Parkway operates at LOS F in the PM peak hour; and
- The southbound Green Meadows Road approach at Grindstone Parkway operates at LOS E in the PM peak hour.

In the 2023 Build conditions, the overall intersections and all individual intersection approaches would continue to operate at acceptable levels of service (i.e., LOS D or better) with the same exceptions noted above along with the following additional exceptions:

- The westbound Veterans United Drive approach at planned roundabout at the VU Middle/MU West Drive operates at LOS F in the PM peak hour; and
- The northbound VU East Drive approach at Veterans United Drive operates at LOS F in the PM peak hour.

Improvement alternatives for each area of concern are detailed in the following paragraphs.

Providence Road and Southampton Drive/Veterans United Drive

As shown in Table 4, the eastbound Southampton Drive approach at Providence Road operates at LOS F in the AM peak hour and LOS E in the PM peak hour. During the AM peak hour, the high school in the northwest quadrant of the intersection creates a less uniform flow of traffic through the intersection and approach resulting in less than desirable operations for the eastbound approach in the AM peak hour, though this longer delay is likely concentrated to the 20 or 30 minutes before school starts and does not impact the entire AM peak hour.

With the full build-out of the Springbrook Crossing and Springbrook North development areas which will likely take several years, it is probable that minor timing adjustments be considered to better accommodate the future traffic volumes. It is common practice to review signal timings every few years and adjust to meet current traffic levels.

Veterans United Drive and VU Middle/MU West Driveway

As shown in Table 4, as a single-lane roundabout the westbound approach of Veterans United Drive at its intersection with the VU Middle and MU West driveways operates at LOS F in the PM peak hour in the 2023 Build scenario. Although the overall intersection is forecasted to operate at acceptable levels of service, the westbound approach falls just above the threshold for LOS F with 61 seconds of delay per vehicle on average.

However, given the estimated 95th percentile queue of 1,190 feet for the westbound approach in the PM peak hour, an alternative roundabout configuration was considered. In order to provide improved operations for the westbound approach, the addition of a second westbound through lane through the north half of the roundabout was evaluated. Note that the two lanes in the north half of the roundabout would result in two westbound through lanes approaching the roundabout and two westbound lanes exiting the roundabout that would continue to the approach at the Providence Road signal. **Figure 10** illustrates the geometrics that were used in the 2023 Build alternative analysis at Veterans United Drive and VU Middle/MU West driveways.

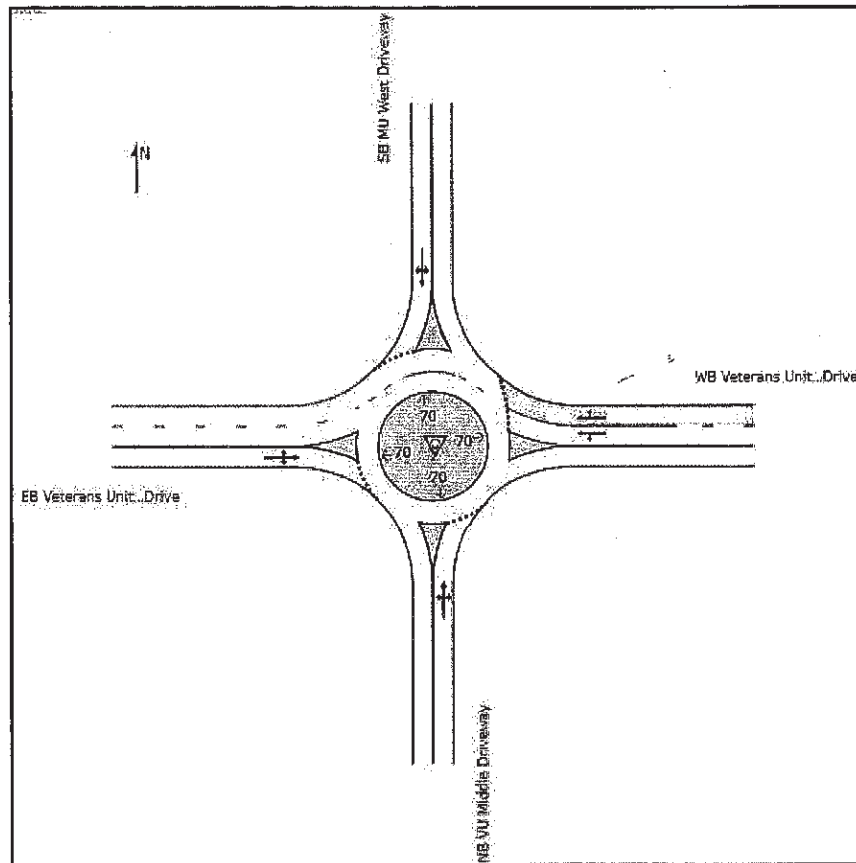


Figure 10: Improved Geometrics at Veterans United Drive and VU Middle/MU West Driveways

Table 5 shows the results of the 2023 alternative analysis. As shown in Table 5, all approaches operate at LOS C or better in the 2023 Improved scenario with the overall intersection operating at LOS A in both peak periods. It is important to note that the improved roundabout configuration is based on the full build out of the Springbrook Crossing and Springbrook Crossing North development areas. The traffic projections for both of these developments were based on several assumptions regarding the anticipated land uses. As such, pending the actual land uses, the trip generation will change, and, if lower, a single-lane roundabout may provide acceptable operations. It is recommended that the intersection operations for Veterans United Drive and VU Middle/MU West Drive roundabout be evaluated with continued development in



the area to determine if a modified roundabout configuration is needed. It is further recommended that the design of the roundabout take into consideration the potential need for the layout to be improved in the future and right-of-way needs.

