



Meeting of the Village of Buffalo Grove Planning and Zoning Commission

Regular Meeting
July 20, 2022 at 7:30 PM

Fifty Raupp Blvd
Buffalo Grove, IL 60089-2100
Phone: 847-459-2500

I. Call to Order

II. Public Hearings/Items For Consideration

1. Consideration of a Preliminary Plan, Zoning Variations and a Sign Variation to Allow the Construction of a New Carwash Facility, to be Called Spotless Auto Spa at 301 N. Milwaukee Avenue (Trustee Ottenheimer) (Staff Contact: Kelly Purvis)

III. Regular Meeting

A. Other Matters for Discussion

B. Approval of Minutes

1. Planning and Zoning Commission - Regular Meeting - Jul 6, 2022 12:00 AM

C. Chairman's Report

D. Committee and Liaison Reports

E. Staff Report/Future Agenda Schedule

F. Public Comments and Questions

IV. Adjournment

The Planning and Zoning Commission will make every effort to accommodate all items on the agenda by 10:30 p.m. The Board, does, however, reserve the right to defer consideration of matters to another meeting should the discussion run past 10:30 p.m.

V. Action Items

The Village of Buffalo Grove, in compliance with the Americans with Disabilities Act, requests that persons with disabilities, who require certain accommodations to allow them to observe and/or participate in this meeting or have questions about the accessibility of the meeting or facilities, contact the ADA Coordinator at 459-2525 to allow the Village to make reasonable accommodations for those persons.



Action Item : Consideration of a Preliminary Plan, Zoning Variations and a Sign Variation to Allow the Construction of a New Carwash Facility, to be Called Spotless Auto Spa at 301 N. Milwaukee Avenue

Recommendation of Action

Staff recommends approval, subject to the conditions in the attached staff report.

Brian Paul, on behalf of Prestige Midwest Holdings, LLC, is the contract purchaser of 301 Milwaukee Avenue. The site is approximately .89 acres and is currently improved with a vacant restaurant (Grill on the Rock, Korean Barbeque). The proposed development would include the demolition of the vacant restaurant and the construction of an approximately 5,000 square foot carwash facility to be called Spotless Auto Spa. The proposed project requires preliminary plan approval, and variations from the Zoning and Sign Codes.

The Planning & Zoning Commission (PZC) shall open the public hearing and take public testimony concerning the requests for approval of a Preliminary Plan, Zoning Variations and a Sign Variation to accommodate the construction of a new carwash facility at 301 N. Milwaukee Avenue. The PZC shall make a recommendation to the Village Board concerning the requests.

ATTACHMENTS:

- Staff Report (PDF)
- Plan Set (PDF)

Trustee Liaison
Ottenheimer

Staff Contact
Kelly Purvis, Community Development

Wednesday, July 20, 2022



**VILLAGE OF BUFFALO GROVE
PLANNING & ZONING COMMISSION
STAFF REPORT**

MEETING DATE:	July 20, 2022
SUBJECT PROPERTY LOCATION:	301 Milwaukee Avenue
PETITIONER:	Brian Paul, Prestige Midwest Holdings, LLC
PREPARED BY:	Kelly Purvis, Deputy Community Development Director
REQUEST:	The petitioner is seeking approval of a Preliminary Plan, a Variation from Section 17.32 of the Zoning Code pertaining to accessory structures closer to the street than the principal structure, Section 17.44.040 of the Zoning Code pertaining to the width of the landscape buffer along Milwaukee Avenue, and a Variation from Section 17.44 of the Sign Code related to the orientation of two of the proposed wall signs.
EXISTING LAND USE AND ZONING:	The property is improved with a vacant restaurant (Grill on the Rock) and is zoned B-3, Planned Business Center District.
COMPREHENSIVE PLAN:	The Village of Buffalo Grove Comprehensive Plan calls for this property to be a commercial use.

BACKGROUND

Brian Paul, on behalf of Prestige Midwest Holdings, LLC, is the contract purchaser of 301 Milwaukee Avenue. The site is approximately .89 acres and is currently improved with a vacant restaurant (Grill on the Rock, Korean Barbeque); approximately ¾ of the site is developed as a surface parking lot. The proposed development would include the demolition of the vacant restaurant and the construction of an approximately 5,000 square foot carwash facility to be called Spotless Auto Spa. The proposed project requires preliminary plan approval, and variations from the Zoning and Sign Codes. The following report provides a summary of the project.

At the May 16, 2022 Village Board meeting, the developer presented an overview of the concept plan. The Trustees had some questions regarding overall circulation and access but were generally supportive of the development. The PZC held a workshop meeting to review the concept plans on June 15, 2022 (minutes attached). Overall, the PZC was supportive of the project, but had some concerns about the full-movement access drive on the south part of the site



It was requested that the traffic consultant and Village staff take a close look at how that access would affect southbound traffic on Milwaukee Avenue. The PZC also briefly discussed noise, lighting and environmental concerns. The petitioner has submitted a complete traffic impact study which is responsive to the PZC's comments, as well as a revised photometric plan.

PLANNING & ZONING ANALYSIS

The petitioner is seeking to demolish the existing restaurant space and construct a new 5,000 square foot carwash facility, which will include canopy covered pay stations with two lanes for vehicle stacking and 17 vacuum stations.

Operations:

The petitioner has indicated that the proposed summer hours of operation for the carwash would be 7:00 AM – 9:00 PM Monday through Saturday and 8:00 AM – 8:00 PM on Sundays. During winter months, the hours of operation would be 8:00 AM – 8:00 PM Monday through Saturday and 8:00 AM – 6:00 PM on Sundays. Peak hours will vary but are normally on evenings and weekends. Total wash times vary from 30 seconds to 3 minutes depending upon the type of wash selected. The carwash will typically have 3 staff members on site to assist customers with a maximum of 4 staff during peak hours. Spotless Auto Spa will not offer detailing or other supplemental services at this facility.

Use & Setbacks:

The proposed use is permitted within the B3 zoning district. The Comprehensive Plan indicates that this site should remain commercial. Given the lot's size (less than 1 acre) and configuration, as well as the surrounding uses, staff believes the development is suitable for the location. The proposed building would meet the zoning setback requirements.



A variation is needed for the accessory structures which are closer to the street than the principal structure. Due to the lot depth, building setback requirements, and drive aisle width requirements there is not a suitable location for these accessory structures to the rear of the principal building. As a result, the refuse enclosure and vacuum stations have been located in front of the building, which requires a variation from Section 17.32 of the Zoning Code. The materials used on the refuse enclosure and the vacuum station canopy will match the materials used on the principal structure.

Landscaping

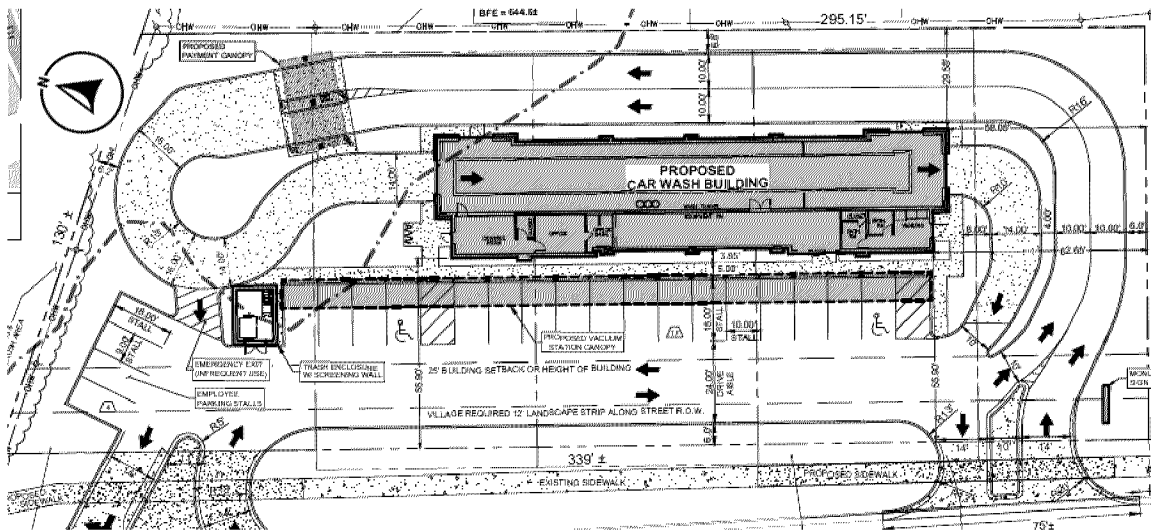
The petitioner has submitted a robust landscape plan that includes shade, ornamental and evergreen trees as well as evergreen and deciduous shrubs, ornamental grasses, and perennials. Evergreen shrubs (Boxwood varieties) will be used to provide parking lot screening. As requested by the Village Engineer, native plantings have been incorporated into the landscape plan.

Based upon the building setback, the Code requires a minimum landscape buffer of 15 feet adjacent to the entire length of the right-of-way on this site. The proposed landscape buffer varies in width from 8 - 11.47 feet and will therefore require a variation from the B-3 Planned Business Center District Regulations.

Signage

The petitioner is proposing a monument sign at the south entrance to the development. The sign will be setback the required 10 feet from all property lines and is compliant with the code limitations for height and sign area. In addition, the sign base material will match the stone veneer on the principal building.

A Code compliant, channel letter, wall sign is proposed on the west building elevation (facing Milwaukee Avenue). Additional wall signs, above the entrance and exit of the carwash are also proposed on the north and south building elevations. These signs are compliant in terms of size but require a sign variation due to their orientation (not facing a public right-of-way). All of the signs would be internally illuminated.



Accessibility & Circulation:

The volume of traffic to be generated by the proposed car wash, will amount to approximately one percent of the existing peak hour traffic on Milwaukee Avenue and will not have a significant impact on traffic conditions in the area.

Access to the site will be provided on the southwest corner of the property by a curb cut on Milwaukee Avenue. The existing full-access driveway will be relocated slightly to the south and expanded to accommodate a full-movement access drive with a raised island median in the drive. The median will prohibit inbound traffic from turning left where multiple lanes of traffic converge. The existing full access drive on the northwest part of the site will be modified to accommodate right-in/right-out only traffic.

Circulation to the vacuum stations will be provided via a two-way drive aisle. Vehicles accessing the vacuum stalls prior to getting a car wash can only do so by entering the site at the northerly right-in/right-out access drive. Access to the car wash tunnel entrance will be provided via a one-way counterclockwise drive aisle. The entrance to the carwash will be on the north end of the site and the exit will be located towards the south of the site.

An emergency exit is proposed at the north end of the site between the pay stations and the carwash tunnel, in the event the carwash breaks down and vehicles need to exit the queue.

The total vehicle stacking capacity (including the carwash tunnel) is 53 cars, which the traffic study indicates will be adequate in accommodating the normal daily projected traffic operations of the car wash.

The traffic consultant recommends that the existing striped median along Milwaukee Avenue be restriped to provide an exclusive left-turn lane. Village Engineers, Police and Fire Department representatives have reviewed the proposed plans and the Traffic Impact Study and are in support this recommendation. The traffic study further recommends certain operating procedures for peak days, to enhance the flow of traffic through the carwash site. Peak demand, warranting modified operations, is anticipated to be rare. Staff suggests that the operators closely monitor circulation and stacking on the site during peak demand and implement the following procedures on an as-needed basis.

- Increase the service rate of the tunnel to the maximum it can process.
- Should the internal vehicular queues occupy both lanes, the right-in movement at the full-movement access drive off Milwaukee Avenue should be closed via traffic cones and an attendant should direct traffic to enter via the right-in/right-out access drive.
- Direct traffic to stack on the drive aisle within the vacuum stalls. This would provide the car wash with additional stacking for approximately 16 to 20 vehicles (stacked side by side).
- Provide staff at critical locations within the circulation system during peak periods at the carwash to help direct and manage the flow of traffic through the site. Critical internal locations where staff should be located include at the pay stations and at the exit of the carwash.

Parking:

The Zoning Code requires a minimum of one parking space per employee be provided for carwashes (auto laundry uses). The project exceeds this requirement with four dedicated parking stalls for employees and 17 parking stalls equipped with vacuum stations.

Building Elevations/Site Design:

The site has been thoughtfully designed and the building elevations, signage, and accessory structures are well coordinated. The stone block columns with cornices provide interest and building articulation and all four sides of the building have been fully designed. The materials on the sign base and accessory structures (pay station, vacuum stations and refuse enclosure) all match the materials on the primary building.

Lighting:

The proposed lighting complies with the Village illumination standards of no more than .5 footcandles at the property line. A combination of pole lights, building fixtures and under canopy lighting will be used to illuminate the site.

Stormwater & Engineering:

The north 1/3 of the site is in a regulatory floodplain. The site will be designed to accommodate the floodplain and mimic the existing elevations. Compensatory storage will be provided along the north side of the project site and the building will be elevated to meet flood protection standards. The petitioner has provided a preliminary stormwater assessment with their submittal. The site's impervious surface and stormwater runoff will be reduced. The Village's Engineers have reviewed the

preliminary plans and have indicated that the minimal concerns related to stormwater and utilities can be addressed during the final engineering process.

Noise:

The petitioner has provided a sound study indicating that the ambient noise from traffic on Milwaukee Avenue will exceed noise generated by the car wash blower during anticipated hours of operation. The nearest residential property is located across Milwaukee Avenue, approximately 220 feet from the proposed carwash site.

DEPARTMENTAL REVIEWS

Village Department	Comments
Engineering	The Village Engineer has reviewed the preliminary engineering plans and does not have any concerns.
Forestry	The Village Forester has reviewed the landscape plan and does not have any concerns.
Police	Police has reviewed the traffic study and proposed access to the site and are supportive of the installation of a dedicated left turn lane on Milwaukee Avenue. Police did not have any other concerns about the plans for the site.
Fire	The Fire Department has reviewed the truck turn exhibit and has some concerns about a ladder truck being able to access the site.

SURROUNDING PROPERTY OWNERS

Pursuant to Village Code, the surrounding property owners within 250 feet were notified and a public hearing sign was posted on the subject property. The posting of the public hearing sign and the mailed notifications were completed within the prescribed timeframe as required. As of the date of this Staff Report, the Village has received one inquiry about what is proposed on the site.

STANDARDS

The Planning & Zoning Commission is authorized to make a recommendation to the Village Board on requested Zoning Variations based on the following criteria:

1. The property in question cannot yield a reasonable return if permitted to be used only under the conditions allowed by the regulations of the zoning district in which it is located except in the case of residential zoning districts;
2. The plight of the owner is due to unique circumstances;
3. The proposed variation will not alter the essential character of the neighborhood.

The petitioner's responses to each of the standards are attached for the Commission's review.

- A. Except for Prohibited signs (Chapter 14.32), the Village Planning & Zoning Commission may recommend approval or disapproval of a variance from the provisions or requirements of the Sign Code subject to the following:
 1. The literal interpretation and strict application of the provisions and requirements of this Title would cause undue and unnecessary hardships to the sign user because of unique or unusual conditions pertaining to the specific building, parcel or property in question; and
 2. The granting of the requested variance would not be materially detrimental to the property owners in the vicinity; and
 3. The unusual conditions applying to the specific property do not apply generally to other properties in the Village; and

4. The granting of the variance will not be contrary to the purpose of this Title pursuant to Section 14.04.020

B. Where there is insufficient evidence, in the opinion of the Planning & Zoning Commission, to support a finding under subsection (A), but some hardship does exist, the Planning & Zoning Commission may consider the requirement fulfilled if:

1. The proposed signage is of particularly good design and in particularly good taste; and
2. The entire site has been or will be particularly well landscaped.

The petitioner's responses to each of the standards are attached for the Commission's review.

STAFF RECOMMENDATION

Staff recommends **approval** of the abovementioned Preliminary Plan, Zoning Variations and Sign Variation subject to the conditions in the Suggested PZC Motion below.

ACTION REQUESTED

The Planning & Zoning Commission (PZC) shall open the public hearing and take public testimony concerning the requests for approval of a Preliminary Plan, Zoning Variations and a Sign Variation to accommodate the construction of a new carwash facility at 301 N. Milwaukee Avenue. The PZC shall make a recommendation to the Village Board concerning the requests.

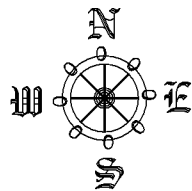
Suggested PZC Motion

The PZC recommends approval of a Preliminary Plan with Variations from the Zoning Code pertaining to the location of accessory structures in relation to the principal structure and the width of the landscape buffer adjacent to the right-of-way; and with a Variation from the Sign Code pertaining to the orientation of two of the proposed wall signs, all to accommodate the construction of a new carwash facility at 301 N. Milwaukee Avenue, subject to the following conditions:

1. *The proposed development shall be developed in substantial conformance with the plans attached as part of the petition.*
2. *The Final Engineering plans shall be submitted in a manner acceptable to the Village.*
3. *Any directional or incidental signage added to the sign package shall be reviewed administratively by staff.*
4. *The fire truck turn exhibit shall be revised to the satisfaction of the Fire Chief prior to issuance of any building permits.*
5. *As recommended by the Traffic Impact Study prepared by KLOA and dated June 29, 2022:*
 - a. *The painted median on Milwaukee Avenue shall be restriped to provide an exclusive left-turn lane into the full-movement access drive at the south end of the site, subject to the review and approval by IDOT.*
 - b. *The carwash wayfinding and traffic control signage shall be installed on the site as noted in the Traffic Impact Study.*
6. *The operator shall closely monitor traffic circulation and stacking during peak operating days/hours and take appropriate measures to ensure that adequate stacking is provided. If the Village determines, at its sole discretion, that additional stacking should be provided to accommodate peak demand on site, the petitioner shall adjust their operating procedures in a manner acceptable to the Village.*

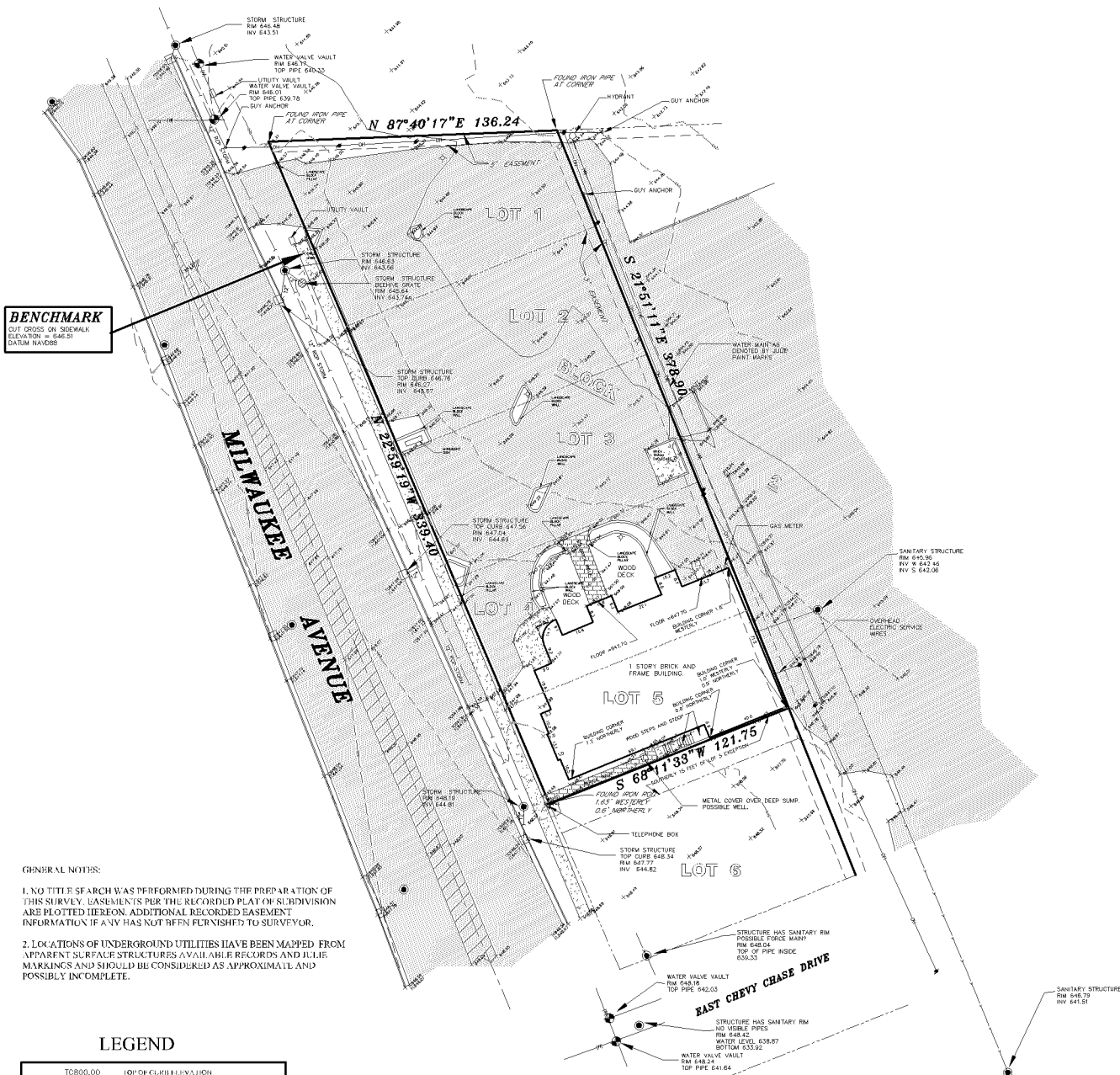
ATTACHMENTS

- Plat of Survey
- Narrative Description
- Description of Business Operations
- Preliminary Civil Engineering Plans
- Architectural and Landscape Plans
- Photometric Plan
- Preliminary Stormwater Analysis
- Sound Evaluation
- Response to Zoning Variation Standards
- Response to Sign Variation Standards
- Minutes from the PZC Workshop Meeting
- Traffic Impact Study



TOPOGRAPHICAL SURVEY

LOTS 1, 2, 3, 4 AND 5 EXCEPT THE SOUTHERLY 15 FEET OF LOT 5 IN BLOCK 2 IN UNIT NUMBER 2 IN COLUMBIAN GARDENS, BEING A SUBDIVISION IN SECTION 35, TOWNSHIP 43 NORTH, RANGE 11, EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT THEREOF RECORDED JULY 11, 1926 AS DOCUMENT 282352, IN BOOK "P" OF PLATS, PAGE 92, IN LAKE COUNTY, ILLINOIS.



GENERAL NOTES:

1. NO TITLE SEARCH WAS PERFORMED DURING THE PREPARATION OF THIS SURVEY. EASEMENTS FOR THE RECORDED PLAT OF SUBDIVISION ARE PLOTTED HEREON. ADDITIONAL RECORDED EASEMENT INFORMATION IF ANY HAS NOT BEEN FURNISHED TO SURVEYOR.

2. LOCATIONS OF UNDERGROUND UTILITIES HAVE BEEN MAPPED FROM APPARENT SURFACE STRUCTURES AVAILABLE RECORDS AND FIELD MARKINGS AND SHOULD BE CONSIDERED AS APPROXIMATE AND POSSIBLY INCOMPLETE.

LEGEND

TC800.00 TOP OF CURB ELEVATION
FL800.00 FLOW LINE OR LOWEST GUTTER ELEVATION
EP800.00 EDGE OF PAVEMENT ELEVATION

12" DECIDUOUS TREE AND TRUNK SIZE

12" CONIFER TREE AND TRUNK SIZE

8" BUSH

STORM SEWER

SANITARY SEWER

WATER MAIN

UNDERGROUND ELECTRIC

UNDERGROUND CABLE TV

UNDERGROUND TELEPHONE

UNDERGROUND GAS LINE

OVERHEAD UTILITY LINES

POST

UTILITY POLE

TELEPHONE BOX

WATER VALVE VAULT

FIRE HYDRANT

CURBED RIM MANHOLE

TRAFFIC SIGNAL VAULT

LIGHT POLE

OVERHANGING LIGHT POLE

STORM DRAIN MANHOLE

TRAFFIC SIGNAL

ASPHALT PAVED SURFACE

CONCRETE PAVED SURFACE

STATE OF ILLINOIS
COUNTY OF KANE SS

THIS IS TO CERTIFY THAT NOLAN & WEDOW SURVEY GROUP, HAS SURVEYED THE PROPERTY DESCRIBED IN THE ABOVE CAPTION, AS SHOWN BY THE ANALYZED PLAT, WHICH IS A CORRECT AND TRUE REPRESENTATION OF SAID SURVEY. ALL DISTANCES ARE SHOWN IN FEET AND DECIMALS THEREOF.

GIVEN UNDER MY HAND AND SEAL AT BALABAY, ILLINOIS THIS 6th DAY OF

JUNE, A.D. 2022

BY:

ERIC WEDOW
ILLINOIS LAND SURVEYOR NO. 3180
EXPIRATION DATE 11/14/2022



SCALE 1" = 30'

PREPARED FOR:

PREMIER DESIGN BUILD

TOPOGRAPHICAL SURVEY

301 N MIL WALKER AVENUE
MILWAUKEE, WI

NOLAN & WEDOW SURVEY GROUP

1235 BRONCO DRIVE, BATAVIA, IL 60510
ILLINOIS PROFESSIONAL DESIGN FIRM NO. 184-094605
(630) 574-4028 F.MAIL: NOLAN@NWSURVEY.COM FAX: (630) 574-4029

308.2 SURVEYED BY: EW SCALE: 1"=20' DATE: 6-6-2022
22-146 DRAFTER BY: EW LLSR E-25-146

Village of Buffalo Grove
Development Services Department-Zoning Application
301 Milwaukee Ave

The purpose of this application is to propose to construct and thereafter establish a new State-Of-The-Art car wash facility. The facility, better known as a luxury spa, shall have designated and clear marked lanes of use, staff members throughout the facility (from entry to exit), and a systematic plan executed to allow a steady and smooth flow of service.

The design of the facility is more akin to a modern-day brick-and-mortar bank with sleek lines and stone.

The operation shall have approximately 3 staff members on site to ensure the smooth flow of traffic, answer questions customers may pose, instruct customers and how to operate vacuums, direct customers to refuse disposal, and assist in the selection of a proper option for a wash.

The site design shall ensure enough space for stacking and for the prevention of any backup traffic onto the major or minor public roadways adjacent to the facility. Additionally, each site is designed to accommodate unobstructed movement of fire & other emergency vehicles onto and throughout the site grounds. Each site will have more than one lane for stacking, typically 3 plus at least another lane for those seeking to exit the facility from the stacking lane.

Clients shall have options to choose specific service to be performed, communicated either electronically, verbally, by writing, or in some other manner thereby creating direction to the client through staff communication to proceed along the facility grounds to obtain the service or services selected.

Hours of operation would not exceed the operation of other like-kind facilities. Typically, the owner/operator can designate hours and the suggested hours are longer on weekdays and shorter on weekends. Peak hours vary. Sometimes the lunch hour on a sunny day may have peak visits. Weekends oftentimes will have peak usage of the facility. Early evenings may have peak usage as well.

Each wash has a different time designation. Typically, a standard wash can vary between 30 seconds to 3 minutes.

Description of Business Operations

301 N. Milwaukee Buffalo Grove, IL

The Petitioner seeks to establish an Auto Luxury Spa, sometimes called an Auto Laundry, or Express Car Wash. The proposed facility is unique in structure as it has brick facade, towers, unique lighting and a state-of-the-art tunnel system. The aesthetics are more akin to a modern-day bank rather than an express car wash. The structure is neither a copy or identical in design to any other structure or facility nearby nor is it an anomaly. The height, width, depth, and breadth are not too wide, high, or deep to create a distraction. Rather, the design is made to create the cohesion of a business district and a unified and symmetrical representation of the area. Unique. Elegant. Luxurious.

The proposed operating hours are 7:00AM-9:00PM Monday to Saturday and Sundays 8:00AM-8:00PM during the summertime and 8:00AM-8:00PM Monday to Saturday and Sundays 8:00AM-6:00PM during the wintertime.

Although the entire system is automated, this facility would employ personnel to be at the facility during normal operating hours. Approximately 3 employees (at any given time) will always be present at the facility with a maximum of 4 during peak hours. Detailing/supplemental services will not be offered at this facility.

As we are dedicated to cleanliness, our facility must demonstrate that. We train our employees to assign one employee as a rover in the vacuum area. In this area, there are several vacuums and waste bins. Our employees will ensure no trash is left on the grounds, all trash is disposed of in the waste bins, and bins are emptied periodically as they fill. Other employees would assist clients in selecting a specific wash-type, answer questions, assist with payment operations, assisting clients entering the wash, and provide overall management of the facility during operations.

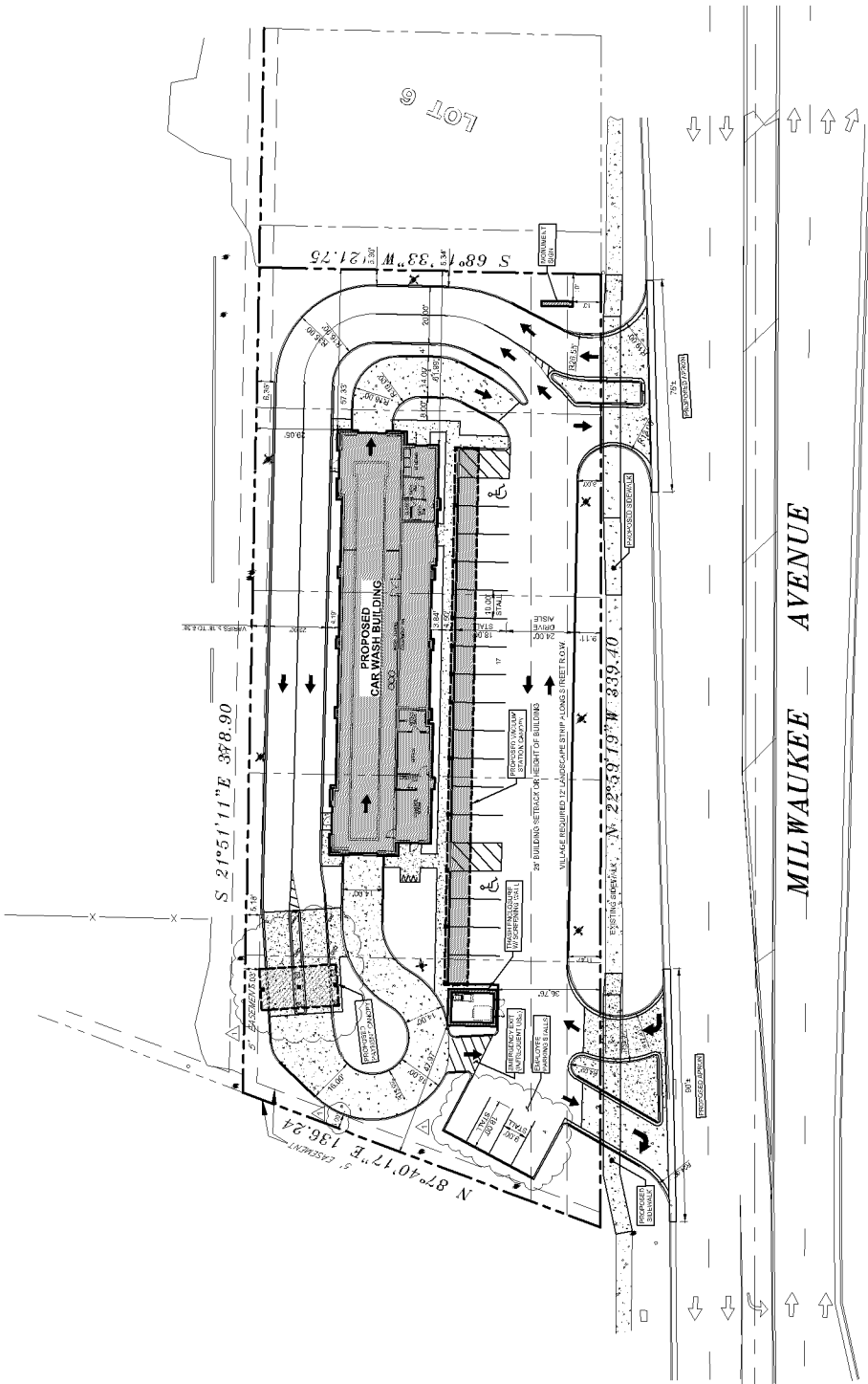
The tunnel system is state-of-the-art, with artificial intelligence (AI), sonar and No-Pile-Ups technology, friction, or touchless wash options. The tunnel is equipped with speed doors on both ends and sophisticated sensor systems to create an efficient and safe operation. The system is belt-fed or conveyor. Unlike a track system requiring a client to line-up the left side of their tire onto a track, place the vehicle in neutral and allow the system to “drag” the vehicle through the wash. Our system allows the client is simply drive onto a conveyor belt. We can accommodate and draw clientele with after-market lowered vehicles, larger vehicles, dual-axel, exotic vehicles and vehicles with specialty wheels. The facility shall have an installed payment canopy with ease of use.

The washing system is extremely efficient. If washing a vehicle in a driveway, an individual may use up to 150 gallons of water. A typical car wash attached to a gas stations or full-service washes may use up to 85 gallons of water. Our wash system uses only 15 gallons on average of water per wash. Additionally, the cleaning products used within the system are non-toxic, water-based, plant-based, marine safe, biodegradable, naturally scented, and environmentally friendly.

To avoid disruption of traffic and to provide a continuous flow from all lanes, the car wash shall be designed to complete the entire process of washing-from the point of sale at gate opening to the exit of the wash-in under three minutes. Finally, the design includes a built-in time-space element so that a vehicle shall exit the wash every 20 seconds thereafter.

The ground/land/property upon which the facility shall be constructed and operated creates diversity and coupling complimentary element to its surroundings. The business corridor along Milwaukee Avenue has several commercial properties with their own unique niche. This will be a great complimentary addition. We selected Buffalo Grove for its vibrant corridor and easy to maneuver and navigate design.

The Petitioner shall encourage inspections by Village, County and State agencies to ensure compliance with all codes and ordinances and will provide full cooperation in this very important process. We look forward to working with the Village of Buffalo Grove. project

[illegible]

LOT DATA:	ADDRESS: 301 N. MILWAUKEE AVE. BUFFALO GROVE, IL 60089 PIN: 15-35-301-401-0000, 15-35-301-402-0000, 15-35-301-403-0000, 15-35-301-404-0000, 15-35-301-405-0000	ZONING: B-3 PLANNED BUSINESS CENTER DISTRICT AREA: ± 0.899 AC
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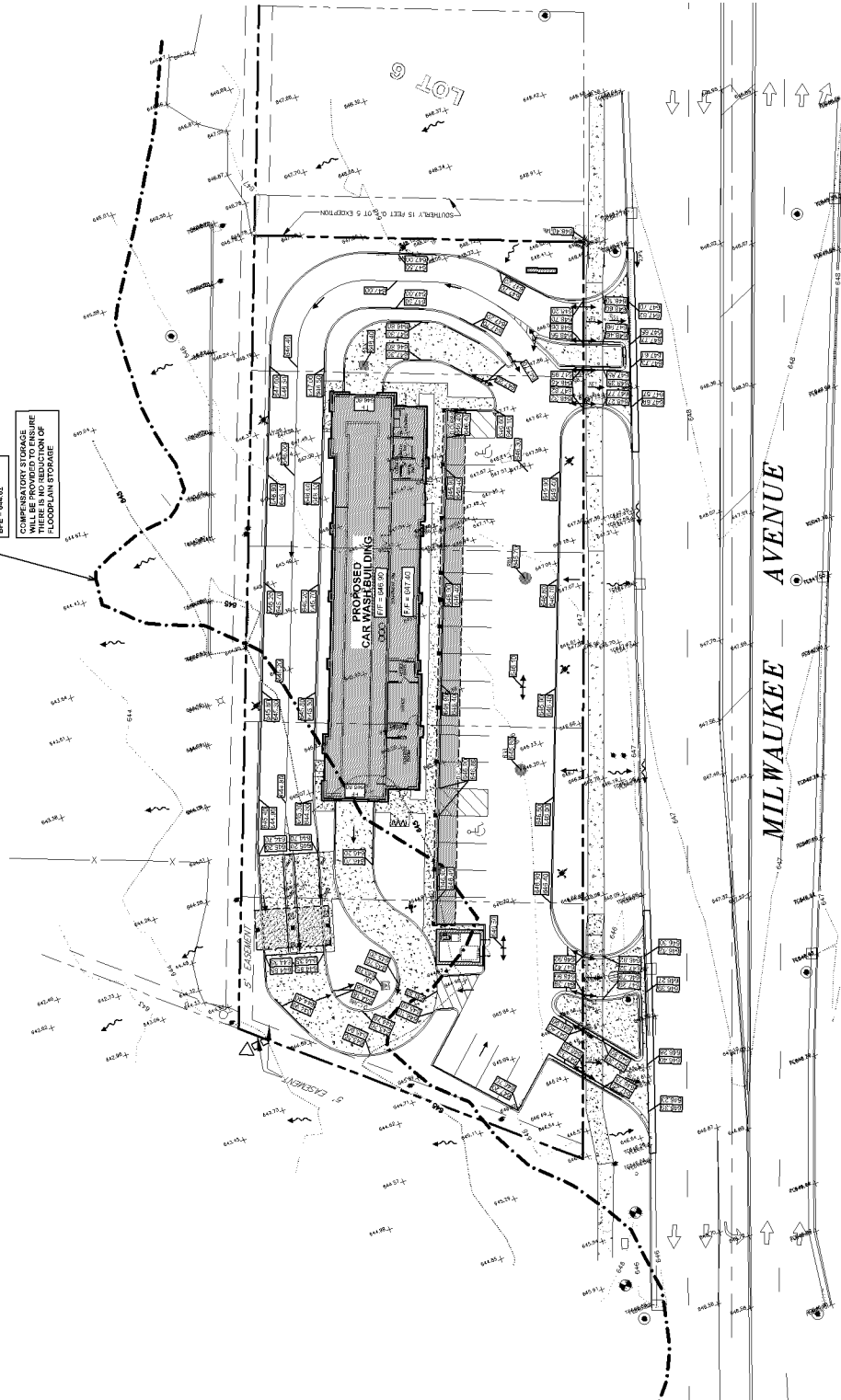
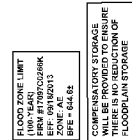
SITE DATA:

TOTAL PROPERTY AREA	= 0.269 AC *
PERVIOUS AREA	= 0.231 AC (26.6%)
IMPERVIOUS AREA	= 0.038 AC (7.4%)

<u>PARKING SUMMARY:</u>	
EMPLOYEE STALLS:	4
ADA/VACUUM STALLS:	2
VACUUM STALLS:	<u>15</u>
TOTAL STALLS:	23
BICYCLE SPACES REQUIRED:	1
BICYCLE SPACES PROVIDED:	1

- LEGEND**
- | | |
|---|--|
|  | PAINTED ACCESSIBILITY SYMBOL |
|  | PROPOSED B4 CONCRETE BARRIER CURB |
|  | DIRECTIONAL TRAFFIC ARROW |
|  | PROPOSED BITUMINOUS PAVEMENT |
|  | PROPOSED CONCRETE |
|  | PARKING STALLS IN EACH ROW |
|  | PROPOSED SITE LIGHT
(REFER TO ARCHITECTURE PLANS) |

- NOTES:**
1. ALL DIMENSIONS ARE FROM FACE OF CURB, EDGE OF PAVEMENT, FACE OF BUILDING ON PERPENDICULAR TO PROPERTY LINE UNLESS OTHERWISE NOTED.
 2. STRIPING DIMENSIONS FROM CENTER OF STRIPE.
 3. ABBREVIATIONS:
TYP. = TYPICAL
BC = BACK OF CURB
BL = BUILDING FACE FOUNDATION LINE
EC = EDGE OF CONCRETE
FC = FACE OF CURB
FL = PROPERTY LINE



<u>PARKING SUMMARY:</u>	
EMPLOYEE STALLS:	4
ADA/VACUUM STALLS:	2
VACUUM STALLS:	<u>15</u>
TOTAL STALLS:	21

TOTAL AREA	= 0.889 AC
IMPERVIOUS AREA	= 0.558 AC
PERVIOUS AREA	= 0.231 AC

LOT DATA:	ADDRESS:	301 N. MILWAUKEE AVE. BUFFALO GROVE, IL 60089	PIN:	15-35-301-001-0000; 15-35-301-002-0000; 15-35-301-003-0000; 15-35-301-004-0000; 15-35-301-005-0000	ZONING:	B-3 PLANNED BUSINESS CE	AREA:	+ 0.88 AC.
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	PROPOSED ELEVATION
	TOP OF GROUND ELEVATION
	BOTTOM OF GROUND ELEVATION
	EARNING ELEVATION
	PROPOSED ELEVATION TO MATCH UNDERLAID ELEVATION
	EARNING FLOW DIRECTION
	PROPOSED GROUND DRAINAGE (SWAMP DRAINAGE DIRECTION)
	PROPOSED STORM MANHOLE WITH INLET
	PROPOSED STORM INLET
	PROPOSED GRATED INLET
	OVERFLOW PATHS

PRELIMINARY
ENGINEERING

con-

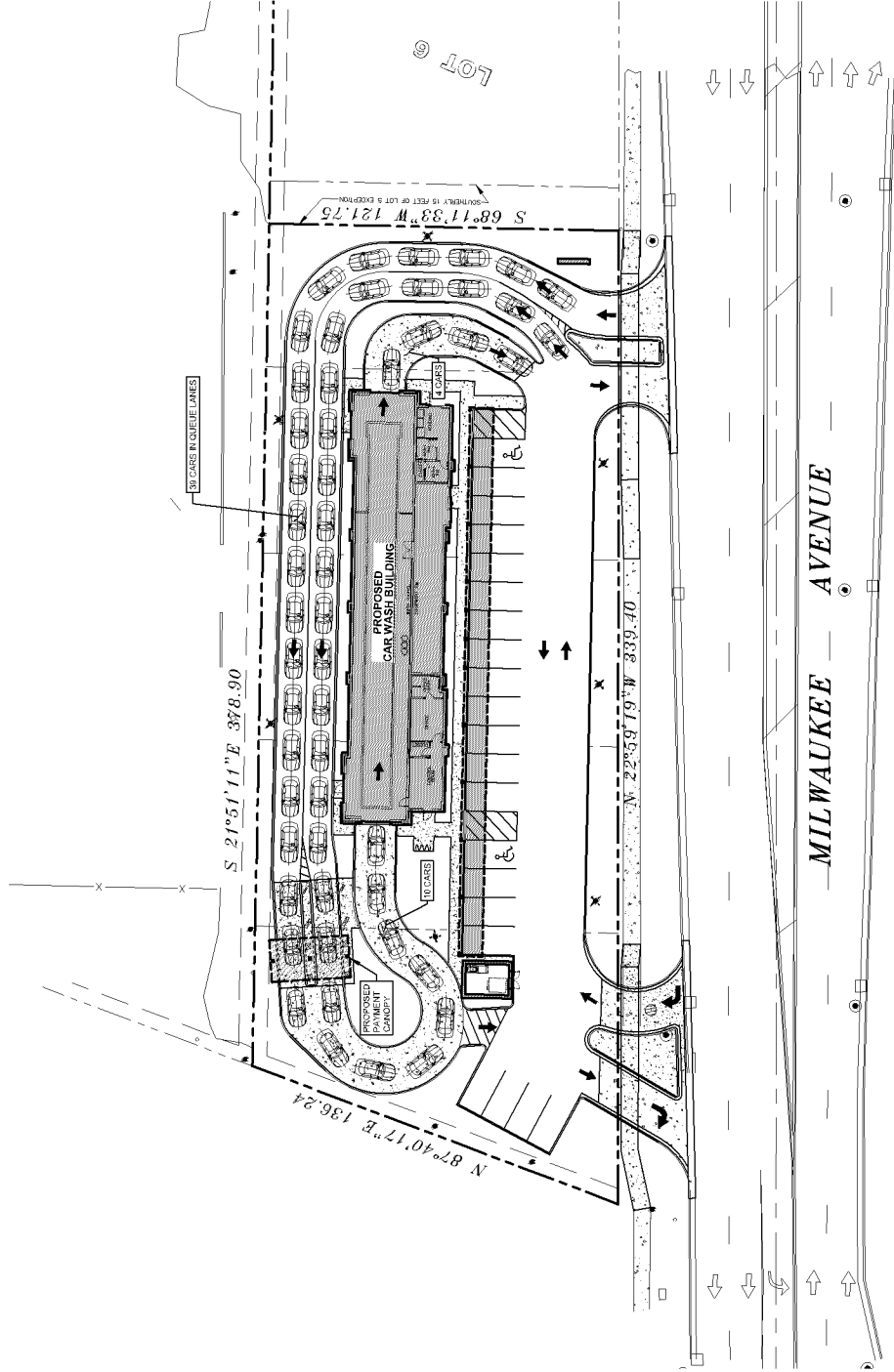
**CAR WASH
FACILITY**

WILWAUKEE AVE
ALD GROVE
L 60089

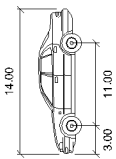
MINED BY:	MJC
OWN BY:	DHC
DATE:	04/14/2024
SHEET #:	15/25

GRADING
PLAN

G-4



CAR WASH STAGING SPACE DATA:
PROPOSED:
USE OF STAGING SPACE IN LOT 6
LARGE LOT FOR STAGING AND TURN-
IN STAGING SPACE



PASSENGER CAR (TYPICAL)
Width : 7.00
Track : 6.00
Lock to Lock Time : 5.0
Steering Angle : 31.5
NOTE: USE OF THE CAR SHOWN IS AVERAGE SIZED CAR.