**Table 5: 2023 Capacity Analysis Summary – Veterans United Drive and VU Middle/MU West Drives
(Improved Roundabout)**

INTERSECTION / APPROACH	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
	2023 BASE	2023 BUILD	2023 IMPROVED	2023 BASE	2023 BUILD	2023 IMPROVED
	Veterans United Drive and VU Middle/MU West Driveways (Improved Roundabout)					
Eastbound Veterans United Dr Approach	A (4.2) 95 th Q: 180'	A (4.5) 95 th Q: 420'	A (4.5) 95 th Q: 415'	A (4.2)	A (4.2)	A (4.2)
Westbound Veterans United Dr Approach	A (5.2)	A (5.3)	A (4.7)	B (13.6) 95 th Q: 315'	F (61.4) 95 th Q: 1190'	A (6.2)
Northbound VU Middle Drive Approach	B (13.8)	C (18.3)	C (18.4)	B (11.7)	B (13.6)	B (13.5)
Southbound MU West Drive Approach	A (6.0)	A (6.6)	A (5.8)	B (13.5)	C (18.4)	A (9.6)
Overall	A (5.5)	A (5.9)	A (5.7)	B (10.3)	D (33.1)	A (7.0)

Veterans United Drive and VU Middle/MU West Driveway

As shown in Table 4, the northbound VU East Drive approach at Veterans United Drive operates at LOS F in the PM peak hour with approximately 60.6 seconds of delay per vehicle on average. This drive is one of three drives serving the Veterans United office building. As such, employees can choose to utilize another drive or wait a few seconds longer during the PM peak time when employees get off work. Given separate turn lanes are already provided for the exit approach and there is a center TWLTL present on Veterans United Drive, further improvements are not recommended since the loner delay would be concentrated to the employee dismissal period.

State Farm Parkway and Nifong Boulevard

As shown in Table 4, the westbound approach of Nifong Boulevard at State Farm Parkway operates at LOS F in the PM peak hour for both the 2023 Base and 2023 Build conditions. Given the westbound approach currently operates at LOS F in the PM peak hour and would further decline with additional traffic, improvements were considered at the intersection to improve the Base conditions, as well as the future conditions. The intersection was reanalyzed with the addition of a 200-foot auxiliary right-turn lane on the westbound Nifong Boulevard approach. **Table 6** shows the results of the 2023 Improved scenario analysis.

As shown in Table 6, operations in the AM and PM peak hours improve significantly with the addition of a separate right-turn lane as compared to the 2023 Base conditions. While the westbound approach still operates at LOS E during the PM peak hour, overall delay for the westbound approach (42 seconds) is nearly half that of the Base scenario (92 seconds). To



improve the 2023 Base and 2023 Build conditions, it is recommended that consideration be given to improving the westbound Nifong Boulevard approach at State Farm Parkway to provide a separate right-turn lane.

**Table 6: 2023 Capacity Analysis Summary – State Farm Parkway and Nifong Boulevard
(Addition of Eastbound Right-Turn Lane)**

INTERSECTION / APPROACH	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
	2023 BASE	2023 BUILD	2023 IMPROVED	2023 BASE	2023 BUILD	2023 IMPROVED
State Farm Parkway and Nifong Boulevard (Side-Street STOP)						
Westbound Nifong Boulevard Approach	D (33.1)	F (77.3) 95% Q: 340	C (24.7)	F (91.9)	F (208) 95% Q: 555	E (42.5) 95% Q: 225
Northbound State Farm Pkwy Approach	Free Flow	Free Flow	Free Flow	Free Flow	Free Flow	Free Flow
Southbound State Farm Pkwy Left-Turn	A (8.2)	A (8.4)	A (8.4)	A (8.8)	A (9.4)	A (9.4)

Grindstone Parkway and State Farm Parkway/Green Meadows Road

As shown in Table 4, the southbound Green Meadows Road approach at the intersection of Grindstone Parkway operates at LOS E during the PM peak hour for both the 2023 Base and 2023 Build scenarios with the delay only increasing about 2.5 seconds in the Build conditions.

It is important to note that the traffic signals along Grindstone Parkway are operating under InSYNC Adaptive signal timing. This system adjusts green durations given to each phase based upon vehicle demand on a second-by-second basis. Thus, the signal timing plan is constantly changing throughout the day. There is currently not a way to model this in SYNCHRO. To represent field conditions most accurately, CBB observed the signal timing splits at the intersection of Grindstone Parkway and State Farm Parkway during the AM and PM peak hours to determine the signal timing plan that would most closely depict current operations. The average observed cycle length along the Grindstone Parkway corridor is fairly long at about 145 seconds. Longer cycle lengths are often used to maximize coordination on major thoroughfares, and though they often accomplish this goal, longer cycle lengths tend to result in longer queues and increased delay for mainline left-turn movements and side street approaches, like Green Meadows Road. Given the southbound approach of Green Meadows Drive provides two left turn lanes, one through lane, and a channelized right turn lane, further physical improvements are not recommended.

Proposed Site Drives

As shown in Table 4, the proposed site drive approach for the access drive on Veterans United Drive and the two access drives on State Farm Parkway all operate at favorable levels of service (i.e., LOS C or better) under side-street stop control with minimal delay.



Potential Site Access Drives

It is our understanding that pending the actual end user, access is being considered on Veterans United Drive between Lots 2 and 3 and on State Farm Parkway between Lots 4 and 5.

There is approximately 1,000 feet between the existing roundabout at State Farm Parkway and the proposed new street for the site on Veterans United Drive which would allow adequate spacing for an additional site access drive between Lots 2 and 3. Furthermore even with all site trips assigned to the main access drive off Veterans United Drive, the left turn in operates at LOS A and the southbound exiting approach operates at LOS C, so if a portion of these trips were reassigned to a new drive between Lots 2 and 3, the movements would likely operate at LOS A or B. As such, an access drive between Lots 2 and 3 is acceptable.

There is approximately 950 feet between the existing roundabout at Veterans United Drive and the proposed new street for the site on State Farm Parkway which would allow adequate spacing for an additional site access drive between Lots 4 and 5. Furthermore even with all site trips assigned to the main access drive off State Farm Parkway, the left turn in operates at LOS A and the eastbound exiting approach operates at LOS C, so if a portion of these trips were reassigned to a new drive between Lots 4 and 5, the movements would likely operate at LOS A or B. As such, an access drive between Lots 4 and 5 is acceptable.



SUMMARY

CBB completed the preceding study to address the traffic impacts associated with the proposed mixed-use development, known as Springbrook Crossing North, located in the northwest quadrant of the Veterans United Drive and State Farm Parkway intersection in Columbia, Missouri.

In summary, the following findings and improvements should be considered based on the 2023 Base conditions:

- To mitigate the existing LOS F for the westbound approach of Nifong Boulevard at State Farm Parkway in the PM peak hour 2023 Base conditions, it is recommended consideration be given to improving the westbound Nifong Boulevard approach at State Farm Parkway to provide a separate right-turn lane.