C-6

Sheet Number

Project No. 13

CAR WASH
PRO ENGINEERS
1000 N. MILWAUKEE AVENUE
MILWAUKEE, WI 53233

TERRA
TERRA LTD.
600 Busse Highway
Park Ridge, IL 60068
PH: 847.698.4400
TERRALTD.COM

NO.	DESCRIPTION	DATE
1	DESIGN	10/1/13
2	REVISION	10/1/13
3	REVISION	10/1/13
4	REVISION	10/1/13
5	REVISION	10/1/13
6	REVISION	10/1/13
7	REVISION	10/1/13
8	REVISION	10/1/13
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17	REVISION	10/1/13
18	REVISION	10/1/13
19	REVISION	10/1/13
20	REVISION	10/1/13

PRELIMINARY
ENGINEERING

FOR

CAR WASH
FACILITY

301 N. MILWAUKEE AVENUE
BUFFALO GROVE, IL 60089
L 60089

NO.	DATE	BY	CHKD.	APPD.
1	10/1/13	10/1/13	10/1/13	10/1/13
2	10/1/13	10/1/13	10/1/13	10/1/13
3	10/1/13	10/1/13	10/1/13	10/1/13
4	10/1/13	10/1/13	10/1/13	10/1/13
5	10/1/13	10/1/13	10/1/13	10/1/13
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7	10/1/13	10/1/13	10/1/13	10/1/13
8	10/1/13	10/1/13	10/1/13	10/1/13
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19	10/1/13	10/1/13	10/1/13	10/1/13
20	10/1/13	10/1/13	10/1/13	10/1/13

CAR
WASH
FACILITY

CAR
WASH
FACILITY



UNCLASSIFIED

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PRELIMINARY ENGINEERING

FOR

**CAR WASH
FACILITY**

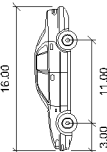
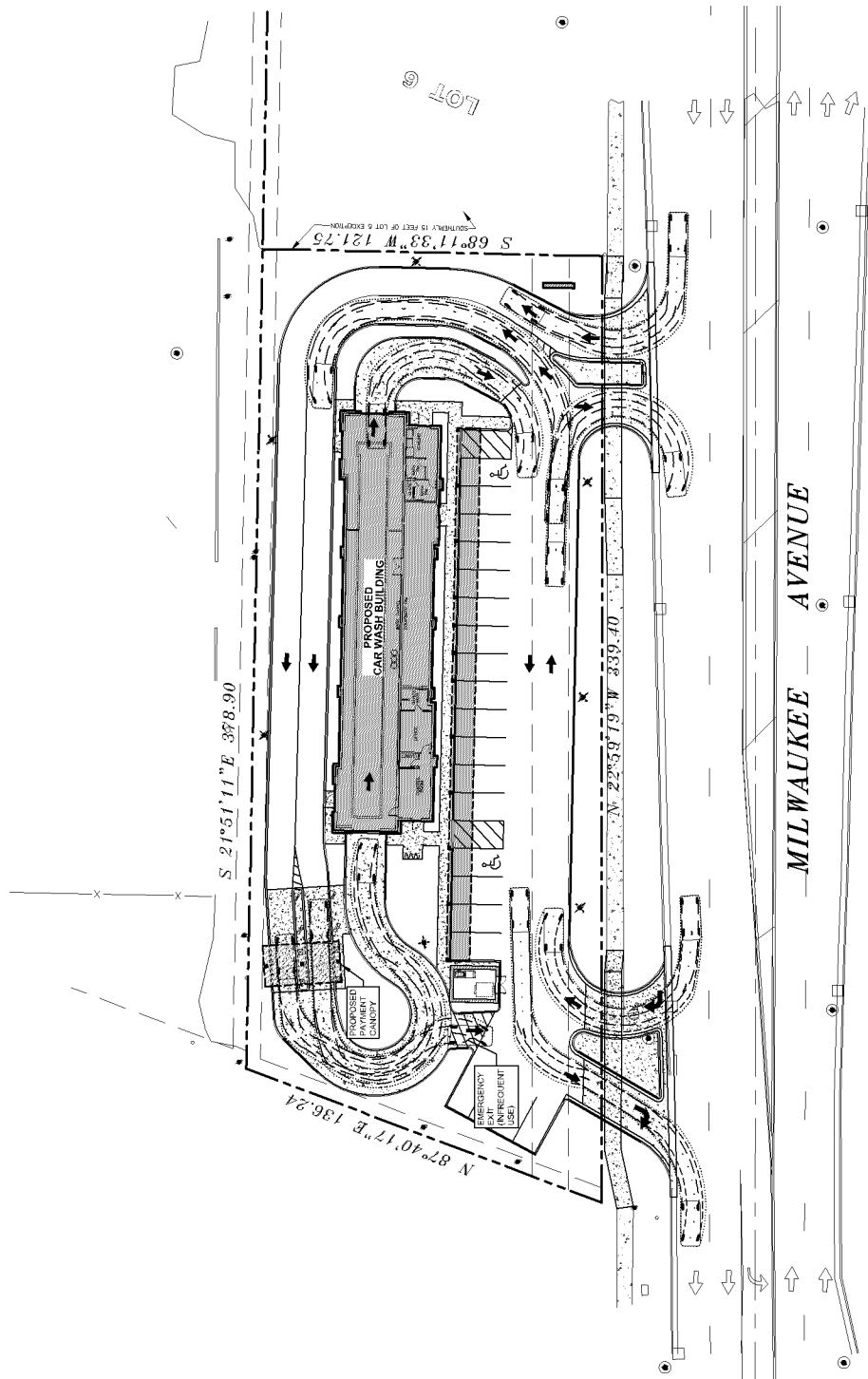
01 N. MILWAUKEE AVE.
BUFFALO GROVE
IL 60089

DESIGNED BY:	M.S.E.
DRAWN BY:	D.J.G.
DATE:	06-11-2024
PROJECT #:	1513

**CAR
TURNING
EXHIBIT**

SHEET NUMBER

C-7



PASSENGER CAR (TYPICAL)

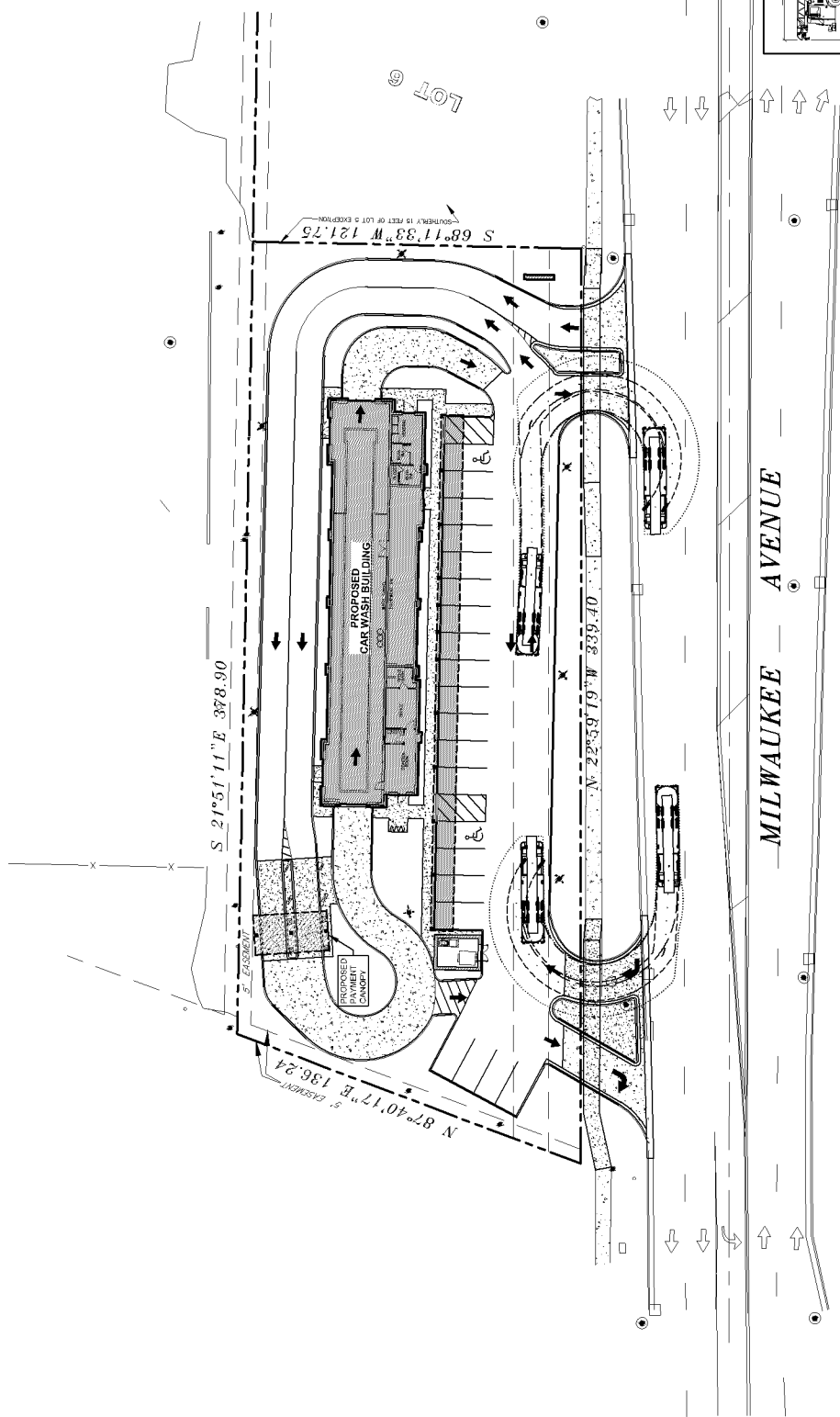
Width	: 7.00
Track	: 6.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.5

NOTE: THE SIZE OF THE TAB SHOWS AN AVERAGE 1/4 INCH STEADY CAR

NOTE:
THE SIZE OF THE CAR SHOWN IS AVERAGE LARGER SIZED CAR.

LEGEND

FRONT WHEEL PATH
REAR WHEEL PATH
OVERHANG OF BODY



SWEA AERIAL RM 100FT

	feet
Width	8.33
Track	9.92
Height	5.0
Swing angle	45.0

NOTE:
DIMENSION DATA IS FROM THE AMERICAN ASSOCIATION
OF MANUFACTURERS OF LIFTING DEVICES (AALMA) AND
AERIAL AND TRUCK MANUFACTURERS
SPECIFICATIONS.

LEGEND

----- FRONT WHEEL PATH

----- REAR WHEEL PATH

..... OVERHANG OF BODY

8-6

PRELIMINARY
ENGINEERING

CAR WASH
FACILITY

301 N. MILWAUKEE AVE.
BUFFALO GROVE

DESIGNED BY:	M.S.E.
DRAWN BY:	D.J.C.
DATE:	06/14/2024
PROJECT #:	1593

**FIRE TRUCK
TURNING
EXHIBIT**

SHEET NUMBER

8-6



TERRA
CONSULTING GROUP, LTD.
TERRALTD.COM
600 Busse Highway
Park Ridge, IL 60068
Ph: 847.698.6400



CAR WASH
— Pro Designers —
Field • Plumbing • Electrical

ADDRESS	DATE	REMARKS
VILLAGE 06-16-08 SHEEPHEAD 10-05-45	06-05-08	
ACCESS UPDATE	06-05-08	
ENCLOSURE	06-05-08	
ENCLOSURE	06-05-08	
PAGE 25/41	06-05-08	

ARCHITECT

NERI ARCHITECTS

600 N. MONTWEST HWY, SUITE 4
CHICAGO, IL 60611
P. 847.625.8400
E. 847.625.8400

CONSULTANTS INFO:

CIVIL ENGINEER

GEORGIA ENGINEERING GROUP, LTD.
1000 W. JACKSON ST., SUITE 105
CHICAGO, IL 60607
P. 847.625.8400
E. 847.625.8400

EQUIPMENT DESIGNER

NDS VASH SOLUTIONS
1000 W. JACKSON ST., SUITE 105
CHICAGO, IL 60607
P. 847.625.8400
E. 847.625.8400

MEP ENGINEER

GEORGIA ENGINEERING GROUP, LTD.
1000 W. JACKSON ST., SUITE 105
CHICAGO, IL 60607
P. 847.625.8400
E. 847.625.8400

OWNER INFO

NAME

GEORGIA ENGINEERING GROUP, LTD.

ADDRESS

1000 W. JACKSON ST., SUITE 105

CITY

CHICAGO, IL 60607

STATE

IL

ZIP

60607

PROJECT DATA

SCOPE OF WORK

NEW COMMERCIAL BUILDING

APPLICABLE CODES:

- 2015 INTERNATIONAL BUILDING CODE, AS AMENDED*
- 2018 PROPERTY MAINTENANCE CODE, AS AMENDED*
- 2018 INTERNATIONAL MECHANICAL CODE, AS AMENDED*
- 2018 INTERNATIONAL FUEL GAS CODE, AS AMENDED*
- 2018 IBC ELECTRICAL CODE ADMINISTRATIVE PROVISIONS, AS AMENDED*
- 2018 IBC MECHANICAL CODE ADMINISTRATIVE PROVISIONS, AS AMENDED*
- 2018 IBC PLUMBING CODE, AS AMENDED*
- 2018 IBC FIRE ALARM CODE, AS AMENDED*
- 2018 IBC LIFE SAFETY CODE, AS AMENDED*
- 2018 IBC ACCESSIBILITY CODE, AS AMENDED*
- 2018 IBC SCHEDULING CODE, AS AMENDED*
- 2018 IBC ZONING CODE, AS AMENDED*
- 2018 IBC SCHEDULING CODE, AS AMENDED*
- 2018 IBC ZONING CODE, AS AMENDED*

CLIMATE ZONE

5A

BUILDING DESCRIPTION

USE GROUP:

"B" - COMMERCIAL CARWASH

OCCUPANCY LOADS

21 (Based on 400 sq ft)

BUILDING AREA:

ONE STORY (50'-9")

CONSTRUCTION TYPE:

III / Non-Sprinklered

PROPOSED BUILDING AREA:

4,983 SQ. FT.

PROPOSED IMPERMEABLE COVERAGE:

1,037 AC (20.9%)

TOTAL AREA:

4,983 AC (100%)

ZONING & LOT DATA

ADDRESS:

301 N. MILWAUKEE AVE., BUFFALO GROVE, IL 60089

PERMITS:

15-05-001-000000, 15-05-001-000000, 15-05-001-000000

ZONING:

EXISTING: B-4 PLANNED BUSINESS CENTER DISTRICT

AREA:

4.088 AC

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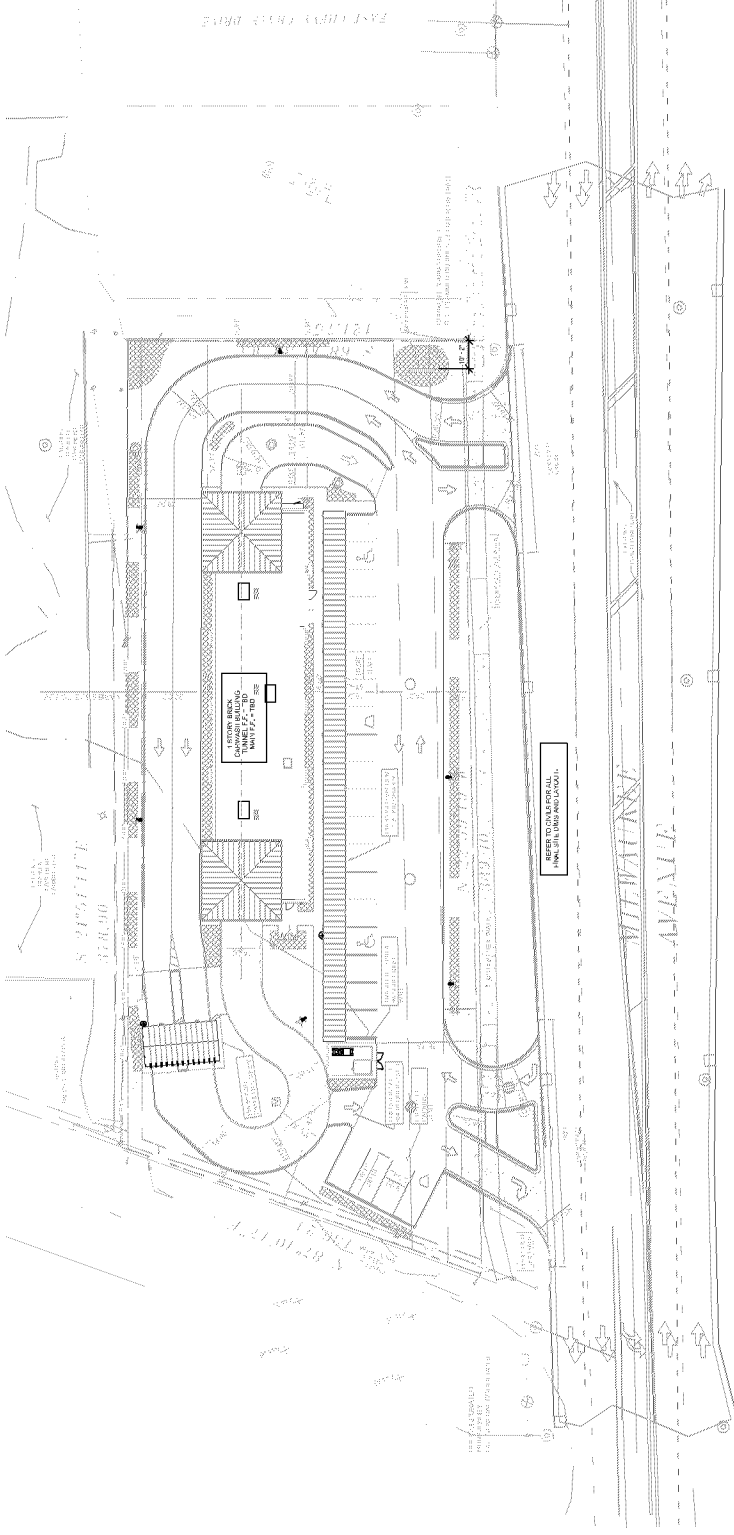
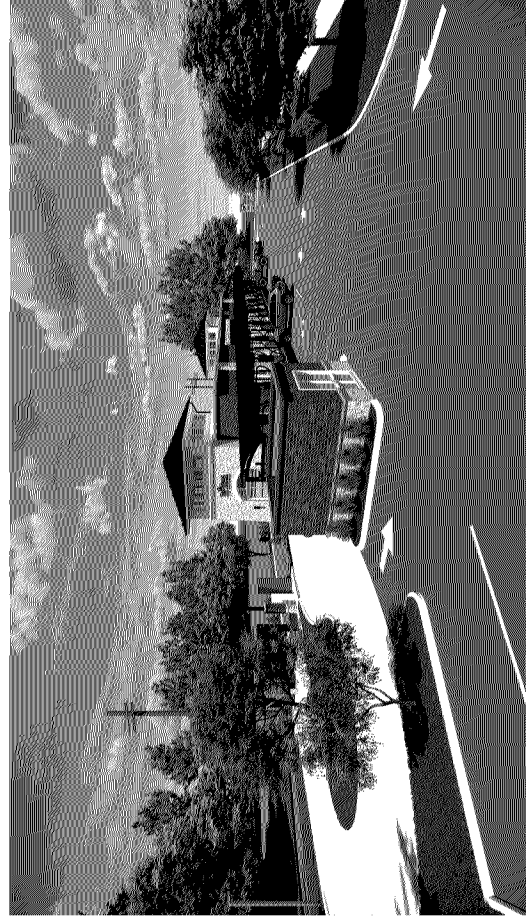
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PROJECT NOTES			CODES, STANDARDS, AND PROCEDURES		
1.	ALL CONSTRUCTION SHALL COMPLY WITH INTERNATIONAL BUILDING CODES, OSHA, AND ZONING CODES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE UNITED STATES OF AMERICA, FEDERAL, STATE, AND LOCAL AGENCIES.				
2.	BEFORE DOING ANY CONSTRUCTION, CONTACT LOCAL ELECTRIC COMPANY AND ASK FOR THE NEW BUSINESS GROUP. REQUEST AN ON-SITE MEETING AND COORDINATION OF PROPOSED WORK. BRING ARCHITECTURAL DRAWINGS AND SPECIFICATIONS TO THE MEETING. ALL NEW STRUCTURES BEING BUILT, AND/OR ELECTRICAL SERVICE BEING MOVED AND/OR UPGRADED.				
3.	BEFORE DOING ANY CONSTRUCTION, CONTACT JAILLE TO DETERMINE THE LOCATION OF ANY UNDERGROUND UTILITIES WHICH MAY AFFECT PROPOSED SITE WORK. SHALL BE THE MONTMONT TOLL-FREE NUMBER FOR LOCATION SERVICES. CALL JAILLE'S TOLL-FREE NUMBER 1-800-860-0122.				
4.	ALL CARWASH EQUIPMENT SHALL BE PROVIDED BY NATIONAL CARWASH SOLUTIONS (NCS) AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH NCS DRAWINGS AND SPECIFICATIONS.				
5.	ALL ELECTRICAL AND MECHANICAL WORK SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND/OR DRAWINGS. SHALL MEAN THE LATEST EDITION, AMENDMENT OR REVISION OF SUCH REFERENCE IN EFFECT AS OF THE LATEST DATE OF THE CONTRACT DOCUMENTS.				
6.	ALL WORK SHALL COMPLY WITH THE REQUIREMENTS, POLICIES, AND PROCEDURES OF THE OWNER.				
7.	DRAWINGS AND SPECIFICATIONS ARE TO BE ISSUED TO THE SUBCONTRACTORS IN COMPLETE SETS SO THAT THE FULL EXTENT OF WORK IS SHOWN AND COORDINATION OF WORK IS MADE POSSIBLE.				
8.	ALL WORK SHALL BE OF THE HIGHEST QUALITY FOLLOWING THE CONTRACT DOCUMENTS, PROJECT SPECIFICATIONS, AND TRADE PRACTICES AND STANDARDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE UNITED STATES OF AMERICA, FEDERAL, STATE, AND LOCAL AGENCIES.				
9.	DETAILS SHOWN ARE INTENDED TO BE INDICATIVE OF THE PROPOSED AND TYPES OF DETAILING REQUIRED FOR THE WORK. DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO THOSE DETAILING.				
10.	PROVIDE ALL SHOP DRAWINGS, CATALOG CUTS, SAMPLES, ETC. FOR THE NECESSARY WORK REQUIRED AND FOR ARCHITECT'S REVIEW PRIOR TO COMMENCEMENT OF THE WORK.				
11.	EACH CONTRACTOR SHALL KEEP ACCURATE RECORDS OF ALL WORK WHICH DIFFERS FROM CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE UNITED STATES OF AMERICA, FEDERAL, STATE, AND LOCAL AGENCIES.				
12.	EACH CONTRACTOR SHALL SUBMIT THE SITE AND MAKE KNOWN EXISTENCE OF CONDITIONS THERE OF. FAILURE TO EXAMINE THE SITE AND DETERMINE EXISTING CONDITIONS OR NATURE OF NEW CONSTRUCTION, OR NATURE OF EXISTING CONSTRUCTION, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE UNITED STATES OF AMERICA, FEDERAL, STATE, AND LOCAL AGENCIES.				
13.	THE CONTRACTOR SHALL INSTRUCT, MONITOR, AND BE RESPONSIBLE FOR ALL REQUIREMENTS OF THE PROJECT AND SHALL NOT BE THE ARCHITECT OF ANY CONDITIONS CONTRARY TO THE CONSTRUCTION DOCUMENTS THAT REQUIRE MODIFICATION BEFORE PROCEEDING WITH THE WORK.				
14.	THE CONTRACTOR SHALL PROTECT ALL EXISTING SITE ELEMENTS FROM DAMAGE DUE TO THE CONSTRUCTION OPERATIONS, AND REPAIR OR REPLACE ANY ELEMENTS DAMAGED DURING THE PROJECT.				
15.	ANY UTILITY SHOWN OR AS INDICATED BY THE CONTRACT DOCUMENTS FOR COMPLETION OF THEIR WORK, SUCH AS ELECTRICAL, GAS, AND/OR WATER, SHOULD BE COORDINATED WITH AGEN AND AGENCY INFORMATION.				

SHEET INDEX		
TITLE	COVERSHEET & PROJECT INFO	STRUCTURAL
T-1.0		S-101 GENERAL NOTES
C-1.0		S-201 FOUNDATION & 1st FLOOR PLAN
C-2.0		S-301 ROOF FRAMING PLAN
C-3.0		S-401 SECTIONS & DETAILS
C-4.0		S-501 SECTIONS & DETAILS
C-5.0		S-601 SECTIONS & DETAILS
C-6.0		S-701 SECTIONS & DETAILS
C-7.0		S-801 SECTIONS & DETAILS
C-8.0		S-901 SECTIONS & DETAILS
C-9.0		S-1001 SECTIONS & DETAILS
C-10.0		S-1101 SECTIONS & DETAILS
C-11.0		S-1201 SECTIONS & DETAILS
C-12.0		S-1301 SECTIONS & DETAILS
C-13.0		S-1401 SECTIONS & DETAILS
C-14.0		S-1501 SECTIONS & DETAILS
C-15.0		S-1601 SECTIONS & DETAILS
C-16.0		S-1701 SECTIONS & DETAILS
C-17.0		S-1801 SECTIONS & DETAILS
C-18.0		S-1901 SECTIONS & DETAILS
C-19.0		S-2001 SECTIONS & DETAILS
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C-44.0		S-4501 SECTIONS & DETAILS
C-45.0		S-4601 SECTIONS & DETAILS
C-46.0		S-4701 SECTIONS & DETAILS
C-47.0		S-4801 SECTIONS & DETAILS
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C-49.0		S-5001 SECTIONS & DETAILS
C-5		

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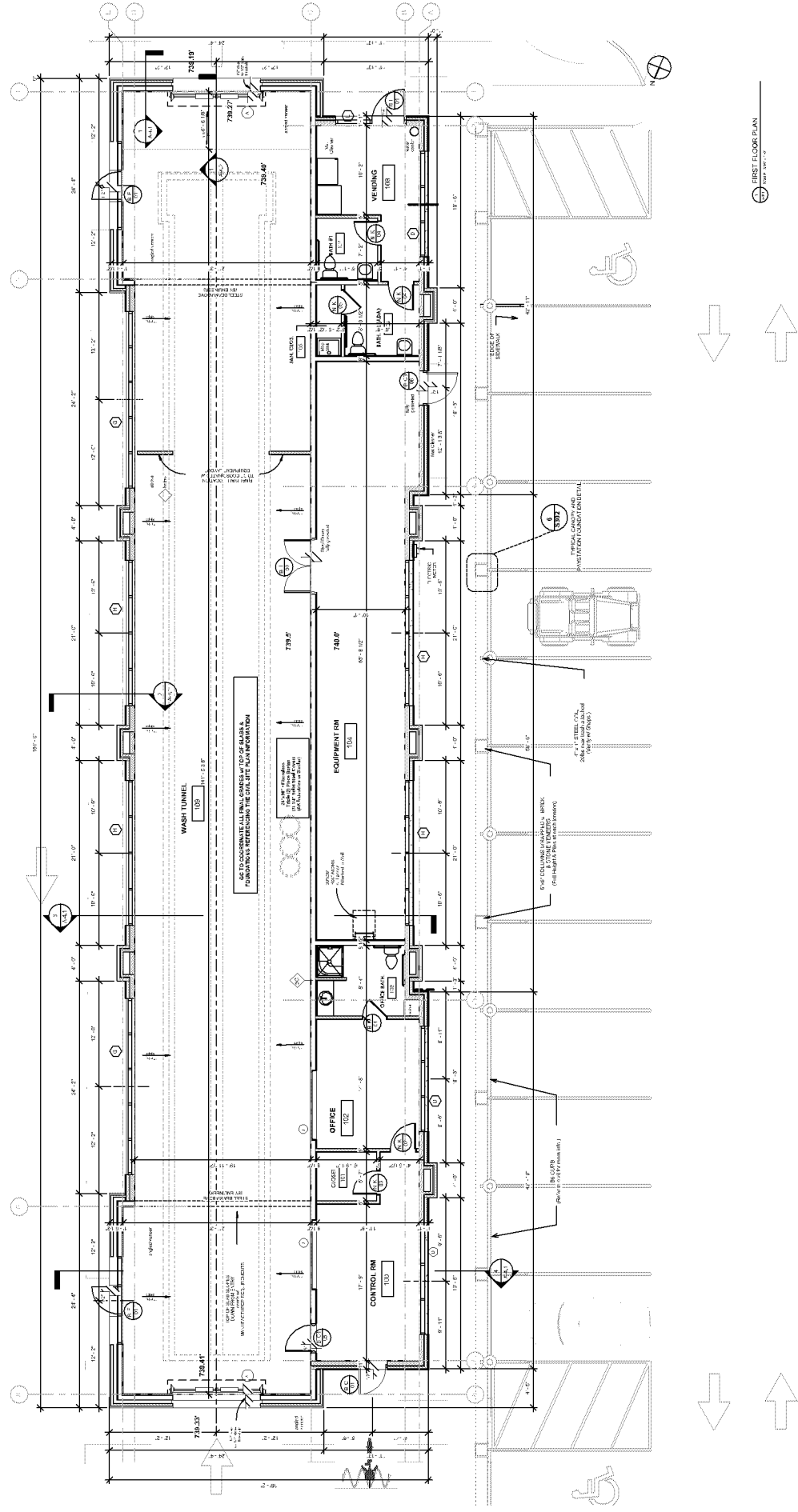
NEW AUTOMATED CARWASH FACILITY

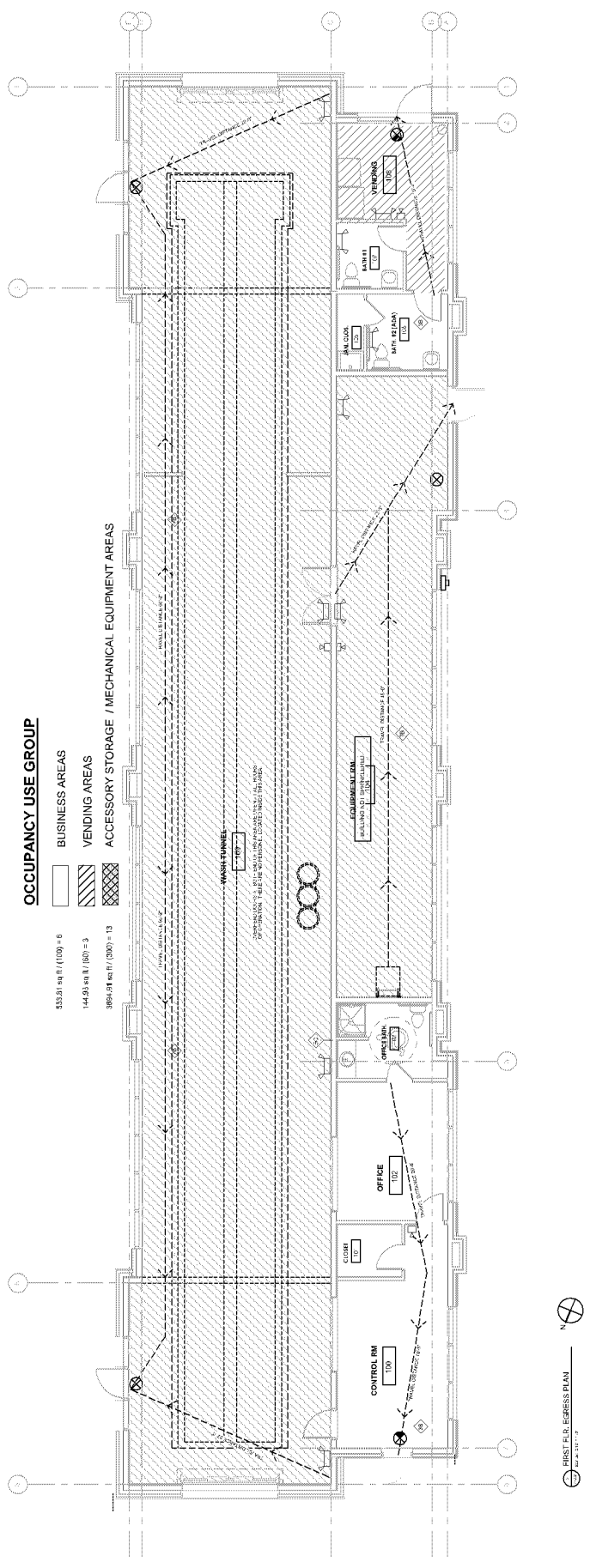
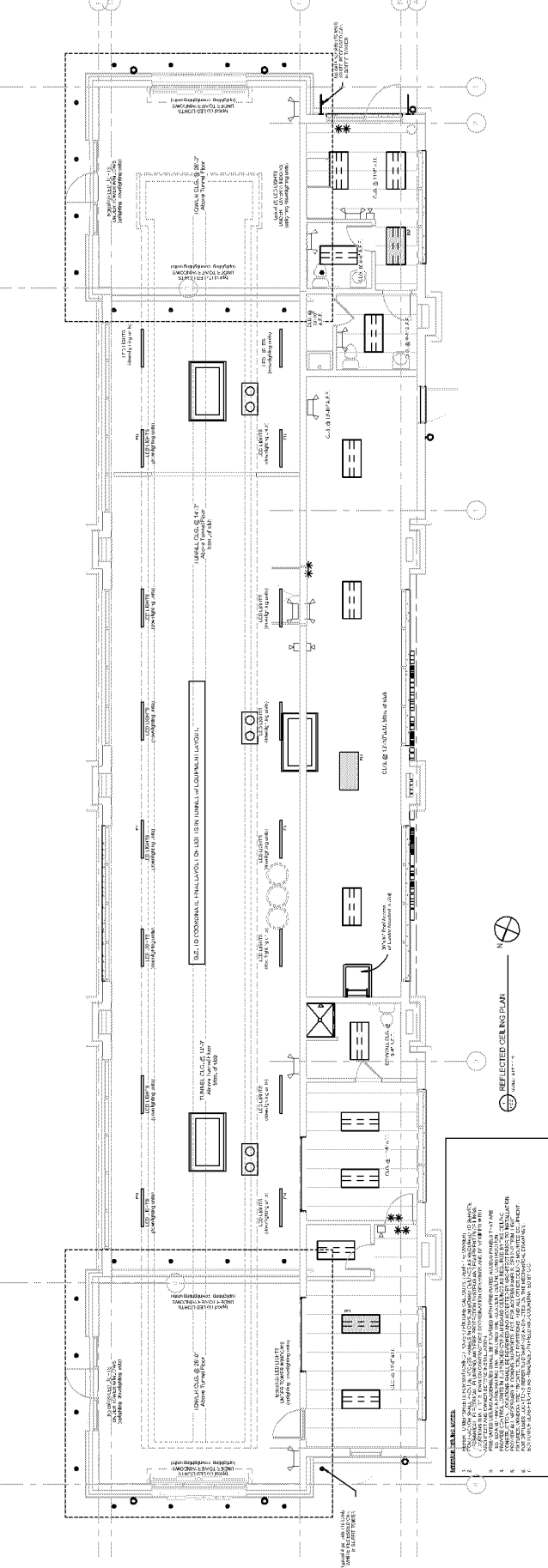
 ANEX^G	ANEX ENGINEERING, INC.	
	3150 INDUSTRIAL E. ST. #200 GAITHERSBURG, MD 20878-1174	
PROJECT #		2222
DATE:		03/1/22