In summary, the following findings and improvements should be considered in conjunction with the proposed development (2023 Build conditions):

- The proposed Springbrook Crossing development is estimated to generate 470 new trips during the weekday AM peak hour and 570 new trips during the weekday PM peak hour.

Given most of the uses were assumed for this study, it is recommended that as actual uses are proposed, the study be revisited to ensure that the actual trip estimates reflect the assumptions in this study. Should the proposed uses result in additional trips, it may be necessary to update the traffic study.

- It is recommended the site design engineer verify adequate sight distance is provided at the proposed site drives on Veterans United Drive and State Farm Parkway.
- Careful consideration should be given to sight distance obstructions when planning future aesthetics enhancements, such as signs, berms, fencing and landscaping, to ensure that these improvements do not obstruct the view of entering and exiting traffic at the intersection of all drives with the public roadways. It is generally recommended that all improvements higher than 3 ½ feet above the elevation of the nearest pavement edge be held back at least 20 feet from the traveled roadway.
- While the planned single-lane roundabout on Veterans United Drive at the VU Middle and MU West drives operates at overall acceptable LOS, the westbound Veterans United Drive approach is forecasted to operate at LOS F in the PM peak hour with long queues. In order to provide improved operations for the westbound approach, the addition of a second westbound through lane through the north half of the roundabout should be considered.

It is important to note that the improved roundabout configuration is based on the full build out of the Springbrook Crossing and Springbrook Crossing North development areas. The traffic projections for both of these developments were based on several assumptions regarding the anticipated land uses. As such, pending the actual land uses,



the trip generation will change, and, if lower, a single-lane roundabout may provide acceptable operations. It is recommended that the intersection operations for Veterans United Drive and VU Middle/MU West Drive roundabout be evaluated with continued development in the area to determine if a modified roundabout configuration is needed. It is further recommended that the design of the roundabout take into consideration the potential need for the layout to be improved in the future and right-of-way needs.

- The proposed site drive approach for the access drive on Veterans United Drive and the two access drives on State Farm Parkway all operate at favorable levels of service (i.e., LOS C or better) under side-street stop control with minimal delay.

We trust that this traffic impact study adequately describes the forecasted traffic conditions that should be expected as a result of the proposed Springbrook Crossing North development in Columbia, Missouri. If additional information is desired, please feel free to contact me at 314-449-9572 or swhite@cbbtraffic.com.

Sincerely,

Shawn Leral White, P.E., PTOE
Associate - Senior Traffic Engineer

April 10, 2024

Mr. Tim Crockett. P.E.
Crockett Engineering
1000 West Nifong Boulevard, Building 1
Columbia, MO 65203

RE: Traffic Impact Study Addendum
Springbrook Crossing North Phase I - Veterans United Drive and State Farm Parkway
Columbia, Missouri
CBB Job No. 105-23

Dear Mr. Crockett:

As requested, CBB has completed an addendum to the Springbrook Crossing North Traffic Impact Study, dated January 17, 2024, to address the impact of the multi-family development only on the planned roundabout at Veterans United Drive and VU Middle/MU West Driveway.

CBB prepared a traffic study for the overall development area which included 338 multi-family units on the northern portion of the site with the southern portion of the site assumed to consist of approximately 180,000 SF of office space.

With the full build out of the Springbrook Crossing developments, the westbound Veterans United Drive approach at the planned roundabout at the VU Middle/MU West Drive is forecasted to operate at LOS F in the PM peak hour. Although the overall intersection is forecasted to operate at acceptable levels of service, the westbound approach falls just above the threshold for LOS F with 61 seconds of delay per vehicle on average but with an estimated 95th percentile queue of 1,190 feet. Thus, to provide improved operations for the westbound approach at the planned roundabout, the addition of a second westbound through lane through the north half of the roundabout would be needed if the proposed Springbrook Crossing and Springbrook Crossing North developments develop as assumed in the respective traffic studies.

However, it is important to note that the traffic projections for both of these developments were based on several assumptions regarding the anticipated land uses. As such, pending the actual land uses, the trip generation will change, and, if lower, a single-lane roundabout may provide acceptable operations. The prior study recommended that the intersection operations for Veterans United Drive and VU Middle/MU West Drive roundabout be evaluated with continued development in the area to determine if a modified roundabout configuration is needed. Although, it was recommended that the design of the roundabout take into



consideration the potential need for the layout to be improved in the future and right-of-way needs.

Currently, the only known user for the Springbrook Crossing North development is the multi-family development on the northern portion of the site. As such, this addendum addresses the forecasted operating conditions at the planned roundabout assuming only the multi-family portion, or Phase I, of the Springbrook Crossing North development.

As detailed in the January 2024 study, the proposed multi-family development, or Phase I of the Springbrook Crossing North development, is estimated to generate 130 trips during the weekday AM peak hour and 165 trips during the weekday PM peak hour, as shown in **Table 1**.

Table 1: Trip Generation Estimate - Springbrook Crossing North Phase I

Land Use	Size	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Multifamily	338 units	30	100	130	105	60	165

The site-generated trips for Phase I of the proposed Springbrook Crossing North development were assigned into and out of the site based upon the estimated directional distribution in the original traffic study. The resulting assignment of the Phase I site-generated trips for the weekday AM and PM peak hours is summarized in **Exhibit 5A**.

The proposed site-generated trips (Exhibit 5A) were added to the 2023 Base Traffic Volumes (Exhibit 4 in the January 2017 study) to determine the total volumes in the 2023 Build scenario at the Veterans United Drive and VU Middle/MU West Driveway intersection, shown in **Figure 1**.

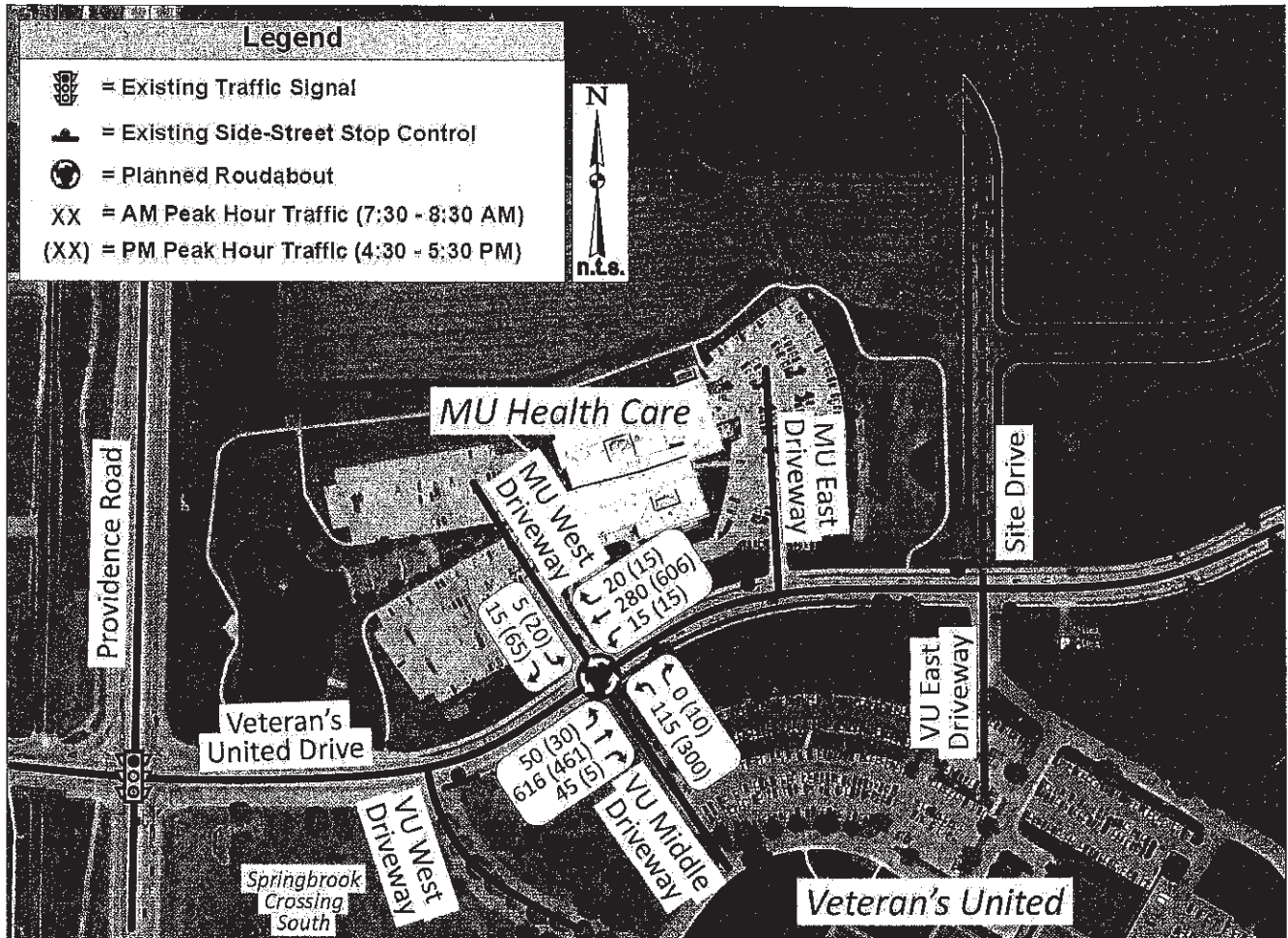


Figure 1: 2023 Phase I Build Traffic Volumes (Veterans United Drive and VU Middle/MU West Driveway)

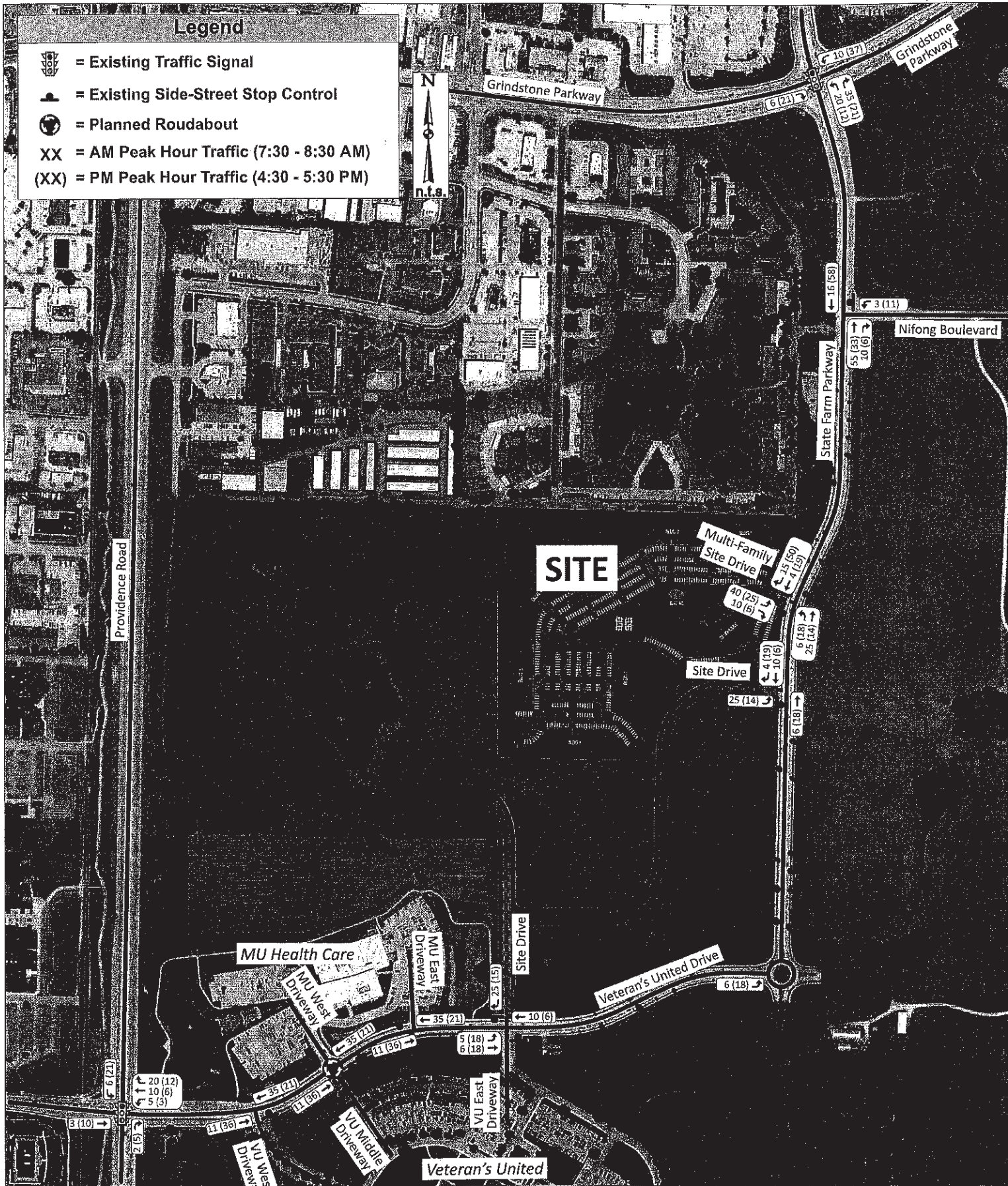


Exhibit 5A: Phase 1 Site-Generated Trips (Multi-Family)