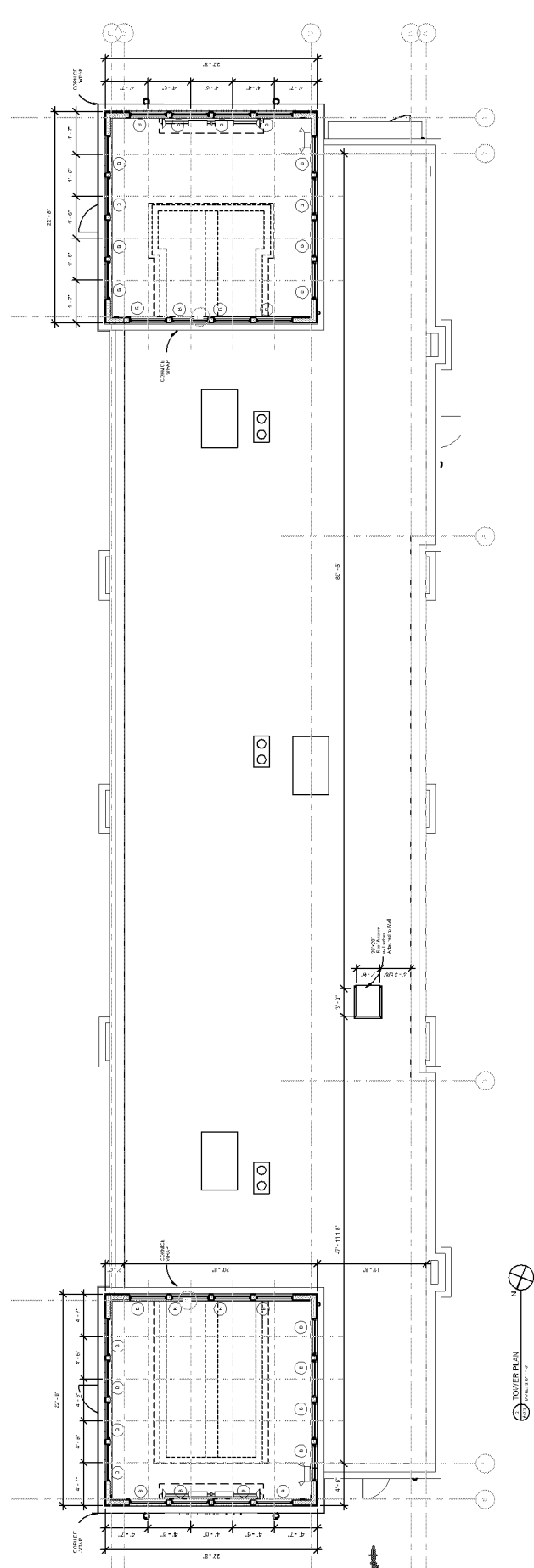
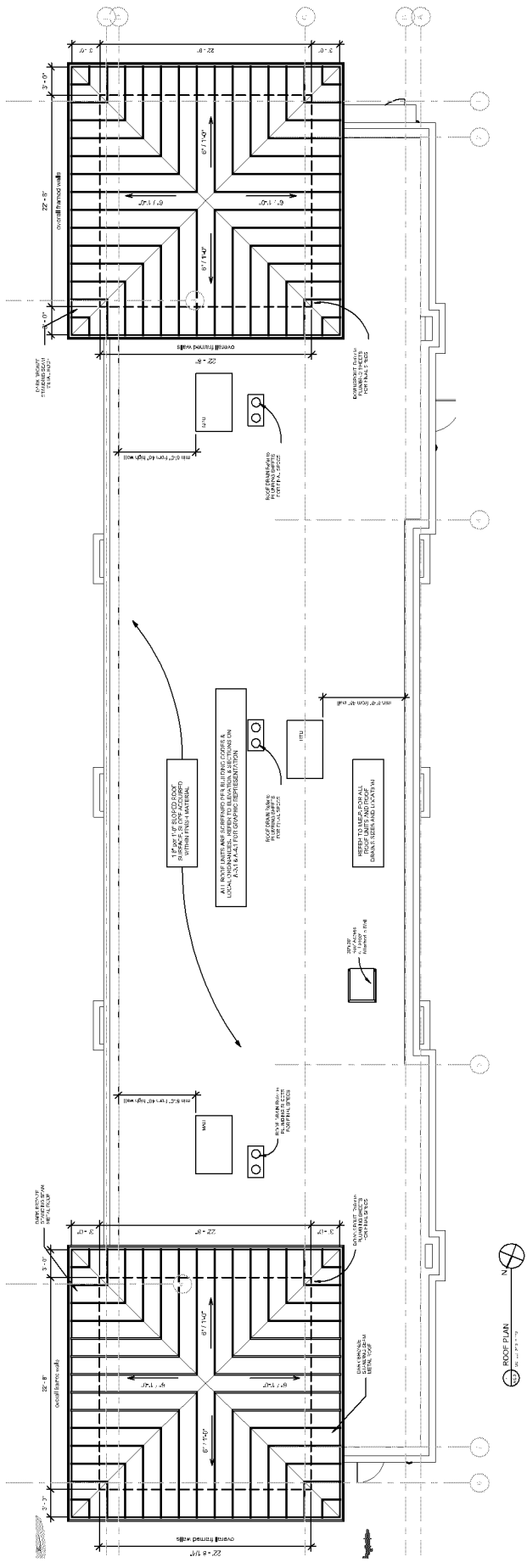
NERI ARCHITECTS
4400 N. NORTHWEST HWY.
SUITE 14
CHICAGO, IL 60631
TEL 312/825-9400

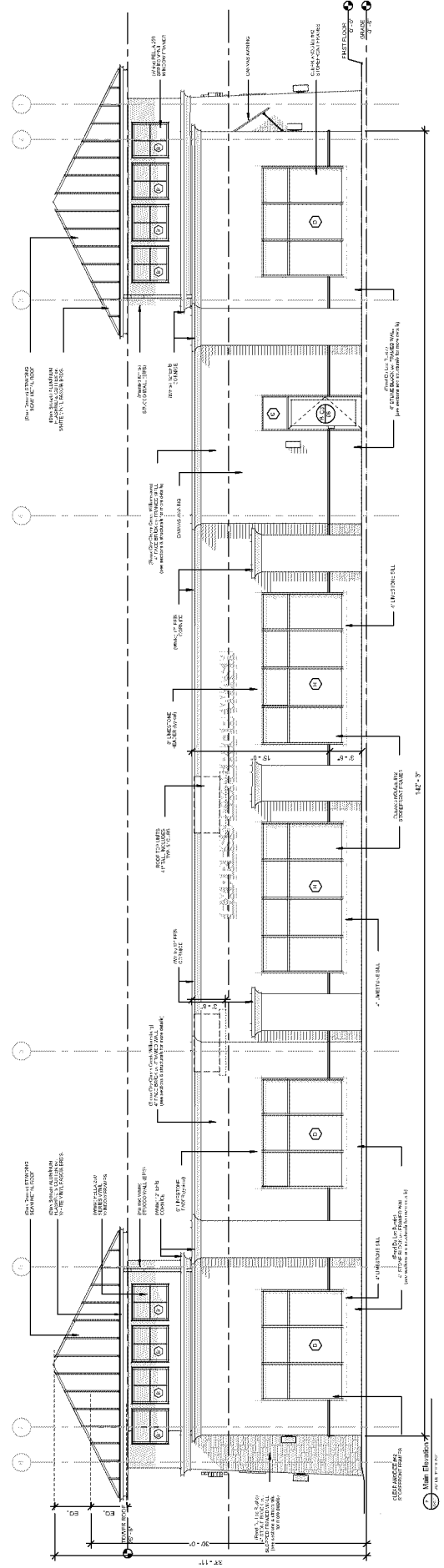
Planting Schedule									
Season	Month	Week	Activity	Location	Equipment	Material	Time	Notes	Responsible
Spring	Jan	1	Site Preparation	Field A	Tractor	Gravel	8:00 - 12:00	Clearing and grading	John Doe
	Jan	2	Planting Corn	Field A	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	Jane Smith
	Jan	3	Planting Soybeans	Field B	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	Mike Johnson
	Jan	4	Planting Wheat	Field C	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	Sarah Lee
	Jan	5	Planting Potatoes	Field D	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	David Kim
	Jan	6	Planting Peas	Field E	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	Emily White
	Jan	7	Planting Beans	Field F	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	Chris Brown
	Jan	8	Planting Carrots	Field G	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	Alex Green
	Jan	9	Planting Onions	Field H	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	Olivia Black
	Jan	10	Planting Garlic	Field I	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	Noah Gray
Summer	Jun	1	Harvesting Corn	Field A	Harvester	Grain	6:00 - 10:00	Moisture 20%	John Doe
	Jun	2	Harvesting Soybeans	Field B	Harvester	Grain	6:00 - 10:00	Moisture 20%	Jane Smith
	Jun	3	Harvesting Wheat	Field C	Harvester	Grain	6:00 - 10:00	Moisture 20%	Mike Johnson
	Jun	4	Harvesting Potatoes	Field D	Harvester	Grain	6:00 - 10:00	Moisture 20%	Sarah Lee
	Jun	5	Harvesting Peas	Field E	Harvester	Grain	6:00 - 10:00	Moisture 20%	David Kim
	Jun	6	Harvesting Beans	Field F	Harvester	Grain	6:00 - 10:00	Moisture 20%	Emily White
	Jun	7	Harvesting Carrots	Field G	Harvester	Grain	6:00 - 10:00	Moisture 20%	Chris Brown
	Jun	8	Harvesting Onions	Field H	Harvester	Grain	6:00 - 10:00	Moisture 20%	Alex Green
	Jun	9	Harvesting Garlic	Field I	Harvester	Grain	6:00 - 10:00	Moisture 20%	Olivia Black
	Jun	10	Harvesting Peas	Field J	Harvester	Grain	6:00 - 10:00	Moisture 20%	Noah Gray
Autumn	Oct	1	Planting Corn	Field A	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	John Doe
	Oct	2	Planting Soybeans	Field B	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	Jane Smith
	Oct	3	Planting Wheat	Field C	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	Mike Johnson
	Oct	4	Planting Potatoes	Field D	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	Sarah Lee
	Oct	5	Planting Peas	Field E	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	David Kim
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	Oct	7	Planting Carrots	Field G	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	Chris Brown
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	Oct	9	Planting Garlic	Field I	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	Olivia Black
	Oct	10	Planting Peas	Field J	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	Noah Gray
Winter	Dec	1	Planting Corn	Field A	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	John Doe
	Dec	2	Planting Soybeans	Field B	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	Jane Smith
	Dec	3	Planting Wheat	Field C	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	Mike Johnson
	Dec	4	Planting Potatoes	Field D	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	Sarah Lee
	Dec	5	Planting Peas	Field E	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	David Kim
	Dec	6	Planting Beans	Field F	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	Emily White
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	Dec	9	Planting Garlic	Field I	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	Olivia Black
	Dec	10	Planting Peas	Field J	Planter	Seeds	8:00 - 12:00	Row spacing 30cm	Noah Gray

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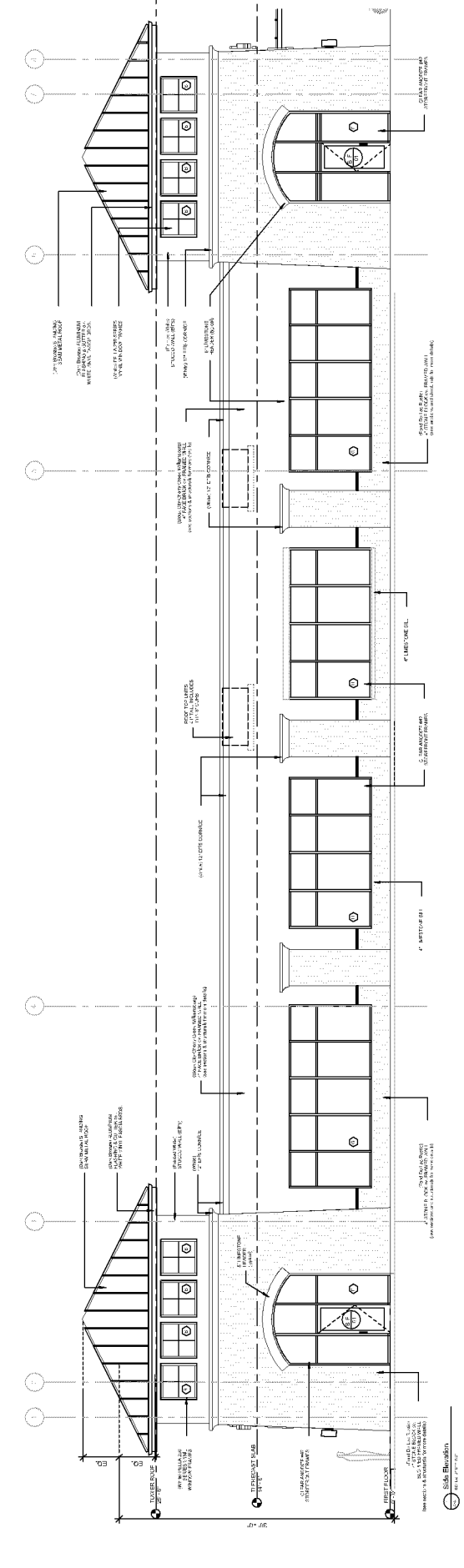






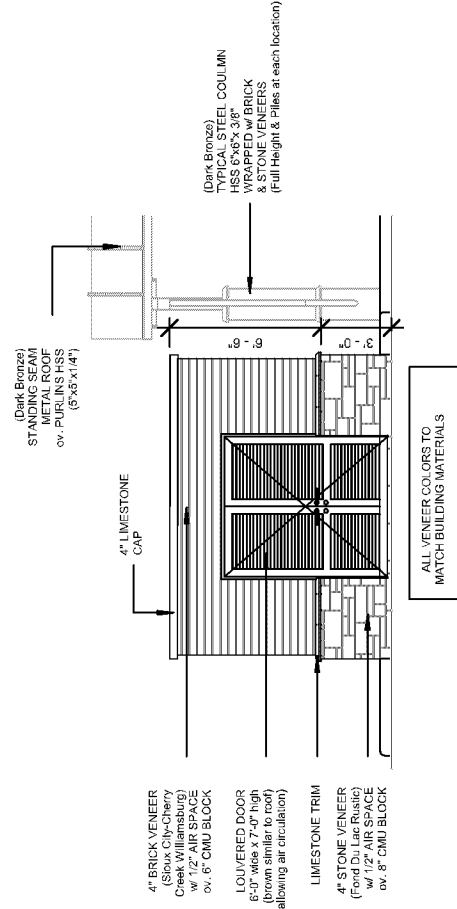


- **Tower Roofs**
Metal-Dark Bronze
- **Main Body of Building**
4" Face Brick - (Sioux City-Cherry Creek Williamsburg)
4"-5" Stone Block (Ford Du Lac Rustic)
- **Accent Walls - Upper Tower Walls**
Stucco EIFS (Painted White)

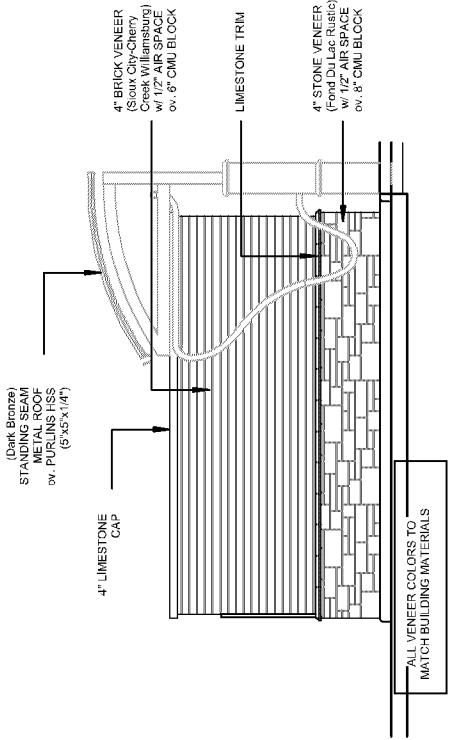


Side Elevation

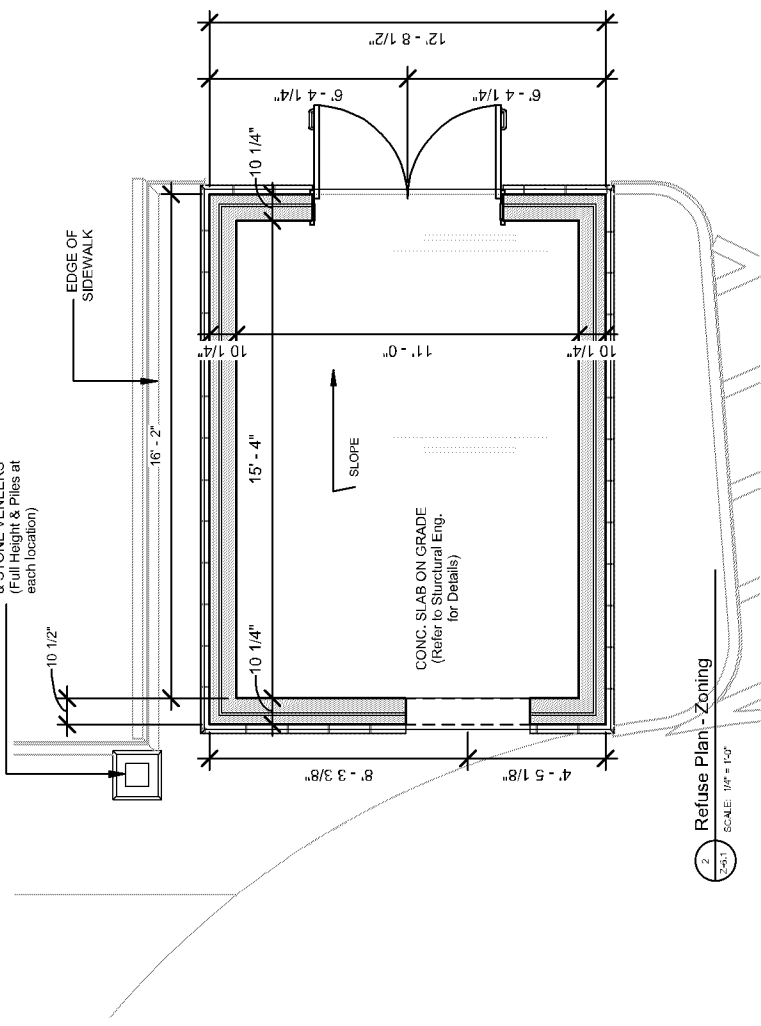
1
Z-6.1
Refuse (Entry) - Zoning
SCALE: 3/16" = 1'-0"

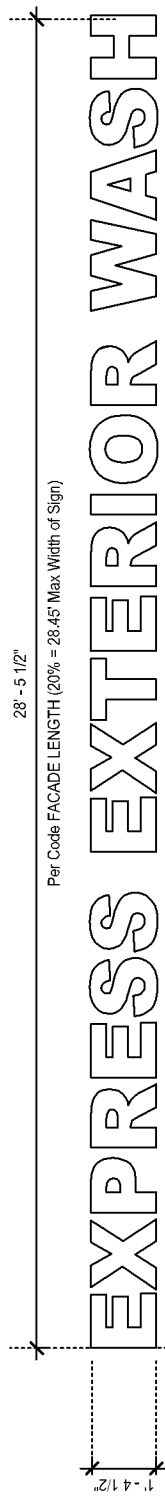


3
Z-6.1
Refuse (Sides) - Zoning
SCALE: 3/16" = 1'-0"



2
Z-6.1
Refuse Plan - Zoning
SCALE: 1/8" = 1'-0"

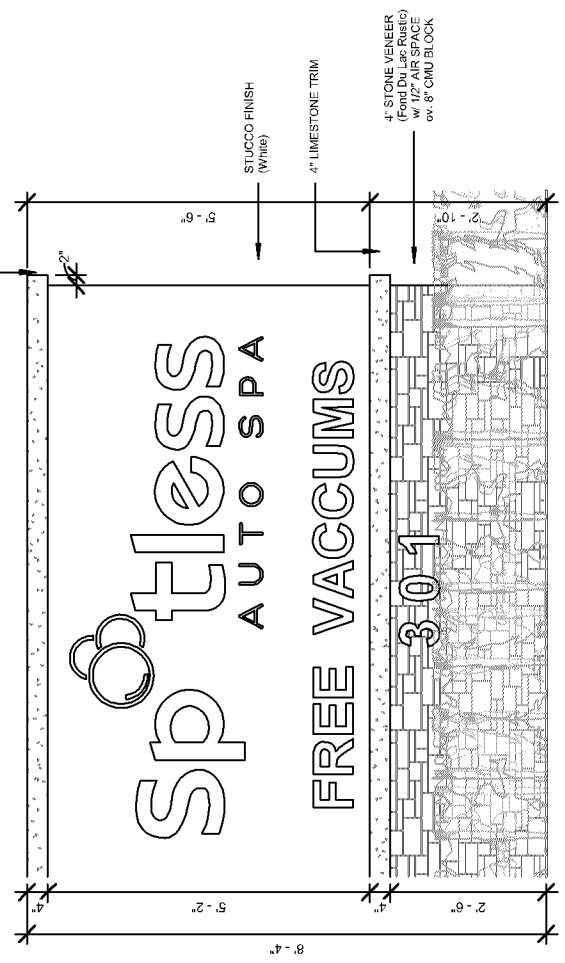




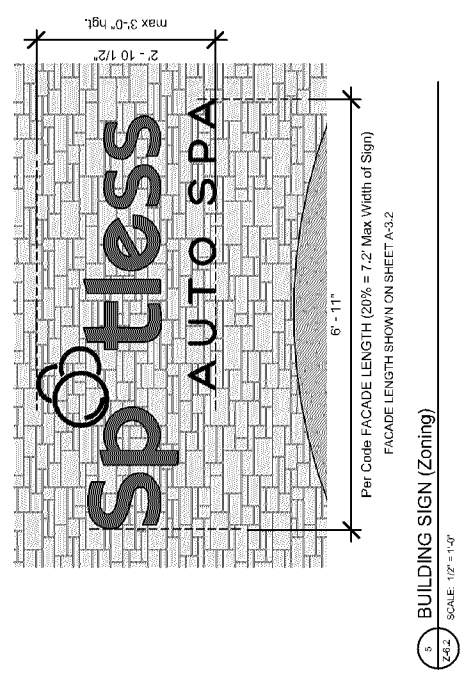
SIGN #2 - "CHANNEL LETTERS" LOCATED ON WEST SIDE OF BUILDING

FACADE LENGTH SHOWN ON SHEET A-3.1

Maximum Permitted Area of Sign
(80 Square Feet)



**"CHANNEL LETTERS"
LOCATED ON BUILDING CENTERED OVER
TUNNEL ENRTY & EXIT**



1 MONUMENT SIGN (Zoning)
SCALE: 1/2" = 1'-0"

GROUND MONUMENT SIGN. A sign that is placed on or supported by the ground, independent of the principal structure on the lot, where the monument base is designed as an integral part of the sign structure. A GROUND MONUMENT SIGN must be designed so that the width of the top of the sign face is a minimum of 80% and a maximum of 120% of the width of the base







May 4, 2022

RE: Preliminary Stormwater Assessment for CWPD – Buffalo Grove
301 N. Milwaukee Ave.
Buffalo Grove, IL

To Whom It May Concern,

This preliminary engineering assessment is intended to identify existing and proposed conditions related to the project site and its drainage according to the Lake County Watershed Development Ordinance. The Village of Buffalo Grove is a certified community with the County. The assessment is intended for a pre-application/referral meeting at the Village Board Meeting and is based on available public information.

Project Description

Client is proposing a new carwash facility in at a vacant 0.89-acre commercial lot. This project entails the development of a proposed 150' x 35' carwash building, vacuum stalls, payment station & canopy, drive aisles and utilities.

Pre-Development Conditions

The site has one (1) building formally the Grill on the Rock Korean BBQ at the south end of the site with a trash enclosure along the east lot line. Three quarters of the site is a parking lot with a few landscape islands. Landscaping is limited to perimeter areas around the building foundation and narrow buffers along the west and north lot lines. Two existing access drives connect to Milwaukee Ave, one at the north end and one adjacent to the building. The site appears to drain north to an offsite swale. The improvements have existed prior to the original Lake County Watershed Development Ordinance effective date of 10/18/92. Aerial exhibits from Lake County GIS has been included.

Impervious Area = 0.85 AC
 Pervious Area = 0.04 AC
 Development Area = 0.89 AC

Regulatory Floodplain

The proposed developed area is within a regulatory floodplain per the Federal Emergency Management Agency. FIRM Panel #17097C0266K, Zone AE with an effective date of September 9th, 2013. The 100-year flood zone limit passes through the northern third of the site. A Base Flood Elevation (BFE) is approximately 644.6 ft based on the Floodplain Study. The site will be designed to accommodate the floodplain and mimic existing elevations. Compensatory storage will be provided along the north side of the project and the building will be elevated to meet flood protection standards. A FEMA Firmette has been included.

Regulatory Wetlands

Cursory review of the US Fish & Wildlife Services National Wetland Inventory and Lake County's GIS indicates no wetlands are in or adjacent to the project site. Maps have been included.

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)



Post-Development Conditions

The redevelopment will reduce the impervious area and thereby increase the pervious with heavy landscaping. A 6' landscape buffer has been proposed on all side of the car wash site. The development will be considered a "Major - Regulated Development" per the Lake County WMO because of regulatory floodplain (300.01). The "new" impervious area will be less than 0.5-acres.

Impervious Area = 0.66 AC
 Pervious Area = 0.23 AC
 Development Area = 0.89 AC

Stormwater Management

Lake County requirements for hydrologically disturbed area: Release rates of 0.04 CFS/AC for the 2-year, 24-hour storm event and 0.15 CFS/AC for the 100-year, 24-hour events.

The existing site is 96% impervious, the proposed site will reduce the percentage to 74%. The stormwater runoff will be reduced with the additional landscaping. If detention is required for the redevelopment, it will be in landscape areas, surface ponding or underground chambers.

Runoff Volume Reduction (RVR)

The Lake County WMO includes water quantity standards: The site development plan shall incorporate stormwater infiltration, evapotranspiration, reuse, or other methods, into the project. The applicant shall use appropriate green infrastructure techniques and best management practices to reduce runoff volume, according to the Lake County WMO. New impervious areas created after 04-01-09 that result in at least 1-acre hydrological disturbance and more than 0.5-acres of new impervious area and/or redevelopment of previously developed sites that result in at least 1 acres of hydrological disturbance.

The project is considered a redevelopment and is less than 1-acre, below the hydrologic disturbance threshold. The RVR requirements do not apply to this project, but some may be incorporated into the design.

Water Quality Treatment

The Lake County WMO includes water quality standards. The water quality treatment requirements in the WMO apply to developments that result in at least 0.5-acre of new impervious surface area, where "new" is defined in 300.06 of the Ordinance.

The project is considered a redevelopment and does not create more than 0.5-acres of "new" impervious area. Water quality treatment is not required for the site.

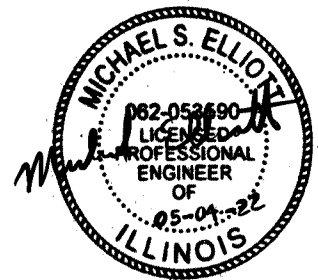
If you have any questions or require additional information, please contact us.

Very truly yours,

TERRA CONSULTING GROUP, LTD

Mike Elliott

Michael Elliott, PE
 Director of Civil Engineering



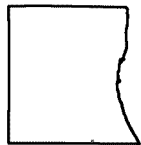
My Comm. Expires 11-30-23

C: Nick Spallone – Car Wash Pro Designers



Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Sources: Layer 12: Lake County, Illinois
Boundaries: Lake County, Illinois GIS/Mapping Division



Lake County, Illinois



LakeCounty

Map Printed on 5/4/2022



Tax Parcel
Information



Tax Parcels 2021

1993

Disclaimer:

The selected feature may not occur anywhere in the current map extent. A Registered Land Surveyor should be consulted to determine the precise location of the feature on the ground. This map does not constitute a regulatory determination and is not a base for engineering design. This map is intended to be viewed as a reference only.

National Flood Hazard Layer FIRMette

87°55'7"W 42°9'49"N



Legend

2.1.b

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

Without Base Flood Elevation (BF)
Zone A, V, AE
With BFE or Depth Zone AE, AO, AH, I
Regulatory Floodway

0.2% Annual Chance Flood Hazard
of 1% annual chance flood with a
depth less than one foot or with d
areas of less than one square mil
Future Conditions 1% Annual
Chance Flood Hazard Zone X
Area with Reduced Flood Risk du
Levee. See Notes. Zone X
Area with Flood Risk due to Levee

OTHER AREAS OF FLOOD HAZARD

NO SCREEN
Area of Minimal Flood Hazard Zone C
Effective LOMRs
Area of Undetermined Flood Haz
Channel, Culvert, or Storm Sewer
Levee, Dike, or Floodwall

GENERAL STRUCTURES

20.2
17.5
Cross Sections with 1% Annual CI
Water Surface Elevation
Coastal Transect
Base Flood Elevation Line (BFE)
Limit of Study
Jurisdiction Boundary
Coastal Transect Baseline
Profile Baseline
Hydrographic Feature

OTHER FEATURES

Digital Data Available
No Digital Data Available
Unmapped

MAP PANELS



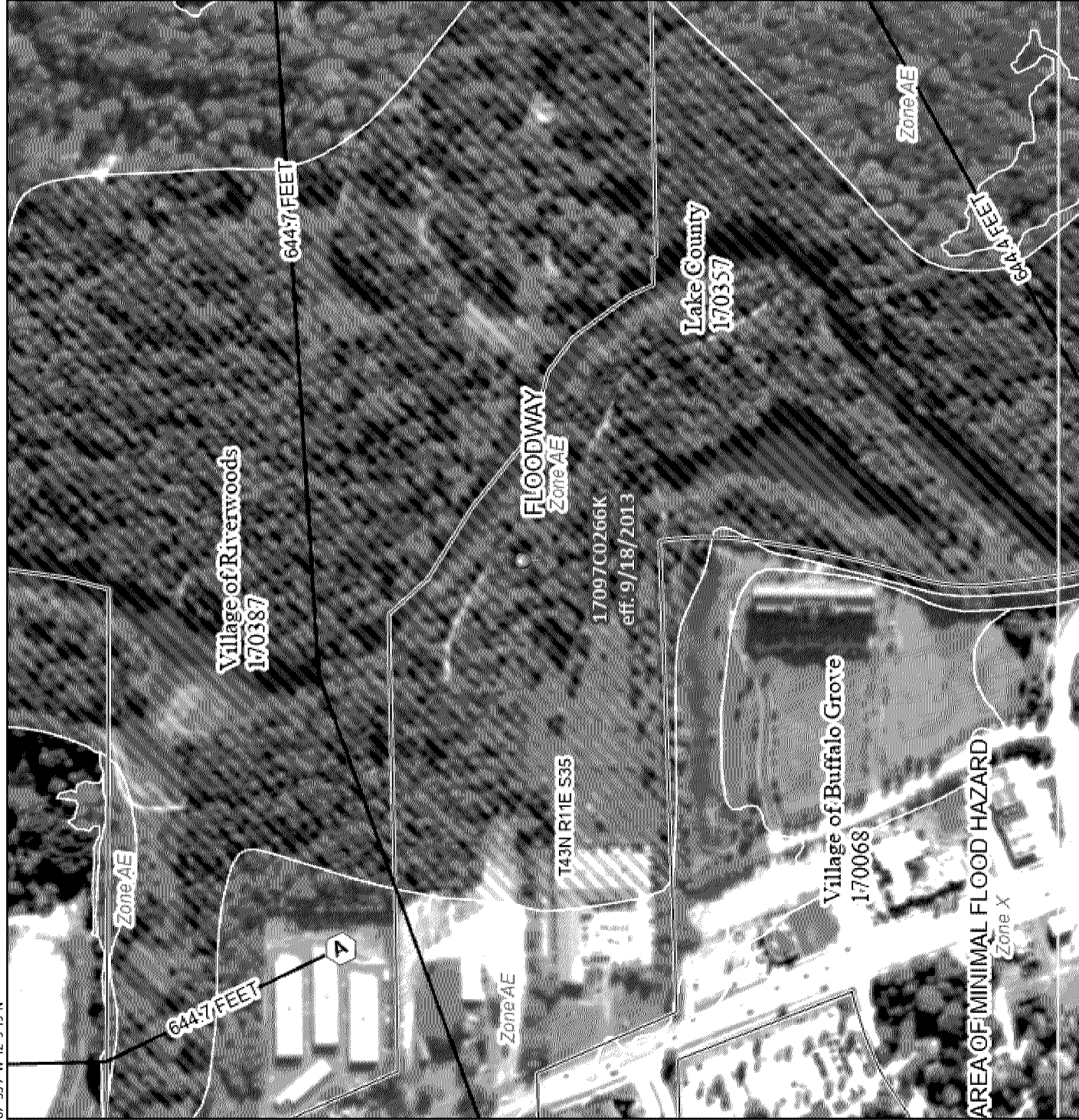
The pin displayed on the map is an appropriate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/26/2022 at 7:22 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and undetermined areas are not for regulatory purposes.

Packet Pg. 42





U.S. Fish and Wildlife Service

National Wetlands Inventory

301 N. Milwaukee Rd.

2.1.b



June 23, 2021

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.



Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Sources: Water: Lake County, Illinois GIS/Mapping Division
Boundaries: Lake County, Illinois GIS/Mapping Division



Lake County, Illinois



LakeCounty

Map Printed on 5/4/2022

2007 Hydro Areas

TYPE

- Tax Parcels 2021
- Lake
- Pond
- Pond

2002 Hydro Lines

TYPE

- River/Stream/Creek
- Lake
- Pond
- River/Stream

- Island
- Detention Basin
- Dam-single line
- Culvert-single line
- Local drainage, apparent
- Stream less than five feet in width

- Out area
- Lake County Wetland Inventory
- ADvanced IDentification Wetlands
- ADID with 100ft Buffer

Disclaimer:

The selected feature may not occur anywhere in the current map extent. A Registered Land Surveyor should be consulted to determine the precise location on the ground. This map does not constitute a regulatory determination and is not a base for engineering design. This map is intended to be viewed as a reference only.

Packet Pg. 44



Sound Evaluation for the Proposed Car Wash in Buffalo Grove on Milwaukee Road

May 4, 2022

Car Wash Pro Designers, LTD (hereinafter "CWPDP") conducted an analysis to examine the impact of noise from the proposed car wash in Buffalo Grove to be located on the east side of Milwaukee Road just north of Riverwalk Dr. To accomplish this, we used noise emissions data from both the exit and the entrance of a facility that is a replica of the car wash proposed in Buffalo Grove, Illinois. This was the Voda Luxury Auto Spa facility located at 7648 W 159th St, Orland Park, IL 60462. The measurements were conducted in May of 2022 by a CWPDP acoustical consultant using professional grade instruments. In addition, our own data from a car wash in Vernon Hills shows that the sound level drops off as angle to the opening increases.

In addition, CWPDP inspected the Buffalo Grove site to examine the effect of its topography on sound propagation. We also conducted ambient noise monitoring to document the background noise levels that exist near the residents in the apartments over 800' to east, and the single family home across Milwaukee Ave to the south west on the corner of Milwaukee Ave & E Chevy Chase Dr. All of this data is important in predicting accurate car wash sound levels at any specific location near the new facility and the impact of the facility on nearby residents.

Based on the Voda car wash noise data (which is primarily blower noise) and allowing for the reduction in noise due to distance, directivity, and topography, CWPDP conclude that the noise from the car wash will meet the Illinois State noise code. Moreover, there would be no noise impact from the car wash because the projected sound levels are well below the ambient noise levels recorded at the site.



Figure 1 - Aerial view showing the location of the audio equipment we used to record the ambient noise data.

Ambient Noise Levels

To assess the ambient noise at this site, CWPD used professional grade audio equipment to record the noise over a 7-hour period from 6:30 AM on Wednesday, May 4th until 1:30 PM on the same day. CWPD used their equipment at the residence located at 7 E Chevy Chase Dr, Buffalo Grove, IL 60089. The south and southeast property line of the proposed wash, and the residential apartment building located at 301 N Riverwalk Dr, Buffalo Grove, IL 60089. This location is shown in the aerial photo in **Figure 1**.

The primary ambient noise at this recording location was vehicle traffic on Milwaukee Ave, a primary, 5-lane highway.

Ambient noise refers to the existing, all-encompassing sound at a given place in a community. It is a composite of sounds from many sources near and far.

The recording in the field was documented via screenshots, of the device, video from the dB equipment, and a report attached as exhibits below. A sample sound level tests were conducted over a 24 hour period on Milwaukee, Ave 2.5 miles south of the proposed wash site in Buffalo Grove by Dr Thunder (Noise Study Expert) are shown in **Figure 2 (below)**. The thin, blue line shows the variation in the **A-weighted sound level** at 1-second intervals. The high peaks in the graph were typically from motorcycles, trucks, and airplane flyovers.

The thick, red line in **Figure 1** is the hourly, time-averaged level of the ambient noise. This level is often called the equivalent level (Leq) because its value is “equivalent” to the average sound energy – not the average decibel level. The Leq is the metric adopted by the U.S. EPA and correlates well with the impact of an ambient noise environment.

The **A-weighted sound level** is the standard metric to measure sound and is expressed in decibels (dB). It is a filter that mimics how we hear noise because it diminishes low frequencies.

The Leq line in **Figure 2 (below)** shows the trend in the ambient noise over a weekday 24-hour period on the same road, 2.5 miles south of the proposed site in Buffalo Grove. Specifically, it reveals that the ambient noise begins to drop around 9:00 PM and then returns to near daytime levels by around 6:00 AM.

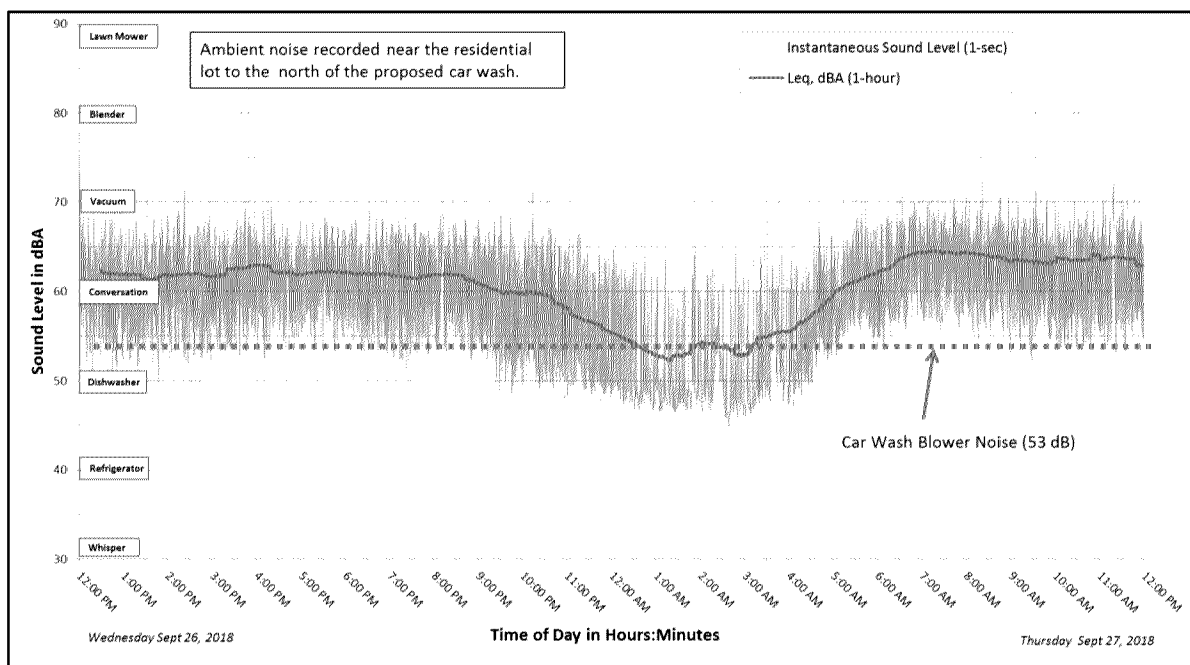


Figure 2 – Plot showing the approximate car wash sound levels at the the property line at the south/east corner of the site from the exit of the car wash compared to the ambient noise levels measured at a similardistance to Milwaukee ave from the sound study conducted on the site located 2.5 miles south of this location on Milwaukee Ave.

Projected Noise Levels

The data obtained at the Voda Luxury Auto Spa in Orland Park indicates an average sound level of 60.9-dB without washes exiting the tunnel and an average of 71.5-dB with a vehicle exiting the tunnel at 110 feet from the exit of the wash at the same degree as the one shown in Figure 1 above. Because the entrance is much further from the blowers, the sound level is substantially lower at that location. Specifically, the level at 40 feet from the entrance at the same angle was 58.2-dB a level 13.3-dB lower than the exit. Since a 10-dB drop in sound level is half as loud, the noise emission from the entrance is more than half as loud as the exit. The recording in the field at 301 N Milwaukee Ave, Buffalo Grove, IL 60089 on the south end of the parcel on May 4, 2022 at 11:49AM that had current dB levels of (Peak: 97.8-dB, Avg: 74.7-dB) and at 11:53AM across the street at the residence located 330 feet from the proposed wash site at 7 E Chevy Chase Dr, Buffalo Grove, IL 60089 that had current dB levels of (Peak: 88.5-dB, Avg: 72.4-dB).

As mentioned above, the sound level of a tunnel car wash drops off as a listener moves to the side of either the exit or the entrance. This is a phenomenon known as directivity. Based on our data, the sound level drops off by as much as 12-dB at an angle of 90° from the opening. The drop is further for angles greater than 90°.

The sound level due to a car wash is generally the highest at the closest residential location. In this case, the closest residential lot is directly to the southwest of the proposed car wash across Milwaukee Ave. Using the Voda sound data, we projected the noise level to this property based on the attenuation of sound over a distance of 330' at 45 degrees from the exit of the wash and the effect of directivity to be 24-dB from the wash facility to this residence (with no passing traffic from Milwaukee Ave). The result is a projected level of 29-dBA radiating from the wash facility alone. This is below the State of Illinois daytime limit (80-85 dBA) of about 72-dB for noise radiated from commercial property (Class B) to residential property (Class A).

A noise impact could occur if the time-averaged noise level of the carwash exceeds the time-averaged level of the ambient noise by more than 3-5 dB. To visualize the relationship between the projected sound level and the ambient noise levels, we plotted the projected car wash blower noise level on the ambient noise graphs of **Figure 2**. As seen in this chart, the car wash noise levels are well below the hourly Leq of the ambient noise level from about 5:00 AM until 11:00 PM. If the on-time of the blowers were factored in, the hourly time-weighted level of the blowers would be even lower. Based on our analysis, it can be concluded that the operation of this facility would pose no impact during its proposed operation hours of 6:00 AM to 10:00 PM.

The closest residential location to the proposed car wash is 330 feet from the exit of the wash, and 445 feet from the entrance of the wash. Residents closest to the exit of the proposed car wash would have the following levels of dB based on distance:

Description of Measurement	dBA
Car Wash - 1 meter from Car Wash Exit	87
Car Wash - 20 feet from Car Wash Exit	73
Car Wash - 40 feet from Car Wash Exit	61
Car Wash - 80 feet from Car Wash Exit	50
Car Wash - 160 feet from Car Wash Exit	42
Car Wash - 320 feet from Car Wash Exit	33
Car Wash - 380 feet from Car Wash Exit	24

Conclusion: Homes closest to the exit of the proposed car wash (330 feet) would hear the equivalent of a pin drop from a height of one (1) centimeter at a distance of one meter (3.28084 ft) away. The dB levels above do not account for any form of screening, which will ultimately reduce the dB levels significantly.

Site design, building design, distance from the source, and landscaping can all be used to decrease ("attenuate") or block/direct sound. Blower layout, the direction the tunnel faces, and of course, the number of blowers are also factors. Many local government ordinances dictate a maximum sound pressure level at the property line, typically 80-85 dBA for commercial properties on busy streets during the day (that's the typical level of traffic noise on a busy street) down to 50-60 dBA in quieter non-industrial, residential areas, especially at night. Some even dictate sound pressure levels by frequency.

We have included sound data, video data from two exact replica washes along with a report from Dr Thunder conducted for the exact same facility on Milwaukee Ave in Wheeling just 2.5 miles to the south to support our conclusions and findings herein.

The conclusions herein are based on a completion of several reports, experts and studies conducted on the same equipment and building type proposed for the new car wash facility.

Sincerely,
Car Wash Pro Designers

A handwritten signature in black ink, appearing to read 'Nick Spallone', with a stylized, looping flourish extending from the end of the name.

Nick Spallone
Principal

Variation Standards

301 N. Milwaukee
Spotless Auto Spa
Landscape Buffer along Frontage and Auxiliary Structure Setback

1. The property in question cannot yield a reasonable return if permitted to be used only under the conditions allowed by the regulations of the zoning district in which it is located except in the case of residential zoning districts;

AUXILIARY STRUCTURES

This facility has its entry and exit on the north and south side of the facility which are not on the frontage (west). Given the nature of a car wash's ingress and egress being in the short direction of the building, and need for allowing for automobile queuing onsite, the vacuum stations/canopy and garbage enclosure structures are needing to be located along the frontage (west) side of the building. The frontage side of the facility is not the main entrance to the wash given the nature of the car wash facility circulation. The structures are architecturally complimentary to the primary structure as well. Both auxiliary structures are necessary for the business to operate.

LANDSCAPE BUFFER ALONG FRONTAGE

The code requires the landscape buffer along the frontage to be 15' wide. Given the desire to appropriately provide landscaping along all sides of the property, the east (rear yard) driveway curb is shifted westward. Landscaping is being installed in the area created on the backside of the curb between this property and the neighbor to the east. It is necessary to provide robust landscaping to project the desired high-end image desired by ownership.

2. The plight of the owner is due to unique circumstances;

Generally, entrances to commercial and business properties face the frontage. Given the nature of a carwash, the entrances do not face the frontage making this unique. Both variances are requested due to the unique nature of car wash facility ingress and egress being on the non-frontage exposure.

3. The proposed variation will not alter the essential character of the neighborhood.

The proposed landscaping for this project covers all available areas capable of being landscaped and is quite robust for the nature of the proposed use. The requested Landscape Buffer Relief will enhance the overall landscaping and therefore enhance the character of the neighborhood.

The proposed Auxiliary Structures compliment the primary structure and in no way could be considered offensive nor detract from the character of the neighborhood

The Planning & Zoning Commission is authorized to make a recommendation to the Village Board based on the following criteria:

- A. Except for Prohibited signs (Chapter 14.32), the Village Planning & Zoning Commission may recommend approval or disapproval of a variance from the provisions or requirements of this Title subject to the following:

1. The literal interpretation and strict application of the provisions and requirements of this Title would cause undue and unnecessary hardships to the sign user because of unique or unusual conditions pertaining to the specific building, parcel or property in question; and

This facility has its entry and exit on the north and south side of the facility which are not on the frontage. Given the nature of a car wash's ingress and egress the traditional signage on the tunnel would need to be on non-frontage elevations which is not permissible in the given code.

2. The granting of the requested variance would not be materially detrimental to the property owners in the vicinity; and

Granting this request would not be materially detrimental to the property owners in the vicinity. The northern property (Gerber) has a yard and driveway adjacent to the proposed building, and the property to the south is currently undeveloped with Speedway eventually developing the property south of that. Milwaukee Avenue borders to the west and an undeveloped parking lot is to the east. The proposed signage meets the "no more than 20% of the elevation length" requirement and will be no more than 7' in length. The proposed signage also matches the design of the other signage for the project.

3. The unusual conditions applying to the specific property do not apply generally to other properties in the Village; and

Generally, entrances to commercial and business properties face the frontage. Given the nature of a carwash, the entrances do not face the frontage making this unique.

4. The granting of the variance will not be contrary to the purpose of this Title pursuant to Section 14.04.020

The purpose of the Title is to "protect the safety and welfare of the public, the need for well maintained and attractive appearance in a community." Permitting this proposed signage will in no way waiver from the purpose of this purpose.

- B. Where there is insufficient evidence, in the opinion of the Planning & Zoning Commission, to support a finding under subsection (A), but some hardship does exist, the Planning & Zoning Commission may consider the requirement fulfilled if:

1. The proposed signage is of particularly good design and in particularly good taste; and

The proposed signage matches the branding of the other signage at the property and in no way could be considered offensive. The relatively small size of the proposed signage furthers this.

2. The entire site has been or will be particularly well landscaped.

The proposed landscaping for this project covers all available areas capable of being landscaped and is quite robust for the nature of the proposed use.

06/15/2022

**MINUTES OF THE REGULAR MEETING OF THE PLANNING AND ZONING COMMISSION OF THE
VILLAGE OF BUFFALO GROVE HELD IN THE COUNCIL CHAMBERS, 50 RAUPP BOULEVARD,
BUFFALO GROVE, ILLINOIS ON WEDNESDAY, JUNE 15, 2022**

Call to Order

The meeting was called to order at 7:30 PM by Chairman Frank Cesario

Public Hearings/Items For Consideration

1. A Public Hearing to Consider a Request for a Rear Yard Setback Variation to Allow the Construction of an Addition on the Property Located at 900 Holly Stone Lane (Trustee Pike) (Staff Contact: Kelly Purvis)

Mr. Binder, associate planner, provided a background on the subject property.

Mr. Lilly provided testimony of the subject property. He explained he would like to turn his 3-season room into a 4 -season room.

Com. Richards ask if we already went through the process for the 3-season room on the subject property in the past.

Mr. Binder said he found no record.

Chairperson Cesario said the current structure has been there for 30 years.

Com. Moodhe asked if there is heating and air.

Mr. Lilly said no

Com. Richards asked if anyone called regarding the variation.

Mr. Binder said no

Mr. Lilly said just inquiries for his neighbors.

Com. Worlikar asked Mr. Lilly to go over the specifications of the new structure.

Mr. Lilly said it will have the same footprint as the current structure.

Chairperson Cesario entered the staff report at exhibit one.

The public hearing was closed at 7:37 PM.

Com. Weinstein made a motion to grant a variation to Section 17.40 of the Buffalo Grove Zoning Code to allow a proposed addition to encroach into the required rear yard setback at 900 Holly Lane property, subject to the following conditions:

1) The proposed sunroom addition shall be installed in accordance with the documents and plans submitted as part of this petition.

Com. Richards seconded the motion.

Chairperson discussed why we have the process we have for rear yard setbacks.

Com. Spunt spoke in favor of the motion.

Com. Moodhe spoke in favor of the motion.

06/15/2022

Com. Davis spoke in favor of the motion.

RESULT:	APPROVED [UNANIMOUS]
AYES:	Moodhe, Spunt, Cesario, Khan, Weinstein, Richards, Worlikar, Davis
ABSENT:	Amy Au

2. A Public Hearing to Consider a Sign Variation Request for Mi Mexico Restaurant to Allow the Construction of a Freestanding Sign on the Property Located at 220 Milwaukee Avenue (Trustee Ottenheimer) (Staff Contact: Kelly Purvis)

Ms. Purvis, Deputy Community Development Director, provided a background on the petition for a sign variation.

Mr. Barajas confirmed that the background was correct. He said the sign would be helpful to their business.

Com. Moodhe asked if the sign was there when they bought it.

Mr. Barajas said yes.

Com. Moodhe asked how long the sign has been up.

Mr. Barajas said it has been there long before they bought it, and they have been there for 15 years.

Com. Weinstein asked if the road was expanded.

Mr. Barajas said he was unsure.

Chairperson Cesario asked about the landscaping plan around the sign and asked if the sign was the same as the original one.

Mr. Barajas expanded on the landscape and said that the sign would be shorter than the original sign.

Com. Richards referenced packet page 58.

Ms. Purvis provided clarification on the distance between the new sign and the sidewalk.

Com. Worlikar asked if there are any additional signs.

Mr. Barajas said there is a smaller sign on the other side of the building. Noting that the sign is hard to see.

Chairperson Cesario asked if they were going to change the sign on the other side of the building.

Mr. Barajas said not at this time.

Chairperson Cesario entered the staff report as exhibit one and the separate response as exhibit two.

The public hearing was closed at 7:52 PM.

Com. Weinstein made a motion to approve the variations from Title 14.16 (Sign Code), to allow a reduction to the minimum setback for a freestanding ground sign; the height of the sign to exceed the distance the sign is setback from the property line; and allow the installation of a ground sign without landscaping at its base, to accommodate a new ground sign to be located at 220 Milwaukee Avenue. The sign shall be installed in accordance with the documents and plans submitted as part of this petition, and the Petitioner shall comply with all applicable Village codes, regulations, and policies.

06/15/2022

Com. Richards seconded the motion.

Com. Worlikar spoke in favor of the motion.

Com. Davis spoke in favor of the motion.

Com. Weinstein spoke in favor of the motion.

Com. Moodhe spoke in favor of the motion.

Chairperson Cesario spoke in favor of the motion.

RESULT:	APPROVED [UNANIMOUS]
AYES:	Moodhe, Spunt, Cesario, Khan, Weinstein, Richards, Worlikar, Davis
ABSENT:	Amy Au

Regular Meeting

Other Matters for Discussion

Ms. Purvis provided background on the workshop for a proposed car wash at 301 Milwaukee Ave.

Mr. Paul reviewed the presentation and the existing site including the conditions of the site.

Nick provided details on the building floor plan and the components and equipment within the car wash.

Mr. Paul went over the renderings of the facility, including the photometric plan and landscape plan.

Ms. Purvis provided the variations that may be required for the subject property development.

Chairperson Cesario said he expressed his concern regarding the traffic study.

Mr. Paul explained the traffic study and the use of the access points.

Com. Worlikar asked the petitioners how people coming from the north would get into the car wash.

Mr. Paul explained the traffic flow in and out of the car wash.

Mr. Spallone said if you go through the other side, you can use the vacuums if you don't want to wash your car.

Com. Spunt asked about the technology within the car wash.

Mr. Paul explained the lidar and sonar technology.

Com. Spunt asked if they have monthly plans.

Mr. Paul said yes.

Com. Davis commented on the traffic flow. He expressed his concerns regarding the stacking of traffic in the median, making exiting into traffic difficult.

06/15/2022

Mr. Spallone talked about the facility in Bartlett that sees more cars than this facility will. He noted they do not have traffic/stacking issues at that facility.

Mr. Paul talked about the KLOA study/report.

Com. Moodhe expressed his concerns about the south bound traffic. Asked when they did their study.

Mr. Spallone said 9 am, 10 am, 1 pm, 3pm, 8 pm

Mr. Paul continued to talk about the stacking to the south.

Chairperson Cesario said they should flush out the traffic study with KLOA.

Com. Moodhe said staff should consider looking at the whole area and not just the property.

Com. Worlikar liked the concept and shares the concerns around the traffic.

Com. Worlikar asked about the environmental aspect.

Mr. Spallone said they are a green facility and fully biodegradable.

Com. Davis said if they could see some traffic flow options or what KLOA looked at to determine their recommendation.

Com. Weinstein touched on the traffic study and said he can't think of a better option. Spoke in favor of the motion.

Chairperson Cesario spoke in favor of the motion.

Com. Weinstein asked that when they come to the public hearing that they address the lighting.

1. Workshop - Proposed Redevelopment of 301 Milwaukee Avenue as Spotless Auto Spa, a New Carwash Facility (Trustee Johnson) (Staff Contact: Kelly Purvis)

Approval of Minutes

1. Planning and Zoning Commission - Regular Meeting - Jun 1, 2022 7:30 PM

RESULT:	ACCEPTED [UNANIMOUS]
AYES:	Moodhe, Spunt, Cesario, Khan, Weinstein, Richards, Worlikar, Davis
ABSENT:	Amy Au

Chairman's Report

Committee and Liaison Reports

Staff Report/Future Agenda Schedule

Ms. Purvis provided an update on the future agenda schedule.

Public Comments and Questions

06/15/2022

Adjournment

The meeting was adjourned at 8:56 PM

Action Items

Chris Stilling

APPROVED BY ME THIS 15th DAY OF June, 2022

Traffic Impact Study Proposed Car Wash

Buffalo Grove, Illinois



Prepared For:

Premier Design + Build Group

KLOA

Kenig, Lindgren, O'Hara, Aboona, Inc.

June 29, 2022

1. Introduction

This report summarizes the methodologies, results, and findings of a traffic impact study conducted by Kenig, Lindgren, O'Hara, Aboona, Inc. (KLOA, Inc.) for a proposed car wash to be located at 301 N. Milwaukee Avenue in Buffalo Grove, Illinois. The site, which currently contains a vacant restaurant, is located on the east side of Milwaukee Avenue (IL Route 21). As proposed, the plans call for an automatic car wash tunnel, four employee parking spaces, and 17 vacuum parking spaces. Access to the proposed car wash will be provided via a proposed full movement access drive and a proposed right-in/right-out access drive on Milwaukee Avenue.

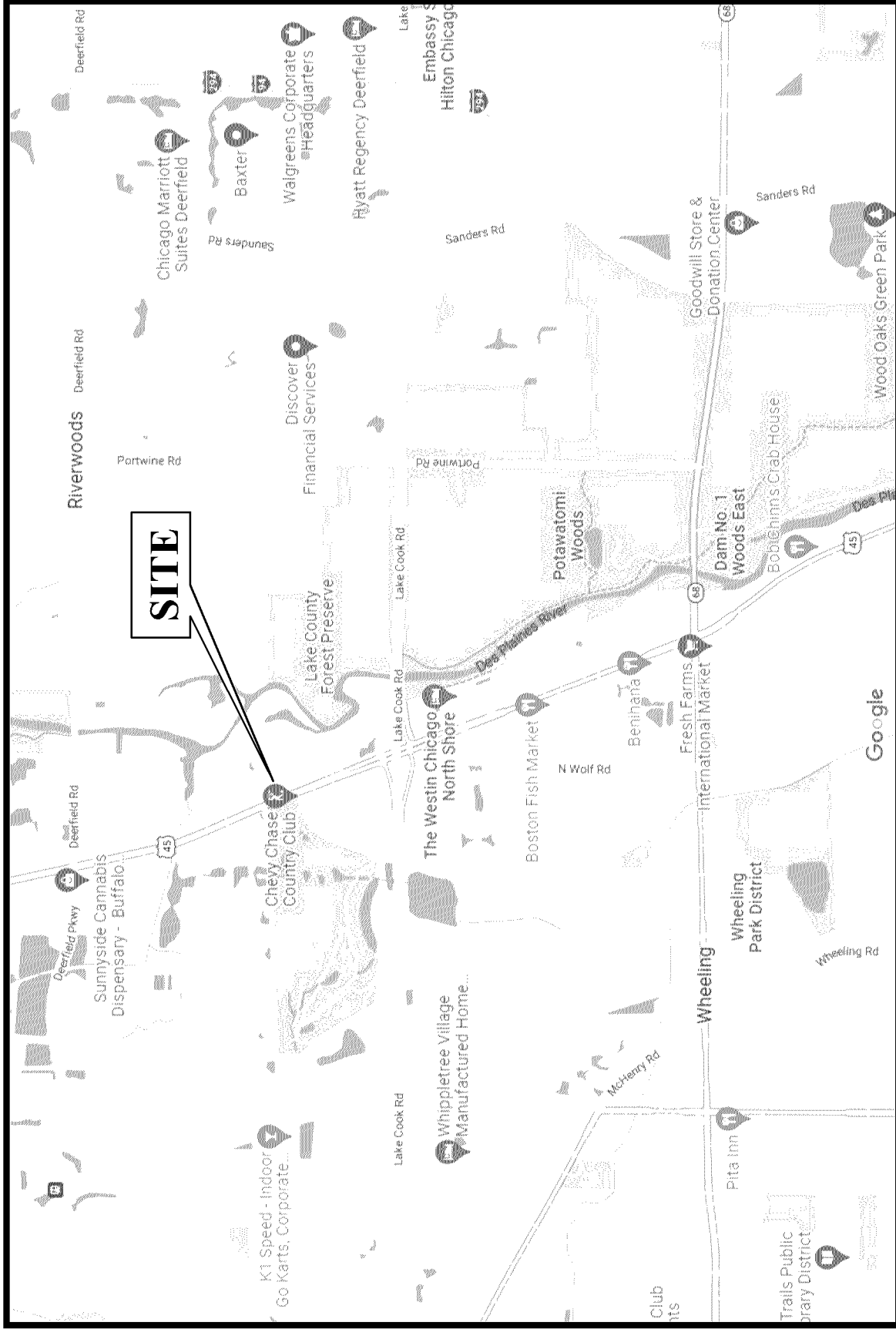
The purpose of this study was to examine background traffic conditions, assess the impact that the proposed car wash will have on traffic conditions in the area, and determine if any roadway or access improvements are necessary to accommodate traffic generated by the proposed car wash. **Figure 1** shows the location of the site in relation to the area roadway system. **Figure 2** shows an aerial view of the site.

The sections of this report present the following:

- Existing roadway conditions
- A description of the proposed facility
- Directional distribution of the facility traffic
- Vehicle trip generation for the facility
- Future traffic conditions including access to the facility
- Traffic analyses for the weekday morning, weekday evening, and Saturday midday peak hours
- Recommendations with respect to adequacy of the site access and adjacent roadway system

Traffic capacity analyses were conducted for the weekday morning, weekday evening, and Saturday midday peak hours for the following conditions:

1. Base Conditions – Analyzes the capacity of the existing roadway system using existing peak hour traffic volumes in the surrounding area adjusted to reflect normal conditions.
2. No-Build Conditions – Analyzes the capacity of the existing roadway system using the ambient area growth not attributable to any particular development and any additional developments not associated with the proposed development.
3. Projected Conditions – Analyzes the capacity of the future roadway system using the traffic volumes that include the base traffic volumes, ambient area growth not attributable to any particular development, and the traffic estimated to be generated by the proposed facility.



Site Location

Figure 1

Proposed Car Wash
Buffalo Grove, Illinois



Aerial View of Site

*Proposed Car Wash
Buffalo Grove, Illinois*

Figure 2

2. Existing Conditions

The following provides a description of the geographical location of the site, physical characteristics of the area roadway system including lane usage and traffic control devices, and existing peak hour traffic volumes.

Site Location

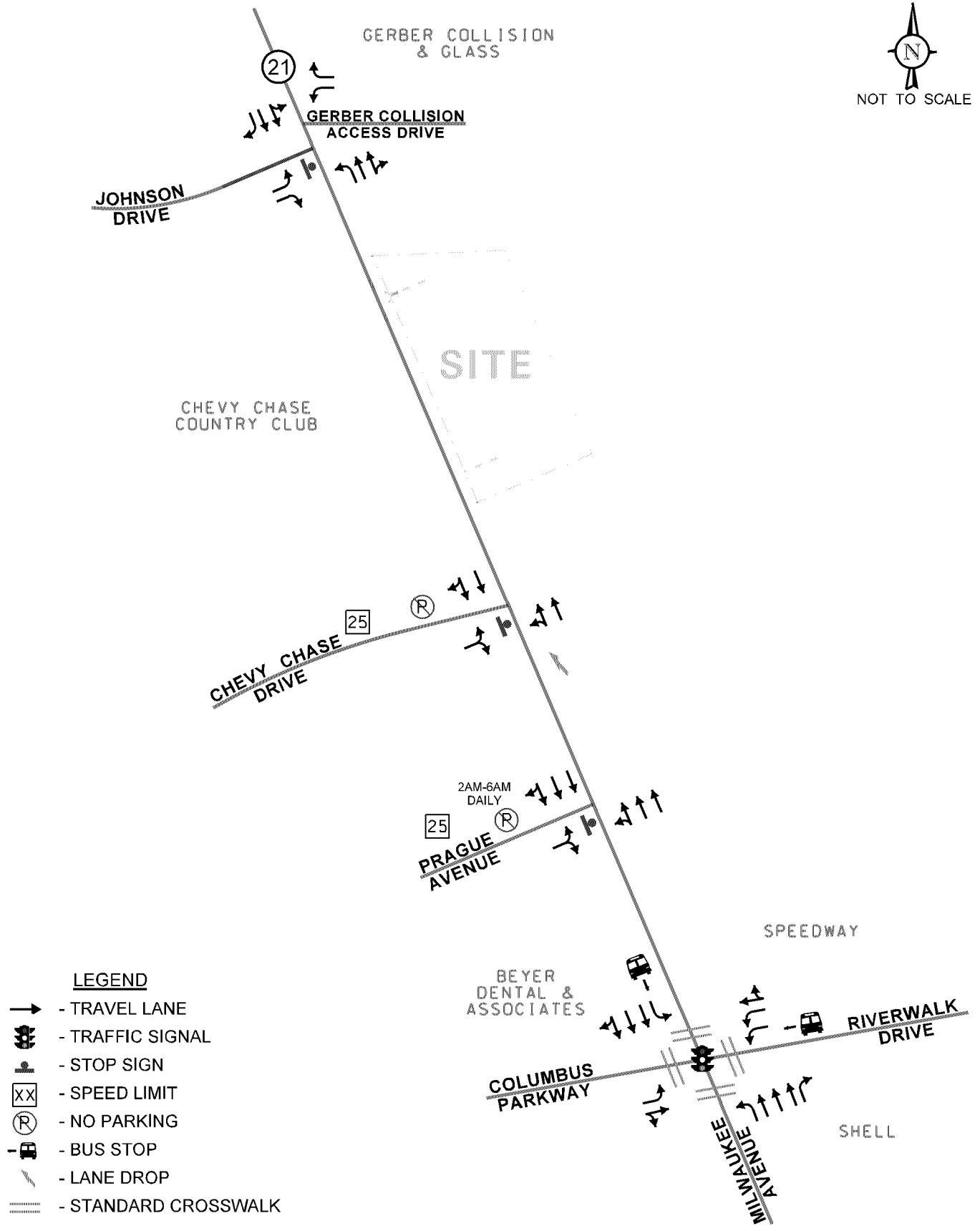
The site, which currently contains a vacant restaurant, is located at 301 N. Milwaukee Avenue on the east side between Chevy Chase Drive and Johnson Drive. Surrounding land uses are commercial to the north and south with residential land uses and the Chevy Chase Country Club to the west and the 301 Riverwalk Place apartment building to the east. Speedway fuel station is located south of the site.

Existing Roadway System Characteristics

The characteristics of the existing roadways near the car wash are described below and illustrated in **Figure 3**.

Milwaukee Avenue (IL 21/US 45) is generally a north-south arterial roadway that in the vicinity of the site provides three through lanes in each direction separated by a raised landscaped median that tapers down to two lanes in each direction north of Prague Avenue separated by a striped median. At its signalized intersection with Riverwalk Drive/Columbus Parkway, Milwaukee Avenue provides an exclusive left-turn lane, three through lanes, and an exclusive right-turn lane on the northbound approach and an exclusive left-turn lane, two through lanes, and a shared through/right-turn lane on the southbound approach. Both legs of the intersection provide standard style crosswalks with pedestrian countdown signals. At its unsignalized intersection with E. Chevy Chase Drive, Milwaukee Avenue provides a combined through/left-turn lane and a combined through/right-turn lane on both approaches. At its unsignalized intersection with Prague Avenue, Milwaukee Avenue provides a combined through/left-turn lane, a through lane, and a combined through/right-turn lane on both approaches. At its unsignalized intersection with Johnson Drive, Milwaukee Avenue provides an exclusive left-turn lane and two through lanes on the northbound approach, and two through lanes and an exclusive right-turn lane on the southbound approach. Milwaukee Avenue is under the jurisdiction of the Illinois Department of Transportation (IDOT), is classified as a Strategic Regional Arterial (SRA) and carries an Annual Average Daily Traffic (AADT) volume of approximately 36,200 vehicles (IDOT 2019). Milwaukee Avenue has a posted speed limit of 40 miles per hour.

Riverwalk Drive is an east-west local roadway that serves the Riverwalk office building, the 301 Riverwalk apartments, and the Shell fuel center. This roadway extends from the Lake Cook Road westbound exit ramp to Milwaukee Avenue and provides one through lane in each direction. At its signalized intersection with Milwaukee Avenue, Riverwalk Drive provides dual left-turn lanes and a shared through/right-turn lane. The west leg of this intersection is Columbus Parkway, which serves the residential homes on the west side of Milwaukee Avenue. At its signalized intersection



Car Wash
Buffalo Grove, Illinois

Existing Roadway Characteristics

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Job No: 22-180

Figure: 3

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Both the east and west legs of this intersection provide standard style crosswalks with pedestrian countdown signals. Riverwalk Drive and Columbus Parkway are under the jurisdiction of the Village of Buffalo Grove. Riverwalk Drive has a posted speed limit of 30 miles per hour and Columbus Parkway has a posted speed limit of 25 miles per hour.

Prague Avenue is an east-west local roadway that provides one lane in each direction. At its unsignalized intersection with Milwaukee Avenue, Prague Avenue provides a combined left /right-turn lane on the eastbound approach under stop sign control. Prague Avenue is under the jurisdiction of the Village of Buffalo Grove and has a posted speed limit of 25 miles per hour.

Chevy Chase Drive is an east-west local roadway that provides one lane in each direction. At its unsignalized intersection with Milwaukee Avenue, E. Chevy Chase Drive provides a combined left-turn/right-turn lane on the eastbound approach under stop sign control. E. Chevy Chase Drive is under the jurisdiction of the Village of Buffalo Grove and has a posted speed limit of 25 miles per hour.

Johnson Drive is an east-west local roadway that provides one lane in each direction. At its unsignalized intersection with Milwaukee Avenue, Johnson Drive provides a combined left /right-turn lane on the eastbound approach under stop sign control. However, it should be noted that the eastbound approach is wide enough to accommodate left and right-turn movements simultaneously. Johnson Drive is under the jurisdiction of the Village of Buffalo Grove and has a posted speed limit of 25 miles per hour.

Existing Traffic Volumes

In order to determine current traffic conditions in the vicinity of the site, KLOA, Inc. conducted peak period vehicle, pedestrian, and bicycle movement traffic counts during the weekday morning (7:00 to 9:00 A.M.), weekday evening (4:00 to 6:00 P.M.), and Saturday midday (11:30 AM. To 2:00 P.M. peak periods at the following intersections:

- Milwaukee Avenue with Riverwalk Drive and Columbus Parkway
- Milwaukee Avenue with Prague Avenue
- Milwaukee Avenue with Chevy Chase Drive
- Milwaukee Avenue with Johnson Drive

All counts were conducted on Thursday, June 16, 2022 and on Saturday Jun 18, 2022 except for the weekday counts at the intersections of Milwaukee Avenue with Riverwalk Drive/Columbus Parkway and Prague Avenue which were conducted in July, 2021. The results of the traffic counts showed that the weekday morning peak hour of traffic generally occurs from 7:45 A.M. to 8:45 A.M., the weekday evening peak hour of traffic generally occurs from 4:45 P.M. to 5:45 P.M., and the Saturday midday peak hour of traffic generally occurs from 12:45 P.M. to 1:45 P.M.

In order to represent normal conditions, the Year 2021 traffic counts along Milwaukee Avenue were compared with the hourly traffic counts found on the IDOT Traffic Count Database System (TCDS) website. As a result of the comparison the Year 2021 traffic counts and were increased by 35 percent during the weekday morning peak hour and by 10 percent during the weekday evening peak hour.

While hourly count data was not available for the Saturday midday peak hours, these traffic volumes were also increased by 10 percent. These traffic volumes were then compared to the traffic volumes conducted in 2022 and the traffic volumes were balanced along the Milwaukee Avenue corridor to their highest values.

Figure 4 illustrates the Year 2022 base traffic volumes. Copies of the traffic count summary sheets are included in the Appendix.

Crash Analysis

KLOA, Inc. obtained crash data¹ for the most recent available past five years (2017 to 2021) for the intersections of Milwaukee Avenue with Riverwalk Drive/Columbus Parkway, Prague Avenue, Chevy Chase Drive, and Johnson Drive. The crash data for the intersections of Milwaukee Avenue with Riverwalk Drive/Columbus Parkway and Milwaukee Avenue with Johnson Drive are summarized in **Tables 1** and **2**, respectively. During the review period, no crashes were reported at the intersections of Milwaukee Avenue with Prague Avenue and Chevy Chase Drive. A review of the crash data revealed that no fatalities were reported at the intersections during the reviewed period.

¹ IDOT DISCLAIMER: The motor vehicle crash data referenced herein was provided by the Illinois Department of Transportation. Any conclusions drawn from analysis of the aforementioned data are the sole responsibility of the data recipient(s). Additionally, for coding years 2015 to present, the Bureau of Data Collection uses the exact latitude/longitude supplied by the investigating law enforcement agency to locate crashes. Therefore, location data may vary in previous years since data prior to 2015 was physically located by bureau personnel.

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Car Wash
Buffalo Grove, Illinois

Year 2022 Base Traffic Volumes



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Kenig, Lindgren, O'Hara, Aberson, Inc.

Job No: 22-180

Figure: 4

Table 1
MILWAUKEE AVENUE WITH RIVERWALK DRIVE – CRASH SUMMARY

Year	Type of Crash Frequency							
	Angle	Head On	Object	Rear End	Sideswipe	Turning	Other	Total
2017	0	0	0	0	2	0	0	2
2018	0	0	0	4	0	2	0	6
2019	0	0	0	0	0	1	0	1
2020	0	0	0	1	0	1	0	2
2021	<u>0</u>	<u>0</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>2</u>
Total	0	0	1	6	2	4	0	13
Average	--	--	<1.0	1.2	<1.0	<1.0	--	2.6

Table 2
MILWAUKEE AVENUE WITH JOHNSON DRIVE– CRASH SUMMARY

Year	Type of Crash Frequency							
	Angle	Head On	Object	Rear End	Sideswipe	Turning	Other	Total
2017	0	0	0	1	0	0	0	1
2018	0	0	0	1	0	1	1	3
2019	0	0	0	0	0	2	0	2
2020	0	0	0	0	0	0	0	0
2021	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>
Total	0	0	0	3	0	3	1	7
Average	--	--	--	<1.0	--	<1.0	<1.0	1.4

3. Traffic Characteristics of the Proposed Car Wash

To properly evaluate future traffic conditions in the surrounding area, it was necessary to determine the traffic characteristics of the proposed car wash, including the directional distribution and volumes of traffic that it will generate.

Proposed Site and Car Wash Plan

As proposed, the site will be redeveloped to provide an automatic car wash tunnel, four employee parking spaces, and 17 vacuum parking spaces. Access to the proposed car wash will be provided via a proposed full movement access drive off Milwaukee Avenue located 170 feet north of Chevy Chase Drive. This access drive will provide one inbound lane and one outbound lane. Outbound movements should be under stop sign control. The existing striped median along Milwaukee Avenue should be restriped to provide an exclusive left-turn lane. It should be noted that the access drive will be provided with a raised island median to prohibit inbound traffic from accessing the vacuum stalls.

Additional access to the development will be provided via a right-in/right-out access drive off Milwaukee Avenue located 185 feet south of Johnson Drive. This access drive will provide one inbound lane and one outbound lane with turning movements physically restricted to right turns only via a raised triangular median and this restriction should also be reinforced via signage. Outbound movements onto Milwaukee Avenue should be under stop-sign control.

A copy of the preliminary site plan is included in the Appendix.

Car Wash Operations and Circulation

The car wash tunnel will be located in the middle of the property oriented north-south. The vacuum stations will be located on the west side of the car wash tunnel. Circulation to the vacuum stations will be provided via a two-way drive aisle. Vehicles accessing the vacuum stalls prior to getting a car wash can only do so by entering the site at the northerly right-in/right-out access drive. All vehicles will have access to the vacuum stalls after utilizing the car wash.

Access to the car wash tunnel entrance will be provided via a one-way counterclockwise drive aisle on the south, east, and north sides of the building. The two queue lanes will be provided with two pay stations before the merge. Immediately after the pay stations, the two approach lanes will narrow to one lane that leads to the entrance of the car wash tunnel.

As proposed, the single-lane automatic car wash tunnel will be an exterior-only car wash system and will provide one-way, counter-clockwise circulation. Manual and automated controls will increase, decrease, or stop vehicle flow through the car wash. The entrance to the car wash will be oriented towards the north of the site and the exit will be located towards the south of the site. Each of the two approach lanes will be individually gated with a separate automatic pay station. The gates will meter the traffic flow proceeding to the car wash tunnel entrance and will open in sequence based on the order of vehicle arrival.

Once the gate is lifted for the respective lane, the individual vehicle will proceed north, west, and south to the entrance to the car wash tunnel. An emergency exit lane is proposed to be provided before the entrance to the car wash. At the entrance to the car wash tunnel, the driver will remain in the vehicle and the car wash will automatically pull the vehicle through the tunnel. After exiting the tunnel, the vehicles will proceed to either west to exit at the southerly full movement access drive or north along the two-way drive aisle to reach the vacuum stations or to exit the site at the northerly right-in/right-out access drive.

Car Wash Stacking

According to the site plan, there will be stacking for a total of approximately 38 vehicles to queue in the two approach lanes to the two pay stations. In addition, there will be stacking for approximately ten vehicles between the pay stations and the entrance to the tunnel and five vehicles within the car wash tunnel. As such, the plan provides stacking for a total of approximately 53 vehicles from the drive aisle to the entrance to the drive-through system.

Car Wash Wayfinding and Traffic Control Signage

The following wayfinding and traffic control signage is recommended:

- Wayfinding signage should be posted to guide vehicles to the respective car wash stacking area to minimize vehicle turning movements within the internal site circulation area.
- Wayfinding signage should be posted at the exit of the car wash tunnel to direct vehicles exiting the car wash to either of the two access drives off Milwaukee Avenue.
- A “Do Not Enter” sign should be posted at the exit of the car wash tunnel to deter opposing traffic from entering the car wash tunnel from the one-way exit direction.
- A stop sign should be provided at the southern end of the vacuum station drive aisle in order to promote free-flow movement for vehicles entering the site or exiting the car wash.

Vacuum Positions

The 17 vacuum positions will be located on the west side of the car wash tunnel. A two-way drive aisle will be provided, allowing flexibility for vehicles to access the vacuum area before or after the car wash. Vehicles exiting the vacuum stations utilize the two-way drive aisle to exit the site at either proposed access drive.

Peak Day Operations

Typical of any car wash, its peak operations (design day) typically occur after a weather event such as a snowfall or a rain event. Based on historical data from other car washes, this typically occurs 12 to 15 times per year.

When this peak demand occurs, the following operational procedures should be implemented:

- Increase the service rate of the tunnel to the maximum it can process.
- Should the internal vehicular queues occupy both lanes, the right-in movement at the full-movement access drive off Milwaukee Avenue should be closed via traffic cones and an attendant should direct traffic to enter via the right-in/right-out access drive.
- Direct traffic to stack on the drive aisle within the vacuum stalls. This would provide the car wash with additional stacking for approximately 16 to 20 vehicles (stacked side by side).
- Provide staff at critical locations within the circulation system during peak periods at the car wash to help direct and manage the flow of traffic through the site. Critical internal locations where staff should be located include at the pay stations and at the exit of the car wash.

Directional Distribution of Site Traffic

The directions from which traffic will approach and depart the site were estimated based on existing travel patterns, as determined from the traffic counts. **Figure 5** illustrates the directional distribution of vehicles to/from the proposed car wash.

Facility-Generated Traffic Volumes

The number of peak hour trips estimated to be generated by the proposed car wash was based on vehicle trip generation rates contained in *Trip Generation Manual*, 11th Edition, published by the Institute of Transportation Engineers (ITE). The “Automated Car Wash” (Land-Use Code 948) rate was utilized for the proposed car wash tunnel.