Job# 105-23
 04/10/2024





The Veterans United Drive and VU Middle/MU West Driveway intersection was re-evaluated for the 2023 Build Phase I conditions using the same methodologies described in the January 2024 study. **Table 2** summarizes the results of this analysis, which reflects the 2023 Base and 2023 Phase I Build operating conditions and average delay at the Veterans United Drive and VU Middle/MU West Driveway intersection during the weekday AM and PM peak hours.

Table 2: 2023 Capacity Analysis Summary – Phase I

INTERSECTION / APPROACH	WEEKDAY AM PEAK HOUR		WEEKDAY PM PEAK HOUR	
	2023 BASE	2023 PHASE I BUILD	2023 BASE	2023 PHASE I BUILD
	Veterans United Drive and VU Middle/MU West Driveway (Planned Single-Lane Roundabout)			
Eastbound Veterans United Drive Approach	A (4.2) 95 th Q: 180'	A (4.2) 95 th Q: 190'	A (4.2)	A (4.2)
Westbound Veterans United Drive Approach	A (5.2)	A (5.2)	B (13.6) 95 th Q: 315'	B (15.0) 95 th Q: 355'
Northbound VU Middle Driveway Approach	B (13.8)	B (14.0)	B (11.7)	B (12.2)
Southbound MU West Driveway Approach	A (6.0)	A (6.3)	B (13.5)	B (14.0)
Overall	A (5.5)	A (5.5)	B (10.3)	B (10.9)

As shown in Table 2, the planned single-lane roundabout at the Veterans United Drive and VU Middle/MU West Driveway intersection operates at desirable level of service in the 2023 Build Phase I scenario with minimal differences in delay as compared to the 2023 Base conditions. Note that the Phase I scenario includes the full build-out of the Springbrook Crossing (south) development and the multi-family portion of Springbrook Crossing North development.

In conclusion, the planned single-lane roundabout at the Veterans United Drive and VU Middle/MU West Driveway intersection is more than adequate to serve the Phase I, multi-family, portion of Springbrook Crossing North development.

If additional information is desired, please feel free to contact me at 314-449-9572 or swhite@cbbtraffic.com.

Sincerely,

Shawn Lerai White, P.E., PTOE
Associate - Senior Traffic Engineer

May 23, 2024

Mr. Tim Crockett, P.E.
Crockett Engineering
1000 West Nifong Boulevard, Building 1
Columbia, MO 65203

RE: Traffic Impact Study Addendum
Springbrook Crossing North Phase I and South Phase I
Veterans United Drive and State Farm Parkway
Columbia, Missouri
CBB Job No. 105-23

Dear Mr. Crockett:

As requested, CBB has completed an addendum to the Springbrook Crossing North Traffic Impact Study, dated January 17, 2024, to address the combined impact of the Springbrook Crossing North Phase I, Springbrook Crossing South Phase I and the Thompson Center on the Veterans United Drive and VU Middle/MU West Driveway intersection and determine if any improvements are need at the intersection for this interim Build condition.

The existing peak hour volumes at the Veterans United Drive and VU Middle/MU West Driveway intersection, as detailed in Exhibit 2 of the Springbrook Crossing North Traffic Study (CBB January 2024), are summarized in **Figure 1**.

Based on the Springbrook Crossing South Traffic Study (CBB January 2023), a roundabout is ultimately recommended at the Veterans United Drive and MU Healthcare/VU Middle Drive intersection to accommodate the full build-out of the Springbrook Crossing South development. However, the existing roadway network and side-street STOP traffic control could accommodate some level of development before the roundabout would be needed.

Based on the January 2023 study, approximately 19% of the Springbrook Crossing South development could be built before, the northbound left-turn exiting the Springbrook Crossing South site drive would degrade to failing levels. **Figure 2** reflects the trips associated with about 20% of the Springbrook Crossing South full build site trips as detailed in Exhibit 3 of the Springbrook Crossing South Traffic Study (CBB January 2023).