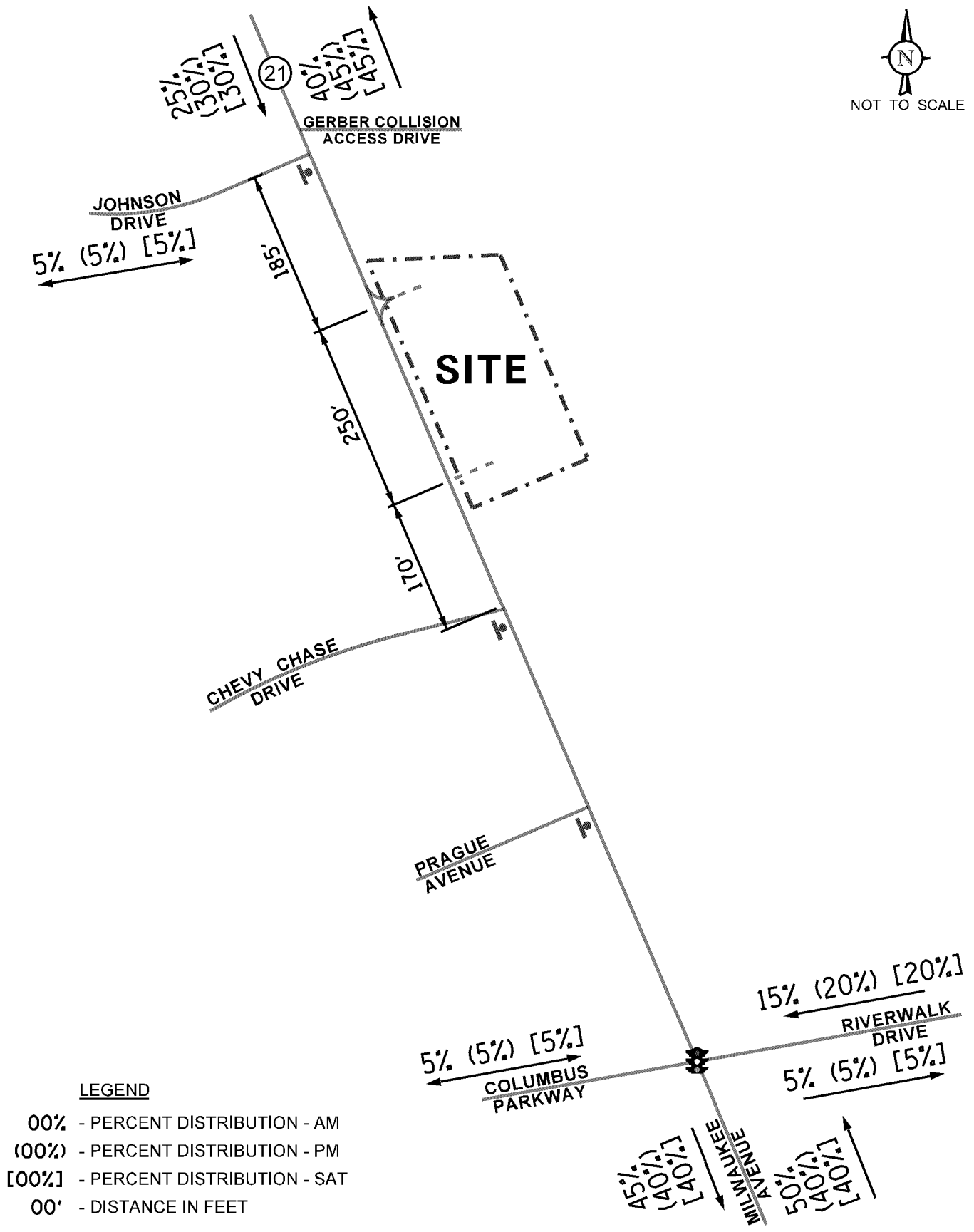
It is important to note that surveys conducted by ITE have shown that a considerable number of trips made to car washes are diverted from the existing traffic on the roadway system. This is particularly true during the weekday morning and evening peak hours when traffic is diverted from the home-to-work and work-to-home trips. Such diverted trips are referred to as pass-by traffic. However, in order to present a worst-case scenario, no reduction in the site-generated traffic was taken into account.

Based on the data provided in the ITE Manual for an automated car wash (Land-Use Code 948), the typical usage is approximately 71 vehicles per hour during the weekday evening peak hour and 152 vehicles per hour during the Saturday midday peak hour. The ITE Manual does not provide data for the morning peak hour for an automated car wash. For the purposes of the evaluation, it was assumed to be approximately one-third of the weekday evening peak hour trip generation.

Table 3 summarized the estimated peak hour trips.



NOT TO SCALE



Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Car Wash
Buffalo Grove, Illinois

Directional Distribution



Job No: 22-180

Figure: 5

Table 3
PEAK HOUR SITE-GENERATED TRAFFIC VOLUMES

ITE Land- Use Code	Type	Weekday Morning Peak Hour			Weekday Evening Peak Hour			Saturday Midday Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
948	Car Wash (1 tunnel)	12	12	24	35	36	71	76	76	160

4. Projected Traffic Conditions

The total projected traffic volumes include the existing traffic volumes, increase in background traffic due to growth, and the traffic estimated to be generated by the proposed car wash.

Car Wash Traffic Assignment

The estimated weekday morning, weekday evening, and Saturday midday peak hour traffic volumes that will be generated by the proposed car wash were assigned to the roadway system in accordance with the previously described directional distribution (Figure 5). The traffic assignment for the car wash is illustrated in **Figure 6**.

Background (No-Build) Traffic Conditions

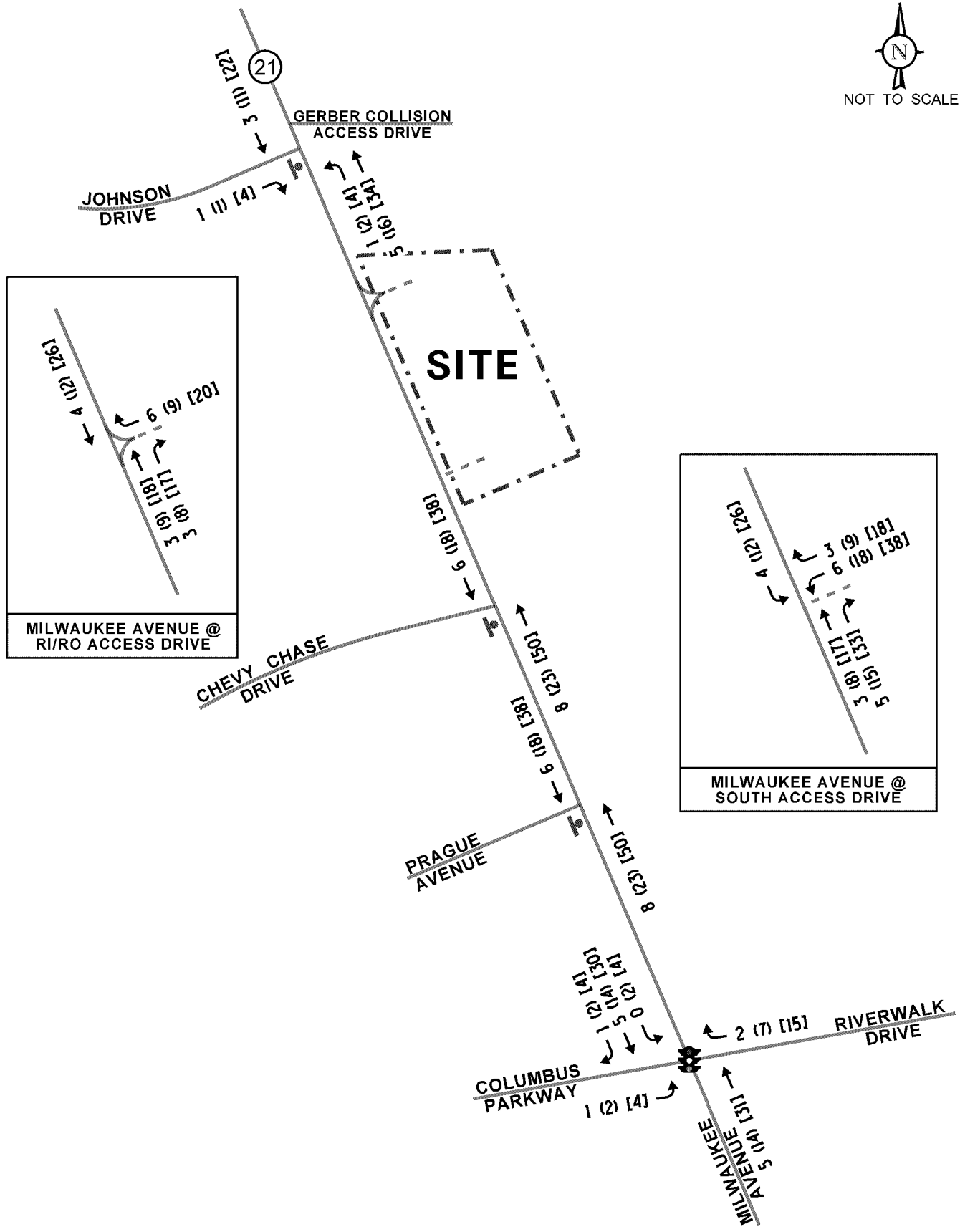
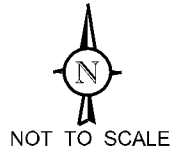
The base traffic volumes (Figure 4) were increased by a regional growth factor to account for the increase in existing traffic related to regional growth in the area (i.e., not attributable to any particular planned development). Based on 2050 Average Daily Traffic (ADT) projections provided by the Chicago Metropolitan Agency for Planning (CMAP) in a letter dated July 29, 2021, the existing traffic volumes were increased by an annually compounded growth rate for six years totaling one percent to represent Year 2028 background conditions.

Additionally, the traffic estimated to be generated by the previously approved expansion of the Speedway gas station located in the northeast quadrant of the intersection of Milwaukee Avenue with Riverwalk Drive was included in the background conditions to determine the Year 2028 no-build traffic volumes.

Figure 7 shows the Year 2028 no-build traffic volumes.

Year 2028 Total Projected Traffic Volumes

The Year 2028 total projected traffic volumes include the no-build traffic volumes and the traffic estimated to be generated by the proposed car wash (Figures 7 and 6). **Figure 8** shows the Year 2028 total projected traffic volumes.



Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Car Wash
Buffalo Grove, Illinois

Site-Generated Traffic Volumes

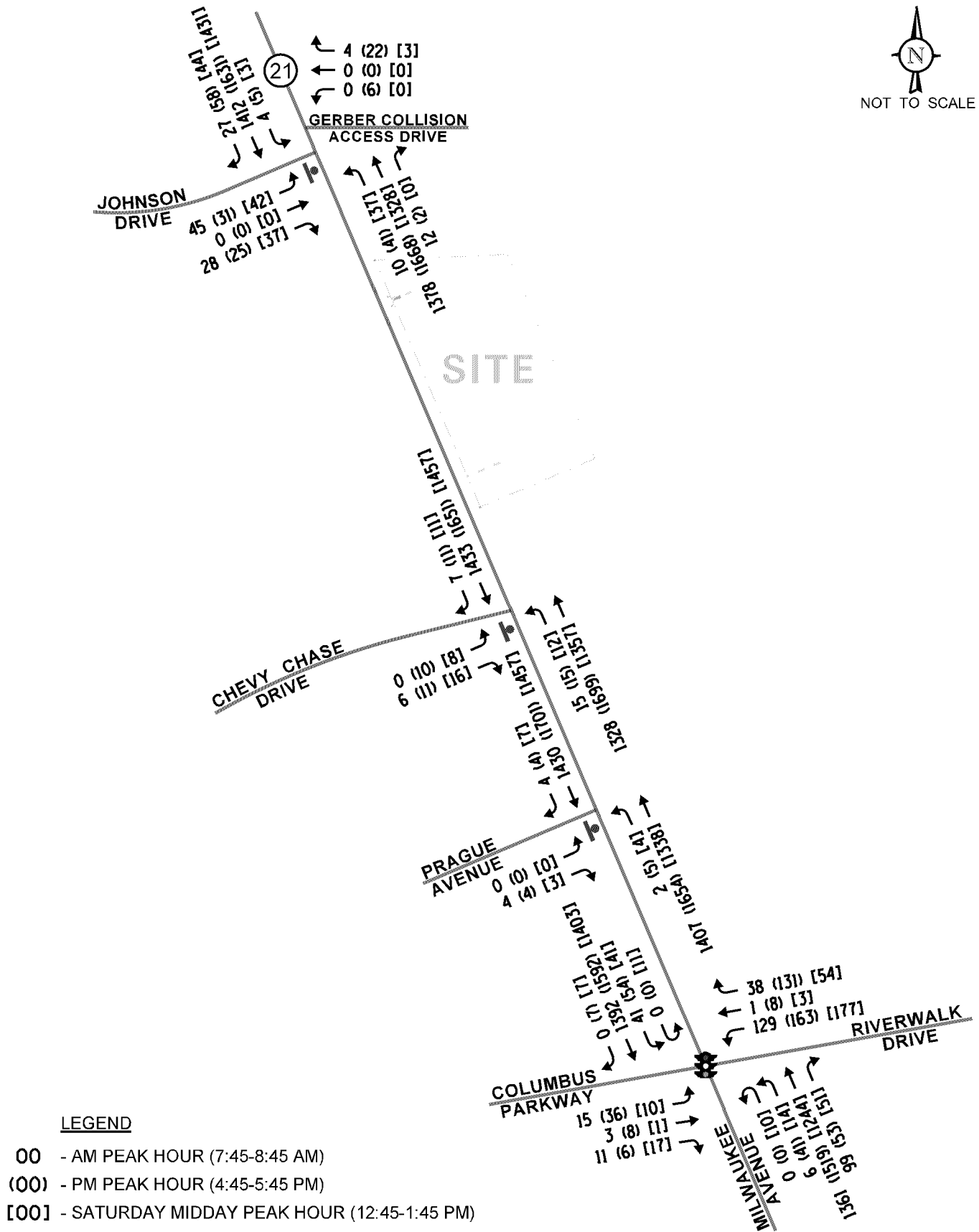


Job No: 22-180

Figure: 6



NOT TO SCALE



Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Car Wash
Buffalo Grove, Illinois

Year 2028 No-Build Traffic Volumes



Job No: 22-180

Figure: 7

5. Traffic Analysis and Recommendations

The following provides an evaluation conducted for the weekday morning, weekday evening, and Saturday midday peak hours. The analysis includes conducting capacity analyses to determine how well the roadway system and access drives are projected to operate and whether any roadway improvements or modifications are required.

Traffic Analyses

Roadway and adjacent or nearby intersection analyses were performed for the weekday morning, weekday evening, and Saturday midday peak hours for the base (Year 2022), no-build, and future projected (Year 2028) traffic volumes.

The traffic analyses were performed using the methodologies outlined in the Transportation Research Board's *Highway Capacity Manual (HCM)*, 6th Edition and analyzed using the Synchro/SimTraffic 11 software. The analysis for the traffic-signal controlled intersections were accomplished using actual cycle lengths, phasings, and offsets to determine the average overall vehicle delay and levels of service.

The analyses for the unsignalized intersections determine the average control delay to vehicles at an intersection. Control delay is the elapsed time from a vehicle joining the queue at a stop sign (includes the time required to decelerate to a stop) until its departure from the stop sign and resumption of free flow speed. The methodology analyzes each intersection approach controlled by a stop sign and considers traffic volumes on all approaches and lane characteristics.

The ability of an intersection to accommodate traffic flow is expressed in terms of level of service, which is assigned a letter from A to F based on the average control delay experienced by vehicles passing through the intersection. The *Highway Capacity Manual* definitions for levels of service and the corresponding control delay for signalized intersections and unsignalized intersections are included in the Appendix of this report.

Summaries of the traffic analysis results showing the level of service and overall intersection delay (measured in seconds) for the base, Year 2028 no-build, and Year 2028 total projected conditions are resented in **Tables 4** through **7**. A discussion of the intersections follows. Summary sheets for the capacity analyses are included in the Appendix.

Table 4

CAPACITY ANALYSIS RESULTS – MILWAUKEE AVEN. WITH RIVERWALK DR./COLUMBUS PKWY – SIGNALIZED

	Peak Hour	Eastbound		Westbound		Northbound			Southbound			Overall
		L	T/R	L	T/R	L	T	R	L	T/R		
Weekday Morning Peak Hour	Existing Conditions	E	E	E	D	A	A	A	A	A	A	B 10.3
		57.8	57.2	59.1	53.4	4.8	8.8	2	5.2	6.7		
		E - 57.3		E - 57.7		A - 8.4			A - 6.7			
	No-Build Conditions	E	E	E	D	A	A	A	A	A	A	B 10.9
58.0		57.4	59.5	52.8	5.2	9.2	2.1	5.5	7.0			
		E - 57.6		E - 58.0		A - 8.7			A - 7.0			
Weekday Evening Peak Hour	Projected Conditions	E	E	E	D	A	A	A	A	A	A	B 11.0
		58.2	57.4	59.3	53.3	5.2	9.2	2.1	5.5	7.1		
		E - 57.6		E - 57.9		A - 8.7			A - 7.0			
	Existing Conditions	E	E	D	E	B	B	A	B	B	B	C 21.1
66.0		59.6	45.3	67.0	11.3	17.4	2.1	11.9	18.0			
		E - 64.5		E - 55.2		B - 16.8			B - 17.8			
Weekday Midday Peak Hour	No-Build Conditions	E	E	D	E	B	B	A	B	B	B	C 21.2
		66.2	60.0	45.5	67.0	11.6	17.6	2.2	12.1	18.2		
		E - 64.4		E - 55.3		B - 16.9			B - 18.0			
	Projected Conditions	E	E	D	E	B	B	A	B	B	B	C 22.2
66.6		60.0	44.7	66.6	12.3	18.5	2.2	13.0	19.1			
		E - 64.7		E - 54.7		B - 17.8			B - 18.9			
Saturday Midday Peak Hour	Existing Conditions	E	E	E	D	A	A	A	A	A	A	B 12.9
		56.0	55.2	56.2	51.6	5.6	9.4	2.3	5.8	9.3		
		E - 55.5		E - 55.1		A - 9.1			A - 9.2			
	No-Build Conditions	E	E	E	D	A	A	A	A	A	A	B 13.4
56.2		55.4	56.4	51.7	5.8	9.8	2.3	6.1	9.6			
		E - 55.7		E - 55.3		A - 9.4			A - 9.5			
Projected Conditions	E	E	E	E	A	B	A	A	A	A	B 14	
	56.9	55.4	55.1	60.6	6.0	10.2	2.3	6.4	10			
		E - 56.1		E - 56.7		A - 9.8			A - 9.9			
Letter denotes Level of Service Delay is measured in seconds.												
L – Left Turns R – Right Turns												
T – Through												

Table 5

CAPACITY ANALYSIS RESULTS – YEAR 2022 BASE CONDITIONS – UNSIGNALIZED

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour		Saturday Midday Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay
Milwaukee Avenue with Prague Avenue						
• Eastbound Approach	C	18.1	C	22.0	C	16.7
• Northbound Left Turn	C	23.5	D	25.4	D	27.4
Milwaukee Avenue with Chevy Chase Drive						
• Eastbound Approach	C	15.3	D	29.5	C	24
• Northbound Left Turn	B	13.3	B	14.4	B	13.3
Milwaukee Avenue with Johnson Drive						
• Eastbound Approach	F	64.4	F	69.7	F	51.0
• Westbound Approach	C	15.3	E	35.4	B	14.0
• Northbound Left Turn	B	13.7	C	16.4	B	14.1
• Southbound Left Turn	B	13.1	B	14.7	B	12.0
LOS = Level of Service Delay is measured in seconds. Note: All intersections under two-way stop sign control						

Table 6

CAPACITY ANALYSIS RESULTS – YEAR 2028 NO-BUILD CONDITIONS – UNSIGNALIZED

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour		Saturday Midday Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay
Milwaukee Avenue with Prague Avenue						
• Eastbound Approach	C	18.4	C	23.2	C	16.9
• Northbound Left Turn	C	24	D	27.4	D	27.9
Milwaukee Avenue with Chevy Chase Drive						
• Eastbound Approach	C	15.5	D	30.9	D	25.4
• Northbound Left Turn	B	13.5	B	14.7	B	13.5
Milwaukee Avenue with Johnson Drive						
• Eastbound Approach	F	69.3	F	76.3	F	56.3
• Westbound Approach	C	15.5	E	40.5	B	14.4
• Northbound Left Turn	B	13.9	C	16.8	B	14.5
• Southbound Left Turn	B	13.3	B	15.0	B	12.3
LOS = Level of Service Delay is measured in seconds. Note: All intersections under two-way stop sign control						

Table 7

CAPACITY ANALYSIS RESULTS – YEAR 2028 PROJECTED CONDITIONS – UNSIGNALIZED

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour		Saturday Midday Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay
Milwaukee Avenue with Prague Avenue						
• Eastbound Approach	C	18.4	C	23.5	C	17.3
• Northbound Left Turn	C	24.2	D	28.0	D	29.2
Milwaukee Avenue with Chevy Chase Drive						
• Eastbound Approach	C	15.5	D	31.5	D	26.2
• Northbound Left Turn	B	13.5	B	14.8	B	13.8
Milwaukee Avenue with Johnson Drive						
• Eastbound Approach	F	68.7	F	77.2	F	56.5
• Westbound Approach	C	15.6	E	41.6	B	14.4
• Northbound Left Turn	B	14.0	C	17.0	B	14.7
• Southbound Left Turn	B	13.4	C	15.1	B	12.3
Milwaukee Avenue with Full Movement Access Drive						
• Westbound Approach	D	28.4	E	48.2	E	38.8
• Southbound Left Turn	B	12.9	C	16.3	B	13.0
Milwaukee Avenue with Right-In/Right-Out Access Drive						
• Westbound Approach	C	15.4	C	18.2	C	15.1
LOS = Level of Service Delay is measured in seconds. Note: All intersections under two-way stop sign control						

Discussion and Recommendations

The following summarizes how the intersections are projected to operate and identifies any roadway and traffic control improvements necessary to accommodate the facility-generated traffic.

Milwaukee Avenue with Riverwalk Drive and Columbus Parkway

The results of the capacity analysis indicate that overall this intersection currently operates at Level of Service (LOS) B during the weekday morning and Saturday midday peak hours while it operates at Level of Service C during the evening peak hours. The eastbound and westbound approaches are operating at LOS E or better during the weekday morning, evening, and Saturday midday peak hours. The northbound and southbound approaches currently operate at LOS B or better during all the peak hours.

Under Year 2028 no-build conditions, this intersection will continue to operate at LOS B during the weekday morning and Saturday midday peak hours and LOS C during the weekday evening peak hour with increases in delay of less than one second. All approaches will operate at the same existing levels of service during both peak hours with increases in delay of less than one second.

Under Year 2028 total projected conditions, this intersection will continue to operate at the same existing level of service during all the peak hours with increases in delay of less than one second. All approaches will continue to operate at the same existing levels of service during all the peak hours with increases in delay of less than one second. As such, this intersection has sufficient capacity to accommodate the traffic projected to be generated by the proposed carwash.

Milwaukee Avenue with Prague Avenue

The results of the capacity analysis indicate that the eastbound approach operates at LOS C during all the peak hours while the northbound left turn movements operate at LOS C during the weekday morning peak hour and LOS D during both weekday evening and Saturday midday peak hours.

Under Year 2028 no-build conditions, all the approaches will continue to operate at the same level of service during all the peak hours with increases in delay of less than two seconds.

Under Year 2028 total projected conditions, all movements will continue to operate at the same levels of service during all the peak hours with increases in delay of less than one second over the no-build condition except for the northbound left-turn movements which will experience an increase of less than two seconds over the no-build condition during the Saturday midday peak hour. Overall, the traffic that will be generated by the proposed carwash will have a limited impact on the operations of this intersection.

Milwaukee Avenue with E. Chevy Chase Drive

The results of the capacity analysis indicate that the northbound left-turn movements are operating at LOS B during all the peak hours. In addition, the eastbound approach currently operates at LOS C during the weekday morning and Saturday midday peak hour, and LOS D during the weekday evening peak hour. This is normal and expected when a minor road intersects a major road such as Milwaukee Avenue.

Under Year 2028 no-build conditions, the northbound left-turn movements and the eastbound approach will continue to operate at the same levels of service during all the peak hours with increases in delay of less than one second, except for the eastbound approach movements which will operate at LOS D during the Saturday midday peak hour with an increase in delay of less than two seconds.

Under Year 2028 total projected conditions, the northbound left-turn movements and the eastbound approach will continue to operate at the same levels of service during all the peak hours with increases in delay of less than one second. Overall, the traffic that will be generated by the proposed carwash will have a limited impact on the operations of this intersection.

Milwaukee Avenue with Johnson Drive

The results of the capacity analysis indicate that the eastbound approach operates at LOS F during all the peak hours with a volume to capacity ratio of less than one which is normal and acceptable for an unsignalized intersection of a minor road intersecting a major roadway such as Milwaukee Avenue. Other approaches operate at LOS E or better during all the peak hours.

Under Year 2028 no-build conditions, the eastbound approach will continue to operate at LOS F with a volume to capacity ratio of less than one during all the peak hours with increases in delay of approximately five seconds. Other approaches will continue to operate at the LOS E or better with increases in delay of less than one second except for the westbound approach during the weekday evening peak hour which will have an increase in delay of approximately five seconds.

Under Year 2028 total projected conditions, the eastbound approach will continue to operate at LOS F with increases in delay of less than one second during all the peak hours. It should be noted that the approach will continue to experience a volume to capacity ratio of less than one with 95th percentile queues of three vehicles during the weekday evening peak hour which indicate that the vehicles will be able to exit with less delays and more efficiently than indicated by the results of the capacity analyses.

Milwaukee Avenue with Proposed Full Movement Access Drives

The results of the capacity analysis indicate that the westbound approach will operate at LOS E or better during all the three peak hours with 95th percentile queues of one or two vehicles that will be accommodated by the proposed full movement access drive. The southbound left-turn movements will operate at LOS C or better during all the peak hours. As such, the proposed full movement access drive will be adequate in accommodating the traffic estimated to be generated by the proposed carwash and will ensure efficient and flexible access is provided.

Milwaukee Avenue with Proposed Right-In/Right-Out Access Drives

The results of the capacity analysis indicate that the westbound approach will operate at LOS C during all the three peak hours with 95th percentile queues of one or two vehicles that will be accommodated by the proposed right-in/right-out access drive. As such, the proposed access drive will be adequate in accommodating the traffic estimated to be generated by the proposed carwash and will ensure efficient and flexible access is provided.

6. Conclusion

Based on the preceding analyses and recommendations, the following conclusions have been made:

- The new traffic projected to be generated by the proposed car wash will be reduced due to the volume of pass-by traffic diverted from the existing traffic on Milwaukee Avenue.
- The results of the capacity analysis indicated that the existing roadway system will have sufficient reserve capacity to accommodate the traffic that will be generated by the proposed car wash and no additional roadway improvements or traffic control modifications are required.
- Access to the proposed car wash will be provided via a proposed full movement access drive and a proposed right-in/right-out access drive off Milwaukee Avenue. The existing striped median along Milwaukee Avenue should be restriped to provide an exclusive left-turn lane.
- In order to enhance the flow of traffic through the car wash site on peak days, the operator should consider implementing the following recommendations:
 - Increase the service rate of the tunnel to the maximum it can process.
 - Should the internal vehicular queues occupy both lanes, the right-in movement at the full-movement access drive off Milwaukee Avenue should be closed via traffic cones and an attendant should direct traffic to enter via the right-in/right-out access drive.
 - Direct traffic to stack on the drive aisle within the vacuum stalls. This would provide the car wash with additional stacking for approximately 16 to 20 vehicles (stacked side by side).
 - Provide staff at critical locations within the circulation system during peak periods at the car wash to help direct and manage the flow of traffic through the site. Critical internal locations where staff should be located include at the pay stations and at the exit of the car wash.

Appendix

Traffic Count Summary Sheets
Site Plan
CMAP Projections Letter
Level of Service Table
Capacity Analysis Summary Sheets

Appendix

Traffic Count Summary Sheets
Site Plan
CMAP 2050 Projections Letter
Level of Service Criteria
Capacity Analysis Summary Sheets

Traffic Count Summary Sheets

Study Name N Milwaukee Ave with With Riverwalk Dr and Gas Station Drive
Start Date Thursday, July 15, 2021 6:30 AM
End Date Thursday, July 15, 2021 6:30 PM
Site Code

Report Summary

Time Period	Class	Eastbound					Westbound					Northbound					Southbound					Southwestbound					Crosswalk																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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Kenig, Lindgren, O'Hara, Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990 sainkeshavarzi@kloainc.com

Count Name: Milwaukee Ave with Riverwalk Dr
Site Code:
Start Date: 06/18/2022
Page No: 1

Turning Movement Data

Start Time	Columbus Pkwy Eastbound						Riverwalk Dr Westbound						Milwaukee Ave Northbound						Milwaukee Ave Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
11:30 AM	0	1	0	4	0	5	0	39	0	9	0	48	3	5	320	11	0	339	0	5	336	2	1	343	735
11:45 AM	0	2	0	2	0	4	0	32	0	10	1	42	2	6	307	4	0	319	1	7	307	1	0	316	681
Hourly Total	0	3	0	6	0	9	0	71	0	19	1	90	5	11	627	15	0	658	1	12	643	3	1	659	1416
12:00 PM	0	4	0	8	0	12	0	40	0	12	0	52	0	3	285	11	1	299	0	8	339	3	0	350	713
12:15 PM	0	4	0	2	0	6	0	44	0	9	0	53	1	2	311	16	0	330	0	10	303	1	2	314	703
12:30 PM	0	3	0	5	1	8	0	37	1	17	2	55	4	5	310	14	0	333	0	15	290	5	3	310	706
12:45 PM	0	1	0	5	0	6	0	40	0	6	0	46	5	5	312	18	1	340	2	9	299	4	1	314	706
Hourly Total	0	12	0	20	1	32	0	161	1	44	2	206	10	15	1218	59	2	1302	2	42	1231	13	6	1288	2828
1:00 PM	0	4	0	3	0	7	0	47	1	17	0	65	2	2	294	9	0	307	0	13	375	0	0	388	767
1:15 PM	0	2	0	3	0	5	0	36	0	17	0	53	1	4	299	9	3	313	5	11	344	1	0	361	732
1:30 PM	0	2	0	5	0	7	0	41	0	13	0	54	1	2	321	10	0	334	3	7	371	1	0	382	777
1:45 PM	0	2	0	4	0	6	0	24	0	12	0	36	3	7	269	7	0	286	3	6	277	0	0	286	614
Hourly Total	0	10	0	15	0	25	0	148	1	59	0	208	7	15	1183	35	3	1240	11	37	1367	2	0	1417	2890
Grand Total	0	25	0	41	1	66	0	380	2	122	3	504	22	41	3028	109	5	3200	14	91	3241	18	7	3364	7134
Approach %	0.0	37.9	0.0	62.1	-	-	0.0	75.4	0.4	24.2	-	-	0.7	1.3	94.6	3.4	-	-	0.4	2.7	96.3	0.5	-	-	-
Total %	0.0	0.4	0.0	0.6	-	0.9	0.0	5.3	0.0	1.7	-	7.1	0.3	0.6	42.4	1.5	-	44.9	0.2	1.3	45.4	0.3	-	47.2	-
Lights	0	25	0	41	-	66	0	377	1	121	-	499	22	41	2973	106	-	3142	14	88	3199	18	-	3319	7026
% Lights	-	100.0	-	100.0	-	100.0	-	98.2	50.0	99.2	-	99.0	100.0	100.0	98.2	97.2	-	98.2	100.0	96.7	98.7	100.0	-	98.7	98.5
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	4	1	-	5	0	0	3	0	-	3	8
% Buses	-	0.0	-	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.1	0.9	-	0.2	0.0	0.0	0.1	0.0	-	0.1	0.1
Single-Unit Trucks	0	0	0	0	-	0	0	3	1	1	-	5	0	0	25	0	-	25	0	3	34	0	-	37	67
% Single-Unit Trucks	-	0.0	-	0.0	-	0.0	-	0.8	50.0	0.8	-	1.0	0.0	0.0	0.8	0.0	-	0.8	0.0	3.3	1.0	0.0	-	1.1	0.9
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	26	2	-	28	0	0	5	0	-	5	33
% Articulated Trucks	-	0.0	-	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.9	1.8	-	0.9	0.0	0.0	0.2	0.0	-	0.1	0.5
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	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	0.0
Pedestrians	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	5	-	-	-	-	-	7	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Count Name: Milwaukee Ave with Riverwalk Dr
Site Code:
Start Date: 06/18/2022
Page No: 2

Turning Movement Peak Hour Data (12:45 PM)

Start Time	Columbus Pkwy Eastbound						Riverwalk Dr Westbound						Milwaukee Ave Northbound						Milwaukee Ave Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
12:45 PM	0	1	0	5	0	6	0	40	0	6	0	46	5	5	312	18	1	340	2	9	299	4	1	314	706
1:00 PM	0	4	0	3	0	7	0	47	1	17	0	65	2	2	294	9	0	307	0	13	375	0	0	388	767
1:15 PM	0	2	0	3	0	5	0	36	0	17	0	53	1	4	299	9	3	313	5	11	344	1	0	361	732
1:30 PM	0	2	0	5	0	7	0	41	0	13	0	54	1	2	321	10	0	334	3	7	371	1	0	382	777
Total	0	9	0	16	0	25	0	164	1	53	0	218	9	13	1226	46	4	1294	10	40	1389	6	1	1445	2982
Approach %	0.0	36.0	0.0	64.0	-	-	0.0	75.2	0.5	24.3	-	-	0.7	1.0	94.7	3.6	-	-	0.7	2.8	96.1	0.4	-	-	-
Total %	0.0	0.3	0.0	0.5	-	0.8	0.0	5.5	0.0	1.8	-	7.3	0.3	0.4	41.1	1.5	-	43.4	0.3	1.3	46.6	0.2	-	-	48.5
PHF	0.000	0.563	0.000	0.800	-	0.893	0.000	0.872	0.250	0.779	-	0.838	0.450	0.650	0.955	0.639	-	0.951	0.500	0.769	0.926	0.375	-	-	0.931
Lights	0	9	0	16	-	25	0	162	0	53	-	215	9	13	1204	45	-	1271	10	38	1368	6	-	1422	2933
% Lights	-	100.0	-	100.0	-	100.0	-	98.8	0.0	100.0	-	98.6	100.0	100.0	98.2	97.8	-	98.2	100.0	95.0	98.5	100.0	-	-	98.4
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	2	0	-	2	0	0	1	0	-	1	3
% Buses	-	0.0	-	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.2	0.0	-	0.2	0.0	0.0	0.1	0.0	-	-	0.1
Single-Unit Trucks	0	0	0	0	-	0	0	2	1	0	-	3	0	0	10	0	-	10	0	2	19	0	-	21	34
% Single-Unit Trucks	-	0.0	-	0.0	-	0.0	-	1.2	100.0	0.0	-	1.4	0.0	0.0	0.8	0.0	-	0.8	0.0	5.0	1.4	0.0	-	-	1.5
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	10	1	-	11	0	0	1	0	-	1	12
% Articulated Trucks	-	0.0	-	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.8	2.2	-	0.9	0.0	0.0	0.1	0.0	-	-	0.4
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	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
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Count Name: N Milwaukee Ave with Prague Ave
Site Code:
Start Date: 07/15/2021
Page No: 1

Turning Movement Data

Start Time	Prague Ave Eastbound				Parking Lot Drive Westbound				N Milwaukee Dr Northbound				N Milwaukee Dr Southbound				Int. Total
	Left	Thru	Right	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
6:30 AM	0	0	0	0	0	0	0	0	0	189	0	0	178	0	0	178	367
6:45 AM	0	0	1	1	0	0	0	0	0	226	0	0	197	0	0	197	424
Hourly Total	0	0	1	1	0	0	0	0	0	415	0	0	375	0	0	375	791
7:00 AM	0	0	1	1	0	0	0	0	0	163	1	0	200	1	0	201	366
7:15 AM	0	0	0	0	0	0	0	0	0	226	2	0	222	0	0	222	450
7:30 AM	0	0	0	0	0	0	0	0	0	270	0	0	286	1	0	287	560
7:45 AM	0	0	1	1	0	0	0	0	0	303	2	0	310	0	0	310	616
Hourly Total	0	0	2	2	0	0	0	2	0	962	5	0	1018	2	0	1020	1992
8:00 AM	0	0	2	2	0	0	0	0	0	271	1	0	240	2	0	242	516
8:15 AM	0	0	0	0	0	0	0	0	0	227	0	0	300	0	0	300	527
8:30 AM	1	0	0	1	0	0	0	0	0	239	0	0	271	0	0	271	511
8:45 AM	0	0	0	0	0	0	0	0	0	268	0	0	350	1	0	351	619
Hourly Total	1	0	2	3	0	0	0	0	0	1005	1	0	1161	3	0	1164	2173
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	0	0	0	0	0	0	1	0	379	0	0	341	0	0	341	722
4:15 PM	0	0	1	1	0	0	0	0	0	414	0	0	360	1	0	361	776
4:30 PM	0	0	1	1	0	0	0	0	0	355	0	0	379	1	0	380	738
4:45 PM	0	0	1	1	0	0	0	0	0	423	0	0	364	1	0	365	790
Hourly Total	0	0	3	3	0	0	0	1	0	1571	0	0	1444	3	0	1447	3026
5:00 PM	0	0	0	0	0	0	0	0	0	386	0	0	342	1	0	343	729
5:15 PM	0	0	0	0	0	1	0	2	0	429	0	0	355	3	0	358	790
5:30 PM	0	0	1	1	0	0	0	0	0	402	0	0	331	5	0	336	739
5:45 PM	0	0	0	0	0	0	0	0	0	407	0	0	344	3	0	347	754
Hourly Total	0	0	1	1	0	1	0	2	0	1624	0	0	1372	12	0	1384	3012
6:00 PM	0	0	1	1	0	0	0	0	0	325	0	0	353	2	0	355	681
6:15 PM	0	0	1	1	0	0	0	0	0	360	0	0	292	5	0	297	659
Grand Total	1	0	11	12	0	1	0	5	0	6274	6	0	6015	27	0	6042	12334
Approach %	8.3	0.0	91.7	-	0.0	16.7	0.0	83.3	-	-	-	0.0	99.6	0.4	-	-	-
Total %	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	-	50.9	0.0	0.0	48.8	0.2	-	49.0	-
Lights	1	0	10	11	0	1	0	5	-	6	1	4	5784	23	-	5807	11839
% Lights	100.0	-	90.9	91.7	-	100.0	-	100.0	-	100.0	80.0	95.9	96.2	85.2	-	96.1	96.0
Buses	0	0	0	0	0	0	0	0	0	41	0	0	31	0	-	31	72
% Buses	0.0	-	0.0	0.0	-	0.0	-	0.0	-	0.7	-	-	0.5	0.0	-	0.5	0.6
Single-Unit Trucks	0	0	1	1	0	0	0	0	0	108	0	0	92	3	-	95	204
% Single-Unit Trucks	0.0	-	9.1	8.3	-	0.0	-	0.0	-	1.7	0.0	-	1.5	11.1	-	1.6	1.7

[illegible]



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Count Name: N Milwaukee Ave with Prague Ave
Site Code:
Start Date: 07/15/2021
Page No: 3

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Prague Ave Eastbound					Parking Lot Drive Westbound					N Milwaukee Dr Northbound					N Milwaukee Dr Southbound					Int. Total			
	Left	Thru	Right	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right		Peds	App. Total	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	226	2	0	228	0	0	222	0	0	0	222	450
7:30 AM	0	0	0	0	0	0	0	2	0	2	0	1	270	0	0	271	0	0	286	1	0	0	287	560
7:45 AM	0	0	1	1	0	0	0	0	0	0	0	0	303	2	0	305	0	0	310	0	0	0	310	616
8:00 AM	0	0	2	2	0	0	0	0	0	0	0	0	271	1	0	272	0	0	240	2	0	0	242	516
Total	0	0	3	3	0	0	0	2	0	2	0	1	1070	5	0	1076	0	0	1058	3	0	0	1061	2142
Approach %	0.0	0.0	100.0	-	0.0	0.0	0.0	100.0	-	-	0.0	0.1	99.4	0.5	-	-	0.0	0.0	99.7	0.3	-	-	-	-
Total %	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	-	0.1	0.0	0.0	50.0	0.2	-	50.2	0.0	0.0	49.4	0.1	-	-	49.5	-
PHF	0.000	0.000	0.375	0.375	0.000	0.000	0.000	0.250	-	0.250	0.000	0.250	0.883	0.625	-	0.882	0.000	0.000	0.853	0.375	-	-	0.856	0.889
Lights	0	0	3	3	0	0	0	2	-	2	0	0	1002	5	-	1007	0	0	1000	0	-	-	1000	2012
% Lights	-	-	100.0	100.0	-	-	-	100.0	-	100.0	-	0.0	93.6	100.0	-	93.6	-	-	94.5	0.0	-	-	94.3	93.9
Buses	0	0	0	0	0	0	0	0	-	0	0	1	13	0	-	14	0	0	6	0	-	-	6	20
% Buses	-	-	0.0	0.0	-	-	-	0.0	-	0.0	-	100.0	1.2	0.0	-	1.3	-	-	0.6	0.0	-	-	0.6	0.9
Single-Unit Trucks	0	0	0	0	0	0	0	0	-	0	0	0	30	0	-	30	0	0	33	2	-	-	35	65
% Single-Unit Trucks	-	-	0.0	0.0	-	-	-	0.0	-	0.0	-	0.0	2.8	0.0	-	2.8	-	-	3.1	66.7	-	-	3.3	3.0
Articulated Trucks	0	0	0	0	0	0	0	0	-	0	0	0	25	0	-	25	0	0	19	1	-	-	20	45
% Articulated Trucks	-	-	0.0	0.0	-	-	-	0.0	-	0.0	-	0.0	2.3	0.0	-	2.3	-	-	1.8	33.3	-	-	1.9	2.1
Bicycles on Road	0	0	0	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-	0	0
% Bicycles on Road	-	-	0.0	0.0	-	-	-	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Count Name: N Milwaukee Ave with Prague Ave
Site Code:
Start Date: 07/15/2021
Page No: 4