Proposed Springbrook Crossing North and South Traffic Impact Study

Interim Build Addendum

Columbia, Missouri

May 23, 2024

Page 2 of 6

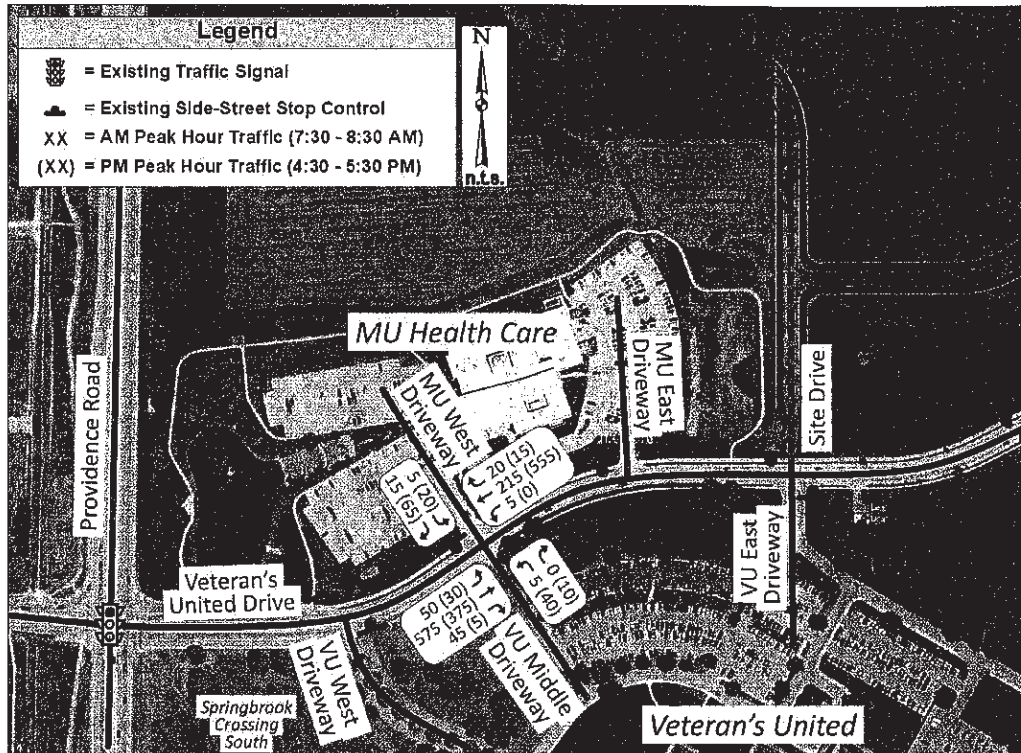


Figure 1: Existing Traffic Volumes

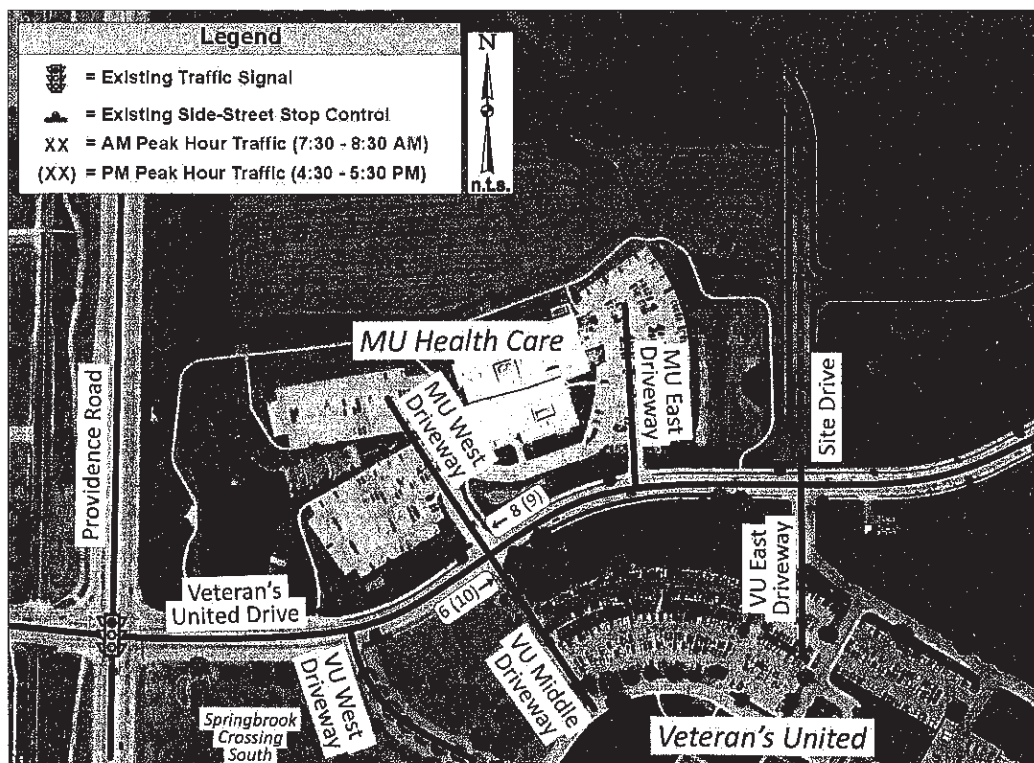


Figure 2: Springbrook Crossing South Phase I Trine (200% of Full Build)



Proposed Springbrook Crossing North and South Traffic Impact Study
Interim Build Addendum

Columbia, Missouri

May 23, 2024

Page 3 of 6

CBB prepared an addendum, dated April 10, 2024, that evaluated Phase I of the Springbrook Crossing North development which included 338 multi-family units on the northern portion of the site. **Figure 3** reflects the trips associated with Phase I of the Springbrook Crossing North development as detailed in Exhibit 5A of the Springbrook Crossing North Addendum (CBB April 2024).

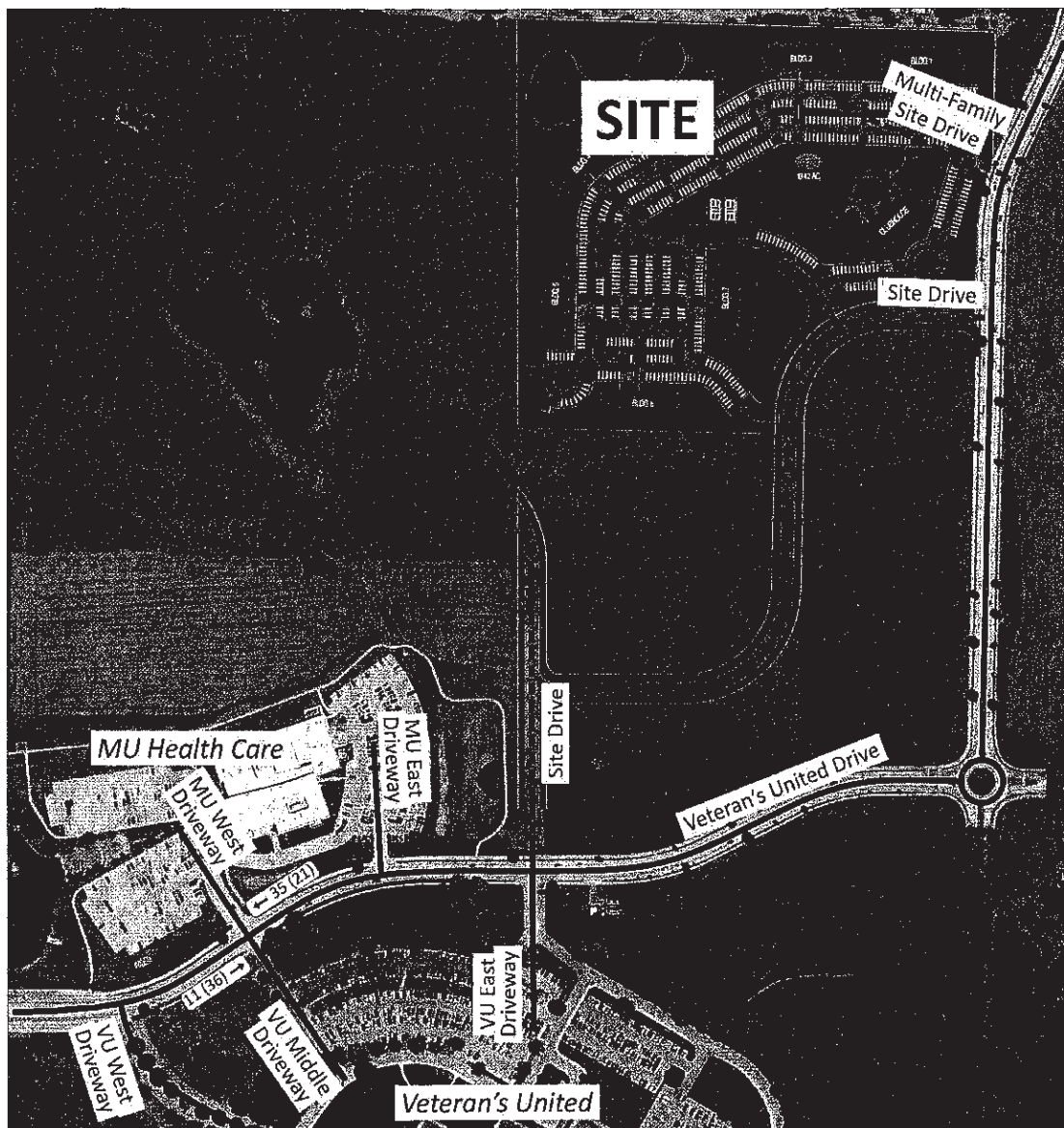


Figure 3: Springbrook Crossing North Phase I Trips



Lochmueller Group recently completed a traffic study for the relocation of the University of Missouri's Thompson Center in April 2024 which would add traffic to the Veterans United Drive and VU Middle/MU West Driveway intersection. **Figure 4** reflects the trips associated with Thompson Center as detailed in Figure 6 of the Relocation of the Thompson Center Traffic Impact Study (Loch April 2024).

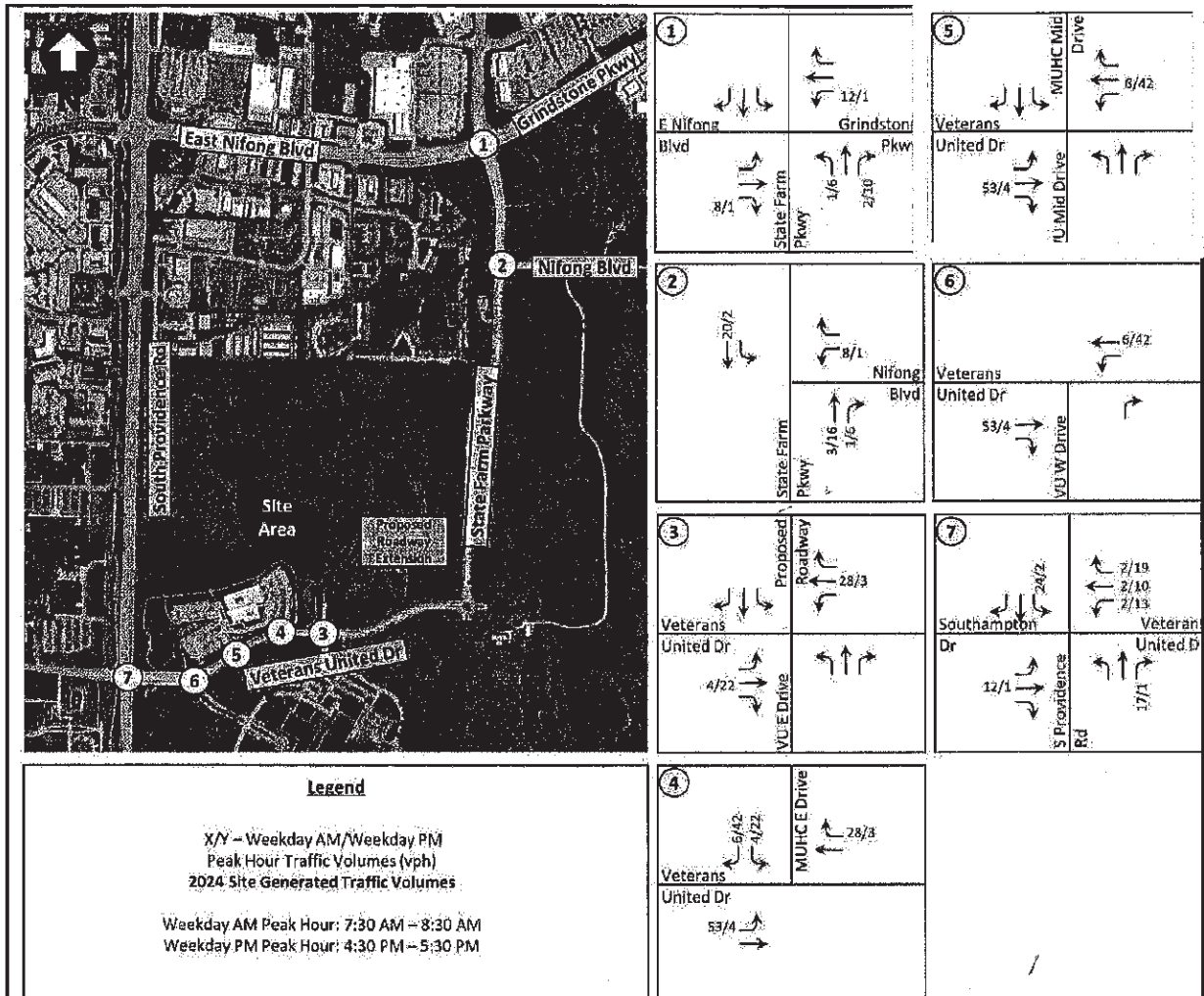


Figure 4: Thompson Center (Figure 6 from the April 2024 Loch Study)



The Springbrook Crossing South Phase I trips (Figure 2), Springbrook Crossing North Phase I trips (Figure 3), and Thompson Center trips (Figure 4) were added to the 2023 Existing Traffic Volumes (Figure 1) to determine the total volumes in the 2023 Interim Build scenario at the Veterans United Drive and VU Middle/MU West Driveway intersection, shown in **Figure 5**.