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Prague Ave Eastbound					Parking Lot Drive Westbound					N Milwaukee Dr Northbound					N Milwaukee Dr Southbound					Int. Total			
	Left	Thru	Right	App. Total		U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru		Right	Peds	App. Total
4:15 PM	0	0	1	1		0	0	0	0	0	414	0	0	414	0	0	414	0	0	360	1	0	361	776
4:30 PM	0	0	1	1		0	0	0	0	0	357	0	2	359	1	0	360	0	0	379	1	0	380	738
4:45 PM	0	0	1	1		0	0	0	0	0	424	0	1	423	0	0	424	0	0	364	1	0	365	790
5:00 PM	0	0	0	0		0	0	0	0	0	386	0	0	386	0	0	386	0	0	342	1	0	343	729
Total	0	0	3	3		0	0	0	0	0	1578	0	3	1578	0	0	1581	0	0	1445	4	0	1449	3033
Approach %	0.0	0.0	100.0	-		0.0	0.0	0.0	0.0	-	-	0.0	0.2	99.8	0.0	-	-	0.0	0.0	99.7	0.3	-	-	-
Total %	0.0	0.0	0.1	0.1		0.0	0.0	0.0	0.0	-	0.0	0.1	52.0	0.0	0.0	-	52.1	0.0	0.0	47.6	0.1	-	47.8	-
PHF	0.000	0.000	0.750	0.750		0.000	0.000	0.000	0.000	-	0.000	0.375	0.933	0.000	0.000	-	0.932	0.000	0.000	0.953	1.000	-	0.953	0.980
Lights	0	0	2	2		0	0	0	0	-	0	3	1523	0	-	-	1526	0	0	1405	4	-	1409	2937
% Lights	-	-	66.7	66.7		-	-	-	-	-	-	-	100.0	96.5	-	-	96.5	-	-	97.2	100.0	-	97.2	96.8
Buses	0	0	0	0		0	0	0	0	-	0	0	0	12	0	-	12	0	0	8	0	-	8	20
% Buses	-	-	0.0	0.0		-	-	-	-	-	-	-	0.0	0.8	-	-	0.8	-	-	0.6	0.0	-	0.6	0.7
Single-Unit Trucks	0	0	1	1		0	0	0	0	-	0	0	0	16	0	-	16	0	0	15	0	-	15	32
% Single-Unit Trucks	-	-	33.3	33.3		-	-	-	-	-	-	-	0.0	1.0	-	-	1.0	-	-	1.0	0.0	-	1.0	1.1
Articulated Trucks	0	0	0	0		0	0	0	0	-	0	0	0	27	0	-	27	0	0	17	0	-	17	44
% Articulated Trucks	-	-	0.0	0.0		-	-	-	-	-	-	-	0.0	1.7	-	-	1.7	-	-	1.2	0.0	-	1.2	1.5
Bicycles on Road	0	0	0	0		0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	-	0.0	0.0		-	-	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	-		-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Count Name: Milwaukee Ave with Prague Ave
Site Code:
Start Date: 06/18/2022
Page No: 1

Turning Movement Data

Start Time	Prague Ave Eastbound					Milwaukee Ave Northbound					Milwaukee Ave Southbound				
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	Int. Total
11:30 AM	0	0	1	0	1	0	0	306	0	306	0	335	1	0	643
11:45 AM	0	1	0	5	1	1	0	340	0	341	0	334	2	0	678
Hourly Total	0	1	1	5	2	1	0	646	0	647	0	669	3	0	1321
12:00 PM	0	0	1	2	1	0	0	286	0	286	0	317	6	0	610
12:15 PM	0	0	1	3	1	0	0	333	0	333	0	344	1	0	679
12:30 PM	0	0	0	3	0	0	0	313	0	313	0	300	0	0	613
12:45 PM	0	0	0	0	0	0	1	341	0	342	0	314	2	0	658
Hourly Total	0	0	2	8	2	0	1	1273	0	1274	0	1275	9	0	2560
1:00 PM	0	0	0	0	0	0	0	292	0	292	0	337	1	0	630
1:15 PM	0	0	1	0	1	1	0	352	0	353	0	331	1	0	686
1:30 PM	0	0	1	0	1	1	0	305	0	306	0	374	2	0	683
1:45 PM	0	0	1	0	1	1	0	325	0	326	0	312	0	0	639
Hourly Total	0	0	3	0	3	3	0	1274	0	1277	0	1354	4	0	2638
Grand Total	0	1	6	13	7	4	1	3193	0	3198	0	3298	16	0	6519
Approach %	0.0	14.3	85.7	-	-	0.1	0.0	99.8	-	-	0.0	99.5	0.5	-	-
Total %	0.0	0.0	0.1	-	0.1	0.1	0.0	49.0	-	49.1	0.0	50.6	0.2	-	50.8
Lights	0	1	6	-	7	4	0	3139	-	3143	0	3241	16	-	6407
% Lights	-	100.0	100.0	-	100.0	100.0	0.0	98.3	-	98.3	-	98.3	100.0	-	98.3
Buses	0	0	0	-	0	0	0	3	-	3	0	3	0	-	6
% Buses	-	0.0	0.0	-	0.0	0.0	0.0	0.1	-	0.1	-	0.1	0.0	-	0.1
Single-Unit Trucks	0	0	0	-	0	0	1	24	-	25	0	45	0	-	70
% Single-Unit Trucks	-	0.0	0.0	-	0.0	0.0	100.0	0.8	-	0.8	-	1.4	0.0	-	1.1
Articulated Trucks	0	0	0	-	0	0	0	27	-	27	0	9	0	-	36
% Articulated Trucks	-	0.0	0.0	-	0.0	0.0	0.0	0.8	-	0.8	-	0.3	0.0	-	0.6
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Bicycles on Road	-	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0
Pedestrians	-	-	-	13	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-



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Count Name: Milwaukee Ave with Prague Ave
Site Code:
Start Date: 06/18/2022
Page No: 2

Turning Movement Peak Hour Data (12:45 PM)

Start Time	Prague Ave Eastbound					Milwaukee Ave Northbound					Milwaukee Ave Southbound				
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	Int. Total
12:45 PM	0	0	0	0	0	0	0	341	0	342	0	314	2	0	658
1:00 PM	0	0	0	0	0	0	0	292	0	292	0	337	1	0	630
1:15 PM	0	0	1	0	1	1	0	352	0	353	0	331	1	0	686
1:30 PM	0	0	1	0	1	1	0	305	0	306	0	374	2	0	683
Total	0	0	2	0	2	2	1	1290	0	1293	0	1356	6	0	2657
Approach %	0.0	0.0	100.0	-	-	0.2	0.1	99.8	-	-	0.0	99.6	0.4	-	-
Total %	0.0	0.0	0.1	-	0.1	0.1	0.0	48.6	-	48.7	0.0	51.0	0.2	-	51.3
PHF	0.000	0.000	0.500	-	0.500	0.500	0.250	0.916	-	0.916	0.000	0.906	0.750	-	0.968
% Lights	0	0	2	-	100.0	2	0	1272	-	1274	0	1333	6	-	2615
% Buses	0	0	0	-	0	0	0	1	-	1	0	1	0	-	2
% Single-Unit Trucks	0	0	0	-	0	0.0	0.0	0.1	-	0.1	-	0.1	0.0	-	0.1
% Articulated Trucks	0	0	0	-	0	0	100.0	0.5	-	0.6	-	1.5	0.0	-	1.1
Bicycles on Road	0	0	0	-	0	0.0	0.0	0.8	-	0.8	-	0.1	0.0	-	0.4
% Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
Pedestrians	-	-	0.0	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0
% Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-



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Count Name: Milwaukee Ave with Chevy Chase
Dr
Site Code:
Start Date: 06/16/2022
Page No: 1

2.1.b

Turning Movement Data

Start Time	Chevy Chase Dr Eastbound					Milwaukee Ave Northbound					Milwaukee Ave Southbound				
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	Int. Total
7:00 AM	0	1	0	2	1	0	2	189	0	191	0	240	0	0	432
7:15 AM	0	0	0	0	0	0	0	257	0	257	0	273	1	0	531
7:30 AM	0	0	1	2	1	0	2	301	0	303	0	335	1	0	640
7:45 AM	0	0	0	0	0	0	5	311	0	316	0	349	0	0	665
Hourly Total	0	1	1	4	2	0	9	1058	0	1067	0	1197	2	0	2288
8:00 AM	0	0	1	0	1	0	1	285	0	286	0	299	3	0	589
8:15 AM	0	0	2	0	2	0	3	277	0	280	0	318	2	0	602
8:30 AM	0	0	2	0	2	0	5	300	0	305	0	340	2	0	649
8:45 AM	0	3	1	1	4	1	3	249	0	253	0	360	2	0	619
Hourly Total	0	3	6	1	9	1	12	1111	0	1124	0	1317	9	0	2459
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	1	3	0	4	0	0	363	0	363	0	401	3	0	771
4:15 PM	0	1	3	0	4	0	1	366	0	367	0	378	1	0	750
4:30 PM	0	1	2	1	3	0	4	350	0	354	0	398	5	0	760
4:45 PM	0	3	5	1	8	0	10	380	0	390	0	411	3	0	812
Hourly Total	0	6	13	2	19	0	15	1459	0	1474	0	1588	12	0	3093
5:00 PM	0	1	4	0	5	0	0	367	0	367	0	441	1	0	814
5:15 PM	0	1	1	1	2	0	2	437	0	439	0	372	3	0	816
5:30 PM	0	4	5	0	9	0	2	382	0	384	0	377	2	0	772
5:45 PM	0	3	16	2	19	0	0	372	0	372	0	362	2	0	755
Hourly Total	0	9	26	3	35	0	4	1558	0	1562	0	1552	8	0	3157
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	0	1	2	0	3	0	1	311	0	312	0	347	1	0	663
11:45 AM	0	1	6	1	7	0	0	325	0	325	0	319	3	0	654
Hourly Total	0	2	8	1	10	0	1	636	0	637	0	666	4	0	1317
12:00 PM	0	1	8	0	9	0	3	298	0	301	0	343	1	0	654
12:15 PM	0	1	4	0	5	1	3	301	0	305	0	310	2	0	622
12:30 PM	0	3	7	4	10	0	4	329	0	333	0	306	1	0	650
12:45 PM	0	1	13	0	14	0	5	327	0	332	0	301	3	0	650
Hourly Total	0	6	32	4	38	1	15	1255	0	1271	0	1260	7	0	2576
1:00 PM	0	3	15	0	18	0	5	292	0	297	0	363	4	0	662
1:15 PM	0	3	7	1	10	0	1	335	0	336	0	339	0	0	685
1:30 PM	0	0	5	0	5	0	0	336	0	336	0	374	3	0	718
1:45 PM	0	1	5	1	6	2	0	303	0	305	0	292	3	0	606
Hourly Total	0	7	32	2	39	2	6	1266	0	1274	0	1368	10	0	2691
Grand Total	0	34	118	17	152	4	62	8343	0	8409	0	8948	52	0	17561

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Approach %	0.0	22.4	77.6	-	-	0.0	0.7	99.2	-	-	0.0	99.4	0.6	-	-	-
Total %	0.0	0.2	0.7	-	0.9	0.0	0.4	47.5	-	47.9	0.0	51.0	0.3	-	51.2	-
Lights	0	33	115	-	148	4	62	8062	-	8128	0	8678	49	-	8727	17003
% Lights	-	97.1	97.5	-	97.4	100.0	100.0	96.6	-	96.7	-	97.0	94.2	-	97.0	96.8
Buses	0	0	0	-	0	0	0	33	-	33	0	28	2	-	30	63
% Buses	-	0.0	0.0	-	0.0	0.0	0.0	0.4	-	0.4	-	0.3	3.8	-	0.3	0.4
Single-Unit Trucks	0	1	1	-	2	0	0	132	-	132	0	149	0	-	149	283
% Single-Unit Trucks	-	2.9	0.8	-	1.3	0.0	0.0	1.6	-	1.6	-	1.7	0.0	-	1.7	1.6
Articulated Trucks	0	0	0	-	0	0	0	114	-	114	0	93	0	-	93	207
% Articulated Trucks	-	0.0	0.0	-	0.0	0.0	0.0	1.4	-	1.4	-	1.0	0.0	-	1.0	1.2
Bicycles on Road	0	0	2	-	2	0	0	2	-	2	0	0	1	-	1	5
% Bicycles on Road	-	0.0	1.7	-	1.3	0.0	0.0	0.0	-	0.0	-	0.0	1.9	-	0.0	0.0
Pedestrians	-	-	-	17	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-



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Count Name: Milwaukee Ave with Chevy Chase
Dr
Site Code:
Start Date: 06/16/2022
Page No: 3

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Chevy Chase Dr Eastbound					Milwaukee Ave Northbound					Milwaukee Ave Southbound				
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	Int. Total
7:45 AM	0	0	0	0	0	0	5	311	0	316	0	349	0	0	665
8:00 AM	0	0	1	0	1	0	1	285	0	286	0	299	3	0	589
8:15 AM	0	0	2	0	2	0	3	277	0	280	0	318	2	0	602
8:30 AM	0	0	2	0	2	0	5	300	0	305	0	340	2	0	649
Total	0	0	5	0	5	0	14	1173	0	1187	0	1306	7	0	2505
Approach %	0.0	0.0	100.0	-	-	0.0	1.2	98.8	-	-	0.0	99.5	0.5	-	-
Total %	0.0	0.0	0.2	-	0.2	0.0	0.6	46.8	-	47.4	0.0	52.1	0.3	-	52.4
PHF	0.000	0.000	0.625	-	0.625	0.000	0.700	0.943	-	0.939	0.000	0.936	0.583	-	0.941
Lights	0	0	5	-	5	0	14	1098	-	1112	0	1258	6	-	1264
% Lights	-	-	100.0	-	100.0	-	100.0	93.6	-	93.7	-	96.3	85.7	-	96.3
Buses	0	0	0	-	0	0	0	11	-	11	0	6	1	-	7
% Buses	-	-	0.0	-	0.0	-	0.0	0.9	-	0.9	-	0.5	14.3	-	0.5
Single-Unit Trucks	0	0	0	-	0	0	0	44	-	44	0	26	0	-	26
% Single-Unit Trucks	-	-	0.0	-	0.0	-	0.0	3.8	-	3.7	-	2.0	0.0	-	2.8
Articulated Trucks	0	0	0	-	0	0	0	19	-	19	0	16	0	-	16
% Articulated Trucks	-	-	0.0	-	0.0	-	0.0	1.6	-	1.6	-	1.2	0.0	-	1.2
Bicycles on Road	0	0	0	-	0	0	0	1	-	1	0	0	0	-	1
% Bicycles on Road	-	-	0.0	-	0.0	-	0.0	0.1	-	0.1	-	0.0	0.0	-	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Count Name: Milwaukee Ave with Chevy Chase
Dr
Site Code:
Start Date: 06/16/2022
Page No: 4

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Chevy Chase Dr Eastbound					Milwaukee Ave Northbound					Milwaukee Ave Southbound				
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	Int. Total
4:45 PM	0	3	5	1	8	0	10	380	0	390	0	411	3	0	814
5:00 PM	0	1	4	0	5	0	0	367	0	367	0	441	1	0	814
5:15 PM	0	1	1	1	2	0	2	437	0	439	0	372	3	0	816
5:30 PM	0	4	5	0	9	0	2	382	0	384	0	377	2	0	772
Total	0	9	15	2	24	0	14	1566	0	1580	0	1601	9	0	3214
Approach %	0.0	37.5	62.5	-	-	0.0	0.9	99.1	-	-	0.0	99.4	0.6	-	-
Total %	0.0	0.3	0.5	-	0.7	0.0	0.4	48.7	-	49.2	0.0	49.8	0.3	-	50.1
PHF	0.000	0.563	0.750	-	0.667	0.000	0.350	0.896	-	0.900	0.000	0.908	0.750	-	0.911
Lights	0	9	15	-	24	0	14	1523	-	1537	0	1566	9	-	3136
% Lights	-	100.0	100.0	-	100.0	-	100.0	97.3	-	97.3	-	97.8	100.0	-	97.8
Buses	0	0	0	-	0	0	0	5	-	5	0	6	0	-	11
% Buses	-	0.0	0.0	-	0.0	-	0.0	0.3	-	0.3	-	0.4	0.0	-	0.3
Single-Unit Trucks	0	0	0	-	0	0	0	14	-	14	0	12	0	-	26
% Single-Unit Trucks	-	0.0	0.0	-	0.0	-	0.0	0.9	-	0.9	-	0.7	0.0	-	0.8
Articulated Trucks	0	0	0	-	0	0	0	24	-	24	0	17	0	-	41
% Articulated Trucks	-	0.0	0.0	-	0.0	-	0.0	1.5	-	1.5	-	1.1	0.0	-	1.3
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Bicycles on Road	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0
Pedestrians	-	-	-	2	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-



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Count Name: Milwaukee Ave with Chevy Chase
Dr
Site Code:
Start Date: 06/16/2022
Page No.: 5

Turning Movement Peak Hour Data (12:45 PM)

Start Time	Chevy Chase Dr Eastbound					Milwaukee Ave Northbound					Milwaukee Ave Southbound				
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	Int. Total
12:45 PM	0	1	13	0	14	0	5	327	0	332	0	301	3	0	650
1:00 PM	0	3	15	0	18	0	5	292	0	297	0	363	4	0	682
1:15 PM	0	3	7	1	10	0	1	335	0	336	0	339	0	0	685
1:30 PM	0	0	5	0	5	0	0	336	0	336	0	374	3	0	718
Total	0	7	40	1	47	0	11	1290	0	1301	0	1377	10	0	2735
Approach %	0.0	14.9	85.1	-	-	0.0	0.8	99.2	-	-	0.0	99.3	0.7	-	-
Total %	0.0	0.3	1.5	-	1.7	0.0	0.4	47.2	-	47.6	0.0	50.3	0.4	-	50.7
PHF	0.000	0.583	0.667	-	0.653	0.000	0.550	0.960	-	0.968	0.000	0.920	0.625	-	0.952
Lights	0	6	40	-	46	0	11	1260	-	1271	0	1349	10	-	2676
% Lights	-	85.7	100.0	-	97.9	-	100.0	97.7	-	97.7	-	98.0	100.0	-	97.8
Buses	0	0	0	-	0	0	0	1	-	1	0	1	0	-	2
% Buses	-	0.0	0.0	-	0.0	-	0.0	0.1	-	0.1	-	0.1	0.0	-	0.1
Single-Unit Trucks	0	1	0	-	1	0	0	18	-	18	0	24	0	-	43
% Single-Unit Trucks	-	14.3	0.0	-	2.1	-	0.0	1.4	-	1.4	-	1.7	0.0	-	1.6
Articulated Trucks	0	0	0	-	0	0	0	11	-	11	0	3	0	-	14
% Articulated Trucks	-	0.0	0.0	-	0.0	-	0.0	0.9	-	0.8	-	0.2	0.0	-	0.5
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Bicycles on Road	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-



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9575 W. Higgins Rd., Suite 400

Count Name: Milwaukee Ave with Johnson Dr
Site Code:
Start Date: 06/16/2022
Page No: 1

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Turning Movement Data

Start Time	Johnson Dr Eastbound						Access Dr Westbound						Milwaukee Ave Northbound						Milwaukee Ave Southbound							
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total	
7:00 AM	0	6	0	5	0	11	0	0	0	1	0	1	0	1	211	1	0	213	0	0	225	9	0	234	459	
7:15 AM	0	6	0	5	0	11	0	0	0	0	0	0	0	0	3	235	0	238	0	1	286	2	0	289	538	
7:30 AM	0	10	0	14	0	24	0	0	0	0	0	0	0	0	1	281	2	284	0	2	293	1	0	296	604	
7:45 AM	0	10	0	5	0	15	0	0	0	1	0	1	0	1	0	2	341	3	346	0	0	349	7	0	356	718
Hourly Total	0	32	0	29	0	61	0	0	0	2	0	2	0	2	7	1068	6	1081	0	3	1153	19	0	1175	2319	
8:00 AM	0	14	0	3	0	17	0	0	0	1	0	1	0	1	0	2	265	5	272	0	3	301	9	0	313	603
8:15 AM	0	11	0	10	0	21	0	0	0	1	0	1	0	1	0	3	280	3	286	0	0	305	4	0	309	617
8:30 AM	0	9	0	9	0	18	0	0	0	0	0	0	0	0	2	291	0	291	0	0	324	6	0	330	641	
8:45 AM	0	8	0	6	0	14	0	0	0	0	0	0	0	0	4	287	0	291	1	1	366	6	0	374	679	
Hourly Total	0	42	0	28	0	70	0	0	0	2	0	2	0	2	11	1123	8	1142	1	4	1296	25	0	1326	2540	
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
4:00 PM	0	6	0	6	0	12	0	1	0	0	0	1	0	1	0	6	368	4	378	0	1	372	6	0	379	770
4:15 PM	0	4	0	4	0	8	0	2	0	2	0	4	0	4	0	7	359	0	366	0	1	381	3	0	385	763
4:30 PM	0	9	0	9	0	18	0	2	0	2	0	4	0	4	0	2	338	0	340	0	1	384	6	0	391	753
4:45 PM	0	4	0	5	0	9	0	1	0	13	0	14	1	1	8	382	0	391	0	2	396	13	0	411	825	
Hourly Total	0	23	0	24	0	47	0	6	0	17	0	23	1	23	1447	4	0	1475	0	5	1533	28	0	1566	3111	
5:00 PM	0	10	0	8	0	18	0	2	0	4	0	6	0	6	0	7	345	1	353	0	1	426	20	0	447	824
5:15 PM	0	8	0	5	0	13	0	1	0	1	0	2	0	2	0	11	415	0	426	0	0	415	12	0	427	868
5:30 PM	0	8	0	6	0	14	0	1	0	3	0	4	1	11	396	0	0	408	0	1	369	12	0	382	808	
5:45 PM	0	7	0	8	0	15	0	0	0	0	0	0	0	7	338	0	0	345	0	0	351	10	0	361	721	
Hourly Total	0	33	0	27	0	60	0	4	0	8	0	12	1	36	1494	1	0	1532	0	2	1561	54	0	1617	3221	
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11:30 AM	0	6	0	12	0	18	0	0	0	4	0	4	0	4	0	6	284	1	291	0	3	306	9	0	318	631
11:45 AM	0	8	0	4	0	12	0	1	0	1	0	2	0	1	334	0	0	335	0	1	338	12	0	351	700	
Hourly Total	0	14	0	16	0	30	0	1	0	5	0	6	0	7	618	1	0	626	0	4	644	21	0	669	1331	
12:00 PM	0	5	0	8	0	13	0	1	0	0	0	1	0	8	290	0	0	298	0	0	295	13	0	308	620	
12:15 PM	0	12	0	6	0	18	0	0	0	0	0	0	0	0	6	306	0	312	0	0	333	10	0	343	673	
12:30 PM	0	9	0	8	0	17	0	0	0	0	0	0	0	7	296	0	0	303	0	0	288	8	0	296	616	
12:45 PM	0	10	0	6	0	16	0	0	0	0	0	0	0	9	287	0	0	296	0	0	323	10	0	333	645	
Hourly Total	0	36	0	28	0	64	0	1	0	0	0	1	0	30	1179	0	0	1209	0	0	1239	41	0	1280	2554	
1:00 PM	0	13	0	11	0	24	0	0	0	2	0	2	1	8	329	0	0	338	0	2	316	9	0	327	691	
1:15 PM	0	10	0	8	0	18	0	0	0	0	0	0	0	7	350	0	0	357	0	0	339	15	0	354	729	
1:30 PM	0	8	0	11	0	19	0	0	0	0	0	0	0	7	302	0	0	309	0	0	359	9	0	368	696	
1:45 PM	1	5	0	10	0	16	0	0	0	0	0	0	1	5	307	0	0	313	0	0	309	5	0	314	643	
Hourly Total	1	36	0	40	0	77	0	0	0	2	0	2	2	27	1288	0	0	1317	0	2	1323	38	0	1363	2759	

Grand Total	1	216	0	192	0	409	0	12	0	36	0	48	4	141	8217	20	0	8382	1	20	8749	226	0	8996	17835
Approach %	0.2	52.8	0.0	46.9	-	-	0.0	25.0	0.0	75.0	-	-	0.0	1.7	98.0	0.2	-	-	0.0	0.2	97.3	2.5	-	-	-
Total %	0.0	1.2	0.0	1.1	-	2.3	0.0	0.1	0.0	0.2	-	0.3	0.0	0.8	46.1	0.1	-	47.0	0.0	0.1	49.1	1.3	-	50.4	-
Lights	1	211	0	185	-	397	0	11	0	34	-	45	4	138	7963	18	-	8123	1	19	8456	221	-	8697	17262
% Lights	100.0	97.7	-	98.4	-	97.1	-	91.7	-	94.4	-	93.8	100.0	97.3	96.9	90.0	-	96.9	100.0	95.0	96.7	97.8	-	96.7	96.8
Buses	0	1	0	2	-	3	0	0	0	0	-	0	0	0	32	0	-	32	0	0	28	3	-	31	66
% Buses	0.0	0.5	-	1.0	-	0.7	-	0.0	-	0.0	-	0.0	0.0	0.0	0.4	0.0	-	0.4	0.0	0.0	0.3	1.3	-	0.3	0.4
Single-Unit Trucks	0	4	0	5	-	9	0	1	0	2	-	3	0	3	126	2	-	131	0	1	160	2	-	163	306
% Single-Unit Trucks	0.0	1.9	-	2.6	-	2.2	-	8.3	-	5.6	-	6.3	0.0	2.1	1.5	10.0	-	1.6	0.0	5.0	1.8	0.9	-	1.8	1.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	94	0	-	94	0	0	105	0	-	105	199
% Articulated Trucks	0.0	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.0	0.0	1.1	0.0	-	1.1	0.0	0.0	1.2	0.0	-	1.2	1.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	2	0	-	2	0	0	0	0	-	0	2
% Bicycles on Road	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	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Kenig, Lindgren, O'Hara, Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990 sainkeshavarzi@kloainc.com

Count Name: Milwaukee Ave with Johnson Dr
Site Code:
Start Date: 06/16/2022
Page No: 3

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Johnson Dr Eastbound						Access Dr Westbound						Milwaukee Ave Northbound						Milwaukee Ave Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
7:45 AM	0	10	0	5	0	15	0	0	0	1	0	1	0	2	341	3	0	346	0	0	349	7	0	356	718
8:00 AM	0	14	0	3	0	17	0	0	0	1	0	1	0	2	265	5	0	272	0	3	301	9	0	313	603
8:15 AM	0	11	0	10	0	21	0	0	0	1	0	1	0	3	280	3	0	286	0	0	305	4	0	309	617
8:30 AM	0	9	0	9	0	18	0	0	0	0	0	0	0	2	291	0	0	293	0	0	324	6	0	330	641
Total	0	44	0	27	0	71	0	0	0	3	0	3	0	9	1177	11	0	1197	0	3	1279	26	0	1308	2579
Approach %	0.0	62.0	0.0	38.0	-	-	0.0	0.0	0.0	100.0	-	-	0.0	0.8	98.3	0.9	-	-	0.0	0.2	97.8	2.0	-	-	-
Total %	0.0	1.7	0.0	1.0	-	2.8	0.0	0.0	0.0	0.1	-	0.1	0.0	0.3	45.6	0.4	-	46.4	0.0	0.1	49.6	1.0	-	50.7	-
PHF	0.000	0.786	0.000	0.675	-	0.845	0.000	0.000	0.000	0.750	-	0.750	0.000	0.750	0.863	0.550	-	0.865	0.000	0.250	0.916	0.722	-	0.919	0.898
Lights	0	43	0	25	-	68	0	0	0	3	0	3	0	9	1106	11	-	1126	0	3	1206	24	-	1233	2430
% Lights	-	97.7	-	92.6	-	95.8	-	-	-	100.0	-	100.0	-	100.0	94.0	100.0	-	94.1	-	100.0	94.3	92.3	-	94.3	94.2
Buses	0	1	0	1	-	2	0	0	0	0	-	0	0	0	12	0	-	12	0	0	9	2	-	11	25
% Buses	-	2.3	-	3.7	-	2.8	-	-	-	0.0	-	0.0	-	0.0	1.0	0.0	-	1.0	-	0.0	0.7	7.7	-	0.8	1.0
Single-Unit Trucks	0	0	0	1	-	1	0	0	0	0	-	0	0	0	42	0	-	42	0	0	35	0	-	35	78
% Single-Unit Trucks	-	0.0	-	3.7	-	1.4	-	-	-	0.0	-	0.0	-	0.0	3.6	0.0	-	3.5	-	0.0	2.7	0.0	-	2.7	3.0
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	16	0	-	16	0	0	29	0	-	29	45
% Articulated Trucks	-	0.0	-	0.0	-	0.0	-	-	-	0.0	-	0.0	-	0.0	1.4	0.0	-	1.3	-	0.0	2.3	0.0	-	2.2	1.7
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	-	0.0	-	0.0	-	0.0	-	-	-	0.0	-	0.0	-	0.0	0.1	0.0	-	0.1	-	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Kenig, Lindgren, O'Hara, Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990 sainkeshavarzi@kloainc.com

Count Name: Milwaukee Ave with Johnson Dr
Site Code:
Start Date: 06/16/2022
Page No: 4

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Johnson Dr Eastbound						Access Dr Westbound						Milwaukee Ave Northbound						Milwaukee Ave Southbound					
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total
4:45 PM	0	4	0	5	0	9	0	1	0	13	0	14	1	8	382	0	0	391	0	2	396	13	0	411
5:00 PM	0	10	0	8	0	18	0	2	0	4	0	6	0	7	345	1	0	353	0	1	426	20	0	447
5:15 PM	0	8	0	5	0	13	0	1	0	1	0	2	0	11	415	0	0	426	0	0	415	12	0	427
5:30 PM	0	8	0	6	0	14	0	1	0	3	0	4	1	11	396	0	0	408	0	1	369	12	0	382
Total	0	30	0	24	0	54	0	5	0	21	0	26	2	37	1538	1	0	1578	0	4	1606	57	0	1667
Approach %	0.0	55.6	0.0	44.4	-	-	0.0	19.2	0.0	80.8	-	-	0.1	2.3	97.5	0.1	-	-	0.0	0.2	96.3	3.4	-	-
Total %	0.0	0.9	0.0	0.7	-	1.6	0.0	0.2	0.0	0.6	-	0.8	0.1	1.1	46.3	0.0	-	47.5	0.0	0.1	46.3	1.7	-	50.1
PHF	0.000	0.750	0.000	0.750	-	0.750	0.000	0.625	0.000	0.404	-	0.464	0.500	0.841	0.927	0.250	-	0.926	0.000	0.500	0.942	0.713	-	0.932
Lights	0	30	0	24	-	54	0	4	0	20	-	24	2	36	1502	0	-	1540	0	4	1571	56	-	1631
% Lights	-	100.0	-	100.0	-	100.0	-	80.0	-	95.2	-	92.3	100.0	97.3	97.7	0.0	-	97.6	-	100.0	97.8	98.2	-	97.8
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	6	0	-	6	0	0	6	0	-	6
% Buses	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.0	0.0	0.4	0.0	-	0.4	-	0.0	0.4	0.0	-	0.4
Single-Unit Trucks	0	0	0	0	-	0	0	1	0	1	-	2	0	1	11	1	-	13	0	0	14	1	-	15
% Single-Unit Trucks	-	0.0	-	0.0	-	0.0	-	20.0	-	4.8	-	7.7	0.0	2.7	0.7	100.0	-	0.8	-	0.0	0.9	1.8	-	0.9
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	19	0	-	19	0	0	15	0	-	15
% Articulated Trucks	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.0	0.0	1.2	0.0	-	1.2	-	0.0	0.9	0.0	-	0.9
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0
% Bicycles on Road	-	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
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Kenig, Lindgren, O'Hara, Aboona, Inc.
9575 W. Higgins Rd., Suite 400

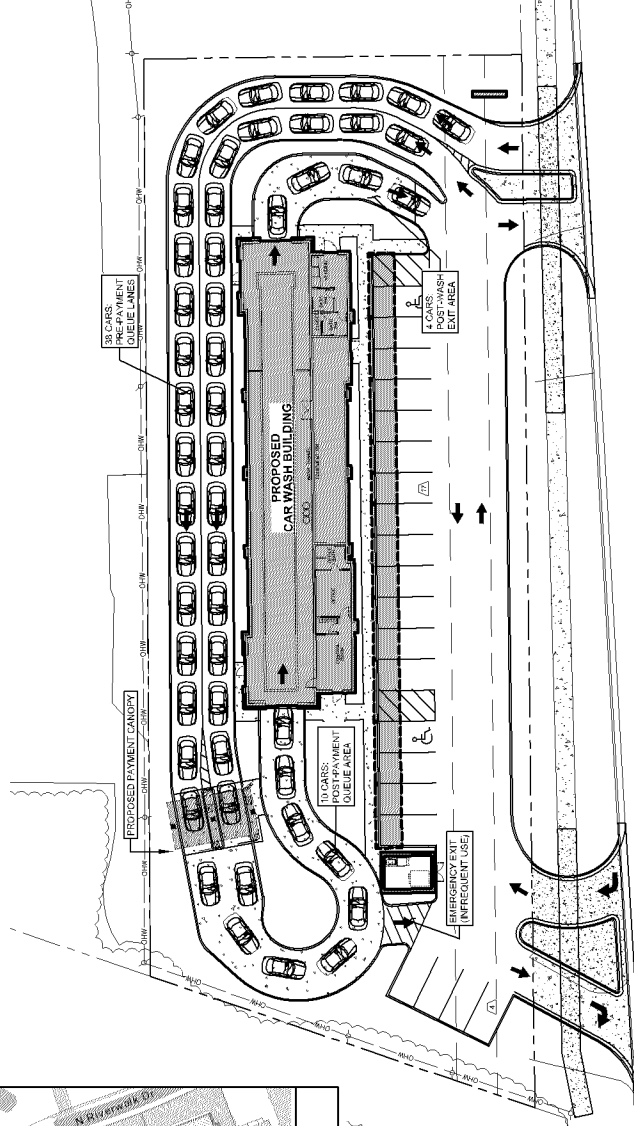
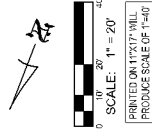
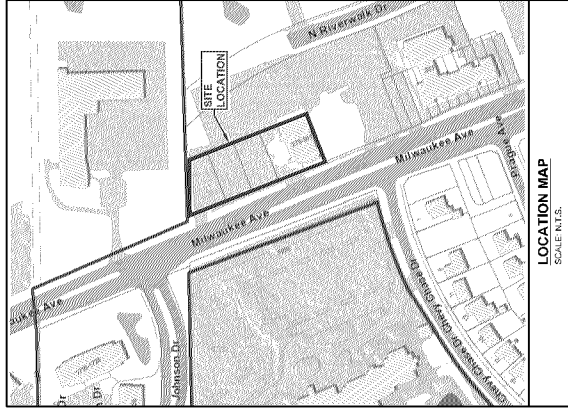
Rosemont, Illinois, United States 60018
(847)518-9990 sainkeshavarzi@kloainc.com

Count Name: Milwaukee Ave with Johnson Dr
Site Code:
Start Date: 06/16/2022
Page No: 5

Turning Movement Peak Hour Data (12:45 PM)

Start Time	Johnson Dr Eastbound						Access Dr Westbound						Milwaukee Ave Northbound						Milwaukee Ave Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
12:45 PM	0	10	0	6	0	16	0	0	0	0	0	0	0	9	287	0	0	296	0	0	323	10	0	333	645
1:00 PM	0	13	0	11	0	24	0	0	0	2	0	2	1	8	329	0	0	338	0	2	316	9	0	327	691
1:15 PM	0	10	0	8	0	18	0	0	0	0	0	0	0	7	350	0	0	357	0	0	339	15	0	354	729
1:30 PM	0	8	0	11	0	19	0	0	0	0	0	0	0	7	302	0	0	309	0	0	359	9	0	368	696
Total	0	41	0	36	0	77	0	0	0	2	0	2	1	31	1268	0	0	1300	0	2	1337	43	0	1382	2761
Approach %	0.0	53.2	0.0	46.8	-	-	0.0	0.0	0.0	100.0	-	-	0.1	2.4	97.5	0.0	-	-	0.0	0.1	96.7	3.1	-	-	-
Total %	0.0	1.5	0.0	1.3	-	2.8	0.0	0.0	0.0	0.1	-	0.1	0.0	1.1	45.9	0.0	-	47.1	0.0	0.1	48.4	1.6	-	-	50.1
PHF	0.000	0.788	0.000	0.818	-	0.802	0.000	0.000	0.000	0.250	-	0.250	0.250	0.861	0.906	0.000	-	0.910	0.000	0.250	0.931	0.717	-	-	0.939
Lights	0	40	0	36	-	76	0	0	0	2	-	2	1	30	1252	0	-	1283	0	2	1309	42	-	-	1353
% Lights	-	97.6	-	100.0	-	98.7	-	-	-	100.0	-	100.0	100.0	96.8	98.7	-	-	98.7	-	100.0	97.9	97.7	-	-	97.9
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	0	0	1	0	-	-	1
% Buses	-	0.0	-	0.0	-	0.0	-	-	-	0.0	-	0.0	0.0	0.0	0.1	-	-	0.1	-	0.0	0.1	0.0	-	-	0.1
Single-Unit Trucks	0	1	0	0	-	1	0	0	0	0	-	0	0	1	7	0	-	8	0	0	23	1	-	-	24
% Single-Unit Trucks	-	2.4	-	0.0	-	1.3	-	-	-	0.0	-	0.0	0.0	3.2	0.6	-	-	0.6	-	0.0	1.7	2.3	-	-	1.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	8	0	-	8	0	0	4	0	-	-	4
% Articulated Trucks	-	0.0	-	0.0	-	0.0	-	-	-	0.0	-	0.0	0.0	0.0	0.6	-	-	0.6	-	0.0	0.3	0.0	-	-	0.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-	0
% Bicycles on Road	-	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
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site Plan



**US 45
(N. MILWAUKEE AVE.)**
STATE RIGHT OF WAY

E CHEVY CHASE DR.

JOHNSON DR.

CARWASH
TO DESIGN

TERRA
CONSULTING GROUP, LTD.
600 Busse Highway
Park Ridge, IL 60068
PH: 847/688-4400
FAX: 847/688-4401

DESIGNED BY: N.E.C.
DRAWN BY: N.E.C.
DATE: 05-14-2021
PROJECT #: 1583

**CAR WASH
QUEUE LINE
EXHIBIT**

2
OF 4

PROJECT NO.: 1583

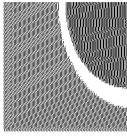
PROJECT NAME: 1583

PROJECT NO.: 1583

PROJECT NAME: 1583

PROJECT NO.: 1583

CMAP 2050 Projections Letter



Chicago Metropolitan Agency for Planning

433 West Van Buren Street
Suite 450
Chicago, IL 60607

312-454-0400
cmap.illinois.gov

July 29, 2021

Elise Purguette
Traffic Engineer
Kenig, Lindgren, O'Hara and Aboona, Inc.
9575 West Higgins Road
Suite 400
Rosemont, IL 60018

Subject: Milwaukee Avenue @ Riverwalk Drive/Columbus Parkway
IDOT

Dear Ms. Purguette:

In response to a request made on your behalf and dated July 29, 2021, we have developed year 2050 average daily traffic (ADT) projections for the subject location.

ROAD SEGMENT	Current ADT	Year 2050 ADT
Milwaukee Ave, @ Riverwalk Dr / Columbus Pkwy	36,200	37,600

Traffic projections are developed using existing ADT data provided in the request letter and the results from the June 2021 CMAP Travel Demand Analysis. The regional travel model uses CMAP 2050 socioeconomic projections and assumes the implementation of the ON TO 2050 Comprehensive Regional Plan for the Northeastern Illinois area. The provision of this data in support of your request does not constitute a CMAP endorsement of the proposed development or any subsequent developments.

If you have any questions, please call me at (312) 386-8806.

Sincerely,

Jose Rodriguez, PTP, AICP
Senior Planner, Research & Analysis

cc: Rios (IDOT)
2021_CY_TrafficForecast\BuffaloGrove\la-19-21\la-19-21.docx

Level of Service Criteria

LEVEL OF SERVICE CRITERIA

Signalized Intersections		
Level of Service	Interpretation	Average Control Delay (seconds per vehicle)
A	Favorable progression. Most vehicles arrive during the green indication and travel through the intersection without stopping.	≤10
B	Good progression, with more vehicles stopping than for Level of Service A.	>10 - 20
C	Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear. Number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.	>20 - 35
D	The volume-to-capacity ratio is high and either progression is ineffective or the cycle length is too long. Many vehicles stop and individual cycle failures are noticeable.	>35 - 55
E	Progression is unfavorable. The volume-to-capacity ratio is high and the cycle length is long. Individual cycle failures are frequent.	>55 - 80
F	The volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.	>80.0
Unsignalized Intersections		
Level of Service	Average Total Delay (SEC/VEH)	
A	0 - 10	
B	> 10 - 15	
C	> 15 - 25	
D	> 25 - 35	
E	> 35 - 50	
F	> 50	

Source: *Highway Capacity Manual*, 2010.