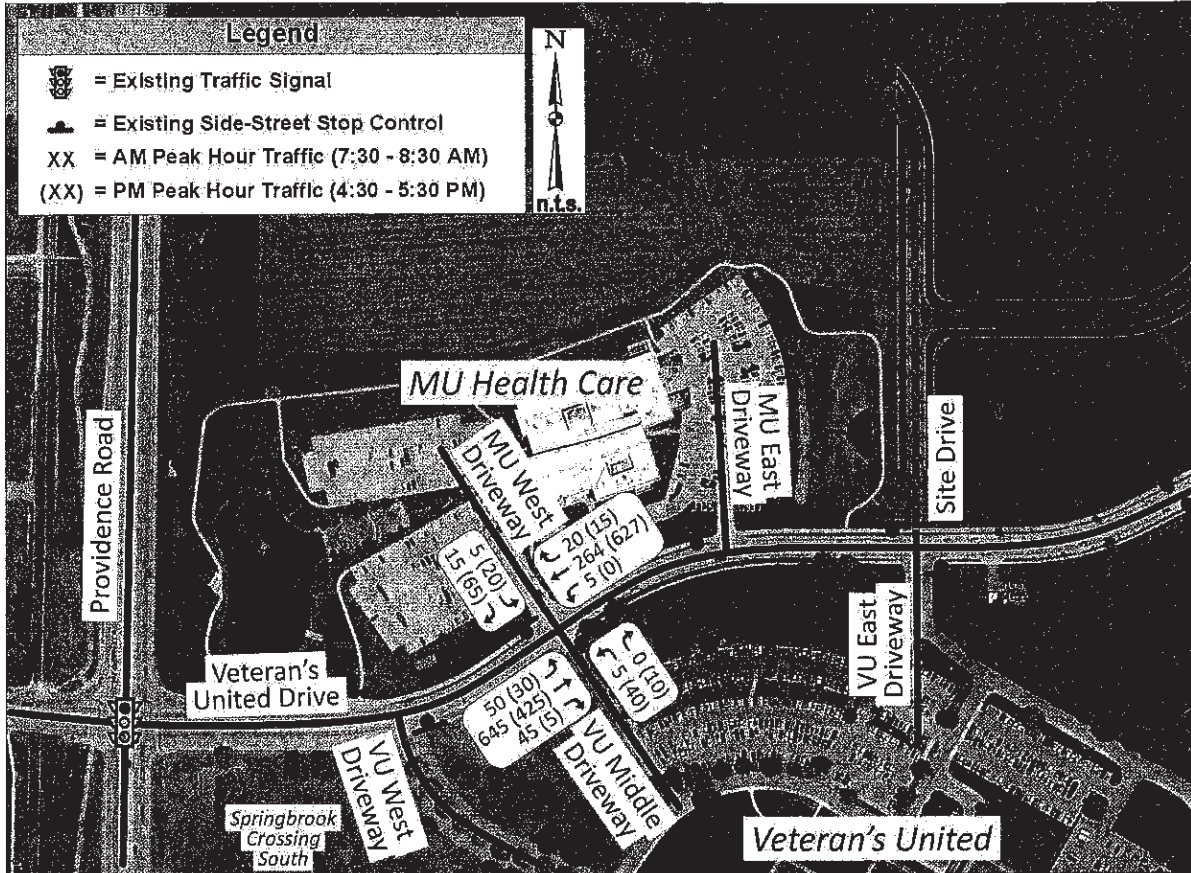


Figure 5: Interim Build Traffic Volumes
 (Inclusive of the Springbrook South Phase 1, Springbrook North Phase I and Thompson Center)

The Veterans United Drive and VU Middle/MU West Driveway intersection was re-evaluated for the 2023 Interim Build conditions using the same methodologies described in the January 2024 study. **Table 1** summarizes the results of this analysis, which reflects the 2023 Existing and 2023 Interim Build operating conditions and average delay at the Veterans United Drive and VU Middle/MU West Driveway intersection during the weekday AM and PM peak hours.

As shown in Table 1, under the existing side-street STOP control, all approaches at the Veterans United Drive and VU Middle/MU West Driveway intersection are forecasted to operate at acceptable levels of service in the 2023 Interim Build scenario with minimal differences in delay as compared to the 2023 Existing conditions.



Table 1: 2023 Capacity Analysis Summary – Combined South/North Phase I & Thompson Center Impacts

INTERSECTION / APPROACH	WEEKDAY AM PEAK HOUR		WEEKDAY PM PEAK HOUR	
	2023 EXISTING	2023 INTERIM BUILD	2023 EXISTING	2023 INTERIM BUILD
Veterans United Drive and VU Middle/MU West Driveway (Side-Street STOP)				
Eastbound Veterans United Drive Left-Turn	A (7.9)	A (8.1)	A (8.9)	A (9.2)
Westbound Veterans United Drive Left-Turn	A (9.2)	A (9.5)	A (8.2)	A (8.3)
Northbound VU Middle Driveway Approach	C (15.9) 95 th Q > 25'	C (17.3) 95 th Q > 25'	C (17.7) 95 th Q > 25'	C (19.8) 95 th Q > 25'
Southbound MU West Driveway Approach	B (11.2) 95 th Q > 25'	B (11.8) 95 th Q > 25'	B (14.0) 95 th Q > 25'	C (15.2) 95 th Q > 25'

In conclusion, the existing side-street STOP control at the Veterans United Drive and VU Middle/MU West Driveway intersection is more than adequate to serve the Springbrook Crossing South Phase I, Springbrook Crossing North Phase I, and Thompson Center developments. It is the trips associated with the further development of the Springbrook Crossing South development that will add to the northbound left-turn movement at the site drive on Veterans United Drive that triggers the need for the planned roundabout.

If additional information is desired, please feel free to contact me at 314-449-9572 or swhite@cbbtraffic.com.

Sincerely,

Shawn Lerai White, P.E., PTOE
 Associate - Senior Traffic Engineer