Capacity Analysis Summary Sheets

Existing Weekday Morning Peak Hour

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	1	10	116	0	37	5	1342	94	40	1378	0
Future Volume (vph)	4	1	10	116	0	37	5	1342	94	40	1378	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	235		0	240		0	165		265	200		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	95			100			155			80		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	0.91
Ped Bike Factor												
Frt		0.862			0.850				0.850			
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1638	0	3155	1495	0	1805	5151	1495	1770	4848	0
Flt Permitted	0.950			0.950			0.157			0.147		
Satd. Flow (perm)	1805	1638	0	3155	1495	0	298	5151	1495	274	4848	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			30			40			40	
Link Distance (ft)		634			251			497			188	
Travel Time (s)		17.3			5.7			8.5			3.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	11%	0%	8%	0%	6%	8%	2%	7%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	12	0	123	39	0	5	1428	100	43	1466	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases							2		2	6		
Detector Phase	7	4		3	8		5	2	3	1	6	
Switch Phase												
Minimum Initial (s)	4.0	8.0		4.0	8.0		3.0	15.0	4.0	3.0	15.0	
Minimum Split (s)	9.5	53.0		9.5	49.0		9.5	38.0	9.5	9.5	31.0	
Total Split (s)	15.0	21.0		26.0	32.0		14.0	64.0	26.0	14.0	64.0	
Total Split (%)	12.0%	16.8%		20.8%	25.6%		11.2%	51.2%	20.8%	11.2%	51.2%	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5	3.5	3.5	4.5	
All-Red Time (s)	1.0	1.5		1.0	1.5		0.5	1.5	1.0	0.5	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0		4.5	6.0		4.0	6.0	4.5	4.0	6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min	None	None	C-Min	
Act Effect Green (s)	5.9	8.2		11.0	13.1		95.9	89.3	105.4	99.2	95.7	
Actuated g/C Ratio	0.05	0.07		0.09	0.10		0.77	0.71	0.84	0.79	0.77	

Buffalo Grove- Carwash

Synchro 11 Report

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.05	0.11		0.44	0.25		0.02	0.39	0.08	0.15	0.40	
Control Delay	57.8	57.2		59.1	53.4		4.8	8.8	2.0	5.2	6.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	57.8	57.2		59.1	53.4		4.8	8.8	2.0	5.2	6.7	
LOS	E	E		E	D		A	A	A	A	A	
Approach Delay		57.3			57.7			8.4			6.7	
Approach LOS		E			E			A			A	
Queue Length 50th (ft)	3	9		49	30		1	128	6	4	83	
Queue Length 95th (ft)	16	31		80	65		5	257	18	21	265	
Internal Link Dist (ft)		554			171			417			108	
Turn Bay Length (ft)	235			240			165		265	200		
Base Capacity (vph)	151	196		542	310		357	3681	1358	338	3711	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.03	0.06		0.23	0.13		0.01	0.39	0.07	0.13	0.40	

Intersection Summary

Area Type: Other

Cycle Length: 125

Actuated Cycle Length: 125

Offset: 1 (1%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.44

Intersection Signal Delay: 10.3

Intersection LOS: B

Intersection Capacity Utilization 53.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

 Ø1	 Ø2 (R)	 Ø4	 Ø3
14 s	64 s	21 s	26 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
14 s	64 s	15 s	32 s

HCM 6th TWSC

2: Milwaukee Avenue & Prague Ave

06/29/2022

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	3	1	1387	1415	3
Future Vol, veh/h	0	3	1	1387	1415	3
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, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	6	6	100
Mvmt Flow	0	3	1	1594	1626	3
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2268	815	1629	0	-	0
Stage 1	1628	-	-	-	-	-
Stage 2	640	-	-	-	-	-
Critical Hdwy	5.7	7.1	5.3	-	-	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.8	3.9	3.1	-	-	-
Pot Cap-1 Maneuver	69	279	196	-	-	-
Stage 1	100	-	-	-	-	-
Stage 2	448	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	66	279	196	-	-	-
Mov Cap-2 Maneuver	86	-	-	-	-	-
Stage 1	96	-	-	-	-	-
Stage 2	448	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	18.1	0.4		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	196	-	279	-	-	
HCM Lane V/C Ratio	0.006	-	0.012	-	-	
HCM Control Delay (s)	23.5	0.4	18.1	-	-	
HCM Lane LOS	C	A	C	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC

3: Milwaukee Ave & Chevy Chase Drive

06/29/2022

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑↑↑	↑↑	
Traffic Vol, veh/h	0	5	14	1373	1413	7
Future Vol, veh/h	0	5	14	1373	1413	7
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	-	25	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	6	4	14
Mvmt Flow	0	5	15	1461	1503	7
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2121	755	1510	0	-	0
Stage 1	1507	-	-	-	-	-
Stage 2	614	-	-	-	-	-
Critical Hdwy	6.25	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.65	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	60	356	449	-	-	-
Stage 1	170	-	-	-	-	-
Stage 2	476	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	58	356	449	-	-	-
Mov Cap-2 Maneuver	130	-	-	-	-	-
Stage 1	164	-	-	-	-	-
Stage 2	476	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	15.3	0.1		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	449	-	356	-	-	
HCM Lane V/C Ratio	0.033	-	0.015	-	-	
HCM Control Delay (s)	13.3	-	15.3	-	-	
HCM Lane LOS	B	-	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0	-	-	

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC

4: Milwaukee Ave & South Access Drive

06/29/2022

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕		↔	↕
Traffic Vol, veh/h	0	0	1373	0	0	1420
Future Vol, veh/h	0	0	1373	0	0	1420
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	-	-	-	25	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	92
Heavy Vehicles, %	0	0	6	0	0	2
Mvmt Flow	0	0	1445	0	0	1543

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	2217	723	0	0	1445	0
Stage 1	1445	-	-	-	-	-
Stage 2	772	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	38	373	-	-	475	-
Stage 1	187	-	-	-	-	-
Stage 2	422	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	38	373	-	-	475	-
Mov Cap-2 Maneuver	133	-	-	-	-	-
Stage 1	187	-	-	-	-	-
Stage 2	422	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	475	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	-
HCM Lane LOS	-	-	A	-
HCM 95th %tile Q(veh)	-	-	0	-

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC
5: Milwaukee Ave & RI/RO Access Dr

06/29/2022

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			↕
Traffic Vol, veh/h	0	0	1373	0	0	1420
Future Vol, veh/h	0	0	1373	0	0	1420
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	95	95	95	95	95	95
Heavy Vehicles, %	0	0	6	0	0	2
Mvmt Flow	0	0	1445	0	0	1495

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	723	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.9	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.3	-
Pot Cap-1 Maneuver	0	373	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	373	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	0
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	-

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC
6: Milwaukee Ave & Johnson Dr

06/29/2022

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱		↰	↱		↰	↱
Traffic Vol, veh/h	44	0	27	0	0	3	9	1353	11	3	1393	26
Future Vol, veh/h	44	0	27	0	0	3	9	1353	11	3	1393	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	105	-	-	50	-	110
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	0	8	0	0	0	0	6	0	0	6	8
Mvmt Flow	49	0	30	0	0	3	10	1503	12	3	1548	29

Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	2326	3089	774	2309	3112	758	1577	0	0	1515	0	0
Stage 1	1554	1554	-	1529	1529	-	-	-	-	-	-	-
Stage 2	772	1535	-	780	1583	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.5	7.06	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4	3.38	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 20	12	328	21	12	354	423	-	-	447	-	-
Stage 1	118	176	-	125	181	-	-	-	-	-	-	-
Stage 2	358	180	-	359	170	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 19	12	328	19	12	354	423	-	-	447	-	-
Mov Cap-2 Maneuver	85	85	-	87	82	-	-	-	-	-	-	-
Stage 1	115	175	-	122	177	-	-	-	-	-	-	-
Stage 2	346	176	-	324	169	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	64.4	15.3	0.1	0
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	423	-	-	85	328	354	447	-	-
HCM Lane V/C Ratio	0.024	-	-	0.575	0.091	0.009	0.007	-	-
HCM Control Delay (s)	13.7	-	-	93.5	17.1	15.3	13.1	-	-
HCM Lane LOS	B	-	-	F	C	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.6	0.3	0	0	-	-

Notes									
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon									

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Capacity Analysis Summary Sheets

Existing Weekday Evening Peak Hour

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	6	5	163	6	131	40	1499	48	53	1576	6
Future Volume (vph)	35	6	5	163	6	131	40	1499	48	53	1576	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	235		0	240		0	165		265	200		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	95			100			155			80		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	0.91
Ped Bike Factor												
Frt		0.937			0.857				0.850		0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1780	0	3148	1513	0	1805	5250	1583	1719	5031	0
Flt Permitted	0.950			0.950			0.089			0.100		
Satd. Flow (perm)	1805	1780	0	3148	1513	0	169	5250	1583	181	5031	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			30			40			40	
Link Distance (ft)		634			251			497			188	
Travel Time (s)		17.3			5.7			8.5			3.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	11%	0%	8%	0%	4%	2%	5%	3%	0%
Bus Blockages (#/hr)	0	0	0	1	0	2	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	12	0	177	149	0	43	1629	52	58	1720	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases							2		2	6		
Detector Phase	7	4		3	8		5	2	3	1	6	
Switch Phase												
Minimum Initial (s)	4.0	8.0		4.0	8.0		3.0	15.0	4.0	3.0	15.0	
Minimum Split (s)	9.5	27.0		9.5	40.0		9.5	38.0	9.5	9.5	31.0	
Total Split (s)	15.0	27.0		28.0	40.0		15.0	60.0	28.0	15.0	60.0	
Total Split (%)	11.5%	20.8%		21.5%	30.8%		11.5%	46.2%	21.5%	11.5%	46.2%	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5	3.5	3.5	4.5	
All-Red Time (s)	1.0	1.5		1.0	1.5		0.5	1.5	1.0	0.5	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0		4.5	6.0		4.0	6.0	4.5	4.0	6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min	None	None	C-Min	
Act Effect Green (s)	8.1	8.2		25.3	19.0		86.7	79.2	109.6	87.7	79.7	
Actuated g/C Ratio	0.06	0.06		0.19	0.15		0.67	0.61	0.84	0.67	0.61	

Buffalo Grove- Carwash

Synchro 11 Report

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.34	0.11		0.29	0.67		0.22	0.51	0.04	0.28	0.56	
Control Delay	66.0	59.6		45.3	67.0		11.3	17.4	2.1	11.9	18.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	66.0	59.6		45.3	67.0		11.3	17.4	2.1	11.9	18.0	
LOS	E	E		D	E		B	B	A	B	B	
Approach Delay		64.5			55.2			16.8			17.8	
Approach LOS		E			E			B			B	
Queue Length 50th (ft)	31	10		60	121		11	291	4	15	320	
Queue Length 95th (ft)	68	31		98	185		30	412	10	37	447	
Internal Link Dist (ft)		554			171			417			108	
Turn Bay Length (ft)	235			240			165		265	200		
Base Capacity (vph)	145	287		662	395		255	3198	1335	255	3085	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.26	0.04		0.27	0.38		0.17	0.51	0.04	0.23	0.56	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 30 (23%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 21.1

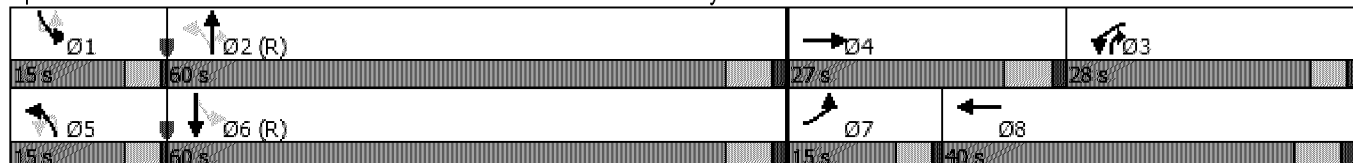
Intersection LOS: C

Intersection Capacity Utilization 62.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr



HCM 6th TWSC

2: Milwaukee Avenue & Prague Ave

06/29/2022

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			U	U	U
Traffic Vol, veh/h	0	3	3	1684	1632	4
Future Vol, veh/h	0	3	3	1684	1632	4
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, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	33	0	0	2	100
Mvmt Flow	0	3	3	1754	1700	4
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2410	852	1704	0	-	0
Stage 1	1702	-	-	-	-	-
Stage 2	708	-	-	-	-	-
Critical Hdwy	5.7	7.76	5.3	-	-	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.8	4.23	3.1	-	-	-
Pot Cap-1 Maneuver	58	215	180	-	-	-
Stage 1	90	-	-	-	-	-
Stage 2	413	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	20	215	180	-	-	-
Mov Cap-2 Maneuver	28	-	-	-	-	-
Stage 1	31	-	-	-	-	-
Stage 2	413	-	-	-	-	-
Approach	EB		NB		SB	
HCM Control Delay, s	22		5.5		0	
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	180	-	215	-	-	
HCM Lane V/C Ratio	0.017	-	0.015	-	-	
HCM Control Delay (s)	25.4	5.5	22	-	-	
HCM Lane LOS	D	A	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0	-	-	

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC

3: Milwaukee Ave & Chevy Chase Drive

06/29/2022

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑↑↑	↑↑	
Traffic Vol, veh/h	9	10	14	1670	1626	9
Future Vol, veh/h	9	10	14	1670	1626	9
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	-	25	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	9	10	14	1687	1642	9
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2350	826	1651	0	-	0
Stage 1	1647	-	-	-	-	-
Stage 2	703	-	-	-	-	-
Critical Hdwy	6.25	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.65	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	44	319	396	-	-	-
Stage 1	143	-	-	-	-	-
Stage 2	427	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	42	319	396	-	-	-
Mov Cap-2 Maneuver	108	-	-	-	-	-
Stage 1	138	-	-	-	-	-
Stage 2	427	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	29.5	0.1		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	396	-	166	-	-	
HCM Lane V/C Ratio	0.036	-	0.116	-	-	
HCM Control Delay (s)	14.4	-	29.5	-	-	
HCM Lane LOS	B	-	D	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-	

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC

6: Milwaukee Ave & Johnson Dr

06/29/2022

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↗		↖	↗	↖
Traffic Vol, veh/h	30	0	24	5	0	21	39	1639	1	4	1606	57
Future Vol, veh/h	30	0	24	5	0	21	39	1639	1	4	1606	57
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	105	-	-	50	-	110
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	20	0	5	3	2	100	0	2	2
Mvmt Flow	31	0	25	5	0	22	41	1707	1	4	1673	59

Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	2617	3471	837	2635	3530	854	1732	0	0	1708	0	0
Stage 1	1681	1681	-	1790	1790	-	-	-	-	-	-	-
Stage 2	936	1790	-	845	1740	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.9	6.5	7	4.16	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.9	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.9	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.7	4	3.35	2.23	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 12	7	314	9	6	296	356	-	-	377	-	-
Stage 1	100	152	-	69	135	-	-	-	-	-	-	-
Stage 2	289	135	-	288	143	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 10	6	314	7	5	296	356	-	-	377	-	-
Mov Cap-2 Maneuver	62	62	-	46	52	-	-	-	-	-	-	-
Stage 1	89	150	-	61	119	-	-	-	-	-	-	-
Stage 2	237	119	-	262	141	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	69.7	35.4	0.4	0
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	356	-	-	62	314	145	377	-	-
HCM Lane V/C Ratio	0.114	-	-	0.504	0.08	0.187	0.011	-	-
HCM Control Delay (s)	16.4	-	-	111.5	17.5	35.4	14.7	-	-
HCM Lane LOS	C	-	-	F	C	E	B	-	-
HCM 95th %tile Q(veh)	0.4	-	-	2	0.3	0.7	0	-	-

Notes									
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon						

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Capacity Analysis Summary Sheets

Existing Saturday Midday Peak Hour

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	9	0	16	164	1	53	9	13	1226	46	10	40
Future Volume (vph)	9	0	16	164	1	53	9	13	1226	46	10	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%				0%			
Storage Length (ft)	235		0	240		0		165		265		200
Storage Lanes	1		0	2		0		1		1		1
Taper Length (ft)	95			100				155				80
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.91	1.00	0.91	1.00	0.91	1.00
Ped Bike Factor												
Frt		0.850			0.853					0.850		
Flt Protected	0.950			0.950				0.950				0.950
Satd. Flow (prot)	1805	1615	0	3433	1478	0	0	1805	5353	1583	0	1735
Flt Permitted	0.950			0.950				0.151				0.179
Satd. Flow (perm)	1805	1615	0	3433	1478	0	0	287	5353	1583	0	327
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			30				40			
Link Distance (ft)		634			251				497			
Travel Time (s)		17.3			5.7				8.5			
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	2%	100%	8%	0%	0%	2%	2%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%				0%			
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	17	0	171	56	0	0	23	1277	48	0	52
Turn Type	Prot	NA		Prot	NA		pm+pt	pm+pt	NA	pm+ov	pm+pt	pm+pt
Protected Phases	7	4		3	8		5	5	2	3	1	1
Permitted Phases							2	2		2	6	6
Detector Phase	7	4		3	8		5	5	2	3	1	1
Switch Phase												
Minimum Initial (s)	4.0	8.0		4.0	8.0		3.0	3.0	15.0	4.0	3.0	3.0
Minimum Split (s)	9.5	53.0		9.5	49.0		9.5	9.5	38.0	9.5	9.5	9.5
Total Split (s)	14.0	21.0		25.0	32.0		14.0	14.0	60.0	25.0	14.0	14.0
Total Split (%)	11.7%	17.5%		20.8%	26.7%		11.7%	11.7%	50.0%	20.8%	11.7%	11.7%
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	3.5	4.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.5		1.0	1.5		0.5	0.5	1.5	1.0	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0		0.0
Total Lost Time (s)	4.5	6.0		4.5	6.0			4.0	6.0	4.5		4.0
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	None	C-Min	None	None	None
Act Effect Green (s)	6.2	8.5		11.9	14.1			89.8	83.0	100.0		91.6
Actuated g/C Ratio	0.05	0.07		0.10	0.12			0.75	0.69	0.83		0.76

Buffalo Grove- Carwash

Synchro 11 Report

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022



Lane Group	SBT	SBR
Lane Configurations	↑↑↑	↔
Traffic Volume (vph)	1389	6
Future Volume (vph)	1389	6
Ideal Flow (vphpl)	1900	1900
Lane Width (ft)	12	12
Grade (%)	0%	
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	0.91	0.91
Ped Bike Factor		
Frt	0.999	
Flt Protected		
Satd. Flow (prot)	5081	0
Flt Permitted		
Satd. Flow (perm)	5081	0
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	40	
Link Distance (ft)	188	
Travel Time (s)	3.2	
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor	0.96	0.96
Growth Factor	100%	100%
Heavy Vehicles (%)	2%	0%
Bus Blockages (#/hr)	0	0
Parking (#/hr)		
Mid-Block Traffic (%)	0%	
Shared Lane Traffic (%)		
Lane Group Flow (vph)	1453	0
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Detector Phase	6	
Switch Phase		
Minimum Initial (s)	15.0	
Minimum Split (s)	31.0	
Total Split (s)	60.0	
Total Split (%)	50.0%	
Yellow Time (s)	4.5	
All-Red Time (s)	1.5	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	6.0	
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Recall Mode	C-Min	
Act Effct Green (s)	85.4	
Actuated g/C Ratio	0.71	

Buffalo Grove- Carwash

Synchro 11 Report

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
v/c Ratio	0.10	0.15		0.50	0.32			0.08	0.35	0.04		0.16
Control Delay	56.0	55.2		56.2	51.6			5.6	9.4	2.3		5.8
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0		0.0
Total Delay	56.0	55.2		56.2	51.6			5.6	9.4	2.3		5.8
LOS	E	E		E	D			A	A	A		A
Approach Delay		55.5			55.1				9.1			
Approach LOS		E			E				A			
Queue Length 50th (ft)	7	13		65	42			2	115	3		6
Queue Length 95th (ft)	24	37		100	81			14	233	11		25
Internal Link Dist (ft)		554			171				417			
Turn Bay Length (ft)	235			240				165		265		200
Base Capacity (vph)	142	201		586	320			348	3700	1403		371
Starvation Cap Reductn	0	0		0	0			0	0	0		0
Spillback Cap Reductn	0	0		0	0			0	0	0		0
Storage Cap Reductn	0	0		0	0			0	0	0		0
Reduced v/c Ratio	0.06	0.08		0.29	0.17			0.07	0.35	0.03		0.14

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 4 (3%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 12.9

Intersection LOS: B

Intersection Capacity Utilization 55.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

				
Ø1	Ø2 (R)		Ø4	Ø3
14 s	60 s		21 s	25 s
				
Ø5	Ø6 (R)		Ø7	Ø8
14 s	60 s		14 s	32 s

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022



Lane Group	SBT	SBR
v/c Ratio	0.40	
Control Delay	9.3	
Queue Delay	0.0	
Total Delay	9.3	
LOS	A	
Approach Delay	9.2	
Approach LOS	A	
Queue Length 50th (ft)	137	
Queue Length 95th (ft)	274	
Internal Link Dist (ft)	108	
Turn Bay Length (ft)		
Base Capacity (vph)	3616	
Starvation Cap Reductn	0	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	0.40	
Intersection Summary		

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC

2: Milwaukee Avenue & Prague Ave

06/29/2022

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			U	U	U
Traffic Vol, veh/h	0	2	3	1317	1443	6
Future Vol, veh/h	0	2	3	1317	1443	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, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	34	2	2	0
Mvmt Flow	0	2	3	1358	1488	6
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2040	747	1494	0	-	0
Stage 1	1491	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Critical Hdwy	5.7	7.1	5.98	-	-	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.8	3.9	3.44	-	-	-
Pot Cap-1 Maneuver	91	309	164	-	-	-
Stage 1	122	-	-	-	-	-
Stage 2	500	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	84	309	164	-	-	-
Mov Cap-2 Maneuver	101	-	-	-	-	-
Stage 1	113	-	-	-	-	-
Stage 2	500	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	16.7	0.8		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	164	-	309	-	-	
HCM Lane V/C Ratio	0.019	-	0.007	-	-	
HCM Control Delay (s)	27.4	0.7	16.7	-	-	
HCM Lane LOS	D	A	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0	-	-	

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC

3: Milwaukee Ave & Chevy Chase Drive

06/29/2022

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑↑↑	↑↑	
Traffic Vol, veh/h	7	15	11	1306	1434	10
Future Vol, veh/h	7	15	11	1306	1434	10
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	-	25	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	15	0	0	3	2	0
Mvmt Flow	7	16	12	1375	1509	11
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2089	760	1520	0	-	0
Stage 1	1515	-	-	-	-	-
Stage 2	574	-	-	-	-	-
Critical Hdwy	6.55	6.9	4.1	-	-	-
Critical Hdwy Stg 1	6.1	-	-	-	-	-
Critical Hdwy Stg 2	6.3	-	-	-	-	-
Follow-up Hdwy	3.8	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	52	353	445	-	-	-
Stage 1	146	-	-	-	-	-
Stage 2	463	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	51	353	445	-	-	-
Mov Cap-2 Maneuver	115	-	-	-	-	-
Stage 1	142	-	-	-	-	-
Stage 2	463	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	24	0.1		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	445	-	213	-	-	
HCM Lane V/C Ratio	0.026	-	0.109	-	-	
HCM Control Delay (s)	13.3	-	24	-	-	
HCM Lane LOS	B	-	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-	

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC

6: Milwaukee Ave & Johnson Dr

06/29/2022

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱		↰	↱		↰	↱
Traffic Vol, veh/h	41	0	36	0	0	2	32	1281	0	2	1408	43
Future Vol, veh/h	41	0	36	0	0	2	32	1281	0	2	1408	43
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	105	-	-	50	-	110
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	0	0	0	0	0	3	2	0	0	2	3
Mvmt Flow	43	0	38	0	0	2	34	1348	0	2	1482	45

Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	2228	2902	741	2161	2947	674	1527	0	0	1348	0	0
Stage 1	1486	1486	-	1416	1416	-	-	-	-	-	-	-
Stage 2	742	1416	-	745	1531	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.5	6.9	7.5	6.5	6.9	4.16	-	-	4.1	-	-
Critical Hdwy Stg 1	6.56	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4	3.3	3.5	4	3.3	2.23	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 23	16	363	27	15	402	428	-	-	517	-	-
Stage 1	129	190	-	147	205	-	-	-	-	-	-	-
Stage 2	371	205	-	377	181	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 21	15	363	23	14	402	428	-	-	517	-	-
Mov Cap-2 Maneuver	87	93	-	94	81	-	-	-	-	-	-	-
Stage 1	119	189	-	135	189	-	-	-	-	-	-	-
Stage 2	340	189	-	336	180	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	51	14	0.3	0
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	428	-	-	87	363	402	517	-	-
HCM Lane V/C Ratio	0.079	-	-	0.496	0.104	0.005	0.004	-	-
HCM Control Delay (s)	14.1	-	-	81.6	16.1	14	12	-	-
HCM Lane LOS	B	-	-	F	C	B	B	-	-
HCM 95th %tile Q(veh)	0.3	-	-	2.1	0.3	0	0	-	-

Notes									
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon									

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Capacity Analysis Summary Sheets
Year 2028 No-Build Weekday Morning Peak Hour

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				 			 	  		 	  	
Traffic Volume (vph)	5	3	11	129	1	38	6	1361	99	41	1392	0
Future Volume (vph)	5	3	11	129	1	38	6	1361	99	41	1392	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	235		0	240		0	165		265	200		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	95			100			155			80		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	0.91
Ped Bike Factor												
Frt		0.880			0.854				0.850			
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1672	0	3155	1505	0	1805	5151	1495	1770	4848	0
Flt Permitted	0.950			0.950			0.154			0.142		
Satd. Flow (perm)	1805	1672	0	3155	1505	0	293	5151	1495	265	4848	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		634			251			497			188	
Travel Time (s)		17.3			6.8			8.5			3.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	11%	0%	8%	0%	6%	8%	2%	7%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	15	0	137	41	0	6	1448	105	44	1481	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases							2		2	6		
Detector Phase	7	4		3	8		5	2	3	1	6	
Switch Phase												
Minimum Initial (s)	4.0	8.0		4.0	8.0		3.0	15.0	4.0	3.0	15.0	
Minimum Split (s)	9.5	53.0		9.5	49.0		9.5	38.0	9.5	9.5	31.0	
Total Split (s)	15.0	21.0		26.0	32.0		14.0	64.0	26.0	14.0	64.0	
Total Split (%)	12.0%	16.8%		20.8%	25.6%		11.2%	51.2%	20.8%	11.2%	51.2%	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5	3.5	3.5	4.5	
All-Red Time (s)	1.0	1.5		1.0	1.5		0.5	1.5	1.0	0.5	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0		4.5	6.0		4.0	6.0	4.5	4.0	6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min	None	None	C-Min	
Act Effect Green (s)	6.0	8.4		11.3	13.5		95.4	88.8	105.3	98.7	95.2	
Actuated g/C Ratio	0.05	0.07		0.09	0.11		0.76	0.71	0.84	0.79	0.76	

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Synchro 11 Report

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.06	0.13		0.48	0.25		0.02	0.40	0.08	0.15	0.40	
Control Delay	58.0	57.4		59.5	52.8		5.2	9.2	2.1	5.5	7.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	58.0	57.4		59.5	52.8		5.2	9.2	2.1	5.5	7.0	
LOS	E	E		E	D		A	A	A	A	A	
Approach Delay		57.6			58.0			8.7			7.0	
Approach LOS		E			E			A			A	
Queue Length 50th (ft)	4	12		55	32		1	132	7	4	85	
Queue Length 95th (ft)	18	34		87	67		6	269	19	22	275	
Internal Link Dist (ft)		554			171			417			108	
Turn Bay Length (ft)	235			240			165		265	200		
Base Capacity (vph)	151	200		542	313		352	3660	1352	330	3693	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.03	0.07		0.25	0.13		0.02	0.40	0.08	0.13	0.40	

Intersection Summary

Area Type: Other

Cycle Length: 125

Actuated Cycle Length: 125

Offset: 1 (1%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 10.9

Intersection LOS: B

Intersection Capacity Utilization 53.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

Ø1	Ø2 (R)	Ø4	Ø3
14 s	64 s	21 s	26 s
Ø5	Ø6 (R)	Ø7	Ø8
14 s	64 s	15 s	32 s

HCM 6th TWSC

2: Milwaukee Avenue & Prague Ave

06/29/2022

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	4	2	1407	1430	4
Future Vol, veh/h	0	4	2	1407	1430	4
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, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	6	6	100
Mvmt Flow	0	5	2	1617	1644	5

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2298	825	1649	0	-	0
Stage 1	1647	-	-	-	-	-
Stage 2	651	-	-	-	-	-
Critical Hdwy	5.7	7.1	5.3	-	-	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.8	3.9	3.1	-	-	-
Pot Cap-1 Maneuver	66	274	192	-	-	-
Stage 1	98	-	-	-	-	-
Stage 2	443	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	59	274	192	-	-	-
Mov Cap-2 Maneuver	78	-	-	-	-	-
Stage 1	88	-	-	-	-	-
Stage 2	443	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.4	0.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	192	-	274	-	-
HCM Lane V/C Ratio	0.012	-	0.017	-	-
HCM Control Delay (s)	24	0.8	18.4	-	-
HCM Lane LOS	C	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC

3: Milwaukee Ave & Chevy Chase Drive

06/29/2022

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑↑↑	↑↑	
Traffic Vol, veh/h	0	6	15	1328	1433	7
Future Vol, veh/h	0	6	15	1328	1433	7
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	-	25	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	6	4	14
Mvmt Flow	0	6	16	1413	1524	7
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2125	766	1531	0	-	0
Stage 1	1528	-	-	-	-	-
Stage 2	597	-	-	-	-	-
Critical Hdwy	6.25	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.65	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	60	350	441	-	-	-
Stage 1	165	-	-	-	-	-
Stage 2	486	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	58	350	441	-	-	-
Mov Cap-2 Maneuver	128	-	-	-	-	-
Stage 1	159	-	-	-	-	-
Stage 2	486	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	15.5	0.2		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	441	-	350	-	-	
HCM Lane V/C Ratio	0.036	-	0.018	-	-	
HCM Control Delay (s)	13.5	-	15.5	-	-	
HCM Lane LOS	B	-	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-	

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC
6: Milwaukee Ave & Johnson Dr

06/29/2022

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕↗		↗	↕↗	↗
Traffic Vol, veh/h	45	0	28	0	0	4	10	1378	12	4	1412	27
Future Vol, veh/h	45	0	28	0	0	4	10	1378	12	4	1412	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	105	-	-	50	-	110
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	0	8	0	0	0	0	6	0	0	6	8
Mvmt Flow	50	0	31	0	0	4	11	1531	13	4	1569	30

Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	2365	3143	785	2353	3167	772	1599	0	0	1544	0	0
Stage 1	1577	1577	-	1560	1560	-	-	-	-	-	-	-
Stage 2	788	1566	-	793	1607	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.5	7.06	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4	3.38	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 19	11	323	19	11	347	415	-	-	436	-	-
Stage 1	114	171	-	120	175	-	-	-	-	-	-	-
Stage 2	350	174	-	352	166	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 18	11	323	17	11	347	415	-	-	436	-	-
Mov Cap-2 Maneuver	82	81	-	83	79	-	-	-	-	-	-	-
Stage 1	111	169	-	117	170	-	-	-	-	-	-	-
Stage 2	336	169	-	315	165	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	69.3	15.5	0.1	0
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	415	-	-	82	323	347	436	-	-
HCM Lane V/C Ratio	0.027	-	-	0.61	0.096	0.013	0.01	-	-
HCM Control Delay (s)	13.9	-	-	101.7	17.3	15.5	13.3	-	-
HCM Lane LOS	B	-	-	F	C	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.8	0.3	0	0	-	-

Notes									
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon									

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Capacity Analysis Summary Sheets
Year 2028 No-Build Weekday Evening Peak Hour

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	8	6	163	6	131	41	1519	53	54	1592	7
Future Volume (vph)	36	8	6	163	6	131	41	1519	53	54	1592	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	235		0	240		0	165		265	200		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	95			100			155			80		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	0.91
Ped Bike Factor												
Frt		0.934			0.857				0.850		0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1775	0	3148	1513	0	1805	5250	1583	1719	5032	0
Flt Permitted	0.950			0.950			0.086			0.097		
Satd. Flow (perm)	1805	1775	0	3148	1513	0	163	5250	1583	176	5032	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			30			40			40	
Link Distance (ft)		634			251			497			188	
Travel Time (s)		17.3			5.7			8.5			3.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	11%	0%	8%	0%	4%	2%	5%	3%	0%
Bus Blockages (#/hr)	0	0	0	1	0	2	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	16	0	177	149	0	45	1651	58	59	1738	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases							2		2	6		
Detector Phase	7	4		3	8		5	2	3	1	6	
Switch Phase												
Minimum Initial (s)	4.0	8.0		4.0	8.0		3.0	15.0	4.0	3.0	15.0	
Minimum Split (s)	9.5	27.0		9.5	40.0		9.5	38.0	9.5	9.5	31.0	
Total Split (s)	15.0	27.0		28.0	40.0		15.0	60.0	28.0	15.0	60.0	
Total Split (%)	11.5%	20.8%		21.5%	30.8%		11.5%	46.2%	21.5%	11.5%	46.2%	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5	3.5	3.5	4.5	
All-Red Time (s)	1.0	1.5		1.0	1.5		0.5	1.5	1.0	0.5	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0		4.5	6.0		4.0	6.0	4.5	4.0	6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min	None	None	C-Min	
Act Effect Green (s)	8.1	8.4		25.2	19.0		86.7	79.1	109.4	87.7	79.6	
Actuated g/C Ratio	0.06	0.06		0.19	0.15		0.67	0.61	0.84	0.67	0.61	

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Synchro 11 Report

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.35	0.14		0.29	0.67		0.23	0.52	0.04	0.29	0.56	
Control Delay	66.2	60.0		45.5	67.0		11.6	17.6	2.2	12.1	18.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	66.2	60.0		45.5	67.0		11.6	17.6	2.2	12.1	18.2	
LOS	E	E		D	E		B	B	A	B	B	
Approach Delay		64.4			55.3			16.9			18.0	
Approach LOS		E			E			B			B	
Queue Length 50th (ft)	32	13		60	121		11	297	4	15	325	
Queue Length 95th (ft)	69	38		99	185		31	421	12	38	454	
Internal Link Dist (ft)		554			171			417			108	
Turn Bay Length (ft)	235			240			165		265	200		
Base Capacity (vph)	145	286		660	395		251	3195	1333	252	3082	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.27	0.06		0.27	0.38		0.18	0.52	0.04	0.23	0.56	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 30 (23%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 21.2

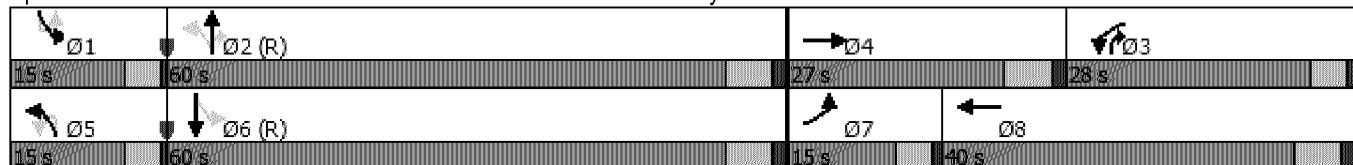
Intersection LOS: C

Intersection Capacity Utilization 63.1%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr



HCM 6th TWSC

2: Milwaukee Avenue & Prague Ave

06/29/2022

Intersection						
Int Delay, s/veh	3.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	4	5	1654	1701	4
Future Vol, veh/h	0	4	5	1654	1701	4
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, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	33	0	0	2	100
Mvmt Flow	0	4	5	1723	1772	4
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2473	888	1776	0	-	0
Stage 1	1774	-	-	-	-	-
Stage 2	699	-	-	-	-	-
Critical Hdwy	5.7	7.76	5.3	-	-	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.8	4.23	3.1	-	-	-
Pot Cap-1 Maneuver	53	202	166	-	-	-
Stage 1	81	-	-	-	-	-
Stage 2	418	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	16	202	166	-	-	-
Mov Cap-2 Maneuver	22	-	-	-	-	-
Stage 1	24	-	-	-	-	-
Stage 2	418	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	23.2	6.5		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	166	-	202	-	-	
HCM Lane V/C Ratio	0.031	-	0.021	-	-	
HCM Control Delay (s)	27.4	6.4	23.2	-	-	
HCM Lane LOS	D	A	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-	

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC

3: Milwaukee Ave & Chevy Chase Drive

06/29/2022

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑↑↑	↑↑	
Traffic Vol, veh/h	10	11	15	1699	1651	11
Future Vol, veh/h	10	11	15	1699	1651	11
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	-	25	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	10	11	15	1716	1668	11
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2390	840	1679	0	-	0
Stage 1	1674	-	-	-	-	-
Stage 2	716	-	-	-	-	-
Critical Hdwy	6.25	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.65	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	41	313	387	-	-	-
Stage 1	138	-	-	-	-	-
Stage 2	421	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	39	313	387	-	-	-
Mov Cap-2 Maneuver	104	-	-	-	-	-
Stage 1	133	-	-	-	-	-
Stage 2	421	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	30.9	0.1		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	387	-	160	-	-	
HCM Lane V/C Ratio	0.039	-	0.133	-	-	
HCM Control Delay (s)	14.7	-	30.9	-	-	
HCM Lane LOS	B	-	D	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-	

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC

6: Milwaukee Ave & Johnson Dr

06/29/2022

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↕↗		↖	↕↗	↗
Traffic Vol, veh/h	31	0	25	6	0	22	41	1668	2	5	1631	58
Future Vol, veh/h	31	0	25	6	0	22	41	1668	2	5	1631	58
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	105	-	-	50	-	110
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	20	0	5	3	2	100	0	2	2
Mvmt Flow	32	0	26	6	0	23	43	1738	2	5	1699	60
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2664	3535	850	2685	3594	870	1759	0	0	1740	0	0
Stage 1	1709	1709	-	1825	1825	-	-	-	-	-	-	-
Stage 2	955	1826	-	860	1769	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.9	6.5	7	4.16	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.9	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.9	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.7	4	3.35	2.23	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 11	6	308	8	6	289	347	-	-	366	-	-
Stage 1	96	148	-	65	129	-	-	-	-	-	-	-
Stage 2	282	129	-	282	138	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 9	5	308	7	5	289	347	-	-	366	-	-
Mov Cap-2 Maneuver	59	59	-	43	49	-	-	-	-	-	-	-
Stage 1	84	146	-	57	113	-	-	-	-	-	-	-
Stage 2	227	113	-	255	136	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	76.3		40.5		0.4		0					
HCM LOS	F		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	347	-	-	59	308	130	366	-	-			
HCM Lane V/C Ratio	0.123	-	-	0.547	0.085	0.224	0.014	-	-			
HCM Control Delay (s)	16.8	-	-	123.5	17.8	40.5	15	-	-			
HCM Lane LOS	C	-	-	F	C	E	B	-	-			
HCM 95th %tile Q(veh)	0.4	-	-	2.2	0.3	0.8	0	-	-			
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Capacity Analysis Summary Sheets
Year 2028 No-Build Saturday Midday Peak Hour

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	10	1	17	177	3	54	10	14	1244	51	11	41
Future Volume (vph)	10	1	17	177	3	54	10	14	1244	51	11	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%				0%			
Storage Length (ft)	235		0	240		0		165		265		200
Storage Lanes	1		0	2		0		1		1		1
Taper Length (ft)	95			100				155				80
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.91	1.00	0.91	1.00	0.91	1.00
Ped Bike Factor												
Frt		0.858			0.858					0.850		
Flt Protected	0.950			0.950				0.950				0.950
Satd. Flow (prot)	1805	1630	0	3433	1447	0	0	1805	5353	1583	0	1736
Flt Permitted	0.950			0.950				0.147				0.174
Satd. Flow (perm)	1805	1630	0	3433	1447	0	0	279	5353	1583	0	318
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			30				40			
Link Distance (ft)		634			251				497			
Travel Time (s)		17.3			5.7				8.5			
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	2%	100%	8%	0%	0%	2%	2%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%				0%			
Shared Lane Traffic (%)												
Lane Group Flow (vph)	10	19	0	184	59	0	0	25	1296	53	0	54
Turn Type	Prot	NA		Prot	NA		pm+pt	pm+pt	NA	pm+ov	pm+pt	pm+pt
Protected Phases	7	4		3	8		5	5	2	3	1	1
Permitted Phases							2	2		2	6	6
Detector Phase	7	4		3	8		5	5	2	3	1	1
Switch Phase												
Minimum Initial (s)	4.0	8.0		4.0	8.0		3.0	3.0	15.0	4.0	3.0	3.0
Minimum Split (s)	9.5	53.0		9.5	49.0		9.5	9.5	38.0	9.5	9.5	9.5
Total Split (s)	14.0	21.0		25.0	32.0		14.0	14.0	60.0	25.0	14.0	14.0
Total Split (%)	11.7%	17.5%		20.8%	26.7%		11.7%	11.7%	50.0%	20.8%	11.7%	11.7%
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	3.5	4.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.5		1.0	1.5		0.5	0.5	1.5	1.0	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0		0.0
Total Lost Time (s)	4.5	6.0		4.5	6.0			4.0	6.0	4.5		4.0
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	None	C-Min	None	None	None
Act Effect Green (s)	6.3	8.5		12.2	14.5			89.4	82.5	99.9		91.2
Actuated g/C Ratio	0.05	0.07		0.10	0.12			0.74	0.69	0.83		0.76

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Synchro 11 Report

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022



Lane Group	SBT	SBR
Lane Configurations	↑↑↑	→
Traffic Volume (vph)	1403	7
Future Volume (vph)	1403	7
Ideal Flow (vphpl)	1900	1900
Lane Width (ft)	12	12
Grade (%)	0%	
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	0.91	0.91
Ped Bike Factor		
Frt	0.999	
Flt Protected		
Satd. Flow (prot)	5081	0
Flt Permitted		
Satd. Flow (perm)	5081	0
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	40	
Link Distance (ft)	188	
Travel Time (s)	3.2	
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor	0.96	0.96
Growth Factor	100%	100%
Heavy Vehicles (%)	2%	0%
Bus Blockages (#/hr)	0	0
Parking (#/hr)		
Mid-Block Traffic (%)	0%	
Shared Lane Traffic (%)		
Lane Group Flow (vph)	1468	0
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Detector Phase	6	
Switch Phase		
Minimum Initial (s)	15.0	
Minimum Split (s)	31.0	
Total Split (s)	60.0	
Total Split (%)	50.0%	
Yellow Time (s)	4.5	
All-Red Time (s)	1.5	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	6.0	
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Recall Mode	C-Min	
Act Effct Green (s)	85.0	
Actuated g/C Ratio	0.71	

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Synchro 11 Report

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
v/c Ratio	0.11	0.17		0.53	0.34			0.09	0.35	0.04		0.17
Control Delay	56.2	55.4		56.4	51.7			5.8	9.8	2.3		6.1
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0		0.0
Total Delay	56.2	55.4		56.4	51.7			5.8	9.8	2.3		6.1
LOS	E	E		E	D			A	A	A		A
Approach Delay		55.7			55.3				9.4			
Approach LOS		E			E				A			
Queue Length 50th (ft)	8	14		70	44			3	118	3		6
Queue Length 95th (ft)	26	39		106	84			15	242	12		27
Internal Link Dist (ft)		554			171				417			
Turn Bay Length (ft)	235			240				165		265		200
Base Capacity (vph)	142	203		586	314			342	3681	1397		364
Starvation Cap Reductn	0	0		0	0			0	0	0		0
Spillback Cap Reductn	0	0		0	0			0	0	0		0
Storage Cap Reductn	0	0		0	0			0	0	0		0
Reduced v/c Ratio	0.07	0.09		0.31	0.19			0.07	0.35	0.04		0.15

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 4 (3%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 13.4

Intersection LOS: B

Intersection Capacity Utilization 55.6%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

 Ø1	 Ø2 (R)	 Ø4	 Ø3
14 s	60 s	21 s	25 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
14 s	60 s	14 s	32 s

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022



Lane Group	SBT	SBR
v/c Ratio	0.41	
Control Delay	9.6	
Queue Delay	0.0	
Total Delay	9.6	
LOS	A	
Approach Delay	9.5	
Approach LOS	A	
Queue Length 50th (ft)	141	
Queue Length 95th (ft)	283	
Internal Link Dist (ft)	108	
Turn Bay Length (ft)		
Base Capacity (vph)	3597	
Starvation Cap Reductn	0	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	0.41	
Intersection Summary		

HCM 6th TWSC

2: Milwaukee Avenue & Prague Ave

06/29/2022

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	3	4	1338	1457	7
Future Vol, veh/h	0	3	4	1338	1457	7
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, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	34	2	2	0
Mvmt Flow	0	3	4	1379	1502	7

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	2066	755	1509
Stage 1	1506	-	-
Stage 2	560	-	-
Critical Hdwy	5.7	7.1	5.98
Critical Hdwy Stg 1	6.6	-	-
Critical Hdwy Stg 2	6	-	-
Follow-up Hdwy	3.8	3.9	3.44
Pot Cap-1 Maneuver	88	305	161
Stage 1	120	-	-
Stage 2	493	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	79	305	161
Mov Cap-2 Maneuver	96	-	-
Stage 1	107	-	-
Stage 2	493	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.9	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	161	-	305	-	-
HCM Lane V/C Ratio	0.026	-	0.01	-	-
HCM Control Delay (s)	27.9	1	16.9	-	-
HCM Lane LOS	D	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0	-	-

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC

3: Milwaukee Ave & Chevy Chase Drive

06/29/2022

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑↑↑	↑↑	
Traffic Vol, veh/h	8	16	12	1357	1457	11
Future Vol, veh/h	8	16	12	1357	1457	11
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	-	25	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	15	0	0	3	2	0
Mvmt Flow	8	17	13	1428	1534	12
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2137	773	1546	0	-	0
Stage 1	1540	-	-	-	-	-
Stage 2	597	-	-	-	-	-
Critical Hdwy	6.55	6.9	4.1	-	-	-
Critical Hdwy Stg 1	6.1	-	-	-	-	-
Critical Hdwy Stg 2	6.3	-	-	-	-	-
Follow-up Hdwy	3.8	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	49	346	435	-	-	-
Stage 1	141	-	-	-	-	-
Stage 2	449	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	48	346	435	-	-	-
Mov Cap-2 Maneuver	110	-	-	-	-	-
Stage 1	137	-	-	-	-	-
Stage 2	449	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	25.4	0.1		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	435	-	202	-	-	
HCM Lane V/C Ratio	0.029	-	0.125	-	-	
HCM Control Delay (s)	13.5	-	25.4	-	-	
HCM Lane LOS	B	-	D	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-	

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC
6: Milwaukee Ave & Johnson Dr

06/29/2022

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕↗		↗	↕↗	↗
Traffic Vol, veh/h	42	0	37	0	0	3	37	1328	0	3	1431	44
Future Vol, veh/h	42	0	37	0	0	3	37	1328	0	3	1431	44
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	105	-	-	50	-	110
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	0	0	0	0	0	3	2	0	0	2	3
Mvmt Flow	44	0	39	0	0	3	39	1398	0	3	1506	46

Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	2289	2988	753	2235	3034	699	1552	0	0	1398	0	0
Stage 1	1512	1512	-	1476	1476	-	-	-	-	-	-	-
Stage 2	777	1476	-	759	1558	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.5	6.9	7.5	6.5	6.9	4.16	-	-	4.1	-	-
Critical Hdwy Stg 1	6.56	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4	3.3	3.5	4	3.3	2.23	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 21	14	357	24	13	387	418	-	-	495	-	-
Stage 1	124	184	-	135	192	-	-	-	-	-	-	-
Stage 2	354	192	-	369	175	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 19	13	357	20	12	387	418	-	-	495	-	-
Mov Cap-2 Maneuver	82	87	-	86	75	-	-	-	-	-	-	-
Stage 1	112	183	-	122	174	-	-	-	-	-	-	-
Stage 2	318	174	-	327	174	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	56.3	14.4	0.4	0
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	418	-	-	82	357	387	495	-	-
HCM Lane V/C Ratio	0.093	-	-	0.539	0.109	0.008	0.006	-	-
HCM Control Delay (s)	14.5	-	-	91.5	16.3	14.4	12.3	-	-
HCM Lane LOS	B	-	-	F	C	B	B	-	-
HCM 95th %tile Q(veh)	0.3	-	-	2.3	0.4	0	0	-	-

Notes									
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon									

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Capacity Analysis Summary Sheets
Year 2028 Total Projected Weekday Morning Peak Hour

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				 			 	  		 	  	
Traffic Volume (vph)	6	3	11	129	1	40	6	1366	99	41	1397	1
Future Volume (vph)	6	3	11	129	1	40	6	1366	99	41	1397	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	235		0	240		0	165		265	200		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	95			100			155			80		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	0.91
Ped Bike Factor												
Frt		0.880			0.853				0.850			
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1672	0	3155	1503	0	1805	5151	1495	1770	4848	0
Flt Permitted	0.950			0.950			0.153			0.141		
Satd. Flow (perm)	1805	1672	0	3155	1503	0	291	5151	1495	263	4848	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			30			40			40	
Link Distance (ft)		634			251			497			188	
Travel Time (s)		17.3			5.7			8.5			3.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	11%	0%	8%	0%	6%	8%	2%	7%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	15	0	137	44	0	6	1453	105	44	1487	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases							2		2	6		
Detector Phase	7	4		3	8		5	2	3	1	6	
Switch Phase												
Minimum Initial (s)	4.0	8.0		4.0	8.0		3.0	15.0	4.0	3.0	15.0	
Minimum Split (s)	9.5	53.0		9.5	49.0		9.5	38.0	9.5	9.5	31.0	
Total Split (s)	15.0	21.0		26.0	32.0		14.0	64.0	26.0	14.0	64.0	
Total Split (%)	12.0%	16.8%		20.8%	25.6%		11.2%	51.2%	20.8%	11.2%	51.2%	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5	3.5	3.5	4.5	
All-Red Time (s)	1.0	1.5		1.0	1.5		0.5	1.5	1.0	0.5	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0		4.5	6.0		4.0	6.0	4.5	4.0	6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min	None	None	C-Min	
Act Effect Green (s)	6.0	8.4		11.4	13.6		95.3	88.8	105.3	98.7	95.2	
Actuated g/C Ratio	0.05	0.07		0.09	0.11		0.76	0.71	0.84	0.79	0.76	

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Synchro 11 Report

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.07	0.13		0.48	0.27		0.02	0.40	0.08	0.16	0.40	
Control Delay	58.2	57.4		59.3	53.3		5.2	9.2	2.1	5.5	7.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	58.2	57.4		59.3	53.3		5.2	9.2	2.1	5.5	7.1	
LOS	E	E		E	D		A	A	A	A	A	
Approach Delay		57.6			57.9			8.7			7.0	
Approach LOS		E			E			A			A	
Queue Length 50th (ft)	5	12		55	34		1	134	7	4	87	
Queue Length 95th (ft)	20	34		87	71		6	270	19	22	277	
Internal Link Dist (ft)		554			171			417			108	
Turn Bay Length (ft)	235			240			165		265	200		
Base Capacity (vph)	151	200		542	312		351	3657	1361	329	3690	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.04	0.07		0.25	0.14		0.02	0.40	0.08	0.13	0.40	

Intersection Summary

Area Type: Other

Cycle Length: 125

Actuated Cycle Length: 125

Offset: 1 (1%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 11.0

Intersection LOS: B

Intersection Capacity Utilization 54.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

 Ø1	 Ø2 (R)	 Ø4	 Ø3
14 s	64 s	21 s	26 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
14 s	64 s	15 s	32 s

HCM 6th TWSC

2: Milwaukee Avenue & Prague Ave

06/29/2022

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	4	2	1415	1436	4
Future Vol, veh/h	0	4	2	1415	1436	4
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, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	6	6	100
Mvmt Flow	0	5	2	1626	1651	5

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	2308	828	1656
Stage 1	1654	-	-
Stage 2	654	-	-
Critical Hdwy	5.7	7.1	5.3
Critical Hdwy Stg 1	6.6	-	-
Critical Hdwy Stg 2	6	-	-
Follow-up Hdwy	3.8	3.9	3.1
Pot Cap-1 Maneuver	65	273	190
Stage 1	97	-	-
Stage 2	441	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	58	273	190
Mov Cap-2 Maneuver	77	-	-
Stage 1	86	-	-
Stage 2	441	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.4	0.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	190	-	273	-	-
HCM Lane V/C Ratio	0.012	-	0.017	-	-
HCM Control Delay (s)	24.2	0.9	18.4	-	-
HCM Lane LOS	C	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC

3: Milwaukee Ave & Chevy Chase Drive

06/29/2022

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑↑↑	↑↑	
Traffic Vol, veh/h	0	5	15	1406	1439	7
Future Vol, veh/h	0	5	15	1406	1439	7
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	-	25	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	6	4	14
Mvmt Flow	0	5	16	1496	1531	7
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2165	769	1538	0	-	0
Stage 1	1535	-	-	-	-	-
Stage 2	630	-	-	-	-	-
Critical Hdwy	6.25	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.65	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	57	348	438	-	-	-
Stage 1	164	-	-	-	-	-
Stage 2	467	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	55	348	438	-	-	-
Mov Cap-2 Maneuver	125	-	-	-	-	-
Stage 1	158	-	-	-	-	-
Stage 2	467	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	15.5	0.1		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	438	-	348	-	-	
HCM Lane V/C Ratio	0.036	-	0.015	-	-	
HCM Control Delay (s)	13.5	-	15.5	-	-	
HCM Lane LOS	B	-	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0	-	-	

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC

4: Milwaukee Ave & South Access Drive

06/29/2022

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕		↔	↕
Traffic Vol, veh/h	6	3	1403	5	4	1440
Future Vol, veh/h	6	3	1403	5	4	1440
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	-	-	-	25	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	6	0	0	2
Mvmt Flow	6	3	1477	5	4	1516

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	2246	741	0	0	1482	0
Stage 1	1480	-	-	-	-	-
Stage 2	766	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	36	363	-	-	460	-
Stage 1	179	-	-	-	-	-
Stage 2	425	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	36	363	-	-	460	-
Mov Cap-2 Maneuver	128	-	-	-	-	-
Stage 1	179	-	-	-	-	-
Stage 2	421	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.4	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	163	460
HCM Lane V/C Ratio	-	-	0.058	0.009
HCM Control Delay (s)	-	-	28.4	12.9
HCM Lane LOS	-	-	D	B
HCM 95th %tile Q(veh)	-	-	0.2	0

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC
5: Milwaukee Ave & RI/RO Access Dr

06/29/2022

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			↕
Traffic Vol, veh/h	0	3	1403	3	0	1444
Future Vol, veh/h	0	3	1403	3	0	1444
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, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	92	92	92	92
Heavy Vehicles, %	0	0	6	0	0	2
Mvmt Flow	0	3	1525	3	0	1570

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	764	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.9	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.3	-
Pot Cap-1 Maneuver	0	351	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	351	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	- 351	-
HCM Lane V/C Ratio	-	- 0.009	-
HCM Control Delay (s)	-	- 15.4	-
HCM Lane LOS	-	- C	-
HCM 95th %tile Q(veh)	-	- 0	-

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC

6: Milwaukee Ave & Johnson Dr

06/29/2022

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↗		↖	↗	↖
Traffic Vol, veh/h	45	0	29	0	0	4	11	1383	12	4	1415	27
Future Vol, veh/h	45	0	29	0	0	4	11	1383	12	4	1415	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	105	-	-	50	-	110
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	0	8	0	0	0	0	6	0	0	6	8
Mvmt Flow	50	0	32	0	0	4	12	1537	13	4	1572	30

Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	2373	3154	786	2362	3178	775	1602	0	0	1550	0	0
Stage 1	1580	1580	-	1568	1568	-	-	-	-	-	-	-
Stage 2	793	1574	-	794	1610	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.5	7.06	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4	3.38	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 18	11	322	19	11	345	414	-	-	433	-	-
Stage 1	114	171	-	118	173	-	-	-	-	-	-	-
Stage 2	348	172	-	352	165	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 17	11	322	17	11	345	414	-	-	433	-	-
Mov Cap-2 Maneuver	82	81	-	82	78	-	-	-	-	-	-	-
Stage 1	111	169	-	115	168	-	-	-	-	-	-	-
Stage 2	334	167	-	314	164	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	68.7	15.6	0.1	0
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	414	-	-	82	322	345	433	-	-
HCM Lane V/C Ratio	0.03	-	-	0.61	0.1	0.013	0.01	-	-
HCM Control Delay (s)	14	-	-	101.7	17.4	15.6	13.4	-	-
HCM Lane LOS	B	-	-	F	C	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.8	0.3	0	0	-	-

Notes									
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon									

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Capacity Analysis Summary Sheets
Year 2028 Total Projected Weekday Evening Peak Hour

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	8	6	176	8	140	41	1533	53	56	1606	9
Future Volume (vph)	38	8	6	176	8	140	41	1533	53	56	1606	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	235		0	240		0	165		265	200		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	95			100			155			80		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	0.91
Ped Bike Factor												
Frt		0.934			0.858				0.850		0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1775	0	3148	1516	0	1805	5250	1583	1719	5032	0
Flt Permitted	0.950			0.950			0.082			0.093		
Satd. Flow (perm)	1805	1775	0	3148	1516	0	156	5250	1583	168	5032	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			30			40			40	
Link Distance (ft)		634			251			497			188	
Travel Time (s)		17.3			5.7			8.5			3.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	11%	0%	8%	0%	4%	2%	5%	3%	0%
Bus Blockages (#/hr)	0	0	0	1	0	2	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	16	0	191	161	0	45	1666	58	61	1756	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases							2		2	6		
Detector Phase	7	4		3	8		5	2	3	1	6	
Switch Phase												
Minimum Initial (s)	4.0	8.0		4.0	8.0		3.0	15.0	4.0	3.0	15.0	
Minimum Split (s)	9.5	27.0		9.5	40.0		9.5	38.0	9.5	9.5	31.0	
Total Split (s)	15.0	27.0		28.0	40.0		15.0	60.0	28.0	15.0	60.0	
Total Split (%)	11.5%	20.8%		21.5%	30.8%		11.5%	46.2%	21.5%	11.5%	46.2%	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5	3.5	3.5	4.5	
All-Red Time (s)	1.0	1.5		1.0	1.5		0.5	1.5	1.0	0.5	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0		4.5	6.0		4.0	6.0	4.5	4.0	6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min	None	None	C-Min	
Act Effect Green (s)	8.2	8.4		26.2	20.0		85.5	78.0	109.3	86.6	78.5	
Actuated g/C Ratio	0.06	0.06		0.20	0.15		0.66	0.60	0.84	0.67	0.60	

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Synchro 11 Report

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.36	0.14		0.30	0.69		0.24	0.53	0.04	0.31	0.58	
Control Delay	66.6	60.0		44.7	66.6		12.3	18.5	2.2	13.0	19.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	66.6	60.0		44.7	66.6		12.3	18.5	2.2	13.0	19.1	
LOS	E	E		D	E		B	B	A	B	B	
Approach Delay		64.7			54.7			17.8			18.9	
Approach LOS		E			D			B			B	
Queue Length 50th (ft)	34	13		65	130		12	309	4	16	338	
Queue Length 95th (ft)	71	38		105	195		32	436	12	40	472	
Internal Link Dist (ft)		554			171			417			108	
Turn Bay Length (ft)	235			240			165		265	200		
Base Capacity (vph)	145	286		680	396		246	3148	1331	246	3038	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.28	0.06		0.28	0.41		0.18	0.53	0.04	0.25	0.58	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 30 (23%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 22.2

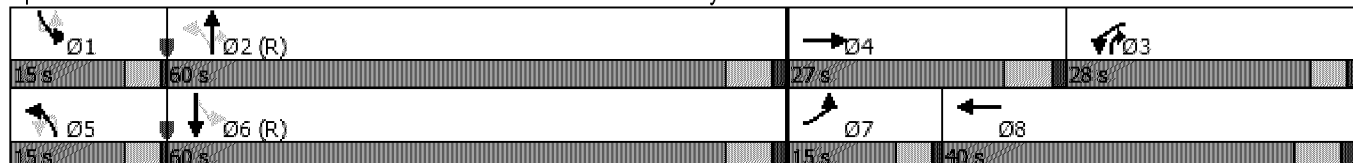
Intersection LOS: C

Intersection Capacity Utilization 64.1%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr



HCM 6th TWSC

2: Milwaukee Avenue & Prague Ave

06/29/2022

Intersection						
Int Delay, s/veh	4.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			U	U	U
Traffic Vol, veh/h	0	4	5	1677	1719	4
Future Vol, veh/h	0	4	5	1677	1719	4
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, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	33	0	0	2	100
Mvmt Flow	0	4	5	1747	1791	4

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	2502	898	1795
Stage 1	1793	-	-
Stage 2	709	-	-
Critical Hdwy	5.7	7.76	5.3
Critical Hdwy Stg 1	6.6	-	-
Critical Hdwy Stg 2	6	-	-
Follow-up Hdwy	3.8	4.23	3.1
Pot Cap-1 Maneuver	51	199	162
Stage 1	79	-	-
Stage 2	413	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	0	199	162
Mov Cap-2 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	413	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.5	9.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	162	-	199	-	-
HCM Lane V/C Ratio	0.032	-	0.021	-	-
HCM Control Delay (s)	28	9.2	23.5	-	-
HCM Lane LOS	D	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC

3: Milwaukee Ave & Chevy Chase Drive

06/29/2022

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑↑↑	↑↑	
Traffic Vol, veh/h	10	11	15	1722	1669	11
Future Vol, veh/h	10	11	15	1722	1669	11
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	-	25	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	10	11	15	1739	1686	11
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2418	849	1697	0	-	0
Stage 1	1692	-	-	-	-	-
Stage 2	726	-	-	-	-	-
Critical Hdwy	6.25	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.65	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	40	308	381	-	-	-
Stage 1	135	-	-	-	-	-
Stage 2	416	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	38	308	381	-	-	-
Mov Cap-2 Maneuver	102	-	-	-	-	-
Stage 1	130	-	-	-	-	-
Stage 2	416	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	31.5	0.1		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	381	-	157	-	-	
HCM Lane V/C Ratio	0.04	-	0.135	-	-	
HCM Control Delay (s)	14.8	-	31.5	-	-	
HCM Lane LOS	B	-	D	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-	

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC

4: Milwaukee Ave & South Access Drive

06/29/2022

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	18	9	1718	15	12	1662
Future Vol, veh/h	18	9	1718	15	12	1662
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	-	-	-	25	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	3	0	2	2
Mvmt Flow	19	9	1808	16	13	1749
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	2717	912	0	0	1824	0
Stage 1	1816	-	-	-	-	-
Stage 2	901	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.14	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.22	-
Pot Cap-1 Maneuver	~ 17	280	-	-	332	-
Stage 1	117	-	-	-	-	-
Stage 2	362	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	~ 16	280	-	-	332	-
Mov Cap-2 Maneuver	85	-	-	-	-	-
Stage 1	117	-	-	-	-	-
Stage 2	348	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	48.2	0		0.1		
HCM LOS	E					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	111	332	-	
HCM Lane V/C Ratio	-	-	0.256	0.038	-	
HCM Control Delay (s)	-	-	48.2	16.3	-	
HCM Lane LOS	-	-	E	C	-	
HCM 95th %tile Q(veh)	-	-	0.9	0.1	-	
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC
5: Milwaukee Ave & RI/RO Access Dr

06/29/2022

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			↕
Traffic Vol, veh/h	0	9	1719	8	0	1674
Future Vol, veh/h	0	9	1719	8	0	1674
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, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	3	0	0	2
Mvmt Flow	0	9	1809	8	0	1762

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	909	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.9	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.3	-
Pot Cap-1 Maneuver	0	282	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	282	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.2	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	- 282	-
HCM Lane V/C Ratio	-	- 0.034	-
HCM Control Delay (s)	-	- 18.2	-
HCM Lane LOS	-	- C	-
HCM 95th %tile Q(veh)	-	- 0.1	-

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC

6: Milwaukee Ave & Johnson Dr

06/29/2022

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕↗		↗	↕↗	↗
Traffic Vol, veh/h	31	0	26	6	0	22	42	1684	2	5	1642	58
Future Vol, veh/h	31	0	26	6	0	22	42	1684	2	5	1642	58
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	105	-	-	50	-	110
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	20	0	5	3	2	100	0	2	2
Mvmt Flow	32	0	27	6	0	23	44	1754	2	5	1710	60
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2685	3564	855	2708	3623	878	1770	0	0	1756	0	0
Stage 1	1720	1720	-	1843	1843	-	-	-	-	-	-	-
Stage 2	965	1844	-	865	1780	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.9	6.5	7	4.16	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.9	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.9	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.7	4	3.35	2.23	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 11	6	306	8	5	285	344	-	-	361	-	-
Stage 1	95	146	-	63	127	-	-	-	-	-	-	-
Stage 2	278	127	-	280	136	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 9	5	306	7	4	285	344	-	-	361	-	-
Mov Cap-2 Maneuver	58	58	-	42	47	-	-	-	-	-	-	-
Stage 1	83	144	-	55	111	-	-	-	-	-	-	-
Stage 2	223	111	-	252	134	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	77.2		41.6		0.4		0					
HCM LOS	F		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	344	-	-	58	306	127	361	-	-			
HCM Lane V/C Ratio	0.127	-	-	0.557	0.089	0.23	0.014	-	-			
HCM Control Delay (s)	17	-	-	127	17.9	41.6	15.1	-	-			
HCM Lane LOS	C	-	-	F	C	E	C	-	-			
HCM 95th %tile Q(veh)	0.4	-	-	2.2	0.3	0.8	0	-	-			
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Capacity Analysis Summary Sheets
Year 2028 Total Projected Saturday Midday Peak Hour

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	14	1	17	177	3	69	10	14	1275	51	11	45
Future Volume (vph)	14	1	17	177	3	69	10	14	1275	51	11	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%				0%			
Storage Length (ft)	235		0	240		0		165		265		200
Storage Lanes	1		0	2		0		1		1		1
Taper Length (ft)	95			100				155				80
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.91	1.00	0.91	1.00	0.91	1.00
Ped Bike Factor												
Frt		0.858			0.856					0.850		
Flt Protected	0.950			0.950				0.950				0.950
Satd. Flow (prot)	1805	1630	0	3433	1456	0	0	1805	5353	1583	0	1735
Flt Permitted	0.950			0.950				0.140				0.166
Satd. Flow (perm)	1805	1630	0	3433	1456	0	0	266	5353	1583	0	303
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				40			
Link Distance (ft)		634			251				497			
Travel Time (s)		17.3			6.8				8.5			
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	2%	100%	8%	0%	0%	2%	2%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%				0%			
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	19	0	184	75	0	0	25	1328	53	0	58
Turn Type	Prot	NA		Prot	NA		pm+pt	pm+pt	NA	pm+ov	pm+pt	pm+pt
Protected Phases	7	4		3	8		5	5	2	3	1	1
Permitted Phases							2	2		2	6	6
Detector Phase	7	4		3	8		5	5	2	3	1	1
Switch Phase												
Minimum Initial (s)	4.0	8.0		4.0	8.0		3.0	3.0	15.0	4.0	3.0	3.0
Minimum Split (s)	9.5	53.0		9.5	49.0		9.5	9.5	38.0	9.5	9.5	9.5
Total Split (s)	14.0	21.0		25.0	32.0		14.0	14.0	60.0	25.0	14.0	14.0
Total Split (%)	11.7%	17.5%		20.8%	26.7%		11.7%	11.7%	50.0%	20.8%	11.7%	11.7%
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	3.5	4.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.5		1.0	1.5		0.5	0.5	1.5	1.0	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0		0.0
Total Lost Time (s)	4.5	6.0		4.5	6.0			4.0	6.0	4.5		4.0
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	None	C-Min	None	None	None
Act Effect Green (s)	6.6	8.5		12.8	12.6			88.7	81.8	99.8		90.7
Actuated g/C Ratio	0.06	0.07		0.11	0.10			0.74	0.68	0.83		0.76

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Synchro 11 Report

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022



Lane Group	SBT	SBR
Lane Configurations	↑↑↑	↔
Traffic Volume (vph)	1433	11
Future Volume (vph)	1433	11
Ideal Flow (vphpl)	1900	1900
Lane Width (ft)	12	12
Grade (%)	0%	
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	0.91	0.91
Ped Bike Factor		
Frt	0.999	
Flt Protected		
Satd. Flow (prot)	5081	0
Flt Permitted		
Satd. Flow (perm)	5081	0
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	40	
Link Distance (ft)	188	
Travel Time (s)	3.2	
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor	0.96	0.96
Growth Factor	100%	100%
Heavy Vehicles (%)	2%	0%
Bus Blockages (#/hr)	0	0
Parking (#/hr)		
Mid-Block Traffic (%)	0%	
Shared Lane Traffic (%)		
Lane Group Flow (vph)	1504	0
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Detector Phase	6	
Switch Phase		
Minimum Initial (s)	15.0	
Minimum Split (s)	31.0	
Total Split (s)	60.0	
Total Split (%)	50.0%	
Yellow Time (s)	4.5	
All-Red Time (s)	1.5	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	6.0	
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Recall Mode	C-Min	
Act Effct Green (s)	84.3	
Actuated g/C Ratio	0.70	

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

Synchro 11 Report

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
v/c Ratio	0.15	0.17		0.50	0.49			0.09	0.36	0.04		0.19
Control Delay	56.9	55.4		55.1	60.6			6.0	10.2	2.3		6.4
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0		0.0
Total Delay	56.9	55.4		55.1	60.6			6.0	10.2	2.3		6.4
LOS	E	E		E	E			A	B	A		A
Approach Delay		56.1			56.7				9.8			
Approach LOS		E			E				A			
Queue Length 50th (ft)	11	14		69	56			3	129	3		7
Queue Length 95th (ft)	34	39		105	102			16	253	12		29
Internal Link Dist (ft)		554			171				417			
Turn Bay Length (ft)	235			240				165		265		200
Base Capacity (vph)	142	203		586	315			331	3649	1388		352
Starvation Cap Reductn	0	0		0	0			0	0	0		0
Spillback Cap Reductn	0	0		0	0			0	0	0		0
Storage Cap Reductn	0	0		0	0			0	0	0		0
Reduced v/c Ratio	0.11	0.09		0.31	0.24			0.08	0.36	0.04		0.16

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 4 (3%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 14.0

Intersection LOS: B

Intersection Capacity Utilization 56.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

 Ø1	 Ø2 (R)	 Ø4	 Ø3
14 s	60 s	21 s	25 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
14 s	60 s	14 s	32 s

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Columbus Pkwy/Riverwalk Dr

06/29/2022



Lane Group	SBT	SBR
v/c Ratio	0.42	
Control Delay	10.0	
Queue Delay	0.0	
Total Delay	10.0	
LOS	A	
Approach Delay	9.9	
Approach LOS	A	
Queue Length 50th (ft)	153	
Queue Length 95th (ft)	296	
Internal Link Dist (ft)	108	
Turn Bay Length (ft)		
Base Capacity (vph)	3571	
Starvation Cap Reductn	0	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	0.42	
Intersection Summary		

HCM 6th TWSC

2: Milwaukee Avenue & Prague Ave

06/29/2022

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	3	4	1388	1496	6
Future Vol, veh/h	0	3	4	1388	1496	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, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	34	2	2	0
Mvmt Flow	0	3	4	1431	1542	6
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2125	774	1548	0	-	0
Stage 1	1545	-	-	-	-	-
Stage 2	580	-	-	-	-	-
Critical Hdwy	5.7	7.1	5.98	-	-	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.8	3.9	3.44	-	-	-
Pot Cap-1 Maneuver	82	296	153	-	-	-
Stage 1	113	-	-	-	-	-
Stage 2	482	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	72	296	153	-	-	-
Mov Cap-2 Maneuver	89	-	-	-	-	-
Stage 1	99	-	-	-	-	-
Stage 2	482	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	17.3	1.3		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	153	-	296	-	-	
HCM Lane V/C Ratio	0.027	-	0.01	-	-	
HCM Control Delay (s)	29.2	1.2	17.3	-	-	
HCM Lane LOS	D	A	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0	-	-	

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC

3: Milwaukee Ave & Chevy Chase Drive

06/29/2022

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑↑↑	↑↑	
Traffic Vol, veh/h	8	16	12	1336	1495	11
Future Vol, veh/h	8	16	12	1336	1495	11
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	-	25	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	15	0	0	3	2	0
Mvmt Flow	8	17	13	1406	1574	12
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2168	793	1586	0	-	0
Stage 1	1580	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Critical Hdwy	6.55	6.9	4.1	-	-	-
Critical Hdwy Stg 1	6.1	-	-	-	-	-
Critical Hdwy Stg 2	6.3	-	-	-	-	-
Follow-up Hdwy	3.8	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	47	336	420	-	-	-
Stage 1	134	-	-	-	-	-
Stage 2	454	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	46	336	420	-	-	-
Mov Cap-2 Maneuver	106	-	-	-	-	-
Stage 1	130	-	-	-	-	-
Stage 2	454	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	26.2	0.1		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	420	-	195	-	-	
HCM Lane V/C Ratio	0.03	-	0.13	-	-	
HCM Control Delay (s)	13.8	-	26.2	-	-	
HCM Lane LOS	B	-	D	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-	

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC

4: Milwaukee Ave & South Access Drive

06/29/2022

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		W		W	W
Traffic Vol, veh/h	38	18	1339	5	26	1468
Future Vol, veh/h	38	18	1339	5	26	1468
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	-	-	-	25	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	19	1409	5	27	1545
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	2239	707	0	0	1414	0
Stage 1	1412	-	-	-	-	-
Stage 2	827	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 36	378	-	-	478	-
Stage 1	191	-	-	-	-	-
Stage 2	390	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	~ 34	378	-	-	478	-
Mov Cap-2 Maneuver	129	-	-	-	-	-
Stage 1	191	-	-	-	-	-
Stage 2	368	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	38.8	0	0.2			
HCM LOS	E					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	164	478	-	
HCM Lane V/C Ratio	-	-	0.359	0.057	-	
HCM Control Delay (s)	-	-	38.8	13	-	
HCM Lane LOS	-	-	E	B	-	
HCM 95th %tile Q(veh)	-	-	1.5	0.2	-	
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC
5: Milwaukee Ave & RI/RO Access Dr

06/29/2022

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			↕
Traffic Vol, veh/h	0	20	1340	17	0	1494
Future Vol, veh/h	0	20	1340	17	0	1494
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, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	3	0	0	2
Mvmt Flow	0	21	1411	18	0	1573

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	715	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.9	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.3	-
Pot Cap-1 Maneuver	0	378	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	378	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	- 378	-
HCM Lane V/C Ratio	-	- 0.056	-
HCM Control Delay (s)	-	- 15.1	-
HCM Lane LOS	-	- C	-
HCM 95th %tile Q(veh)	-	- 0.2	-

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

HCM 6th TWSC

6: Milwaukee Ave & Johnson Dr

06/29/2022

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕↗		↗	↕↗	↗
Traffic Vol, veh/h	42	0	41	0	0	3	37	1323	0	3	1453	44
Future Vol, veh/h	42	0	41	0	0	3	37	1323	0	3	1453	44
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	105	-	-	50	-	110
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	0	0	0	0	0	3	2	0	0	2	3
Mvmt Flow	44	0	43	0	0	3	39	1393	0	3	1529	46
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2310	3006	765	2242	3052	697	1575	0	0	1393	0	0
Stage 1	1535	1535	-	1471	1471	-	-	-	-	-	-	-
Stage 2	775	1471	-	771	1581	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.5	6.9	7.5	6.5	6.9	4.16	-	-	4.1	-	-
Critical Hdwy Stg 1	6.56	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4	3.3	3.5	4	3.3	2.23	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 20	14	350	24	13	388	410	-	-	497	-	-
Stage 1	120	180	-	136	193	-	-	-	-	-	-	-
Stage 2	355	193	-	363	171	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 18	13	350	19	12	388	410	-	-	497	-	-
Mov Cap-2 Maneuver	80	86	-	85	74	-	-	-	-	-	-	-
Stage 1	109	179	-	123	175	-	-	-	-	-	-	-
Stage 2	319	175	-	316	170	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	56.5		14.4		0.4		0					
HCM LOS	F		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	410	-	-	80	350	388	497	-	-			
HCM Lane V/C Ratio	0.095	-	-	0.553	0.123	0.008	0.006	-	-			
HCM Control Delay (s)	14.7	-	-	95.4	16.7	14.4	12.3	-	-			
HCM Lane LOS	B	-	-	F	C	B	B	-	-			
HCM 95th %tile Q(veh)	0.3	-	-	2.4	0.4	0	0	-	-			
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

Attachment: Plan Set [Revision 2] (Consideration of a Carwash Development at 301 Milwaukee Avenue)

07/6/2022

**MINUTES OF THE REGULAR MEETING OF THE PLANNING AND ZONING COMMISSION OF THE
VILLAGE OF BUFFALO GROVE HELD IN THE COUNCIL CHAMBERS, 50 RAUPP BOULEVARD,
BUFFALO GROVE, ILLINOIS ON WEDNESDAY, JULY 6, 2022**

Call to Order

The meeting was called to order at 7:30 PM by Chairman Frank Cesario

Public Hearings/Items For Consideration

1. Consider a Petition for an Amendment to the Preliminary Plan Approval, a Special Use and Sign Variation to Allow the Installation of a Second Drive-Through Lane with Two Menu Boards in Each Lane for the McDonalds Restaurant Located at 1200 Arlington Heights Road. (Trustee Johnson) (Staff Contact: Kelly Purvis)

Ms. Purvis, Deputy Director of Community Development, provided background on the SUP and sign variation for a second drive through and two menu boards, along with a landscape plan at 1200 Arlington Heights Road.

Mr. Olson provided additional background regarding the SUP and sign variation for a second drive through lane and two menu boards. Additionally, he reviewed the reasons for the update to the site.

Com. Weinstein asked if they are able to accommodate the 4 drive lines with the existing space.

Mr. Olson said yes.

Com. Weinstein asked if they are aware of the conditions outlined in the staff report.

Mr. Olson said yes.

Chairperson Cesario asked if neighbors have called regarding the subject property.

Ms. Purvis said one, but it was just an inquiry and not a complaint.

Com. Moodhe asked how they got so far in the process.

Ms. Purvis provided an explanation to Commissioner Moodhe.

Com. Moodhe asked if there was a hearing for the second menu board in the past.

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Ms. Purvis said she could not find any in their records.

Chairperson Cesario said it looks like an improvement to the establishment and appreciates that the signage size is modest.

The Village Staff Report was entered as exhibit one.

The slide deck staff presentation was entered as exhibit two.

The Public Hearing closed at 7:44.

Com. Weinstein made a motion to recommend approval for an amendment to the Preliminary Plan approved by Ordinance No. 98-15, a Special Use for the addition of a second drive-through lane, and a Variation to Section 14.16 of the Sign Code pertaining to the maximum number of menu boards allowed per drive-through lane for the proposed improvements on the property at 1200 Arlington Heights Road, subject to the following conditions:

- 1. The proposed development shall be developed in substantial conformance to the plans attached.*
- 2. The Petitioner shall comply with all applicable Village codes, regulations, and policies.*
- 3. Any directional or incidental sign added to the sign package provided shall be reviewed administratively by staff.*
- 4. The special use is granted to McDonald's USA LLC and said special use does not run with the land.*
- 5. The special use granted may be assignable to subsequent petitioners seeking assignment of this special use as follows:*
 - a. Upon application of a petition seeking assignment of this special use, the Village of Buffalo Grove, in their sole discretion, may approve the assignment administratively, or may refer it to the Planning & Zoning Commission and/or the Village Board for a public hearing.*
 - b. Such assignment shall be valid only upon the written approval of the Village of Buffalo Grove granting said assignment, which may be granted or denied for any reason.*

Com. Moodhe seconded the motion.

Com. Spunt spoke in favor of the motion.

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RESULT:	RECOMMENDATION TO APPROVE [UNANIMOUS]
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	Next: 7/18/2022 7:30 PM
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AYES:	Moodhe, Spunt, Cesario, Khan, Weinstein, Davis
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ABSENT:	Amy Au, Kevin Richards, Neil Worlikar
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Regular Meeting

Other Matters for Discussion

Approval of Minutes

1. Planning and Zoning Commission - Regular Meeting - Jun 15, 2022 7:30 PM

RESULT:	ACCEPTED [5 TO 0]
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AYES:	Moodhe, Spunt, Cesario, Weinstein, Davis
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ABSTAIN:	Zill Khan
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ABSENT:	Amy Au, Kevin Richards, Neil Worlikar
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Chairman's Report

Committee and Liaison Reports

Chairperson Cesario read an email from Com. Richards, which outlined the Village Board meeting he attended.

Staff Report/Future Agenda Schedule

Ms. Purvis provided the Commission with future agenda items.

Public Comments and Questions

Adjournment

The meeting was adjourned at 7:48 PM

Action Items

Chris Stilling

APPROVED BY ME THIS 6th DAY OF July, 2022

Minutes Acceptance: Minutes of Jul 6, 2022 12:00 AM (Approval of Minutes)